



# RADIO TEST REPORT

**Test Report No.: 32LE0159-SH-01-A**

**Applicant** : **Sony Corporation**  
**Type of Equipment** : **WIRELESS SPEAKER SYSTEM**  
**Model No.** : **SRS-BTV5**  
**FCC ID** : **AK8SRSBTV5**  
**Test regulation** : **FCC Part15 Subpart C: 2012**  
**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 any agency of the Federal Government.
6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

**Date of test:** July 25 to 27, 2012

**Tested by:** *A. Hayashi*

Akio Hayashi  
Engineer of WiSE Japan,  
UL Verification Service

**Approved by :** *T. Imamura*

Toyokazu Imamura  
Leader of EMC Service,  
UL Verification Service

- The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.  
 There is no testing item of "Non-accreditation".



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

13-EM-F0429



**Contents**

	<b><u>Page</u></b>
<b>SECTION 1: Customer information .....</b>	<b>4</b>
<b>SECTION 2: Equipment under test (E.U.T.) .....</b>	<b>4</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: Carrier frequency separation.....</b>	<b>11</b>
<b>SECTION 7: 20dB bandwidth &amp; Occupied bandwidth (99%) .....</b>	<b>11</b>
<b>SECTION 8: Number of hopping frequency .....</b>	<b>11</b>
<b>SECTION 9: Dwell time .....</b>	<b>11</b>
<b>SECTION 10: Maximum peak output power.....</b>	<b>11</b>
<b>SECTION 11: Radiated emission.....</b>	<b>12</b>
<b>SECTION 12: Spurious emissions (Antenna port conducted).....</b>	<b>13</b>
<b>Contents of APPENDIXES.....</b>	<b>14</b>
<b>APPENDIX 1: Data of radio tests .....</b>	<b>15</b>
<b>APPENDIX 2: Test instruments .....</b>	<b>58</b>
<b>APPENDIX 3: Photographs of test setup .....</b>	<b>59</b>

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**SECTION 1: Customer information**

Company Name : Sony Corporation  
Address : Shinagawa INTERCITY C Tower, 2-15-3 Konan, Minato-ku, Tokyo 108-6201  
Japan  
Telephone Number : +81-3-5769-5640  
Facsimile Number : +81-3-5769-5901  
Contact Person : Toshihiro Maeda

**SECTION 2: Equipment under test (E.U.T.)****2.1 Identification of E.U.T.**

Type of Equipment : WIRELESS SPEAKER SYSTEM  
Model Number : SRS-BTV5  
Serial Number : Refer to 4.2 in this report.  
Rating : DC 5V  
Country of Mass-production : China  
Condition of EUT : Engineering prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Receipt Date of Sample : July 23, 2012  
Modification of EUT : No modification by the test lab.

**2.2 Product description**

Model: SRS-BTV5 (referred to as the EUT in this report) is a WIRELESS SPEAKER SYSTEM.

Clock frequency(ies) in the system : 300kHz (P-AMP IC), 6MHz (Rechargeable IC),  
16MHz, 48MHz (Bluetooth Module)

## &lt;Radio part&gt;

Equipment type : Transceiver  
Frequency of operation : 2402-2480MHz  
Bandwidth / Channel spacing : 79MHz & 1MHz  
Type of modulation : FHSS (GFSK,  $\pi/4$ -DQPSK, 8DPSK)  
Antenna type : PIFA  
Antenna connector type : None  
Antenna gain : 2.0287dBi  
ITU code : F1D, G1D  
Operation temperature range : +5 to +35 deg.C.

## FCC 15.31 (e)

The equipment provides the Bluetooth transmitter with stable power supply (DC1.76V). Therefore, the equipment complies with the requirement.

## FCC 15.203

The equipment and its antenna comply with this requirement since this antenna is built in the equipment and it cannot be replaced by end users.

---

**UL Japan, Inc.****Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**SECTION 3: Test specification, procedures & results****3.1 Test specification**

Test specification : FCC Part 15 Subpart C: 2012, final revised on July 23, 2012 and effective August 22, 2012  
 Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
 Section 15.207 Conducted limits  
 Section 15.209 Radiated emission limits, general requirements  
 Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz,  
 and 5725-5850MHz

\* The revision on July 23, 2012 does not affect the test specification applied to the EUT.

The EUT complies with FCC Part 15 Subpart B. Refer to the test report 32LE0159-SH-01-C.

**3.2 Procedures & Results**

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results	
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A	18.6dB Freq.: 10.81300MHz Phase: N Detection: Quasi-Peak Mode: Tx 2441MHz, DH5	Complied	
Carrier frequency separation	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A	*See data.	Complied	
20dB bandwidth	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)	Conducted	N/A		-	
Number of hopping frequency	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied	
Dwell time	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(1)(iii)	Conducted	N/A		Complied	
Maximum peak output power	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(1)	Conducted	N/A		Complied	
Band edge compliance & Spurious emission	FCC Public Notice DA 00-705 & ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (d) 15.209	Conducted/ Radiated	N/A		4.5dB Freq.: 4804MHz Polarization: Vertical Detection: Average Mode: Tx 2402MHz, DH5	Complied
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422							

**UL Japan, Inc.****Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### 3.3 Addition to standard

Item	Test Procedure	Specification	Remarks	Worst Margin	Results
Occupied Bandwidth (99%)	ANSI C63.4:2009 13. Measurement of intentional radiators, RSS-Gen 4.6.1	-	Conducted	-	-

Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422

\* Other than above, no addition, exclusion nor deviation has been made from the standard.

### 3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC <sup>*1</sup> /SR <sup>*2</sup> (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
<b>Conducted emission (AC Mains) AMN/LISN</b>	9kHz-150kHz	4.0 dB	4.0 dB	3.9 dB
	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
<b>Radiated emission (Measurement distance: 3m)</b>	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	5.0 dB
	300MHz-1GHz	5.0 dB	5.2 dB	5.0 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
<b>Radiated emission (Measurement distance: 1m)</b>	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.8 dB	4.3 dB	4.4 dB

\*1: SAC=Semi-Anechoic Chamber

\*2: SR= Shielded Room is applied besides radiated emission

#### Conducted emission test

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

#### Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

#### Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB

Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB

Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB

Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB

Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB

Bandwidth measurement uncertainty for this test was: (±) 5.4%

## UL Japan, Inc.

### Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### 3.5 Test location

UL Japan, Inc. Shonan EMC Lab.

1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN

Telephone number : +81 463 50 6400

Facsimile number : +81 463 50 6401

JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
<input type="checkbox"/> No.1 Semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input type="checkbox"/> No.2 Semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
<input checked="" type="checkbox"/> No.3 Semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
<input type="checkbox"/> No.4 Semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
<input type="checkbox"/> No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input type="checkbox"/> No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
<input checked="" type="checkbox"/> No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
<input type="checkbox"/> No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
<input checked="" type="checkbox"/> No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
<input type="checkbox"/> No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

### 3.6 Test setup, Data of test & Test instruments

Refer to APPENDIX 1 to 3.

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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

### **4.1 Operating mode**

<b>Test item</b>	<b>Operating mode</b>	<b>Tested frequency</b>
Carrier frequency separation	Transmitting Hopping ON (DH5/3-DH5), Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5/3-DH5), Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5/3-DH5), Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 DH1, DH3, DH5 3-DH1, 3-DH3, 3-DH5	-
Maximum peak output power	Transmitting (Hopping OFF), Payload: PRBS9 DH5, 2-DH5, 3-DH5	2402MHz, 2441MHz, 2480MHz
Band edge compliance & Spurious emission (Conducted)	Transmitting (DH5/3-DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	Band edge compliance: 2402MHz, 2480MHz
(Radiated)	Transmitting (DH5/3-DH5), Payload: PRBS9	Spurious emission: 2402MHz, 2441MHz, 2480MHz
99% occupied bandwidth	Transmitting (DH5/3-DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	2402MHz, 2441MHz, 2480MHz

\*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test).

\*Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not affect the output power and bandwidth of the EUT.

As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

EUT has the power settings by the software as follows;

Power settings	BDR: 0x22, EDR: 0x1a
Software	ISRT (Version: 1.0.35.2833)

The EUT does not have Inquiry mode.

**Justification:** The system was configured in typical fashion (as customer would normally use it) for testing.

**UL Japan, Inc.**

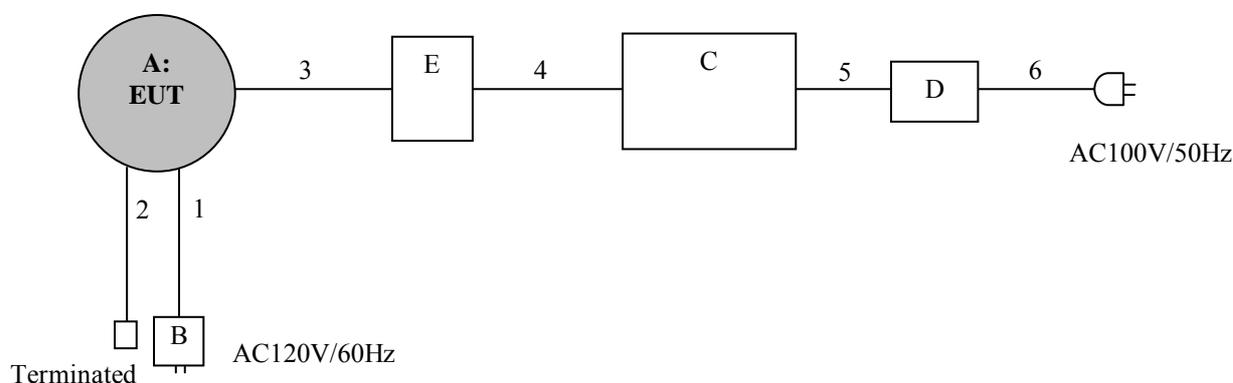
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## 4.2 Configuration and peripherals



\* Test data was taken under worse case conditions.

### Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	WIRELESS SPEAKER SYSTEM	SRS-BTV5	*1)	SONY	-
B	AC Adaptor	AC-UD20	11096003468	SONY	-
C	Laptop computer	PCG-5D1N	28248612 1000876	SONY	-
D	AC Adaptor	VGP-AC16V11	147994821 0012053	SONY	-
E	USB I/F Board	PCB:21.1002901.12	-	iSSC	-

\*1) Conducted / Radiated emission: 9900077, Other test: 9900035

### List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	USB	2.0	Unshielded	Unshielded	-
2	Audio	0.8	Shielded	Shielded	-
3	FLAT	0.2	Unshielded	Unshielded	*2)
4	USB	2.0	Shielded	Shielded	-
5	DC	1.8	Unshielded	Unshielded	-
6	AC	0.7	Unshielded	Unshielded	-

\*2) This cable was used for continuous transmitting.

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## **SECTION 5: Conducted emission**

### **5.1 Operating environment**

Test place : See test data (APPENDIX 1)  
Temperature : See test data (APPENDIX 1)  
Humidity : See test data (APPENDIX 1)

### **5.2 Test configuration**

EUT was placed on a platform of nominal size, 1.0m by 2.0m, raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was 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 LISN and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the 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 to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment. Photographs of the set up are shown in APPENDIX 3.

### **5.3 Test conditions**

Frequency range : 0.15 - 30MHz  
EUT position : Table top

### **5.4 Test procedure**

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT via AC adaptor within a Shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN) via AC adaptor. An overview sweep with peak detection has been performed.

The measurements had been performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detection of the test receiver.

Detection Type : Quasi-Peak/ Average  
IF Bandwidth : 9kHz

### **5.5 Results**

Summary of the test results : Pass  
Refer to APPENDIX 1

---

## **UL Japan, Inc.**

### **Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## **SECTION 6: Carrier frequency separation**

### **Test procedure**

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

Summary of the test results: Pass  
Refer to APPENDIX 1

## **SECTION 7: 20dB bandwidth & Occupied bandwidth (99%)**

### **Test procedure**

The bandwidth was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass  
Refer to APPENDIX 1

## **SECTION 8: Number of hopping frequency**

### **Test procedure**

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

Summary of the test results: Pass  
Refer to APPENDIX 1

## **SECTION 9: Dwell time**

### **Test procedure**

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Summary of the test results: Pass  
Refer to APPENDIX 1

## **SECTION 10: Maximum peak output power**

### **Test procedure**

The maximum peak output power was measured with a power meter connected to the antenna port.

Summary of the test results: Pass  
Refer to APPENDIX 1

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## **SECTION 11: Radiated emission**

### **11.1 Operating environment**

Test place : See test data (APPENDIX 1)  
Temperature : See test data (APPENDIX 1)  
Humidity : See test data (APPENDIX 1)

### **11.2 Test configuration**

EUT was placed on a platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity. The rear of EUT, including its peripherals was aligned and flushed with rear of tabletop. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Photographs of the set up are shown in APPENDIX 3.

### **11.3 Test conditions**

Frequency range : 30MHz - 25GHz  
EUT position : Table top

### **11.4 Test procedure**

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was 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.

The radiated emission measurements were made with the following detection of the test receiver.

Frequency	30-1000MHz	1-25GHz		20dBc
Detection type	Quasi-Peak	Peak	* Average	Peak
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz	RBW: 100kHz VBW: 300kHz

\* When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold. Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

The EUT was tested in the direction normally used since there was no difference in the result caused by direction.

---

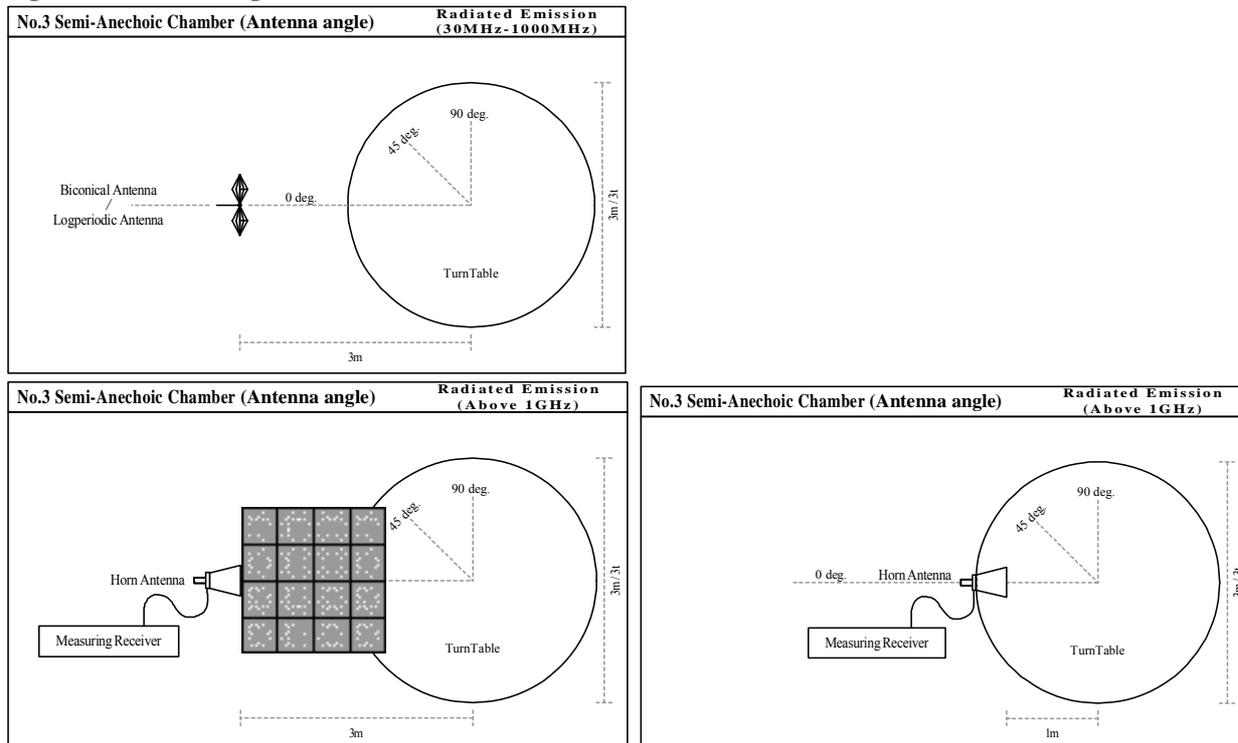
## **UL Japan, Inc.**

### **Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400  
Facsimile : +81 463 50 6401

**Figure 1. Antenna angle**



**11.5 Band edge**

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

**11.6 Results**

Summary of the test results : Pass \*No noise was detected above the 5<sup>th</sup> order harmonics.  
Refer to APPENDIX 1

**SECTION 12: Spurious emissions (Antenna port conducted)**

**Test procedure**

The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port. 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. In the frequency range below 30MHz, RBW was narrowed to separate the noise contents. Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=10kHz)

Summary of the test results: Pass  
Refer to APPENDIX 1

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## **Contents of APPENDIXES**

### **APPENDIX 1: Data of Radio tests**

Conducted emission  
20dB bandwidth and Carrier frequency separation  
Number of hopping frequency  
Dwell time  
Maximum peak output power  
Radiated emission  
Spurious emission (Antenna port conducted)  
Occupied bandwidth

### **APPENDIX 2: Test instruments**

Test instruments

### **APPENDIX 3: Photographs of test setup**

Conducted emission  
Radiated emission

---

**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

APPENDIX 1: Data of Radio tests

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

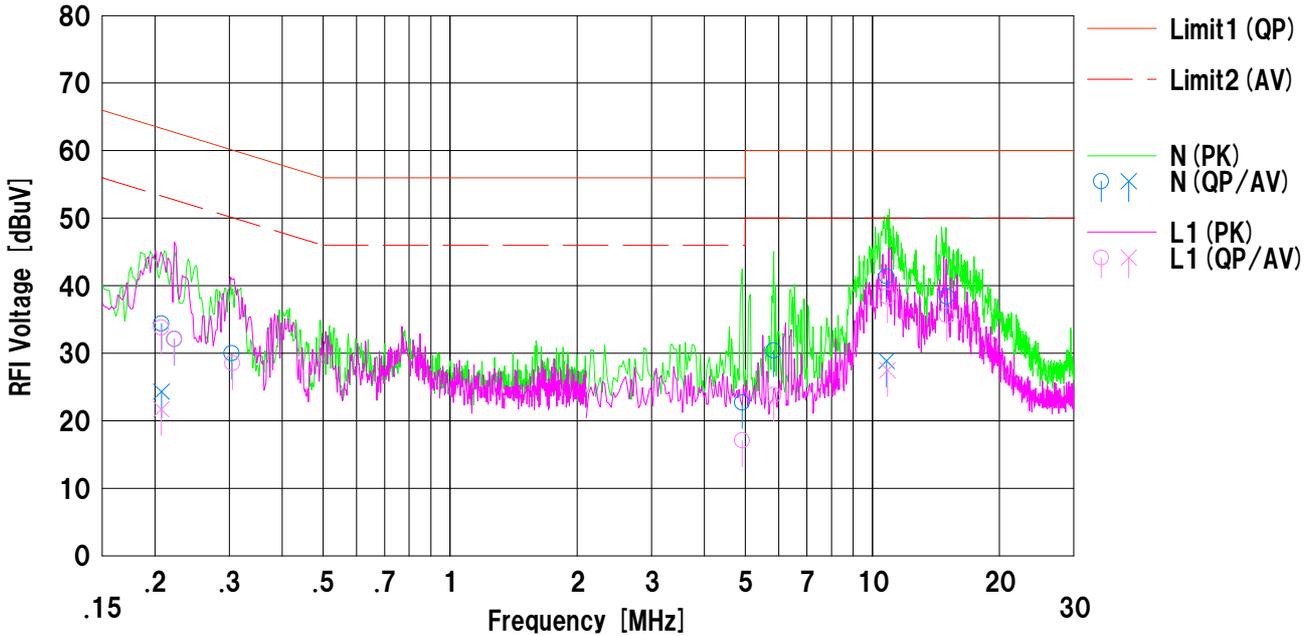
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx DH5 2441MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.20710	21.6	11.5	12.8	34.4	24.3	63.3	53.3	28.9	29.0	N	
2	0.22243	19.3	---	12.8	32.1	---	62.7	52.7	30.6	---	N	
3	0.30400	17.2	---	12.8	30.0	---	60.1	50.1	30.1	---	N	
4	4.91910	9.6	---	13.1	22.7	---	56.0	46.0	33.3	---	N	
5	5.83998	17.3	---	13.1	30.4	---	60.0	50.0	29.6	---	N	
6	10.81300	28.2	15.7	13.2	41.4	28.9	60.0	50.0	18.6	21.1	N	
7	15.02000	24.9	---	13.5	38.4	---	60.0	50.0	21.6	---	N	
8	0.20700	21.0	8.9	12.8	33.8	21.7	63.3	53.3	29.5	31.6	L1	
9	0.22190	19.3	---	12.8	32.1	---	62.7	52.7	30.6	---	L1	
10	0.30500	15.7	---	12.8	28.5	---	60.1	50.1	31.6	---	L1	
11	4.91910	4.0	---	13.1	17.1	---	56.0	46.0	38.9	---	L1	
12	5.83998	10.7	---	13.1	23.8	---	60.0	50.0	36.2	---	L1	
13	10.85300	25.2	14.3	13.2	38.4	27.5	60.0	50.0	21.6	22.5	L1	
14	15.02000	22.1	---	13.5	35.6	---	60.0	50.0	24.4	---	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

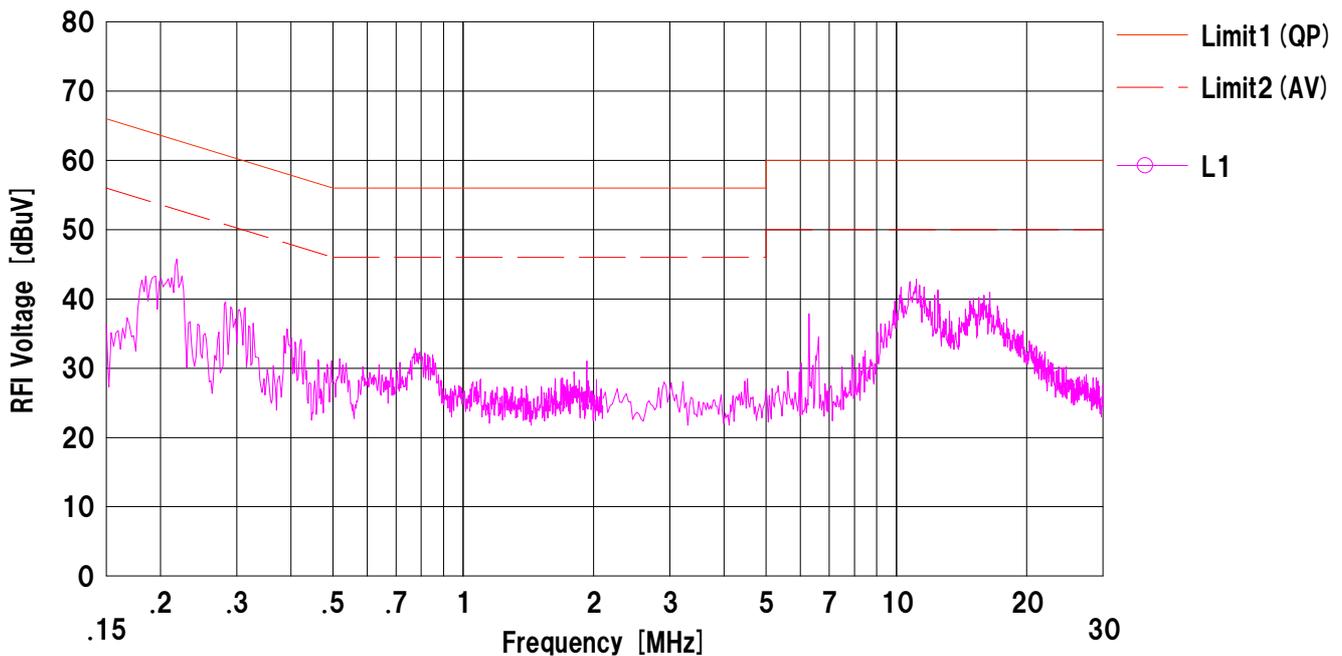
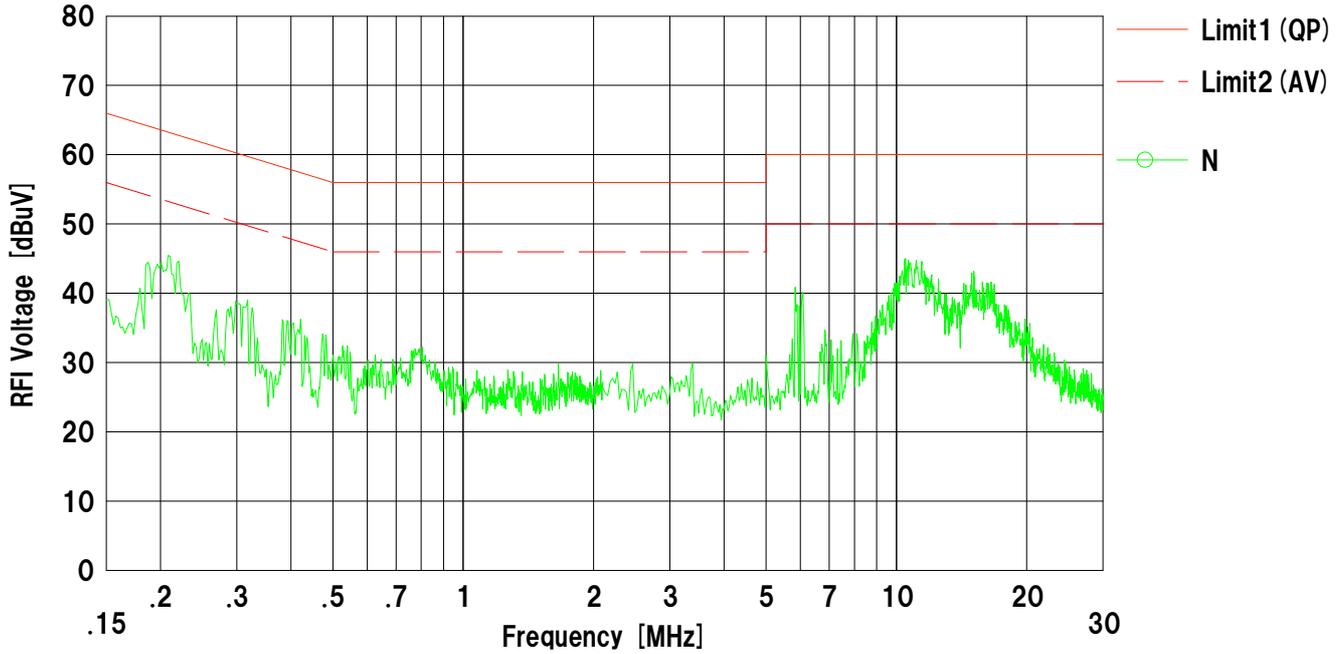
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx DH5 2402MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

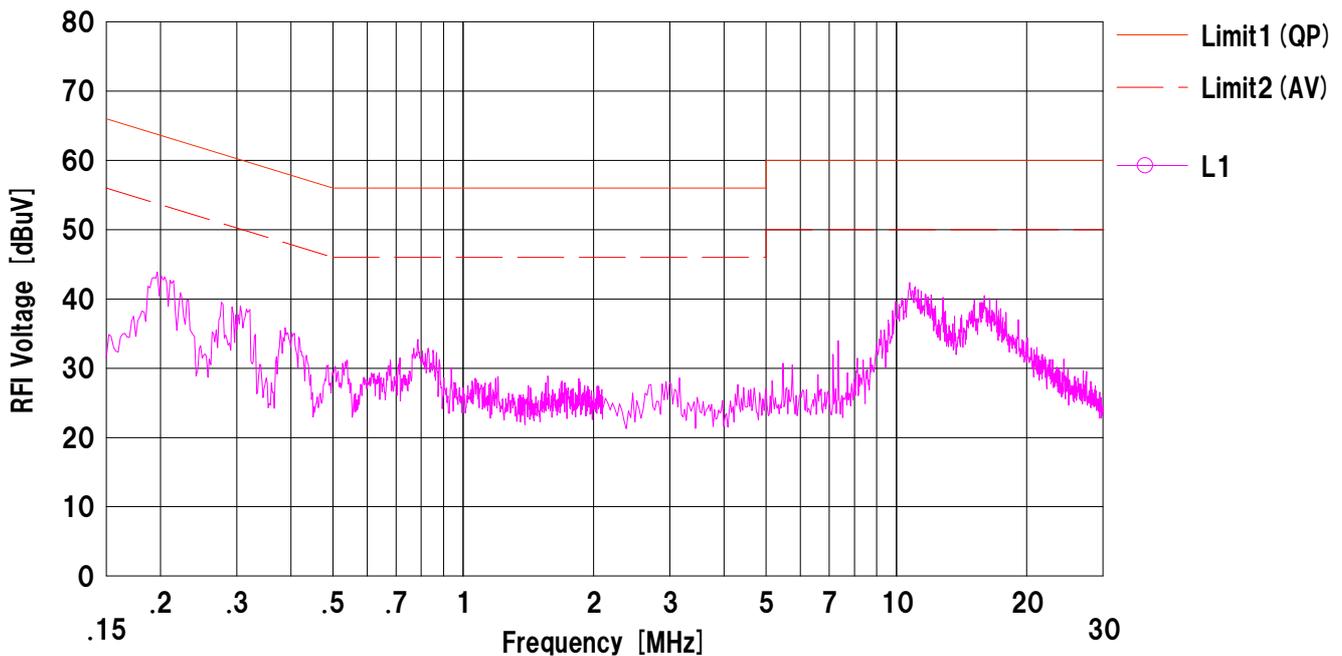
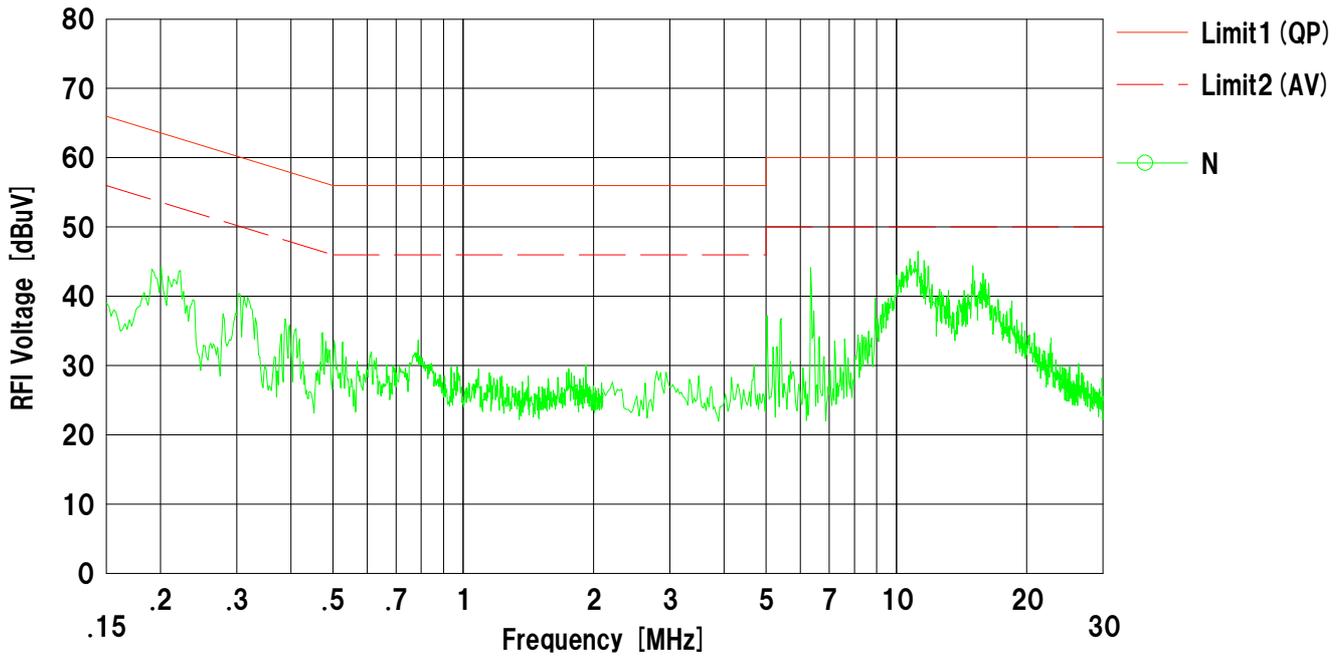
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx DH5 2480MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

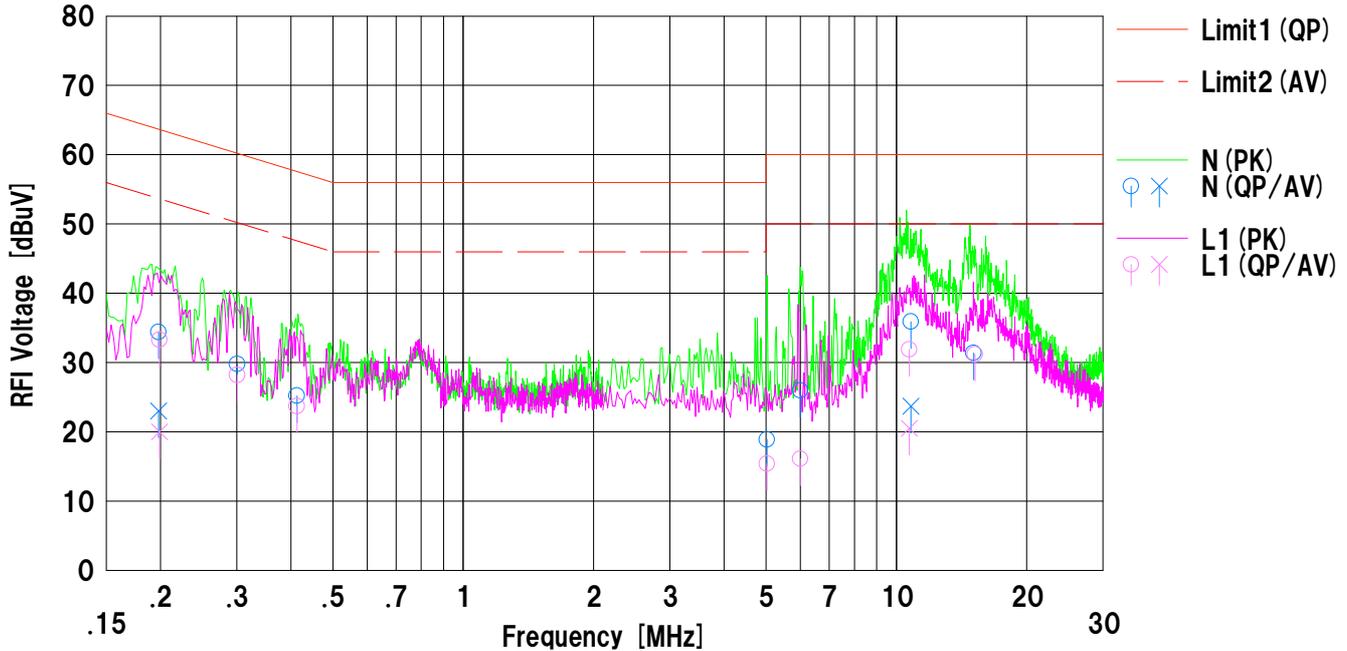
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx 3DH5 2441MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.19800	21.6	10.2	12.8	34.4	23.0	63.6	53.6	29.2	30.6	N	
2	0.30100	17.0	---	12.8	29.8	---	60.2	50.2	30.4	---	N	
3	0.41300	12.4	---	12.8	25.2	---	57.5	47.5	32.3	---	N	
4	5.02950	5.8	---	13.1	18.9	---	60.0	50.0	41.1	---	N	
5	6.00300	12.9	---	13.1	26.0	---	60.0	50.0	34.0	---	N	
6	10.80700	22.7	10.5	13.2	35.9	23.7	60.0	50.0	24.1	26.3	N	
7	15.09500	17.9	---	13.5	31.4	---	60.0	50.0	28.6	---	N	
8	0.19900	20.5	7.2	12.8	33.3	20.0	63.6	53.6	30.3	33.6	L1	
9	0.30100	15.4	---	12.8	28.2	---	60.2	50.2	32.0	---	L1	
10	0.41300	10.9	---	12.8	23.7	---	57.5	47.5	33.8	---	L1	
11	5.02950	2.3	---	13.1	15.4	---	60.0	50.0	44.6	---	L1	
12	6.00300	3.0	---	13.1	16.1	---	60.0	50.0	43.9	---	L1	
13	10.70700	18.7	7.3	13.2	31.9	20.5	60.0	50.0	28.1	29.5	L1	
14	15.19500	17.7	---	13.5	31.2	---	60.0	50.0	28.8	---	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

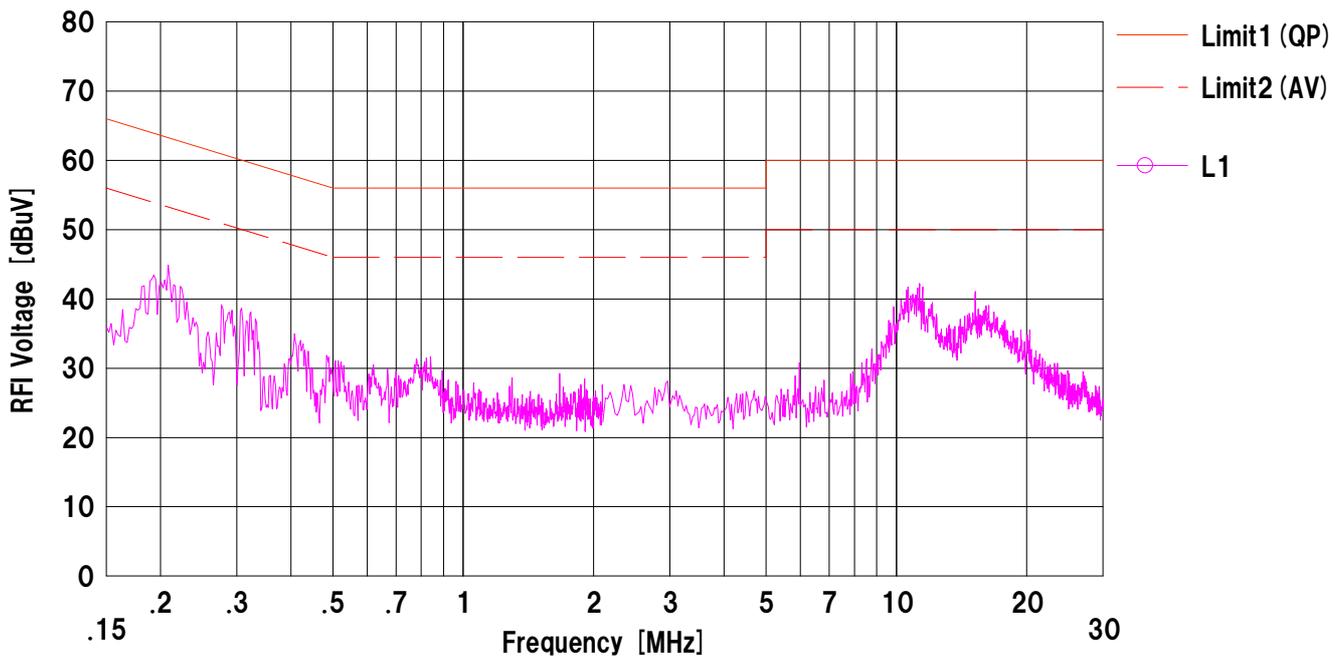
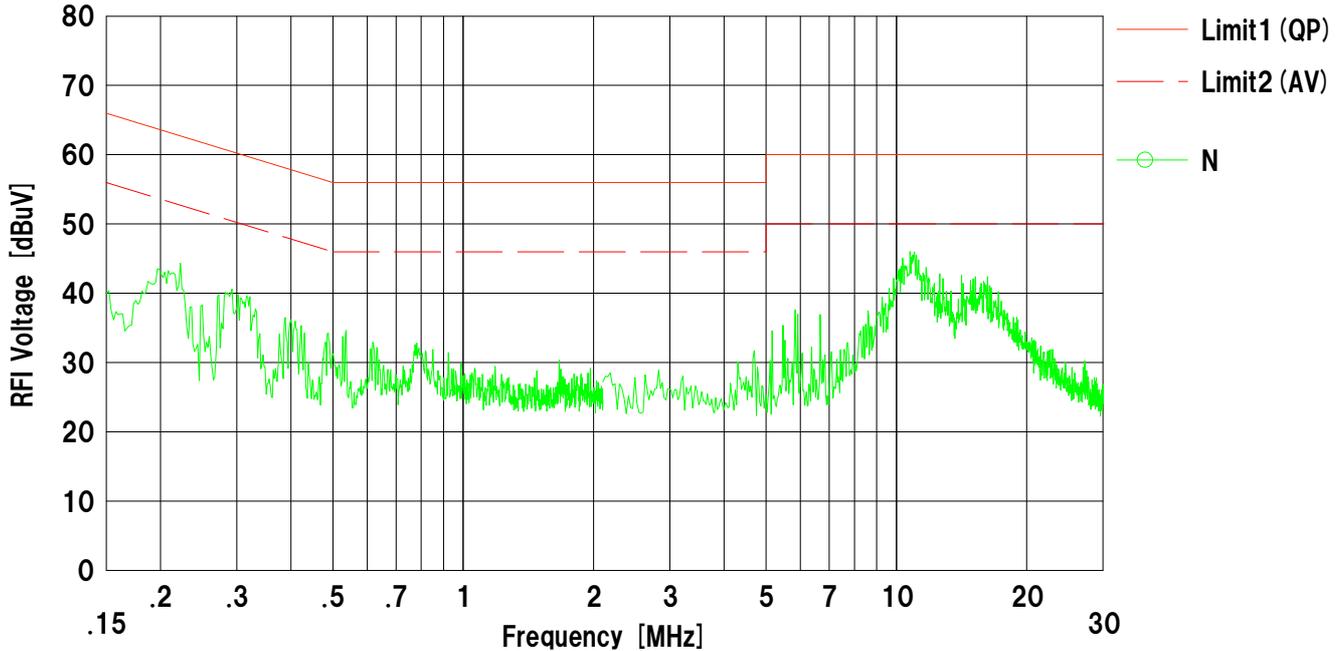
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx 3DH5 2402MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2012/07/27

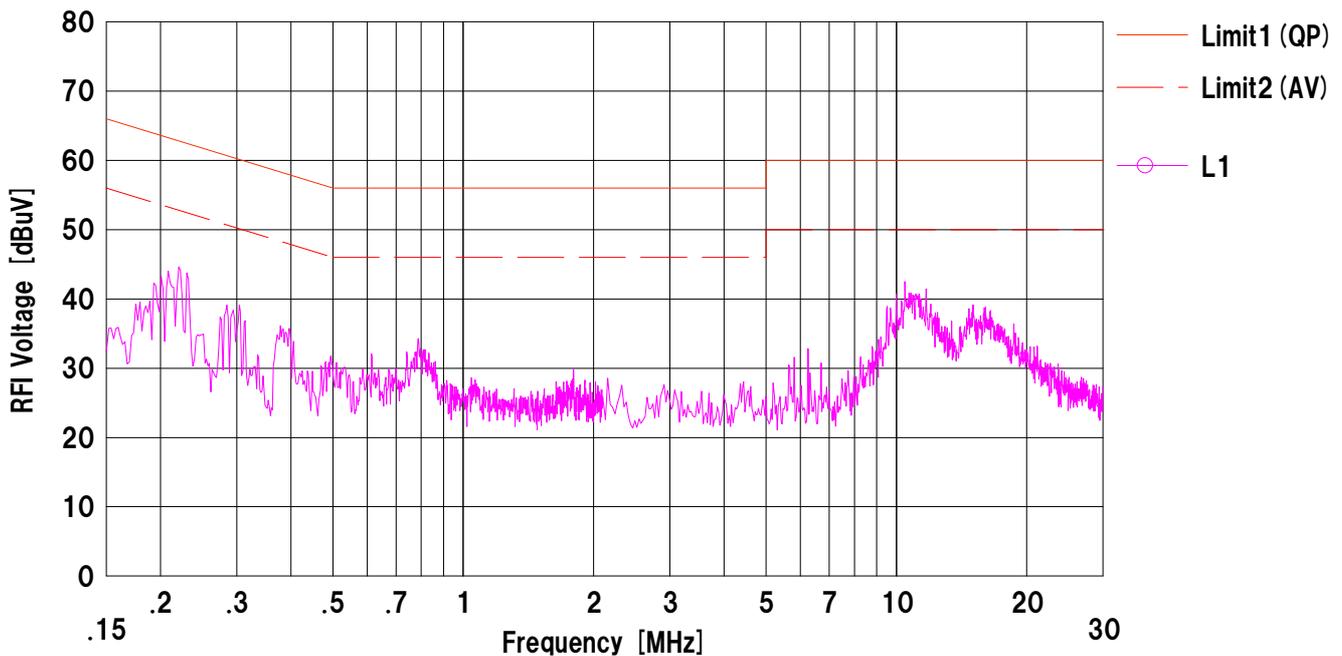
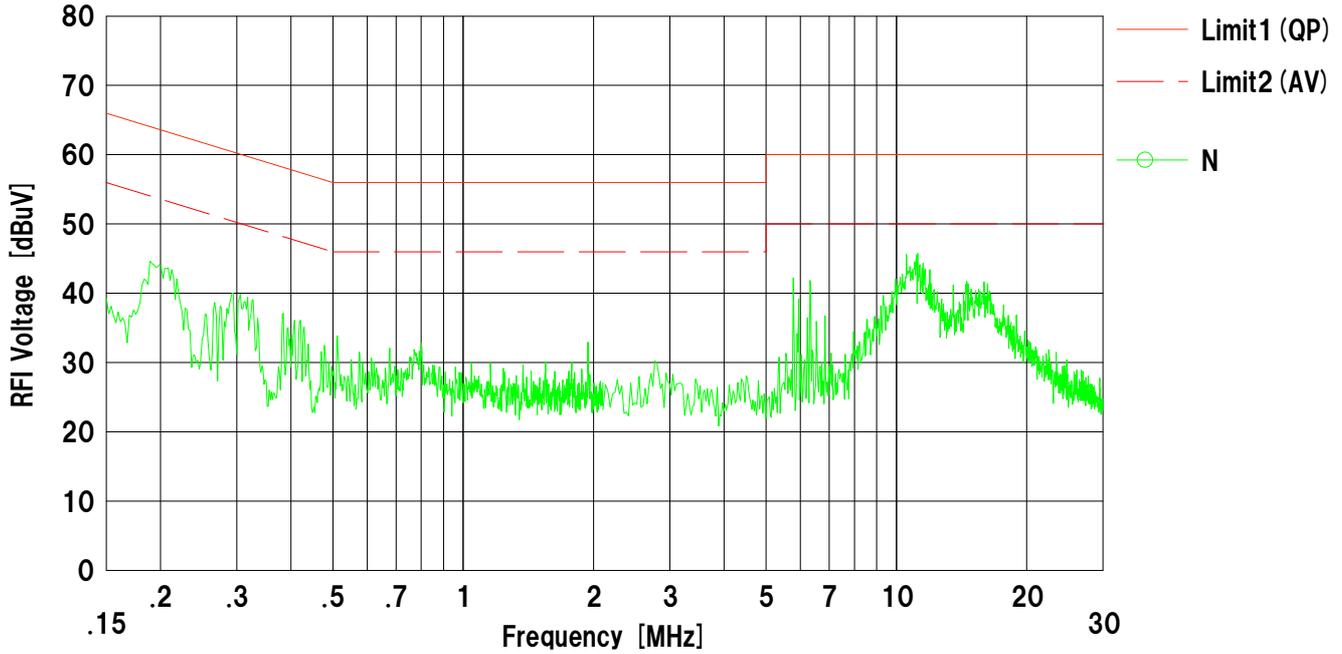
Company : Sony Corporation  
Kind of EUT : WIRELESS SPEAKER SYSTEM  
Model No. : SRS-BTV5  
Serial No. : 9900077

Mode : Tx 3DH5 2480MHz  
Report No. : 32LE0159-SH-01-A  
Power : AC 120V / 60Hz  
Temp./Humi. : 26deg.C. / 54%RH

Remarks : -

Limit1 : FCC 15C (15.207) QP  
Limit2 : FCC 15C (15.207) AV

Engineer : Tatsuya Arai



Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

## 20dB Bandwidth and Carrier Frequency Separation

Test place                   UL Japan, Inc. Shonan EMC Lab.           No.5 Shielded Room  
 Date                            2012/7/25  
 Temperature / Humidity    27 deg.C   , 56 %RH  
 Engineer                    Akio Hayashi  
 Mode                         Tx, Bluetooth, BDR, PRBS9

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.952	1.000	>= 0.635
DH5	2441.0	0.952	1.000	>= 0.635
DH5	2480.0	0.949	1.000	>= 0.633

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

**UL Japan, Inc.**

**Shonan EMC Lab.**

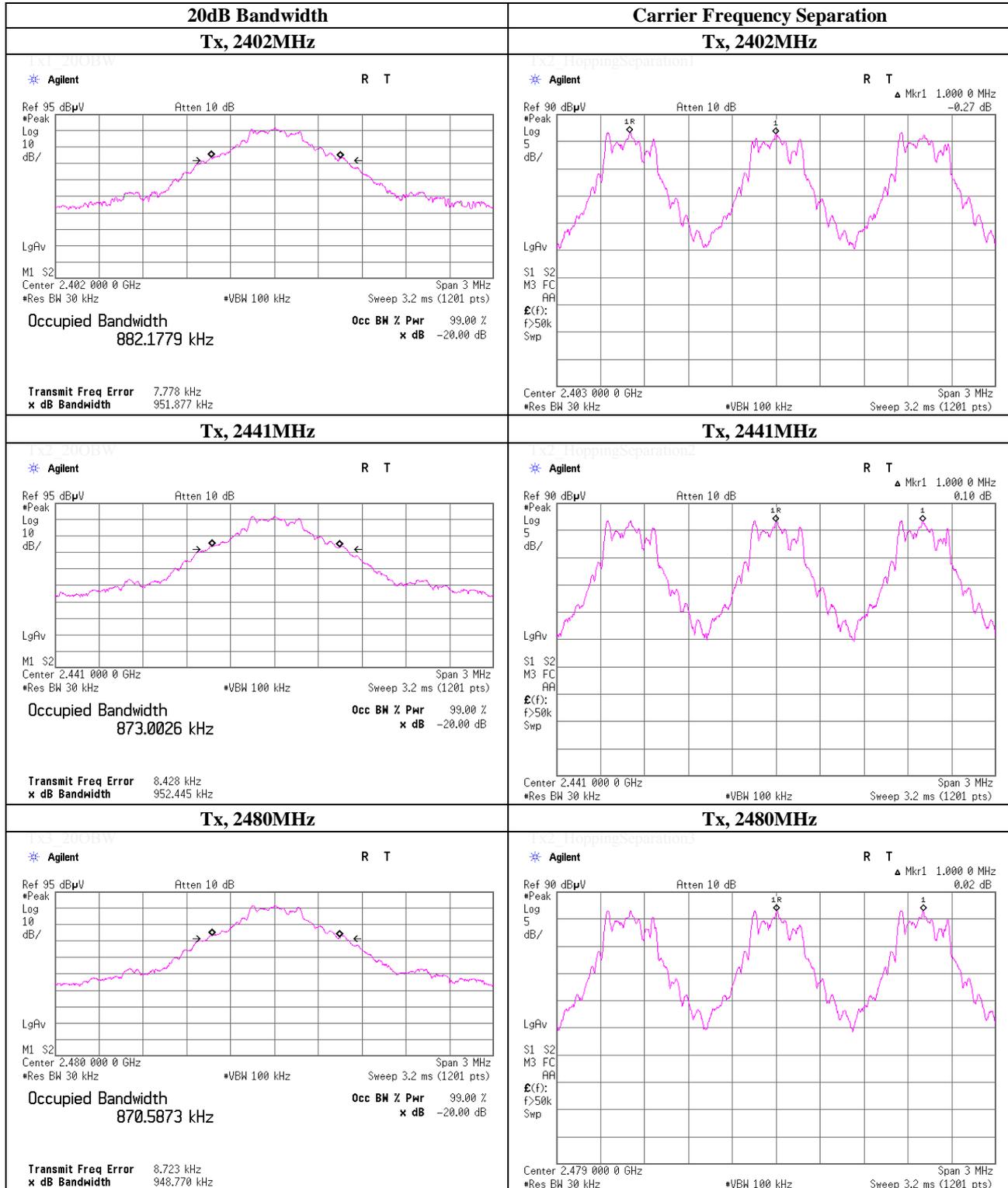
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## 20dB Bandwidth and Carrier Frequency Separation

### Tx, Bluetooth, BDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## 20dB Bandwidth and Carrier Frequency Separation

Test place                   UL Japan, Inc. Shonan EMC Lab.           No.5 Shielded Room  
 Date                            2012/7/25  
 Temperature / Humidity    27 deg.C   , 56 %RH  
 Engineer                    Akio Hayashi  
 Mode                         Tx, Bluetooth, EDR, PRBS9

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
3-DH5	2402.0	1.269	1.000	>= 0.846
3-DH5	2441.0	1.265	1.000	>= 0.843
3-DH5	2480.0	1.261	1.000	>= 0.841

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

**UL Japan, Inc.**

**Shonan EMC Lab.**

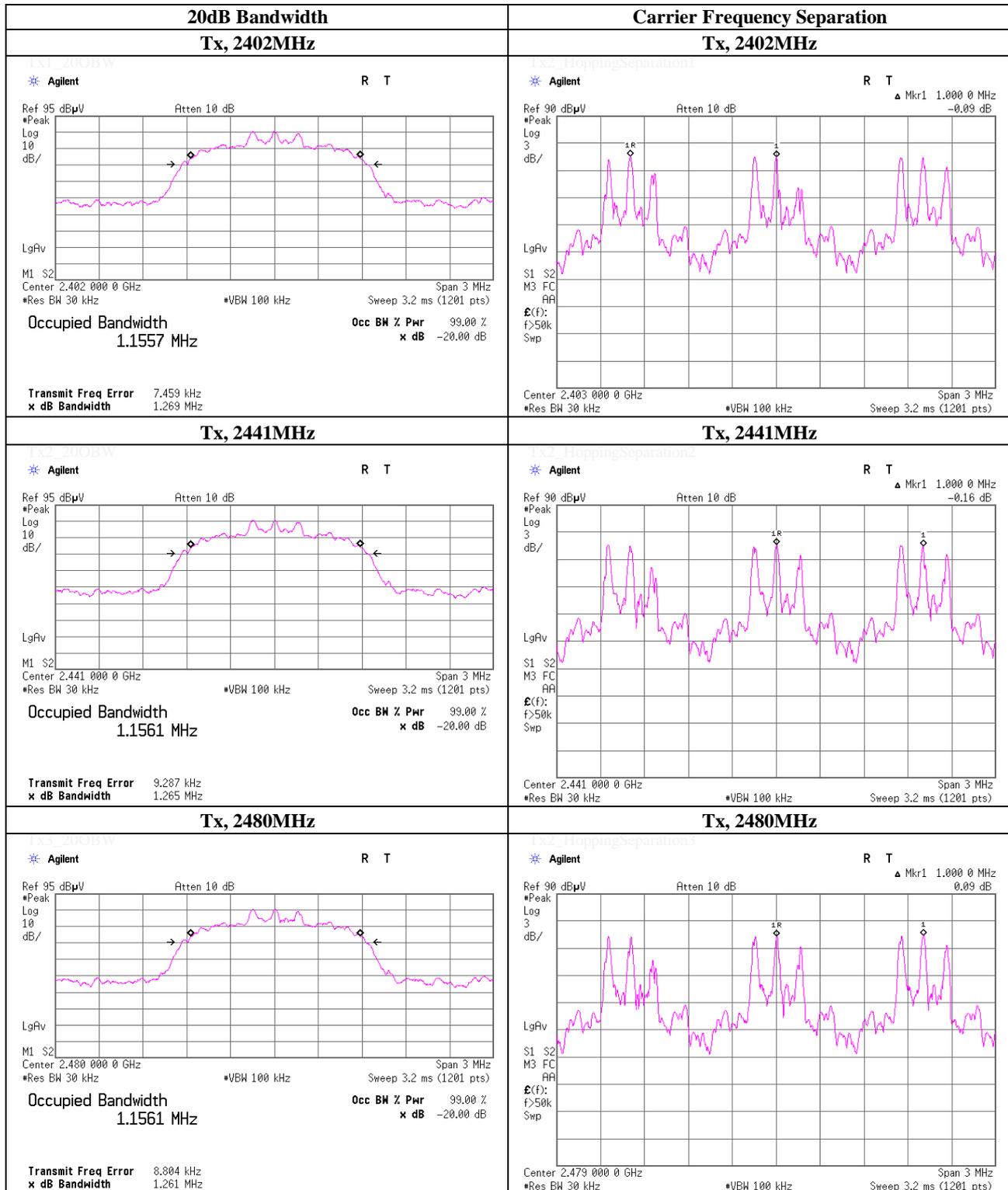
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## 20dB Bandwidth and Carrier Frequency Separation

### Tx, Bluetooth, EDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

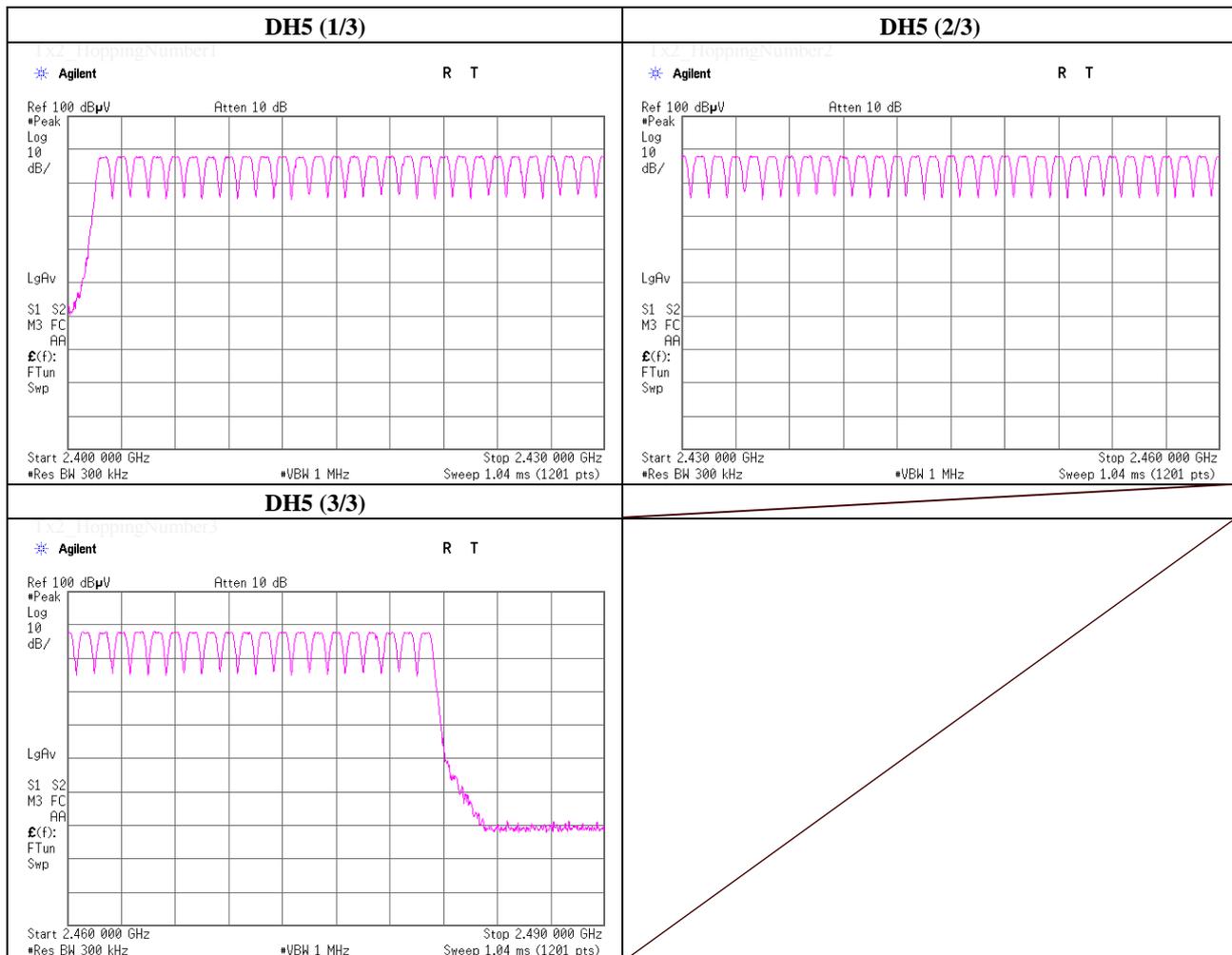
Facsimile : +81 463 50 6401

### Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	2012/7/25	
Temperature / Humidity	27 deg.C , 56 %RH	
Engineer	Akio Hayashi	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Number of Channel [times]	Limit [times]
DH5	79	>= 15

\* Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.



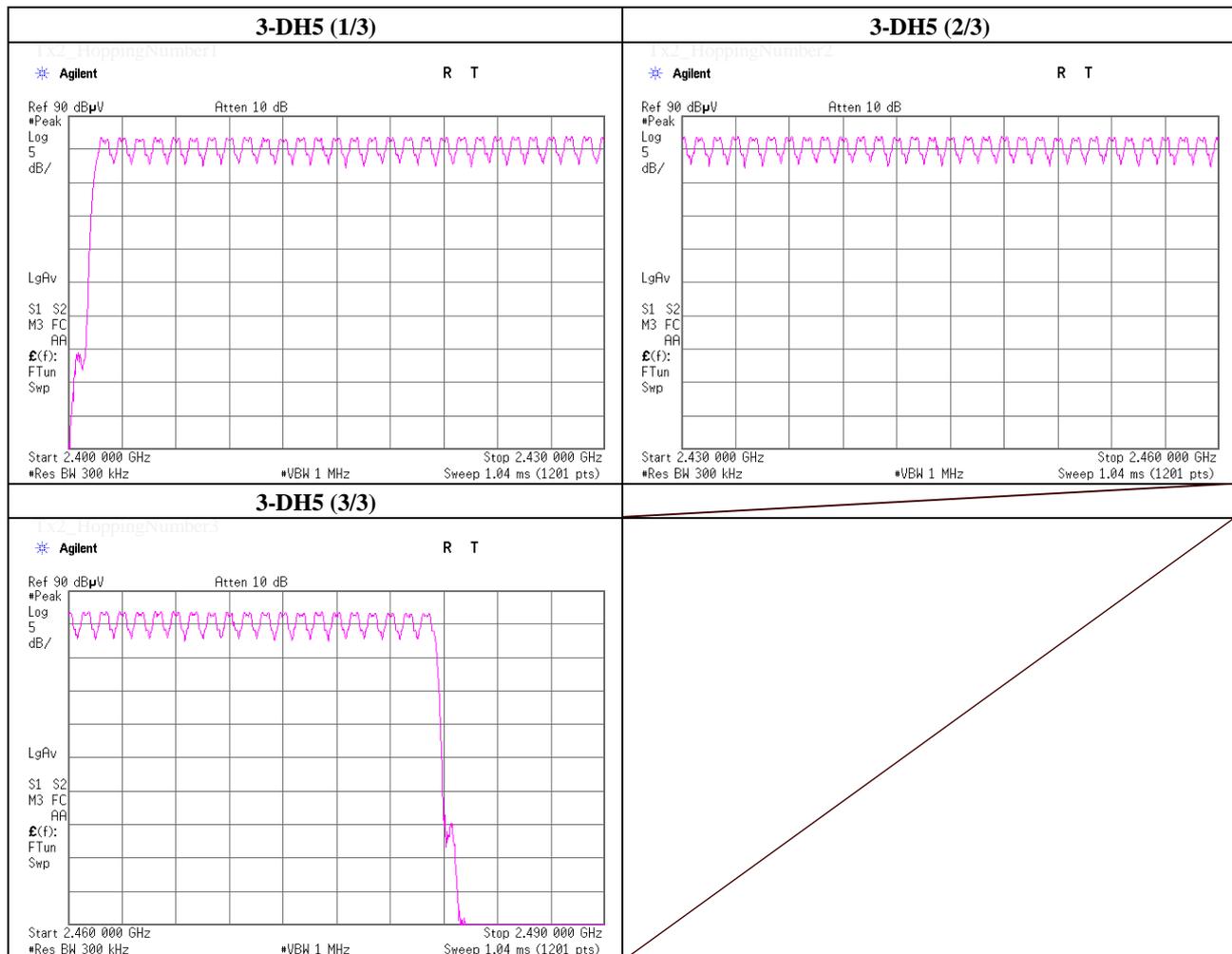
**UL Japan, Inc.**  
**Shonan EMC Lab.**  
 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

## Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	2012/7/25	
Temperature / Humidity	27 deg.C , 56 %RH	
Engineer	Akio Hayashi	
Mode	Tx, Bluetooth, EDR, PRBS9	

Mode	Number of Channel [times]	Limit [times]
3-DH5	79	>= 15

\* Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell Time

Test place           UL Japan, Inc. Shonan EMC Lab.           No.5 Shielded Room  
 Date                 2012/7/25  
 Temperature / Humidity 27 deg.C   , 56 %RH  
 Engineer            Akio Hayashi  
 Mode                Tx, Bluetooth, BDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4)	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	48.8 / 5.0 sec. x 31.6 sec. = 309 times	0.397	123	400
DH3	23.8 / 5.0 sec. x 31.6 sec. = 151 times	1.655	250	400
DH5	17.8 / 5.0 sec. x 31.6 sec. = 113 times	2.903	328	400

Sample Calculation

Result = Number of transmission x Length of transmission time

\* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in  $N \times 0.4s$ , where  $N$  is the number of channels being used in the hopping sequence ( $20 \leq N \leq 79$ ), is always less than 0.4s regardless of packet size (DH1, DH3 or DH5). This is confirmed in the test report for  $N=79$ .

\*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	49	48	49	49	49	48.8
DH3	21	24	24	27	23	23.8
DH5	19	18	17	15	20	17.8

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

**UL Japan, Inc.**

**Shonan EMC Lab.**

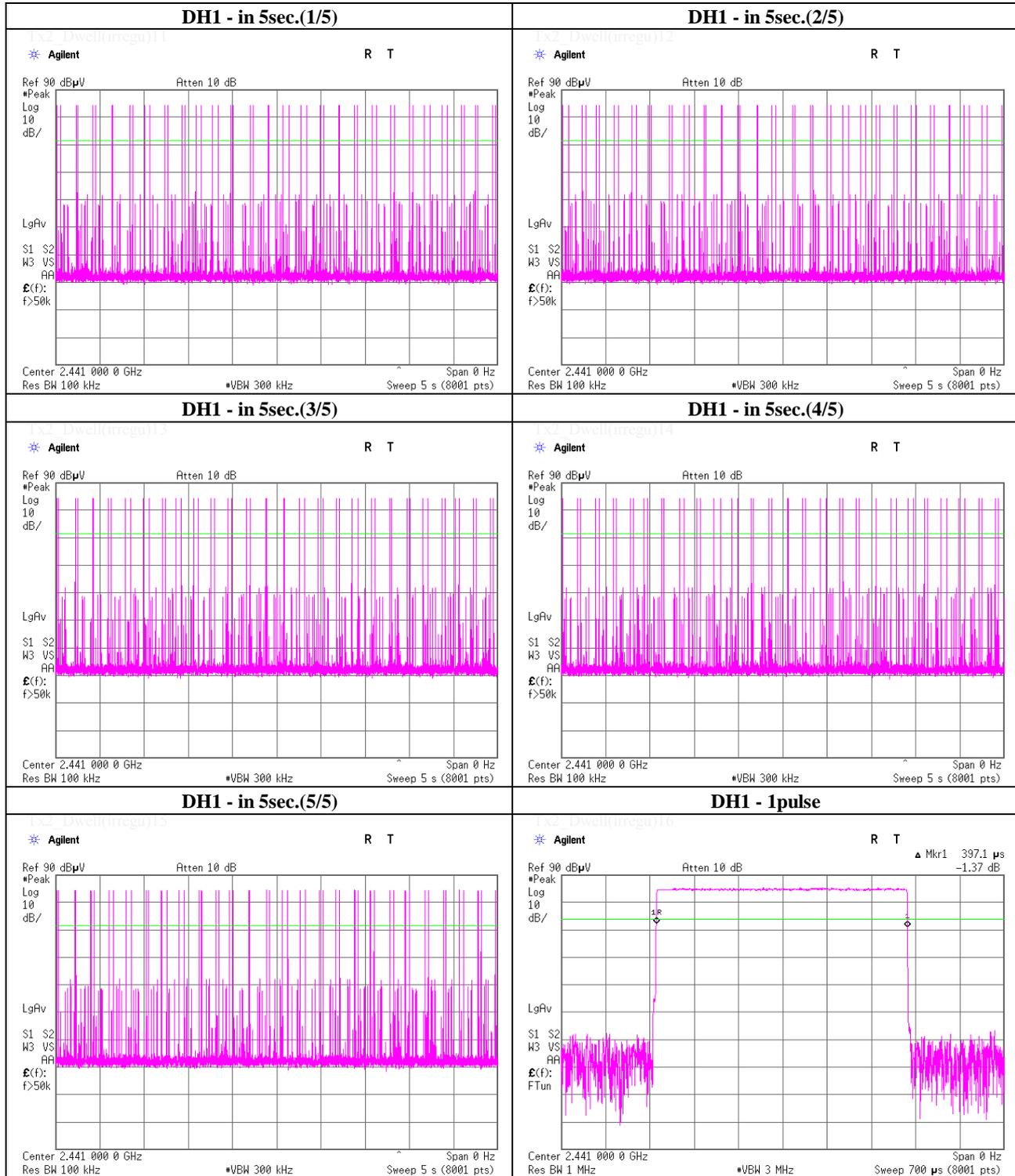
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

**Tx, Bluetooth, BDR, PRBS9**



**UL Japan, Inc.**

**Shonan EMC Lab.**

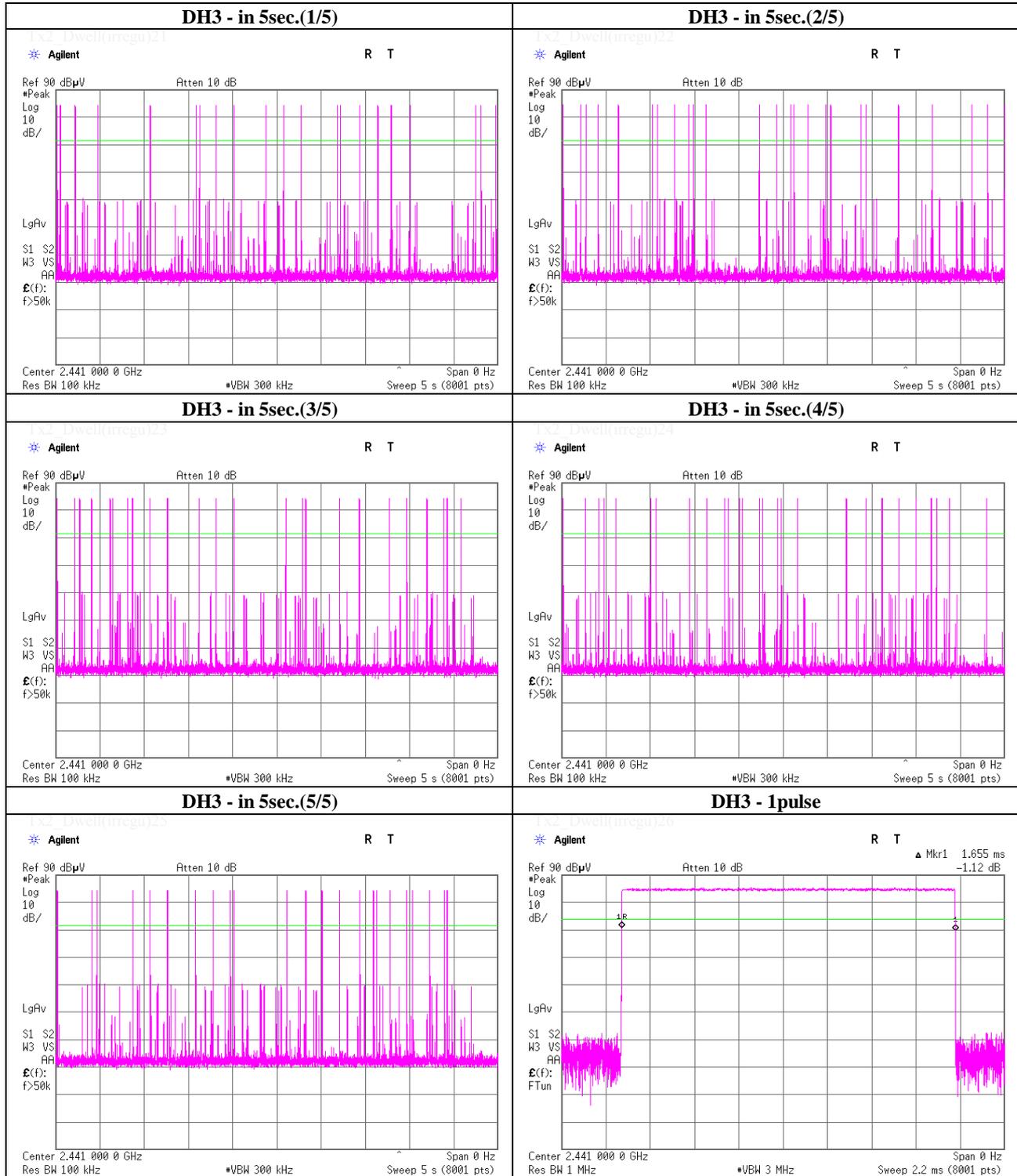
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

**Tx, Bluetooth, BDR, PRBS9**



**UL Japan, Inc.**

**Shonan EMC Lab.**

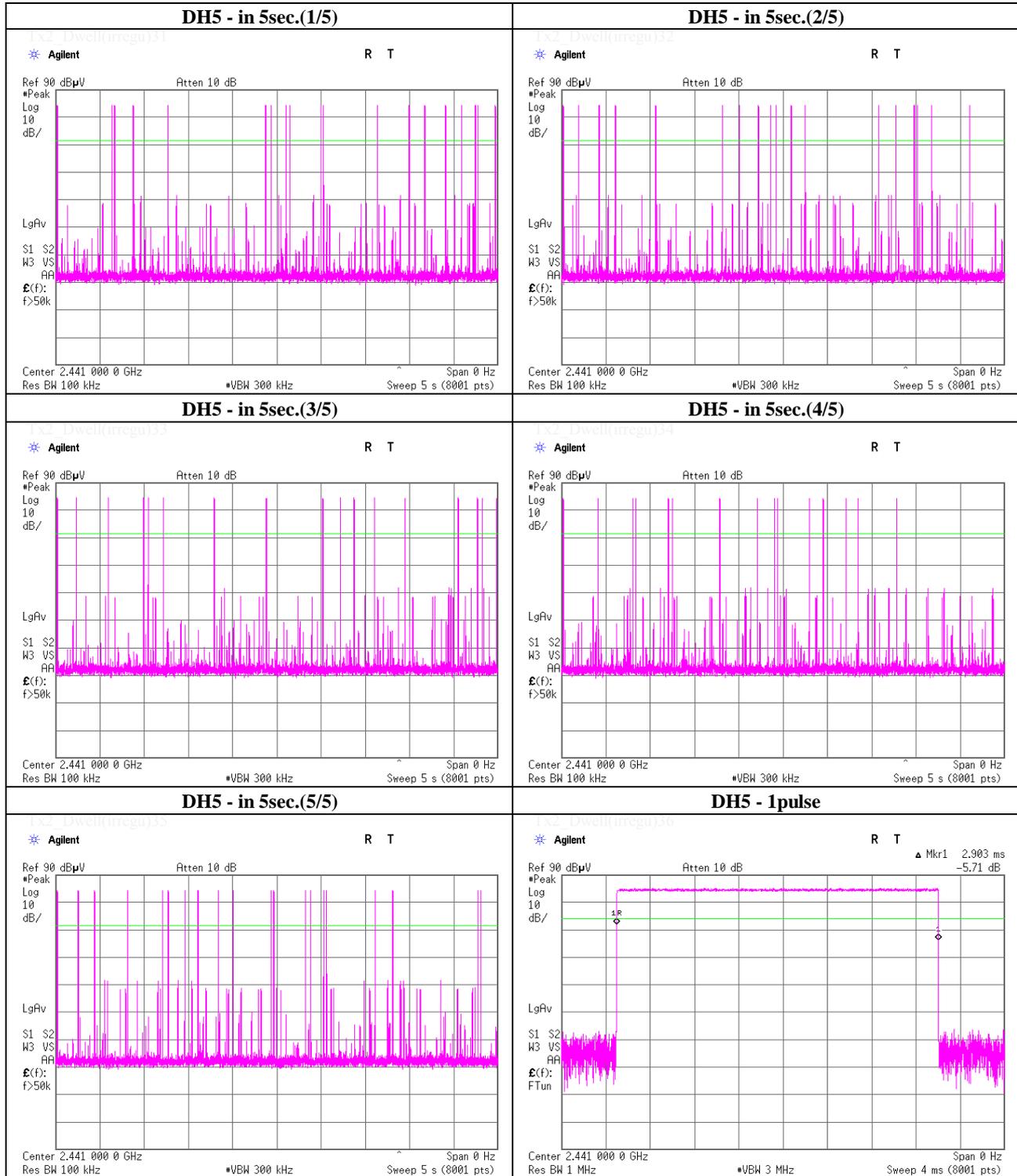
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

### Tx, Bluetooth, BDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell Time

Test place           UL Japan, Inc. Shonan EMC Lab.           No.5 Shielded Room  
 Date                 2012/7/25  
 Temperature / Humidity 27 deg.C   , 56 %RH  
 Engineer            Akio Hayashi  
 Mode                Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4)	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	49.6 / 5.0 sec. x 31.6 sec. = 314 times	0.409	128	400
3-DH3	25.4 / 5.0 sec. x 31.6 sec. = 161 times	1.660	267	400
3-DH5	18.4 / 5.0 sec. x 31.6 sec. = 117 times	2.912	341	400

Sample Calculation

Result = Number of transmission x Length of transmission time

\* This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in  $N \times 0.4s$ , where  $N$  is the number of channels being used in the hopping sequence ( $20 \leq N \leq 79$ ), is always less than 0.4s regardless of packet size (3-DH1, 3-DH3 or 3-DH5). This is confirmed in the test report for  $N=79$ .

\*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
3-DH1	51	47	52	51	47	49.6
3-DH3	22	26	28	26	25	25.4
3-DH5	21	18	19	17	17	18.4

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

**UL Japan, Inc.**

**Shonan EMC Lab.**

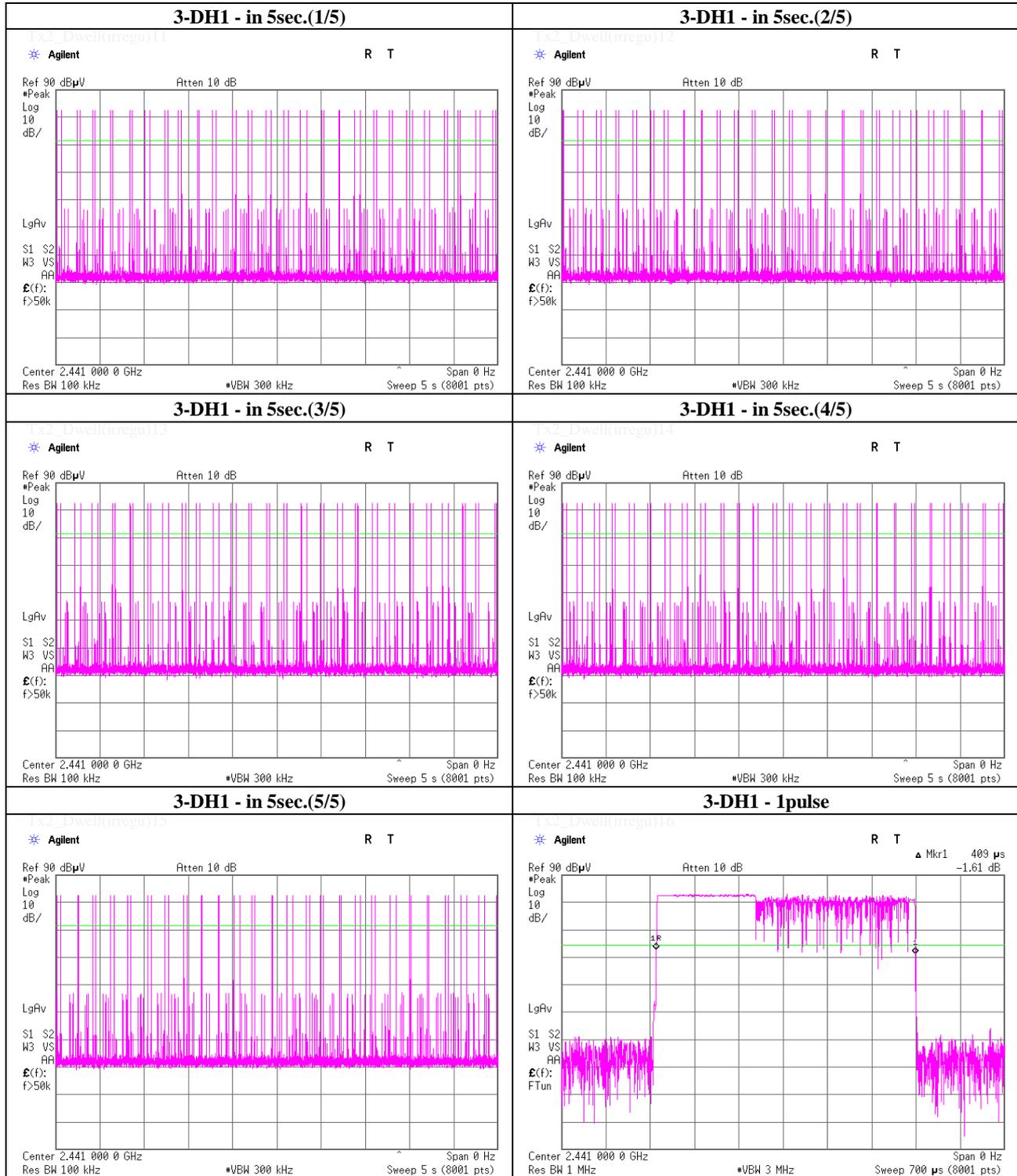
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

### Tx, Bluetooth, EDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

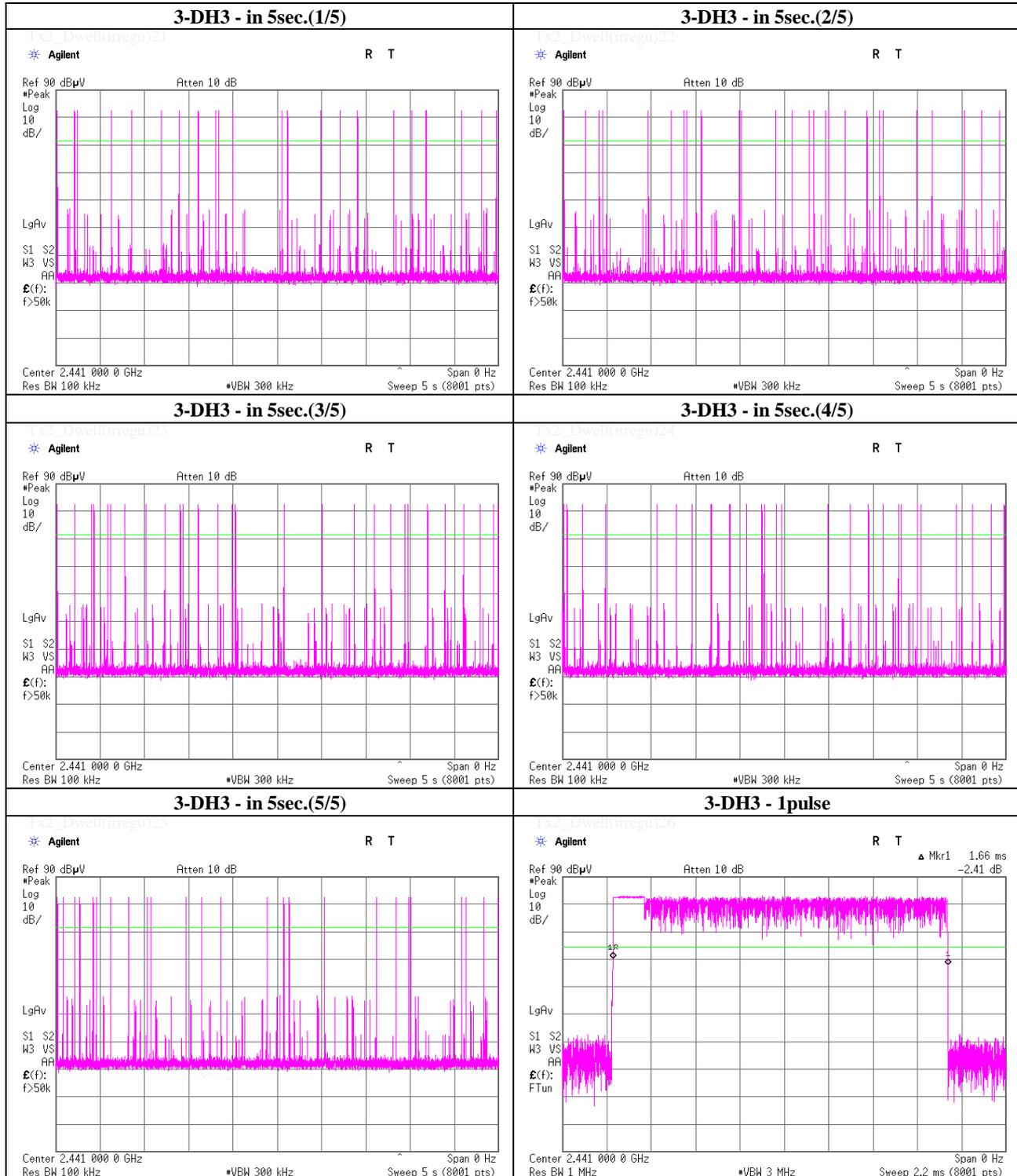
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

### Tx, Bluetooth, EDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

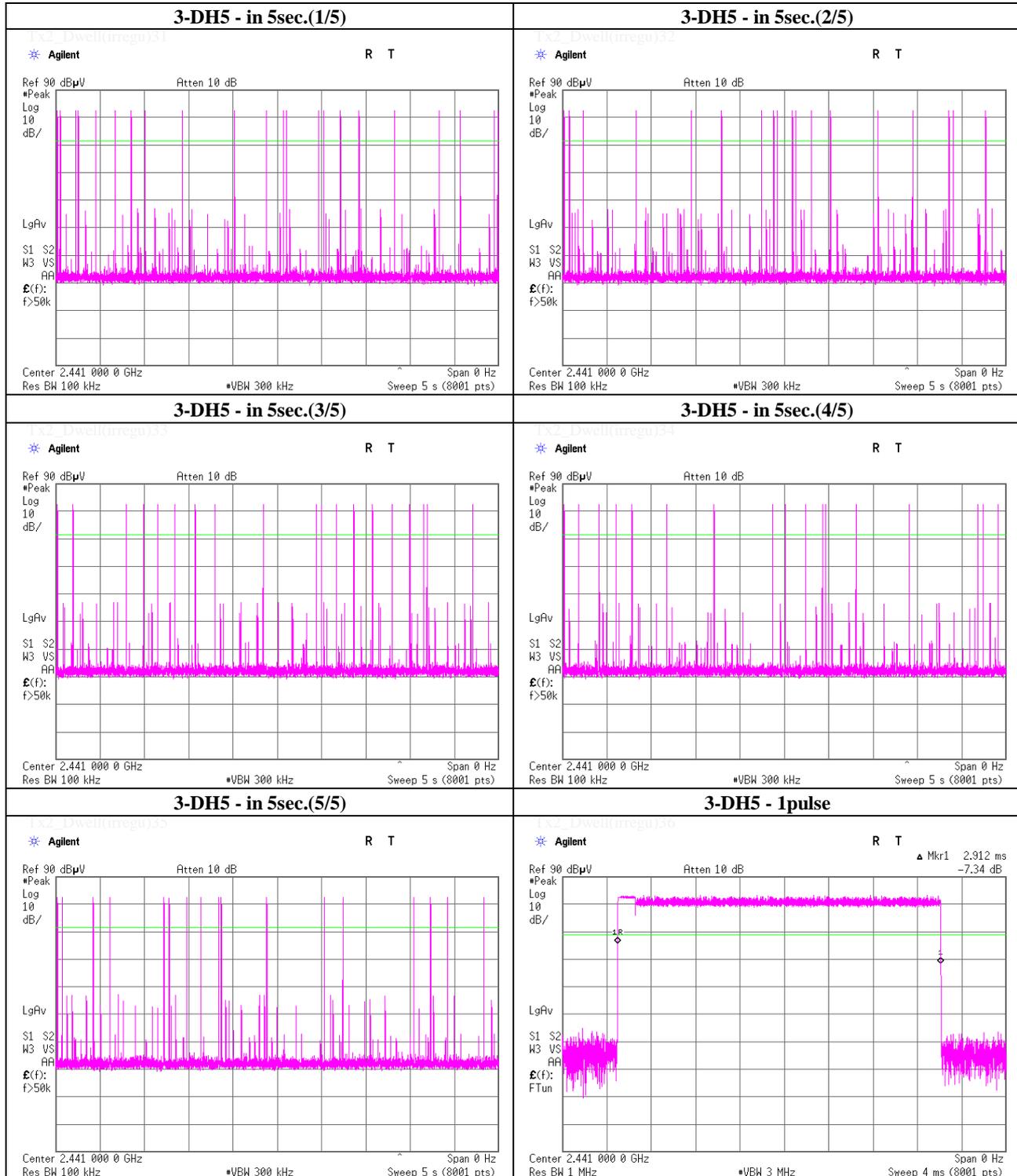
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time

### Tx, Bluetooth, EDR, PRBS9



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Peak Output Power (Conducted)

Test place           UL Japan, Inc. Shonan EMC Lab.       No.5 Shielded Room  
 Date                 2012/7/24  
 Temperature / Humidity   27 deg.C   , 50%RH  
 Engineer             Hikaru Shirasawa  
 Mode                 Tx, Bluetooth

(\* P/M: Power Meter with power sensor)

	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-17.47	0.93	20.15	3.61	2.30	20.97	125	17.36
DH5	2441.0	-17.51	0.94	20.15	3.58	2.28	20.97	125	17.39
DH5	2480.0	-17.57	0.95	20.15	3.53	2.25	20.97	125	17.44
2-DH5	2402.0	-18.59	0.93	20.15	2.49	1.77	20.97	125	18.48
2-DH5	2441.0	-18.39	0.94	20.15	2.70	1.86	20.97	125	18.27
2-DH5	2480.0	-18.71	0.95	20.15	2.39	1.73	20.97	125	18.58
3-DH5	2402.0	-18.31	0.93	20.15	2.77	1.89	20.97	125	18.20
3-DH5	2441.0	-18.23	0.94	20.15	2.86	1.93	20.97	125	18.11
3-DH5	2480.0	-18.54	0.95	20.15	2.56	1.80	20.97	125	18.41

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

**UL Japan, Inc.**  
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone   : +81 463 50 6400  
 Facsimile   : +81 463 50 6401

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.  
 Test room                   No.3 Semi Anechoic Chamber   No.3 Semi Anechoic Chamber  
 Date                         July 25, 2012                     July 26, 2012  
 Temperature / Humidity   25 deg.C , 66 %RH             22 deg.C , 39 %RH  
 Engineer                   Akira Sato                       Hikaru Shirasawa  
 Mode                        Tx,                                 2402 MHz  
                               Tx, Bluetooth, BDR, PRBS9

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.002	QP	45.3	14.5	7.7	32.1	35.4	43.5	8.1	233	206	
Hori.	175.360	QP	35.3	15.7	7.8	32.1	26.7	43.5	16.8	238	163	
Hori.	268.805	QP	43.6	17.9	8.4	32.0	37.9	46.0	8.1	122	192	
Hori.	320.002	QP	46.7	14.4	8.6	32.0	37.7	46.0	8.3	129	17	
Hori.	400.003	QP	46.9	16.4	9.0	32.0	40.3	46.0	5.7	100	208	
Hori.	2385.917	PK	47.5	27.2	14.2	41.4	47.5	73.9	26.4	100	0	
Hori.	2390.000	PK	45.2	27.2	14.2	41.4	45.2	73.9	28.7	102	328	
Hori.	4804.000	PK	55.7	31.1	6.8	41.2	52.4	73.9	21.5	100	204	
Hori.	7206.000	PK	48.7	36.5	8.3	41.4	52.1	73.9	21.8	100	0	
Hori.	9608.000	PK	45.9	38.2	9.4	38.9	54.6	73.9	19.3	100	0	
Hori.	12010.000	PK	44.7	39.3	10.7	39.4	55.3	73.9	18.6	100	0	
Hori.	2385.917	AV	34.2	27.2	14.2	41.4	34.2	53.9	19.7	100	0	
Hori.	2390.000	AV	34.8	27.2	14.2	41.4	34.8	53.9	19.1	102	328	
Hori.	4804.000	AV	50.2	31.1	6.8	41.2	46.9	53.9	7.0	100	204	
Hori.	7206.000	AV	36.1	36.5	8.3	41.4	39.5	53.9	14.4	100	0	
Hori.	9608.000	AV	33.6	38.2	9.4	38.9	42.3	53.9	11.6	100	0	
Hori.	12010.000	AV	34.9	39.3	10.7	39.4	45.5	53.9	8.4	100	0	
Vert.	75.187	QP	46.3	6.4	7.2	32.2	27.7	40.0	12.3	103	160	
Vert.	160.000	QP	44.0	15.2	7.8	32.1	34.9	43.5	8.6	100	156	
Vert.	176.005	QP	41.2	15.7	7.8	32.1	32.6	43.5	10.9	100	201	
Vert.	2385.917	PK	45.3	27.2	14.2	41.4	45.3	73.9	28.6	100	0	
Vert.	2390.000	PK	43.6	27.2	14.2	41.4	43.6	73.9	30.3	187	191	
Vert.	4804.000	PK	57.6	31.1	6.8	41.2	54.3	73.9	19.6	100	212	
Vert.	7206.000	PK	48.6	36.5	8.3	41.4	52.0	73.9	21.9	100	0	
Vert.	9608.000	PK	44.7	38.2	9.4	38.9	53.4	73.9	20.5	100	0	
Vert.	12010.000	PK	47.4	39.3	10.7	39.4	58.0	73.9	15.9	100	0	
Vert.	2385.917	AV	34.7	27.2	14.2	41.4	34.7	53.9	19.2	100	0	
Vert.	2390.000	AV	34.7	27.2	14.2	41.4	34.7	53.9	19.2	187	191	
Vert.	4804.000	AV	52.7	31.1	6.8	41.2	49.4	53.9	4.5	100	212	
Vert.	7206.000	AV	36.3	36.5	8.3	41.4	39.7	53.9	14.2	100	0	
Vert.	9608.000	AV	33.5	38.2	9.4	38.9	42.2	53.9	11.7	100	0	
Vert.	12010.000	AV	35.2	39.3	10.7	39.4	45.8	53.9	8.1	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

\*Distance factor [dB](15GHz - 40GHz)= 20 x log ( 3.0[m] / 1.0[m] ) = 9.5 [dB]

### 20dBc Data Sheet (RBW 100kHz, VBW 300kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	84.8	27.3	14.2	41.4	84.9	-	-	
Hori.	2400.000	PK	42.2	27.3	14.2	41.4	42.3	64.9	22.6	
Vert.	2402.000	PK	85.5	27.3	14.2	41.4	85.6	-	-	
Vert.	2400.000	PK	42.2	27.3	14.2	41.4	42.3	65.6	23.3	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.  
 Test room                   No.3 Semi Anechoic Chamber   No.3 Semi Anechoic Chamber  
 Date                         July 25, 2012                   July 26, 2012  
 Temperature / Humidity   25 deg.C , 66 %RH           22 deg.C , 39 %RH  
 Engineer                  Akira Sato                     Hikaru Shirasawa  
 Mode                        Tx,                               2441 MHz  
                               Tx, Bluetooth, BDR, PRBS9

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.000	QP	45.4	14.5	7.7	32.1	35.5	43.5	8.0	236	206	
Hori.	272.004	QP	46.5	18.0	8.4	32.0	40.9	46.0	5.1	121	202	
Hori.	336.001	QP	47.2	14.8	8.7	32.0	38.7	46.0	7.3	100	194	
Hori.	352.001	QP	49.2	15.2	8.8	31.9	41.3	46.0	4.7	100	199	
Hori.	400.003	QP	46.8	16.4	9.0	32.0	40.2	46.0	5.8	100	221	
Hori.	4882.000	PK	54.6	31.2	6.9	41.1	51.6	73.9	22.3	109	150	
Hori.	7323.000	PK	47.6	36.8	8.6	41.4	51.6	73.9	22.3	100	0	
Hori.	9764.000	PK	44.5	38.5	9.5	38.9	53.6	73.9	20.3	100	0	
Hori.	12205.000	PK	43.5	39.3	10.8	39.3	54.3	73.9	19.6	100	0	
Hori.	4882.000	AV	49.2	31.2	6.9	41.1	46.2	53.9	7.7	109	150	
Hori.	7323.000	AV	35.7	36.8	8.6	41.4	39.7	53.9	14.2	100	0	
Hori.	9764.000	AV	32.6	38.5	9.5	38.9	41.7	53.9	12.2	100	0	
Hori.	12205.000	AV	32.5	39.3	10.8	39.3	43.3	53.9	10.6	100	0	
Vert.	80.002	QP	46.5	6.2	7.5	32.2	28.0	40.0	12.0	100	96	
Vert.	160.004	QP	44.3	15.2	7.8	32.1	35.2	43.5	8.3	100	162	
Vert.	4882.000	PK	54.9	31.2	6.9	41.1	51.9	73.9	22.0	100	63	
Vert.	7323.000	PK	46.7	36.8	8.6	41.4	50.7	73.9	23.2	100	0	
Vert.	9764.000	PK	43.8	38.5	9.5	38.9	52.9	73.9	21.0	100	0	
Vert.	12205.000	PK	43.8	39.3	10.8	39.3	54.6	73.9	19.3	100	0	
Vert.	4882.000	AV	48.7	31.2	6.9	41.1	45.7	53.9	8.2	100	63	
Vert.	7323.000	AV	35.7	36.8	8.6	41.4	39.7	53.9	14.2	100	0	
Vert.	9764.000	AV	32.6	38.5	9.5	38.9	41.7	53.9	12.2	100	0	
Vert.	12205.000	AV	32.9	39.3	10.8	39.3	43.7	53.9	10.2	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

\*Distance factor [dB](15GHz - 40GHz)= 20 x log ( 3.0[m] / 1.0[m] ) = 9.5 [dB]

## Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	
Test room	No.3 Semi Anechoic Chamber	No.3 Semi Anechoic Chamber
Date	July 25, 2012	July 26, 2012
Temperature / Humidity	25 deg.C , 66 %RH	22 deg.C , 39 %RH
Engineer	Akira Sato	Hikaru Shirasawa
Mode	Tx, 2480 MHz Tx, Bluetooth, BDR, PRBS9	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.000	QP	45.7	14.5	7.7	32.1	35.8	43.5	7.7	236	208	
Hori.	272.002	QP	45.2	18.0	8.4	32.0	39.6	46.0	6.4	131	31	
Hori.	319.998	QP	46.5	14.4	8.6	32.0	37.5	46.0	8.5	100	5	
Hori.	352.004	QP	49.2	15.2	8.8	31.9	41.3	46.0	4.7	100	203	
Hori.	400.002	QP	47.4	16.4	9.0	32.0	40.8	46.0	5.2	100	217	
Hori.	2483.500	PK	44.8	27.5	14.3	41.4	45.2	73.9	28.7	100	325	
Hori.	4960.000	PK	51.6	31.4	6.9	41.0	48.9	73.9	25.0	100	22	
Hori.	7440.000	PK	46.7	37.0	8.8	41.5	51.0	73.9	22.9	100	0	
Hori.	9920.000	PK	43.5	38.8	9.7	38.9	53.1	73.9	20.8	100	0	
Hori.	12400.000	PK	43.2	39.4	10.8	39.3	54.1	73.9	19.8	100	0	
Hori.	2483.500	AV	34.8	27.5	14.3	41.4	35.2	53.9	18.7	100	325	
Hori.	4960.000	AV	44.5	31.4	6.9	41.0	41.8	53.9	12.1	100	22	
Hori.	7440.000	AV	35.6	37.0	8.8	41.5	39.9	53.9	14.0	100	0	
Hori.	9920.000	AV	31.5	38.8	9.7	38.9	41.1	53.9	12.8	100	0	
Hori.	12400.000	AV	31.9	39.4	10.8	39.3	42.8	53.9	11.1	100	0	
Vert.	80.296	QP	45.9	6.2	7.5	32.2	27.4	40.0	12.6	100	103	
Vert.	160.002	QP	44.6	15.2	7.8	32.1	35.5	43.5	8.0	100	169	
Vert.	2483.500	PK	43.9	27.5	14.3	41.4	44.3	73.9	29.6	100	207	
Vert.	4960.000	PK	53.4	31.4	6.9	41.0	50.7	73.9	23.2	100	165	
Vert.	7440.000	PK	47.3	37.0	8.8	41.5	51.6	73.9	22.3	100	0	
Vert.	9920.000	PK	43.1	38.8	9.7	38.9	52.7	73.9	21.2	100	0	
Vert.	12400.000	PK	43.2	39.4	10.8	39.3	54.1	73.9	19.8	100	0	
Vert.	2483.500	AV	34.8	27.5	14.3	41.4	35.2	53.9	18.7	100	207	
Vert.	4960.000	AV	47.5	31.4	6.9	41.0	44.8	53.9	9.1	100	165	
Vert.	7440.000	AV	35.4	37.0	8.8	41.5	39.7	53.9	14.2	100	0	
Vert.	9920.000	AV	31.5	38.8	9.7	38.9	41.1	53.9	12.8	100	0	
Vert.	12400.000	AV	31.7	39.4	10.8	39.3	42.6	53.9	11.3	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)  
 \*Distance factor [dB](15GHz - 40GHz)= 20 x log (3.0[m] / 1.0[m]) = 9.5 [dB]

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.  
 Test room                   No.3 Semi Anechoic Chamber   No.3 Semi Anechoic Chamber  
 Date                         July 25, 2012                     July 26, 2012  
 Temperature / Humidity   25 deg.C , 66 %RH               22 deg.C , 39 %RH  
 Engineer                   Akira Sato                         Hikaru Shirasawa  
 Mode                        Tx,                                 2402 MHz  
                                   Tx, Bluetooth, EDR, PRBS9

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.005	QP	45.7	14.5	7.7	32.1	35.8	43.5	7.7	125	200	
Hori.	272.000	QP	46.4	18.0	8.4	32.0	40.8	46.0	5.2	129	199	
Hori.	319.999	QP	46.9	14.4	8.6	32.0	37.9	46.0	8.1	100	193	
Hori.	352.002	QP	49.2	15.2	8.8	31.9	41.3	46.0	4.7	100	208	
Hori.	400.003	QP	47.3	16.4	9.0	32.0	40.7	46.0	5.3	100	216	
Hori.	2386.217	PK	45.8	27.2	14.2	41.4	45.8	73.9	28.1	100	0	
Hori.	2390.000	PK	46.4	27.2	14.2	41.4	46.4	73.9	27.5	100	150	
Hori.	4804.000	PK	52.9	31.1	6.8	41.2	49.6	73.9	24.3	100	167	
Hori.	7206.000	PK	48.7	36.5	8.3	41.4	52.1	73.9	21.8	100	0	
Hori.	9608.000	PK	46.2	38.2	9.4	38.9	54.9	73.9	19.0	100	0	
Hori.	12010.000	PK	45.8	39.3	10.7	39.4	56.4	73.9	17.5	100	0	
Hori.	2386.217	AV	34.6	27.2	14.2	41.4	34.6	53.9	19.3	100	0	
Hori.	2390.000	AV	34.7	27.2	14.2	41.4	34.7	53.9	19.2	100	150	
Hori.	4804.000	AV	42.9	31.1	6.8	41.2	39.6	53.9	14.3	100	167	
Hori.	7206.000	AV	36.2	36.5	8.3	41.4	39.6	53.9	14.3	100	0	
Hori.	9608.000	AV	33.7	38.2	9.4	38.9	42.4	53.9	11.5	100	0	
Hori.	12010.000	AV	35.5	39.3	10.7	39.4	46.1	53.9	7.8	100	0	
Vert.	80.007	QP	46.4	6.2	7.5	32.2	27.9	40.0	12.1	100	97	
Vert.	160.006	QP	44.6	15.2	7.8	32.1	35.5	43.5	8.0	100	177	
Vert.	2386.217	PK	46.2	27.2	14.2	41.4	46.2	73.9	27.7	100	0	
Vert.	2390.000	PK	47.0	27.2	14.2	41.4	47.0	73.9	26.9	100	208	
Vert.	4804.000	PK	56.4	31.1	6.8	41.2	53.1	73.9	20.8	108	215	
Vert.	7206.000	PK	47.3	36.5	8.3	41.4	50.7	73.9	23.2	100	0	
Vert.	9608.000	PK	44.3	38.2	9.4	38.9	53.0	73.9	20.9	100	0	
Vert.	12010.000	PK	45.6	39.3	10.7	39.4	56.2	73.9	17.7	100	0	
Vert.	2386.217	AV	34.6	27.2	14.2	41.4	34.6	53.9	19.3	100	0	
Vert.	2390.000	AV	34.8	27.2	14.2	41.4	34.8	53.9	19.1	100	208	
Vert.	4804.000	AV	47.2	31.1	6.8	41.2	43.9	53.9	10.0	108	215	
Vert.	7206.000	AV	36.2	36.5	8.3	41.4	39.6	53.9	14.3	100	0	
Vert.	9608.000	AV	33.5	38.2	9.4	38.9	42.2	53.9	11.7	100	0	
Vert.	12010.000	AV	35.6	39.3	10.7	39.4	46.2	53.9	7.7	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

\*Distance factor [dB](15GHz - 40GHz)= 20 x log ( 3.0[m] / 1.0[m] ) = 9.5 [dB]

20dBc Data Sheet (RBW 100kHz, VBW 300kHz)										
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	83.7	27.3	14.2	41.4	83.8	-	-	
Hori.	2400.000	PK	39.6	27.3	14.2	41.4	39.7	63.8	24.1	
Vert.	2402.000	PK	84.3	27.3	14.2	41.4	84.4	-	-	
Vert.	2400.000	PK	36.1	27.3	14.2	41.4	36.2	64.4	28.2	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter) - Gain(Amplifier)

## Radiated Emission

Test place           UL Japan, Inc. Shonan EMC Lab.  
 Test room           No.3 Semi Anechoic Chamber   No.3 Semi Anechoic Chamber  
 Date                 July 25, 2012                         July 26, 2012  
 Temperature / Humidity   25 deg.C , 66 %RH                 22 deg.C , 39 %RH  
 Engineer            Akira Sato                             Hikaru Shirasawa  
 Mode                Tx,                                       2441 MHz  
                       Tx, Bluetooth, EDR, PRBS9

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.010	QP	45.1	14.5	7.7	32.1	35.2	43.5	8.3	229	197	
Hori.	272.005	QP	45.7	18.0	8.4	32.0	40.1	46.0	5.9	129	189	
Hori.	336.001	QP	47.5	14.8	8.7	32.0	39.0	46.0	7.0	100	200	
Hori.	352.002	QP	48.5	15.2	8.8	31.9	40.6	46.0	5.4	100	205	
Hori.	400.005	QP	47.1	16.4	9.0	32.0	40.5	46.0	5.5	100	222	
Hori.	4882.000	PK	51.7	31.2	6.9	41.1	48.7	73.9	25.2	133	162	
Hori.	7323.000	PK	46.1	36.8	8.6	41.4	50.1	73.9	23.8	100	0	
Hori.	9764.000	PK	43.6	38.5	9.5	38.9	52.7	73.9	21.2	100	0	
Hori.	12205.000	PK	43.6	39.3	10.8	39.3	54.4	73.9	19.5	100	0	
Hori.	4882.000	AV	41.7	31.2	6.9	41.1	38.7	53.9	15.2	133	162	
Hori.	7323.000	AV	35.1	36.8	8.6	41.4	39.1	53.9	14.8	100	0	
Hori.	9764.000	AV	32.5	38.5	9.5	38.9	41.6	53.9	12.3	100	0	
Hori.	12205.000	AV	32.0	39.3	10.8	39.3	42.8	53.9	11.1	100	0	
Vert.	80.223	QP	45.5	6.2	7.5	32.2	27.0	40.0	13.0	100	87	
Vert.	160.005	QP	44.5	15.2	7.8	32.1	35.4	43.5	8.1	100	173	
Vert.	4882.000	PK	54.5	31.2	6.9	41.1	51.5	73.9	22.4	100	206	
Vert.	7323.000	PK	46.5	36.8	8.6	41.4	50.5	73.9	23.4	100	0	
Vert.	9764.000	PK	43.9	38.5	9.5	38.9	53.0	73.9	20.9	100	0	
Vert.	12205.000	PK	43.3	39.3	10.8	39.3	54.1	73.9	19.8	100	0	
Vert.	4882.000	AV	42.6	31.2	6.9	41.1	39.6	53.9	14.3	100	206	
Vert.	7323.000	AV	35.1	36.8	8.6	41.4	39.1	53.9	14.8	100	0	
Vert.	9764.000	AV	32.3	38.5	9.5	38.9	41.4	53.9	12.5	100	0	
Vert.	12205.000	AV	32.6	39.3	10.8	39.3	43.4	53.9	10.5	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

\*Distance factor [dB](15GHz - 40GHz)= 20 x log ( 3.0[m] / 1.0[m] ) = 9.5 [dB]

## Radiated Emission

Test place                   UL Japan, Inc. Shonan EMC Lab.  
 Test room                   No.3 Semi Anechoic Chamber   No.3 Semi Anechoic Chamber  
 Date                         July 25, 2012                     July 26, 2012  
 Temperature / Humidity   25 deg.C , 66 %RH               22 deg.C , 39 %RH  
 Engineer                   Akira Sato                         Hikaru Shirasawa  
 Mode                        Tx,                                 2480 MHz  
                               Tx, Bluetooth, EDR, PRBS9

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	144.007	QP	44.7	14.5	7.7	32.1	34.8	43.5	8.7	131	215	
Hori.	272.004	QP	46.5	18.0	8.4	32.0	40.9	46.0	5.1	126	201	
Hori.	336.000	QP	47.6	14.8	8.7	32.0	39.1	46.0	6.9	100	202	
Hori.	352.003	QP	49.0	15.2	8.8	31.9	41.1	46.0	4.9	100	202	
Hori.	399.999	QP	45.8	16.3	9.0	32.0	39.1	46.0	6.9	100	194	
Hori.	2483.500	PK	44.5	27.5	14.3	41.4	44.9	73.9	29.0	100	0	
Hori.	4960.000	PK	48.7	31.4	6.9	41.0	46.0	73.9	27.9	100	7	
Hori.	7440.000	PK	47.4	37.0	8.8	41.5	51.7	73.9	22.2	100	0	
Hori.	9920.000	PK	43.6	38.8	9.7	38.9	53.2	73.9	20.7	100	0	
Hori.	12400.000	PK	43.6	39.4	10.8	39.3	54.5	73.9	19.4	100	0	
Hori.	2483.500	AV	34.6	27.5	14.3	41.4	35.0	53.9	18.9	100	0	
Hori.	4960.000	AV	36.3	31.4	6.9	41.0	33.6	53.9	20.3	100	7	
Hori.	7440.000	AV	35.6	37.0	8.8	41.5	39.9	53.9	14.0	100	0	
Hori.	9920.000	AV	31.5	38.8	9.7	38.9	41.1	53.9	12.8	100	0	
Hori.	12400.000	AV	31.8	39.4	10.8	39.3	42.7	53.9	11.2	100	0	
Vert.	80.428	QP	46.0	6.2	7.5	32.2	27.5	40.0	12.5	100	134	
Vert.	160.008	QP	43.8	15.2	7.8	32.1	34.7	43.5	8.8	100	148	
Vert.	2483.500	PK	45.8	27.5	14.3	41.4	46.2	73.9	27.7	169	200	
Vert.	4960.000	PK	50.2	31.4	6.9	41.0	47.5	73.9	26.4	100	7	
Vert.	7440.000	PK	46.2	37.0	8.8	41.5	50.5	73.9	23.4	100	0	
Vert.	9920.000	PK	42.3	38.8	9.7	38.9	51.9	73.9	22.0	100	0	
Vert.	12400.000	PK	43.5	39.4	10.8	39.3	54.4	73.9	19.5	100	0	
Vert.	2483.500	AV	34.7	27.5	14.3	41.4	35.1	53.9	18.8	169	200	
Vert.	4960.000	AV	40.5	31.4	6.9	41.0	37.8	53.9	16.1	100	7	
Vert.	7440.000	AV	34.6	37.0	8.8	41.5	38.9	53.9	15.0	100	0	
Vert.	9920.000	AV	31.4	38.8	9.7	38.9	41.0	53.9	12.9	100	0	
Vert.	12400.000	AV	31.8	39.4	10.8	39.3	42.7	53.9	11.2	100	0	

Result = Reading + Ant Factor + Loss(Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)  
 \*Distance factor [dB](15GHz - 40GHz)= 20 x log (3.0[m] / 1.0[m]) = 9.5 [dB]

## Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

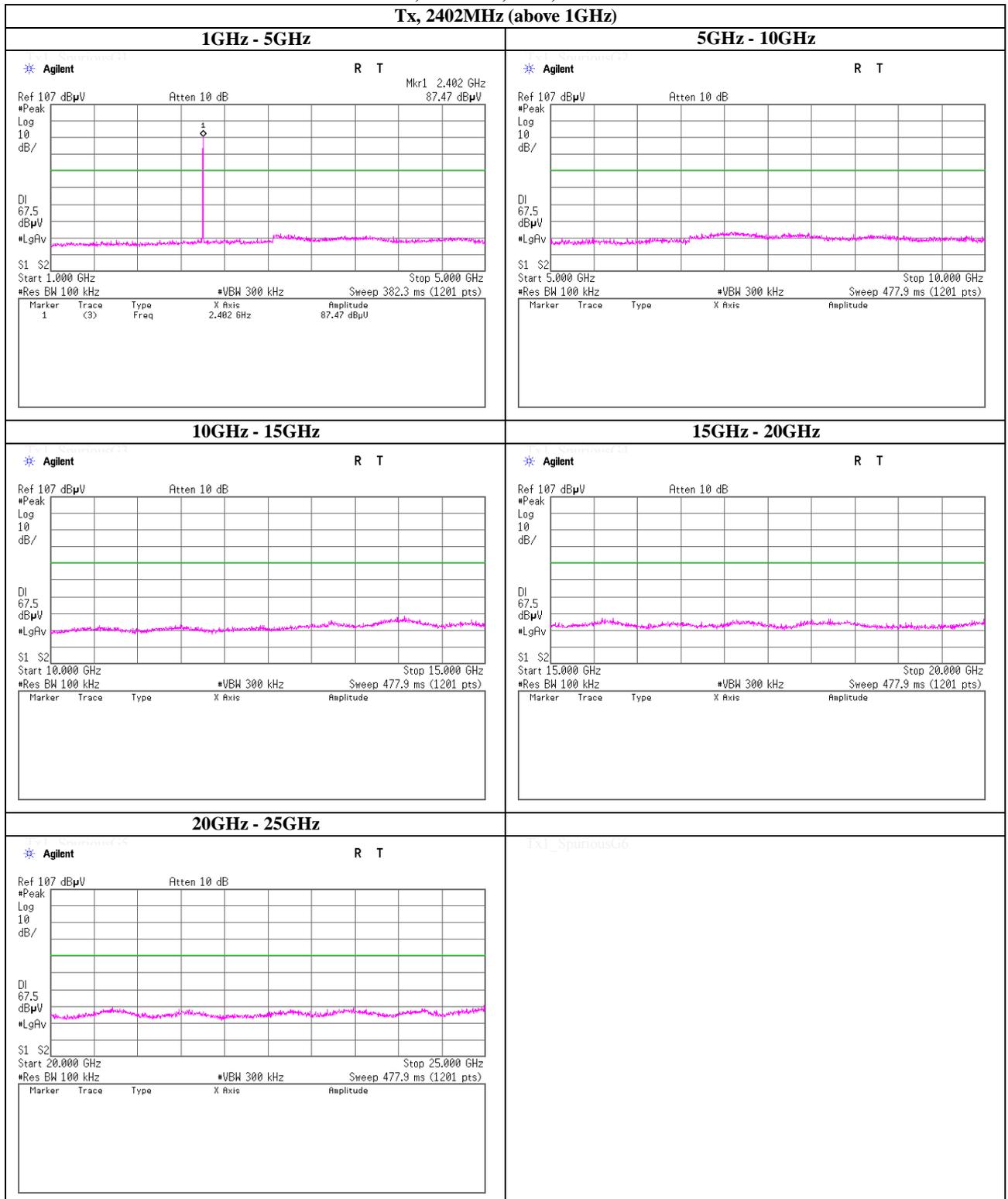
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2402MHz (above 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2441MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

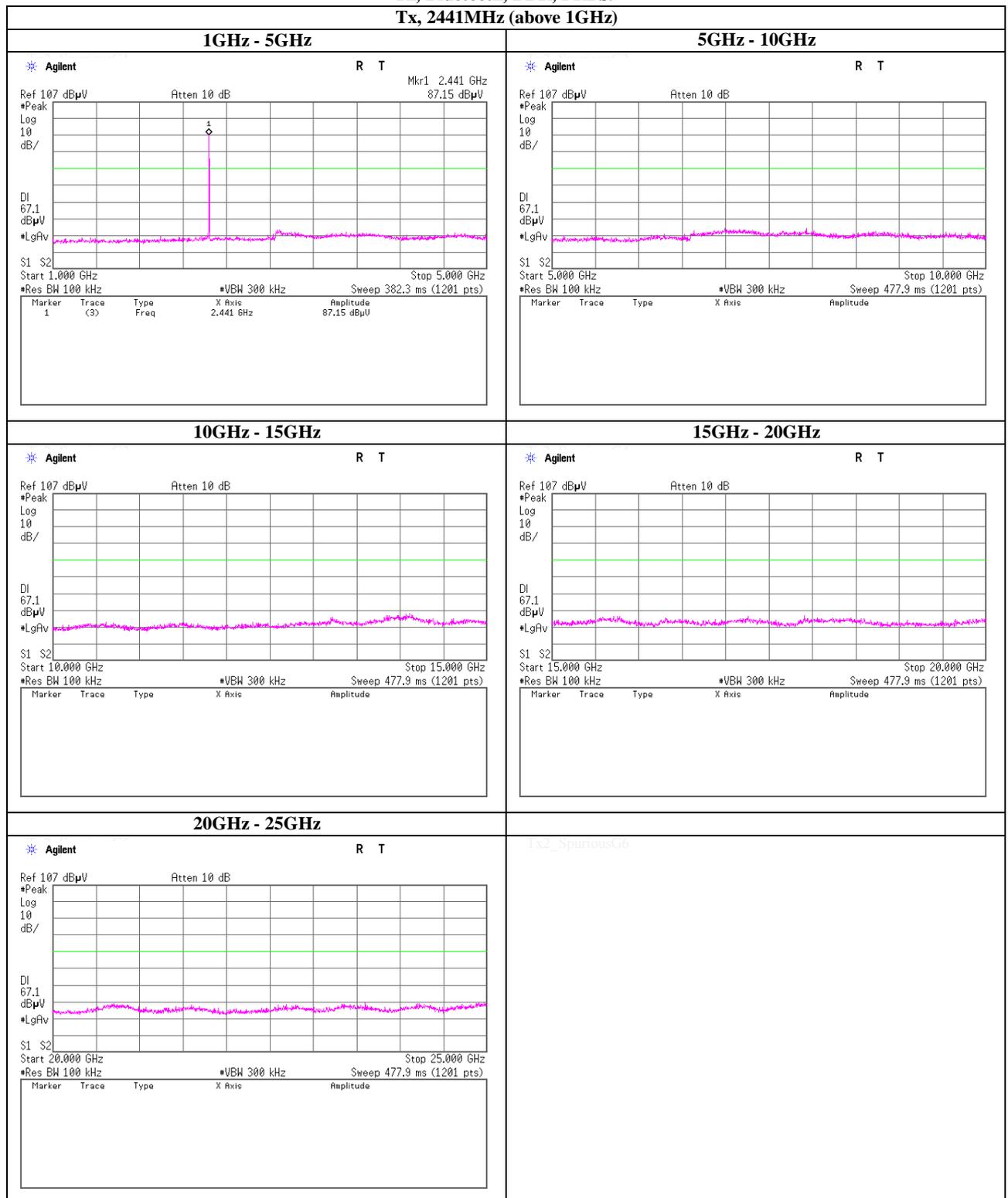
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2441MHz (above 1GHz)**



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

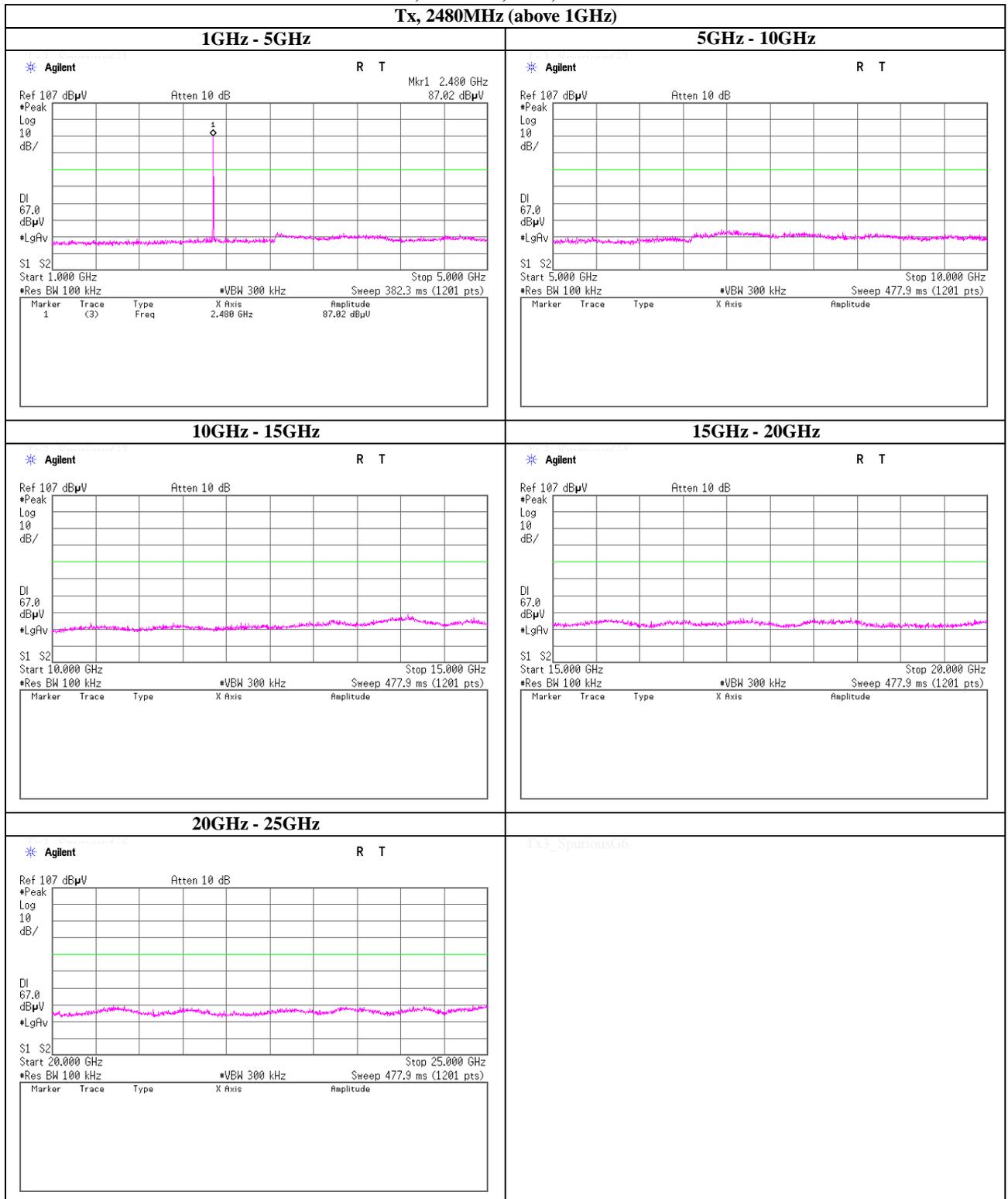
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9

Tx, 2480MHz (above 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

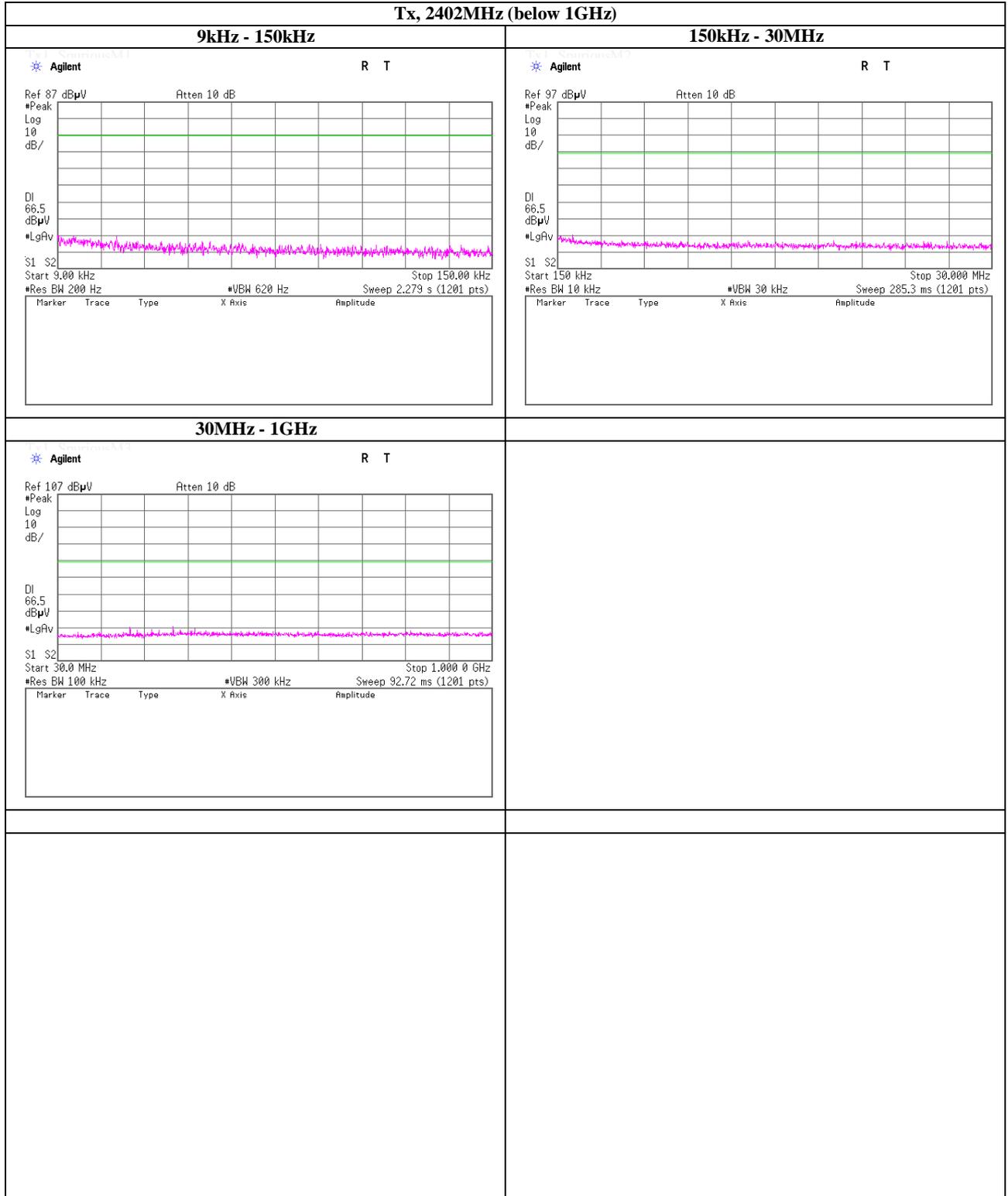
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

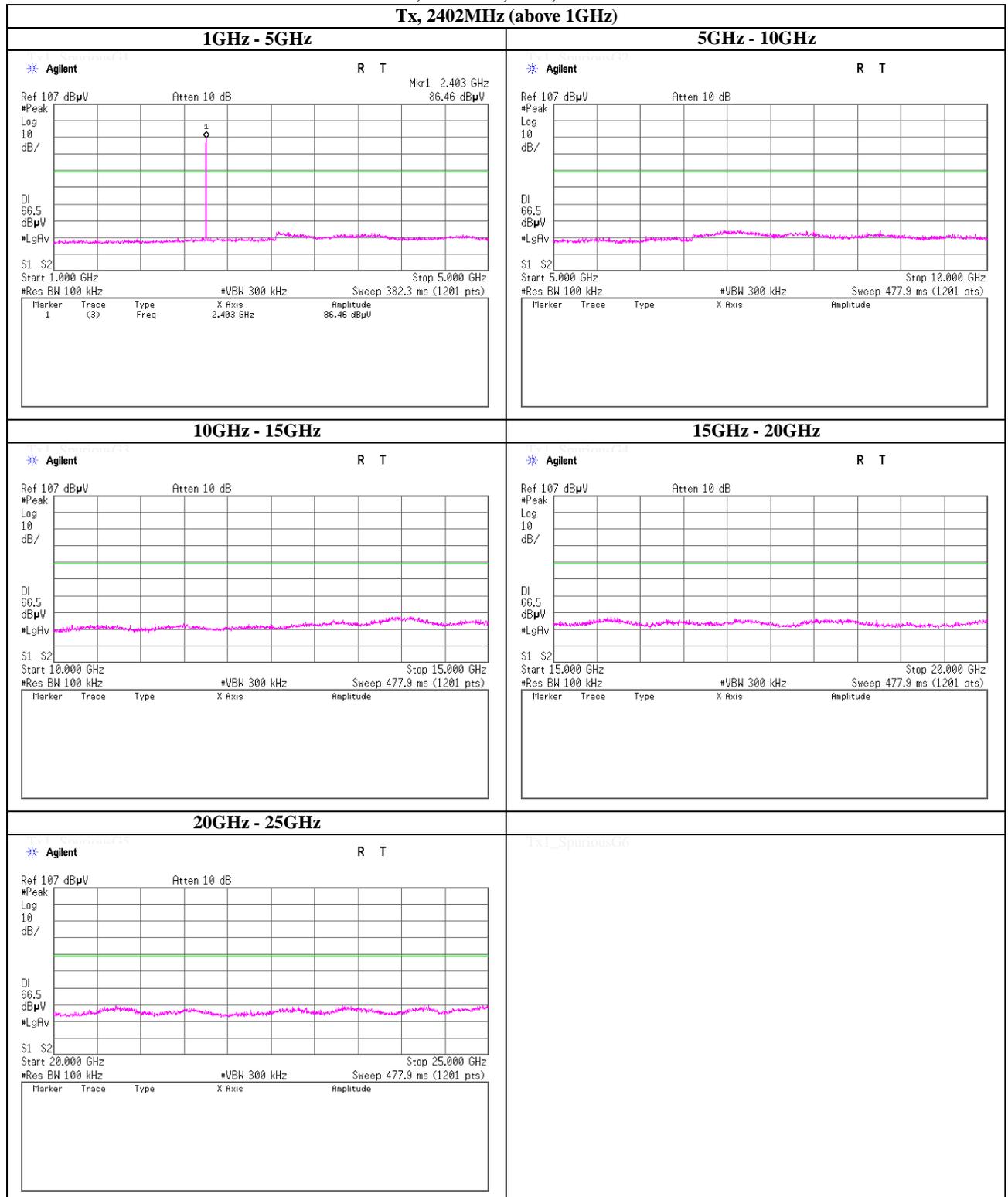
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (above 1GHz)



UL Japan, Inc.

Shonan EMC Lab.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

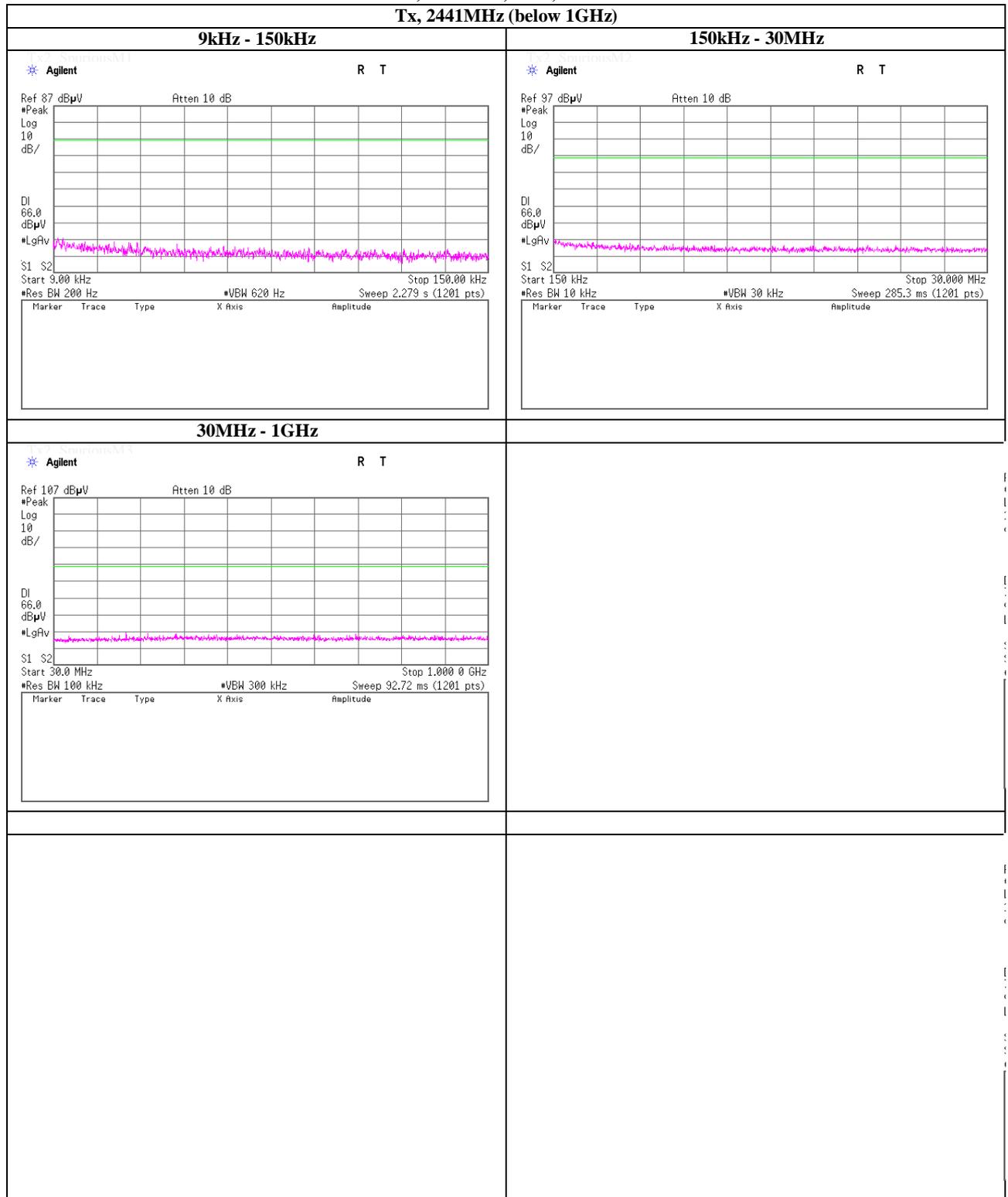
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

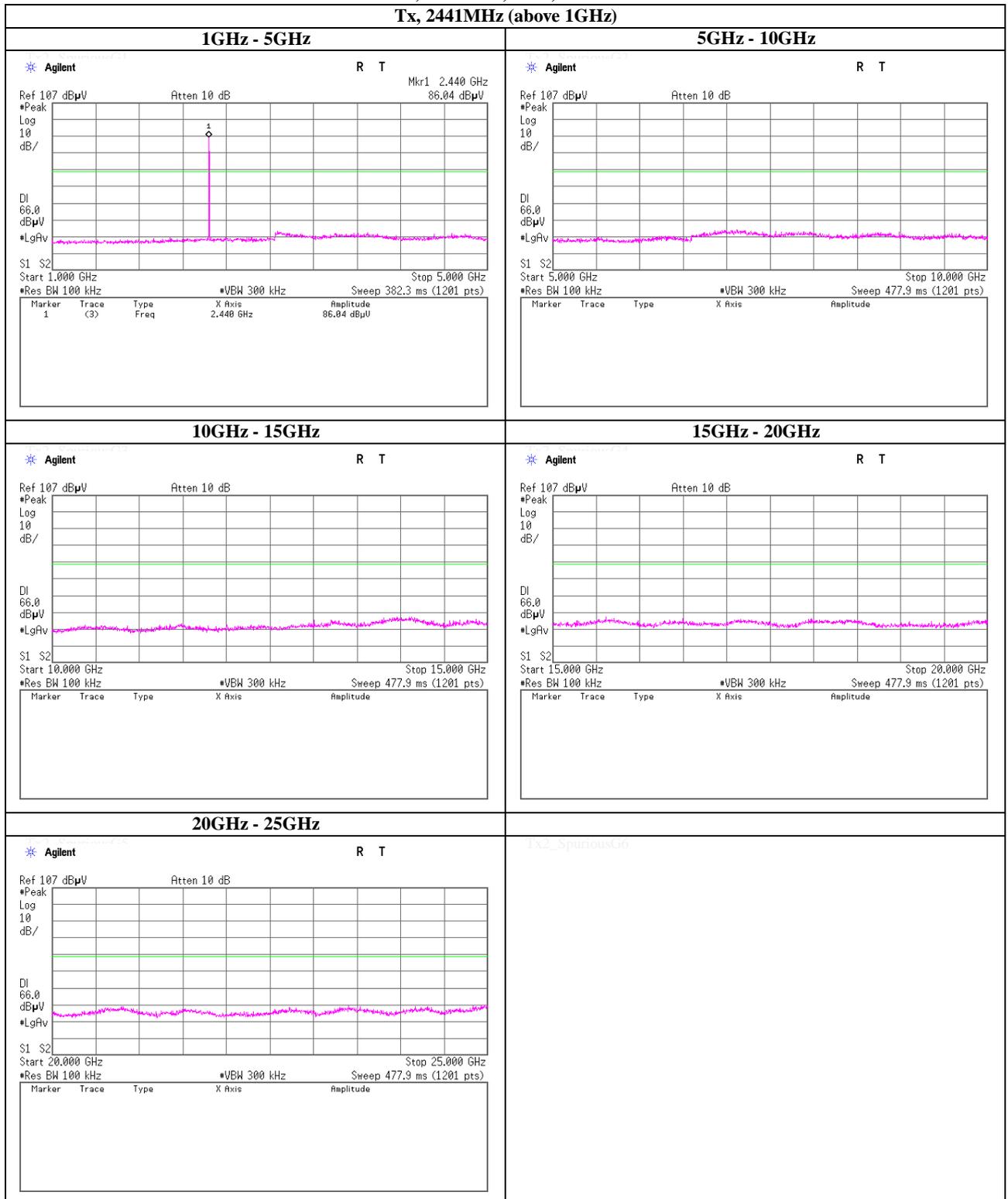
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (above 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

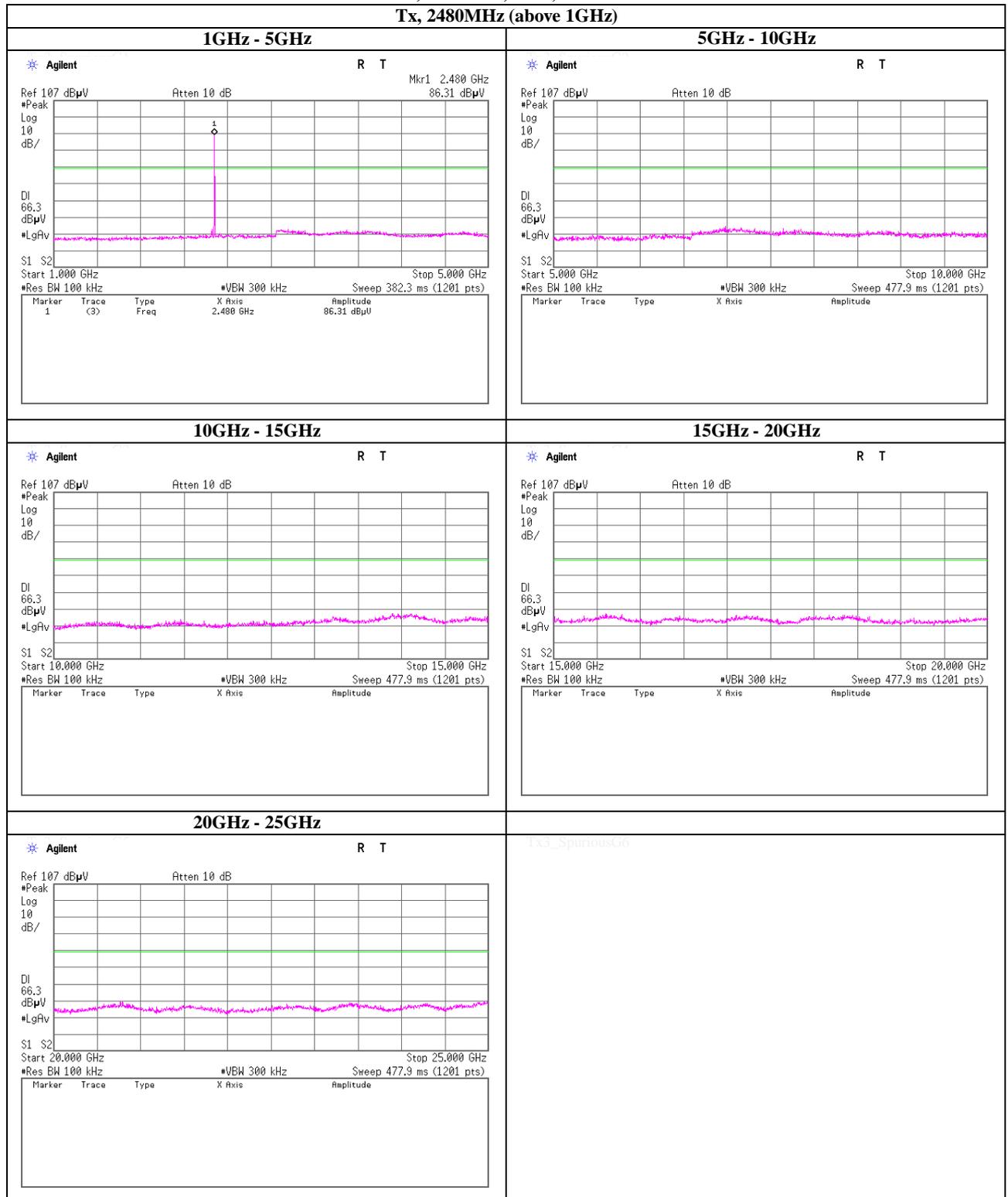
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (above 1GHz)



**UL Japan, Inc.**

**Shonan EMC Lab.**

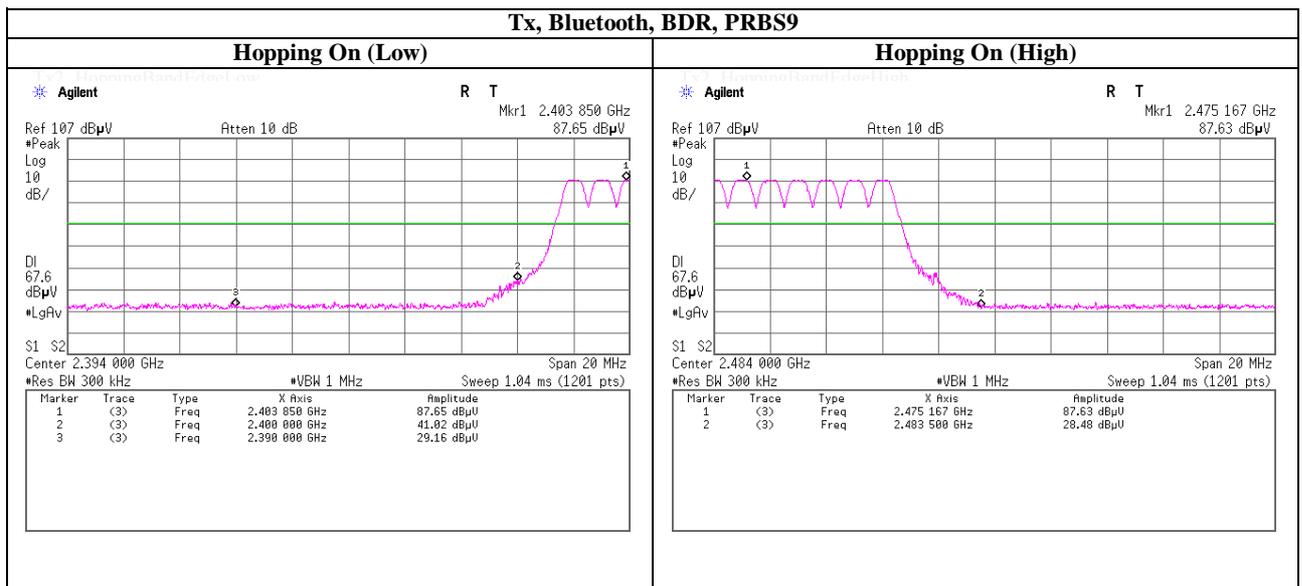
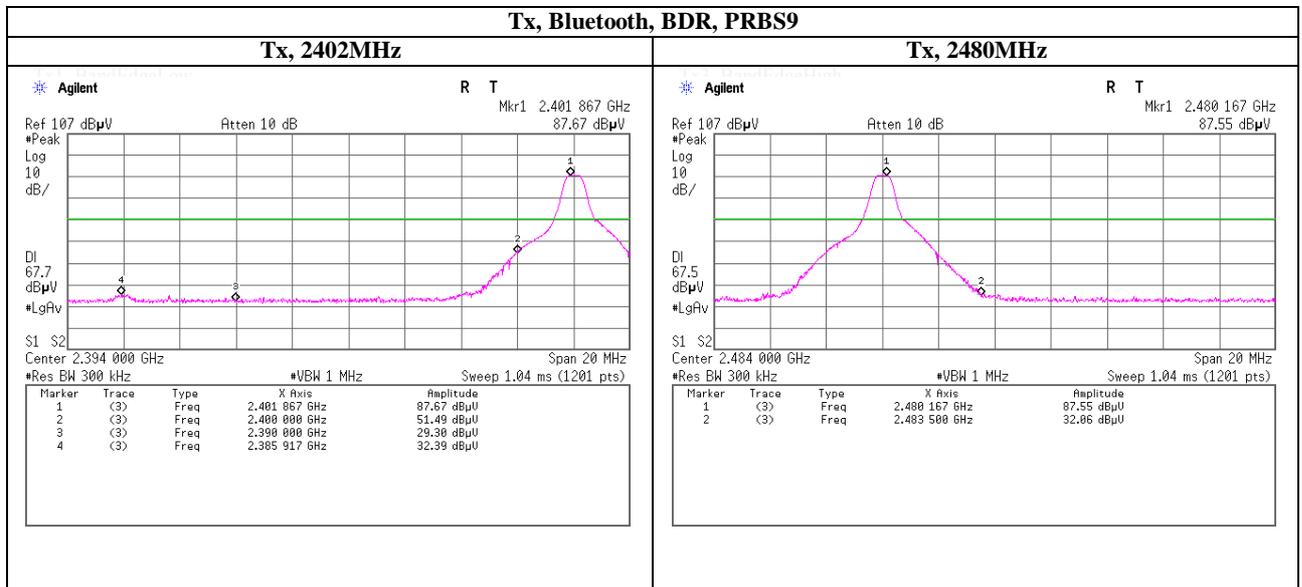
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

### Band Edge compliance



**UL Japan, Inc.**

**Shonan EMC Lab.**

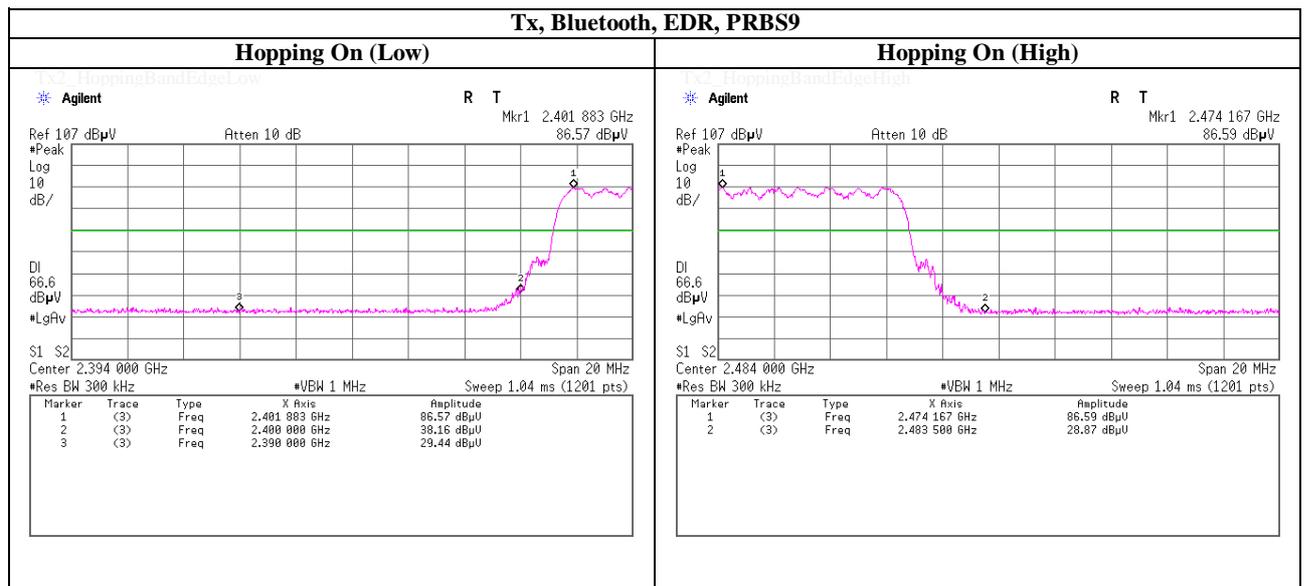
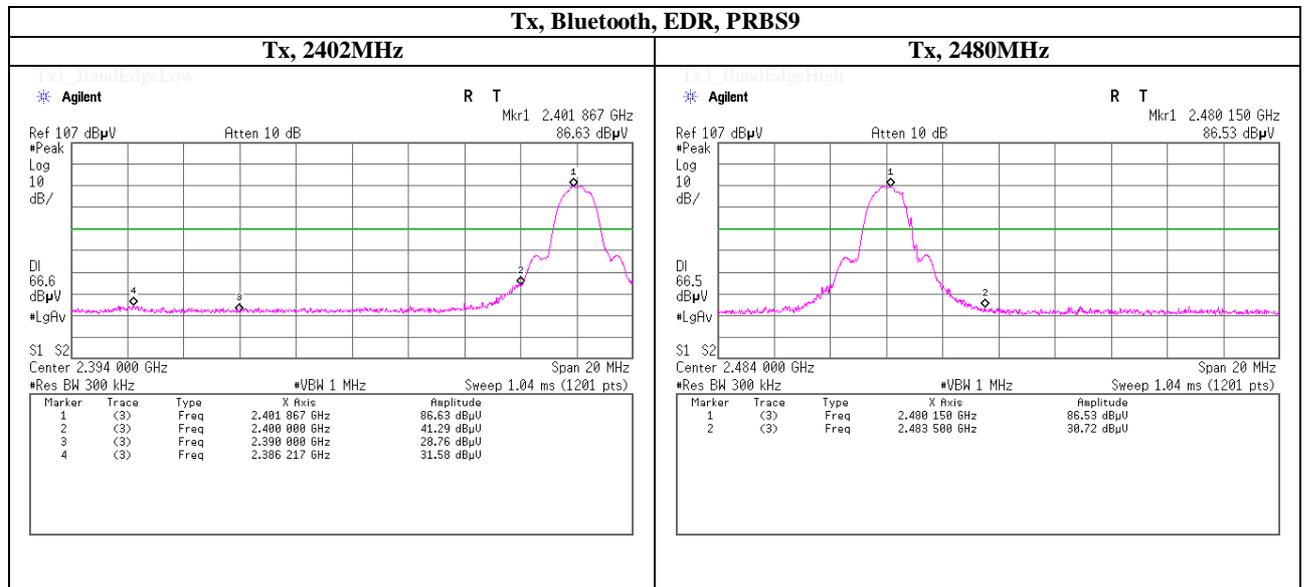
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Spurious emission (Conducted)

### Band Edge compliance



**UL Japan, Inc.**

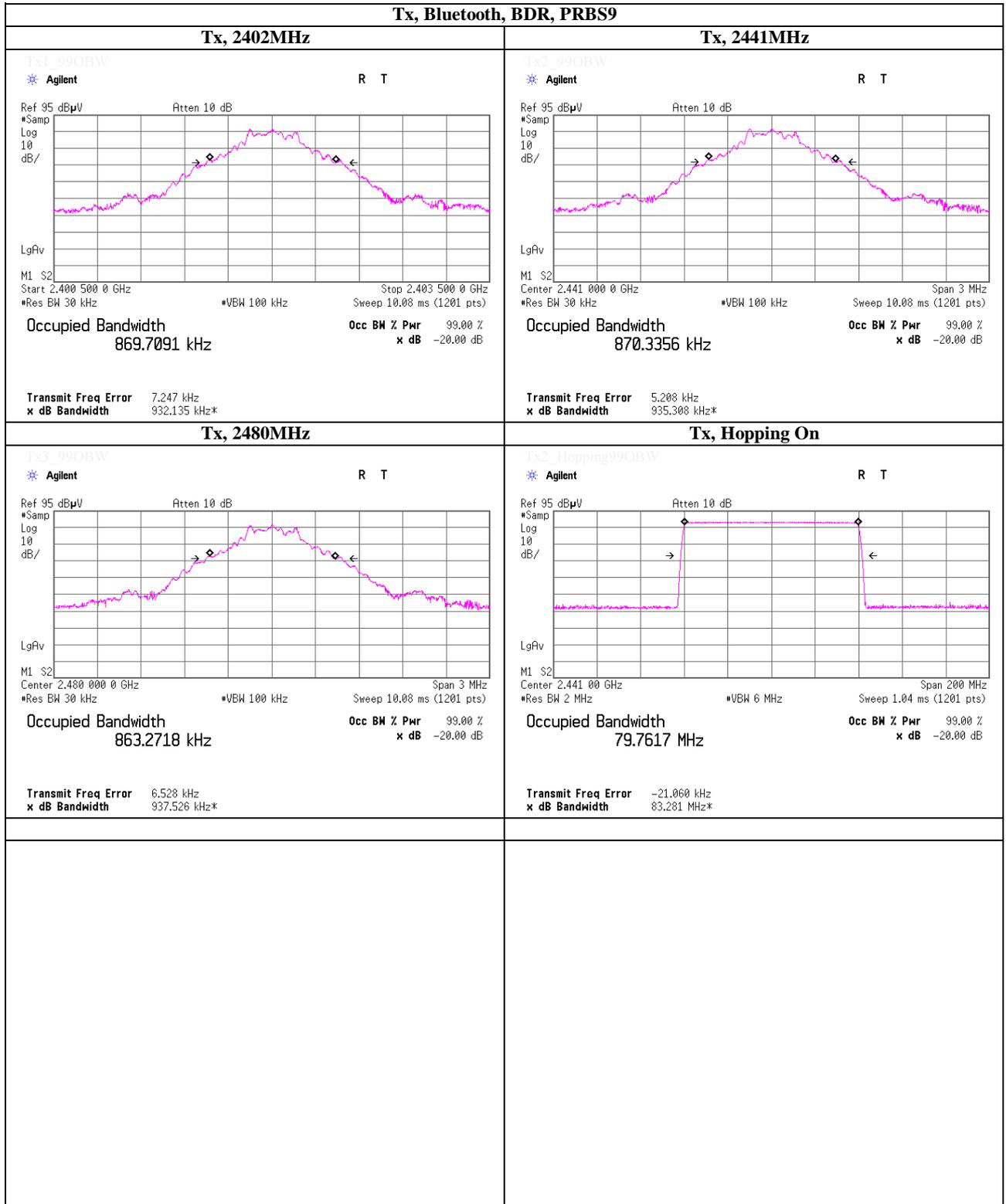
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### 99% Occupied Bandwidth



**UL Japan, Inc.**

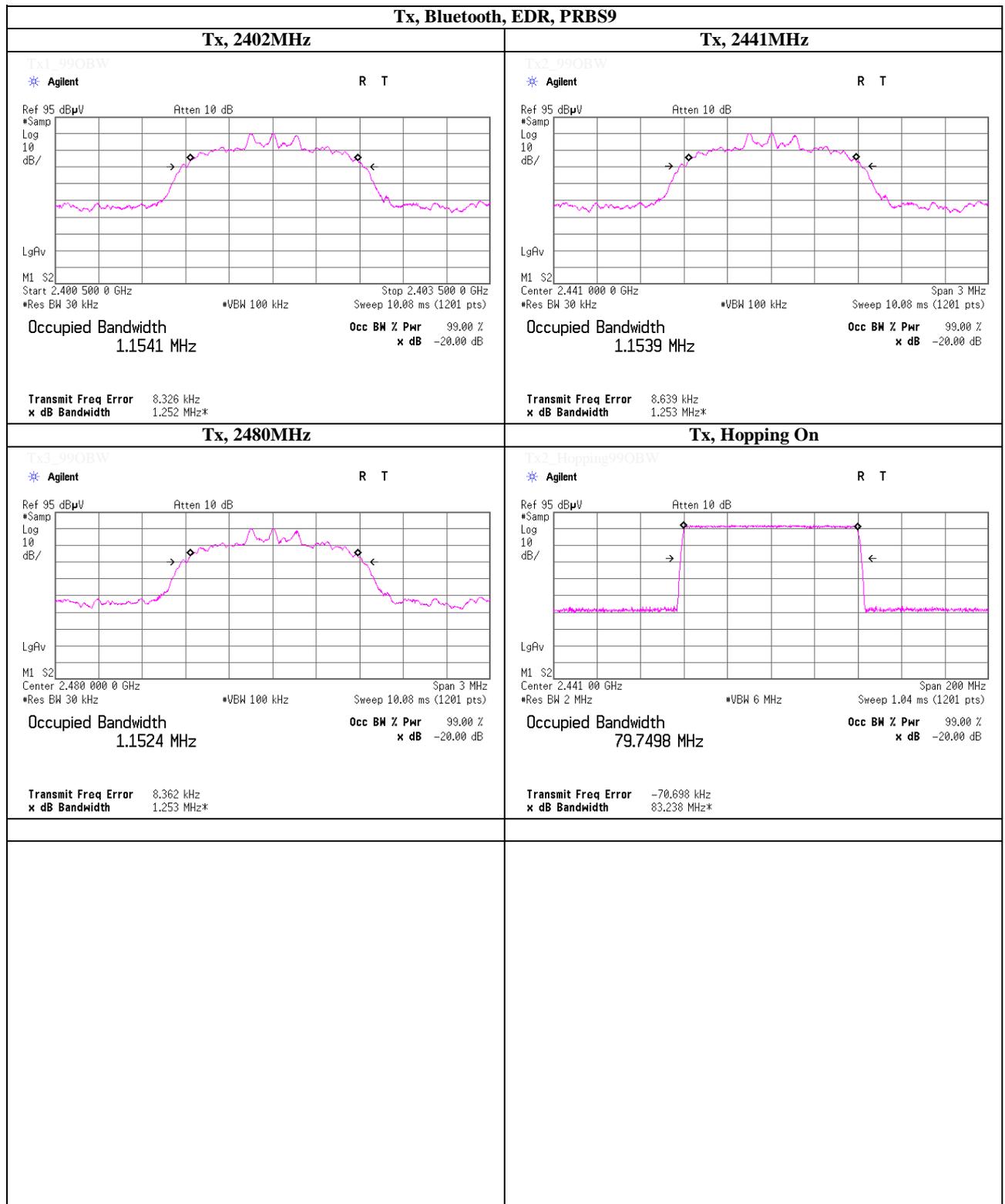
**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### 99% Occupied Bandwidth



**UL Japan, Inc.**

**Shonan EMC Lab.**

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

**APPENDIX 2**  
**Test Instruments**

**EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2011/12/05 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12
SAT20-03	Attenuator	Agilent	8493C-020	74891	AT	2012/03/12 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2012/02/10 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2011/10/23 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2012/04/10 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2011/10/23 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE/CE	2012/02/07 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE/CE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF,IMF)	-	RE/CE	-
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2012/02/16 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2011/08/28 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2012/03/16 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2012/04/10 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE	2012/02/28 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2012/02/23 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2012/03/26 * 12
STM-01	Terminator	TME	CT-01 BP	-	CE	2012/01/05 * 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 :**

- CE: Conducted emission ,**
- RE: Radiated emission ,**
- AT: Antenna terminal conducted test**