



**FCC CFR47 PART 15 SUBPART C  
INDUSTRY CANADA RSS-210 ISSUE 8**

**CLASS II PERMISSIVE CHANGE  
TEST REPORT**

**FOR**

**Wii Remote Plus**

**MODEL NUMBER: RVL-036(-01)**

**FCC ID: BKERVL036  
IC: 4360A-RVL036**

**REPORT NUMBER: 33AE0073-HO-A-R1**

**ISSUE DATE: September 6, 2012**

*Prepared for*  
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11-1 KAMITOBATA-HOKOTATE-CHO, MINAMI-KU  
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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>

Revision History

Rev.	Issue Date	Revisions	Revised By
-	08/28/12	Initial Issue	T. Hatakeda
01	09/06/12	Add the justification description for the changes of test items in clause 5.2. *This report is a revised version of 33AE0073-HO-A. 33AE0073-HO-A is replaced with this report.	T. Hatakeda

## TABLE OF CONTENTS

<b>1. ATTESTATION OF TEST RESULTS .....</b>	<b>4</b>
<b>2. TEST METHODOLOGY .....</b>	<b>5</b>
<b>3. FACILITIES AND ACCREDITATION .....</b>	<b>5</b>
<b>4. CALIBRATION AND UNCERTAINTY .....</b>	<b>5</b>
4.1. <i>MEASURING INSTRUMENT CALIBRATION .....</i>	<i>5</i>
4.2. <i>SAMPLE CALCULATION.....</i>	<i>5</i>
4.3. <i>MEASUREMENT UNCERTAINTY.....</i>	<i>6</i>
<b>5. EQUIPMENT UNDER TEST .....</b>	<b>7</b>
5.1. <i>DESCRIPTION OF EUT.....</i>	<i>7</i>
5.2. <i>DESCRIPTION OF CLASS II PERMISSIVE CHANGE.....</i>	<i>7</i>
5.3. <i>MAXIMUM OUTPUT POWER.....</i>	<i>7</i>
5.4. <i>DESCRIPTION OF AVAILABLE ANTENNAS.....</i>	<i>7</i>
5.5. <i>SOFTWARE AND FIRMWARE .....</i>	<i>7</i>
5.6. <i>WORST-CASE CONFIGURATION AND MODE.....</i>	<i>7</i>
5.7. <i>DESCRIPTION OF TEST SETUP .....</i>	<i>8</i>
<b>6. TEST AND MEASUREMENT EQUIPMENT .....</b>	<b>10</b>
<b>7. RADIATED TEST RESULTS.....</b>	<b>11</b>
7.1 <i>LIMITS AND PROCEDURE.....</i>	<i>11</i>
7.2 <i>TRANSMITTER Below 1 GHz .....</i>	<i>12</i>
<b>8 AC POWER LINE CONDUCTED EMISSIONS.....</b>	<b>13</b>
<b>9 SETUP PHOTOS.....</b>	<b>15</b>

# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** NINTENDO CO., LTD  
11-1 KAMITOBATA-HOKOTATE-CHO, MINAMI-KU  
KYOTO, 601-8501, JAPAN

**EUT DESCRIPTION:** Wii Remote Plus

**MODEL:** RVL-036(-01)

**SERIAL NUMBER:** N/A

**DATE TESTED:** AUGUST 10, 2012

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL Japan, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Japan, Inc based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Japan, Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Japan, Inc. will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by any government agency.

Approved & Released For UL Japan, Inc. By:                      Tested By:



Takahiro Hatakeda  
Leader of WiSE Japan,  
UL Verification Service



Takumi Shimada  
Engineer of WiSE Japan,  
UL Verification Service

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2009, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN.

UL Japan, Inc. is accredited by NVLAP, Laboratory Code 200572-0  
The full scope of accreditation can be viewed at  
<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

#### 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	3.1dB
No.2	3.3dB
No.3	3.7dB
No.4	3.2dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Bluetooth Remote control unit, powered by AC adapter.

The radio module is manufactured by CSR.

### 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application is that the power supply from battery pack has been changed to that of external power source through an AC/DC adapter.

The RF is identical with the original and only the power supply source is different. Therefore, only spurious emissions (below 1GHz) and AC power line conducted emissions were re-evaluated to confirm that the change still meets the requirements of FCC standards.

### 5.3. MAXIMUM OUTPUT POWER

The measured average power values were same as values in original report. Refer to original report No. 31JE0311-SH-01-A-R1 issued by UL Japan, Inc.

### 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes  $\lambda/4$  PIFA antenna, with a maximum gain of 1.83 dBi.

### 5.5. SOFTWARE AND FIRMWARE

The test utility software used during testing: fs\_1012201147 + 20110614\_No01

### 5.6. WORST-CASE CONFIGURATION AND MODE

The fundamental and spurious was measured in three different orientations X, Y and Z to find worst-case orientation, and final testing for radiated emissions was performed with EUT in following orientation.

	Horizontal	Vertical
Spurious (below 1GHz)	X	X

Test was performed on Bluetooth communication mode.

## 5.7. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

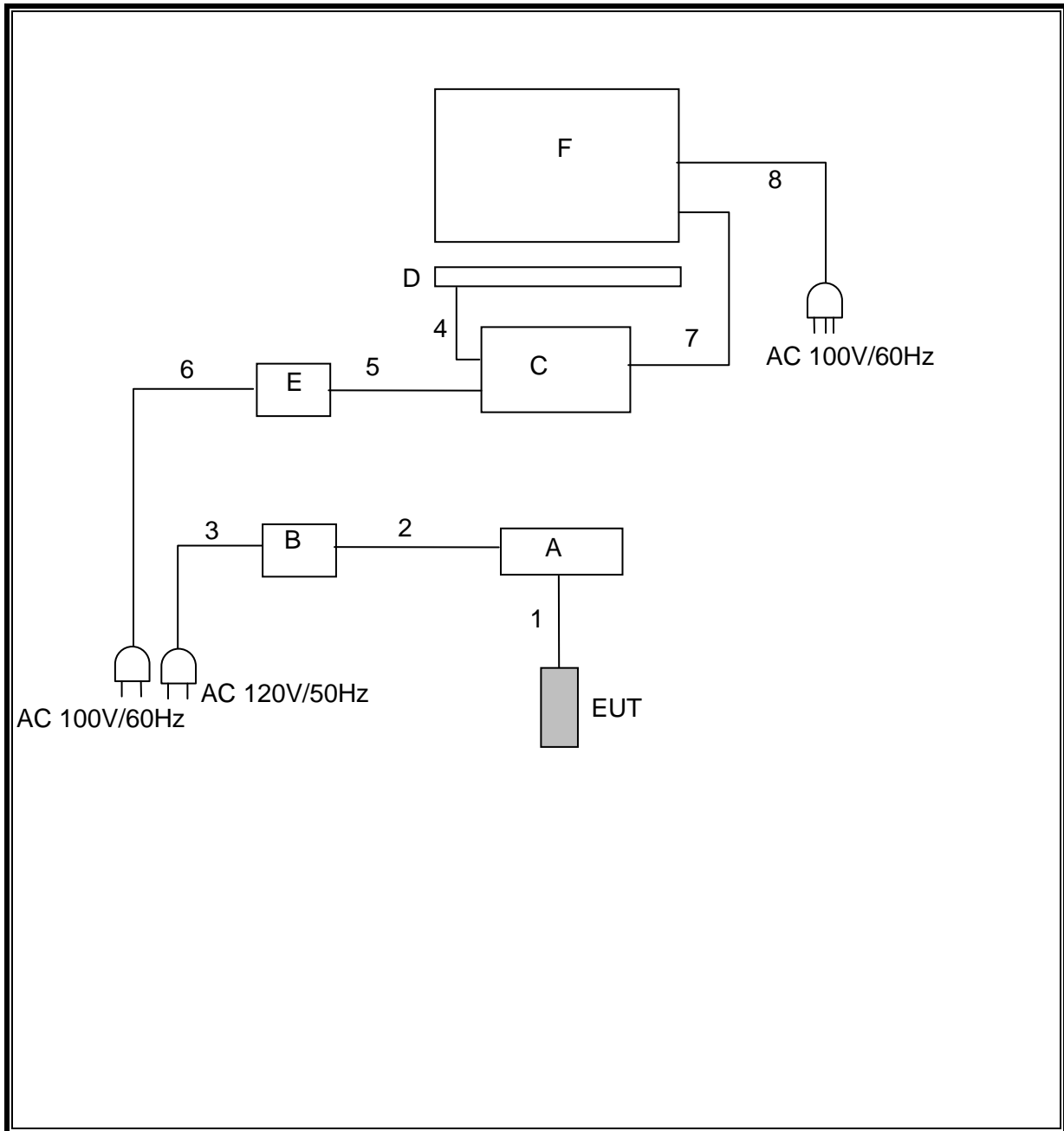
PERIPHERAL SUPPORT EQUIPMENT LIST					
No.	Description	Manufacturer	Model	Serial Number	Remarks
A	Controller HUB	Nintendo	WIS-007	N/A	-
B	AC Adapter	Nintendo	WUP-011	N/A	-
C	Wii	Nintendo	RVL-101	DP1-PCB-A-FOX	-
D	Sensor Bar	Nintendo	RVL-014	N/A	-
E	AC Adapter	Nintendo	RVL-002	RDP-EVR-TB-01	-
F	Monitor	Sharp	LL-T1530A	1A051790	-

### I/O CABLES

I/O CABLE LIST				
Cable No.	Port	Cable Type	Cable Length	Remarks
1	DC & Signal	Shielded	1.5m	NA
2	DC	Un-shielded	2.0m	NA
3	AC	Un-shielded	0.5m	NA
4	Sensor	Un-shielded	3.5m	NA
5	DC	Un-shielded	1.0m	NA
6	AC	Un-shielded	2.0m	NA
7	AV	Un-shielded	2.5m	NA
8	AC	Un-shielded	1.8m	NA



**SETUP DIAGRAM FOR TESTS**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2012/02/24 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2012/02/06 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE/CE	
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	RE/CE	2011/11/23 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	RE/CE	2012/04/05 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2011/10/15 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2011/10/15 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2012/07/12 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2011/11/02 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2012/03/16 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2012/02/06 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2012/01/11 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(3m)/sucoform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher)	-/00640	CE	2012/07/12 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2012/01/28 * 12

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test Item:

- RE: Radiated emission,
- CE: Conducted emission

## 7. RADIATED TEST RESULTS

### 7.1 LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

The measurement below 1GHz was only performed to confirm the effect of the addition of AC adapter.

## 7.2 TRANSMITTER Below 1 GHz

### SPURIOUS EMISSIONS

#### DATA OF RADIATED EMISSION TEST

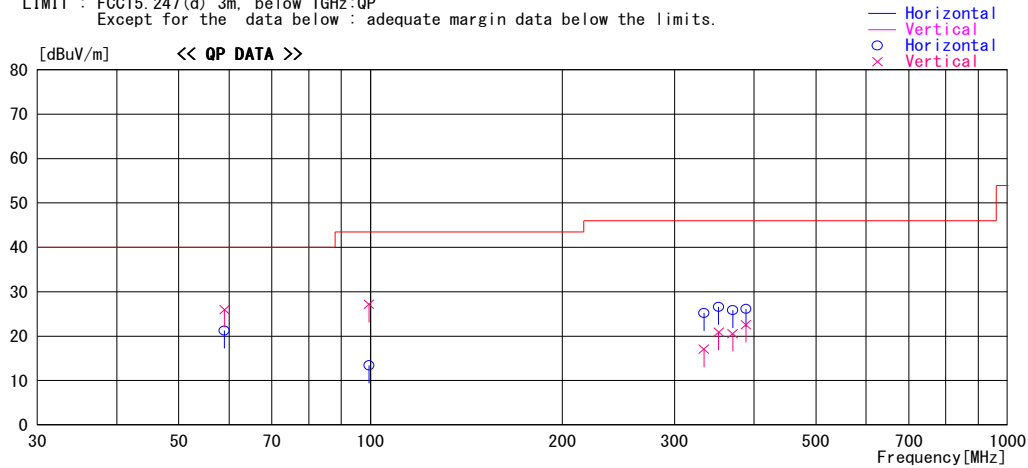
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber  
 Date : 2012/08/10

Report No. : 33AE0073-HO  
 Power : AC 120V / 50Hz  
 Temp./Humi. : 25deg. C / 58% RH  
 Engineer : Takumi Shimada

Mode / Remarks : BT Communication

LIMIT : FCC15.247(d) 3m, below 1GHz:QP

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]							
59.011	37.6	QP	8.3	-24.6	21.3	198	400	Hori.	40.0	18.7	
59.011	42.3	QP	8.3	-24.6	26.0	275	100	Vert.	40.0	14.0	
99.489	27.6	QP	10.0	-24.2	13.4	358	327	Hori.	43.5	30.1	
99.489	41.4	QP	10.0	-24.2	27.2	191	100	Vert.	43.5	16.3	
333.799	31.6	QP	15.5	-21.9	25.2	236	100	Hori.	46.0	20.8	
333.799	23.5	QP	15.5	-21.9	17.1	153	153	Vert.	46.0	28.9	
351.999	26.5	QP	16.2	-21.8	20.9	144	141	Vert.	46.0	25.1	
351.999	32.2	QP	16.2	-21.8	26.6	218	100	Hori.	46.0	19.4	
370.210	30.7	QP	16.8	-21.6	25.9	218	100	Hori.	46.0	20.1	
370.210	25.4	QP	16.8	-21.6	20.6	156	132	Vert.	46.0	25.4	
388.421	26.8	QP	17.3	-21.5	22.6	161	152	Vert.	46.0	23.4	
388.421	30.3	QP	17.3	-21.5	26.1	225	100	Hori.	46.0	19.9	

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)

## 8 AC POWER LINE CONDUCTED EMISSIONS

### TEST PROCEDURE

ANSI C63.4

### LIMIT

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Notes:  
1. The lower limit shall apply at the transition frequencies  
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

**RESULTS**

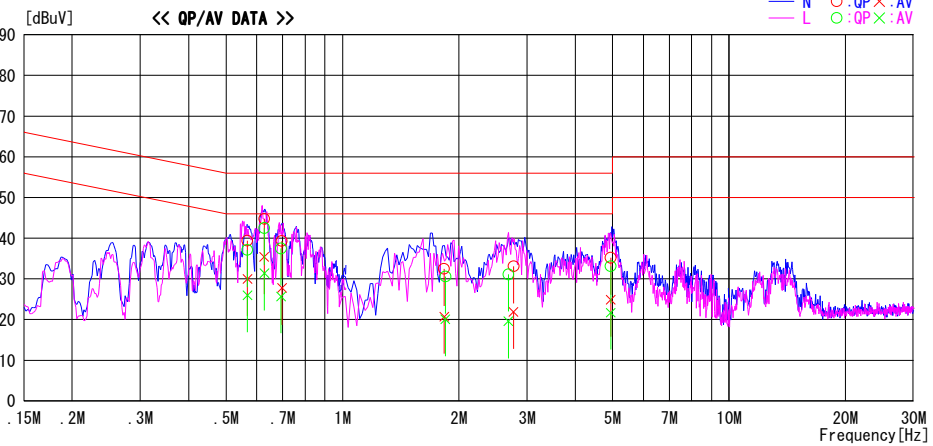
**DATA OF CONDUCTED EMISSION TEST**

UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2012/08/10

Report No. : 33AE0073-HO  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg. C / 58% RH  
 Engineer : Takumi Shimada

Mode / Remarks : BT Communication

LIMIT : FCC15.207 QP  
 FCC15.207 AV



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]		
0.56764	26.1	16.7	13.3	39.4	30.0	56.0	46.0	16.6	16.0	N	
0.62766	31.4	22.1	13.3	44.7	35.4	56.0	46.0	11.3	10.6	N	
0.69736	26.0	14.5	13.3	39.3	27.8	56.0	46.0	16.7	18.2	N	
1.83319	19.1	7.3	13.4	32.5	20.7	56.0	46.0	23.5	25.3	N	
2.77035	19.6	8.4	13.5	33.1	21.9	56.0	46.0	22.9	24.1	N	
4.94220	21.5	11.2	13.7	35.2	24.9	56.0	46.0	20.8	21.1	N	
0.56771	23.8	12.7	13.3	37.1	26.0	56.0	46.0	18.9	20.0	L	
0.62825	29.2	18.1	13.3	42.5	31.4	56.0	46.0	13.5	14.6	L	
0.69429	24.2	12.4	13.3	37.5	25.7	56.0	46.0	18.5	20.3	L	
1.84676	17.2	6.7	13.4	30.6	20.1	56.0	46.0	25.4	25.9	L	
2.68773	17.6	6.1	13.5	31.1	19.6	56.0	46.0	24.9	26.4	L	
4.94307	19.4	8.0	13.7	33.1	21.7	56.0	46.0	22.9	24.3	L	

CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (PROBE LOSS + CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.