



# EMI TEST REPORT

**Test Report No. : 32FE0253-HO-L**

**Applicant** : SAMSUNG ELECTRONICS CO., LTD.  
**Type of Equipment** : GPRS850/1900, EDGE850/1900, WCDMA2,  
WCDMA5 Tablet with 802.11bgn, BT3.0+EDR  
**Model No.** : GT-P5100  
**Test regulation** : FCC Part 15 Subpart B: 2012 Class B  
**FCC ID** : A3LGTP5100  
**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:** March 6, 2012

**Representative test engineer:**

H. Kukita

Hiroshi Kukita  
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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**Head Office EMC Lab.**

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13-EM-F0429

<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Customer information .....</b>	<b>3</b>
<b>SECTION 2: Equipment under test (E.U.T.) .....</b>	<b>3</b>
<b>SECTION 3: Test specification, procedures &amp; results .....</b>	<b>5</b>
<b>SECTION 4: Operation of E.U.T. during testing .....</b>	<b>8</b>
<b>SECTION 5: Conducted Emission .....</b>	<b>10</b>
<b>SECTION 6: Radiated Emission .....</b>	<b>11</b>
<b>APPENDIX 1: Data of EMI test .....</b>	<b>12</b>
Conducted Emission .....	12
Radiated Emission .....	14
<b>APPENDIX 2: Test instruments .....</b>	<b>18</b>
<b>APPENDIX 3: Photographs of test setup.....</b>	<b>19</b>
Conducted Emission .....	19
Radiated Emission .....	21
Worst Case Position (Horizontal: X-axis/ Vertical:X-axis) .....	23

## **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 : GPRS850/1900, EDGE850/1900, WCDMA2, WCDMA5 Tablet with  
802.11bgn, BT3.0+EDR  
Model No. : GT-P5100  
Serial No. : Refer to Section 4, Clause 4.2  
Rating : DC5.0V  
Receipt Date of Sample : February 29, 2012  
Modification of EUT : No Modification by the test lab

### **2.2 Product Description**

Maximum frequency generated or used by the EUT: 26MHz (oscillator), 1GHz (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	-0.31 dBi (MAX)

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

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	20MHz & 5MHz
Antenna Type	PIFA
Antenna Gain	-0.31 dBi (MAX)

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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: 824-849MHz: -4.41dBi (MAX) 869-894MHz: -3.77dBi (MAX) PCS: 1850-1910MHz: 1.65dBi (MAX) 1930-1990MHz: -1.79dBi (MAX)

**W-CDMA**

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz Band II: 1850 – 1910MHz [Down Link] Band V: 869 – 894MHz Band II: 1930 – 1990MHz
Type of Modulation	QPSK
Antenna Type	PIFA
Antenna Gain	Band V: 824-849MHz: -4.41dBi (MAX) 869-894MHz: -3.77dBi (MAX) Band II: 1850-1910MHz: 1.65dBi (MAX) 1930-1990MHz: -1.79dBi (MAX)

\*All the tests were performed due to the change of GSM/WCDMA antenna and minor change of the enclosure from the original model (FCC ID: A3LGTP5100).

### **SECTION 3: Test specification, procedures & results**

#### **3.1 Test specification**

Test Specification : FCC Part 15 Subpart B: 2012, final revised on February 1, 2012  
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] 15.5dB 0.20006MHz, N [AV] 18.4dB 7.87520MHz, L	Complied
Radiated emission	ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	8.0dB 84.030MHz, QP Horizontal	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	4.7dB	5.7dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	4.8dB	5.6dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	4.8dB	5.6dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	4.8dB	5.6dB	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 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 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

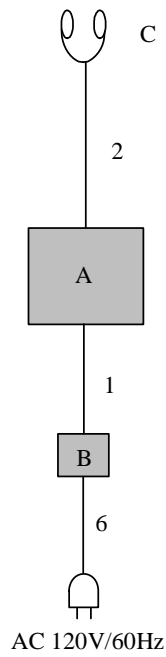
## SECTION 4: Operation of E.U.T. during testing

### 4.1 Operating modes

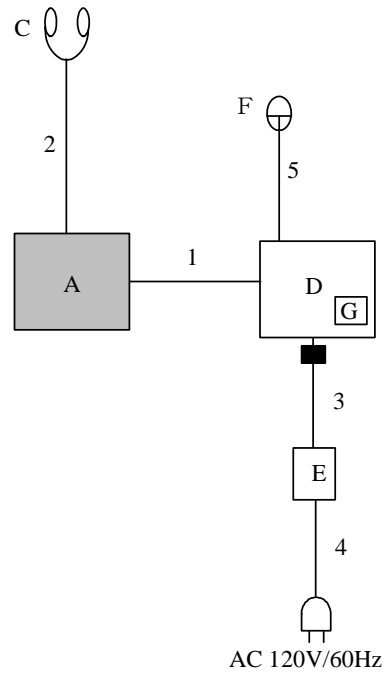
Mode	Remarks
Charge mode	-
USB mode	-

### 4.2 Configuration and peripherals

Charge mode



USB 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	GPRS850/1900, EDGE850/1900, WCDMA2, WCDMA5 Tablet with 802.11bgn, BT3.0+EDR	GT-P5100	R31C10LL01K	SAMSUNG	EUT
B	AC Adaptor	ETA-P11X	-	SAMSUNG	EUT
C	Ear phone	-	-	SAMSUNG	-
D	Laptop PC	T60	L3-KY149	Lenovo	-
E	AC Adaptor	92P1160	11S92P1160Z1ZBG H77W6YJ	Lenovo	-
F	Mouse	M-UB48	LZE02601001	Logitech	-
G	PC Card	PCFDC IV-ADP	CT41098540TD	IO DATA	-

**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	0.75	Shielded	Shielded	-
6	AC Cable	0.9	Unshielded	Unshielded	-

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## **SECTION 5: Conducted Emission**

### **5.1 Operating environment**

Test place : No.2 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: March 6, 2012

Test engineer: Hiroshi Kukita

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## **SECTION 6: Radiated Emission**

### **6.1 Operating environment**

Test place : No.2 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 -10000MHz (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: March 6, 2012

Test engineer: Hiroshi Kukita

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**APPENDIX 1: Data of EMI test**

**Conducted Emission**  
Charge mode

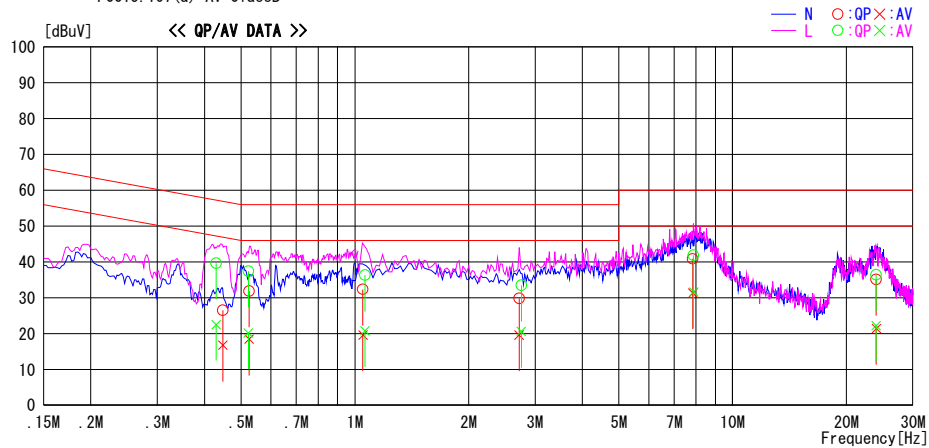
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

Mode / Remarks : Charge 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]		
0.44710	13.3	3.5	13.2	26.5	16.7	56.9	46.9	30.4	30.2	N	
0.52482	18.6	5.2	13.2	31.8	18.4	56.0	46.0	24.2	27.6	N	
1.05120	19.0	6.3	13.3	32.3	19.6	56.0	46.0	23.7	26.4	N	
2.72256	16.2	6.0	13.6	29.8	19.6	56.0	46.0	26.2	26.4	N	
7.84856	26.7	17.2	14.1	40.8	31.3	60.0	50.0	19.2	18.7	N	
24.01560	19.9	6.2	15.2	35.1	21.4	60.0	50.0	24.9	28.6	N	
0.42948	26.4	9.3	13.2	39.6	22.5	57.3	47.3	17.7	24.8	L	
0.52276	24.2	7.0	13.2	37.4	20.2	56.0	46.0	18.6	25.8	L	
1.06300	23.0	7.5	13.3	36.3	20.8	56.0	46.0	19.7	25.2	L	
2.75920	19.8	7.0	13.6	33.4	20.6	56.0	46.0	22.6	25.4	L	
7.87520	27.7	17.5	14.1	41.8	31.6	60.0	50.0	18.2	18.4	L	
23.99340	21.2	7.0	15.2	36.4	22.2	60.0	50.0	23.6	27.8	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.

## Conducted Emission USB Mode

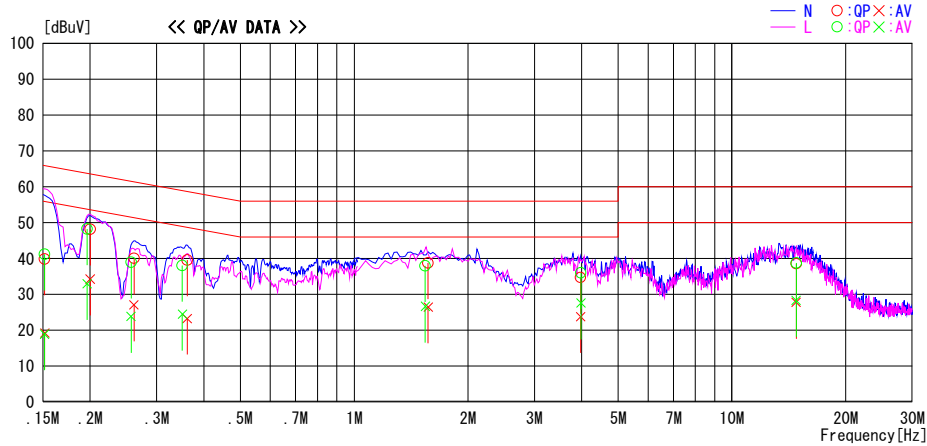
### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

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]		
0.15176	26.6	6.0	13.2	39.8	19.2	65.9	55.9	26.1	36.7	N	
0.20006	34.9	21.0	13.2	48.1	34.2	63.6	53.6	15.5	19.4	N	
0.26150	26.8	13.8	13.2	40.0	27.0	61.4	51.4	21.4	24.4	N	
0.36148	26.3	10.0	13.2	39.5	23.2	58.7	48.7	19.2	25.5	N	
1.57086	25.3	13.0	13.4	38.7	26.4	56.0	46.0	17.3	19.6	N	
3.97468	20.9	9.9	13.8	34.7	23.7	56.0	46.0	21.3	22.3	N	
14.79730	23.7	12.9	14.8	38.5	27.7	60.0	50.0	21.5	22.3	N	
0.15162	27.9	5.7	13.2	41.1	18.9	65.9	55.9	24.8	37.0	L	
0.19646	35.0	19.7	13.2	48.2	32.9	63.8	53.8	15.6	20.9	L	
0.25674	25.7	10.6	13.2	38.9	23.8	61.5	51.5	22.6	27.7	L	
0.35102	24.8	11.2	13.2	38.0	24.4	58.9	48.9	20.9	24.5	L	
1.54252	24.5	13.2	13.4	37.9	26.6	56.0	46.0	18.1	19.4	L	
3.98260	22.2	13.7	13.8	36.0	27.5	56.0	46.0	20.0	18.5	L	
14.79976	23.9	13.4	14.8	38.7	28.2	60.0	50.0	21.3	21.8	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**  
Charge mode

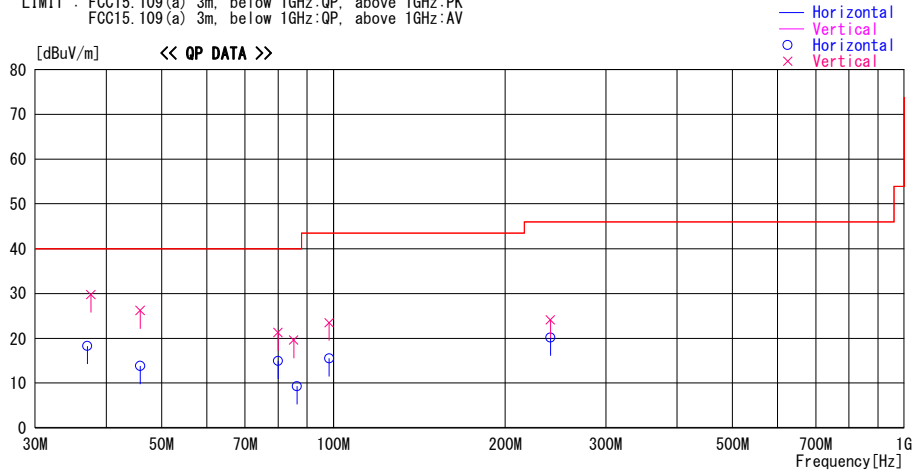
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

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	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain					[dBuV/m]	[dB]	
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
37.090	24.7	QP	15.3	-21.7	18.3	302	339	Hori.	40.0	21.7	
37.602	36.4	QP	15.2	-21.8	29.8	210	100	Vert.	40.0	10.2	
45.890	23.1	QP	12.4	-21.7	13.8	4	300	Hori.	40.0	26.2	
45.875	35.5	QP	12.4	-21.7	26.2	195	100	Vert.	40.0	13.8	
80.000	30.0	QP	6.2	-21.2	15.0	64	254	Hori.	40.0	25.0	
80.002	36.3	QP	6.2	-21.2	21.3	148	100	Vert.	40.0	18.7	
85.198	33.8	QP	6.9	-21.1	19.6	219	100	Vert.	40.0	20.4	
86.326	23.2	QP	7.1	-21.0	9.3	291	300	Hori.	40.0	30.7	
98.303	35.1	QP	9.3	-20.9	23.5	205	100	Vert.	43.5	20.0	
98.303	27.1	QP	9.3	-20.9	15.5	349	204	Hori.	43.5	28.0	
240.003	22.0	QP	17.2	-19.1	20.1	3	300	Hori.	46.0	25.9	
240.000	26.0	QP	17.2	-19.1	24.1	207	100	Vert.	46.0	21.9	

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**

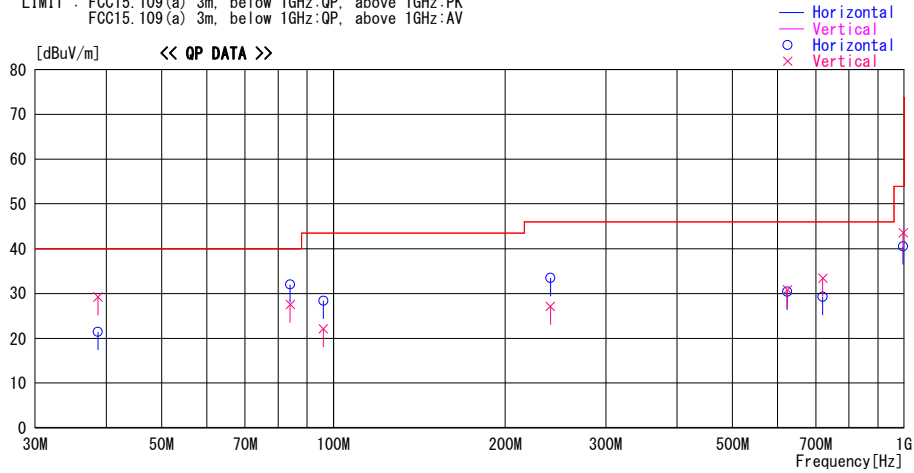
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

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	Angle	Height	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
38.686	36.2	QP	14.8	-21.8	29.2	291	100	Vert.	40.0	10.8	
38.685	28.4	QP	14.8	-21.8	21.4	304	311	Hori.	40.0	18.6	
84.030	41.8	QP	6.8	-21.1	27.5	274	100	Vert.	40.0	12.5	
84.030	46.3	QP	6.8	-21.1	32.0	242	223	Hori.	40.0	8.0	
96.032	34.3	QP	8.8	-21.0	22.1	269	100	Vert.	43.5	21.4	
96.033	40.6	QP	8.8	-21.0	28.4	258	194	Hori.	43.5	15.1	
239.999	29.0	QP	17.2	-19.1	27.1	261	100	Vert.	46.0	18.9	
239.999	35.4	QP	17.2	-19.1	33.5	243	100	Hori.	46.0	12.5	
623.994	28.8	QP	20.0	-18.4	30.4	232	170	Hori.	46.0	15.6	
623.994	29.2	QP	20.0	-18.4	30.8	68	100	Vert.	46.0	15.2	
719.996	26.0	QP	21.0	-17.7	29.3	256	222	Hori.	46.0	16.7	
719.994	30.1	QP	21.0	-17.7	33.4	2	158	Vert.	46.0	12.6	
995.806	33.1	QP	23.3	-15.9	40.5	180	100	Hori.	53.9	13.4	
995.452	36.1	QP	23.3	-15.9	43.5	308	100	Vert.	53.9	10.4	

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**  
Charge mode

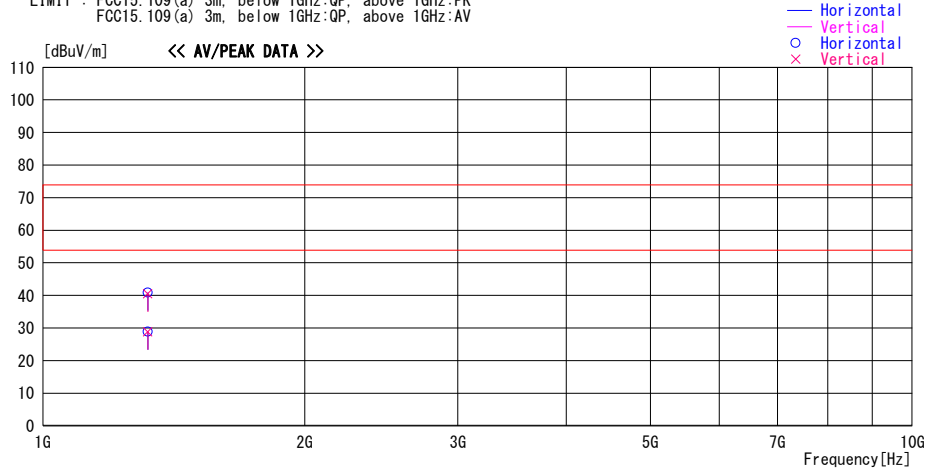
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

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	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
1320.001	49.0	PK	25.8	-33.9	40.9	17	100	Hori.	73.9	33.0	
1320.082	48.6	PK	25.8	-33.9	40.5	156	100	Vert.	73.9	33.4	
1320.001	37.0	AV	25.8	-33.9	28.9	27	100	Hori.	53.9	25.0	
1320.082	37.0	AV	25.8	-33.9	28.9	156	100	Vert.	53.9	25.0	

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**  
**USB mode**

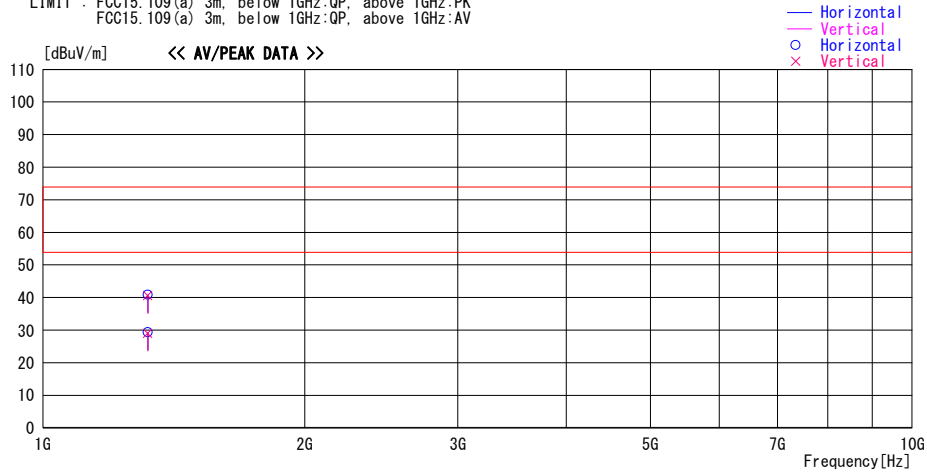
**DATA OF RADIATED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
Date : 2012/03/06

Report No. : 32FE0253-H0  
Temp./Humi. : 23 deg.C / 32% RH  
Engineer : Hiroshi Kukita

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	Angle	Height	Polar.	Limit	Margin	Comment
			Factor	Gain					[dBuV/m]	[dB]	
			[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
1320.000	49.0	PK	25.8	-33.9	40.9	12	100	Hori.	73.9	33.0	
1320.080	48.7	PK	25.8	-33.9	40.6	222	100	Vert.	73.9	33.3	
1320.000	37.4	AV	25.8	-33.9	29.3	12	100	Hori.	53.9	24.6	
1320.080	37.2	AV	25.8	-33.9	29.1	222	100	Vert.	53.9	24.8	

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-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	CE/RE	2011/06/21 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	CE/RE	2012/02/06 * 12
MJM-14	Measure	KOMELON	KMC-36	-	CE/RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	CE/RE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	CE/RE	2011/06/30 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	CE	2011/08/11 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE	2012/02/09 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	CE	2012/02/16 * 12
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2011/10/23 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2011/10/23 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2011/11/02 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2011/09/26 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2012/02/22 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2011/09/06 * 12
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2012/01/25 * 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.**

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