



# RADIO TEST REPORT

Test Report No. : 28FE0222-HO-B


Applicant : Brother Industries, Ltd.  
Type of Equipment : Digital Cordless Handset  
Model No. : BCL-D60  
FCC ID : B3QBCLD60  
Test regulation : FCC Part 15 Subpart C 2008  
Section 15.207, Section 15.247  
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 to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Date of test:

March 22 to April 4, 2008

Tested by:

  
Shinya Watanabe  
EMC Services

  
Takahiro Hatakeda  
EMC Services

  
Takayuki Shimada  
EMC Services

Approved by :

  
Makoto Kosaka  
EMC Services



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://uljapan.co.jp/emc/nvlap.htm>

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

MF060b (09.01.08)

**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 ..... 8**  
**SECTION 5: Conducted Emission..... 11**  
**SECTION 6: Spurious Emission ..... 12**  
**SECTION 7: Bandwidth ..... 13**  
**SECTION 8: Maximum Peak Output Power ..... 13**  
**SECTION 9: Carrier Frequency Separation ..... 14**  
**SECTION 10: Number of Hopping Frequency ..... 14**  
**SECTION 11: Dwell time..... 15**  
**APPENDIX 1: Photographs of test setup ..... 16**  
    Conducted Emission..... 16  
    Spurious Emission (Radiated)..... 18  
    Worst Case Position (Horizontal: Z-axis/ Vertical:Y-axis)..... 19  
**APPENDIX 2: Data of EMI test..... 20**  
    Conducted Emission..... 20  
    Carrier Frequency Separation ..... 28  
    20dB Bandwidth ..... 30  
    Number of Hopping Frequency..... 32  
    Dwell time..... 34  
    Maximum Peak Output Power..... 36  
    Radiated Spurious Emission (below 1GHz) ..... 37  
    Radiated Spurious Emission (above 1GHz) ..... 41  
    Conducted Spurious Emission..... 45  
    Conducted Spurious Emission(Band Edge compliance) ..... 51  
    99% Occupied Bandwidth ..... 52  
**APPENDIX 3: Test instruments ..... 53**

**SECTION 1: Customer information**

Company Name : Brother Industries, Ltd.  
Address : 1-1-1, Kawagishi, Mizuho-ku, Nagoya 467-8562, Japan  
Telephone Number : +81-52-824-2348  
Facsimile Number : +81-52-824-2734  
Contact Person : Katsuhiko Sato

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

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

Type of Equipment : Digital Cordless Handset  
Model No. : BCL-D60  
Serial No. : 0700138E  
Rating : DC 3.6V  
Receipt Date of Sample : March 21, 2008  
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**

Model No: BCL-D60 (referred to as the EUT in this report) is the Digital Cordless Handset.  
It is an enhanced Digital Cordless Telecommunications.

Clock frequency(ies) in the system : 13.824MHz  
Equipment Type : Transceiver  
Frequency of Operation : 5725.809328MHz to 5848.889420MHz: 139ch\*  
Bandwidth : 1MHz  
Type of Modulation : FHSS  
Frequency generation : Synthesizer  
Power Supply (inner) : DC 3.3V  
Antenna Type : Patch antenna  
Antenna Connector Type : none  
Antenna Gain : Peak 6.1dBi

\*The channels for usage

	0	1	2	3	4	5	6	7	8	9
0	1	3	5	7	9	11	13	15	17	19
10	21	23	25	27	29	31	33	35	37	39
20	41	43	45	47	49	51	53	55	57	59
30	61	63	65	67	69	71	73	75	77	79
40	81	83	85	87	89	91	93	95	97	99
50	101	103	105	107	109	111	113	115	117	119
60	121	123	125	127	129	130	131	132	133	134
70	135	136	137	138	139					

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

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

#### **3.1 Test Specification**

Test Specification : FCC Part15 Subpart C: 2008, final revised on March 24, 2008

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits  
Section 15.247 Operation within the bands 902-928MHz,  
2400-2483.5MHz, and 5725-5850MHz

\*The revision on March 24, 2008 does not influence the test specification applied to the EUT.

#### **FCC 15.31 (e)**

This EUT provides stable voltage(DC3.3V) constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

#### **FCC Part 15.203 Antenna requirement**

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

---

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

### 3.2 Procedures and results

#### [FHSS]

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results			
1	Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC: Section 15.207		N/A	[With Cradle] <QP> 18.2dB 0.16830MHz, L <AV> 19.5dB 0.17000MHz, N	Complied			
		IC: RSS-Gen 7.2.2	IC: RSS-Gen 7.2.2			[With Multi-Function Cetner] <QP> 12.8dB 0.15000MHz, N <AV> 15.1dB 0.56047MHz, L				
2	Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(a)(1)	Conducted	N/A	See data.	Complied			
		IC: -	IC: RSS-210 A8.1 (b)							
3	20dB Bandwidth	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(a)(1)(ii)	Conducted	N/A		See data.	Complied		
		IC: -	IC: RSS-210 A8.1 (a) (e)							
4	Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(a)(1)(ii)	Conducted	N/A			See data.	Complied	
		IC: -	IC: RSS-210 A8.1 (e)							
5	Dwell time	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(a)(1)(ii)	Conducted	N/A				See data.	Complied
		IC: -	IC: RSS-210 A8.1 (e)							
6	Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(b)(1)	Conducted	N/A	See data.				Complied
		IC: RSS-Gen 4.8	IC: RSS-210 A8.4 (3)							
7	Band Edge Compliance	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(d)	Conducted	N/A		See data.			Complied
		IC: -	IC: RSS-210 A8.5							
8	Spurious Emission	FCC: FCC Public Notice DA 00-705	FCC: Section15.247(d)	Conducted/ Radiated	N/A			See data.		Complied
		IC: RSS-Gen 4.9 RSS-Gen 4.10	IC: RSS-210 A8.5 RSS-Gen 7.2.1 and 7.2.3							

Note: UL Japan, Inc.'s EMI Work Procedures No.QPM05 and QPM15.

\*These tests were performed without any deviations from test procedure except for additions or exclusions.

\* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

### 3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	Conducted	N/A	N/A	N/A

### 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	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic Chamber (±)	3.7dB	3.1dB	4.7dB	4.4dB	3.2dB	3.7dB	4.4dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.3dB	3.9dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.2dB	4.4dB	5.9dB	6.1dB

\*10m/3m = 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.

#### Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty for this test is 3.0dB.

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

### 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	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	IC4247-3	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	IC4247-4	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, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

### **4.1 Operating Mode(s)**

<b>Test Item</b>	<b>Operating Mode</b>	<b>Tested frequency</b>
Conducted Emission	Transmitting (Tx) mode Hopping off (Cradle/ Multi-Function Center)	Low Channel (ch 1): 5725.809328MHz Mid Channel (ch 71): 5788.240269MHz High Channel (ch 139): 5848.889420MHz
	Receiving (Rx) Hopping off	Mid Channel (ch 71): 5788.240269MHz
Carrier Frequency Separation	Transmitting (Tx) mode Hopping on *1) (Cradle/ Multi-Function Center)	5725.809328MHz to 5848.889420MHz
20dB Bandwidth Maximum Peak Output Power	Transmitting (Tx) mode Hopping off	Low Channel (ch 1): 5725.809328MHz Mid Channel (ch 71): 5788.240269MHz High Channel (ch 139): 5848.889420MHz
Number of Hopping Frequency	Transmitting (Tx) mode Hopping on *1)	5725.809328MHz to 5848.889420MHz
Dwell time	Transmitting (Tx) mode Hopping on *1)	5725.809328MHz to 5848.889420MHz
Spurious Emission	<Conducted> Transmitting (Tx) mode Hopping off	Low Channel (ch 1): 5725.809328MHz Mid Channel (ch 71): 5788.240269MHz High Channel (ch 139): 5848.889420MHz
	<Radiated> Transmitting (Tx) mode Hopping off	Low Channel (ch 1): 5725.809328MHz Mid Channel (ch 71): 5788.240269MHz High Channel (ch 139): 5848.889420MHz
	Receiving (Rx) Hopping off	Mid Channel (ch 71): 5788.240269MHz
Band Edge Compliance (Conducted)	Transmitting (Tx) mode Hopping on *1)	Low Channel (ch 1): 5725.809328MHz High Channel (ch 139): 5848.889420MHz
	Transmitting (Tx) mode Hopping off	Low Channel (ch 1): 5725.809328MHz High Channel (ch 139): 5848.889420MHz
99% Occupied Bandwidth	Transmitting (Tx) mode Hopping on *1)	5725.809328MHz to 5848.889420MHz
	Transmitting (Tx) mode Hopping off	Low Channel (ch 1): 5725.809328MHz Mid Channel (ch 71): 5788.240269MHz High Channel (ch 139): 5848.889420MHz

\*1) Digital Cordless Handset communicates with Multi-Function Center.

**UL Japan, Inc.**

**Head Office EMC Lab.**

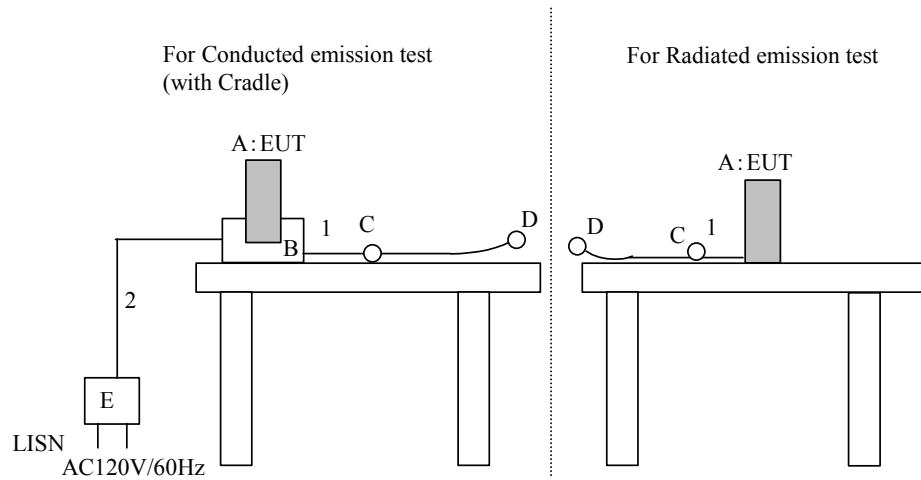
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124



## 4.2 Configuration and peripherals



\* Cabling and setup were taken into consideration and test data was taken under worst case conditions.

### Description of Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Digital Cordless Handset	BCL-D60	0700138E	Brother Industries, Ltd.	EUT
B	Cradle	-	001	Brother Industries, Ltd.	-
C	Microphone	-	-	Brother Industries, Ltd.	-
D	Earphone	-	-	Brother Industries, Ltd.	-
E	AC Adapter	BCL-ADA	0627	Brother Industries, Ltd.	-

### List of cables used

No.	Name	Length (m)	Shield	
			Cable	Connector
1	Audio Cable	1.0	Unshielded	Unshielded
2	DC Cable	2.0	Unshielded	Unshielded

**UL Japan, Inc.**

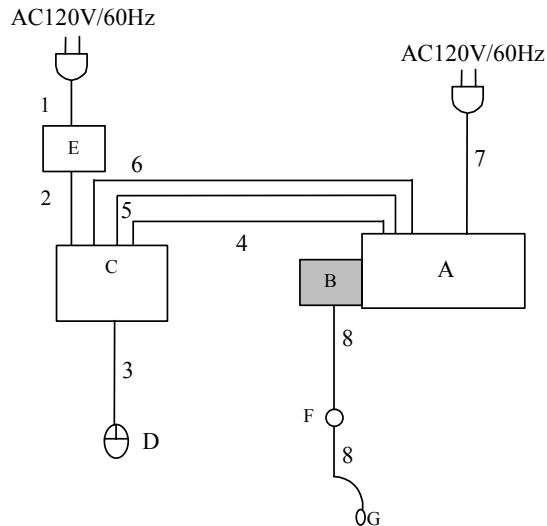
**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

<For Conducted emission test with Multi-Function Center >



\* 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	Multi-Function Center	MFC-990CW	999999B8F001800	Brother Industries, Ltd.	-
B	Digital Cordless	BCL-D60	0700138E	Brother Industries, Ltd.	EUT
C	Note PC	267LJ3	97ALT9W	IBM	-
D	Mouse	TK-MSUK	060801070	Sanwa Supply	-
E	AC Adapter	02K6750	11S02K6750Z1Z2UP3561HY	IBM	-
F	Microphone	-	-	Brother Industries, Ltd.	-
G	Earphone	-	-	Brother Industries, Ltd.	-

**List of cables used**

No.	Name	Length (m)	Shield	
			Cable	Connector
1	AC Cable	1.0	Unshielded	Unshielded
2	DC Cable	1.6	Unshielded	Unshielded
3	USB Cable	1.5	Shielded	Shielded
4	TEL Cable	1.5	Unshielded	Unshielded
5	USB Cable	3.0	Shielded	Shielded
6	LAN Cable	3.0	Unshielded	Unshielded
7	AC Cable	1.8	Unshielded	Unshielded
8	Audio Cable	1.0	Unshielded	Unshielded

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

## **SECTION 5: Conducted Emission**

### **Test Procedure and conditions**

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals 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 a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

#### 1) For the tests on EUT with other peripherals (as a whole system) with *Multi-Function Center*

I/O cable and AC cables that were connected to the 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. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

#### 2) For the tests on EUT itself (as a stand alone equipment) for *Cradle only*

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 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

**Detector** : quasi-peak and average detector (IF BW 9 kHz)  
**Measurement range** : 0.15-30MHz  
**Test data** : APPENDIX 2  
**Test result** : Pass

---

**UL Japan, Inc.**

**Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

## **SECTION 6: Spurious Emission**

### **[Conducted]**

#### **Test Procedure**

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.  
The following spectrum analyzer setting was used:

- RBW: 100kHz
- VBW: 300kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

**Test data : APPENDIX 2**

**Test result : Pass**

### **[Radiated]**

#### **Test Procedure**

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 80cm above the conducting ground plane. The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(10GHz-26.5GHz) and 0.5m (26.5GHz-40GHz).

The height of the measuring 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 (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

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

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

**20dBc was applied to the frequency over the limit of FCC 15.209 / Table 2 of RSS-210 2.7 (IC) and outside the restricted band of FCC15.205 / Table 1 of RSS-210 2.7 (IC).**

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

- The carrier level and 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 the position that has the maximum noise.

**Test data : APPENDIX 2**

**Test result : Pass**

---

## **UL Japan, Inc.**

### **Head Office EMC Lab.**

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124

## **SECTION 7: Bandwidth**

### **Test Procedure**

The bandwidth was measured with a spectrum analyzer connected to the antenna port.  
The following spectrum analyzer setting was used:

- Span: 3MHz
- RBW: 30kHz
- VBW: 30kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

**Test data** : APPENDIX 2  
**Test result** : Pass

## **SECTION 8: Maximum Peak Output Power**

### **Test Procedure**

The Maximum Peak Output Power was measured with a power meter (tested bandwidth: 50MHz) connected to the antenna port.

**Test data** : APPENDIX 2  
**Test result** : Pass

## **SECTION 9: Carrier Frequency Separation**

### **Test Procedure**

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.  
The following spectrum analyzer setting was used:

- Span: 6MHz/3MHz
- RBW: 100kHz
- VBW: 300kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

**Test data** : APPENDIX 2  
**Test result** : Pass

## **SECTION 10: Number of Hopping Frequency**

### **Test Procedure**

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.  
The following spectrum analyzer setting was used:

- Span: 30MHz
- RBW: 300kHz
- VBW: 1MHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

**Test data** : APPENDIX 2  
**Test result** : Pass

## **SECTION 11: Dwell time**

### **Test Procedure**

The Dwell time was measured with a spectrum analyzer connected to the antenna port.  
The following spectrum analyzer setting was used:

- Span: Zero Span
- RBW: 100kHz
- VBW: 100kHz
- Sweep: as necessary to capture the entire dwell time per hopping channel
- Detector: function peak
- Trace: Max Hold

**Test data** : APPENDIX 2  
**Test result** : Pass