



# EMI TEST REPORT

**Test Report No. : 32BE0278-HO-G**

**Applicant** : SAMSUNG ELECTRONICS CO., LTD.  
**Type of Equipment** : Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0  
**Model No.** : SC-02D  
**Test regulation** : FCC Part 15 Subpart B: 2011 Class B  
**FCC ID** : A3LSWDSC02D  
**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 10, 2011

**Representative test engineer:**

K. Kawamura

Keisuke Kawamura  
Engineer of WiSE Japan,  
UL Verification Service

**Approved by:**

T. Hatakeda

Takahiro Hatakeda  
Leader of WiSE Japan,  
UL Verification Service



NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.  
\*As for the range of Accreditation in NVLAP, you may refer to the WEB address,  
<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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13-EM-F0429

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**SECTION 1: Customer information**

Company Name : SAMSUNG ELECTRONICS CO., LTD.  
Address : 416, MAETAN 3-DONG, YEONGTONG-GU SUWON-CITY,  
GYEONGGI-DO 443-742, SOUTH KOREA

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

**2.1 Identification of E.U.T.**

Type of Equipment : Cellular/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0  
Model No. : SC-02D  
Serial No. : Refer to Section 4, Clause 4.2  
Rating : DC4.0V  
Receipt Date of Sample : September 27, 2011  
Modification of EUT : No Modification by the test lab

**2.2 Product Description**

Maximum frequency generated or used by the EUT: 26MHz (oscillator), 1.2GHz (processor)

**Radio Specification**

**Bluetooth**

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Type	PIFA
Antenna Gain	-0.63 dBi

**WLAN (IEEE802.11a/b/g/n-20)**

Equipment Type	Transceiver	
Frequency of Operation	2412-2462MHz	5180-5240MHz 5260-5320MHz 5500-5700MHz 5745-5825MHz
Type of Modulation	DSSS, OFDM	OFDM
Bandwidth & Channel spacing	20MHz & 5MHz	20MHz & 20MHz
Antenna Type	SEMI-PIFA	
Antenna Gain	2.4G: -0.4dBi	5G: -3.8dBi

**WLAN (IEEE802.11n-40)**

Equipment Type	Transceiver
Frequency of Operation	5190-5230MHz 5270-5310MHz 5510-5670MHz 5755-5795MHz
Type of Modulation	OFDM
Bandwidth & Channel spacing	40MHz & 40MHz
Antenna Type	SEMI-PIFA
Antenna Gain	-3.8dBi

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**GSM**

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Type of Modulation	GMSK , 8PSK
Antenna Type	PIFA
Antenna Gain	GSM850: -5.0dBi PCS: -1.5dBi

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## **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**

<b>Item</b>	<b>Test Procedure</b>	<b>Limits</b>	<b>Deviation</b>	<b>Worst margin</b>	<b>Result</b>
Conducted emission	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Class B	N/A	[QP] 11.0dB 25.82295MHz, L [AV] 12.8dB 0.49605MHz, N	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	4.2dB 36.971MHz 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	3.5dB
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.

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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 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

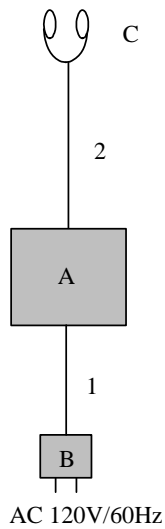
## SECTION 4: Operation of E.U.T. during testing

### 4.1 Operating modes

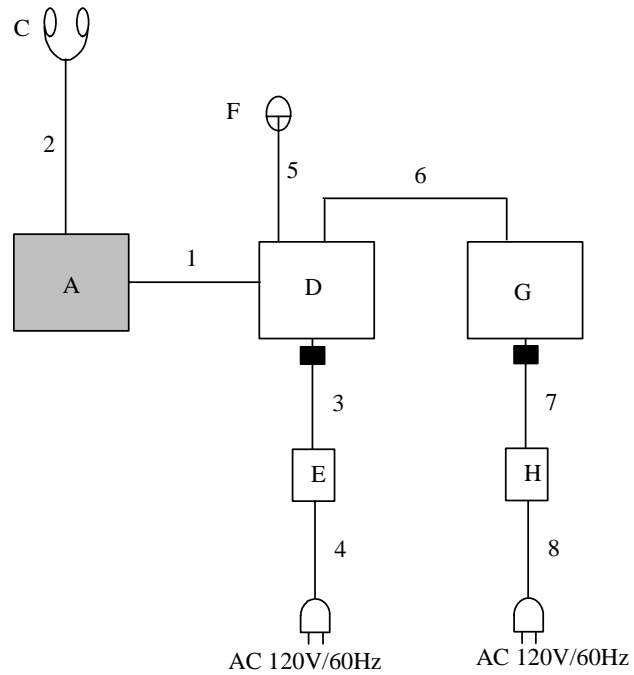
Mode	Remarks
Charge mode	-
USB mode	-

### 4.2 Configuration and peripherals

Charge mode



USB Data mode



■ : Ferrite Core (Standard Attachment)

\*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/PCS GSM/GPRS/EDGE Tablet with 802.11abgn, BT3.0	SC-02D	R24B976670T	SAMSUNG	EUT
B	AC Adaptor	SC02	-	SAMSUNG	EUT
C	Ear phone	-	-	SAMSUNG	-
D	Laptop PC	2537-C96	R8-6AFVB10/11	Lenovo	-
E	AC Adaptor	42T4419	11S42T4418Z1ZGW 608ZBW8	Lenovo	-
F	Mouse	1049	X803801-004	Microsoft	-
G	Monitor	1702FP	KR-07G197-47602- 1AT-A2LV	DELL	-
H	AC Adaptor	PSC V420102A	C011021821	DELL	-

**List of cables used**

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.0	Shielded	Shielded	-
2	Ear phone Cable	1.2	Unshielded	Unshielded	-
3	DC Cable	1.8	Unshielded	Unshielded	-
4	AC Cable	0.9	Unshielded	Unshielded	-
5	Mouse Cable	0.8	Shielded	Shielded	-
6	Monitor Cable	1.7	Shielded	Shielded	-
7	DC Cable	1.7	Unshielded	Unshielded	-
8	AC Cable	2.3	Unshielded	Unshielded	-

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## **SECTION 5: Conducted Emission**

### **5.1 Operating environment**

Test place : No.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. 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 10, 2011

Test engineer: Keisuke Kawamura

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## **SECTION 6: Radiated Emission**

### **6.1 Operating environment**

Test place : No.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 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 noise levels were confirmed at each position of X, Y and Z axes of EUT and/or GPS antenna to see the position of maximum noise, and the test was made at the position that has the maximum noise.

### **6.5 Test result**

Summary of the test results: Pass

Date: October 10, 2011

Test engineer: Keisuke Kawamura

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**APPENDIX 1: Data of EMI test**

**Conducted Emission**  
Charge mode

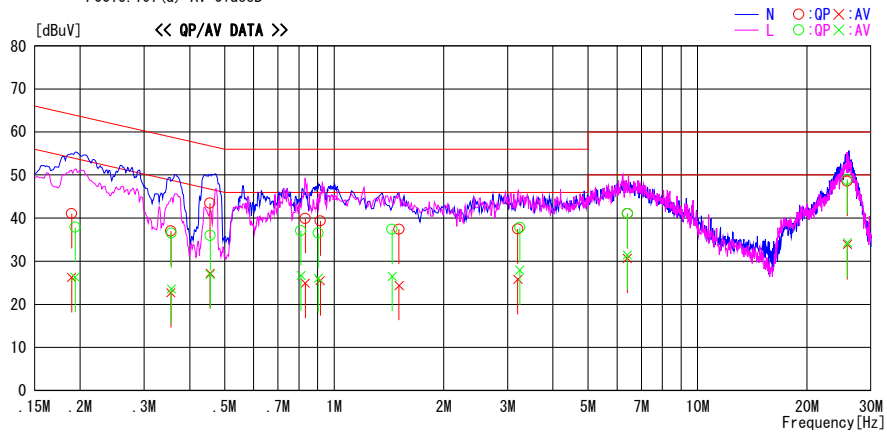
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-HO  
Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Charge 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]		
0.18931	27.8	12.9	13.3	41.1	26.2	64.1	54.1	23.0	27.9	N	
0.35531	23.7	9.4	13.3	37.0	22.7	58.8	48.8	21.8	26.1	N	
0.45531	30.2	13.9	13.3	43.5	27.2	56.8	46.8	13.3	19.6	N	
0.83295	26.5	11.5	13.4	39.9	24.9	56.0	46.0	16.1	21.1	N	
0.91524	26.0	12.1	13.4	39.4	25.5	56.0	46.0	16.6	20.5	N	
1.50908	23.9	10.9	13.5	37.4	24.4	56.0	46.0	18.6	21.6	N	
3.20215	23.7	12.0	13.8	37.5	25.8	56.0	46.0	18.5	20.2	N	
6.40689	26.7	16.3	14.4	41.1	30.7	60.0	50.0	18.9	19.3	N	
25.82295	30.9	16.2	17.7	48.6	33.9	60.0	50.0	11.4	16.1	N	
0.19351	24.6	13.0	13.3	37.9	26.3	63.9	53.9	26.0	27.6	L	
0.35651	23.2	10.3	13.3	36.5	23.6	58.8	48.8	22.3	25.2	L	
0.45601	22.7	13.7	13.3	36.0	27.0	56.8	46.8	20.8	19.8	L	
0.80995	23.7	13.3	13.4	37.1	26.7	56.0	46.0	18.9	19.3	L	
0.90445	23.1	12.7	13.4	36.5	26.1	56.0	46.0	19.5	19.9	L	
1.44308	23.9	13.0	13.5	37.4	26.5	56.0	46.0	18.6	19.5	L	
3.24127	24.0	14.1	13.8	37.8	27.9	56.0	46.0	18.2	18.1	L	
6.40689	26.7	17.1	14.4	41.1	31.5	60.0	50.0	18.9	18.5	L	
25.82295	31.3	16.6	17.7	49.0	34.3	60.0	50.0	11.0	15.7	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C. F (LISN LOSS+CABLE LOSS+ATTN. 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 USB mode

### DATA OF CONDUCTED EMISSION TEST

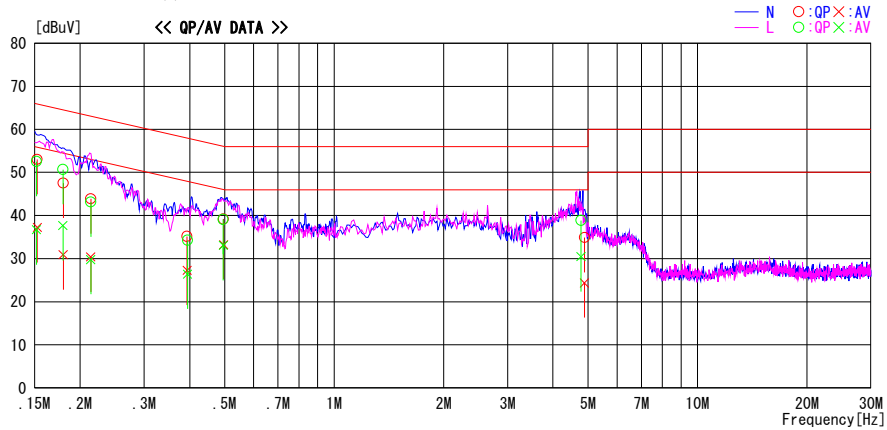
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-H0

Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : USB 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]		
0.15245	39.7	23.9	13.3	53.0	37.2	65.9	55.9	12.9	18.7	N	
0.17952	34.2	17.6	13.3	47.5	30.9	64.5	54.5	17.0	23.6	N	
0.21381	30.6	17.1	13.3	43.9	30.4	63.1	53.1	19.2	22.7	N	
0.39361	21.9	14.0	13.3	35.2	27.3	58.0	48.0	22.8	20.7	N	
0.49605	25.9	20.0	13.3	39.2	33.3	56.1	46.1	16.9	12.8	N	
4.88806	21.2	10.7	13.7	34.9	24.4	56.0	46.0	21.1	21.6	N	
0.15152	39.2	23.4	13.3	52.5	36.7	65.9	55.9	13.4	19.2	L	
0.17912	37.4	24.4	13.3	50.7	37.7	64.5	54.5	13.8	16.8	L	
0.21381	29.9	16.5	13.3	43.2	29.8	63.1	53.1	19.9	23.3	L	
0.39505	21.0	13.1	13.3	34.3	26.4	58.0	48.0	23.7	21.6	L	
0.49505	25.8	19.8	13.3	39.1	33.1	56.1	46.1	17.0	13.0	L	
4.78006	25.2	16.8	13.7	38.9	30.5	56.0	46.0	17.1	15.5	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (L1SN LOSS+CABLE LOSS+ATTN. 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**  
Charge mode

**DATA OF RADIATED EMISSION TEST**

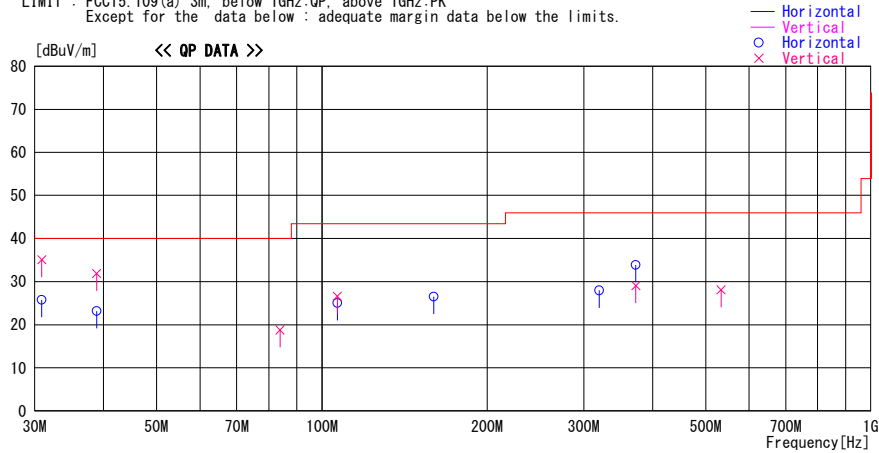
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-H0

Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Charge 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]	
30.891	32.3	QP	18.6	-25.1	25.8	133	305	Hori.	40.0	14.2	
30.891	41.6	QP	18.6	-25.1	35.1	28	100	Vert.	40.0	4.9	
38.871	41.7	QP	15.3	-25.1	31.9	205	100	Vert.	40.0	8.1	
38.871	33.0	QP	15.3	-25.1	23.2	123	317	Hori.	40.0	16.8	
83.939	35.8	QP	7.3	-24.3	18.8	215	100	Vert.	40.0	21.2	
106.667	37.8	QP	11.3	-24.0	25.1	85	157	Hori.	43.5	18.4	
106.667	39.3	QP	11.3	-24.0	26.6	170	100	Vert.	43.5	16.9	
160.001	34.9	QP	15.1	-23.5	26.5	340	199	Hori.	43.5	17.0	
320.001	33.7	QP	16.5	-22.2	28.0	222	100	Hori.	46.0	18.0	
373.332	33.7	QP	17.3	-21.9	29.1	215	154	Vert.	46.0	16.9	
373.332	38.5	QP	17.3	-21.9	33.9	26	100	Hori.	46.0	12.1	
533.332	29.5	QP	19.5	-20.9	28.1	164	100	Vert.	46.0	17.9	

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 USB mode

### DATA OF RADIATED EMISSION TEST

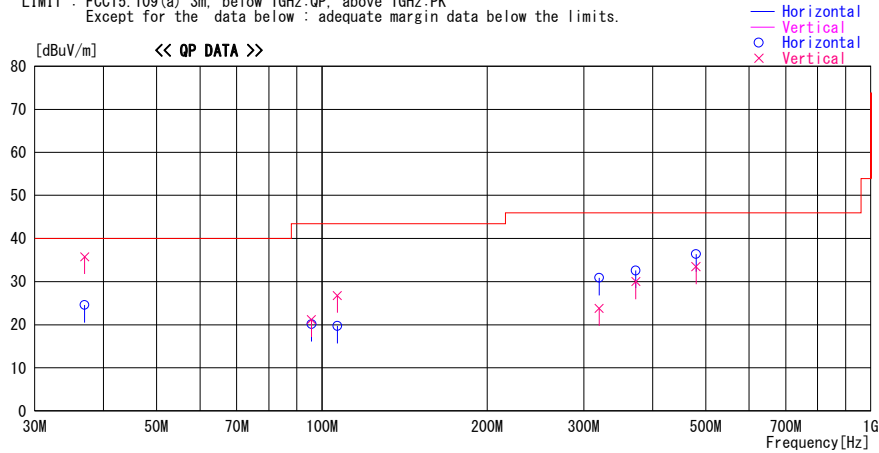
UL Japan, Inc. Head Office EMC Lab. No.4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-H0

Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : USB 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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
36.971	33.6	QP	16.1	-25.1	24.6	127	296	Hori.	40.0	15.4	
36.971	44.8	QP	16.1	-25.1	35.8	150	100	Vert.	40.0	4.2	
95.769	34.9	QP	9.5	-24.3	20.1	248	176	Hori.	43.5	23.4	
95.769	36.0	QP	9.5	-24.3	21.2	261	100	Vert.	43.5	22.3	
106.668	32.4	QP	11.3	-24.0	19.7	344	305	Hori.	43.5	23.8	
106.668	39.5	QP	11.3	-24.0	26.8	185	100	Vert.	43.5	16.7	
319.998	36.6	QP	16.5	-22.2	30.9	214	100	Hori.	46.0	15.1	
319.998	29.5	QP	16.5	-22.2	23.8	287	108	Vert.	46.0	22.2	
373.332	37.2	QP	17.3	-21.9	32.6	19	100	Hori.	46.0	13.4	
373.332	34.6	QP	17.3	-21.9	30.0	0	250	Vert.	46.0	16.0	
479.999	38.7	QP	18.9	-21.2	36.4	0	100	Hori.	46.0	9.6	
479.999	35.8	QP	18.9	-21.2	33.5	197	100	Vert.	46.0	12.5	

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**  
Charge mode

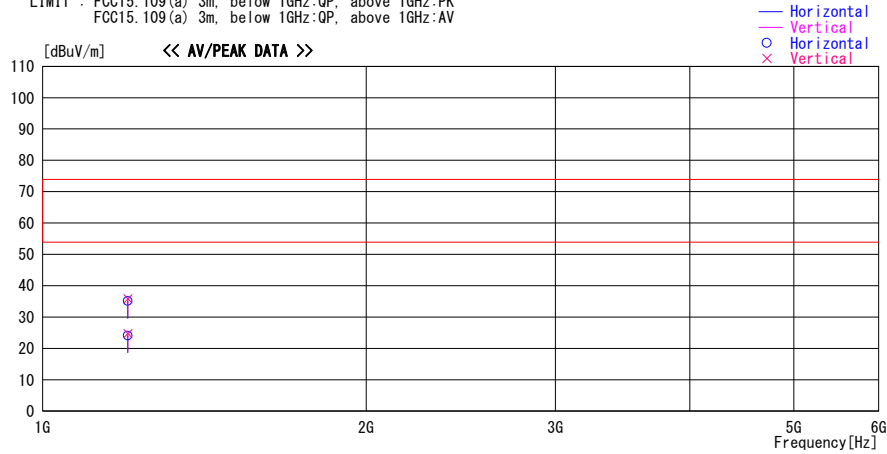
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-H0  
Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : Charge 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]	Comment
			Factor [dB/m]	Gain [dB]							
1200.000	43.3	PK	24.5	-32.7	35.1	0	100	Hori.	73.9	38.8	
1200.000	44.0	PK	24.5	-32.7	35.8	0	100	Vert.	73.9	38.1	
1200.000	32.9	AV	24.5	-32.7	24.7	0	100	Vert.	53.9	29.2	
1200.000	32.3	AV	24.5	-32.7	24.1	0	100	Hori.	53.9	29.8	

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**  
**USB mode**

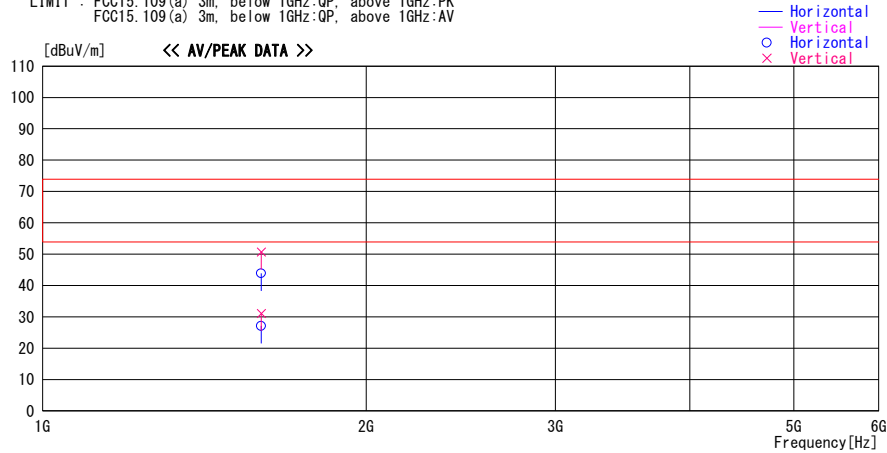
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No. 4 Semi Anechoic Chamber  
Date : 2011/10/10

Report No. : 32BE0278-H0  
Temp./Humi. : 22deg. C / 58% RH  
Engineer : Keisuke Kawamura

Mode / Remarks : USB 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]	Comment
			Factor [dB/m]	Gain [dB]							
1596.673	49.8	PK	25.5	-31.4	43.9	166	100	Hori.	73.9	30.0	
1596.673	56.6	PK	25.5	-31.4	50.7	171	100	Vert.	73.9	23.2	
1596.673	37.0	AV	25.5	-31.4	31.1	171	100	Vert.	53.9	22.8	
1596.673	33.0	AV	25.5	-31.4	27.1	166	100	Hori.	53.9	26.8	

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-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2011/02/23 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE/CE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE/CE	2011/04/08 * 12
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE/CE	2011/04/15 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2011/08/17 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2011/08/17 * 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	2011/08/11 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2011/09/07 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 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-29	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	2011/07/04 * 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**

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**Head Office EMC Lab.**

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