




# RADIO TEST REPORT

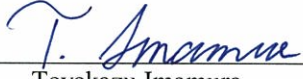
**Test Report No.: 33CE0267-SH-02-B**

**Applicant** : Toshiba Corporation  
**Type of Equipment** : Notebook Computer  
**Model No.** : Satellite U930  
**FCC ID** : CJ6UPSU7FPC1  
**Test regulation** : FCC Part15 Subpart C: 2012  
**Test result** : Complied

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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.
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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:** November 15 to 22, 2012

**Tested by:**   
Kenichi Adachi  
Engineer of WiSE Japan,  
UL Verification Service

**Approved by :**   
Toyokazu Imamura  
Leader of WiSE Japan,  
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".



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13-EM-F0429



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## **SECTION 1: Customer information**

Company Name : Toshiba Corporation  
Address : 2-9, Suehiro-cho, Ome-shi, Tokyo, 198-8710 Japan  
Telephone Number : +81 42 834 1050  
Facsimile Number : +81 42 830 7331  
Contact Person : Toshiyuki Echigo

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

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

Type of Equipment : Notebook Computer  
Model Number : Satellite U930  
Serial Number : Refer to 4.2 in this report.  
Rating : DC19V  
Country of Mass-production : China  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)  
Receipt Date of Sample : November 14, 2012  
Modification of EUT : No modification by the test lab.

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## 2.2 Product description

Model: Satellite U930 (referred to as the EUT in this report) is a Notebook Computer.

Derived models of the EUT:

Model	Touch screen function
Satellite U930 (EUT)	-
Satellite U930t	Yes
Satellite U935	-
Satellite U935t	Yes

Model: Satellite U930/ Satellite U930t has a different sales channel with Satellite U935/Satellite U935t.

Clock frequency(ies) in the system : 40MHz (XTAL)

Radio specification:

Bluetooth:

Equipment type : Transceiver  
Frequency of operation : 2402-2480MHz  
Bandwidth : 79MHz  
Channel spacing : 1MHz (BDR/EDR mode), 2MHz (Low Energy mode)  
Type of modulation : FHSS, DSSS  
Antenna type : PIFA  
Antenna gain with cable loss : 3.24dBi  
Antenna connector type : U.FL  
ITU code : F1D, G1D  
Operation temperature range : 0 to +80 deg.C

Refer to the test report: 33CE0267-SH-02-C for Bluetooth part (Low Energy mode).

When Bluetooth is used, IEEE 802.11 b/g/n is not transmitted.

Wireless LAN:

Equipment type : Transceiver  
Frequency of operation : 2412-2462MHz (IEEE 802.11b, 11g, 11n (HT20))  
2422-2452MHz (IEEE 802.11n (HT40))  
Bandwidth : 20MHz (IEEE 802.11b/g/n), 40MHz (IEEE 802.11n)  
Channel spacing : 5MHz  
Type of modulation : DSSS, OFDM  
Antenna type : PIFA  
Antenna gain with cable loss : 3.24dBi  
Antenna connector type : U.FL  
ITU code : D1D, G1D  
Operation temperature range : 0 to +80 deg.C

Refer to the test report: 33CE0267-SH-02-A for Wireless LAN part.

FCC 15.31 (e)

The EUT provides stable voltage (DC3.3V) constantly to the wireless transmitter regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203

The EUT has a unique coupling/antenna connector (U.FL). Therefore the equipment complies with the requirement.

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

Test specification : FCC Part 15 Subpart C: 2012, final revised on August 13, 2012 and effective September 12, 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 EUT will be tested for compliance with FCC Part 15 Subpart B by the customer.

**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	12.9dB Freq.: 0.15MHz Detection: Quasi-Peak Phase: L1 Mode: Tx 2402MHz, 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		7.5dB Freq.: 2521.220MHz Polarization: Vertical Detection: Average Mode: Tx 2441MHz, DH5	Complied
Note: UL Japan's Work Procedures No. 13-EM-W0420 and 13-EM-W0422							

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### 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) LISN</b>	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	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 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	4.6 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 the site margin.

#### Radiated emission test

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

#### 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%

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### 3.5 Test location

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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 checked="" 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 checked="" 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 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	-
<input checked="" type="checkbox"/> No.7 shielded room	-	-	2.76 x 3.76 x 2.4	2.76 x 3.76	-

### 3.6 Test setup, Test data & Test instruments

Refer to APPENDIX 1 to 3.

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## **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>
Conducted emission	Transmitting (DH5/3-DH5), Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Carrier frequency separation	Transmitting Hopping ON (DH5/3-DH5) / Paging Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5/3-DH5) / Paging Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5/3-DH5) / Paging Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 -DH1, -DH3, -DH5 -3-DH1, -3-DH3, -3-DH5 -Paging	-
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: Power target: 8 (dBm)

Test software: DRTU version 1.5.7.0432 (Intel)

Antenna port used: AUX (Bluetooth is transmitted from this port only.)

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

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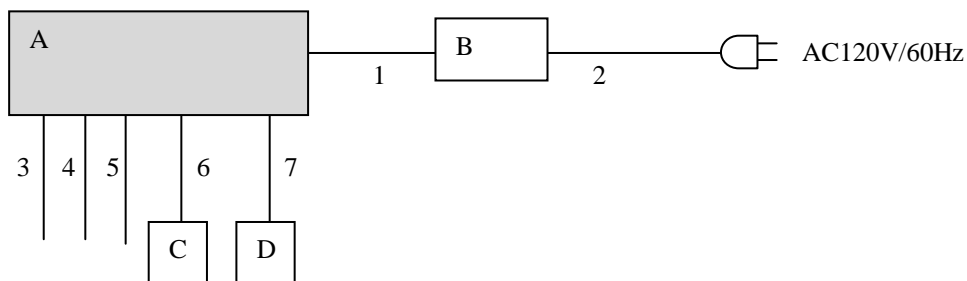
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## 4.2 Configuration and peripherals



\* Test data was taken under worse case conditions.

### Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Notebook Computer	Satellite U930	*1)	Toshiba	EUT *2)
B	AC Adaptor	PA5096U-1ACA	G71C000FF1100	Toshiba	-
C	Mouse	MO28UOL	453859	Lenovo	-
D	Headphones	HP-H500N	-	AudioComm	-

\*1) XC125734H: Maximum peak output power test, XC125724H: Other test

\*2) Intel® Centrino® Wireless-N 2230 (Model: 2230BNHMW, FCC ID: PD92230BNH) is installed in the EUT.

### List of cables used

No.	Cable Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC	1.7	Unshielded	Unshielded	-
2	AC	1.7	Unshielded	Unshielded	-
3	HDMI	3.0	Shielded	Shielded	-
4	USB	2.0	Shielded	Shielded	-
5	USB	1.8	Shielded	Shielded	-
6	Audio	1.2	Unshielded	Unshielded	-
7	Mouse	1.8	Unshielded	Unshielded	-

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## **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, 1m 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 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.

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 within a Shielded room.

The EUT was connected to a Line Impedance Stabilization Network (LISN).

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

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## **SECTION 6: Radiated emission**

### **6.1 Operating environment**

Test room : See test data (APPENDIX)  
Temperature : See test data (APPENDIX)  
Humidity : See test data (APPENDIX)

### **6.2 Test configuration**

EUT was placed on a urethane platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. The rear of EUT was aligned and flushed with rear of tabletop.  
Photographs of the set up are shown in APPENDIX 3.

### **6.3 Test conditions**

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

### **6.4 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	
Detection Type	: Quasi-Peak	Peak	* Average
IF Bandwidth	: 120kHz	RBW:1MHz/VBW:3MHz	RBW:1MHz/VBW:10Hz

\* 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 carrier level and noise levels were confirmed at each tilt angle of LCD of EUT to see the angle of maximum noise, and the test was made at the tilt angle of 90 deg. that has the maximum noise.

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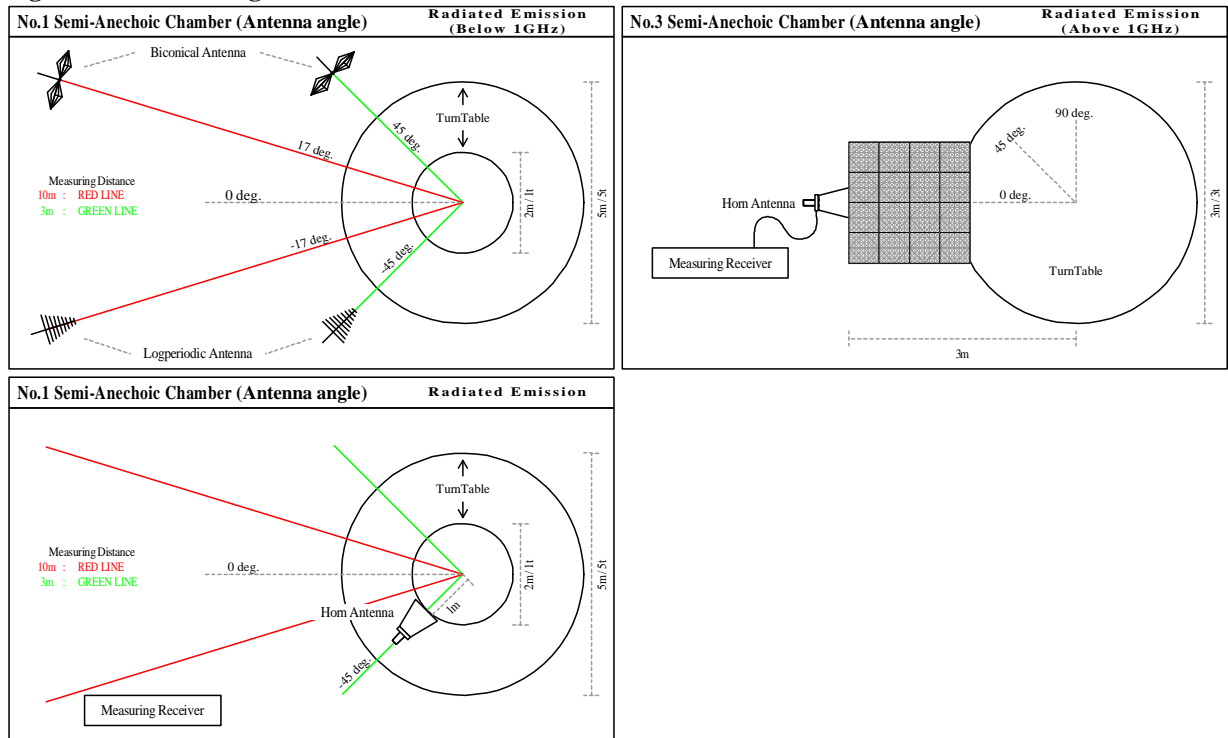
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**Figure 1. Antenna angle**



## 6.5 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.

## 6.6 Results

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

Refer to APPENDIX

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## **SECTION 7: 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

## **SECTION 8: 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

## **SECTION 9: 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

## **SECTION 10: 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

## **SECTION 11: 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

## **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

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## **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

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APPENDIX 1: Data of Radio tests

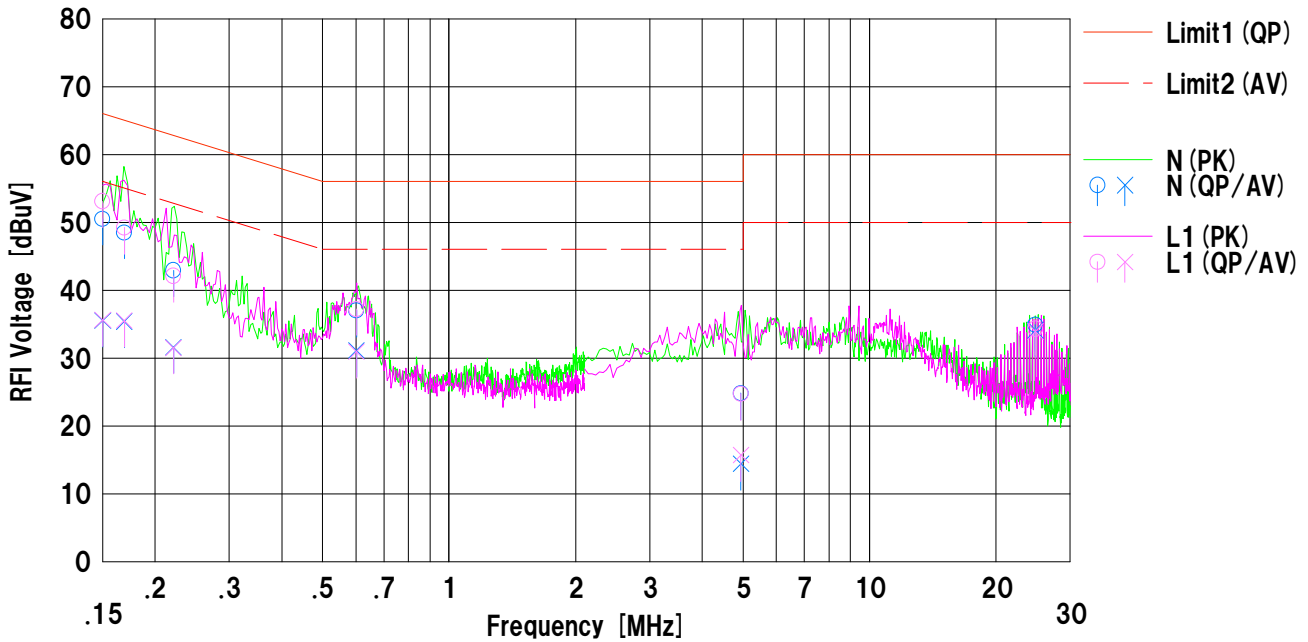
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, DH5, Tx 2402MHz  
 Report No. : 33CE0267-SH-02-B  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]				
1	0.15000	37.8	22.8	12.7	50.5	35.5	66.0	56.0	15.5	20.5	N	
2	0.16900	35.8	22.7	12.7	48.5	35.4	65.0	55.0	16.5	19.6	N	
3	0.22100	30.2	18.9	12.7	42.9	31.6	62.7	52.7	19.8	21.1	N	
4	0.60200	24.3	18.4	12.7	37.0	31.1	56.0	46.0	19.0	14.9	N	
5	4.94300	11.8	1.4	13.0	24.8	14.4	56.0	46.0	31.2	31.6	N	
6	24.77473	21.2	20.4	13.7	34.9	34.1	60.0	50.0	25.1	15.9	N	
7	0.15000	40.4	22.9	12.7	53.1	35.6	66.0	56.0	12.9	20.4	L1	
8	0.16900	36.5	22.8	12.7	49.2	35.5	65.0	55.0	15.8	19.5	L1	
9	0.22100	29.4	18.8	12.7	42.1	31.5	62.7	52.7	20.6	21.2	L1	
10	0.60200	24.5	18.2	12.7	37.2	30.9	56.0	46.0	18.8	15.1	L1	
11	4.94300	11.7	2.7	13.0	24.7	15.7	56.0	46.0	31.3	30.3	L1	
12	24.79319	20.6	20.2	13.7	34.3	33.9	60.0	50.0	25.7	16.1	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
 LISN: SLS-01



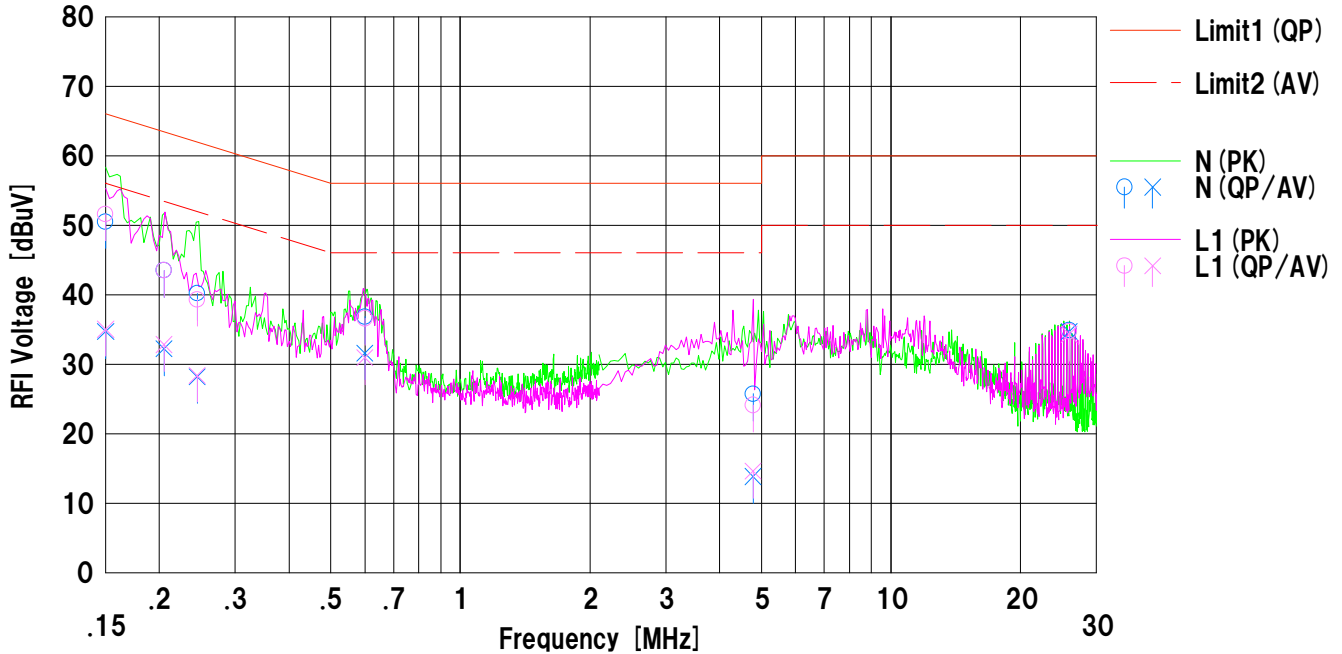
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, DH5, Tx 2441MHz  
Report No. : 33CE0267-SH-02-B  
Power : AC 120V / 60Hz  
Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



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	0.15000	37.8	22.0	12.7	50.5	34.7	66.0	56.0	15.5	21.3	N	
2	0.20500	30.8	19.5	12.7	43.5	32.2	63.4	53.4	19.9	21.2	N	
3	0.24500	27.5	15.5	12.7	40.2	28.2	61.9	51.9	21.7	23.7	N	
4	0.60000	24.1	18.9	12.7	36.8	31.6	56.0	46.0	19.2	14.4	N	
5	4.78500	12.8	0.9	12.9	25.7	13.8	56.0	46.0	30.3	32.2	N	
6	25.93616	21.1	20.9	13.8	34.9	34.7	60.0	50.0	25.1	15.3	N	
7	0.15000	38.9	22.3	12.7	51.6	35.0	66.0	56.0	14.4	21.0	L1	
8	0.20500	30.8	20.1	12.7	43.5	32.8	63.4	53.4	19.9	20.6	L1	
9	0.24500	26.6	15.7	12.7	39.3	28.4	61.9	51.9	22.6	23.5	L1	
10	0.60000	23.9	18.2	12.7	36.6	30.9	56.0	46.0	19.4	15.1	L1	
11	4.78500	11.2	1.7	12.9	24.1	14.6	56.0	46.0	31.9	31.4	L1	
12	25.93616	20.9	20.5	13.8	34.7	34.3	60.0	50.0	25.3	15.7	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-01

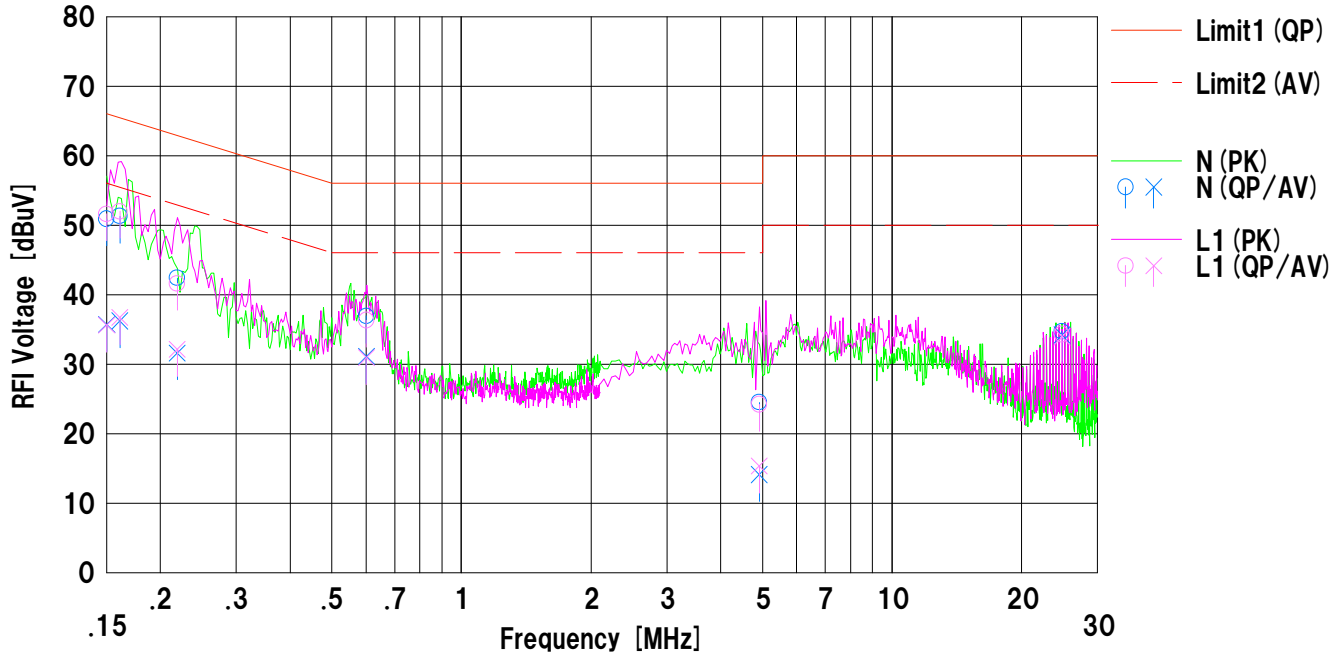
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, DH5, Tx 2480MHz  
 Report No. : 33CE0267-SH-02-B  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



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	0.15000	38.2	230	12.7	50.9	35.7	66.0	56.0	15.1	20.3	N	
2	0.16100	38.6	235	12.7	51.3	36.2	65.4	55.4	14.1	19.2	N	
3	0.21900	29.7	189	12.7	42.4	31.6	62.8	52.8	20.4	21.2	N	
4	0.60100	24.2	184	12.7	36.9	31.1	56.0	46.0	19.1	14.9	N	
5	4.91500	11.5	1.1	13.0	24.5	14.1	56.0	46.0	31.5	31.9	N	
6	24.77523	21.0	205	13.7	34.7	34.2	60.0	50.0	25.3	15.8	N	
7	0.15000	38.9	229	12.7	51.6	35.6	66.0	56.0	14.4	20.4	L1	
8	0.16100	39.3	240	12.7	52.0	36.7	65.4	55.4	13.4	18.7	L1	
9	0.21900	28.9	194	12.7	41.6	32.1	62.8	52.8	21.2	20.7	L1	
10	0.60100	23.6	182	12.7	36.3	30.9	56.0	46.0	19.7	15.1	L1	
11	4.91500	11.2	2.3	13.0	24.2	15.3	56.0	46.0	31.8	30.7	L1	
12	24.77307	20.6	202	13.7	34.3	33.9	60.0	50.0	25.7	16.1	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]  
 LISN: SLS-01

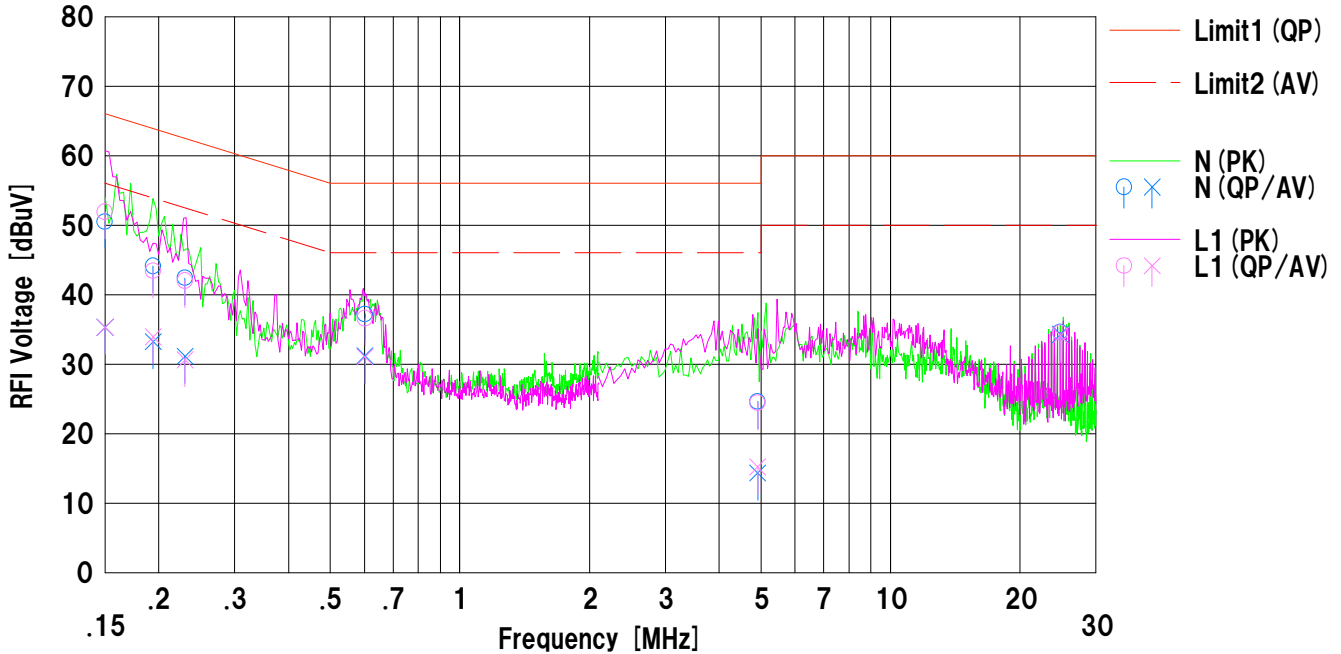
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, 3-DH5, Tx 2402MHz  
 Report No. : 33CE0267-SH-02-B  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



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	0.15000	37.8	22.6	12.7	50.5	35.3	66.0	56.0	15.5	20.7	N	
2	0.19400	31.4	20.5	12.7	44.1	33.2	63.8	53.8	19.7	20.6	N	
3	0.23000	29.7	18.4	12.7	42.4	31.1	62.4	52.4	20.0	21.3	N	
4	0.60200	24.5	18.5	12.7	37.2	31.2	56.0	46.0	18.8	14.8	N	
5	4.91600	11.6	1.3	13.0	24.6	14.3	56.0	46.0	31.4	31.7	N	
6	24.77317	20.9	20.6	13.7	34.6	34.3	60.0	50.0	25.4	15.7	N	
7	0.15000	39.2	22.6	12.7	51.9	35.3	66.0	56.0	14.1	20.7	L1	
8	0.19400	30.7	21.2	12.7	43.4	33.9	63.8	53.8	20.4	19.9	L1	
9	0.23000	29.3	17.9	12.7	42.0	30.6	62.4	52.4	20.4	21.8	L1	
10	0.60200	23.9	18.3	12.7	36.6	31.0	56.0	46.0	19.4	15.0	L1	
11	4.91600	11.4	2.2	13.0	24.4	15.2	56.0	46.0	31.6	30.8	L1	
12	24.77462	20.8	20.4	13.7	34.5	34.1	60.0	50.0	25.5	15.9	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
 LISN: SLS-01

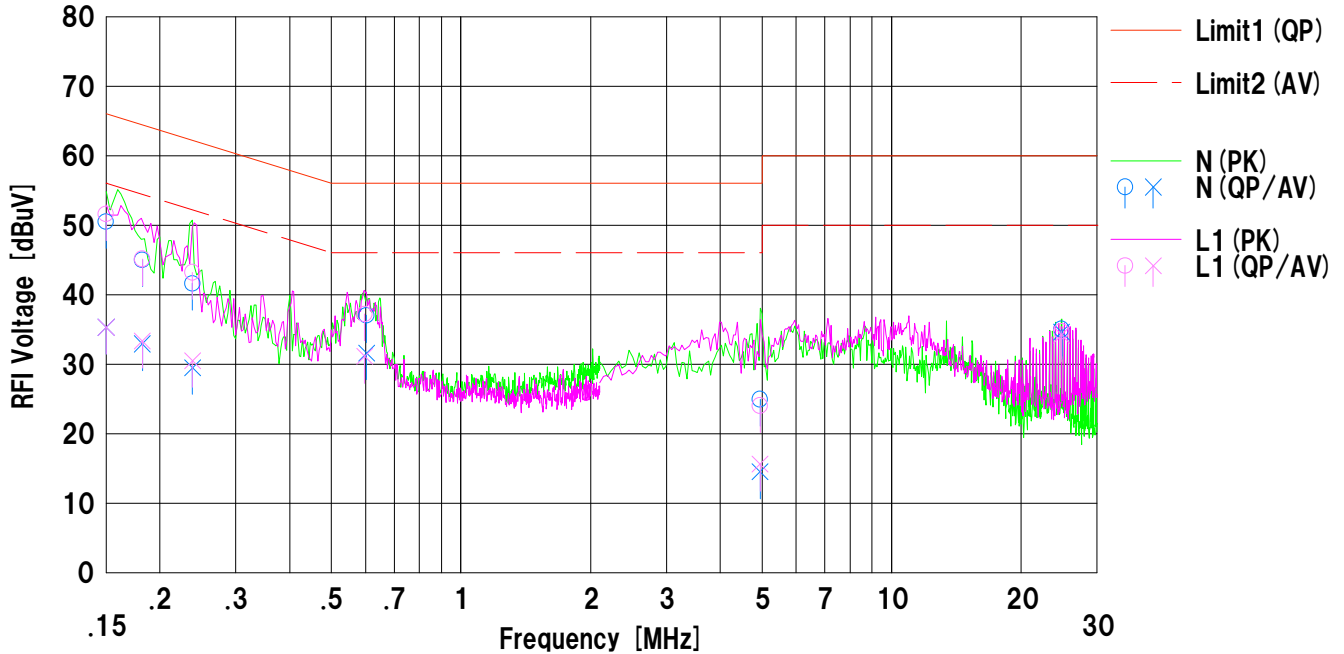
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, 3-DH5, Tx 2441MHz  
 Report No. : 33CE0267-SH-02-B  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



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	0.15000	37.8	22.6	12.7	50.5	35.3	66.0	56.0	15.5	20.7	N	
2	0.18200	32.3	20.2	12.7	45.0	32.9	64.3	54.3	19.3	21.4	N	
3	0.23800	28.9	16.8	12.7	41.6	29.5	62.1	52.1	20.5	22.6	N	
4	0.60300	24.3	18.9	12.7	37.0	31.6	56.0	46.0	19.0	14.4	N	
5	4.94600	11.9	1.5	13.0	24.9	14.5	56.0	46.0	31.1	31.5	N	
6	24.80803	21.3	20.9	13.7	35.0	34.6	60.0	50.0	25.0	15.4	N	
7	0.15000	38.9	22.6	12.7	51.6	35.3	66.0	56.0	14.4	20.7	L1	
8	0.18200	32.4	20.6	12.7	45.1	33.3	64.3	54.3	19.2	21.0	L1	
9	0.23800	30.5	17.8	12.7	43.2	30.5	62.1	52.1	18.9	21.6	L1	
10	0.59700	24.5	18.4	12.7	37.2	31.1	56.0	46.0	18.8	14.9	L1	
11	4.94600	11.0	2.6	13.0	24.0	15.6	56.0	46.0	32.0	30.4	L1	
12	24.77385	21.0	20.5	13.7	34.7	34.2	60.0	50.0	25.3	15.8	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
 LISN: SLS-01

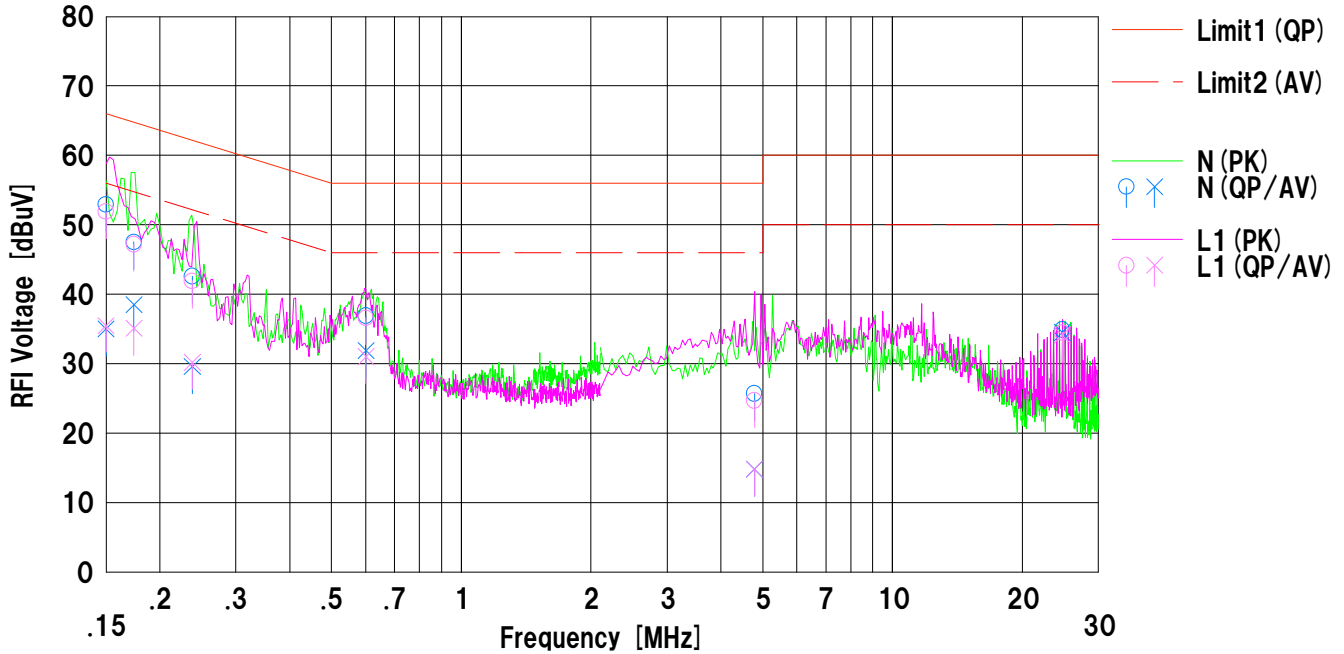
# DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.1 Shielded Room  
Date : 2012/11/21

Mode : Bluetooth, 3-DH5, Tx 2480MHz  
 Report No. : 33CE0267-SH-02-B  
 Power : AC 120V / 60Hz  
 Temp./Humi. : 25deg.C / 43%RH

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

Engineer : Kenichi Adachi



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	0.15000	402	22.3	12.7	529	35.0	66.0	56.0	13.1	21.0	N	
2	0.17400	348	25.8	12.7	47.5	38.5	64.7	54.7	17.2	16.2	N	
3	0.23800	299	16.9	12.7	42.6	29.6	62.1	52.1	19.5	22.5	N	
4	0.60100	242	19.2	12.7	36.9	31.9	56.0	46.0	19.1	14.1	N	
5	4.78300	128	1.9	12.9	25.7	14.8	56.0	46.0	30.3	31.2	N	
6	24.77408	212	20.8	13.7	34.9	34.5	60.0	50.0	25.1	15.5	N	
7	0.15000	392	22.8	12.7	51.9	35.5	66.0	56.0	14.1	20.5	L1	
8	0.17400	345	22.4	12.7	47.2	35.1	64.7	54.7	17.5	19.6	L1	
9	0.23800	292	17.5	12.7	41.9	30.2	62.1	52.1	20.2	21.9	L1	
10	0.60100	239	18.3	12.7	36.6	31.0	56.0	46.0	19.4	15.0	L1	
11	4.78300	118	1.9	12.9	24.7	14.8	56.0	46.0	31.3	31.2	L1	
12	24.77365	208	20.4	13.7	34.5	34.1	60.0	50.0	25.5	15.9	L1	

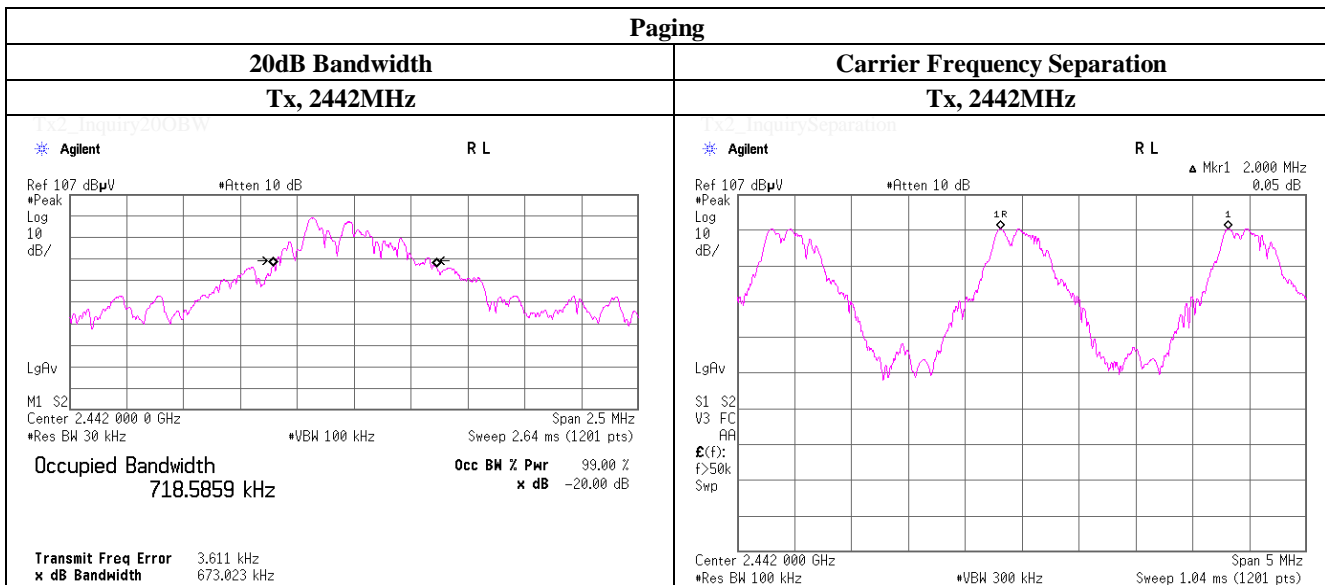
Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
 LISN: SLS-01

## 20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	November 19, 2012	
Temperature / Humidity	23deg.C , 38%RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.966	1.000	>= 0.644
DH5	2441.0	0.960	1.000	>= 0.640
DH5	2480.0	0.966	1.000	>= 0.644
Paging	2442.0	0.673	2.000	>= 0.449

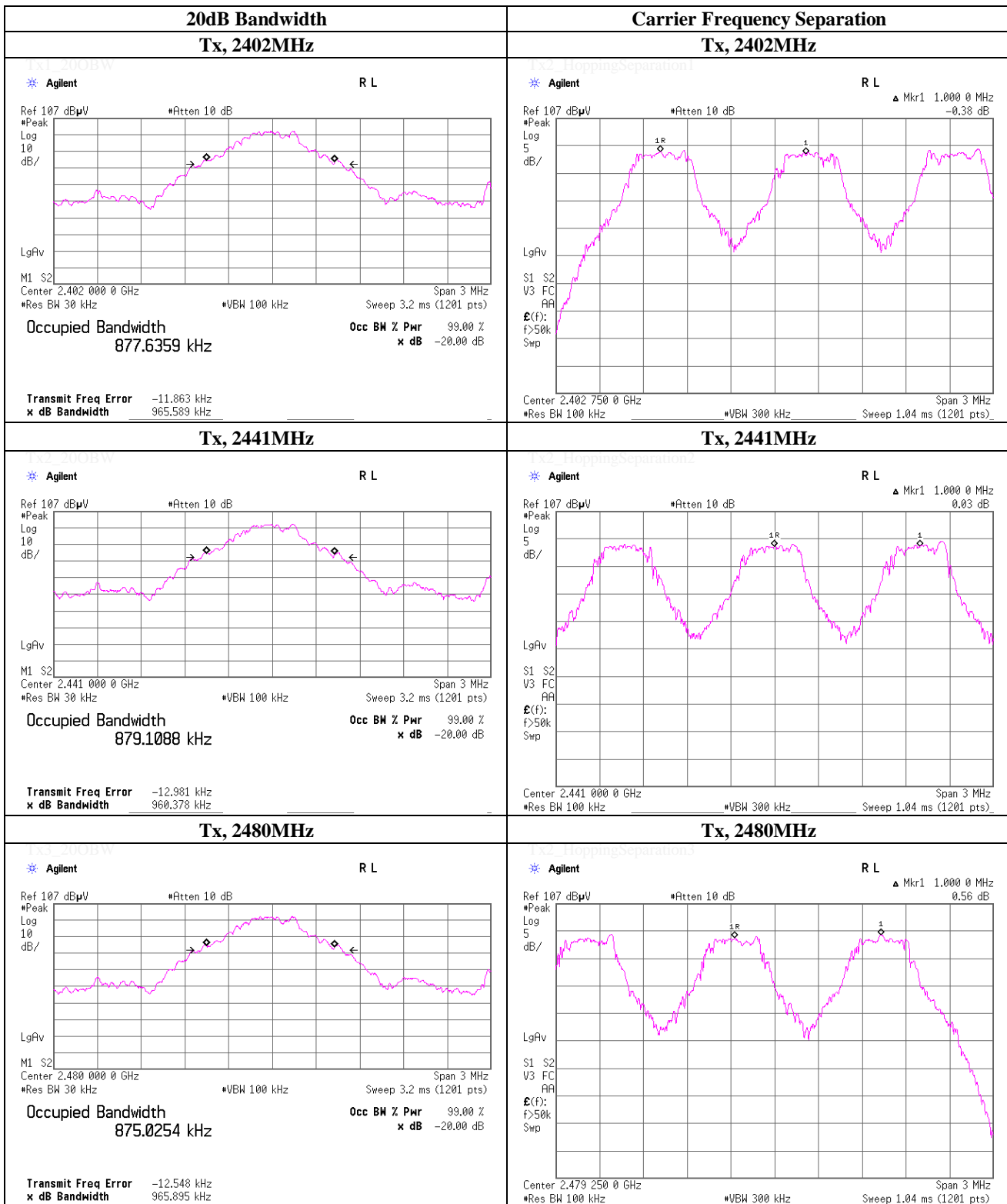
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).  
 No limit applies to 20dB Bandwidth.



**UL Japan, Inc.**  
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 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
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## 20dB Bandwidth and Carrier Frequency Separation

**Tx, Bluetooth, BDR, PRBS9**



**UL Japan, Inc.**

**Shonan EMC Lab.**

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## 20dB Bandwidth and Carrier Frequency Separation

Test place                   UL Japan, Inc. Shonan EMC Lab.           No.5 Shielded Room  
 Date                            November 19, 2012  
 Temperature / Humidity    23deg.C           , 38%RH  
 Engineer                    Kenichi Adachi  
 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	1.299	1.000	>= 0.866
3-DH5	2441.0	1.302	1.000	>= 0.868
3-DH5	2480.0	1.299	1.000	>= 0.866

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

No limit applies to 20dB Bandwidth.

**UL Japan, Inc.**

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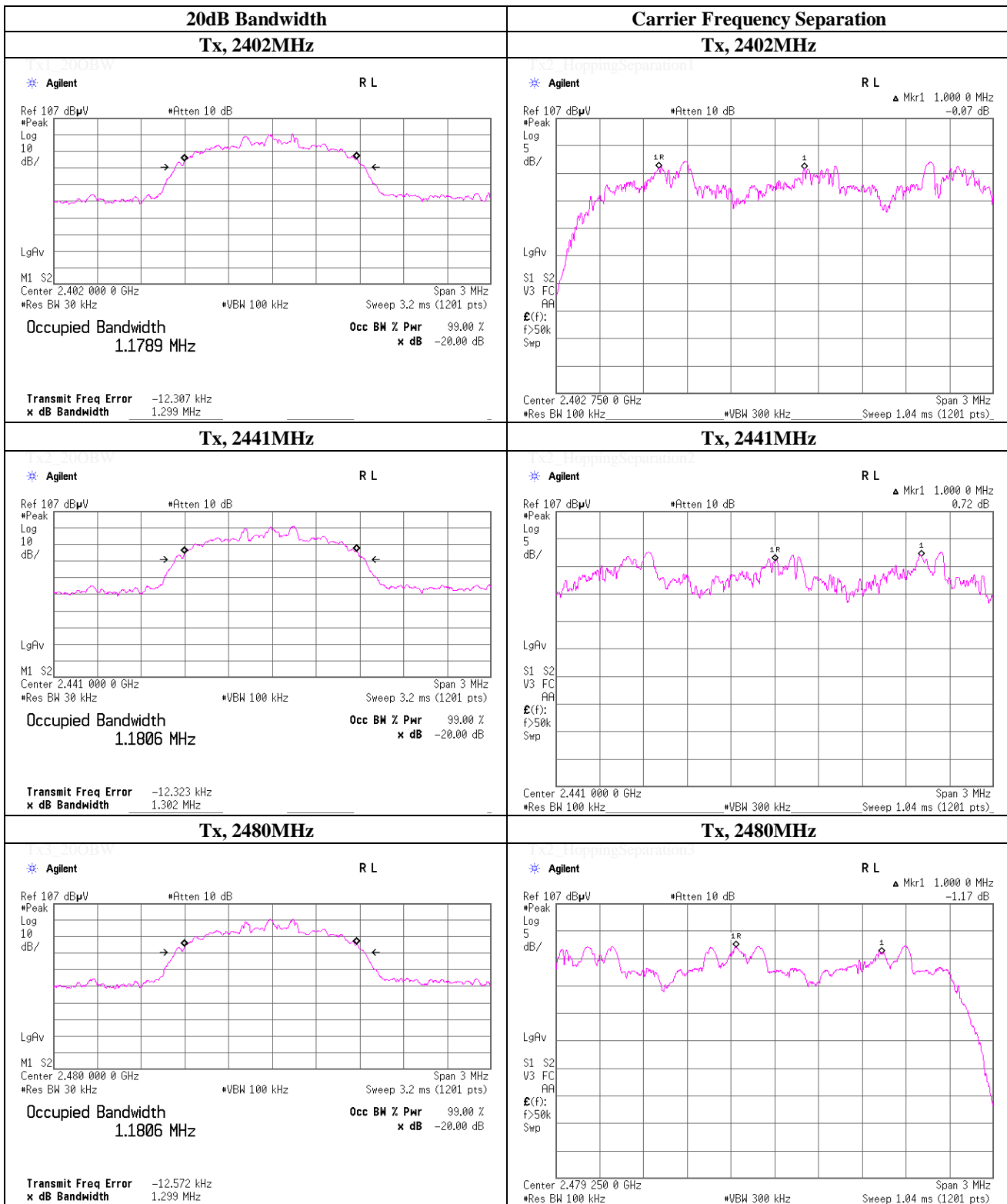
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## 20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9



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**Shonan EMC Lab.**

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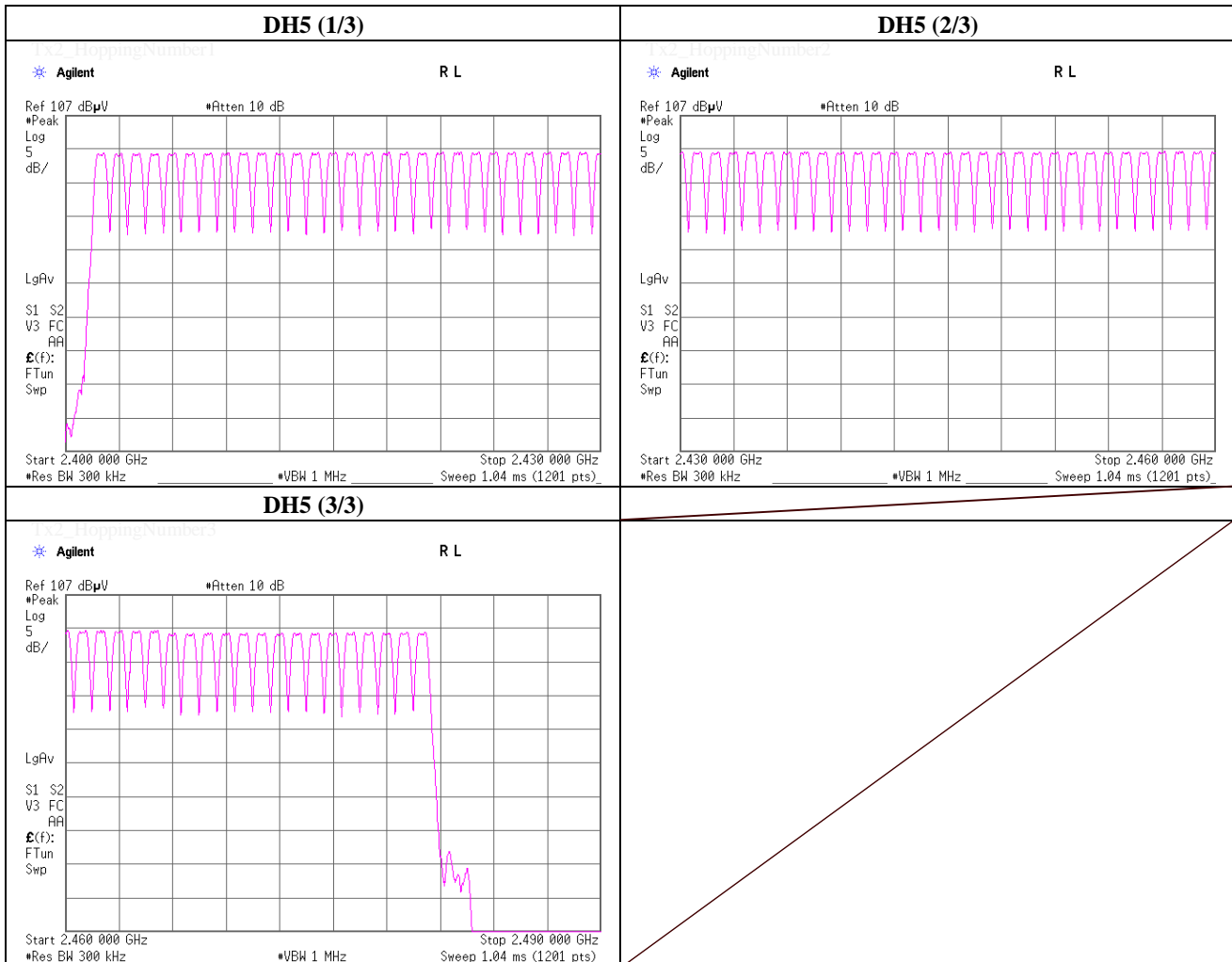
Facsimile : +81 463 50 6401

### Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Novemer 19, 2012	
Temperature / Humidity	23deg.C , 38%RH	
Engineer	Kenichi Adachi	
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.



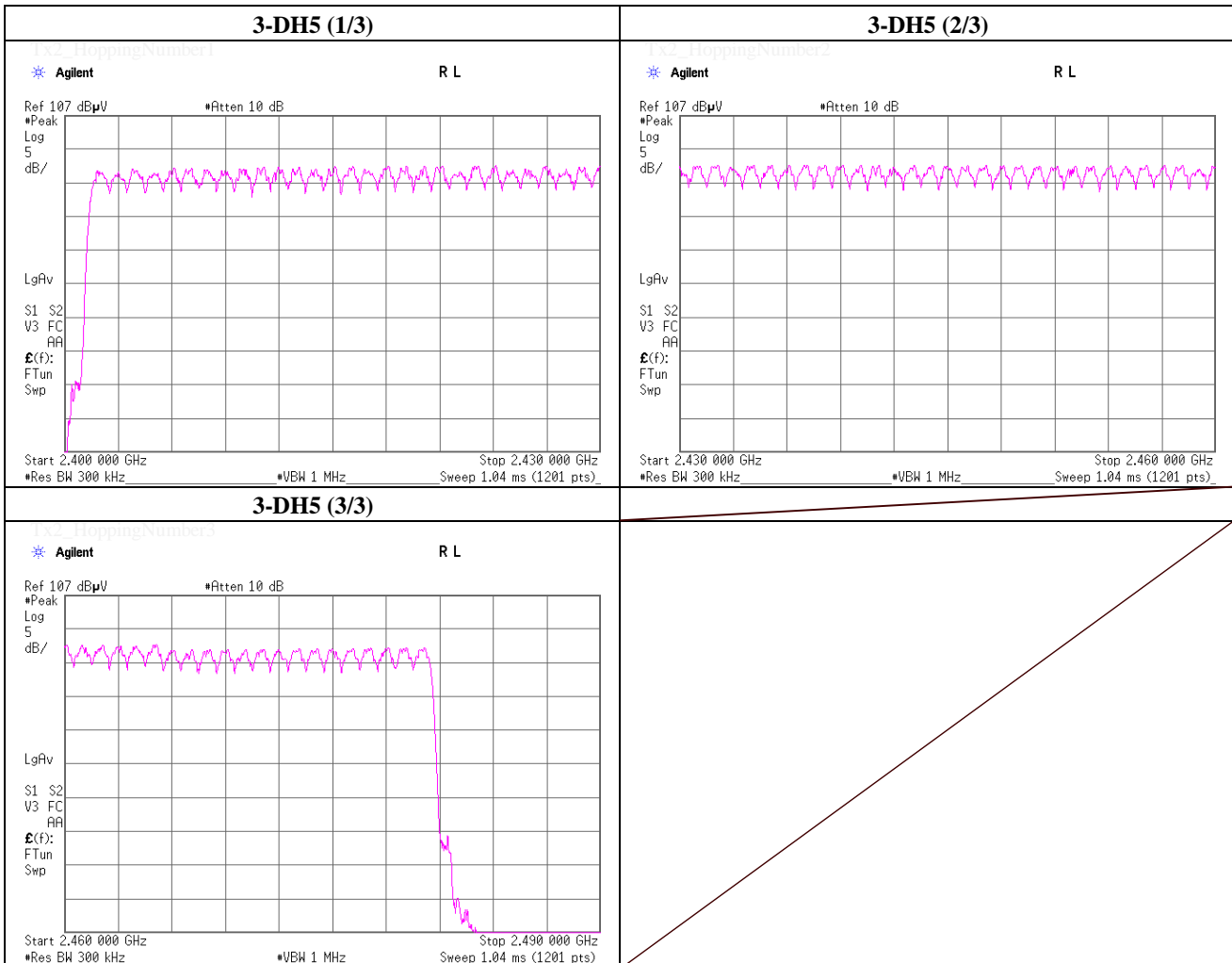
**UL Japan, Inc.**  
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 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN  
 Telephone : +81 463 50 6400  
 Facsimile : +81 463 50 6401

### Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Novemer 19, 2012	
Temperature / Humidity	23deg.C , 38%RH	
Engineer	Kenichi Adachi	
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.

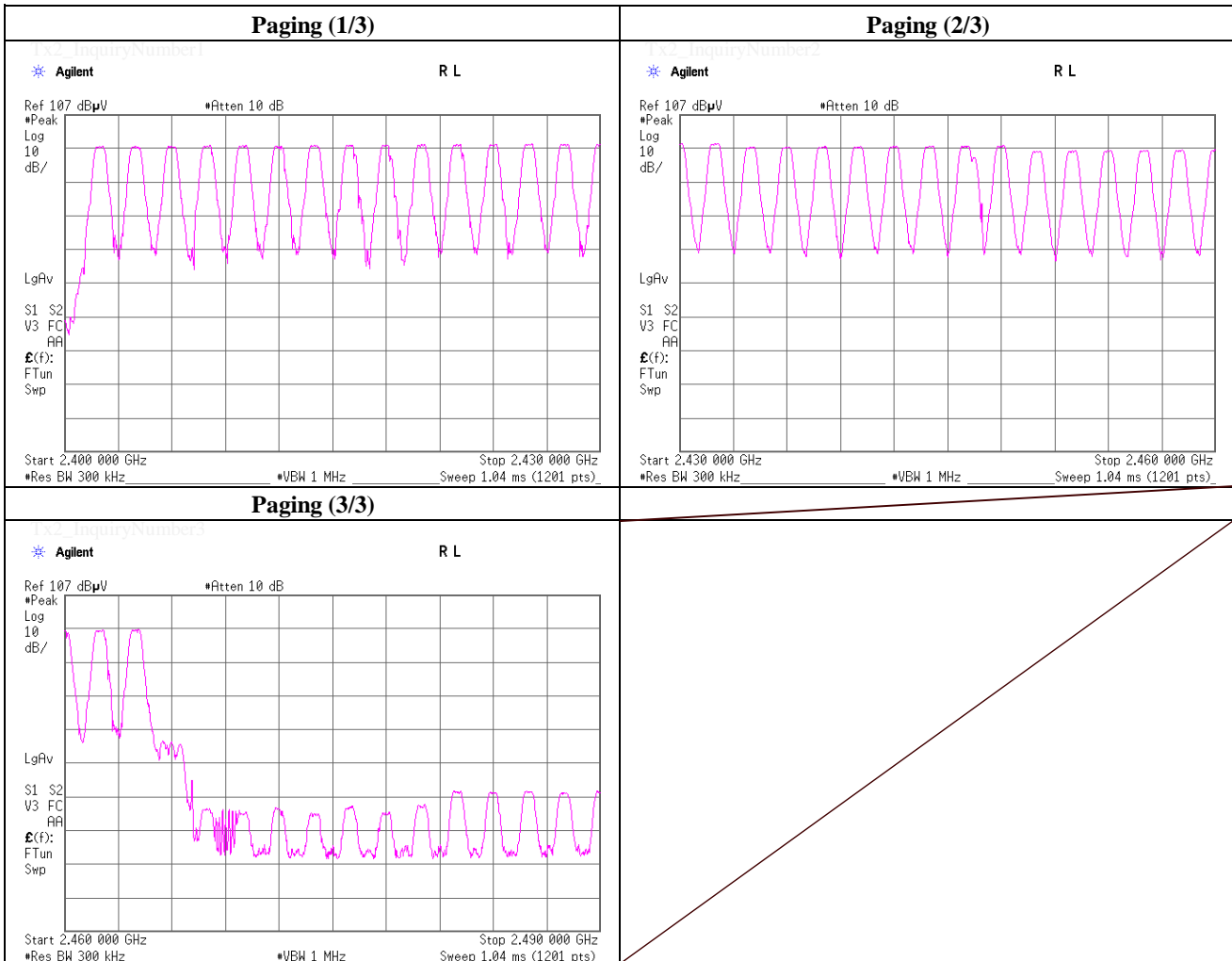


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### Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Novemer 19, 2012	
Temperature / Humidity	23deg.C , 38%RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, Paging	

Mode	Number of Channel [times]	Limit [times]
Paging	32	>= 15



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## Dwell Time

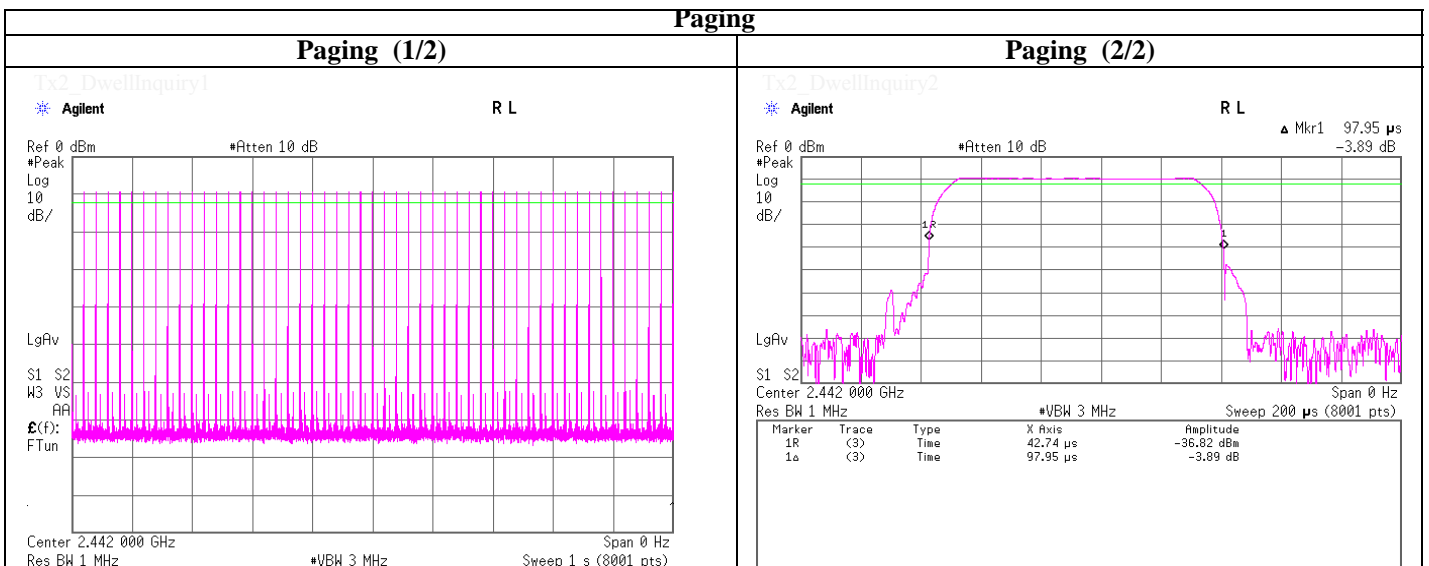
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Novemer 19, 2012	
Temperature / Humidity	23deg.C , 38%RH	
Engineer	Kenichi Adachi	
Mode	Tx, Bluetooth, BDR, PRBS9	

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period	Length of transmission time [msec]	Result [msec]	Limit [msec]
DH1	100.0 / 5.0 sec. x 31.6 sec. = 632 times	0.396	250	400
DH3	34.0 / 5.0 sec. x 31.6 sec. = 215 times	1.651	355	400
DH5	21.0 / 5.0 sec. x 31.6 sec. = 133 times	2.899	386	400
Paging	51.0 / 1.0 sec. x 12.8 sec. = 653 times	0.098	64	400

Sample Calculation

Result = Number of transmission x Length of transmtion 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  $N=79$ .



**UL Japan, Inc.**

**Shonan EMC Lab.**

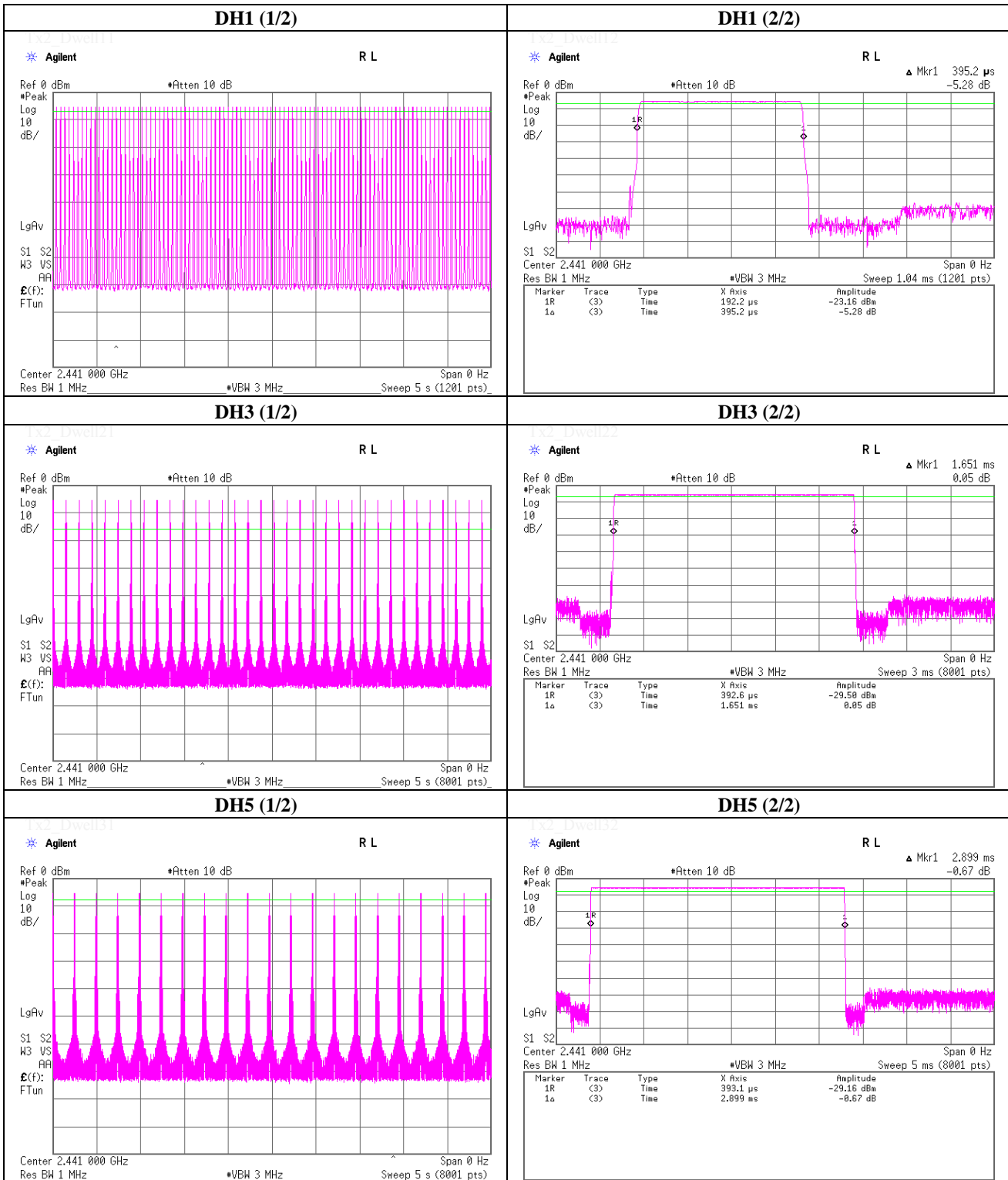
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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## 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                        Novemer 19, 2012  
 Temperature / Humidity  23deg.C           , 38%RH  
 Engineer                  Kenichi Adachi  
 Mode                        Tx, Bluetooth, EDR, PRBS9

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second	Length of transmission time [msec]	Result [msec]	Limit [msec]
3-DH1	100.0 / 5.0 sec. x 31.6 sec. = 632 times	0.407	257	400
3-DH3	34.0 / 5.0 sec. x 31.6 sec. = 215 times	1.657	356	400
3-DH5	21.0 / 5.0 sec. x 31.6 sec. = 133 times	2.908	387	400

Sample Calculation

Result = Number of transmission x Length of transmittion 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  $N=79$ .

**UL Japan, Inc.**

**Shonan EMC Lab.**

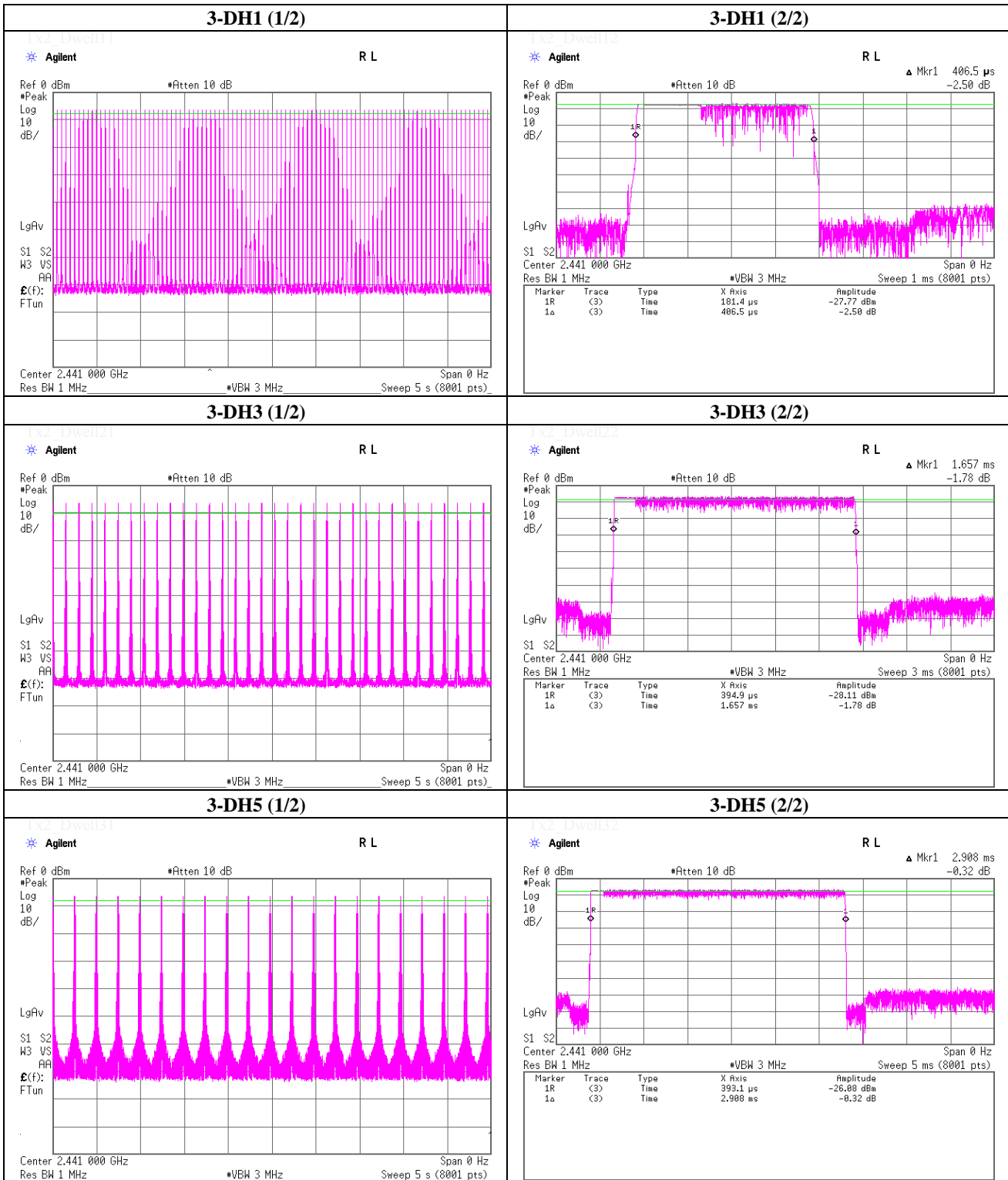
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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## Dwell time

Tx, Bluetooth, EDR, PRBS9



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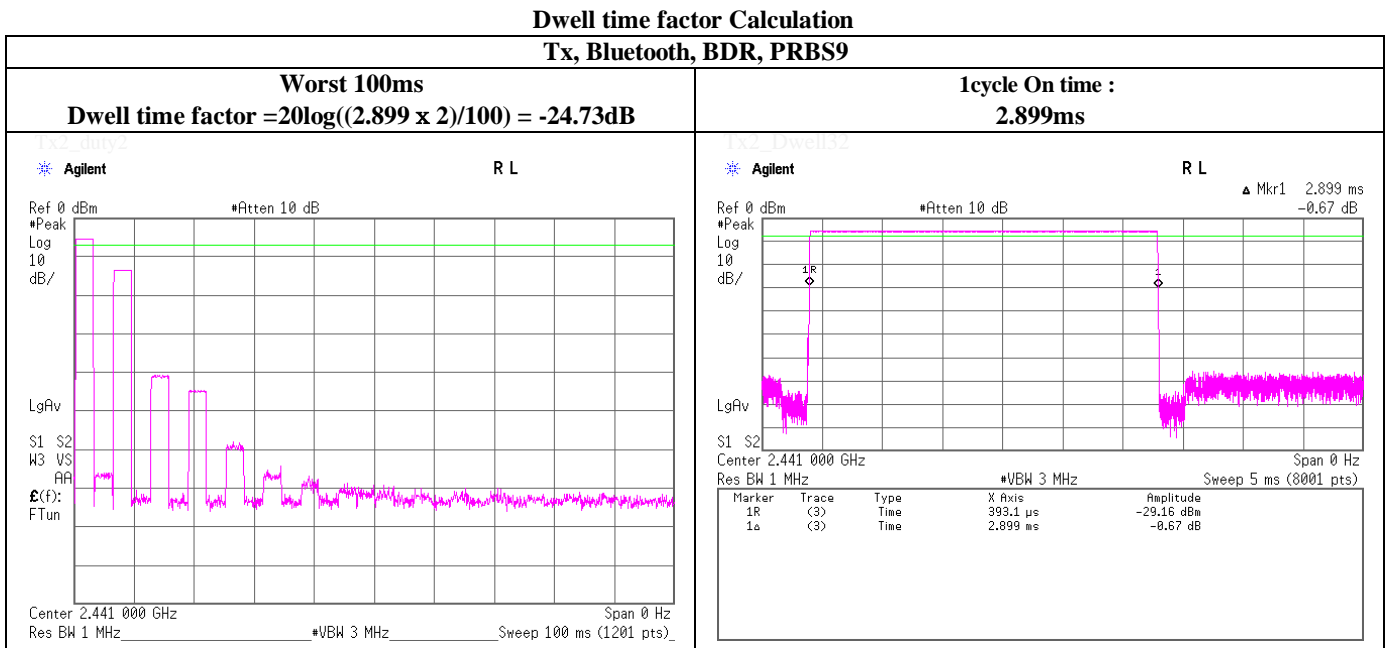
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

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Facsimile : +81 463 50 6401



## Dwell time factor Calculation chart



### VBW (Average) setting

\*Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

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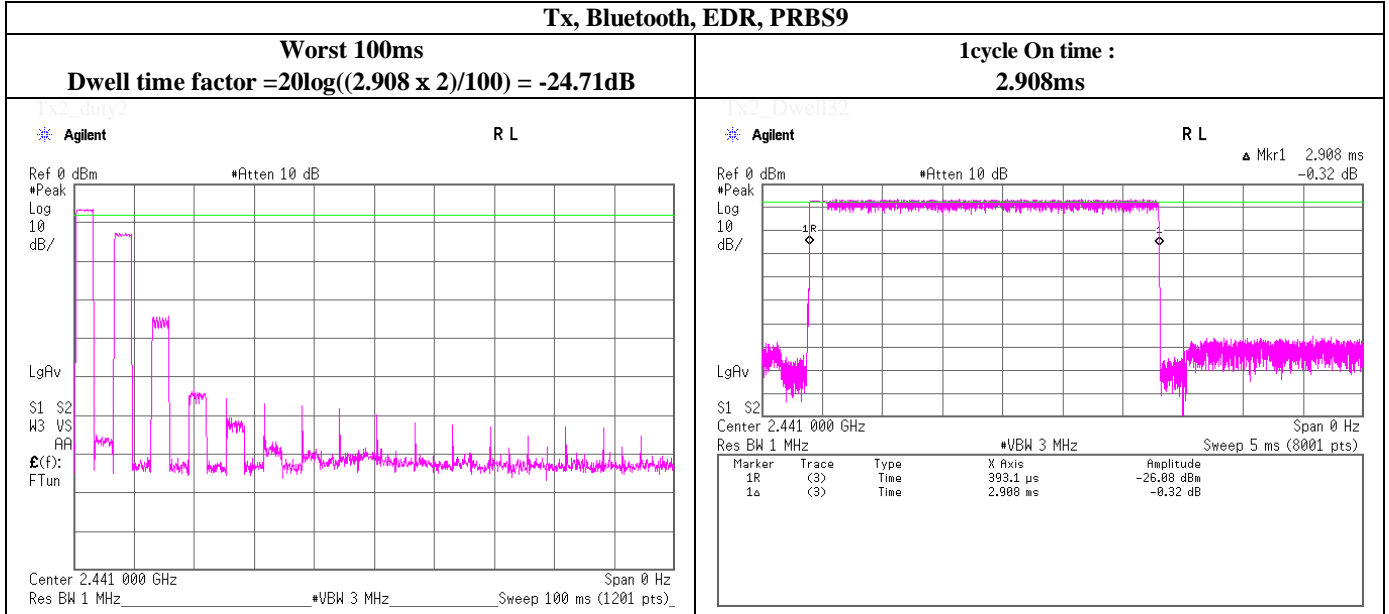
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## Dwell time factor Calculation chart

### Dwell time factor Calculation Tx, Bluetooth, EDR, PRBS9



### VBW (Average) setting

\*Although 00-705 accepts VBW=10Hz for AV measurements, confirmed that superfluous smoothing was not performed.

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## Maximum Peak Conducted Output Power (Conducted)

Test place                   UL Japan, Inc. Shonan EMC Lab.     No.7 Shielded Room  
 Date                         November 15, 2012  
 Temperature / Humidity   24deg.C     , 45%RH  
 Engineer                  Tomochika Sato  
 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	-4.35	0.74	10.00	<b>6.39</b>	4.36	20.97	125	14.58
DH5	2441.0	-4.36	0.75	10.00	<b>6.39</b>	4.36	20.97	125	14.58
DH5	2480.0	-4.44	0.75	10.00	6.31	4.28	20.97	125	14.66
3-DH5	2402.0	-5.54	0.74	10.00	5.20	3.31	20.97	125	15.77
3-DH5	2441.0	-5.39	0.75	10.00	5.36	3.44	20.97	125	15.61
3-DH5	2480.0	-5.41	0.75	10.00	5.34	3.42	20.97	125	15.63

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

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

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## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2402.0 MHz DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.289	QP	33.4	16.8	9.3	31.7	27.8	43.5	15.7	153	336	
Hori.	239.194	QP	33.0	17.1	9.6	31.7	28.0	46.0	18.0	132	218	
Hori.	353.343	QP	39.0	15.1	7.4	31.7	29.8	46.0	16.2	100	53	
Hori.	377.301	QP	38.9	15.5	7.6	31.8	30.2	46.0	15.8	100	294	
Hori.	2322.000	PK	47.1	27.3	14.1	41.4	47.1	73.9	26.8	124	43	
Hori.	2390.000	PK	45.6	27.4	14.2	41.4	45.8	73.9	28.1	100	61	
Hori.	2522.854	PK	43.6	27.6	14.3	41.4	44.1	73.9	29.8	209	298	
Hori.	4804.000	PK	47.1	31.1	6.8	41.2	43.8	73.9	30.1	100	0	
Hori.	7206.000	PK	48.7	36.6	8.3	41.4	52.2	73.9	21.7	100	0	
Hori.	9608.000	PK	46.7	38.5	9.4	38.9	55.7	73.9	18.2	100	0	
Hori.	12010.000	PK	45.6	39.4	10.7	39.4	56.3	73.9	17.6	100	0	
Hori.	2322.000	AV	37.4	27.3	14.1	41.4	37.4	53.9	16.5	124	43	
Hori.	2390.000	AV	34.2	27.4	14.2	41.4	34.4	53.9	19.5	100	61	
Hori.	2522.854	AV	41.7	27.6	14.3	41.4	42.2	53.9	11.7	209	298	
Hori.	4804.000	AV	35.7	31.1	6.8	41.2	32.4	53.9	21.5	100	0	
Hori.	7206.000	AV	36.2	36.6	8.3	41.4	39.7	53.9	14.2	100	0	
Hori.	9608.000	AV	34.0	38.5	9.4	38.9	43.0	53.9	10.9	100	0	
Hori.	12010.000	AV	35.0	39.4	10.7	39.4	45.7	53.9	8.2	100	0	
Vert.	149.335	QP	32.4	15.0	8.7	31.8	24.3	43.5	19.2	100	215	
Vert.	175.126	QP	34.9	15.9	8.9	31.8	27.9	43.5	15.6	100	209	
Vert.	2322.000	PK	47.8	27.3	14.1	41.4	47.8	73.9	26.1	191	13	
Vert.	2390.000	PK	44.6	27.4	14.2	41.4	44.8	73.9	29.1	233	2	
Vert.	2522.854	PK	52.0	27.6	14.3	41.4	52.5	73.9	21.4	213	37	
Vert.	4804.000	PK	46.9	31.1	6.8	41.2	43.6	73.9	30.3	100	0	
Vert.	7206.000	PK	48.2	36.6	8.3	41.4	51.7	73.9	22.2	100	0	
Vert.	9608.000	PK	44.5	38.5	9.4	38.9	53.5	73.9	20.4	100	0	
Vert.	12010.000	PK	46.6	39.4	10.7	39.4	57.3	73.9	16.6	100	0	
Vert.	2322.000	AV	39.8	27.3	14.1	41.4	39.8	53.9	14.1	191	13	
Vert.	2390.000	AV	34.7	27.4	14.2	41.4	34.9	53.9	19.0	233	2	
Vert.	2522.854	AV	44.8	27.6	14.3	41.4	45.3	53.9	8.6	213	37	
Vert.	4804.000	AV	35.7	31.1	6.8	41.2	32.4	53.9	21.5	100	0	
Vert.	7206.000	AV	35.9	36.6	8.3	41.4	39.4	53.9	14.5	100	0	
Vert.	9608.000	AV	34.0	38.5	9.4	38.9	43.0	53.9	10.9	100	0	
Vert.	12010.000	AV	34.8	39.4	10.7	39.4	45.5	53.9	8.4	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

**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	95.3	27.4	14.2	41.4	95.5	-	-	
Hori.	2399.100	PK	55.8	27.4	14.2	41.4	56.0	75.5	19.5	
Hori.	2400.000	PK	56.2	27.4	14.2	41.4	56.4	75.5	19.1	
Vert.	2402.000	PK	97.4	27.4	14.2	41.4	97.6	-	-	
Vert.	2399.100	PK	58.5	27.4	14.2	41.4	58.7	77.6	18.9	
Vert.	2400.000	PK	60.3	27.4	14.2	41.4	60.5	77.6	17.1	

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

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Facsimile : +81 463 50 6401

## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2441.0 MHz DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.244	QP	32.0	16.8	9.3	31.7	26.4	43.5	17.1	154	322	
Hori.	239.153	QP	34.2	17.1	9.6	31.7	29.2	46.0	16.8	133	229	
Hori.	353.322	QP	38.9	15.1	7.4	31.7	29.7	46.0	16.3	100	42	
Hori.	377.310	QP	39.2	15.5	7.6	31.8	30.5	46.0	15.5	100	300	
Hori.	2363.000	PK	47.9	27.4	14.1	41.4	48.0	73.9	25.9	100	47	
Hori.	2523.000	PK	50.3	27.6	14.3	41.4	50.8	73.9	23.1	145	123	
Hori.	4882.000	PK	46.5	31.3	6.9	41.1	43.6	73.9	30.3	100	0	
Hori.	7323.000	PK	46.6	36.6	8.6	41.4	50.4	73.9	23.5	100	0	
Hori.	9764.000	PK	44.1	38.7	9.5	38.9	53.4	73.9	20.5	100	0	
Hori.	12205.000	PK	45.2	39.5	10.8	39.3	56.2	73.9	17.7	100	0	
Hori.	2363.000	AV	40.3	27.4	14.1	41.4	40.4	53.9	13.5	100	47	
Hori.	2523.000	AV	43.6	27.6	14.3	41.4	44.1	53.9	9.8	145	123	
Hori.	4882.000	AV	35.8	31.3	6.9	41.1	32.9	53.9	21.0	100	0	
Hori.	7323.000	AV	36.0	36.6	8.6	41.4	39.8	53.9	14.1	100	0	
Hori.	9764.000	AV	33.6	38.7	9.5	38.9	42.9	53.9	11.0	100	0	
Hori.	12205.000	AV	34.2	39.5	10.8	39.3	45.2	53.9	8.7	100	0	
Vert.	149.320	QP	32.1	15.0	8.7	31.8	24.0	43.5	19.5	100	200	
Vert.	175.102	QP	35.7	15.9	8.9	31.8	28.7	43.5	14.8	100	210	
Vert.	2361.130	PK	48.2	27.4	14.1	41.4	48.3	73.9	25.6	178	8	
Vert.	2521.220	PK	51.6	27.6	14.3	41.4	52.1	73.9	21.8	234	319	
Vert.	4882.000	PK	46.5	31.3	6.9	41.1	43.6	73.9	30.3	100	0	
Vert.	7323.000	PK	46.6	36.6	8.6	41.4	50.4	73.9	23.5	100	0	
Vert.	9764.000	PK	44.1	38.7	9.5	38.9	53.4	73.9	20.5	100	0	
Vert.	12205.000	PK	45.1	39.5	10.8	39.3	56.1	73.9	17.8	100	0	
Vert.	2361.130	AV	43.5	27.4	14.1	41.4	43.6	53.9	10.3	178	8	
Vert.	2521.220	AV	45.9	27.6	14.3	41.4	46.4	53.9	7.5	234	319	
Vert.	4882.000	AV	35.7	31.3	6.9	41.1	32.8	53.9	21.1	100	0	
Vert.	7323.000	AV	35.8	36.6	8.6	41.4	39.6	53.9	14.3	100	0	
Vert.	9764.000	AV	32.9	38.7	9.5	38.9	42.2	53.9	11.7	100	0	
Vert.	12205.000	AV	33.8	39.5	10.8	39.3	44.8	53.9	9.1	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2480.0 MHz DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.226	QP	34.3	16.8	9.3	31.7	28.7	43.5	14.8	150	311	
Hori.	239.206	QP	33.9	17.1	9.6	31.7	28.9	46.0	17.1	178	214	
Hori.	353.390	QP	40.1	15.1	7.4	31.7	30.9	46.0	15.1	100	36	
Hori.	377.325	QP	39.2	15.5	7.6	31.8	30.5	46.0	15.5	100	257	
Hori.	2320.000	PK	48.9	27.3	14.1	41.4	48.9	73.9	25.0	244	284	
Hori.	2483.500	PK	48.2	27.5	14.3	41.4	48.6	73.9	25.3	201	288	
Hori.	2560.310	PK	50.0	27.7	14.3	41.4	50.6	73.9	23.3	217	285	
Hori.	4960.000	PK	45.9	31.6	6.9	41.0	43.4	73.9	30.5	100	0	
Hori.	7440.000	PK	46.7	36.7	8.8	41.5	50.7	73.9	23.2	100	0	
Hori.	9920.000	PK	43.3	39.0	9.7	38.9	53.1	73.9	20.8	100	0	
Hori.	12400.000	PK	42.8	39.5	10.8	39.3	53.8	73.9	20.1	100	0	
Hori.	2320.000	AV	40.2	27.3	14.1	41.4	40.2	53.9	13.7	244	284	
Hori.	2483.500	AV	38.7	27.5	14.3	41.4	39.1	53.9	14.8	201	288	
Hori.	2560.310	AV	42.3	27.7	14.3	41.4	42.9	53.9	11.0	217	285	
Hori.	4960.000	AV	35.2	31.6	6.9	41.0	32.7	53.9	21.2	100	0	
Hori.	7440.000	AV	35.9	36.7	8.8	41.5	39.9	53.9	14.0	100	0	
Hori.	9920.000	AV	32.4	39.0	9.7	38.9	42.2	53.9	11.7	100	0	
Hori.	12400.000	AV	32.3	39.5	10.8	39.3	43.3	53.9	10.6	100	0	
Vert.	149.337	QP	33.7	15.0	8.7	31.8	25.6	43.5	17.9	100	224	
Vert.	175.123	QP	35.7	15.9	8.9	31.8	28.7	43.5	14.8	100	218	
Vert.	2320.000	PK	49.3	27.3	14.1	41.4	49.3	73.9	24.6	175	10	
Vert.	2483.500	PK	47.7	27.5	14.3	41.4	48.1	73.9	25.8	100	215	
Vert.	2560.310	PK	50.1	27.7	14.3	41.4	50.7	73.9	23.2	100	223	
Vert.	4960.000	PK	45.6	31.6	6.9	41.0	43.1	73.9	30.8	100	0	
Vert.	7440.000	PK	46.7	36.7	8.8	41.5	50.7	73.9	23.2	100	0	
Vert.	9920.000	PK	43.3	39.0	9.7	38.9	53.1	73.9	20.8	100	0	
Vert.	12400.000	PK	42.8	39.5	10.8	39.3	53.8	73.9	20.1	100	0	
Vert.	2320.000	AV	42.6	27.3	14.1	41.4	42.6	53.9	11.3	175	10	
Vert.	2483.500	AV	37.8	27.5	14.3	41.4	38.2	53.9	15.7	100	215	
Vert.	2560.310	AV	43.9	27.7	14.3	41.4	44.5	53.9	9.4	100	223	
Vert.	4960.000	AV	35.0	31.6	6.9	41.0	32.5	53.9	21.4	100	0	
Vert.	7440.000	AV	35.6	36.7	8.8	41.5	39.6	53.9	14.3	100	0	
Vert.	9920.000	AV	32.4	39.0	9.7	38.9	42.2	53.9	11.7	100	0	
Vert.	12400.000	AV	32.3	39.5	10.8	39.3	43.3	53.9	10.6	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2402.0 MHz 3-DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.210	QP	33.0	16.8	9.3	31.7	27.4	43.5	16.1	149	310	
Hori.	239.182	QP	33.2	17.1	9.6	31.7	28.2	46.0	17.8	133	275	
Hori.	353.311	QP	39.8	15.1	7.4	31.7	30.6	46.0	15.4	100	39	
Hori.	377.334	QP	40.0	15.5	7.6	31.8	31.3	46.0	14.7	100	269	
Hori.	2243.000	PK	47.5	27.2	14.0	41.3	47.4	73.9	26.5	100	311	
Hori.	2390.000	PK	44.9	27.4	14.2	41.4	45.1	73.9	28.8	100	45	
Hori.	2561.896	PK	48.2	27.7	14.3	41.4	48.8	73.9	25.1	233	294	
Hori.	4804.000	PK	47.5	31.1	6.8	41.2	44.2	73.9	29.7	100	0	
Hori.	7206.000	PK	46.0	36.6	8.3	41.4	49.5	73.9	24.4	100	0	
Hori.	9608.000	PK	45.7	38.5	9.4	38.9	54.7	73.9	19.2	100	0	
Hori.	12010.000	PK	46.1	39.4	10.7	39.4	56.8	73.9	17.1	100	0	
Hori.	2243.000	AV	35.9	27.2	14.0	41.3	35.8	53.9	18.1	100	311	
Hori.	2390.000	AV	34.7	27.4	14.2	41.4	34.9	53.9	19.0	100	45	
Hori.	2561.896	AV	39.0	27.7	14.3	41.4	39.6	53.9	14.3	233	294	
Hori.	4804.000	AV	35.0	31.1	6.8	41.2	31.7	53.9	22.2	100	0	
Hori.	7206.000	AV	36.7	36.6	8.3	41.4	40.2	53.9	13.7	100	0	
Hori.	9608.000	AV	33.8	38.5	9.4	38.9	42.8	53.9	11.1	100	0	
Hori.	12010.000	AV	34.7	39.4	10.7	39.4	45.4	53.9	8.5	100	0	
Vert.	149.350	QP	33.9	15.0	8.7	31.8	25.8	43.5	17.7	100	239	
Vert.	175.154	QP	35.7	15.9	8.9	31.8	28.7	43.5	14.8	100	210	
Vert.	2243.000	PK	47.1	27.2	14.0	41.3	47.0	73.9	26.9	100	0	
Vert.	2390.000	PK	44.2	27.4	14.2	41.4	44.4	73.9	29.5	112	294	
Vert.	2561.896	PK	49.4	27.7	14.3	41.4	50.0	73.9	23.9	100	332	
Vert.	4804.000	PK	47.6	31.1	6.8	41.2	44.3	73.9	29.6	100	0	
Vert.	7206.000	PK	46.2	36.6	8.3	41.4	49.7	73.9	24.2	100	0	
Vert.	9608.000	PK	45.9	38.5	9.4	38.9	54.9	73.9	19.0	100	0	
Vert.	12010.000	PK	46.0	39.4	10.7	39.4	56.7	73.9	17.2	100	0	
Vert.	2243.000	AV	34.8	27.2	14.0	41.3	34.7	53.9	19.2	100	0	
Vert.	2390.000	AV	37.5	27.4	14.2	41.4	37.7	53.9	16.2	112	294	
Vert.	2561.896	AV	39.6	27.7	14.3	41.4	40.2	53.9	13.7	100	332	
Vert.	4804.000	AV	35.2	31.1	6.8	41.2	31.9	53.9	22.0	100	0	
Vert.	7206.000	AV	36.7	36.6	8.3	41.4	40.2	53.9	13.7	100	0	
Vert.	9608.000	AV	34.0	38.5	9.4	38.9	43.0	53.9	10.9	100	0	
Vert.	12010.000	AV	34.9	39.4	10.7	39.4	45.6	53.9	8.3	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

**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	92.7	27.4	14.2	41.4	92.9	-	-	
Hori.	2400.000	PK	44.9	27.4	14.2	41.4	45.1	72.9	27.8	
Vert.	2402.000	PK	93.4	27.4	14.2	41.4	93.6	-	-	
Vert.	2400.000	PK	42.9	27.4	14.2	41.4	43.1	73.6	30.5	

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

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## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2441.0 MHz 3-DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.222	QP	32.1	16.8	9.3	31.7	26.5	43.5	17.0	143	310	
Hori.	239.180	QP	35.4	17.1	9.6	31.7	30.4	46.0	15.6	156	209	
Hori.	353.456	QP	39.4	15.1	7.4	31.7	30.2	46.0	15.8	100	68	
Hori.	377.329	QP	38.8	15.5	7.6	31.8	30.1	46.0	15.9	100	329	
Hori.	2363.000	PK	46.7	27.4	14.1	41.4	46.8	73.9	27.1	100	58	
Hori.	2521.035	PK	47.5	27.6	14.3	41.4	48.0	73.9	25.9	100	64	
Hori.	4882.000	PK	47.8	31.3	6.9	41.1	44.9	73.9	29.0	100	0	
Hori.	7323.000	PK	46.8	36.6	8.6	41.4	50.6	73.9	23.3	100	0	
Hori.	9764.000	PK	43.9	38.7	9.5	38.9	53.2	73.9	20.7	100	0	
Hori.	12205.000	PK	44.7	39.5	10.8	39.3	55.7	73.9	18.2	100	0	
Hori.	2363.000	AV	37.8	27.4	14.1	41.4	37.9	53.9	16.0	100	58	
Hori.	2521.035	AV	37.8	27.6	14.3	41.4	38.3	53.9	15.6	100	64	
Hori.	4882.000	AV	34.8	31.3	6.9	41.1	31.9	53.9	22.0	100	0	
Hori.	7323.000	AV	35.6	36.6	8.6	41.4	39.4	53.9	14.5	100	0	
Hori.	9764.000	AV	32.9	38.7	9.5	38.9	42.2	53.9	11.7	100	0	
Hori.	12205.000	AV	33.6	39.5	10.8	39.3	44.6	53.9	9.3	100	0	
Vert.	149.353	QP	34.3	15.0	8.7	31.8	26.2	43.5	17.3	100	111	
Vert.	175.130	QP	34.1	15.9	8.9	31.8	27.1	43.5	16.4	100	332	
Vert.	2363.000	PK	46.5	27.4	14.1	41.4	46.6	73.9	27.3	100	224	
Vert.	2521.035	PK	47.9	27.6	14.3	41.4	48.4	73.9	25.5	100	198	
Vert.	4882.000	PK	47.6	31.3	6.9	41.1	44.7	73.9	29.2	100	0	
Vert.	7323.000	PK	47.0	36.6	8.6	41.4	50.8	73.9	23.1	100	0	
Vert.	9764.000	PK	43.0	38.7	9.5	38.9	52.3	73.9	21.6	100	0	
Vert.	12205.000	PK	45.2	39.5	10.8	39.3	56.2	73.9	17.7	100	0	
Vert.	2363.000	AV	34.6	27.4	14.1	41.4	34.7	53.9	19.2	100	224	
Vert.	2521.035	AV	39.3	27.6	14.3	41.4	39.8	53.9	14.1	100	198	
Vert.	4882.000	AV	35.2	31.3	6.9	41.1	32.3	53.9	21.6	100	0	
Vert.	7323.000	AV	35.6	36.6	8.6	41.4	39.4	53.9	14.5	100	0	
Vert.	9764.000	AV	33.9	38.7	9.5	38.9	43.2	53.9	10.7	100	0	
Vert.	12205.000	AV	34.2	39.5	10.8	39.3	45.2	53.9	8.7	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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## Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	November 20, 2012	November 22, 2012
Temperature / Humidity	25 deg.C, 40%RH	26 deg.C, 43%RH
Engineer	Kenichi Adachi	Kenichi Adachi
Mode	Tx, 2480.0 MHz 3-DH5	

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	212.440	QP	34.4	16.8	9.3	31.7	28.8	43.5	14.7	129	301	
Hori.	239.220	QP	35.4	17.1	9.6	31.7	30.4	46.0	15.6	143	220	
Hori.	353.876	QP	42.5	15.1	7.4	31.7	33.3	46.0	12.7	100	21	
Hori.	377.460	QP	40.6	15.5	7.6	31.8	31.9	46.0	14.1	100	278	
Hori.	2320.060	PK	47.8	27.3	14.1	41.4	47.8	73.9	26.1	201	30	
Hori.	2483.500	PK	48.7	27.5	14.3	41.4	49.1	73.9	24.8	241	297	
Hori.	2560.030	PK	48.6	27.7	14.3	41.4	49.2	73.9	24.7	230	260	
Hori.	4960.000	PK	47.2	31.6	6.9	41.0	44.7	73.9	29.2	100	0	
Hori.	7440.000	PK	48.3	36.7	8.8	41.5	52.3	73.9	21.6	100	0	
Hori.	9920.000	PK	46.2	39.0	9.7	38.9	56.0	73.9	17.9	100	0	
Hori.	12400.000	PK	45.0	39.5	10.8	39.3	56.0	73.9	17.9	100	0	
Hori.	2320.060	AV	38.9	27.3	14.1	41.4	38.9	53.9	15.0	201	30	
Hori.	2483.500	AV	39.4	27.5	14.3	41.4	39.8	53.9	14.1	241	297	
Hori.	2560.030	AV	41.6	27.7	14.3	41.4	42.2	53.9	11.7	230	260	
Hori.	4960.000	AV	35.0	31.6	6.9	41.0	32.5	53.9	21.4	100	0	
Hori.	7440.000	AV	36.1	36.7	8.8	41.5	40.1	53.9	13.8	100	0	
Hori.	9920.000	AV	35.1	39.0	9.7	38.9	44.9	53.9	9.0	100	0	
Hori.	12400.000	AV	35.0	39.5	10.8	39.3	46.0	53.9	7.9	100	0	
Vert.	149.102	QP	35.6	15.0	8.7	31.8	27.5	43.5	16.0	100	230	
Vert.	175.587	QP	34.8	15.9	8.9	31.8	27.8	43.5	15.7	100	189	
Vert.	2320.060	PK	45.7	27.3	14.1	41.4	45.7	73.9	28.2	100	0	
Vert.	2483.500	PK	49.8	27.5	14.3	41.4	50.2	73.9	23.7	100	212	
Vert.	2560.030	PK	48.7	27.7	14.3	41.4	49.3	73.9	24.6	100	243	
Vert.	4960.000	PK	47.1	31.6	6.9	41.0	44.6	73.9	29.3	100	0	
Vert.	7440.000	PK	47.8	36.7	8.8	41.5	51.8	73.9	22.1	100	0	
Vert.	9920.000	PK	46.0	39.0	9.7	38.9	55.8	73.9	18.1	100	0	
Vert.	12400.000	PK	46.1	39.5	10.8	39.3	57.1	73.9	16.8	100	0	
Vert.	2320.060	AV	35.7	27.3	14.1	41.4	35.7	53.9	18.2	100	0	
Vert.	2483.500	AV	38.4	27.5	14.3	41.4	38.8	53.9	15.1	100	212	
Vert.	2560.030	AV	40.4	27.7	14.3	41.4	41.0	53.9	12.9	100	243	
Vert.	4960.000	AV	35.4	31.6	6.9	41.0	32.9	53.9	21.0	100	0	
Vert.	7440.000	AV	36.4	36.7	8.8	41.5	40.4	53.9	13.5	100	0	
Vert.	9920.000	AV	34.4	39.0	9.7	38.9	44.2	53.9	9.7	100	0	
Vert.	12400.000	AV	34.3	39.5	10.8	39.3	45.3	53.9	8.6	100	0	

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

\*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

\*The 10th harmonic was not seen so the result was its base noise level.

Distance factor : 15GHz -40GHz : 20log(3.0m/1.0m)= 9.5dB

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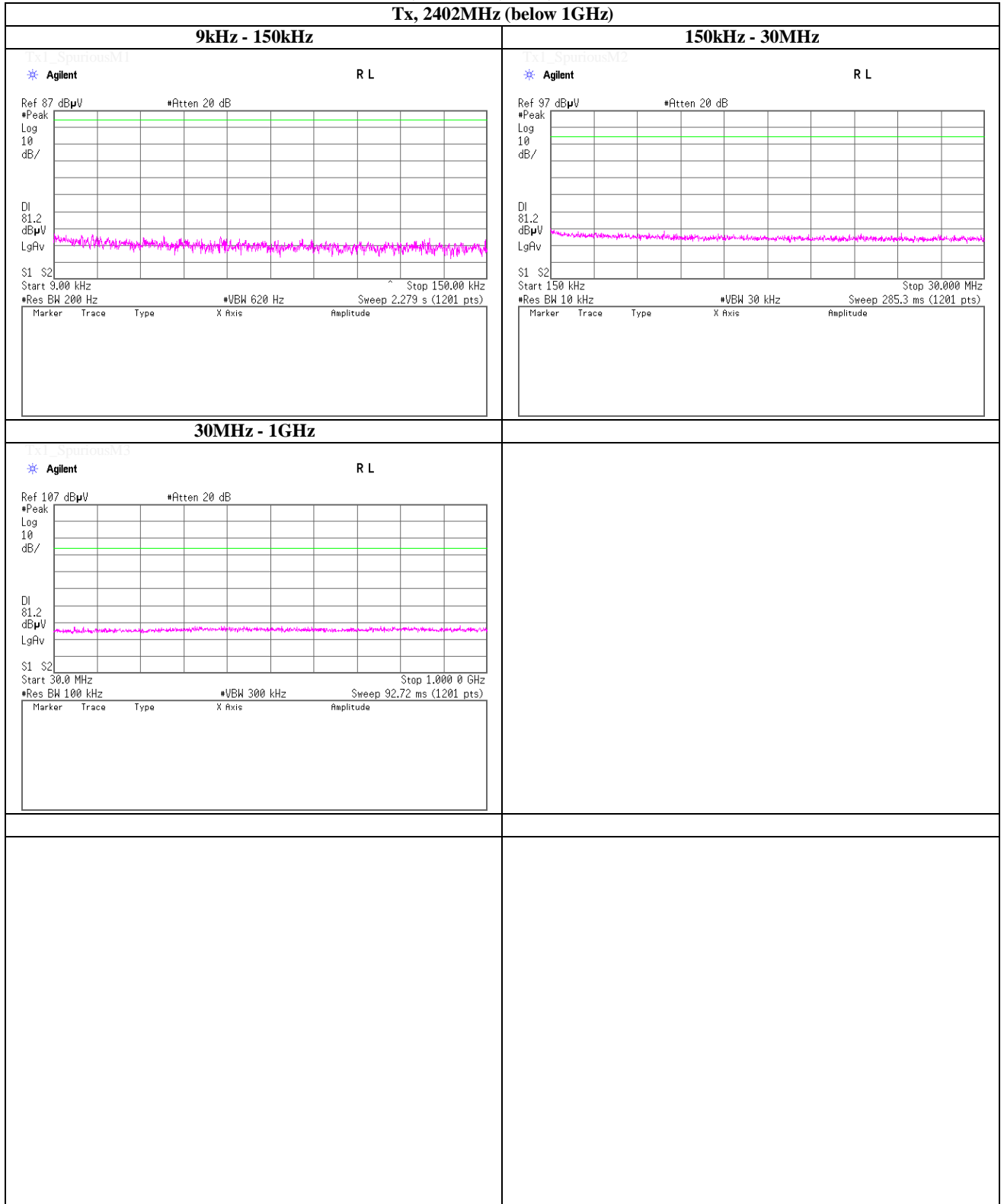
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Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2402MHz (below 1GHz)**

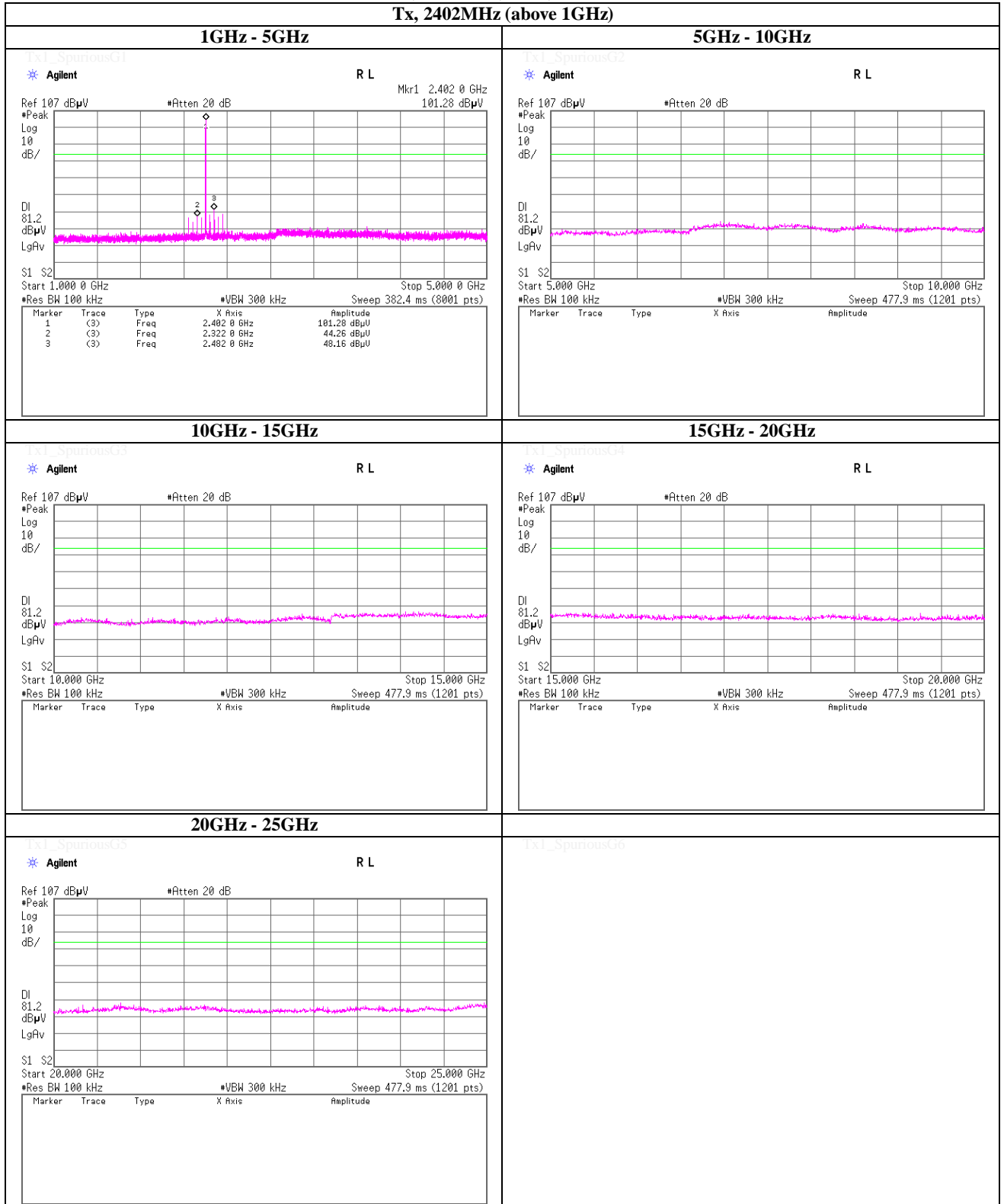


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## Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2402MHz (above 1GHz)**



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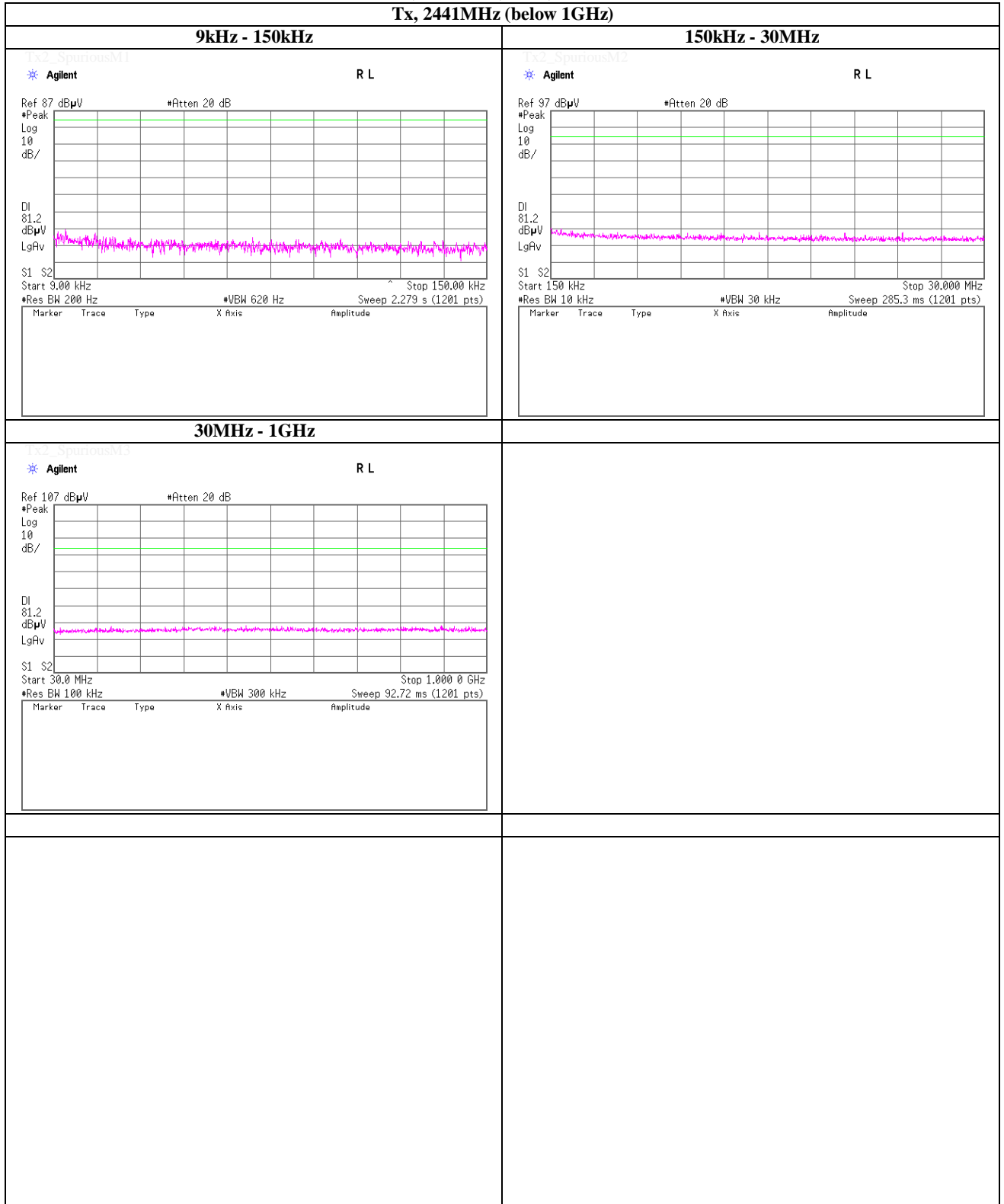
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Facsimile : +81 463 50 6401

### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

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

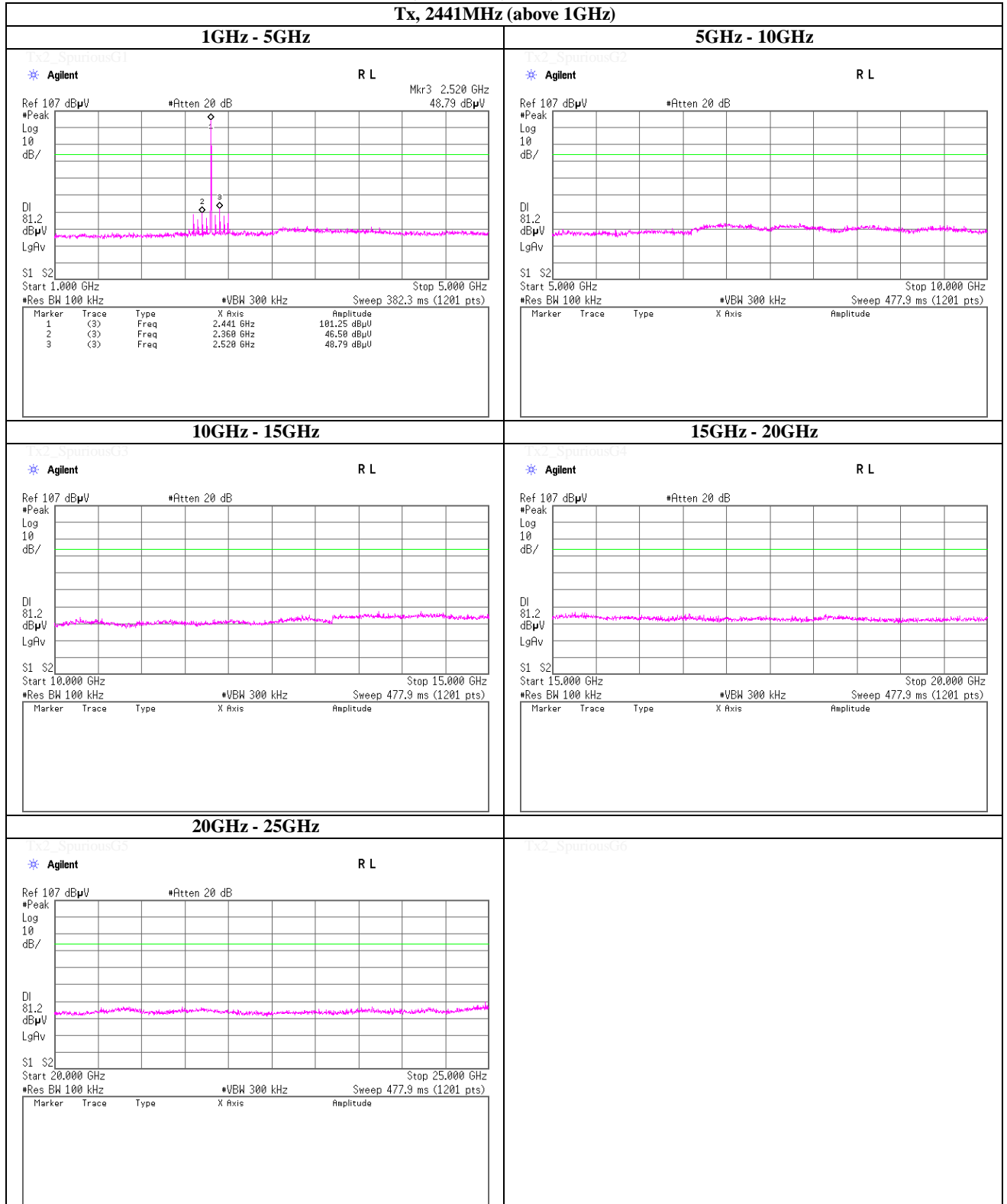


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### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

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



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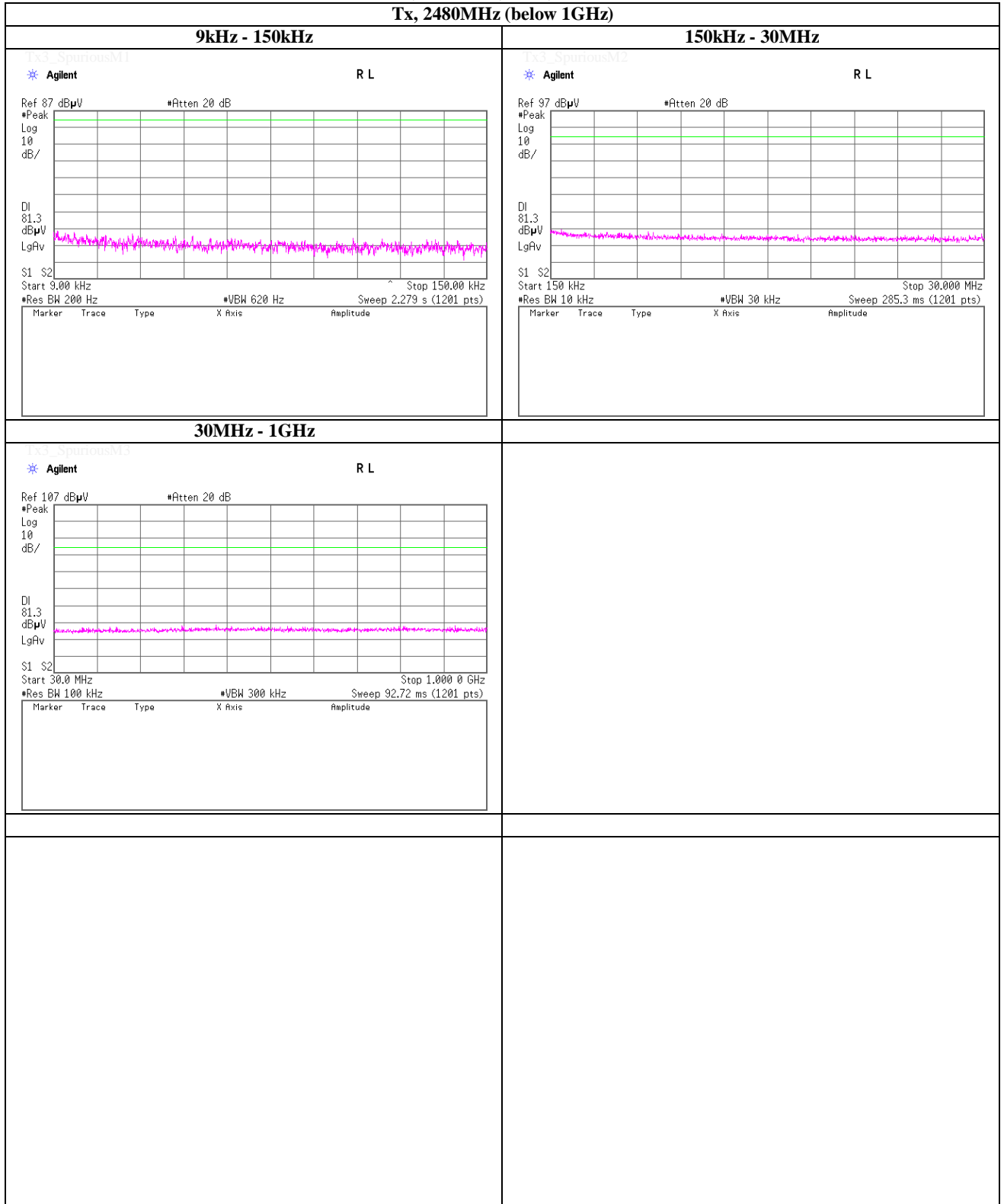
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### Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2480MHz (below 1GHz)**

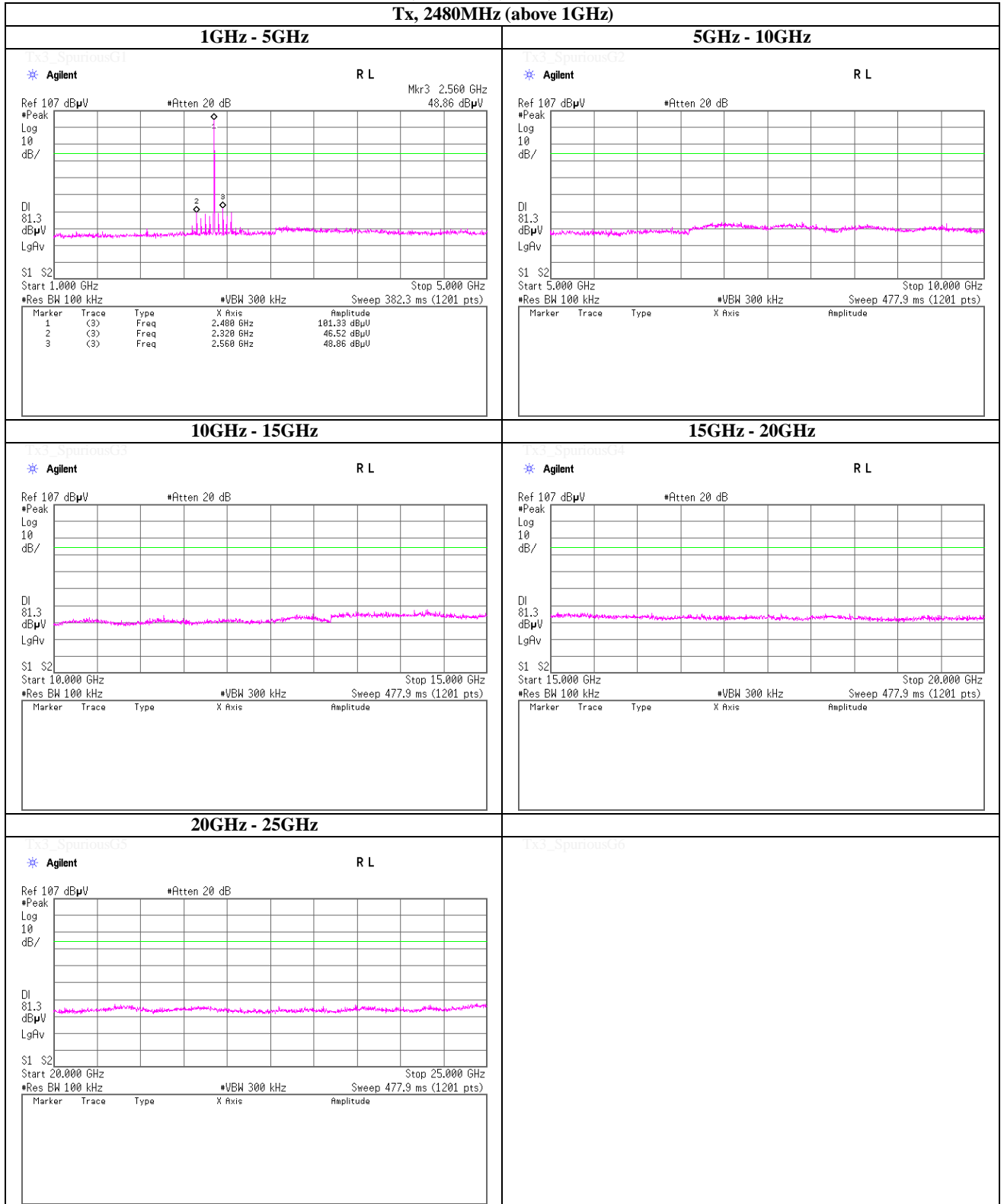


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## Spurious emission (Conducted)

**Tx, Bluetooth, BDR, PRBS9**

**Tx, 2480MHz (above 1GHz)**



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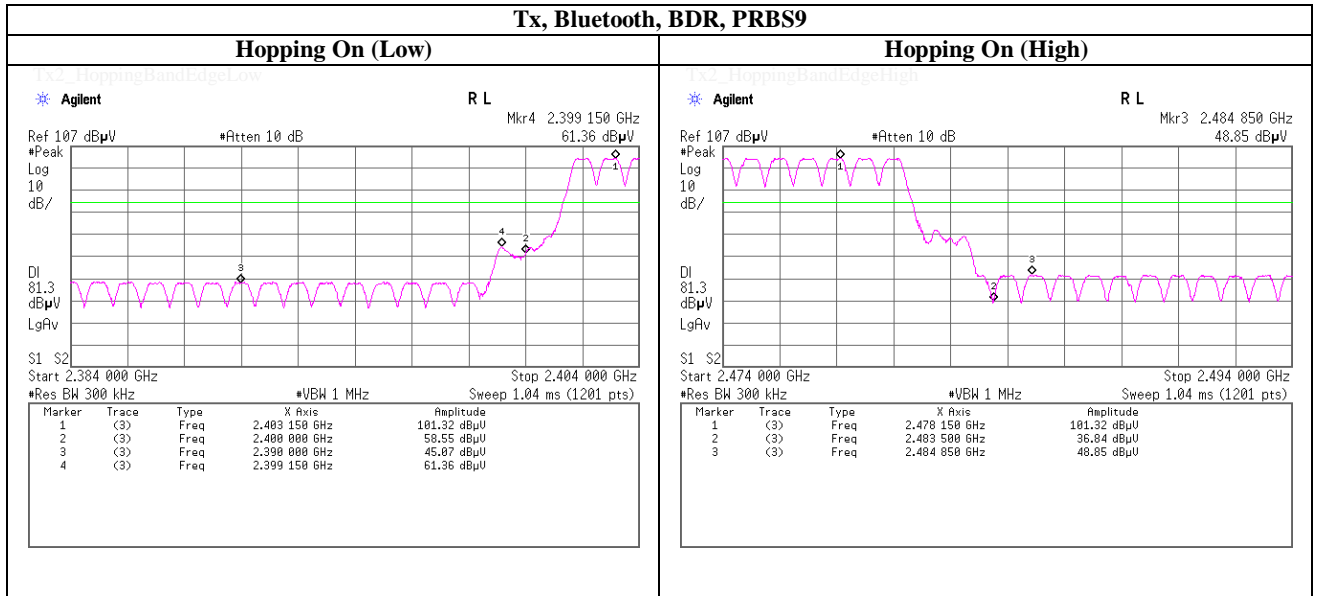
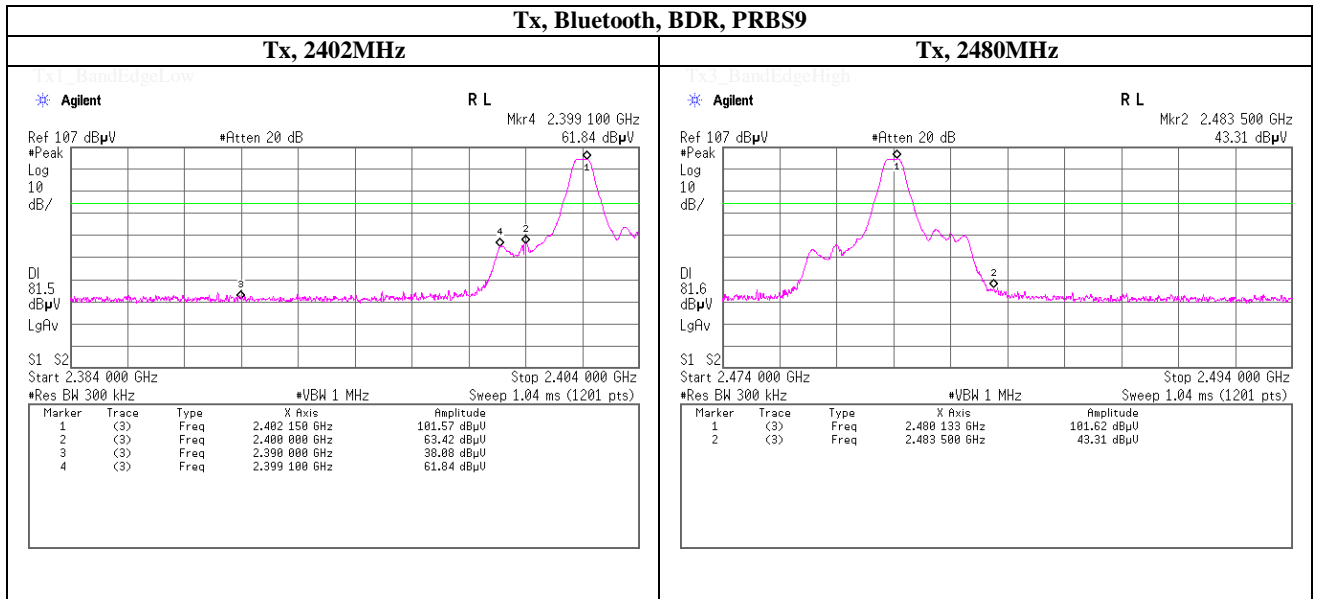
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## Spurious emission (Conducted)

### Band Edge compliance



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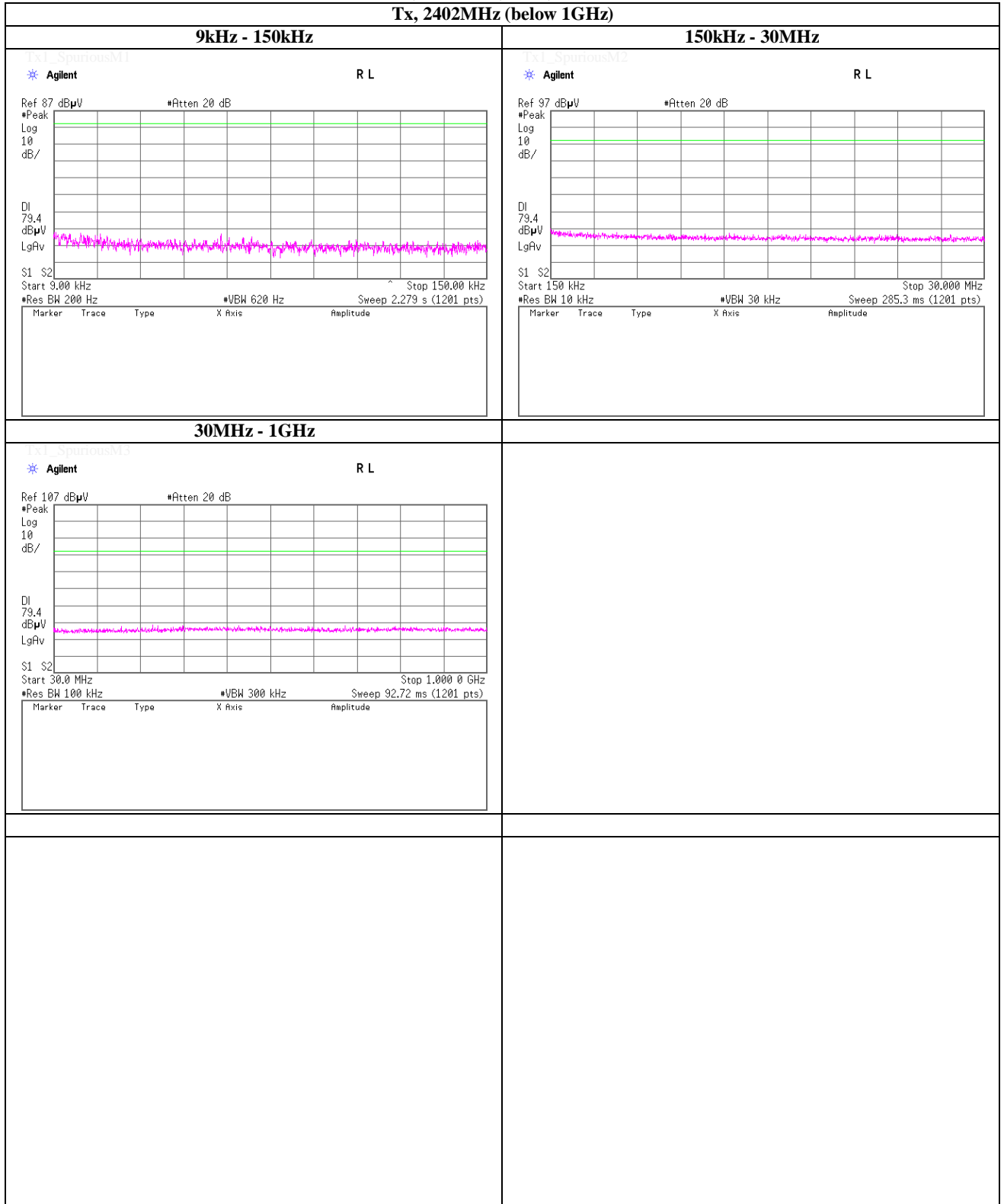
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### Spurious emission (Conducted)

**Tx, Bluetooth, EDR, PRBS9**

**Tx, 2402MHz (below 1GHz)**



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**Shonan EMC Lab.**

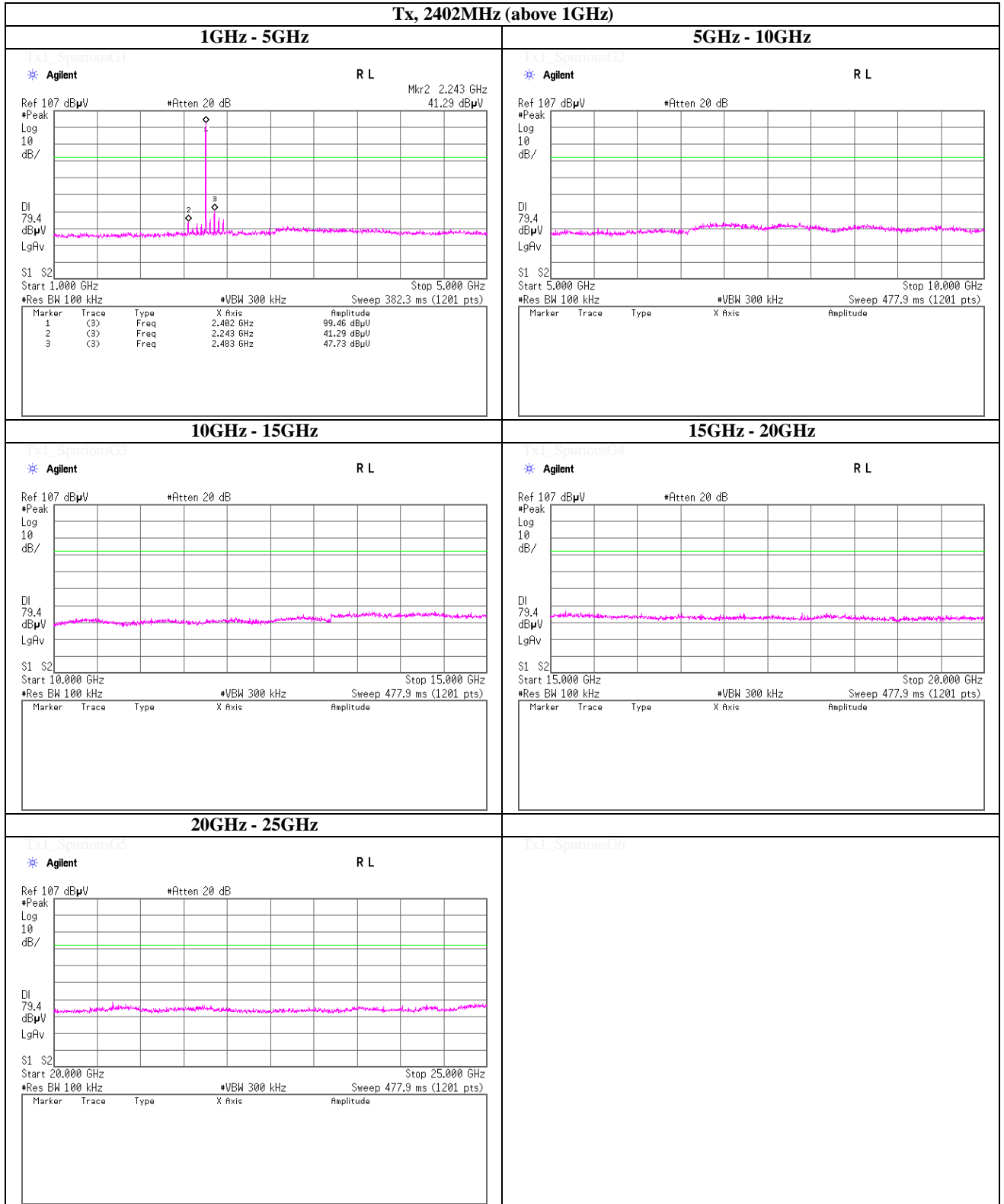
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### Spurious emission (Conducted)

**Tx, Bluetooth, EDR, PRBS9**  
**Tx, 2402MHz (above 1GHz)**

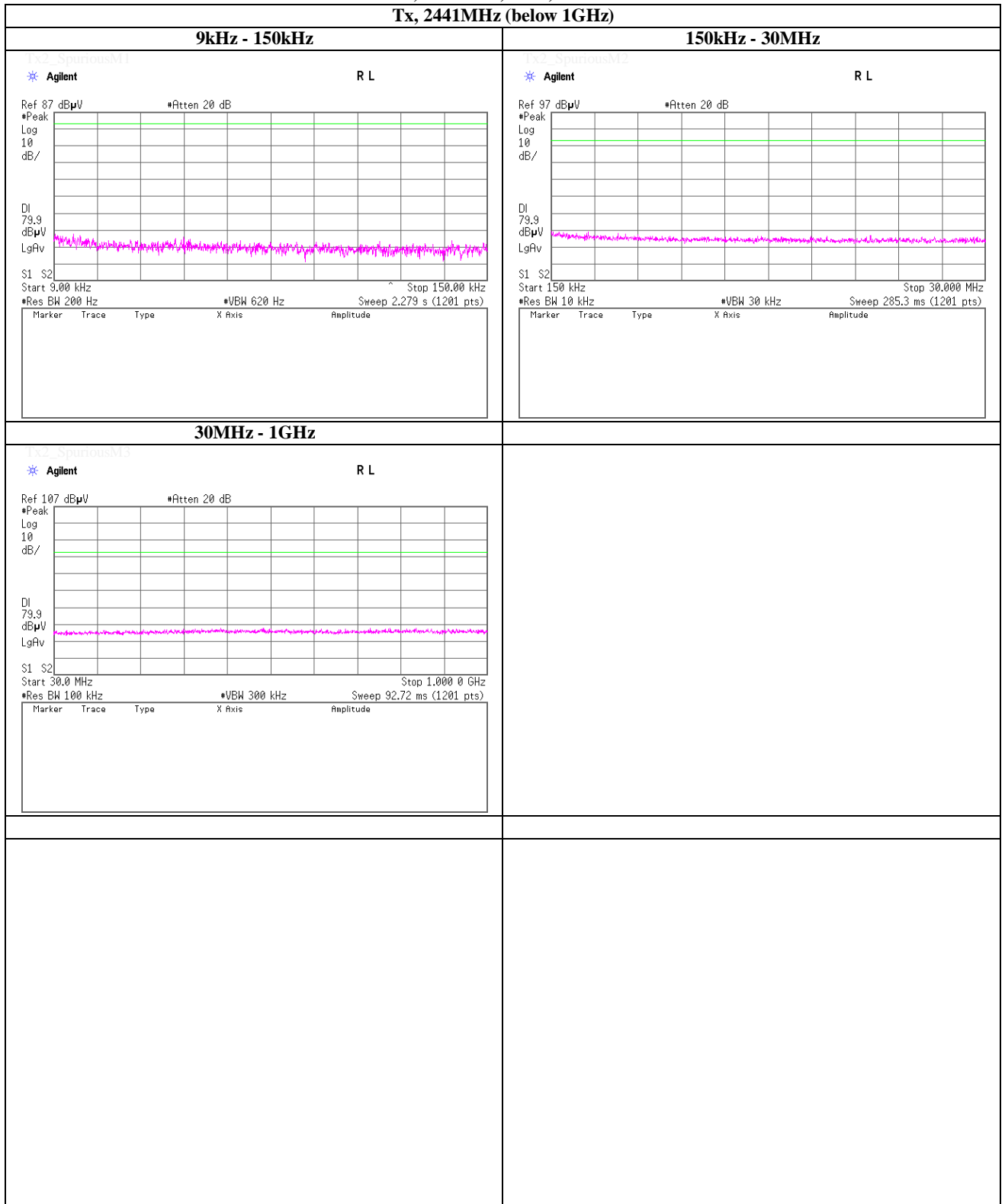


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### Spurious emission (Conducted)

**Tx, Bluetooth, EDR, PRBS9**

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



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**Shonan EMC Lab.**

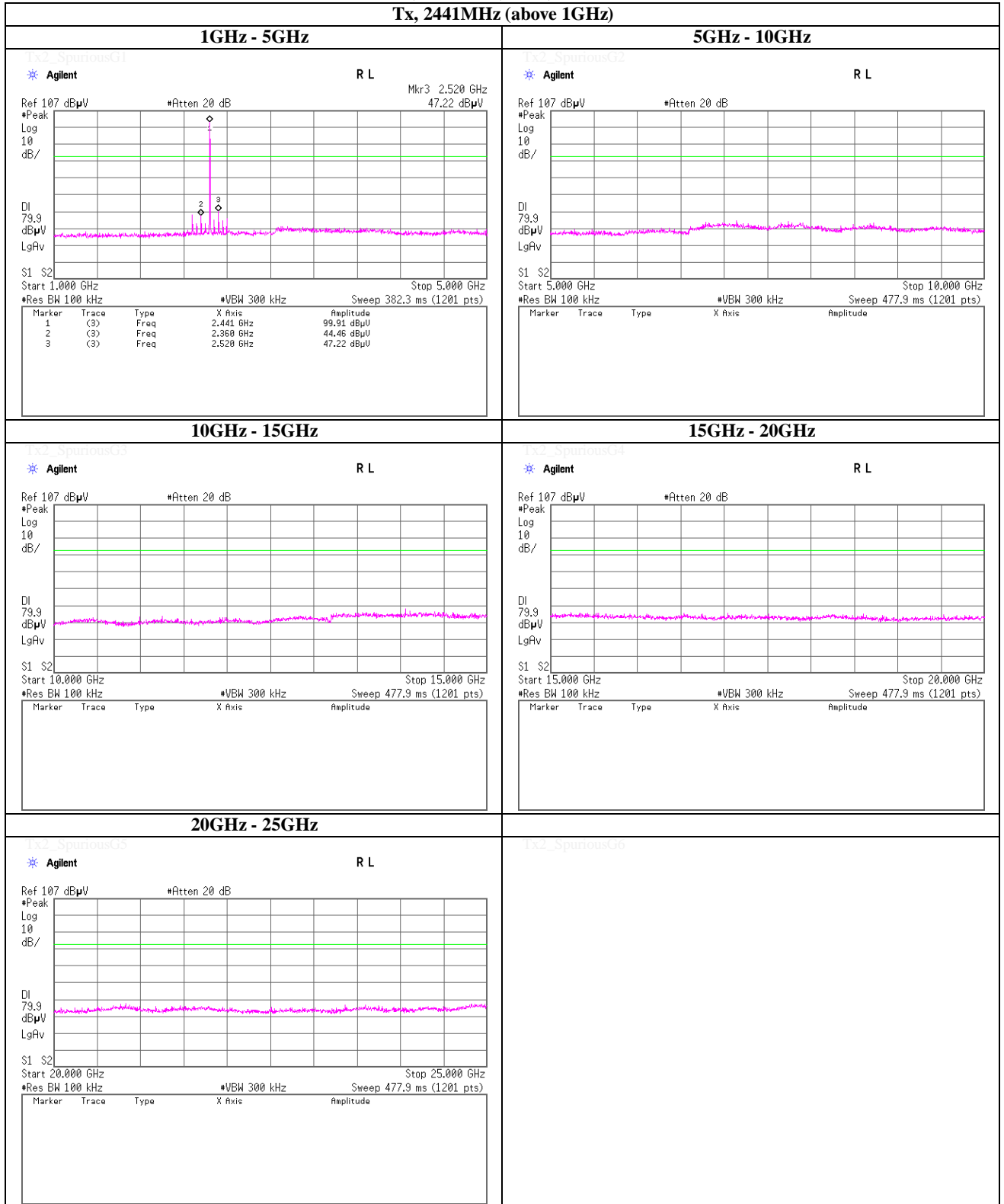
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### Spurious emission (Conducted)

**Tx, Bluetooth, EDR, PRBS9**  
**Tx, 2441MHz (above 1GHz)**

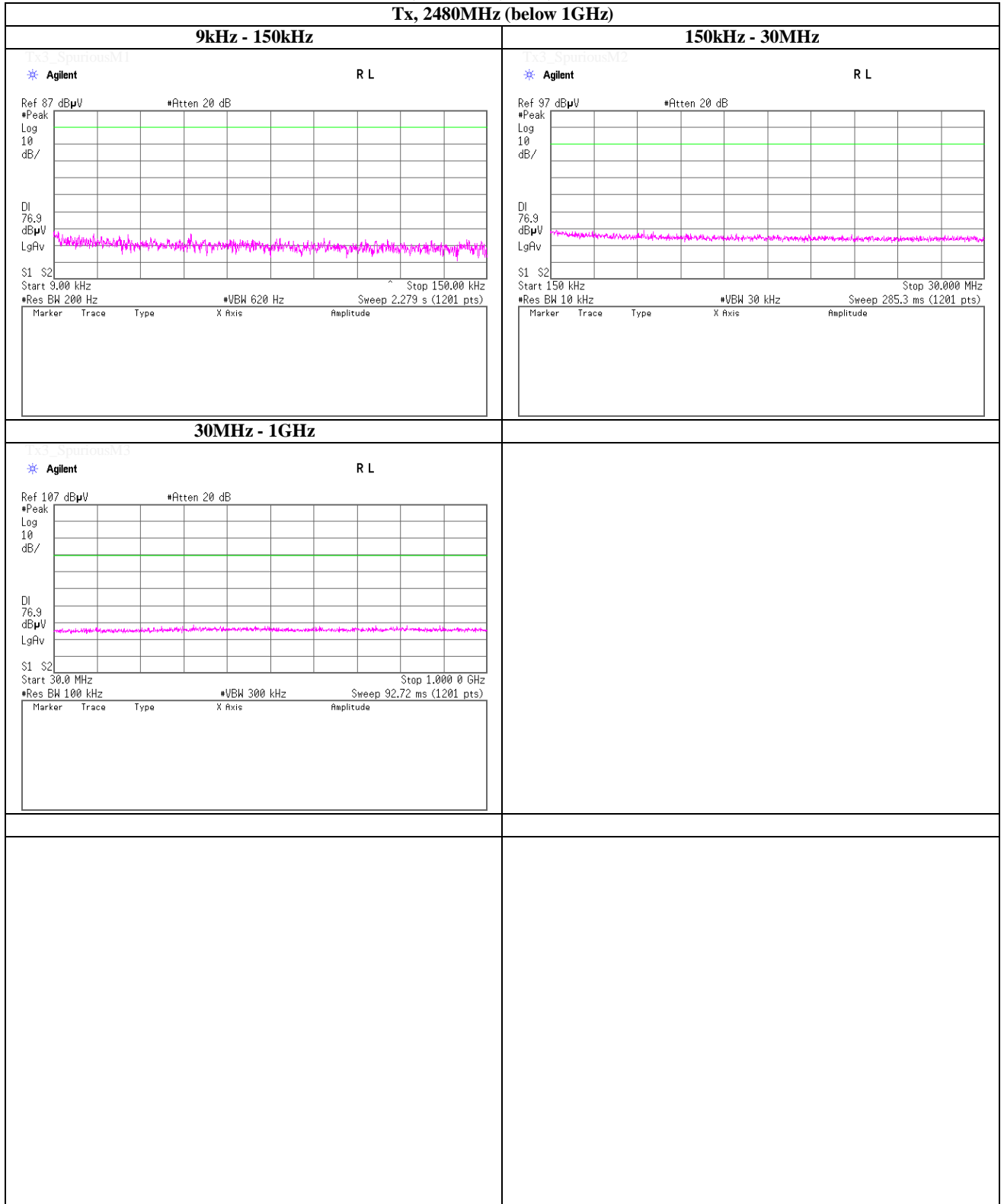


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### Spurious emission (Conducted)

**Tx, Bluetooth, EDR, PRBS9**

**Tx, 2480MHz (below 1GHz)**



**UL Japan, Inc.**

**Shonan EMC Lab.**

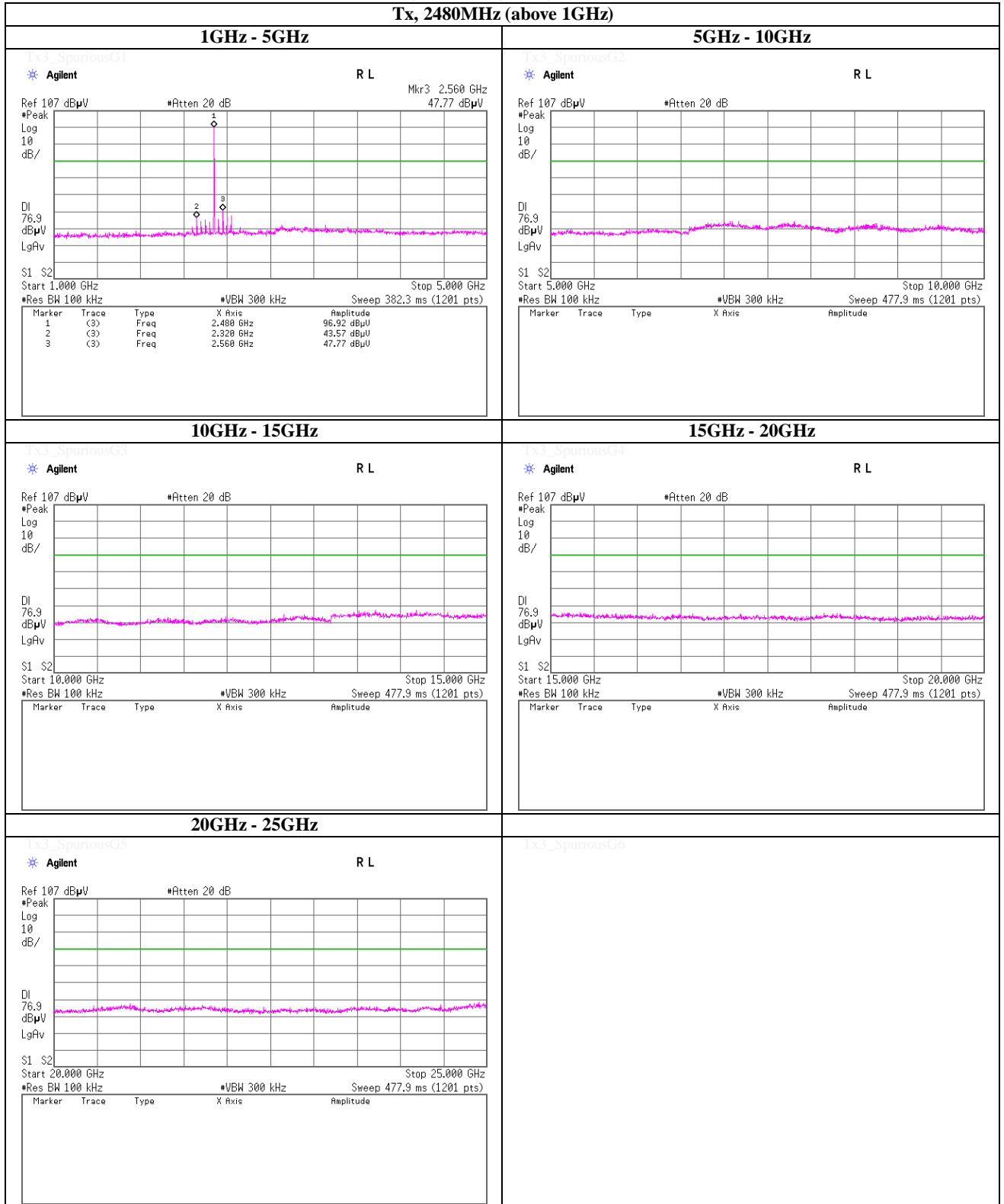
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### Spurious emission (Conducted)

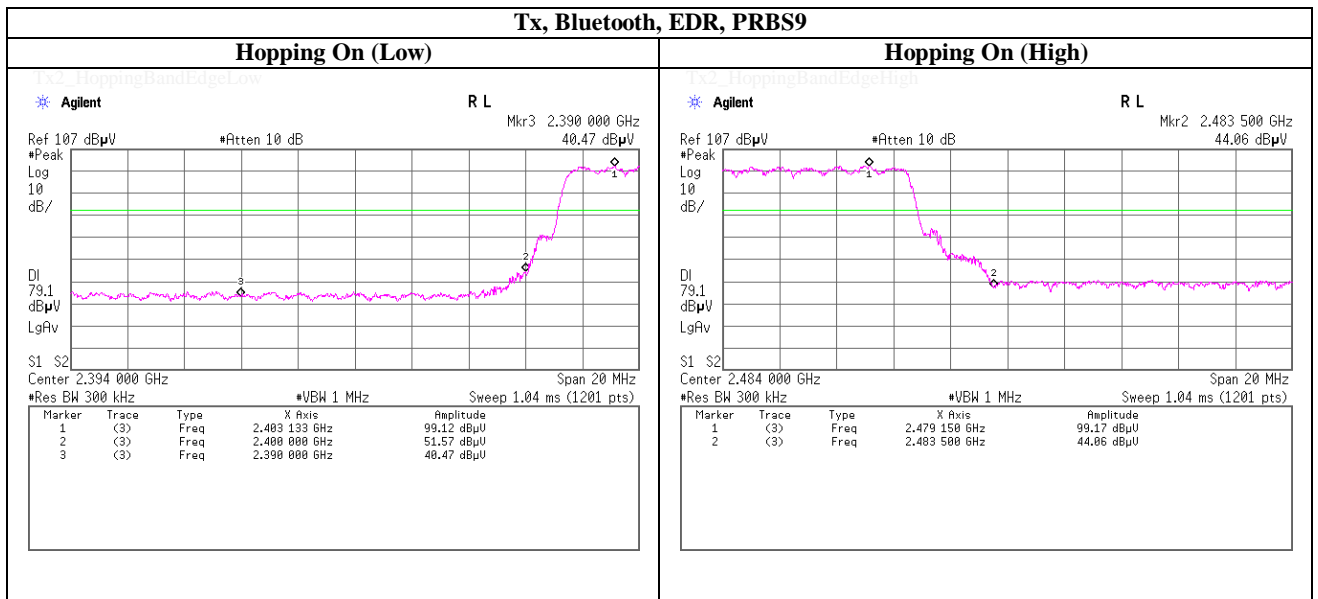
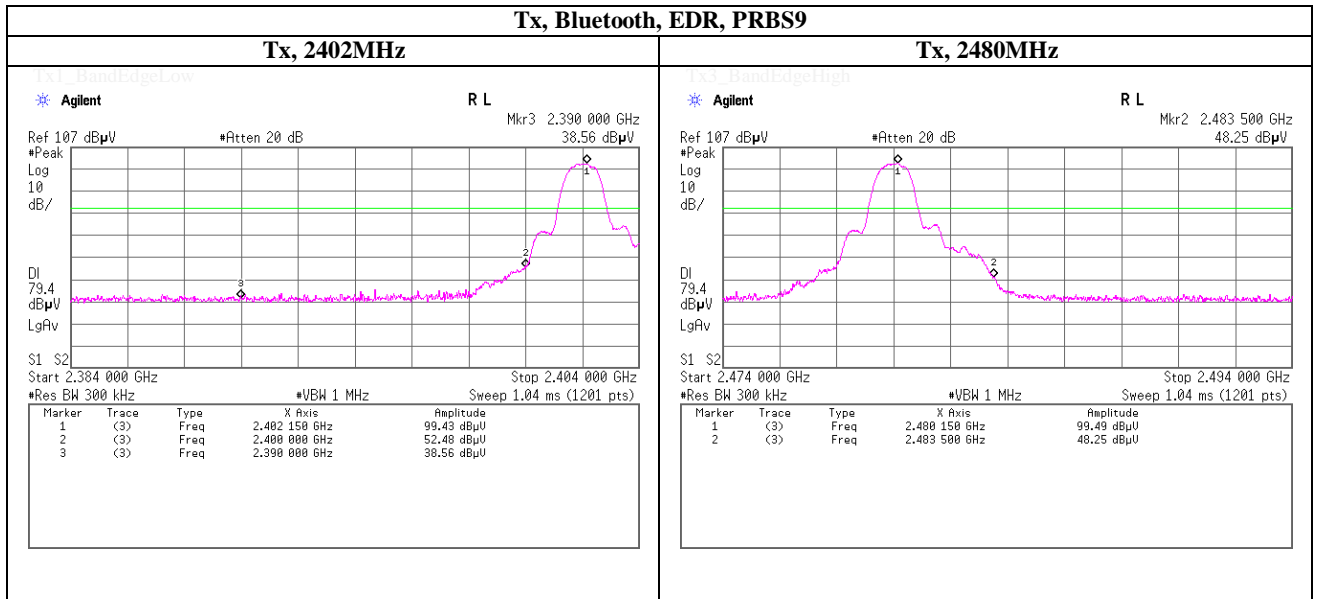
**Tx, Bluetooth, EDR, PRBS9**  
**Tx, 2480MHz (above 1GHz)**



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## Spurious emission (Conducted)

### Band Edge compliance



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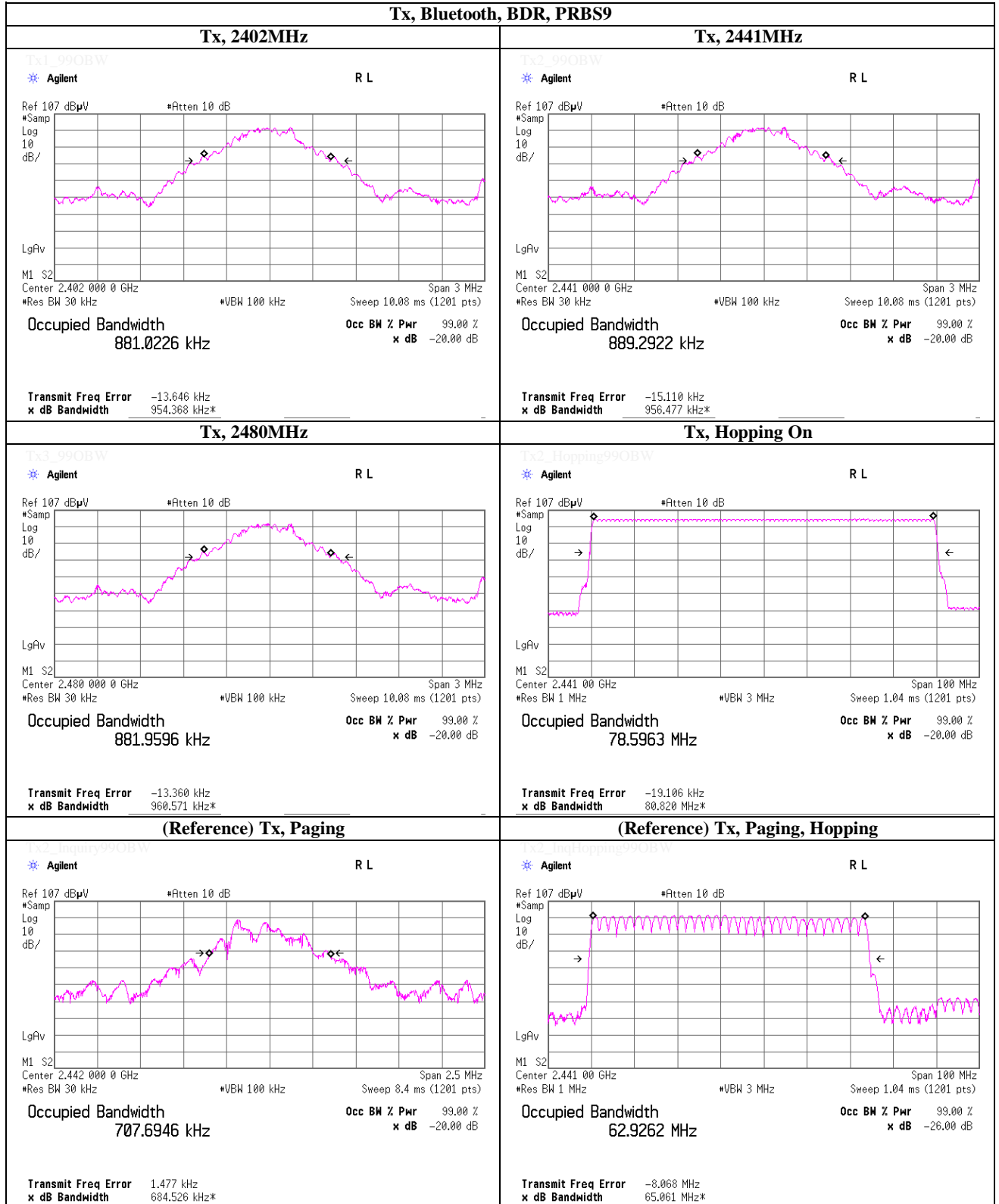
**Shonan EMC Lab.**

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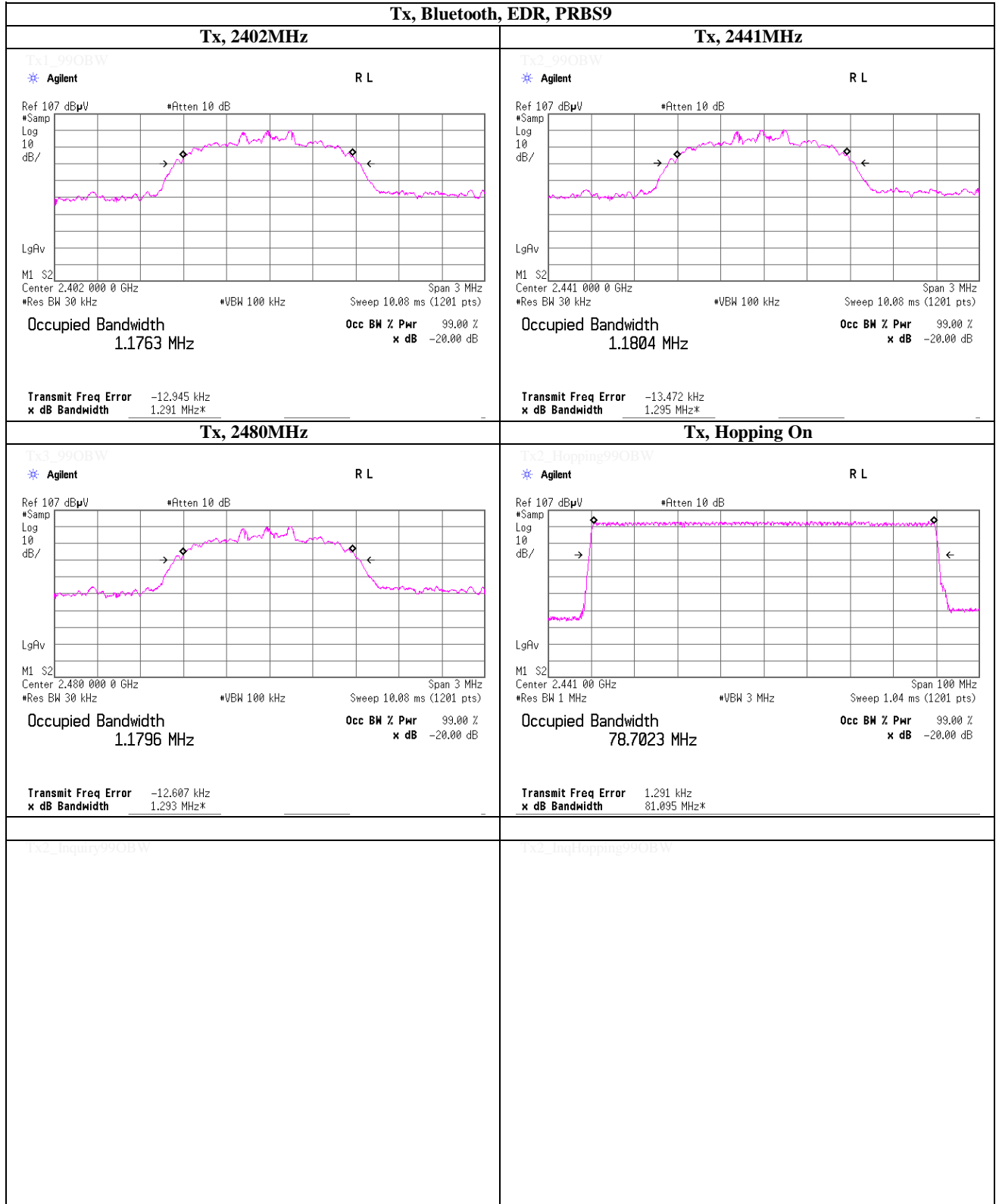
## 99% Occupied Bandwidth



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### 99% Occupied Bandwidth



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**APPENDIX  
Test Instruments**

**EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2011/12/05 * 12
SAT10-11	Attenuator	Weinschel Corp.	54A-10	37588	AT	2012/04/06 * 12
SCC-G28	Coaxial Cable	Junkosha	MWX241-01000KM SKMS	SEP-20-12-00 2	AT	2012/09/26 * 12
SCC-H2	Microwave cable	Hirose Electric	U.FL-2LP-066J1- A-(200)	-	AT	Pre Check
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2012/09/21 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2011/12/27 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2011/12/27 * 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	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2012/03/16 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFL,MF)	-	RE	-

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 ,

AT: Antenna terminal conducted tests

**APPENDIX 2  
Test Instruments**

**EMI test equipment**

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2012/02/10 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2012/02/10 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2012/10/08 * 12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-269(RF Selector)	RE	2012/04/10 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP9108-A 0888	RE	2011/11/23 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2012/02/06 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE, CE	2012/10/04 * 12
SJM-08	Measure	PROMART	SEN1935	-	RE, CE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2012/09/11 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF, MF)	-	RE	-
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2012/03/12 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2012/04/10 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2012/05/22 * 12
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
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2012/08/20 * 12
SCC-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2012/04/10 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2012/02/20 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2012/03/26 * 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