



RADIO TEST REPORT

Test Report No. : 10006266S-A

Applicant : **Panasonic Corporation**
Automotive Systems Company

Type of Equipment : **Bluetooth Module**

Model No. : **YEP0PTA606A0**

FCC ID : **ACJ932YEP0PTA606**

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: February 28 to March 5, 2013

Tested by: J. Arai
Tatsuya Arai
Engineer of WiSE Japan,
UL Verification Service

Approved by : Go Ishiwata
Go Ishiwata
Manager 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 : Panasonic Corporation Automotive Systems Company
Brand Name : Panasonic
Address : 4261 Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa 224-8520 Japan
Telephone Number : +81-50-3689-7133
Facsimile Number : +81-45-931-0806
Contact Person : Motohiro Shimizu

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

2.1 Identification of E.U.T.

Type of Equipment : Bluetooth Module
Model Number : YEP0PTA606A0
Serial Number : 001
Rating : DC 5.0V
Receipt Date of Sample : February 27, 2013
Country of Mass-production : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: YEP0PTA606A0 (referred to as the EUT in this report) is a Bluetooth Module.

Clock frequencies : 26MHz, 12MHz, 12.288MHz

Radio specification

Equipment type : Transceiver
Frequency of operation : 2402-2480MHz
Bandwidth / Channel spacing : 79MHz & 1MHz
Type of modulation : FHSS (GFSK, $\pi/4$ -DQPSK, 8DPSK)
Antenna type : Monopole
Antenna connector type : U.FL
Antenna gain with cable loss : -1.5dBi (Antenna 1: N1KYYYY00037), -2.4dBi (Antenna 2: YEAP01A601b-1)
ITU code : F1D, G1D
Operation temperature range : -10 to +55 deg. C.

FCC 15.31 (e)

The Bluetooth module is provided with stable power supply DC 3.3V from the host device, therefore, the equipment complies with the power supply regulation.

FCC 15.203

The EUT complies with the requirement, because the antenna has a unique coupling (U.FL).

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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 December 27, 2012 and effective January 28, 2013
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

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 *1)	N/A	N/A
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		2.8dB Freq.: 192.004MHz Polarization: Vertical Detection: Quasi peak Mode: Tx 2441 MHz, DH5 Antenna:2

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

*1) The test is not applicable since the EUT does not have AC Mains.

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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 ^{*1} /SR ^{*2} (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	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
Radiated emission (Measurement distance: 1m)	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

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%

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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 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 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.

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

4.1 Operating mode

Test item	Operating mode	Tested frequency
Carrier frequency separation	Transmitting Hopping ON (DH5/3-DH5)/Inquiry, Payload: PRBS9	-
20dB bandwidth	Transmitting Hopping OFF (DH5/3-DH5)/Inquiry, Payload: PRBS9	2402MHz, 2441MHz, 2480MHz
Number of hopping frequency	Transmitting Hopping ON (DH5/3-DH5)/Inquiry, Payload: PRBS9	-
Dwell time	Transmitting (Hopping ON), Payload: PRBS9 -DH1, -DH3, -DH5 -3DH1, -3DH3, -3DH5 -Inquiry	-
Maximum peak output power	Transmitting (Hopping OFF), Payload: PRBS9 -DH5, -2DH5, -3DH5	2402MHz, 2441MHz, 2480MHz
Band edge compliance & Spurious emission (Conducted)	Transmitting (DH5/3DH5), Payload: PRBS9 -Hopping ON -Hopping OFF	Band edge compliance: 2402MHz, 2480MHz
(Radiated)	Transmitting (DH5/3DH5), Payload: PRBS9	Spurious emission: 2402MHz, 2441MHz, 2480MHz
99% occupied bandwidth	Transmitting (DH5/3DH5), 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	Fixed (The setting is not controlled by the software and it is equivalent to that of mass- produced items.)
Software	HCI Tester Ver 1.0.01

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

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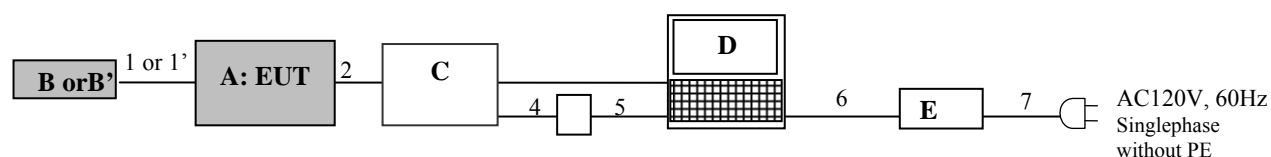
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4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Bluetooth Module	YEP0PTA606A0	001	Panasonic Corporation	EUT
B	Antenna1	N1KYYYY00037	-	Panasonic Corporation	EUT
B'	Antenna2	YEAP01A601b-1	-	Panasonic Corporation	EUT
C	Jig board	-	-	Panasonic Corporation	-
D	Laptop PC	PCG-5M2N	28396833 1302334	Sony Corporation	-
E	AC Adaptor	VGP-AC16V11	147994822 0241264	Sony Corporation	-

List of cables used

No.	Cable name	Length (m)	Shield		Remark
			Cable	Connector	
1	Antenna1	0.17	Shielded	Shielded	-
1'	Antenna2	0.085	Shielded	Shielded	-
2	Flat	0.06	Unshielded	Unshielded	-
3	USB (DC5.0V bass power)	1.5	Shielded	Shielded	-
4	Serial	0.4	Shielded	Shielded	-
5	USB-Serial	0.6	Shielded	Shielded	-
6	DC	1.8	Unshielded	Unshielded	-
7	AC	0.7	Unshielded	Unshielded	-

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SECTION 5: 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 6: 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 7: 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 8: 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 9: 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

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SECTION 10: Radiated emission

10.1 Operating environment

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

10.2 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. Photographs of the set up are shown in APPENDIX 3.

10.3 Test conditions

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

10.4 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 DA 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 position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Worst position:

Frequency range		Below 1GHz	Above 1GHz	Carrier
Module	Horizontal	Z	Z	X
	Vertical	Z	Z	Z
Antenna1	Horizontal	Y	Y	X
	Vertical	Z	Y	Z

Frequency range		Below 1GHz	Above 1GHz	Carrier
Module	Horizontal	Y	Y	X
	Vertical	Z	Y	Z
Antenna2	Horizontal	Y	Y	X
	Vertical	Z	Y	Z

* The definition of the axis was listed in a 'Pre-check of the worst position' in APPENDIX 3.

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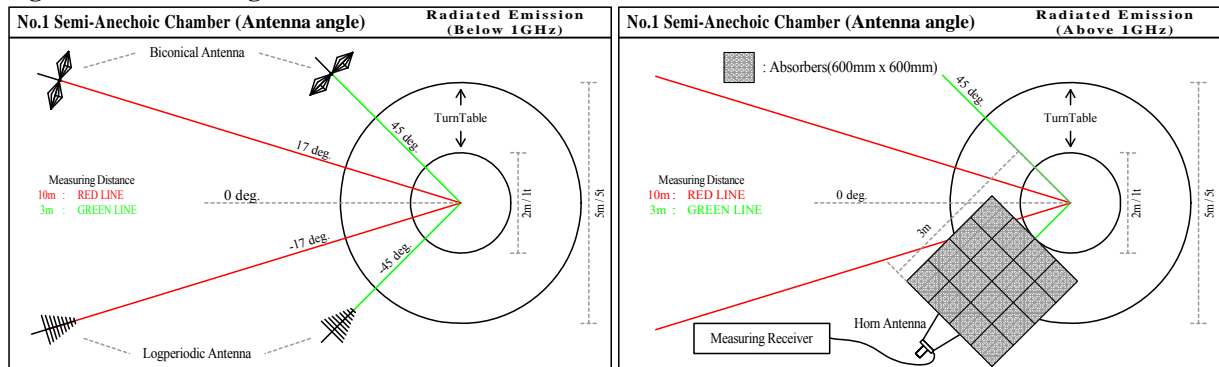
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Figure 1. Antenna angle



10.5 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.

10.6 Results

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

SECTION 11: 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

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

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

Radiated emission
Pre-check of worst position
Antenna type

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APPENDIX 1: Data of Radio tests

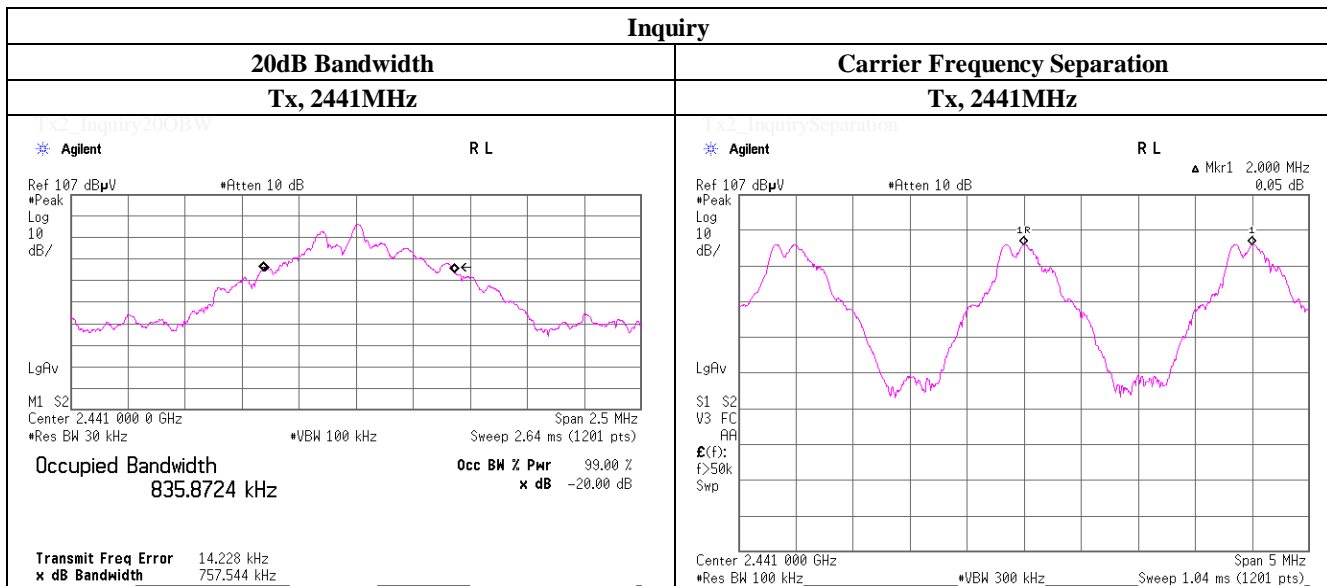
20dB Bandwidth and Carrier Frequency Separation

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 4, 2013	
Temperature / Humidity	23 deg.C , 50 %RH	
Engineer	Tatsuya Arai	
Mode	Tx, Bluetooth, BDR, PRBS9.	

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency Separation [MHz]
DH5	2402.0	0.928	1.000	>= 0.619
DH5	2441.0	0.929	1.000	>= 0.620
DH5	2480.0	0.916	1.000	>= 0.610
Inquiry	2441.0	0.758	2.000	>= 0.505

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

No limit applies to 20dB Bandwidth.



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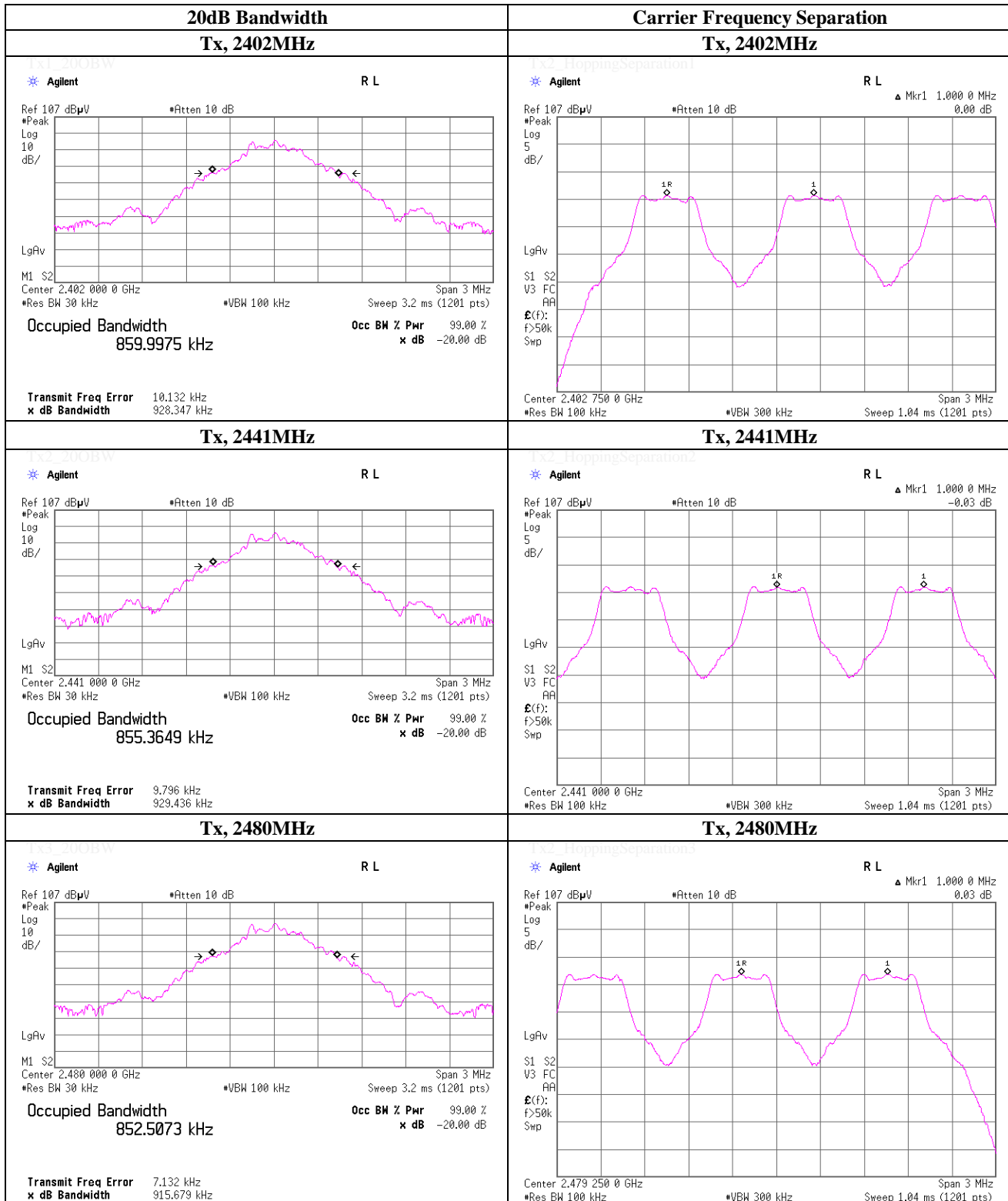
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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, BDR, PRBS9,



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20dB Bandwidth and Carrier Frequency Separation

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 4, 2013
 Temperature / Humidity 23 deg.C , 50 %RH
 Engineer Tatsuya Arai
 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	1.262	1.000	>= 0.841
3-DH5	2441.0	1.264	1.000	>= 0.842
3-DH5	2480.0	1.273	1.000	>= 0.849

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

No limit applies to 20dB Bandwidth.

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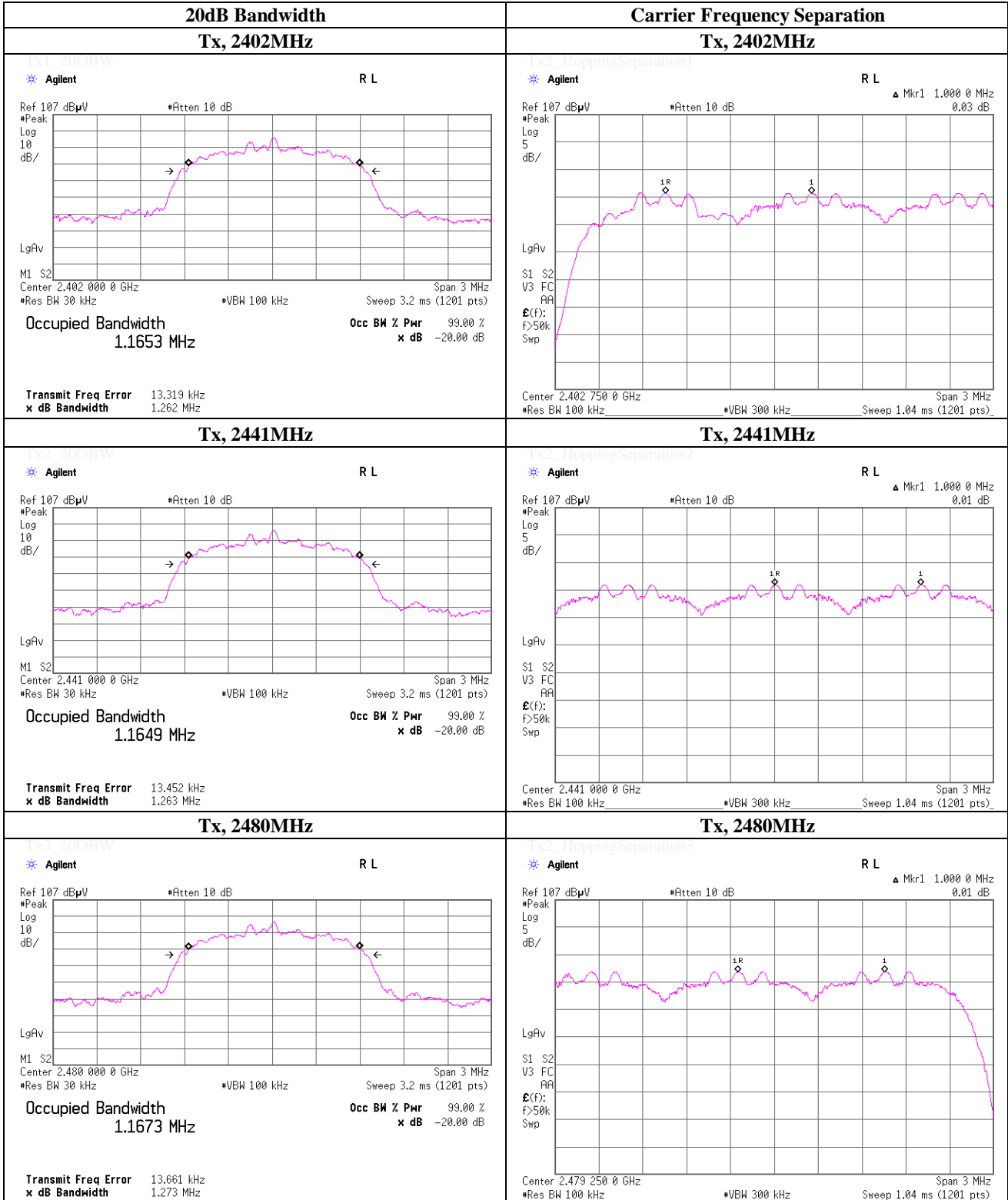
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20dB Bandwidth and Carrier Frequency Separation

Tx, Bluetooth, EDR, PRBS9



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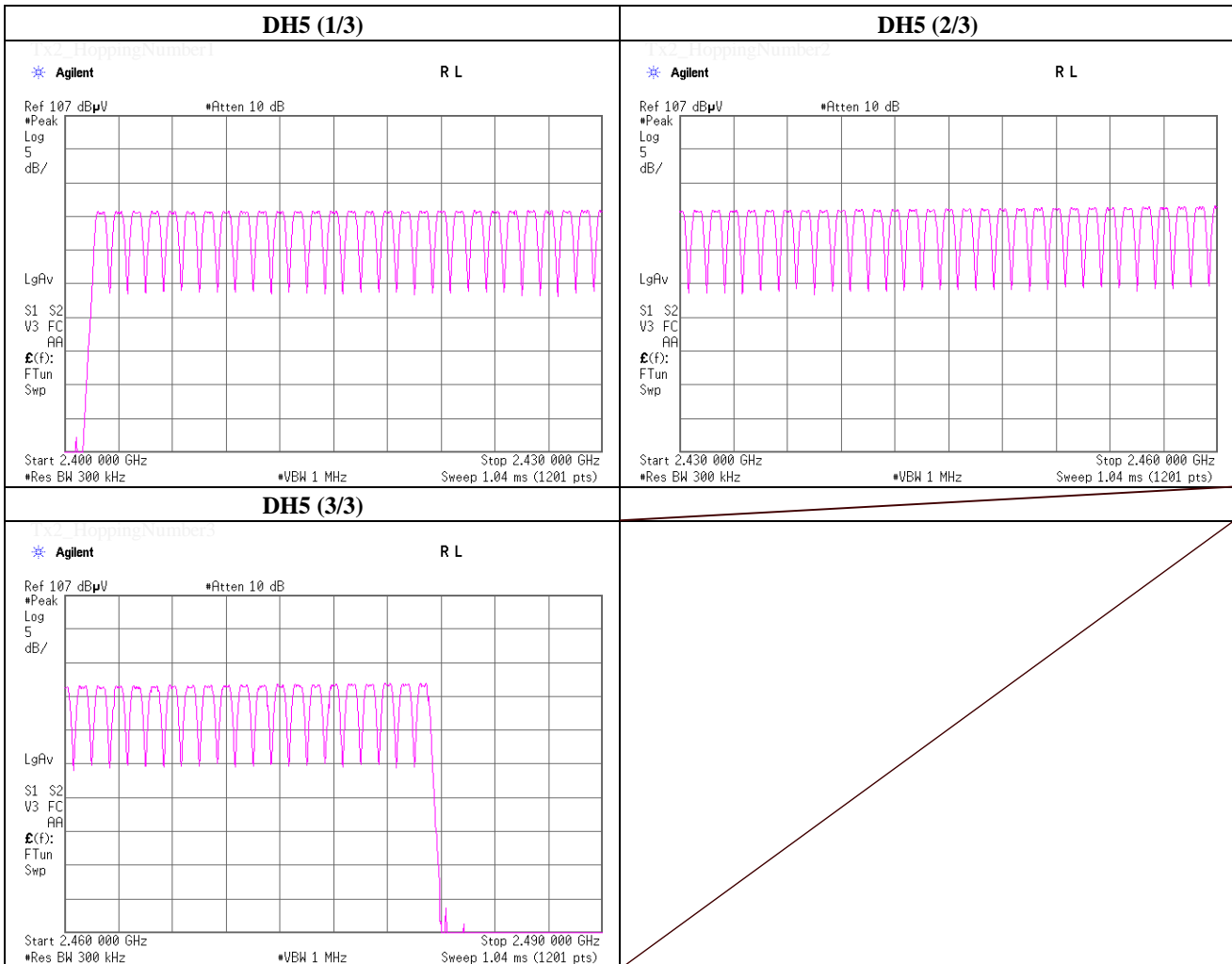
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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 4, 2013	
Temperature / Humidity	23 deg.C , 50 %RH	
Engineer	Tatsuya Arai	
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.



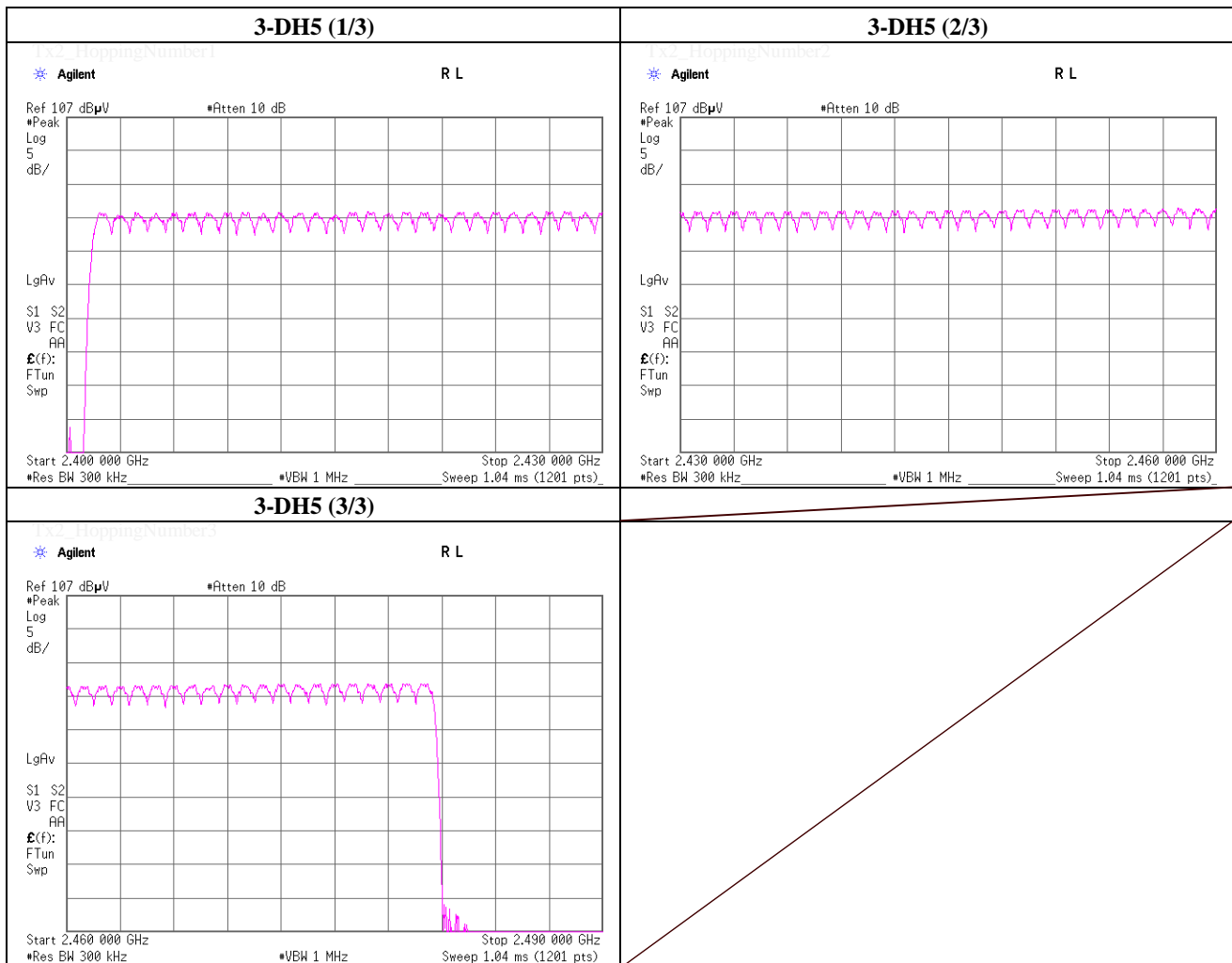
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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 4, 2013	
Temperature / Humidity	23 deg.C , 50 %RH	
Engineer	Tatsuya Arai	
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.

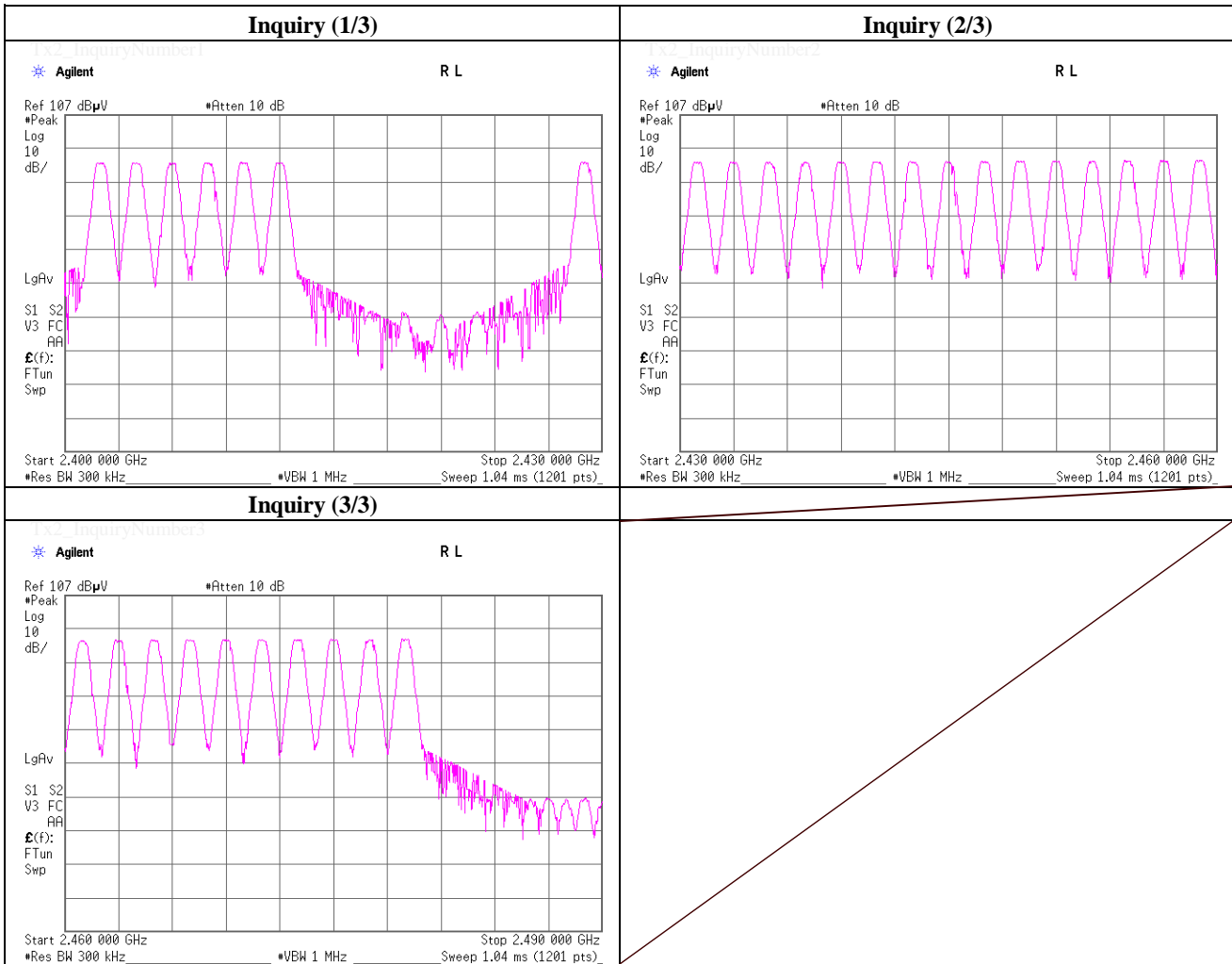


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Number of Hopping Frequency

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 4, 2013	
Temperature / Humidity	23 deg.C , 50 %RH	
Engineer	Tatsuya Arai	
Mode	Tx, Bluetooth, Inquiry	

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



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Dwell Time

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	March 4, 2013	
Temperature / Humidity	23 deg.C , 50 %RH	
Engineer	Tatsuya Arai	
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	50.6 / 5.0 sec. x 31.6 sec. = 320 times	0.451	144	400
DH3	25.6 / 5.0 sec. x 31.6 sec. = 162 times	1.706	276	400
DH5	18.6 / 5.0 sec. x 31.6 sec. = 118 times	2.954	349	400
Inquiry	100.0 / 1.0 sec. x 12.8 sec. = 1280 times	0.142	182	400

Sample Calculation

Result = Number of transmission x Length of transmission time

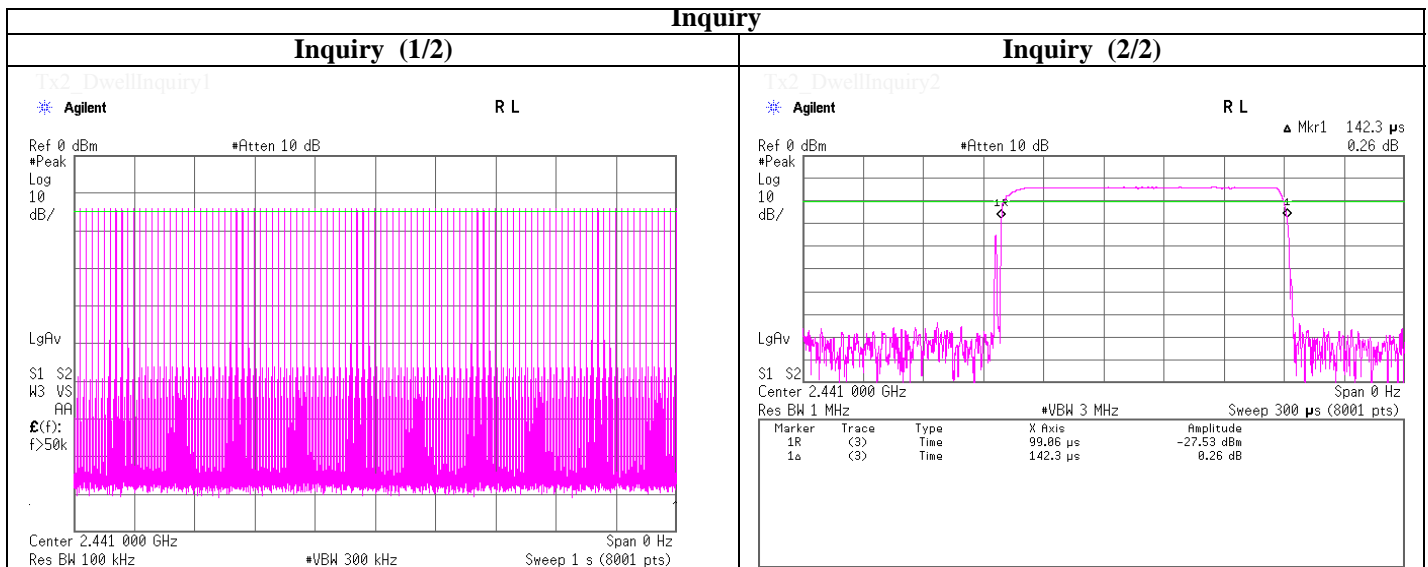
*Average data of 5 tests.(except Inquiry)

Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	50	50	51	51	50.6
DH3	18	27	26	31	26	25.6
DH5	16	21	19	18	19	18.6
Inquiry	100	-	-	-	-	100.0

Sample Calculation

Average= Summation(Sampling 1 to 5) / 5

* 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 $N=79$.



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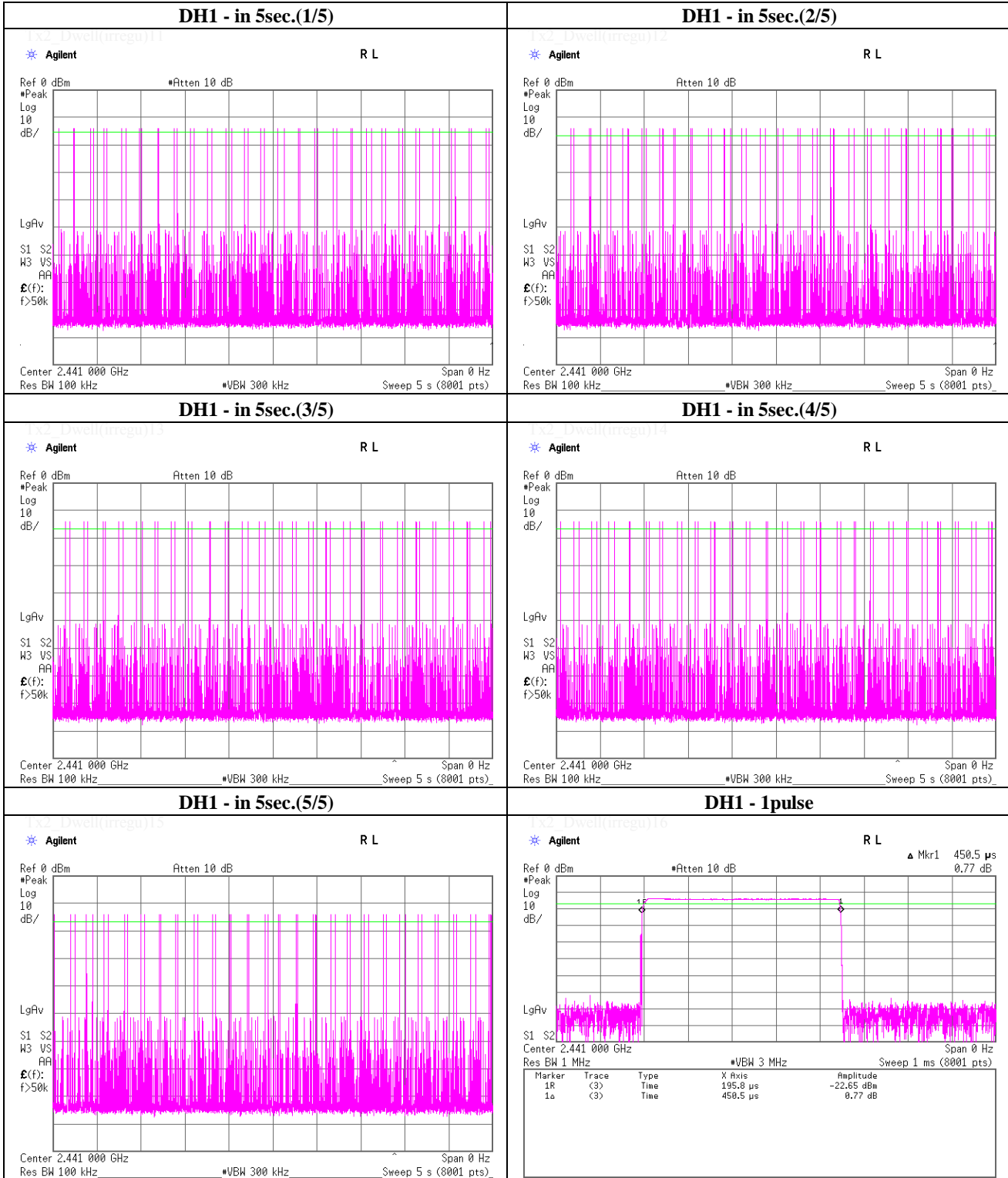
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, BDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

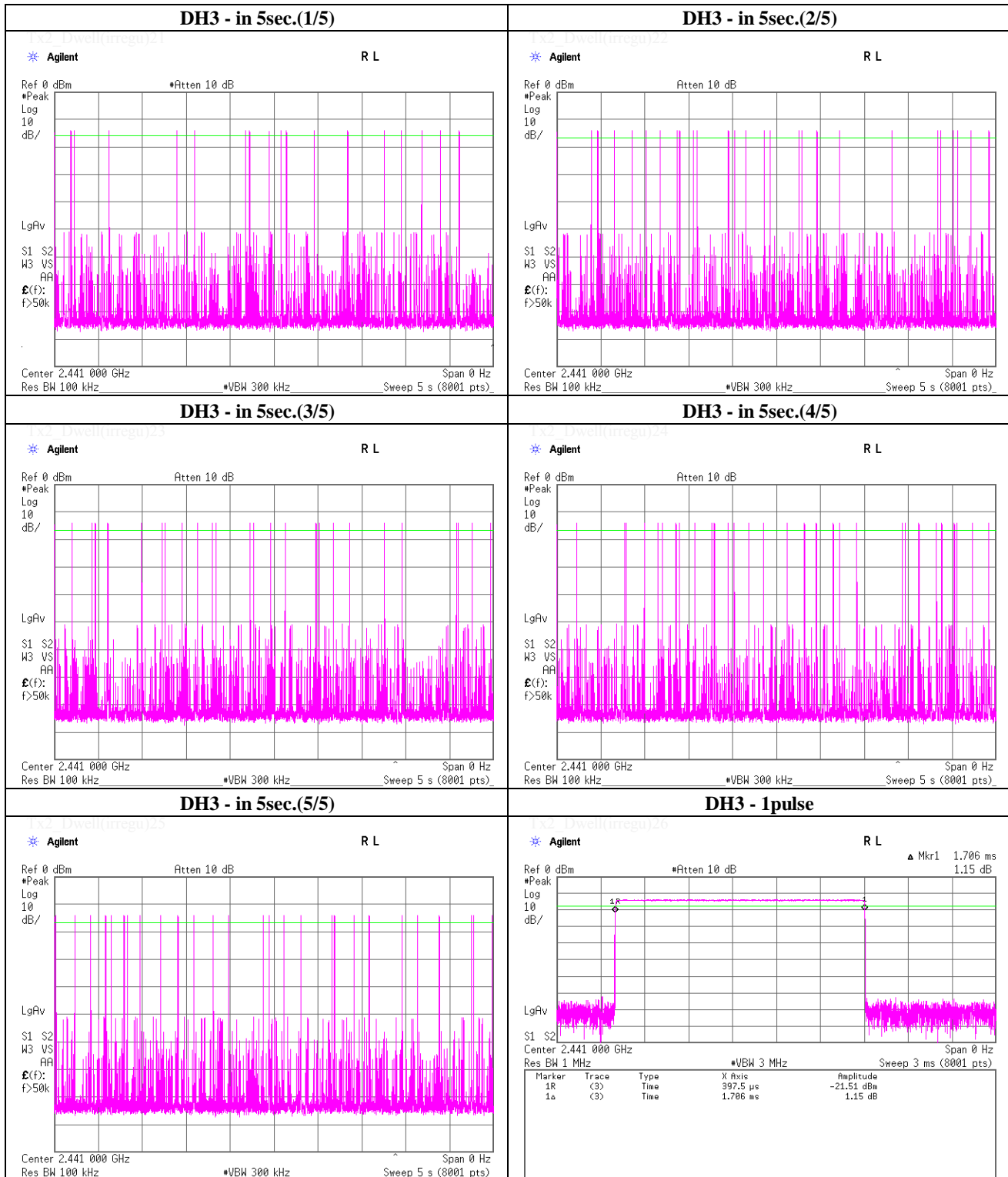
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, BDR, PRBS9.



UL Japan, Inc.

Shonan EMC Lab.

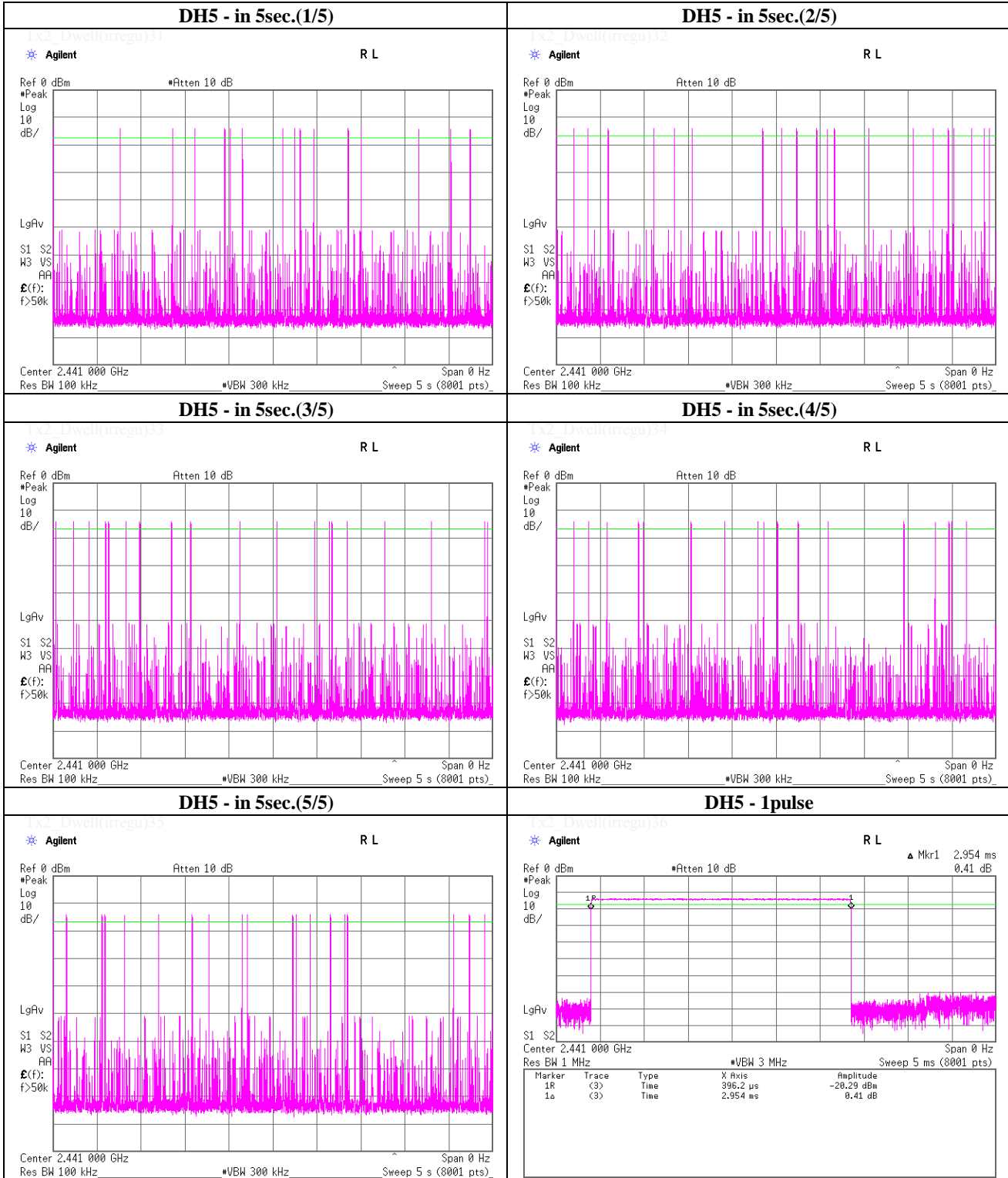
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, BDR, PRBS9.



UL Japan, Inc.

Shonan EMC Lab.

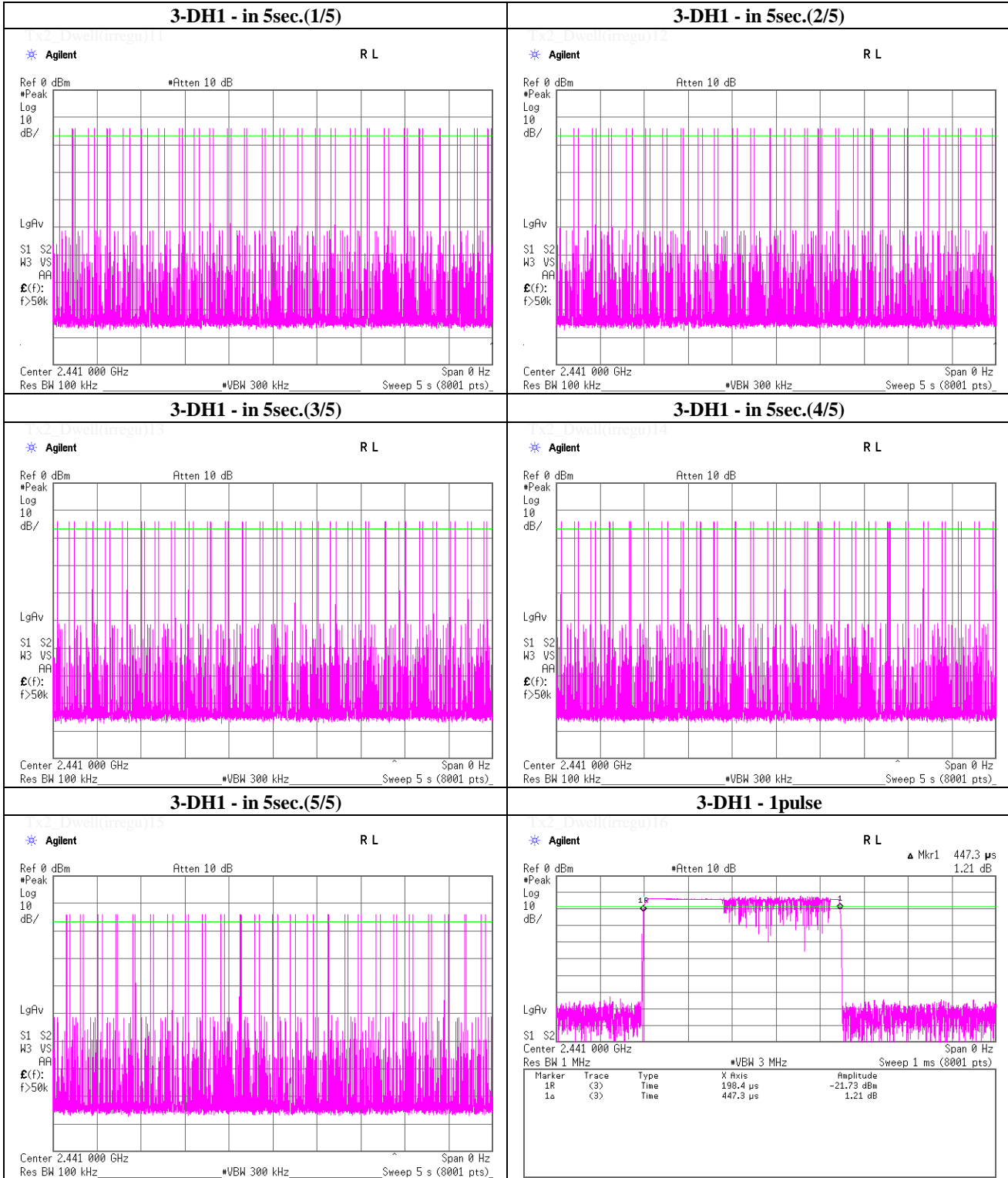
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, EDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

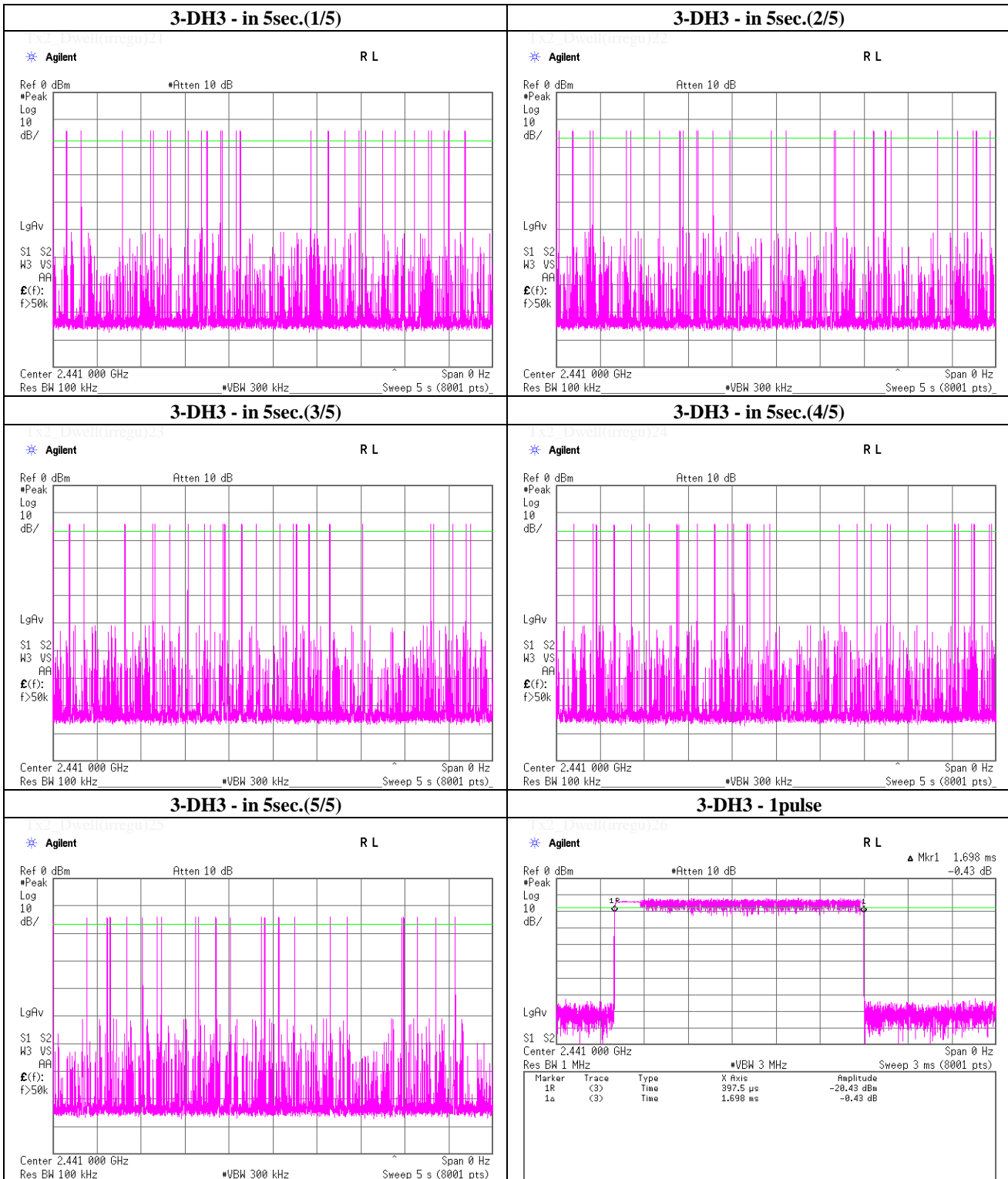
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, EDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

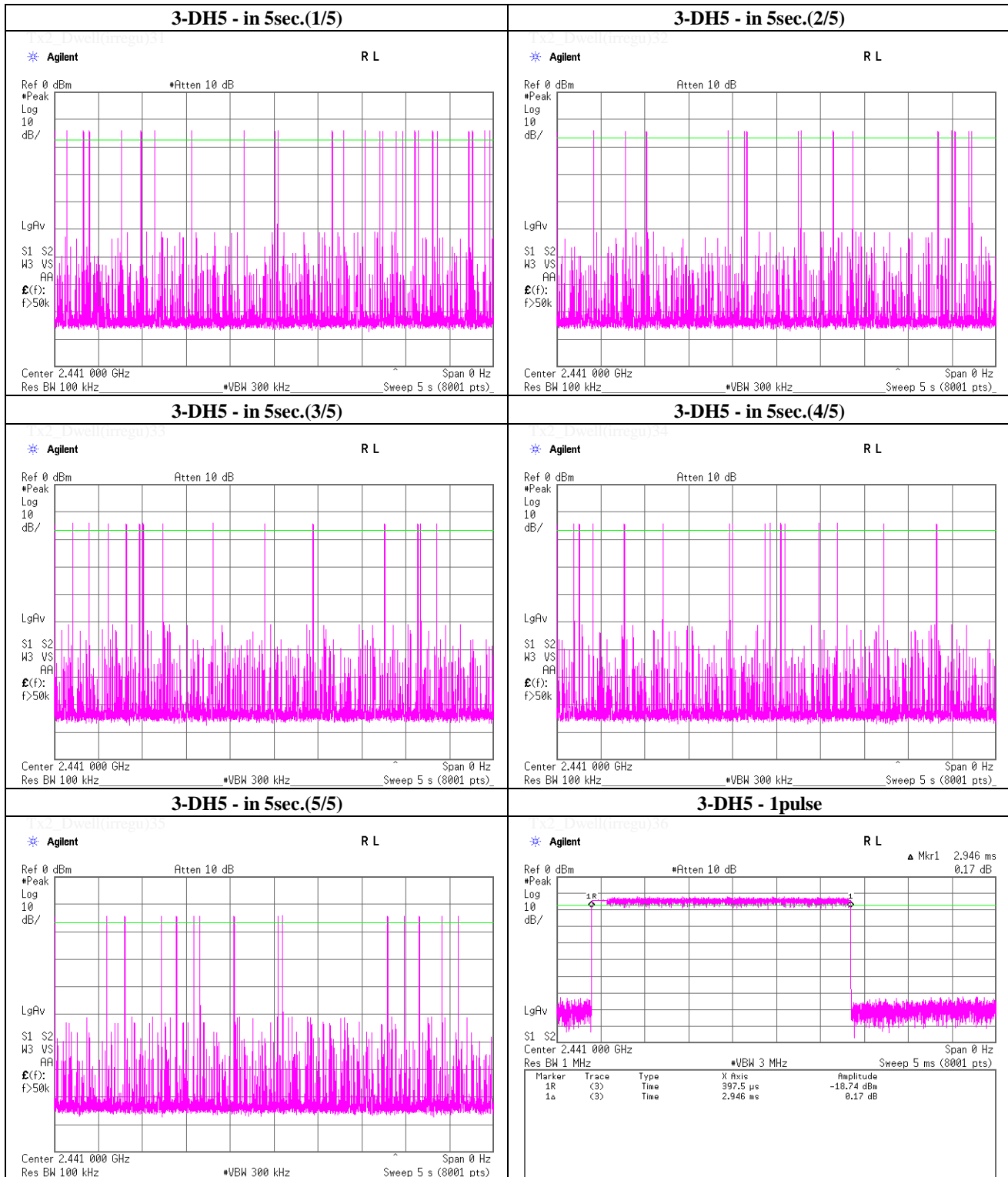
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time

Tx, Bluetooth, EDR, PRBS9



UL Japan, Inc.

Shonan EMC Lab.

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Maximum Peak Conducted Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date March 4, 2013
 Temperature / Humidity 23 deg.C , 50 %RH
 Engineer Tatsuya Arai
 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	-13.55	1.47	10.00	-2.08	0.62	20.97	125	23.05
DH5	2441.0	-13.25	1.47	10.00	-1.78	0.66	20.97	125	22.75
DH5	2480.0	-12.52	1.50	10.00	-1.02	0.79	20.97	125	21.99
2-DH5	2402.0	-12.09	1.47	10.00	-0.62	0.87	20.97	125	21.59
2-DH5	2441.0	-11.82	1.47	10.00	-0.35	0.92	20.97	125	21.32
2-DH5	2480.0	-11.02	1.50	10.00	0.48	1.12	20.97	125	20.49
3-DH5	2402.0	-11.71	1.47	10.00	-0.24	0.95	20.97	125	21.21
3-DH5	2441.0	-11.41	1.47	10.00	0.06	1.01	20.97	125	20.91
3-DH5	2480.0	-10.65	1.50	10.00	0.85	1.22	20.97	125	20.12

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

UL Japan, Inc.
Shonan EMC Lab.

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

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Facsimile : +81 463 50 6401

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	February 28, 2013	March 2, 2013 March 3, 2013
Temperature / Humidity	22 deg.C , 24 %RH	24 deg.C , 34 %RH 25 deg.C , 36 %RH
Engineer	Shinichi Takano	Akio Hayashi Akio Hayashi
Mode	Tx, 2441 MHz Tx, Bluetooth, BDR, PRBS9, Antenna1	

(* 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.	227.999	QP	44.8	16.9	9.5	31.8	39.4	46.0	6.6	153	92	
Hori.	252.000	QP	44.8	17.3	9.8	31.8	40.1	46.0	5.9	139	99	
Hori.	264.002	QP	46.6	17.9	10.0	31.8	42.7	46.0	3.3	122	96	
Hori.	287.999	QP	43.8	19.0	10.3	31.8	41.3	46.0	4.7	122	104	
Hori.	300.001	QP	45.3	14.1	6.9	31.8	34.5	46.0	11.5	107	14	
Hori.	323.998	QP	44.7	14.6	7.1	31.8	34.6	46.0	11.4	103	41	
Hori.	2337.010	PK	49.7	27.5	13.9	40.7	50.4	73.9	23.5	100	56	
Hori.	2363.004	PK	50.0	27.6	13.9	40.7	50.8	73.9	23.1	100	56	
Hori.	2388.996	PK	51.7	27.6	13.9	40.7	52.5	73.9	21.4	100	56	
Hori.	2493.014	PK	50.5	27.7	14.0	40.7	51.5	73.9	22.4	100	56	
Hori.	2519.016	PK	49.1	27.7	14.0	40.7	50.1	73.9	23.8	100	56	
Hori.	2545.005	PK	48.6	27.8	14.1	40.7	49.8	73.9	24.1	100	56	
Hori.	4882.000	PK	45.4	31.3	6.4	41.5	41.6	73.9	32.3	100	52	
Hori.	7323.000	PK	49.5	36.2	7.9	41.2	52.4	73.9	21.5	167	95	
Hori.	9764.000	PK	45.1	38.1	8.9	40.4	51.7	73.9	22.2	168	103	
Hori.	12205.000	PK	44.3	38.9	10.3	39.2	54.3	73.9	19.6	100	0	
Hori.	2337.010	AV	42.2	27.5	13.9	40.7	42.9	53.9	11.0	100	56	
Hori.	2363.004	AV	41.0	27.6	13.9	40.7	41.8	53.9	12.1	100	56	
Hori.	2388.996	AV	44.2	27.6	13.9	40.7	45.0	53.9	8.9	100	56	
Hori.	2493.014	AV	42.0	27.7	14.0	40.7	43.0	53.9	10.9	100	56	
Hori.	2519.016	AV	40.1	27.7	14.0	40.7	41.1	53.9	12.8	100	56	
Hori.	2545.005	AV	40.3	27.8	14.1	40.7	41.5	53.9	12.4	100	56	
Hori.	4882.000	AV	34.3	31.3	6.4	41.5	30.5	53.9	23.4	100	52	
Hori.	7323.000	AV	41.7	36.2	7.9	41.2	44.6	53.9	9.3	167	95	
Hori.	9764.000	AV	34.5	38.1	8.9	40.4	41.1	53.9	12.8	168	103	
Hori.	12205.000	AV	32.5	38.9	10.3	39.2	42.5	53.9	11.4	100	0	
Vert.	71.999	QP	50.0	6.5	7.5	31.8	32.2	40.0	7.8	100	209	
Vert.	108.000	QP	47.8	11.4	8.0	31.8	35.4	43.5	8.1	100	81	
Vert.	191.999	QP	41.8	16.4	9.0	31.8	35.4	43.5	8.1	100	177	
Vert.	264.002	QP	43.4	17.9	10.0	31.8	39.5	46.0	6.5	100	163	
Vert.	287.999	QP	42.9	19.0	10.3	31.8	40.4	46.0	5.6	100	173	
Vert.	504.001	QP	41.3	17.7	8.3	32.0	35.3	46.0	10.7	100	140	
Vert.	2336.998	PK	49.8	27.5	13.9	40.7	50.5	73.9	23.4	123	186	
Vert.	2363.010	PK	49.7	27.6	13.9	40.7	50.5	73.9	23.4	123	186	
Vert.	2389.006	PK	51.4	27.6	13.9	40.7	52.2	73.9	21.7	123	186	
Vert.	2493.024	PK	51.4	27.7	14.0	40.7	52.4	73.9	21.5	123	186	
Vert.	2518.998	PK	49.9	27.7	14.0	40.7	50.9	73.9	23.0	123	186	
Vert.	2545.001	PK	50.5	27.8	14.1	40.7	51.7	73.9	22.2	123	186	
Vert.	4882.000	PK	46.3	31.3	6.4	41.5	42.5	73.9	31.4	107	49	
Vert.	7323.000	PK	50.3	36.2	7.9	41.2	53.2	73.9	20.7	100	134	
Vert.	9764.000	PK	45.1	38.1	8.9	40.4	51.7	73.9	22.2	100	32	
Vert.	12205.000	PK	44.2	38.9	10.3	39.2	54.2	73.9	19.7	100	0	
Vert.	2336.998	AV	42.2	27.5	13.9	40.7	42.9	53.9	11.0	123	186	
Vert.	2363.010	AV	41.1	27.6	13.9	40.7	41.9	53.9	12.0	123	186	
Vert.	2389.006	AV	44.8	27.6	13.9	40.7	45.6	53.9	8.3	123	186	
Vert.	2493.024	AV	45.0	27.7	14.0	40.7	46.0	53.9	7.9	123	186	
Vert.	2518.998	AV	42.5	27.7	14.0	40.7	43.5	53.9	10.4	123	186	
Vert.	2545.001	AV	42.9	27.8	14.1	40.7	44.1	53.9	9.8	123	186	
Vert.	4882.000	AV	34.9	31.3	6.4	41.5	31.1	53.9	22.8	107	49	
Vert.	7323.000	AV	42.0	36.2	7.9	41.2	44.9	53.9	9.0	100	134	
Vert.	9764.000	AV	33.7	38.1	8.9	40.4	40.3	53.9	13.6	100	32	
Vert.	12205.000	AV	32.7	38.9	10.3	39.2	42.7	53.9	11.2	100	0	

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 Semi Anechoic Chamber
Date February 28, 2013 March 2, 2013 March 3, 2013
Temperature / Humidity 22 deg.C , 24 %RH 24 deg.C , 34 %RH 25 deg.C , 36 %RH
Engineer Shinichi Takano Akio Hayashi Akio Hayashi
Mode Tx, 2480 MHz
 Tx, Bluetooth, EDR, PRBS9, Antenna1

(* 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.	227.996	QP	43.7	16.9	9.5	31.8	38.3	46.0	7.7	152	106	
Hori.	252.001	QP	44.1	17.3	9.8	31.8	39.4	46.0	6.6	126	85	
Hori.	264.003	QP	46.7	17.9	10.0	31.8	42.8	46.0	3.2	133	98	
Hori.	287.998	QP	42.9	19.0	10.3	31.8	40.4	46.0	5.6	126	269	
Hori.	300.001	QP	45.6	14.1	6.9	31.8	34.8	46.0	11.2	102	19	
Hori.	323.997	QP	44.8	14.6	7.1	31.8	34.7	46.0	11.3	100	40	
Hori.	503.998	QP	43.6	17.7	8.3	32.0	37.6	46.0	8.4	192	67	
Hori.	2376.012	PK	49.5	27.6	13.9	40.7	50.3	73.9	23.6	100	55	
Hori.	2483.500	PK	61.9	27.6	14.0	40.7	62.8	73.9	11.1	100	55	
Hori.	2506.022	PK	48.8	27.7	14.0	40.7	49.8	73.9	24.1	100	55	
Hori.	2532.042	PK	49.7	27.7	14.0	40.7	50.7	73.9	23.2	100	55	
Hori.	2558.022	PK	49.1	27.8	14.1	40.7	50.3	73.9	23.6	100	55	
Hori.	2583.990	PK	48.9	27.8	14.1	40.7	50.1	73.9	23.8	100	55	
Hori.	4960.000	PK	45.9	31.5	6.5	41.4	42.5	73.9	31.4	100	49	
Hori.	7440.000	PK	51.7	36.3	7.9	41.3	54.6	73.9	19.3	164	97	
Hori.	9920.000	PK	45.3	38.1	9.0	40.3	52.1	73.9	21.8	153	107	
Hori.	12400.000	PK	44.0	38.9	10.3	39.0	54.2	73.9	19.7	100	0	
Hori.	2376.012	AV	40.7	27.6	13.9	40.7	41.5	53.9	12.4	100	55	
Hori.	2483.500	AV	36.1	27.6	14.0	40.7	37.0	53.9	16.9	100	55	
Hori.	2506.022	AV	38.9	27.7	14.0	40.7	39.9	53.9	14.0	100	55	
Hori.	2532.042	AV	40.4	27.7	14.0	40.7	41.4	53.9	12.5	100	55	
Hori.	2558.022	AV	38.8	27.8	14.1	40.7	40.0	53.9	13.9	100	55	
Hori.	2583.990	AV	39.2	27.8	14.1	40.7	40.4	53.9	13.5	100	55	
Hori.	4960.000	AV	34.2	31.5	6.5	41.4	30.8	53.9	23.1	100	49	
Hori.	7440.000	AV	43.5	36.3	7.9	41.3	46.4	53.9	7.5	164	97	
Hori.	9920.000	AV	34.8	38.1	9.0	40.3	41.6	53.9	12.3	153	107	
Hori.	12400.000	AV	32.7	38.9	10.3	39.0	42.9	53.9	11.0	100	0	
Vert.	72.003	QP	50.4	6.5	7.5	31.8	32.6	40.0	7.4	100	223	
Vert.	108.004	QP	48.3	11.4	8.0	31.8	35.9	43.5	7.6	100	91	
Vert.	191.998	QP	40.8	16.4	9.0	31.8	34.4	43.5	9.1	100	168	
Vert.	264.003	QP	44.2	17.9	10.0	31.8	40.3	46.0	5.7	150	154	
Vert.	287.998	QP	42.5	19.0	10.3	31.8	40.0	46.0	6.0	100	162	
Vert.	2376.016	PK	50.3	27.6	13.9	40.7	51.1	73.9	22.8	126	185	
Vert.	2483.500	PK	64.5	27.6	14.0	40.7	65.4	73.9	8.5	126	185	
Vert.	2503.982	PK	50.7	27.7	14.0	40.7	51.7	73.9	22.2	126	185	
Vert.	2532.021	PK	52.0	27.7	14.0	40.7	53.0	73.9	20.9	126	185	
Vert.	2558.072	PK	51.2	27.8	14.1	40.7	52.4	73.9	21.5	126	185	
Vert.	2584.006	PK	50.8	27.8	14.1	40.7	52.0	73.9	21.9	126	185	
Vert.	4960.000	PK	46.3	31.5	6.5	41.4	42.9	73.9	31.0	100	43	
Vert.	7440.000	PK	50.3	36.3	7.9	41.3	53.2	73.9	20.7	100	134	
Vert.	9920.000	PK	44.1	38.1	9.0	40.3	50.9	73.9	23.0	126	61	
Vert.	12400.000	PK	43.8	38.9	10.3	39.0	54.0	73.9	19.9	100	0	
Vert.	2376.016	AV	40.5	27.6	13.9	40.7	41.3	53.9	12.6	126	185	
Vert.	2483.500	AV	37.3	27.6	14.0	40.7	38.2	53.9	15.7	126	185	
Vert.	2503.982	AV	41.0	27.7	14.0	40.7	42.0	53.9	11.9	126	185	
Vert.	2532.021	AV	42.7	27.7	14.0	40.7	43.7	53.9	10.2	126	185	
Vert.	2558.072	AV	40.7	27.8	14.1	40.7	41.9	53.9	12.0	126	185	
Vert.	2584.006	AV	40.8	27.8	14.1	40.7	42.0	53.9	11.9	126	185	
Vert.	4960.000	AV	34.5	31.5	6.5	41.4	31.1	53.9	22.8	100	43	
Vert.	7440.000	AV	41.4	36.3	7.9	41.3	44.3	53.9	9.6	100	134	
Vert.	9920.000	AV	33.5	38.1	9.0	40.3	40.3	53.9	13.6	126	61	
Vert.	12400.000	AV	32.7	38.9	10.3	39.0	42.9	53.9	11.0	100	0	

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 Semi Anechoic Chamber
Date March 1, 2013 March 2, 2013 March 5, 2013
Temperature / Humidity 23 deg.C , 35 %RH 24 deg.C , 34 %RH 25 deg.C , 30 %RH
Engineer Shinichi Takano Akio Hayashi Wataru Kojima
Mode Tx, 2402 MHz
 Tx, Bluetooth, BDR, PRBS9, Antenna2

(* 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.	264.004	QP	43.6	17.9	10.0	31.8	39.7	46.0	6.3	267	218	
Hori.	300.002	QP	44.9	14.1	6.9	31.8	34.1	46.0	11.9	109	12	
Hori.	2298.013	PK	48.5	27.5	13.9	40.7	49.2	73.9	24.7	100	43	
Hori.	2324.012	PK	49.9	27.5	13.9	40.7	50.6	73.9	23.3	100	43	
Hori.	2350.006	PK	50.7	27.5	13.9	40.7	51.4	73.9	22.5	100	43	
Hori.	2390.000	PK	46.2	27.6	13.9	40.7	47.0	73.9	26.9	100	43	
Hori.	2506.015	PK	50.1	27.7	14.0	40.7	51.1	73.9	22.8	100	43	
Hori.	4804.000	PK	45.8	31.2	6.4	41.6	41.8	73.9	32.1	100	38	
Hori.	7206.000	PK	47.7	36.0	7.7	41.2	50.2	73.9	23.7	150	272	
Hori.	9608.000	PK	46.2	38.1	8.9	40.4	52.8	73.9	21.1	166	101	
Hori.	12010.000	PK	45.7	39.0	10.3	39.4	55.6	73.9	18.3	100	0	
Hori.	2298.013	AV	39.4	27.5	13.9	40.7	40.1	53.9	13.8	100	43	
Hori.	2324.012	AV	40.1	27.5	13.9	40.7	40.8	53.9	13.1	100	43	
Hori.	2350.006	AV	43.2	27.5	13.9	40.7	43.9	53.9	10.0	100	43	
Hori.	2390.000	AV	33.4	27.6	13.9	40.7	34.2	53.9	19.7	100	43	
Hori.	2506.015	AV	41.3	27.7	14.0	40.7	42.3	53.9	11.6	100	43	
Hori.	4804.000	AV	34.7	31.2	6.4	41.6	30.7	53.9	23.2	100	38	
Hori.	7206.000	AV	38.9	36.0	7.7	41.2	41.4	53.9	12.5	150	272	
Hori.	9608.000	AV	35.8	38.1	8.9	40.4	42.4	53.9	11.5	166	101	
Hori.	12010.000	AV	33.3	39.0	10.3	39.4	43.2	53.9	10.7	100	0	
Vert.	192.001	QP	42.1	16.4	9.1	31.8	35.8	43.5	7.7	100	171	
Vert.	198.009	QP	43.1	16.6	9.1	31.8	37.0	43.5	6.5	100	319	
Vert.	2298.004	PK	49.1	27.5	13.9	40.7	49.8	73.9	24.1	100	17	
Vert.	2324.012	PK	50.6	27.5	13.9	40.7	51.3	73.9	22.6	100	17	
Vert.	2350.018	PK	51.2	27.5	13.9	40.7	51.9	73.9	22.0	100	17	
Vert.	2390.000	PK	46.7	27.6	13.9	40.7	47.5	73.9	26.4	100	17	
Vert.	2506.030	PK	49.3	27.7	14.0	40.7	50.3	73.9	23.6	100	17	
Vert.	4804.000	PK	45.9	31.2	6.4	41.6	41.9	73.9	32.0	100	80	
Vert.	7206.000	PK	48.7	36.0	7.7	41.2	51.2	73.9	22.7	100	260	
Vert.	9608.000	PK	45.0	38.1	8.9	40.4	51.6	73.9	22.3	135	155	
Vert.	12010.000	PK	44.5	39.0	10.3	39.4	54.4	73.9	19.5	100	0	
Vert.	2298.004	AV	40.6	27.5	13.9	40.7	41.3	53.9	12.6	100	17	
Vert.	2324.012	AV	41.6	27.5	13.9	40.7	42.3	53.9	11.6	100	17	
Vert.	2350.018	AV	44.7	27.5	13.9	40.7	45.4	53.9	8.5	100	17	
Vert.	2390.000	AV	33.4	27.6	13.9	40.7	34.2	53.9	19.7	100	17	
Vert.	2506.030	AV	41.3	27.7	14.0	40.7	42.3	53.9	11.6	100	17	
Vert.	4804.000	AV	35.0	31.2	6.4	41.6	31.0	53.9	22.9	100	80	
Vert.	7206.000	AV	39.0	36.0	7.7	41.2	41.5	53.9	12.4	100	260	
Vert.	9608.000	AV	33.9	38.1	8.9	40.4	40.5	53.9	13.4	135	155	
Vert.	12010.000	AV	33.1	39.0	10.3	39.4	43.0	53.9	10.9	100	0	

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

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

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	89.6	27.6	13.9	40.7	90.4	-	-	
Hori.	2400.000	PK	48.5	27.6	13.9	40.7	49.3	70.4	21.1	
Vert.	2402.000	PK	89.9	27.6	13.9	40.7	90.7	-	-	
Vert.	2400.000	PK	49.0	27.6	13.9	40.7	49.8	70.7	20.9	

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	March 1, 2013	March 2, 2013
Temperature / Humidity	23 deg.C , 35 %RH	24 deg.C , 34 %RH
Engineer	Shinichi Takano	Akio Hayashi
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, BDR, PRBS9, Antenna2	

(* 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.	264.001	QP	43.8	17.9	10.0	31.8	39.9	46.0	6.1	131	104	
Hori.	300.001	QP	44.6	14.1	6.9	31.8	33.8	46.0	12.2	100	20	
Hori.	2337.014	PK	49.0	27.5	13.9	40.7	49.7	73.9	24.2	100	42	
Hori.	2363.026	PK	48.9	27.6	13.9	40.7	49.7	73.9	24.2	100	42	
Hori.	2389.024	PK	50.0	27.6	13.9	40.7	50.8	73.9	23.1	100	42	
Hori.	2493.022	PK	50.4	27.7	14.0	40.7	51.4	73.9	22.5	100	216	
Hori.	2519.012	PK	49.2	27.7	14.0	40.7	50.2	73.9	23.7	100	216	
Hori.	2545.015	PK	49.2	27.8	14.1	40.7	50.4	73.9	23.5	100	216	
Hori.	4882.000	PK	45.8	31.3	6.4	41.5	42.0	73.9	31.9	100	39	
Hori.	7323.000	PK	48.3	36.2	7.9	41.2	51.2	73.9	22.7	142	273	
Hori.	9764.000	PK	45.4	38.1	8.9	40.4	52.0	73.9	21.9	168	98	
Hori.	12205.000	PK	44.3	38.9	10.3	39.2	54.3	73.9	19.6	100	0	
Hori.	2337.014	AV	40.7	27.5	13.9	40.7	41.4	53.9	12.5	100	42	
Hori.	2363.026	AV	39.3	27.6	13.9	40.7	40.1	53.9	13.8	100	42	
Hori.	2389.024	AV	42.3	27.6	13.9	40.7	43.1	53.9	10.8	100	42	
Hori.	2493.022	AV	42.8	27.7	14.0	40.7	43.8	53.9	10.1	100	216	
Hori.	2519.012	AV	40.9	27.7	14.0	40.7	41.9	53.9	12.0	100	216	
Hori.	2545.015	AV	42.1	27.8	14.1	40.7	43.3	53.9	10.6	100	216	
Hori.	4882.000	AV	34.8	31.3	6.4	41.5	31.0	53.9	22.9	100	39	
Hori.	7323.000	AV	38.7	36.2	7.9	41.2	41.6	53.9	12.3	142	273	
Hori.	9764.000	AV	35.3	38.1	8.9	40.4	41.9	53.9	12.0	168	98	
Hori.	12205.000	AV	32.7	38.9	10.3	39.2	42.7	53.9	11.2	100	0	
Vert.	180.001	QP	43.2	16.1	8.9	31.8	36.4	43.5	7.1	100	275	
Vert.	192.004	QP	47.0	16.4	9.1	31.8	40.7	43.5	2.8	100	153	
Vert.	198.001	QP	44.1	16.6	9.1	31.8	38.0	43.5	5.5	100	185	
Vert.	2337.010	PK	51.1	27.5	13.9	40.7	51.8	73.9	22.1	100	15	
Vert.	2363.005	PK	49.5	27.6	13.9	40.7	50.3	73.9	23.6	100	15	
Vert.	2389.013	PK	50.0	27.6	13.9	40.7	50.8	73.9	23.1	100	15	
Vert.	2492.995	PK	50.1	27.7	14.0	40.7	51.1	73.9	22.8	100	15	
Vert.	2519.004	PK	50.0	27.7	14.0	40.7	51.0	73.9	22.9	100	15	
Vert.	2544.999	PK	50.0	27.8	14.1	40.7	51.2	73.9	22.7	100	15	
Vert.	4882.000	PK	46.2	31.3	6.4	41.5	42.4	73.9	31.5	100	80	
Vert.	7323.000	PK	47.5	36.2	7.9	41.2	50.4	73.9	23.5	100	263	
Vert.	9764.000	PK	44.6	38.1	8.9	40.4	51.2	73.9	22.7	140	57	
Vert.	12205.000	PK	43.5	38.9	10.3	39.2	53.5	73.9	20.4	100	0	
Vert.	2337.010	AV	42.6	27.5	13.9	40.7	43.3	53.9	10.6	100	15	
Vert.	2363.005	AV	40.5	27.6	13.9	40.7	41.3	53.9	12.6	100	15	
Vert.	2389.013	AV	42.6	27.6	13.9	40.7	43.4	53.9	10.5	100	15	
Vert.	2492.995	AV	42.5	27.7	14.0	40.7	43.5	53.9	10.4	100	15	
Vert.	2519.004	AV	41.3	27.7	14.0	40.7	42.3	53.9	11.6	100	15	
Vert.	2544.999	AV	42.2	27.8	14.1	40.7	43.4	53.9	10.5	100	15	
Vert.	4882.000	AV	35.2	31.3	6.4	41.5	31.4	53.9	22.5	100	80	
Vert.	7323.000	AV	37.5	36.2	7.9	41.2	40.4	53.9	13.5	100	263	
Vert.	9764.000	AV	33.4	38.1	8.9	40.4	40.0	53.9	13.9	140	57	
Vert.	12205.000	AV	32.4	38.9	10.3	39.2	42.4	53.9	11.5	100	0	

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 Semi Anechoic Chamber
Date March 1, 2013 March 2, 2013 March 5, 2013
Temperature / Humidity 23 deg.C , 35 %RH 24 deg.C , 34 %RH 25 deg.C , 30 %RH
Engineer Shinichi Takano Akio Hayashi Wataru Kojima
Mode Tx, 2480 MHz
 Tx, Bluetooth, BDR, PRBS9, Antenna2

(* 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.	264.000	QP	43.5	17.9	10.0	31.8	39.6	46.0	6.4	132	107	
Hori.	300.001	QP	45.1	14.1	6.9	31.8	34.3	46.0	11.7	100	5	
Hori.	2376.001	PK	47.8	27.6	13.9	40.7	48.6	73.9	25.3	100	43	
Hori.	2483.500	PK	60.4	27.6	14.0	40.7	61.3	73.9	12.6	100	221	
Hori.	2505.989	PK	48.9	27.7	14.0	40.7	49.9	73.9	24.0	100	221	
Hori.	2532.003	PK	50.8	27.7	14.0	40.7	51.8	73.9	22.1	100	221	
Hori.	2558.039	PK	50.5	27.8	14.1	40.7	51.7	73.9	22.2	100	221	
Hori.	2584.024	PK	49.4	27.8	14.1	40.7	50.6	73.9	23.3	100	221	
Hori.	4960.000	PK	46.7	31.5	6.5	41.4	43.3	73.9	30.6	100	42	
Hori.	7440.000	PK	50.0	36.3	7.9	41.3	52.9	73.9	21.0	141	272	
Hori.	9920.000	PK	45.5	38.1	9.0	40.3	52.3	73.9	21.6	167	98	
Hori.	12400.000	PK	45.1	38.9	10.3	39.0	55.3	73.9	18.6	100	0	
Hori.	2376.001	AV	39.6	27.6	13.9	40.7	40.4	53.9	13.5	100	43	
Hori.	2483.500	AV	35.0	27.6	14.0	40.7	35.9	53.9	18.0	100	221	
Hori.	2505.989	AV	41.0	27.7	14.0	40.7	42.0	53.9	11.9	100	221	
Hori.	2532.003	AV	43.5	27.7	14.0	40.7	44.5	53.9	9.4	100	221	
Hori.	2558.039	AV	41.6	27.8	14.1	40.7	42.8	53.9	11.1	100	221	
Hori.	2584.024	AV	42.2	27.8	14.1	40.7	43.4	53.9	10.5	100	221	
Hori.	4960.000	AV	35.5	31.5	6.5	41.4	32.1	53.9	21.8	100	42	
Hori.	7440.000	AV	40.3	36.3	7.9	41.3	43.2	53.9	10.7	141	272	
Hori.	9920.000	AV	35.1	38.1	9.0	40.3	41.9	53.9	12.0	167	98	
Hori.	12400.000	AV	32.7	38.9	10.3	39.0	42.9	53.9	11.0	100	0	
Vert.	191.995	QP	45.7	16.4	9.1	31.8	39.4	43.5	4.1	100	200	
Vert.	198.000	QP	42.2	16.6	9.1	31.8	36.1	43.5	7.4	100	252	
Vert.	215.999	QP	44.3	16.8	9.4	31.8	38.7	43.5	4.8	100	234	
Vert.	2375.989	PK	49.2	27.6	13.9	40.7	50.0	73.9	23.9	100	20	
Vert.	2483.500	PK	61.0	27.6	14.0	40.7	61.9	73.9	12.0	100	20	
Vert.	2506.025	PK	48.9	27.7	14.0	40.7	49.9	73.9	24.0	100	20	
Vert.	2532.011	PK	51.0	27.7	14.0	40.7	52.0	73.9	21.9	100	20	
Vert.	2557.994	PK	50.8	27.8	14.1	40.7	52.0	73.9	21.9	100	20	
Vert.	2584.012	PK	49.1	27.8	14.1	40.7	50.3	73.9	23.6	100	20	
Vert.	4960.000	PK	47.0	31.5	6.5	41.4	43.6	73.9	30.3	100	80	
Vert.	7440.000	PK	48.2	36.3	7.9	41.3	51.1	73.9	22.8	100	261	
Vert.	9920.000	PK	44.9	38.1	9.0	40.3	51.7	73.9	22.2	141	56	
Vert.	12400.000	PK	44.7	38.9	10.3	39.0	54.9	73.9	19.0	100	0	
Vert.	2375.989	AV	40.8	27.6	13.9	40.7	41.6	53.9	12.3	100	20	
Vert.	2483.500	AV	35.1	27.6	14.0	40.7	36.0	53.9	17.9	100	20	
Vert.	2506.025	AV	40.9	27.7	14.0	40.7	41.9	53.9	12.0	100	20	
Vert.	2532.011	AV	43.8	27.7	14.0	40.7	44.8	53.9	9.1	100	20	
Vert.	2557.994	AV	41.3	27.8	14.1	40.7	42.5	53.9	11.4	100	20	
Vert.	2584.012	AV	41.1	27.8	14.1	40.7	42.3	53.9	11.6	100	20	
Vert.	4960.000	AV	35.7	31.5	6.5	41.4	32.3	53.9	21.6	100	80	
Vert.	7440.000	AV	39.1	36.3	7.9	41.3	42.0	53.9	11.9	100	261	
Vert.	9920.000	AV	33.7	38.1	9.0	40.3	40.5	53.9	13.4	141	56	
Vert.	12400.000	AV	32.6	38.9	10.3	39.0	42.8	53.9	11.1	100	0	

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	March 1, 2013	March 2, 2013
Temperature / Humidity	23 deg.C , 35 %RH	24 deg.C , 34 %RH
Engineer	Shinichi Takano	Akio Hayashi
Mode	Tx, 2402 MHz	Wataru Kojima
	Tx, Bluetooth, EDR, PRBS9, Antenna2	

(* 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.	264.000	QP	43.6	17.9	10.0	31.8	39.7	46.0	6.3	131	118	
Hori.	300.002	QP	45.2	14.1	6.9	31.8	34.4	46.0	11.6	110	19	
Hori.	2298.010	PK	47.8	27.5	13.9	40.7	48.5	73.9	25.4	100	37	
Hori.	2324.036	PK	49.0	27.5	13.9	40.7	49.7	73.9	24.2	100	37	
Hori.	2350.058	PK	50.0	27.5	13.9	40.7	50.7	73.9	23.2	100	37	
Hori.	2390.000	PK	46.7	27.6	13.9	40.7	47.5	73.9	26.4	100	37	
Hori.	2506.022	PK	49.2	27.7	14.0	40.7	50.2	73.9	23.7	100	226	
Hori.	4804.000	PK	45.6	31.2	6.4	41.6	41.6	73.9	32.3	100	40	
Hori.	7206.000	PK	47.8	36.0	7.7	41.2	50.3	73.9	23.6	148	255	
Hori.	9608.000	PK	45.6	38.1	8.9	40.4	52.2	73.9	21.7	162	98	
Hori.	12010.000	PK	45.2	39.0	10.3	39.4	55.1	73.9	18.8	100	0	
Hori.	2298.010	AV	38.0	27.5	13.9	40.7	38.7	53.9	15.2	100	37	
Hori.	2324.036	AV	38.7	27.5	13.9	40.7	39.4	53.9	14.5	100	37	
Hori.	2350.058	AV	41.6	27.5	13.9	40.7	42.3	53.9	11.6	100	37	
Hori.	2390.000	AV	33.4	27.6	13.9	40.7	34.2	53.9	19.7	100	37	
Hori.	2506.022	AV	40.1	27.7	14.0	40.7	41.1	53.9	12.8	100	226	
Hori.	4804.000	AV	34.6	31.2	6.4	41.6	30.6	53.9	23.3	100	40	
Hori.	7206.000	AV	38.1	36.0	7.7	41.2	40.6	53.9	13.3	148	255	
Hori.	9608.000	AV	35.6	38.1	8.9	40.4	42.2	53.9	11.7	162	98	
Hori.	12010.000	AV	33.2	39.0	10.3	39.4	43.1	53.9	10.8	100	0	
Vert.	191.997	QP	43.0	16.4	9.1	31.8	36.7	43.5	6.8	100	178	
Vert.	198.012	QP	42.3	16.6	9.1	31.8	36.2	43.5	7.3	100	319	
Vert.	215.999	QP	44.9	16.8	9.4	31.8	39.3	43.5	4.2	100	287	
Vert.	2298.010	PK	48.9	27.5	13.9	40.7	49.6	73.9	24.3	100	19	
Vert.	2324.037	PK	50.2	27.5	13.9	40.7	50.9	73.9	23.0	100	19	
Vert.	2350.039	PK	51.2	27.5	13.9	40.7	51.9	73.9	22.0	100	19	
Vert.	2390.000	PK	46.3	27.6	13.9	40.7	47.1	73.9	26.8	100	19	
Vert.	2505.995	PK	49.3	27.7	14.0	40.7	50.3	73.9	23.6	100	19	
Vert.	4804.000	PK	46.5	31.2	6.4	41.6	42.5	73.9	31.4	100	79	
Vert.	7206.000	PK	47.3	36.0	7.7	41.2	49.8	73.9	24.1	100	262	
Vert.	9608.000	PK	45.2	38.1	8.9	40.4	51.8	73.9	22.1	144	57	
Vert.	12010.000	PK	44.4	39.0	10.3	39.4	54.3	73.9	19.6	100	0	
Vert.	2298.010	AV	39.3	27.5	13.9	40.7	40.0	53.9	13.9	100	19	
Vert.	2324.037	AV	40.3	27.5	13.9	40.7	41.0	53.9	12.9	100	19	
Vert.	2350.039	AV	43.0	27.5	13.9	40.7	43.7	53.9	10.2	100	19	
Vert.	2390.000	AV	33.5	27.6	13.9	40.7	34.3	53.9	19.6	100	19	
Vert.	2505.995	AV	40.1	27.7	14.0	40.7	41.1	53.9	12.8	100	19	
Vert.	4804.000	AV	34.6	31.2	6.4	41.6	30.6	53.9	23.3	100	79	
Vert.	7206.000	AV	37.7	36.0	7.7	41.2	40.2	53.9	13.7	100	262	
Vert.	9608.000	AV	34.0	38.1	8.9	40.4	40.6	53.9	13.3	144	57	
Vert.	12010.000	AV	33.1	39.0	10.3	39.4	43.0	53.9	10.9	100	0	

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

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

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	89.7	27.6	13.9	40.7	90.5	-	-	
Hori.	2400.000	PK	48.2	27.6	13.9	40.7	49.0	70.5	21.5	
Vert.	2402.000	PK	90.1	27.6	13.9	40.7	90.9	-	-	
Vert.	2400.000	PK	49.4	27.6	13.9	40.7	50.2	70.9	20.7	

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber
Date	March 1, 2013	March 2, 2013
Temperature / Humidity	23 deg.C , 35 %RH	24 deg.C , 34 %RH
Engineer	Shinichi Takano	Akio Hayashi
Mode	Tx, 2441 MHz	
	Tx, Bluetooth, EDR, PRBS9, Antenna2	

(* 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.	264.000	QP	43.5	17.9	10.0	31.8	39.6	46.0	6.4	132	108	
Hori.	300.001	QP	45.5	14.1	6.9	31.8	34.7	46.0	11.3	108	16	
Hori.	2337.003	PK	47.5	27.5	13.9	40.7	48.2	73.9	25.7	100	42	
Hori.	2363.002	PK	47.9	27.6	13.9	40.7	48.7	73.9	25.2	100	42	
Hori.	2389.018	PK	49.8	27.6	13.9	40.7	50.6	73.9	23.3	100	42	
Hori.	2493.006	PK	49.6	27.7	14.0	40.7	50.6	73.9	23.3	100	223	
Hori.	2519.057	PK	48.9	27.7	14.0	40.7	49.9	73.9	24.0	100	223	
Hori.	2544.996	PK	49.4	27.8	14.1	40.7	50.6	73.9	23.3	100	223	
Hori.	4882.000	PK	46.3	31.3	6.4	41.5	42.5	73.9	31.4	100	44	
Hori.	7323.000	PK	47.8	36.2	7.9	41.2	50.7	73.9	23.2	140	275	
Hori.	9764.000	PK	45.5	38.1	8.9	40.4	52.1	73.9	21.8	170	101	
Hori.	12205.000	PK	44.1	38.9	10.3	39.2	54.1	73.9	19.8	100	0	
Hori.	2337.003	AV	39.0	27.5	13.9	40.7	39.7	53.9	14.2	100	42	
Hori.	2363.002	AV	37.8	27.6	13.9	40.7	38.6	53.9	15.3	100	42	
Hori.	2389.018	AV	40.5	27.6	13.9	40.7	41.3	53.9	12.6	100	42	
Hori.	2493.006	AV	40.8	27.7	14.0	40.7	41.8	53.9	12.1	100	223	
Hori.	2519.057	AV	39.2	27.7	14.0	40.7	40.2	53.9	13.7	100	223	
Hori.	2544.996	AV	40.3	27.8	14.1	40.7	41.5	53.9	12.4	100	223	
Hori.	4882.000	AV	34.8	31.3	6.4	41.5	31.0	53.9	22.9	100	44	
Hori.	7323.000	AV	37.8	36.2	7.9	41.2	40.7	53.9	13.2	140	275	
Hori.	9764.000	AV	35.1	38.1	8.9	40.4	41.7	53.9	12.2	170	101	
Hori.	12205.000	AV	32.6	38.9	10.3	39.2	42.6	53.9	11.3	100	0	
Vert.	192.003	QP	44.7	16.4	9.1	31.8	38.4	43.5	5.1	100	79	
Vert.	197.999	QP	42.0	16.6	9.1	31.8	35.9	43.5	7.6	100	309	
Vert.	215.999	QP	44.8	16.8	9.4	31.8	39.2	43.5	4.3	100	286	
Vert.	2337.004	PK	50.0	27.5	13.9	40.7	50.7	73.9	23.2	100	15	
Vert.	2363.023	PK	49.7	27.6	13.9	40.7	50.5	73.9	23.4	100	15	
Vert.	2388.984	PK	50.1	27.6	13.9	40.7	50.9	73.9	23.0	100	15	
Vert.	2493.010	PK	49.9	27.7	14.0	40.7	50.9	73.9	23.0	100	15	
Vert.	2519.060	PK	49.9	27.7	14.0	40.7	50.9	73.9	23.0	100	15	
Vert.	2545.008	PK	50.3	27.8	14.1	40.7	51.5	73.9	22.4	100	15	
Vert.	4882.000	PK	47.0	31.3	6.4	41.5	43.2	73.9	30.7	100	78	
Vert.	7323.000	PK	47.5	36.2	7.9	41.2	50.4	73.9	23.5	100	259	
Vert.	9764.000	PK	44.5	38.1	8.9	40.4	51.1	73.9	22.8	136	54	
Vert.	12205.000	PK	43.8	38.9	10.3	39.2	53.8	73.9	20.1	100	0	
Vert.	2337.004	AV	41.1	27.5	13.9	40.7	41.8	53.9	12.1	100	15	
Vert.	2363.023	AV	39.2	27.6	13.9	40.7	40.0	53.9	13.9	100	15	
Vert.	2388.984	AV	41.1	27.6	13.9	40.7	41.9	53.9	12.0	100	15	
Vert.	2493.010	AV	41.0	27.7	14.0	40.7	42.0	53.9	11.9	100	15	
Vert.	2519.060	AV	39.9	27.7	14.0	40.7	40.9	53.9	13.0	100	15	
Vert.	2545.008	AV	40.7	27.8	14.1	40.7	41.9	53.9	12.0	100	15	
Vert.	4882.000	AV	35.0	31.3	6.4	41.5	31.2	53.9	22.7	100	78	
Vert.	7323.000	AV	36.6	36.2	7.9	41.2	39.5	53.9	14.4	100	259	
Vert.	9764.000	AV	33.7	38.1	8.9	40.4	40.3	53.9	13.6	136	54	
Vert.	12205.000	AV	32.5	38.9	10.3	39.2	42.5	53.9	11.4	100	0	

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Semi Anechoic Chamber	
Date	March 1, 2013	March 2, 2013	March 5, 2013
Temperature / Humidity	23 deg.C , 35 %RH	24 deg.C , 34 %RH	25 deg.C , 30 %RH
Engineer	Shinichi Takano	Akio Hayashi	Wataru Kojima
Mode	Tx, 2480 MHz		
	Tx, Bluetooth, EDR, PRBS9, Antenna2		

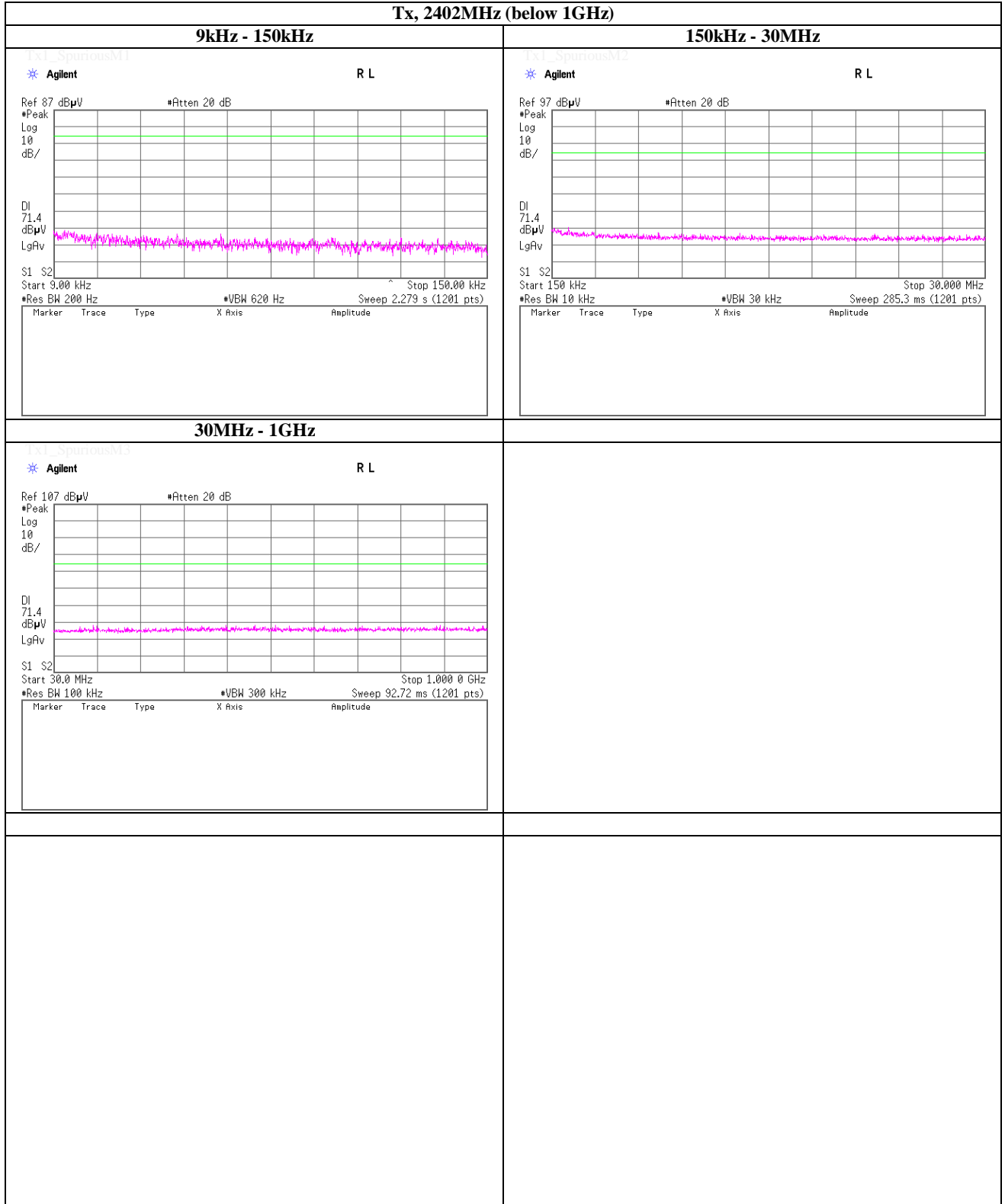
(* PK: Peak, AV: Average, QP: Quasi-Peak)

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.	264.000	QP	43.9	17.9	10.0	31.8	40.0	46.0	6.0	131	111	
Hori.	300.002	QP	44.4	14.1	6.9	31.8	33.6	46.0	12.4	114	11	
Hori.	2376.013	PK	47.9	27.6	13.9	40.7	48.7	73.9	25.2	100	228	
Hori.	2483.500	PK	60.2	27.6	14.0	40.7	61.1	73.9	12.8	100	228	
Hori.	2506.068	PK	48.7	27.7	14.0	40.7	49.7	73.9	24.2	100	228	
Hori.	2532.001	PK	50.1	27.7	14.0	40.7	51.1	73.9	22.8	100	228	
Hori.	2558.018	PK	49.4	27.8	14.1	40.7	50.6	73.9	23.3	100	228	
Hori.	2584.028	PK	48.1	27.8	14.1	40.7	49.3	73.9	24.6	100	228	
Hori.	4960.000	PK	47.0	31.5	6.5	41.4	43.6	73.9	30.3	100	43	
Hori.	7440.000	PK	48.4	36.3	7.9	41.3	51.3	73.9	22.6	144	272	
Hori.	9920.000	PK	46.5	38.1	9.0	40.3	53.3	73.9	20.6	162	104	
Hori.	12400.000	PK	44.6	38.9	10.3	39.0	54.8	73.9	19.1	100	0	
Hori.	2376.013	AV	38.2	27.6	13.9	40.7	39.0	53.9	14.9	100	228	
Hori.	2483.500	AV	35.1	27.6	14.0	40.7	36.0	53.9	17.9	100	228	
Hori.	2506.068	AV	39.4	27.7	14.0	40.7	40.4	53.9	13.5	100	228	
Hori.	2532.001	AV	41.5	27.7	14.0	40.7	42.5	53.9	11.4	100	228	
Hori.	2558.018	AV	39.9	27.8	14.1	40.7	41.1	53.9	12.8	100	228	
Hori.	2584.028	AV	40.4	27.8	14.1	40.7	41.6	53.9	12.3	100	228	
Hori.	4960.000	AV	35.1	31.5	6.5	41.4	31.7	53.9	22.2	100	43	
Hori.	7440.000	AV	38.8	36.3	7.9	41.3	41.7	53.9	12.2	144	272	
Hori.	9920.000	AV	35.3	38.1	9.0	40.3	42.1	53.9	11.8	162	104	
Hori.	12400.000	AV	32.7	38.9	10.3	39.0	42.9	53.9	11.0	100	0	
Vert.	215.999	QP	40.7	16.8	9.4	31.8	35.1	43.5	8.4	100	211	
Vert.	287.999	QP	41.4	19.0	10.3	31.8	38.9	46.0	7.1	100	151	
Vert.	2376.010	PK	49.4	27.6	13.9	40.7	50.2	73.9	23.7	100	13	
Vert.	2483.500	PK	61.5	27.6	14.0	40.7	62.4	73.9	11.5	100	13	
Vert.	2506.017	PK	49.1	27.7	14.0	40.7	50.1	73.9	23.8	100	13	
Vert.	2532.020	PK	50.7	27.7	14.0	40.7	51.7	73.9	22.2	100	13	
Vert.	2558.039	PK	50.0	27.8	14.1	40.7	51.2	73.9	22.7	100	13	
Vert.	2584.005	PK	48.8	27.8	14.1	40.7	50.0	73.9	23.9	100	13	
Vert.	4960.000	PK	46.2	31.5	6.5	41.4	42.8	73.9	31.1	100	78	
Vert.	7440.000	PK	48.6	36.3	7.9	41.3	51.5	73.9	22.4	100	261	
Vert.	9920.000	PK	44.8	38.1	9.0	40.3	51.6	73.9	22.3	142	59	
Vert.	12400.000	PK	44.7	38.9	10.3	39.0	54.9	73.9	19.0	100	0	
Vert.	2376.010	AV	39.6	27.6	13.9	40.7	40.4	53.9	13.5	100	13	
Vert.	2483.500	AV	35.5	27.6	14.0	40.7	36.4	53.9	17.5	100	13	
Vert.	2506.017	AV	39.6	27.7	14.0	40.7	40.6	53.9	13.3	100	13	
Vert.	2532.020	AV	42.3	27.7	14.0	40.7	43.3	53.9	10.6	100	13	
Vert.	2558.039	AV	39.9	27.8	14.1	40.7	41.1	53.9	12.8	100	13	
Vert.	2584.005	AV	39.6	27.8	14.1	40.7	40.8	53.9	13.1	100	13	
Vert.	4960.000	AV	35.4	31.5	6.5	41.4	32.0	53.9	21.9	100	78	
Vert.	7440.000	AV	38.3	36.3	7.9	41.3	41.2	53.9	12.7	100	261	
Vert.	9920.000	AV	33.9	38.1	9.0	40.3	40.7	53.9	13.2	142	59	
Vert.	12400.000	AV	32.6	38.9	10.3	39.0	42.8	53.9	11.1	100	0	

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

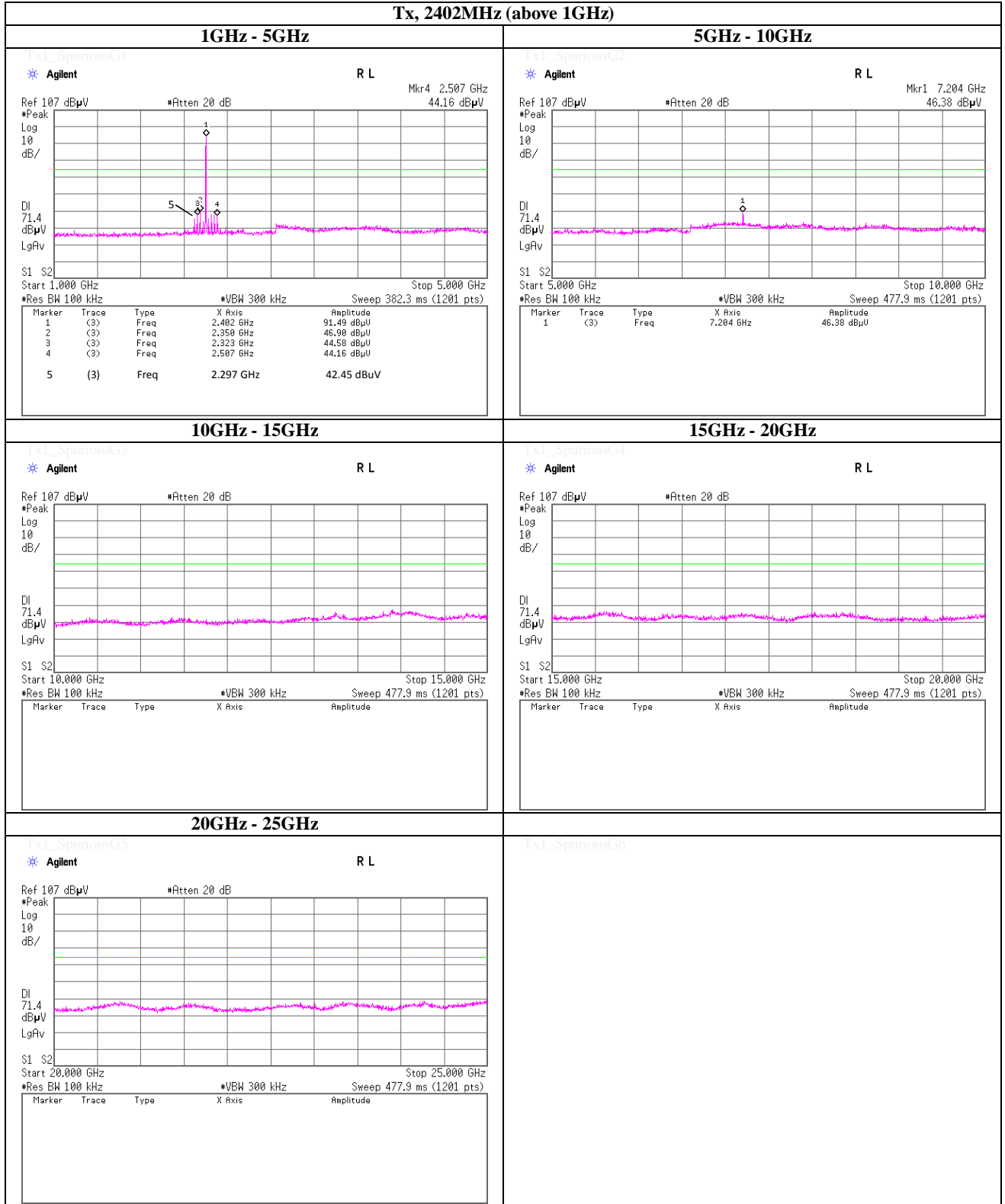
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).

Spurious emission (Conducted)
Tx, Bluetooth, BDR, PRBS9.



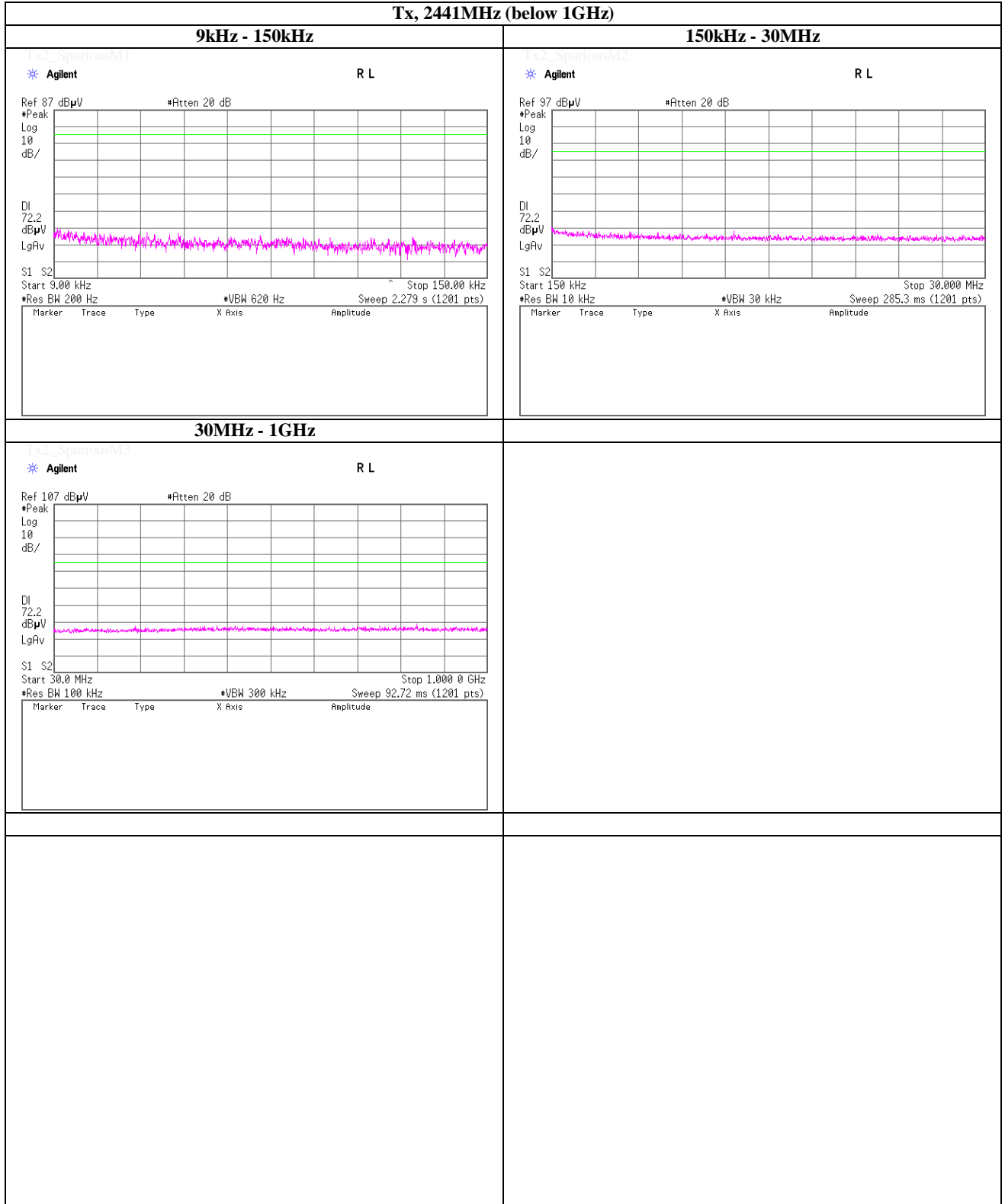
UL Japan, Inc.
Shonan EMC Lab.
 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
 Telephone : +81 463 50 6400
 Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, Bluetooth, BDR, PRBS9.



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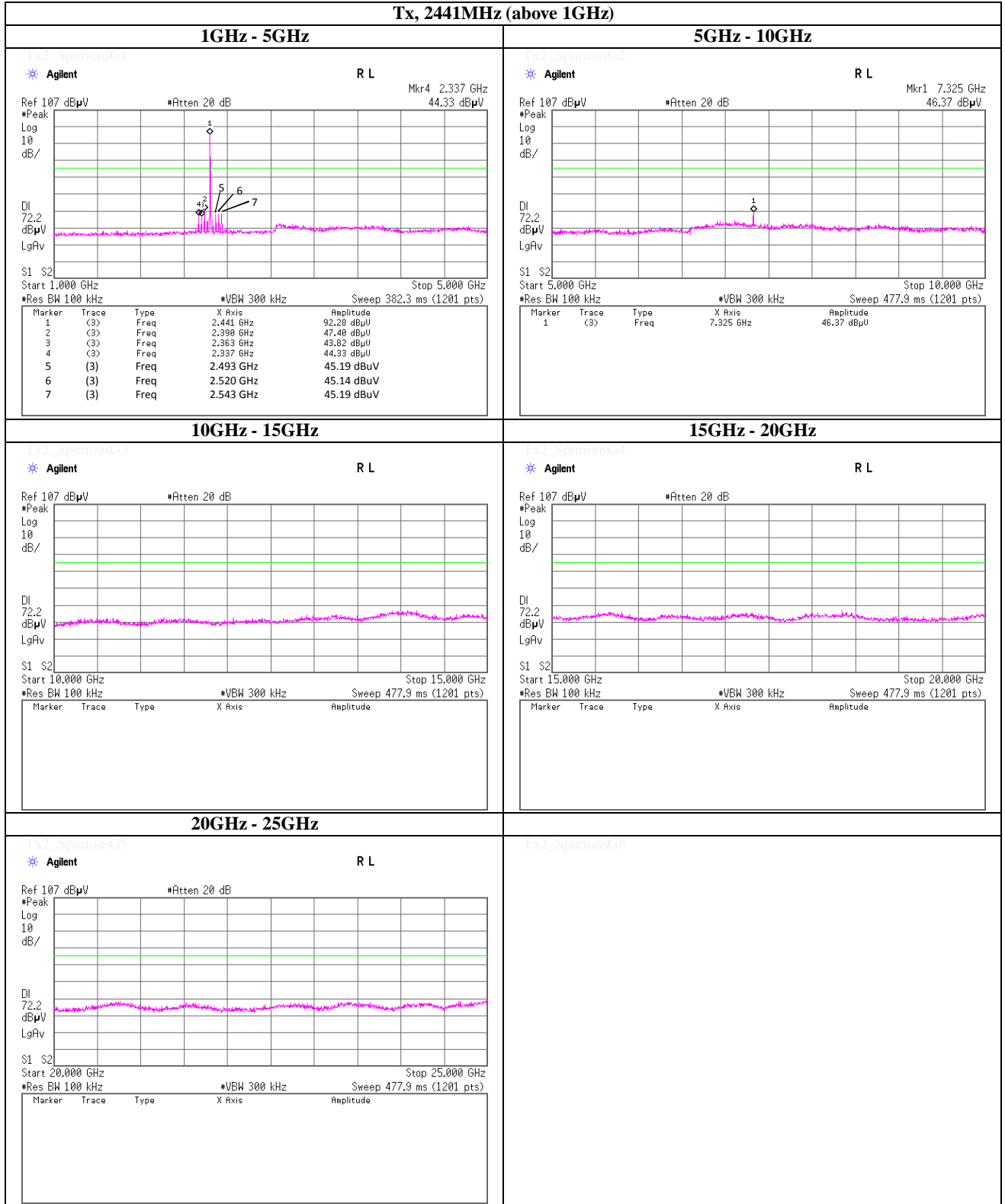
Spurious emission (Conducted)
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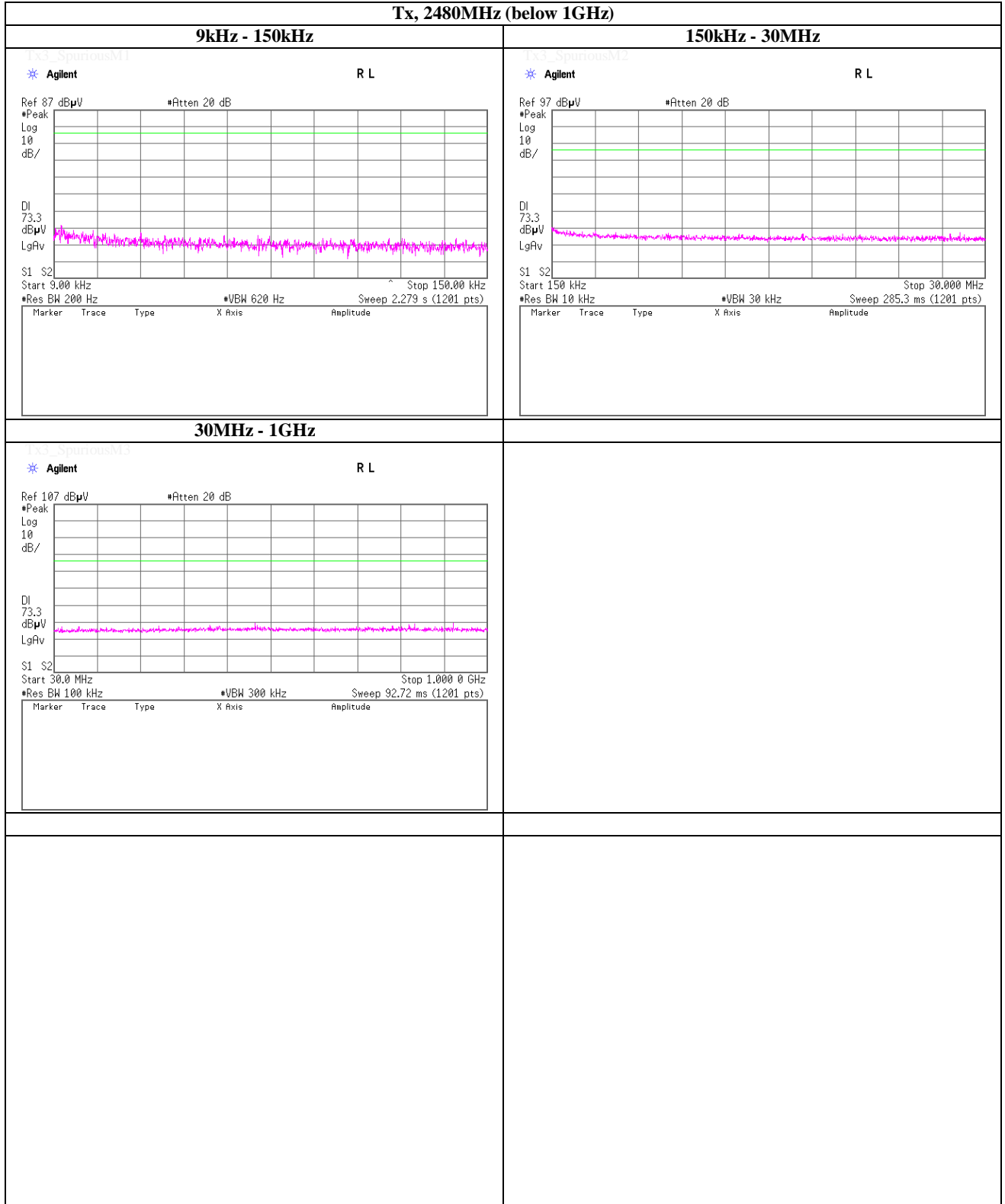
Spurious emission (Conducted)

Tx, Bluetooth, BDR, PRBS9



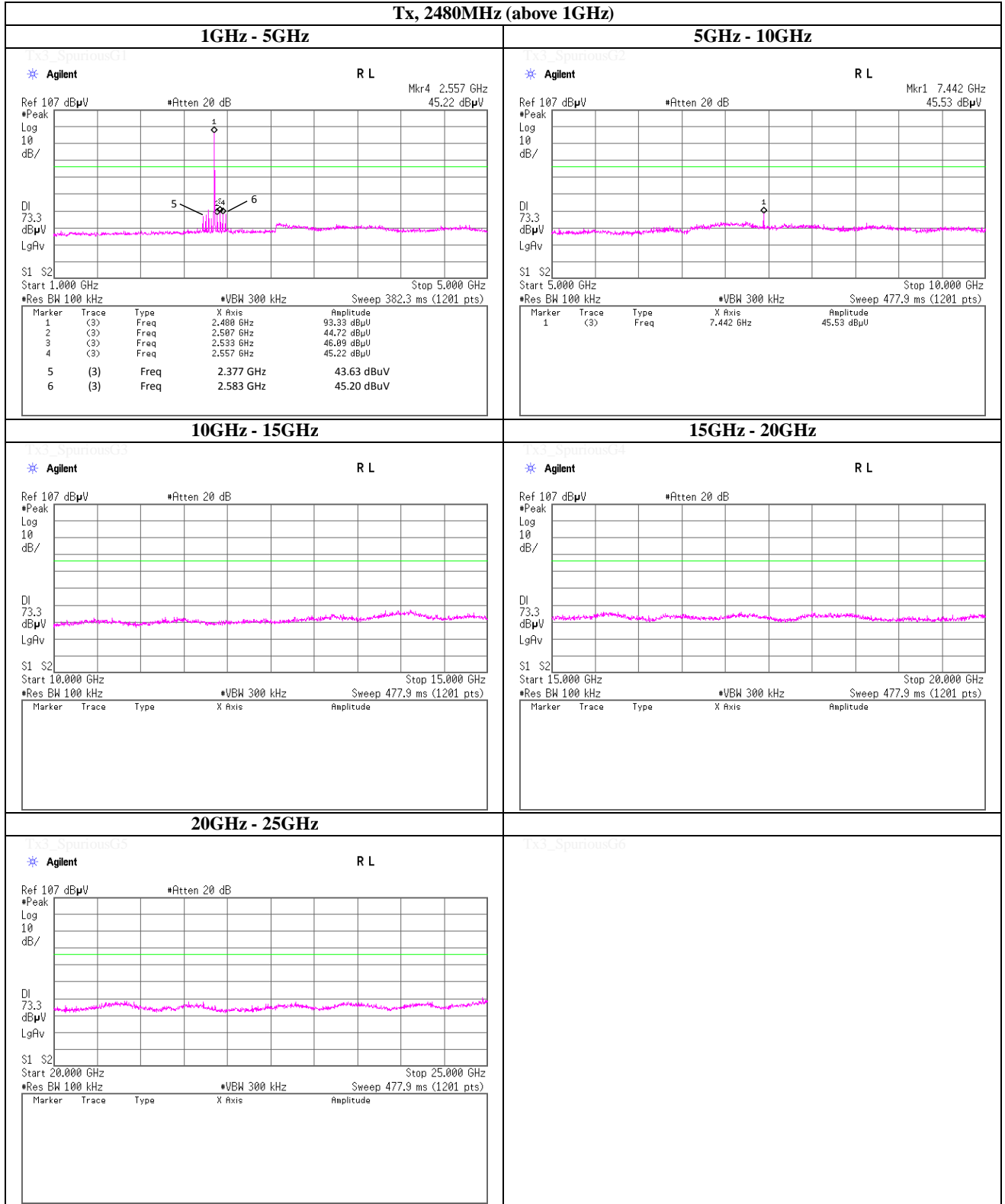
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Spurious emission (Conducted)
Tx, Bluetooth, BDR, PRBS9.



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Spurious emission (Conducted)
Tx, Bluetooth, BDR, PRBS9.

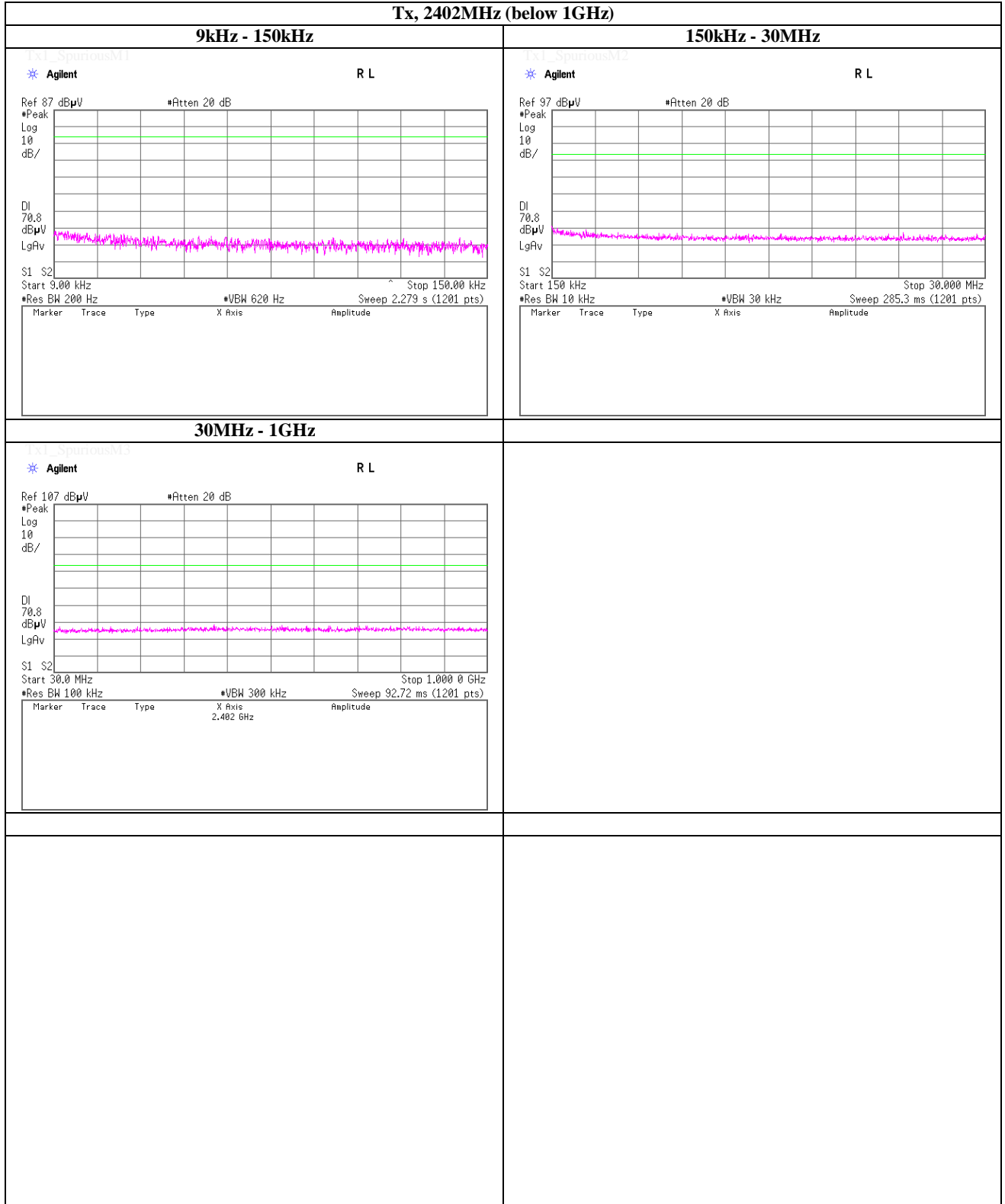


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Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (below 1GHz)



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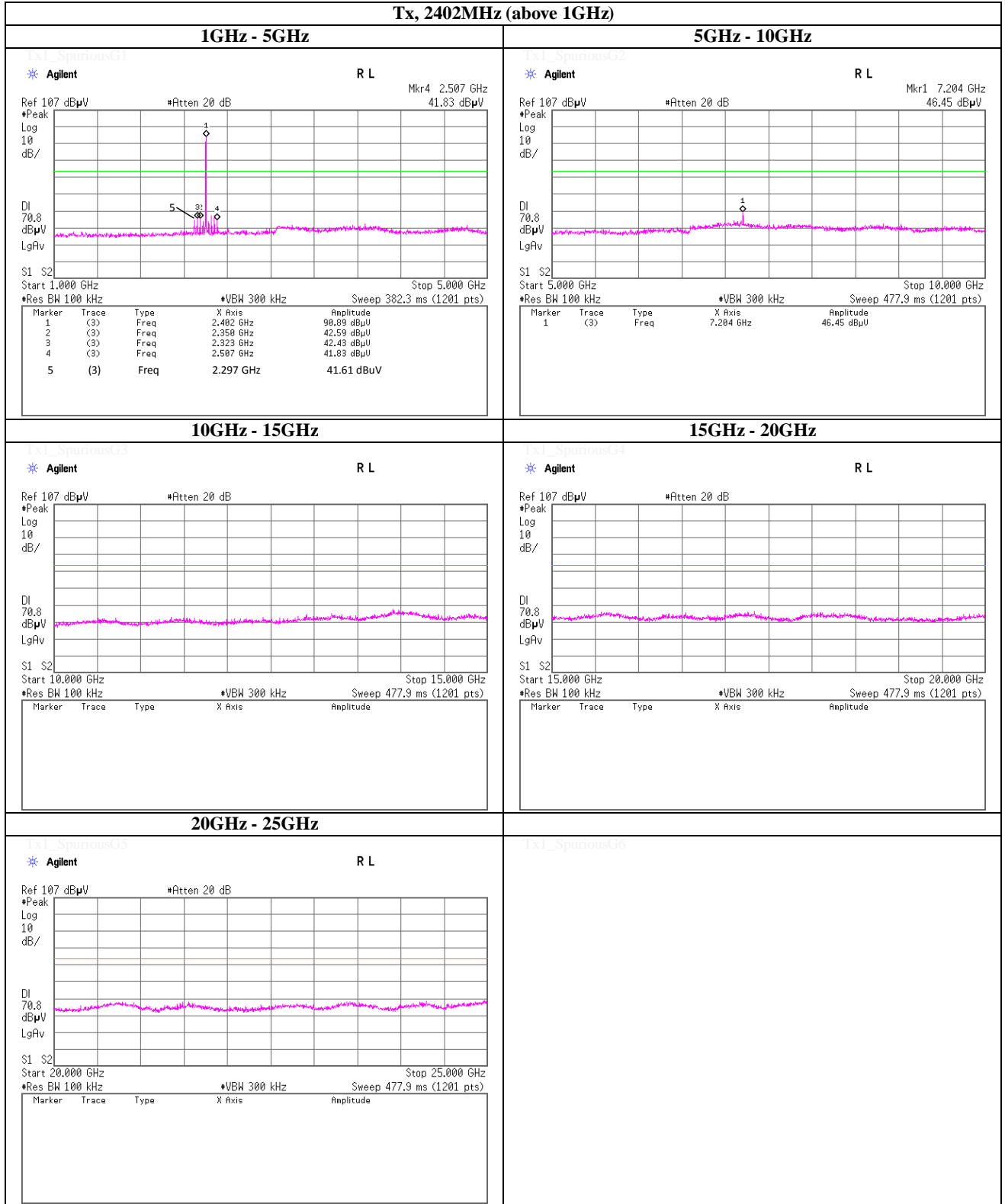
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2402MHz (above 1GHz)



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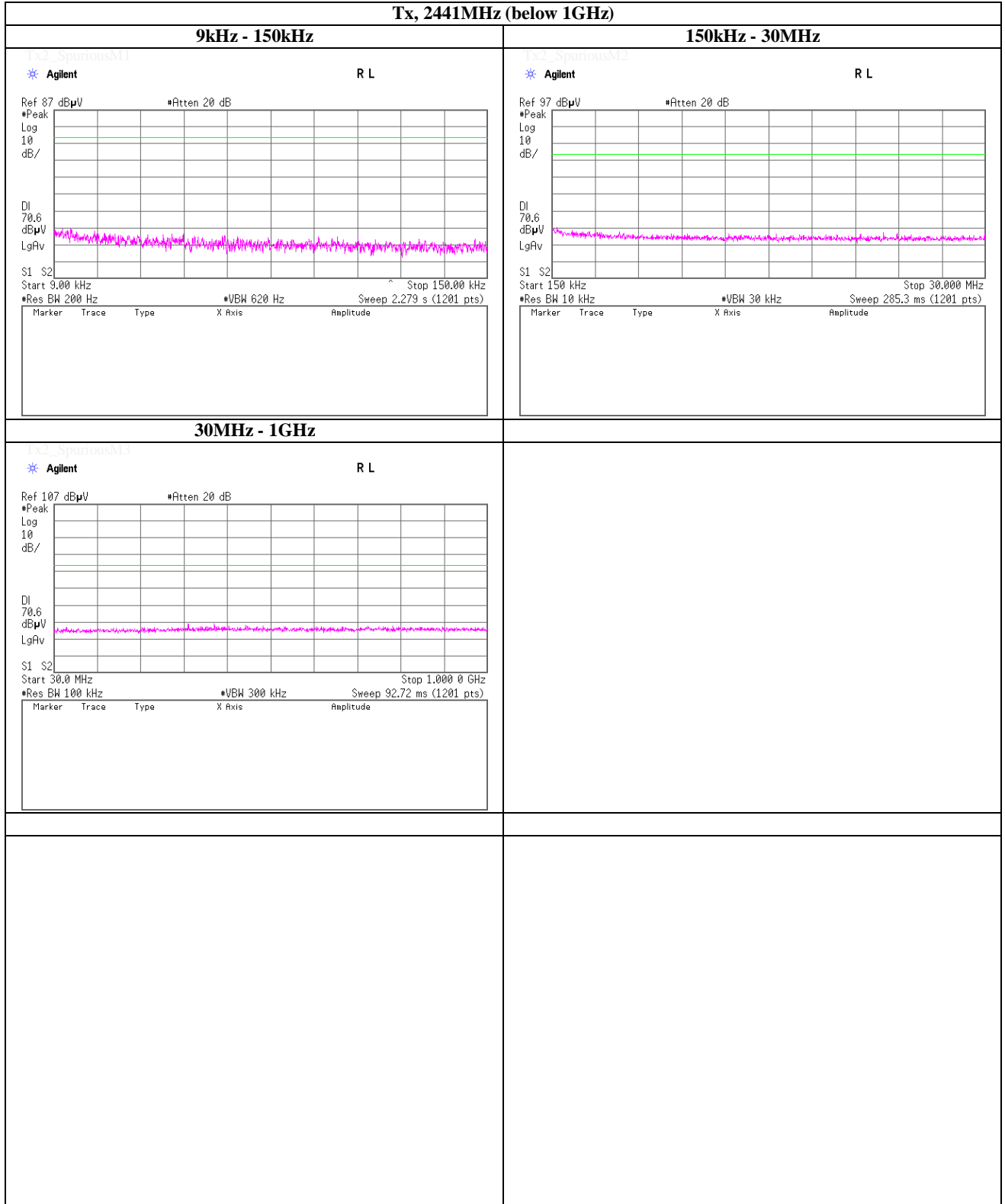
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (below 1GHz)



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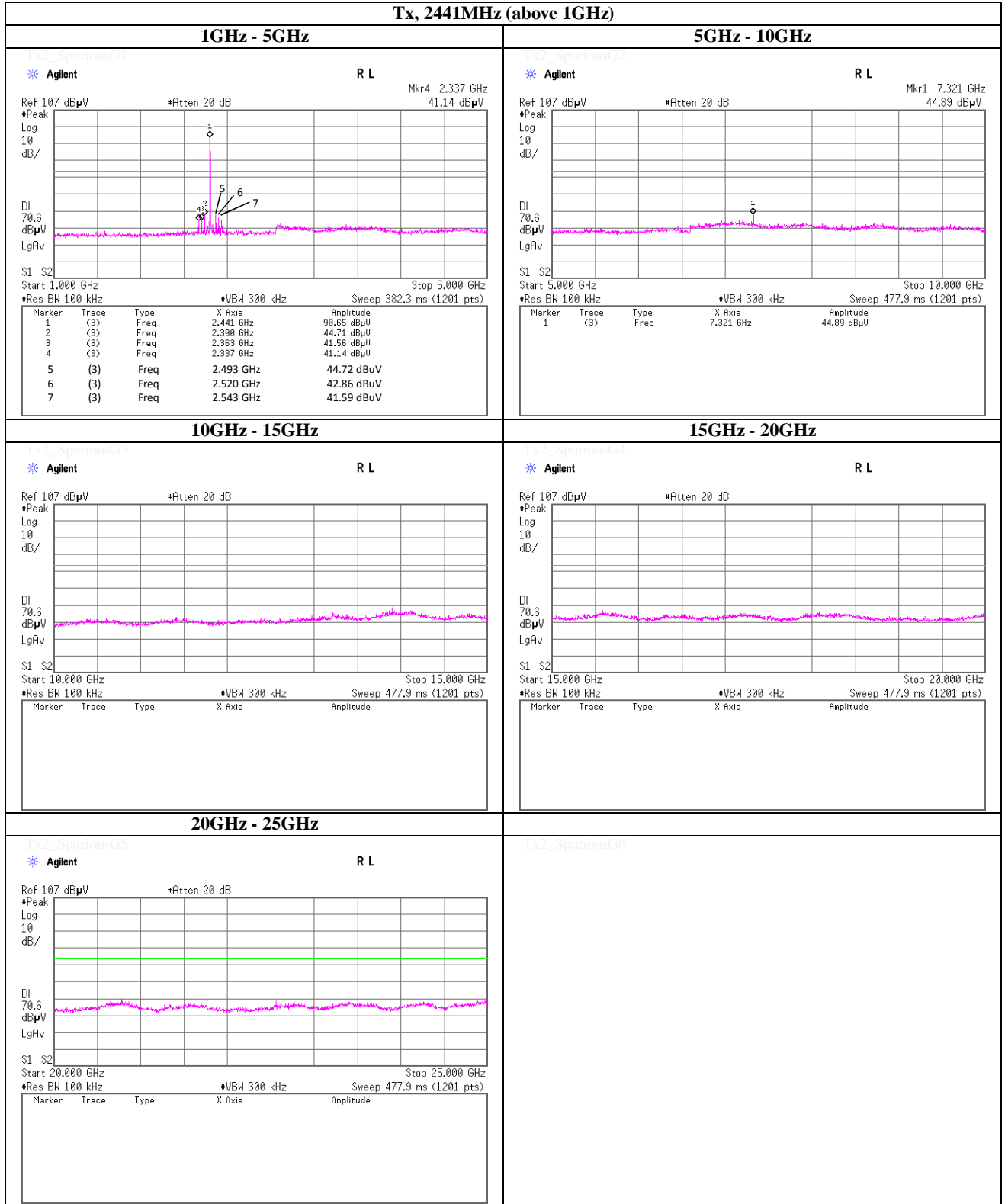
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2441MHz (above 1GHz)



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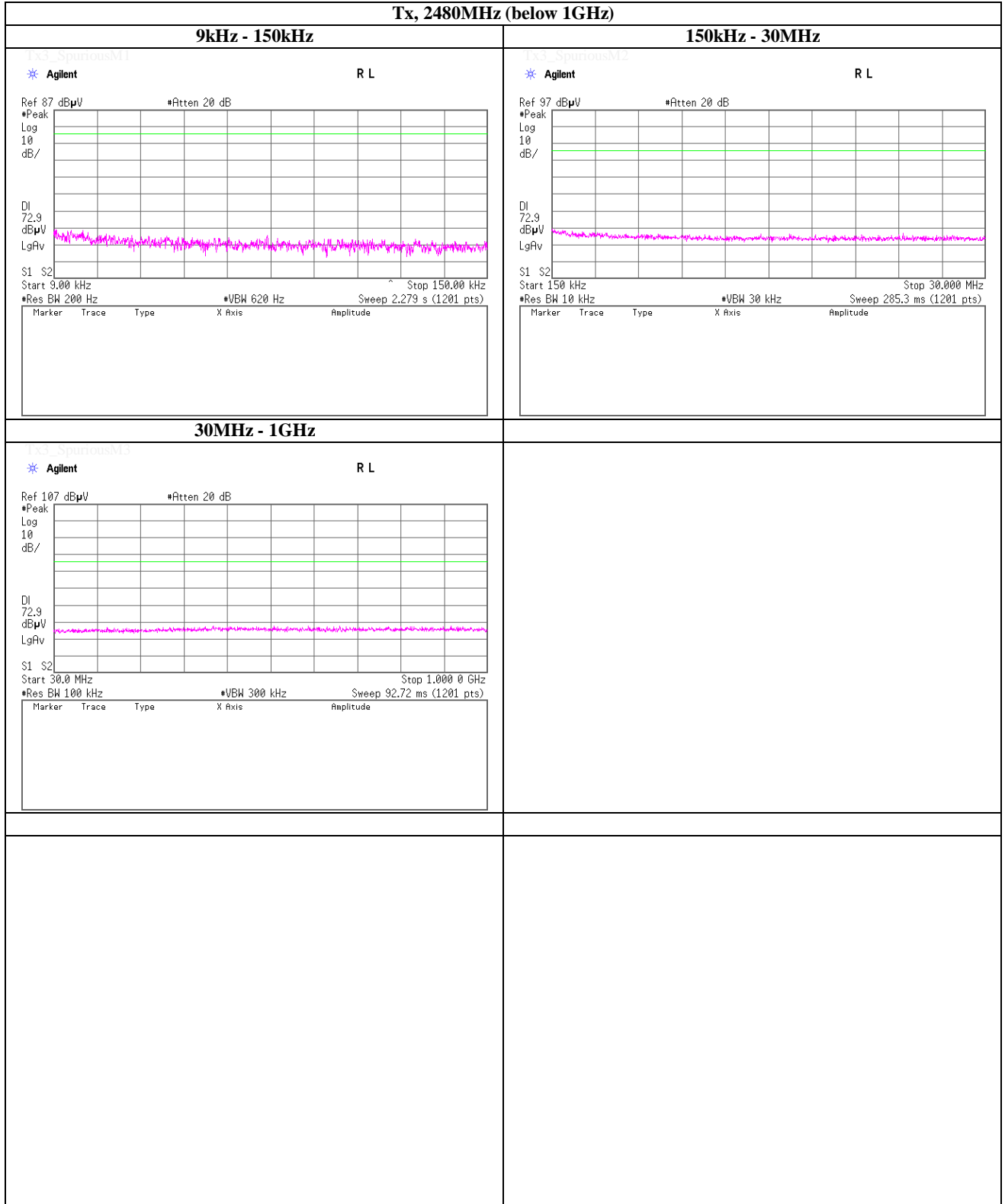
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Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (below 1GHz)



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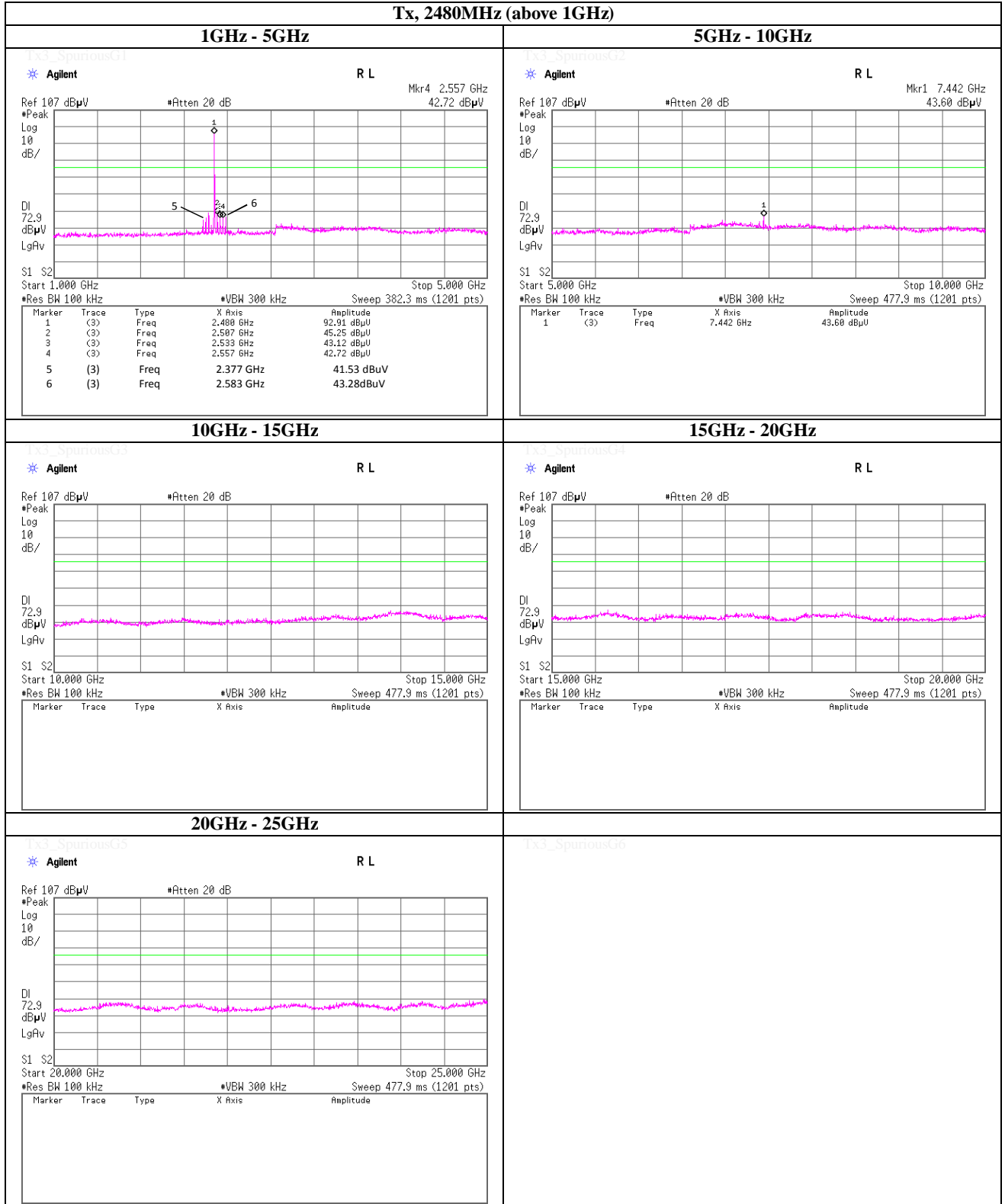
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, Bluetooth, EDR, PRBS9

Tx, 2480MHz (above 1GHz)



UL Japan, Inc.

Shonan EMC Lab.

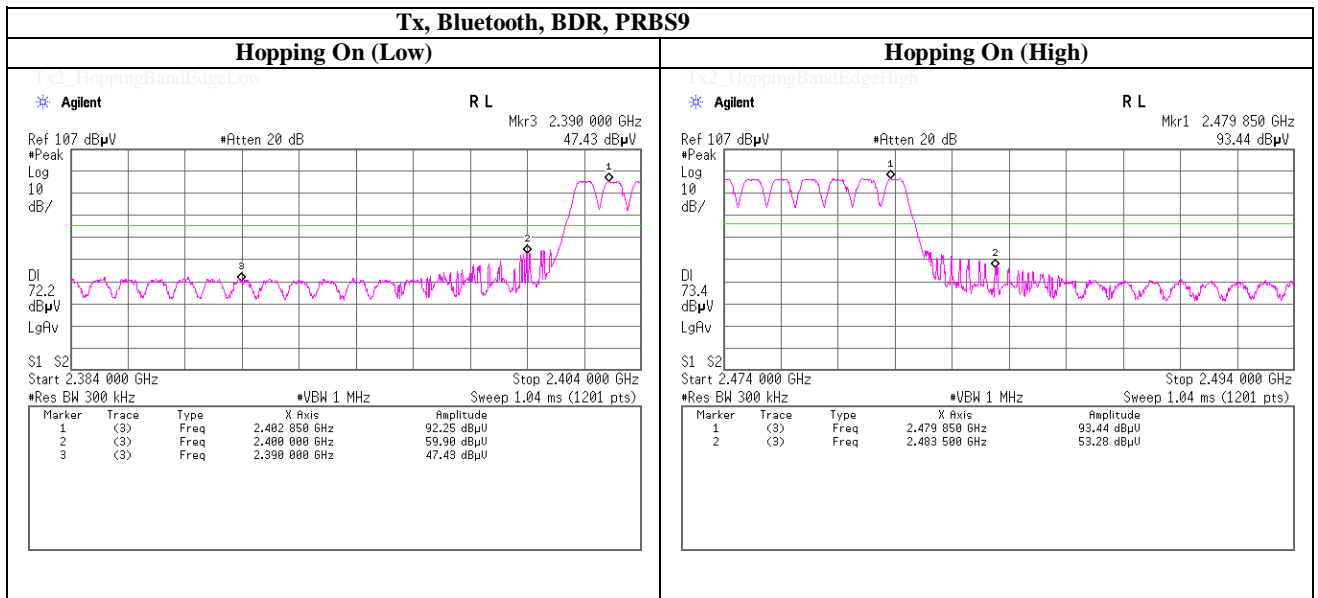
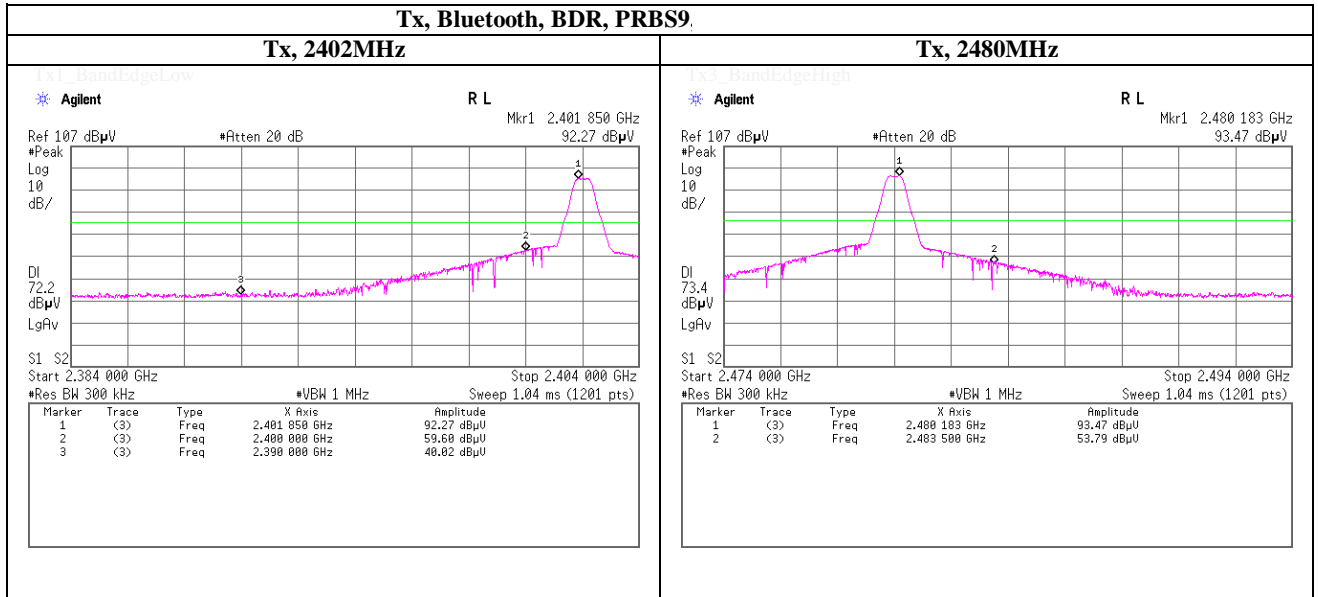
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

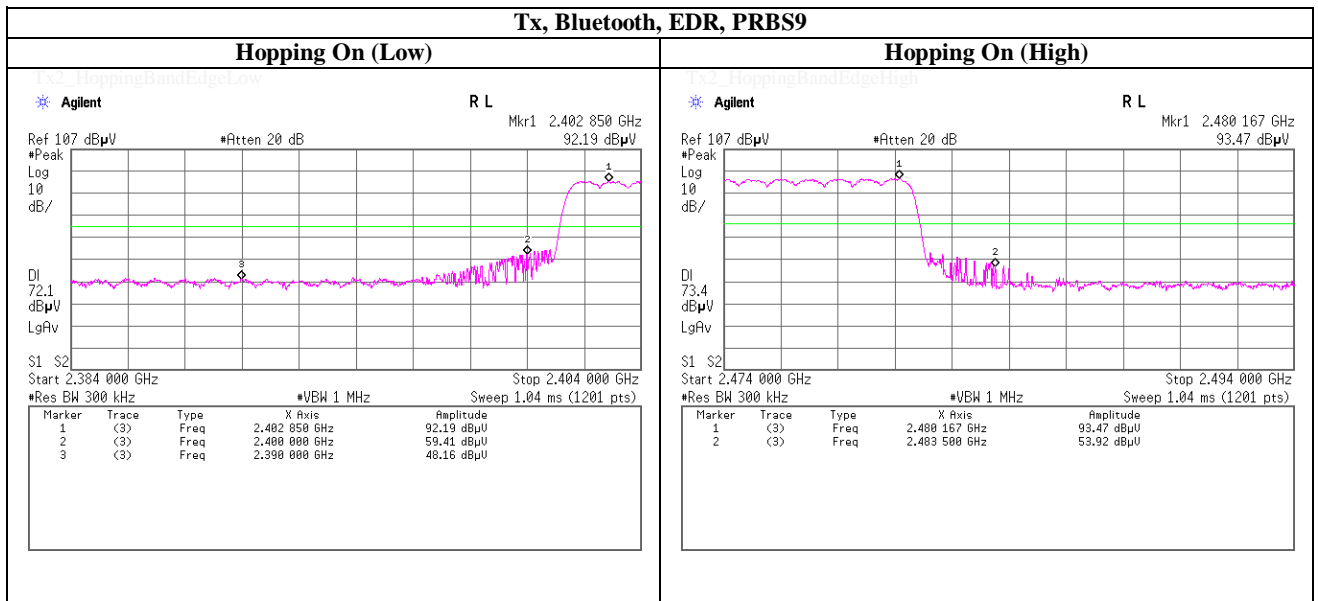
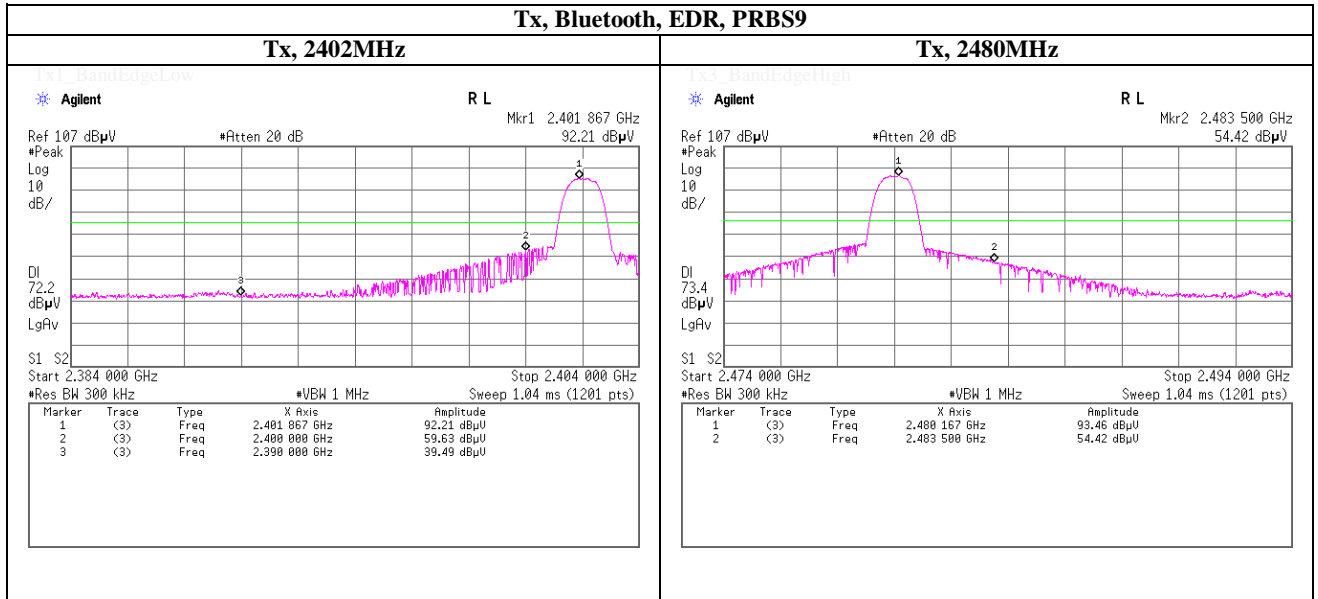
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

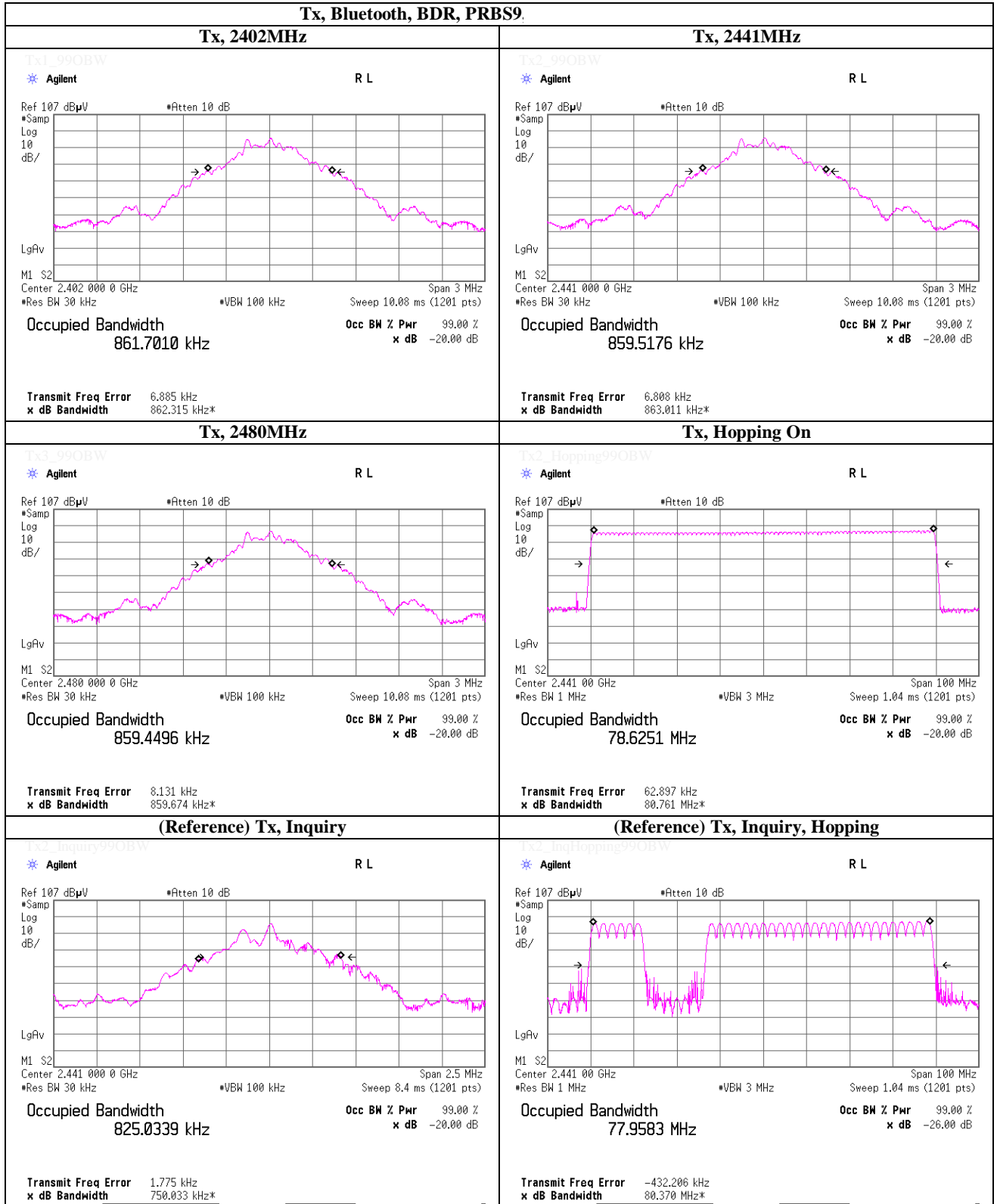
Shonan EMC Lab.

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Telephone : +81 463 50 6400

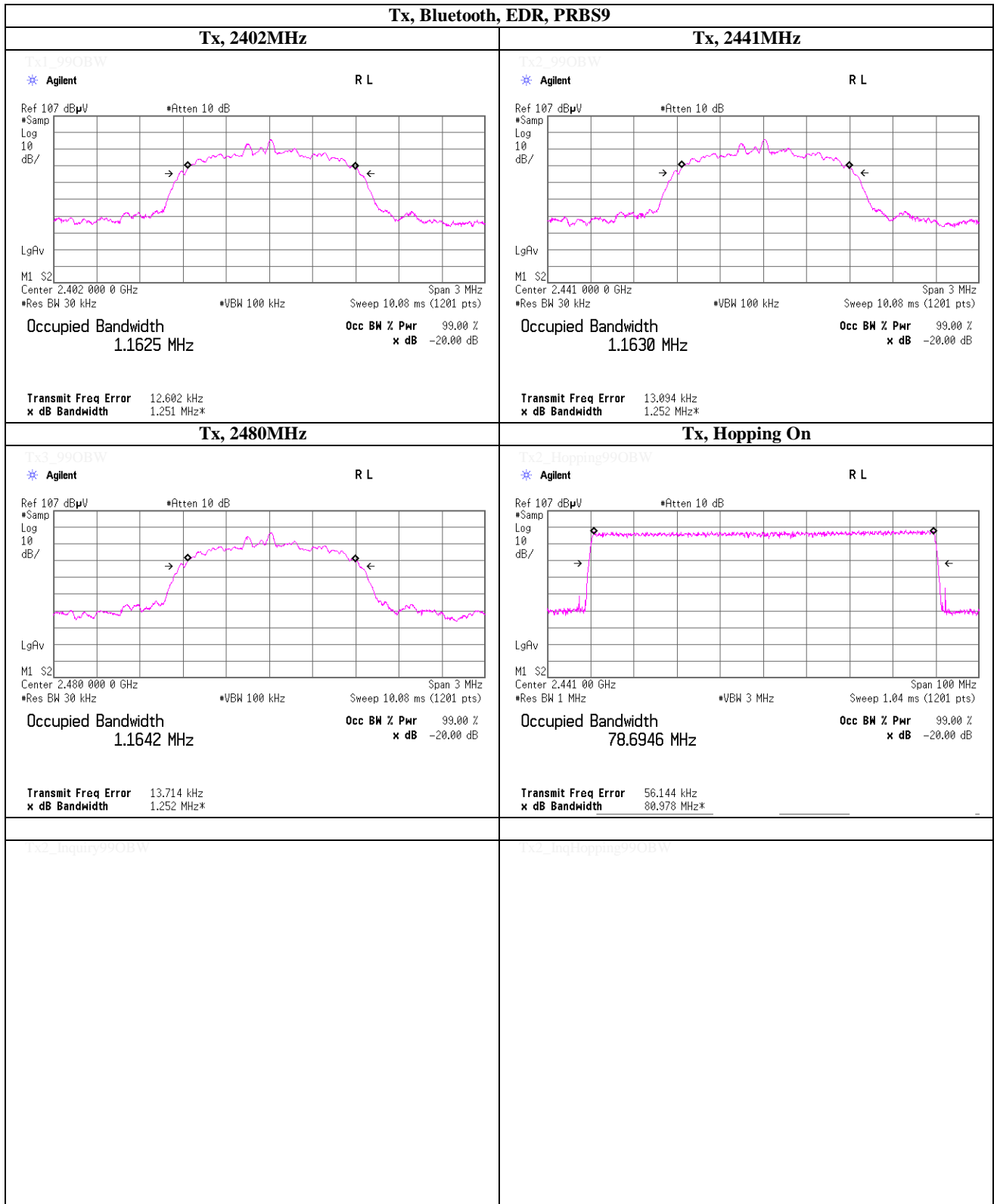
Facsimile : +81 463 50 6401

99% Occupied Bandwidth



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99% Occupied Bandwidth



UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

Test Report No : 10006266S-A

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,RE	2013/01/08 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2012/03/12 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2012/11/15 * 12
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2012/09/11 * 12
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-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2012/08/20 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2013/02/27 * 12
SJM-08	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2012/12/18 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2012/12/18 * 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
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2013/02/12 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2013/02/12 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2013/02/12 * 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	UHALP 9108-A0888	RE	2012/11/18 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2012/10/04 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2012/03/16 * 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
SAT10-11	Attenuator	Weinschel Corp.	54A-10	37588	AT	2012/04/06 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12

The expiration date of the calibration is the end of the expired month .
As for some calibrations performed after the tested dates , those test equipment have been controlled by means of an unbroken chains of calibrations .

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

Test Item :

RE: Radiated emission,

AT: Antenna terminal conducted test