



EMI TEST REPORT

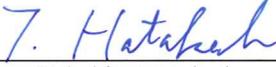
Test Report No. : 10121847H-B

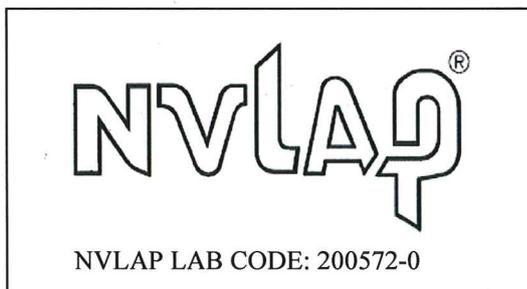
Applicant : SHARP Corporation, Communication Systems Division.
Type of Equipment : Cellular Phone
Model No. : SH-02F
FCC ID : APYHRO00202
Test standard : FCC Part 15 Subpart B 2013 Class B
Test Result : Complied

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: November 29, 2013

Representative test engineer: 
Hiroshi Kukita
Engineer of WiSE Japan,
UL Verification Service

Approved by : 
Takahiro Hatakeda
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>

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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 : Cellular Phone
Model No. : SH-02F
Serial No. : Refer to Section 4, Clause 4.2
Receipt Date of Sample : November 22, 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-02F is Quad-band LTE(B1/B3/B19/B21), Quad-band W-CDMA (FDD 1 /
5 / 6 / 19), Quad-band GSM(850/900/1800/1900) 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: 2,150.4MHz (max)
RTC: 32.763kHz
Source oscillation: 19.2MHz (CPU)

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: 2013, final revised on September 30, 2013 and effective October 30, 2013

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

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	ANSI C63.4: 2009 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 6.4dB 0.16885MHz, L [AV] 10.4dB 0.16885MHz, L	Complied
Radiated emission	ANSI C63.4: 2009 8. Radiated emission measurements	Class B	N/A	7.0dB 797.842MHz, 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	3.5dB
No.3	3.6dB
No.4	3.5dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	4.2dB

*3m/1m/0.5m = Measurement distance

Conducted Emission test

The data listed in this test report has enough margin, more than the site margin.

Radiated emission test(3m)

The data listed in this test report has enough margin, more than the site margin.

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3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.0 x 4.5 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.8 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	-	6.2 x 4.7 x 3.0m	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

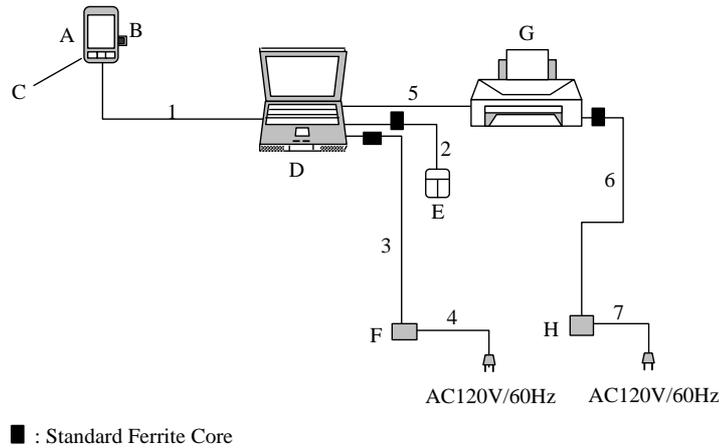
Refer to APPENDIX.

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	Cellular Phone	SH-02F	004401/11/4985456	Sharp Corporation	EUT
B	microSD Memory Card	SD-C02G	None	Toshiba	-
C	Lithium-Ion Battery	-	WDA	Sharp Corporation	EUT
D	Personal Computer	PP11L	CN-0D4571-48643-58P-1053	Dell	-
E	Mouse	M-UAG120	LZ733B70EUV	Toshiba	-
F	AC Adapter (PC)	LA65NS1-00	CN-0YD637-71615-64Q-2243	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: November 29, 2013

Test engineer: Hiroshi Kukita

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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-13000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

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

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

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

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 3MHz AV *1): RBW:1MHz/VBW:10Hz

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

- The noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at representative X-axis since no difference was found among each position.

6.5 Test result

Summary of the test results: Pass

Date: November 29, 2013

Test engineer: Hiroshi Kukita

UL Japan, Inc.

Head Office EMC Lab.

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APPENDIX 1: Data of EMI test

Conducted Emission

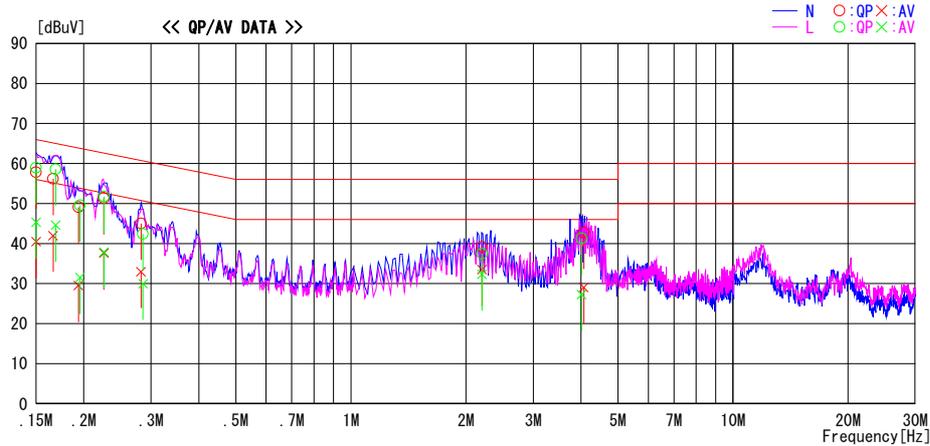
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H
Temp./Humi. : 21deg.C / 40% 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	44.5	27.2	13.3	57.8	40.5	66.0	56.0	8.2	15.5	N	
0.16618	43.1	28.9	13.1	56.2	42.0	65.1	55.1	8.9	13.1	N	
0.19358	36.0	16.4	13.1	49.1	29.5	63.9	53.9	14.8	24.4	N	
0.22560	38.2	24.4	13.2	51.4	37.6	62.6	52.6	11.2	15.0	N	
0.28250	31.8	19.8	13.2	45.0	33.0	60.7	50.7	15.7	17.7	N	
2.20190	25.7	20.0	13.5	39.2	33.5	56.0	46.0	16.8	12.5	N	
4.06660	29.0	15.4	13.7	42.7	29.1	56.0	46.0	13.3	16.9	N	
0.15000	45.6	32.0	13.3	58.9	45.3	66.0	56.0	7.1	10.7	L	
0.16885	45.5	31.5	13.1	58.6	44.6	65.0	55.0	6.4	10.4	L	
0.19562	36.5	18.4	13.1	49.6	31.5	63.8	53.8	14.2	22.3	L	
0.22601	38.5	24.7	13.2	51.7	37.9	62.6	52.6	10.9	14.7	L	
0.28584	29.2	16.8	13.2	42.4	30.0	60.6	50.6	18.2	20.6	L	
2.20290	24.0	18.8	13.5	37.5	32.3	56.0	46.0	18.5	13.7	L	
4.01340	27.6	13.5	13.7	41.3	27.2	56.0	46.0	14.7	18.8	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT [dBuV] = READING [dBuV] + C. F [dB] (L1SN+CABLE+ATTEN.)
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

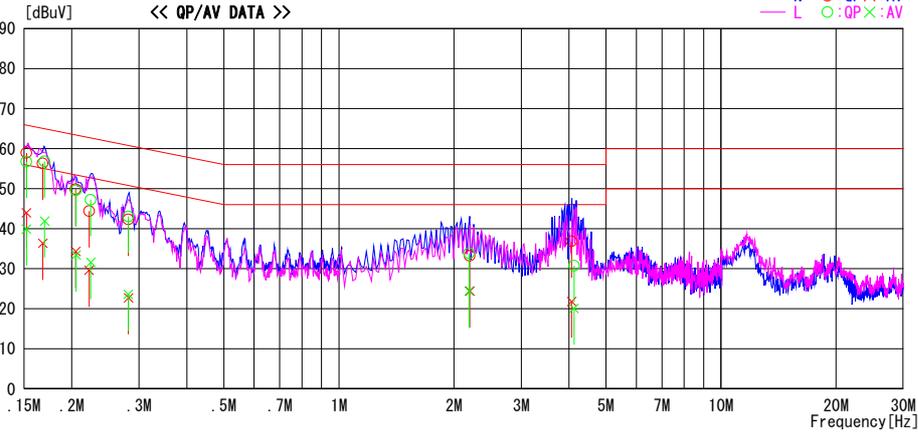
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H
Temp./Humi. : 21deg.C / 40% 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	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15216	45.8	30.9	13.1	58.9	44.0	65.9	55.9	7.0	11.9	N	
0.16788	43.2	23.2	13.1	56.3	36.3	65.1	55.1	8.8	18.8	N	
0.20472	36.6	21.1	13.2	49.8	34.3	63.4	53.4	13.6	19.1	N	
0.22199	31.2	16.4	13.2	44.4	29.6	62.7	52.7	18.3	23.1	N	
0.28150	29.1	9.5	13.2	42.3	22.7	60.8	50.8	18.5	28.1	N	
2.19960	19.7	10.9	13.5	33.2	24.4	56.0	46.0	22.8	21.6	N	
4.06260	23.1	8.1	13.7	36.8	21.8	56.0	46.0	19.2	24.2	N	
0.15226	43.6	26.8	13.1	56.7	39.9	65.9	55.9	9.2	16.0	L	
0.16976	43.7	28.8	13.1	56.8	41.9	65.0	55.0	8.2	13.1	L	
0.20530	36.4	20.2	13.2	49.6	33.4	63.4	53.4	13.8	20.0	L	
0.22426	34.0	18.4	13.2	47.2	31.6	62.7	52.7	15.5	21.1	L	
0.28104	29.8	10.4	13.2	43.0	23.6	60.8	50.8	17.8	27.2	L	
2.19200	20.3	10.9	13.5	33.8	24.4	56.0	46.0	22.2	21.6	L	
4.12300	17.0	6.4	13.7	30.7	20.1	56.0	46.0	25.3	25.9	L	

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

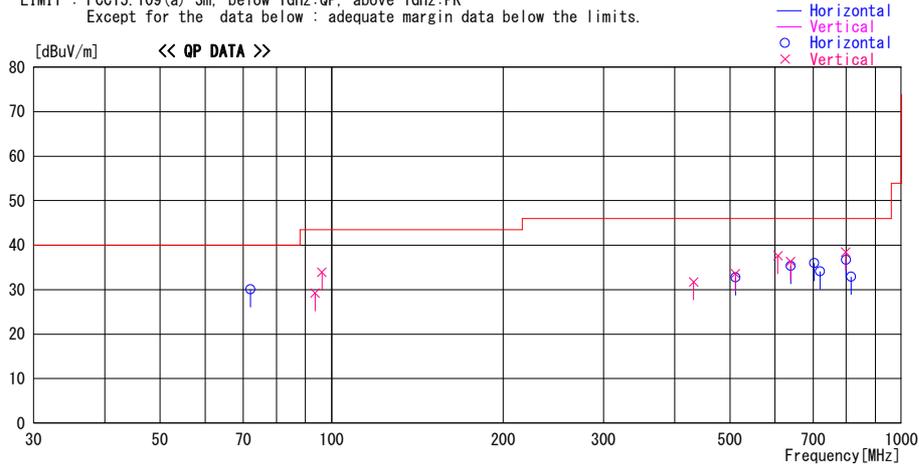
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H

Temp./Humi. : 21deg. C / 40% RH
Engineer : Hiroshi Kukita

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

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]							
72.017	54.1	QP	6.7	-30.7	30.1	103	238	Hori.	40.0	9.9	
93.517	50.6	QP	9.0	-30.4	29.2	95	100	Vert.	43.5	14.3	
96.136	54.6	QP	9.6	-30.3	33.9	189	100	Vert.	43.5	9.6	
431.984	40.9	QP	17.8	-27.0	31.7	172	100	Vert.	46.0	14.3	
511.272	41.6	QP	18.3	-26.3	33.6	337	124	Vert.	46.0	12.4	
511.271	40.7	QP	18.3	-26.3	32.7	222	126	Hori.	46.0	13.3	
607.130	43.6	QP	19.6	-25.6	37.6	334	100	Vert.	46.0	8.4	
639.088	40.8	QP	20.0	-25.5	35.3	159	100	Hori.	46.0	10.7	
639.082	41.8	QP	20.0	-25.5	36.3	354	100	Vert.	46.0	9.7	
702.997	40.4	QP	20.7	-25.1	36.0	221	100	Hori.	46.0	10.0	
719.984	38.0	QP	21.0	-24.9	34.1	153	100	Hori.	46.0	11.9	
797.915	40.3	QP	22.4	-24.3	38.4	57	100	Vert.	46.0	7.6	
800.001	38.6	QP	22.4	-24.3	36.7	102	100	Hori.	46.0	9.3	
815.979	34.7	QP	22.4	-24.2	32.9	211	100	Hori.	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)

*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

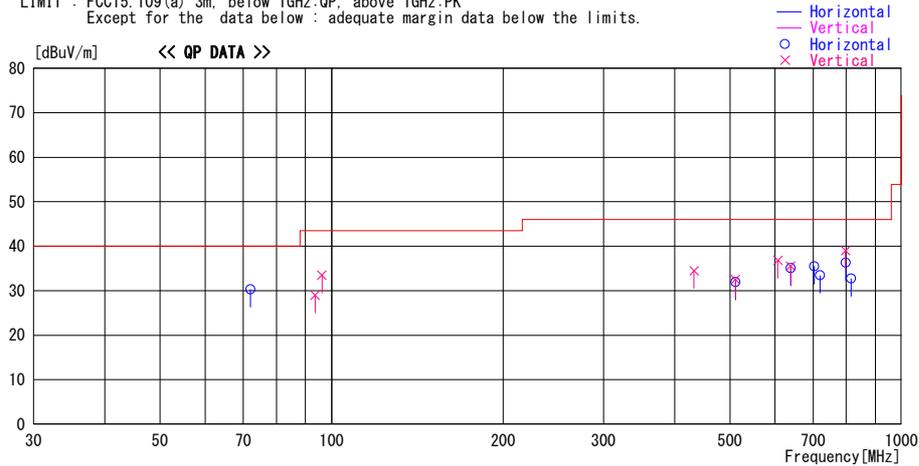
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H

Temp./Humi. : 21deg.C / 40% RH
Engineer : Hiroshi Kukita

Mode / Remarks : Stand-by Mode, Worst axis: Hori:X axis Ver:X axis

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]							
72.018	54.3	QP	6.7	-30.7	30.3	111	248	Hori.	40.0	9.7	
93.518	50.4	QP	9.0	-30.4	29.0	97	100	Vert.	43.5	14.5	
96.134	54.2	QP	9.6	-30.3	33.5	197	100	Vert.	43.5	10.0	
432.603	43.7	QP	17.8	-27.0	34.5	179	100	Vert.	46.0	11.5	
511.272	39.9	QP	18.3	-26.3	31.9	279	131	Hori.	46.0	14.1	
511.271	40.5	QP	18.3	-26.3	32.5	250	100	Vert.	46.0	13.5	
607.135	42.8	QP	19.6	-25.6	36.8	333	100	Vert.	46.0	9.2	
639.481	41.0	QP	20.0	-25.5	35.5	355	100	Vert.	46.0	10.5	
639.089	40.6	QP	20.0	-25.5	35.1	151	100	Hori.	46.0	10.9	
702.988	39.9	QP	20.7	-25.1	35.5	233	100	Hori.	46.0	10.5	
719.983	37.4	QP	21.0	-24.9	33.5	155	100	Hori.	46.0	12.5	
798.140	38.2	QP	22.4	-24.3	36.3	211	100	Hori.	46.0	9.7	
797.842	40.9	QP	22.4	-24.3	39.0	52	100	Vert.	46.0	7.0	
815.983	34.5	QP	22.4	-24.2	32.7	238	100	Hori.	46.0	13.3	

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.

Radiated Emission
(Above 1GHz)

DATA OF RADIATED EMISSION TEST

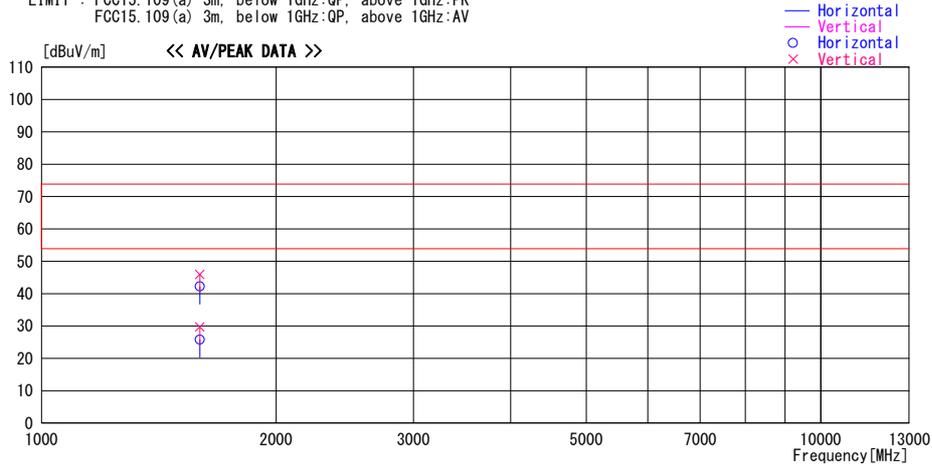
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H

Temp./Humi. : 21deg. C / 40% RH
Engineer : Hiroshi Kukita

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

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]							
1596.040	55.8	PK	24.9	-34.7	46.0	221	100	Vert.	73.9	27.9	
1596.040	39.5	AV	24.9	-34.7	29.7	221	100	Vert.	53.9	24.2	
1596.180	52.0	PK	24.9	-34.7	42.2	354	100	Hori.	73.9	31.7	
1596.180	35.6	AV	24.9	-34.7	25.8	354	100	Hori.	53.9	28.1	

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
(Above 1GHz)

DATA OF RADIATED EMISSION TEST

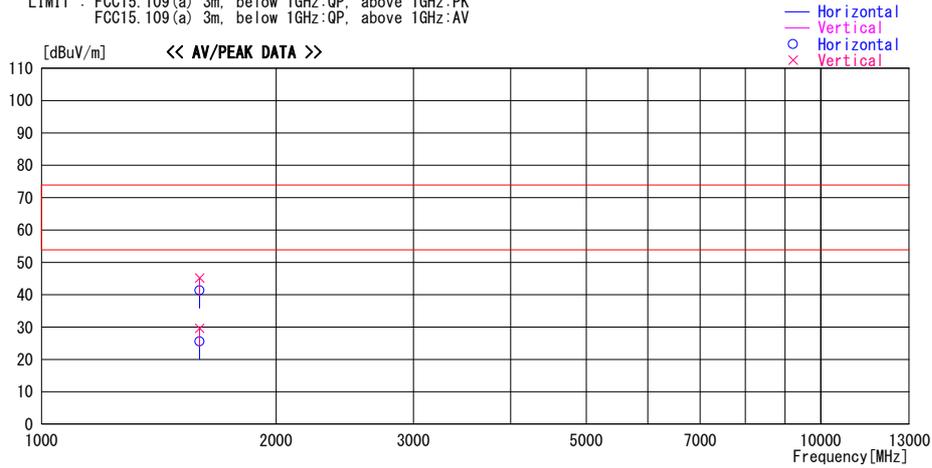
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2013/11/29

Report No. : 10121847H

Temp./Humi. : 21deg. C / 40% RH
Engineer : Hiroshi Kukita

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

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	Margin	Comment
									[dBuV/m]	[dB]	
1595.320	51.2	PK	24.9	-34.7	41.4	351	100	Hori.	73.9	32.5	
1595.320	55.0	PK	24.9	-34.7	45.2	231	100	Vert.	73.9	28.7	
1595.320	39.4	AV	24.9	-34.7	29.6	231	100	Vert.	53.9	24.3	
1595.320	35.4	AV	24.9	-34.7	25.6	351	100	Hori.	53.9	28.3	

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	2013/08/01 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE/CE	2013/02/26 * 12
MJM-01	Measure	KDS	ES19-55	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE/CE	2013/06/07 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2012/11/18 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2012/11/18 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2013/11/26 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/ TSJ	-	-	RE	2013/09/12 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2013/02/07 * 12
MHA-05	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	253	RE	2013/05/13 * 12
MCC-165	Microwave Cable	Junkosha	MWX221	1203S213(1m) / 1311S166(5m)	RE	2013/11/27 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2013/01/07 * 12
MLS-03	LISN(AMN)	Schwarzbeck	NSLK8127	8127384	CE(AE)	2013/03/18 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W(20m)/ 3D-2W(7.5m)/ RG400u(1.5m)/RFM -E421(Switcher)	-/01068(Switcher)	CE	2013/09/12 * 12
MAT-64	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2013/01/09 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2013/01/21 * 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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