



Test report No. : 4786002229S-E

Page : 1 of 69

Issued date : April 16, 2013

FCC ID : AZD221

RADIO TEST REPORT

Test Report No. : 4786002229S-E

Applicant : Canon Inc.

Type of Equipment : Wireless Module

Model No. : CH9-1346

FCC ID : AZD221

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: December 19, 2012 to January 30, 2013

Representative test engineer:

S. Takano

Shinichi Takano
Engineer of WiSE Japan,
UL Verification Service

Approved by :

T. Imamura

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 : Canon Inc.
Address : 30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 JAPAN
Telephone Number : +81-3-3758-2111
Facsimile Number : +81-3-3757-8431
Contact Person : Takato Matsuura

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

Type of Equipment : Wireless Module
Model No. : CH9-1346
Serial No. : Refer to 4.2 in this report.
Rating : DC3.3V
Receipt Date of Sample : December 19, 2012
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: CH9-1346 (referred to as the EUT in this report) is a Wireless Module.

Clock frequency(ies) in the system : 32.768kHz, 38.4MHz

Radio specification

Equipment type : Transceiver
Frequency of operation : 2412-2462MHz
Bandwidth & channel spacing : Bandwidth:
20MHz (IEEE 802.11b, 11g, 11n-20HT) / 40MHz (IEEE 802.11n-40HT)
Channel spacing: 5MHz
Type of modulation : DSSS: CCK,DQPSK, DBPSK
OFDM: 64QAM, 16QAM, QPSK, BPSK
Antenna type : $\lambda/4$ Monopole
Antenna connector type : None
Antenna gain with cable loss : -0.8 dBi
ITU code : D1D, G1D
Operation temperature range : 0 to +60 deg.C.

FCC 15.31 (e) / 212

The host device provides the RF module with stable power supply (DC3.3V), therefore, the equipment complies with the requirement.

FCC 15.203 / 212

The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna 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 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

* The revision on December 27, 2012 does not affect the test specification applied to the EUT.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.10:2009	FCC 15.207	-	N/A	19.7dB Freq.: 0.37340MHz Detector: Quasi-Peak Phase: L1 Mode: Tx 2437MHz, IEEE 802.11n-40HT	Complied
6dB bandwidth	ANSI C63.10:2009	FCC 15.247 (a)(2)	Conducted	N/A	* See data	Complied
Maximum peak conducted output power	ANSI C63.10:2009	FCC 15.247 (b)(3)	Conducted	N/A		Complied
Spurious emission & Restricted band edges	ANSI C63.10:2009	FCC 15.109, 15.247 (d) & 15.209	Conducted / Radiated	N/A	2.2dB Freq.: 2390.000MHz Detector: Average Polarization: Vertical Mode: Tx 2422MHz, IEEE 802.11n-40HT	Complied
Peak Power density	ANSI C63.10:2009	FCC 15.247 (e)	Conducted	N/A	* See data	Complied

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

*1) These tests were also referred to KDB 558074 (FCC), "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

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.

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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 (±)
Conducted emission (AC Mains) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
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

Conducted emission test

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

Radiated emission test

The data listed in this test 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
☒ No.1 Semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.2 Semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 Semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 Semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☒ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ 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

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission Radiated emission (below 1GHz) *3)	Transmitting IEEE 802.11n-40HT	2437MHz	12dBm	MCS5, PN9
Other items	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	12dBm	1Mbps, PN9
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	12dBm	6Mbps, PN9
	Transmitting IEEE 802.11n-20HT	2412MHz, 2437MHz, 2462MHz	12dBm	MCS0, PN9
	Transmitting IEEE 802.11n-40HT	2422MHz, 2437MHz, 2452MHz	12dBm	MCS5, PN9

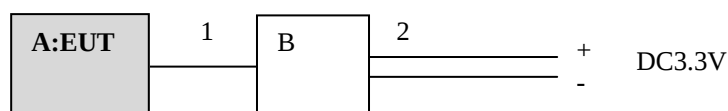
*1) Software used for the test: Tera Term Ver4.67.

*2) The worst condition was determined based on the test result of Maximum Peak Output Power.

*3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals -" of TCB Council Workshop October 2009.

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

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Module	CH9-1346	ES3020 *1) ES3006 *2)	Canon	EUT
B	WLAN-JIGU	-	-	Canon	-

*1) Used for Antenna port conducted test

*2) Used for Radiated and Conducted emission test

List of cables used

No.	Cable	Length (m)	Shield-Cable	Shield-Connector	Remarks
1	Jig	0.02	Unshielded	Unshielded	-
2	DC (+, -)	1.1	Unshielded	Unshielded	-

* All cables used for the measurement are exclusive use or marketed.

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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 and excess AC cable was bundled in center.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.

Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

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

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT via DC power supply within a shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN) via DC power supply.

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 detector of the test receiver.

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

5.5 Results

Summary of the test results : Pass

Refer to APPENDIX 1

SECTION 6: 6dB bandwidth & Occupied bandwidth (99%)

Test procedure

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

The test was measured based on Method 7.1 Option 1 and 7.2 Option 2 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Summary of the test results: Pass

Refer to APPENDIX 1

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SECTION 7: Maximum peak conducted output power

Test procedure

The Maximum Peak Conducted Output Power was measured with a power meter connected to the antenna port. The test was measured based on Method 8.1.3 Option 3 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

Detection type: Peak / Average *1)

Summary of the test results: Pass

Refer to APPENDIX 1

*1) Average detector was used only for Reference data of SAR testing.

SECTION 8: Spurious emission (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

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SECTION 9: Radiated emission

9.1 Operating environment

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

9.2 Test configuration

EUT was placed on a styrofoam platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Photographs of the set up are shown in APPENDIX 3.

9.3 Test conditions

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

9.4 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). 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 and spectrum analyzer.

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

*1) Average Power Measurement was measured based on 10.2.3.3 and 8.2.1 of "Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247".

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.

	Carrier	Spurious		
		Below 1GHz	1-2.8GHz	2.8-25GHz
Horizontal	X	X	X	Y
Vertical	Y	X	Y	Z

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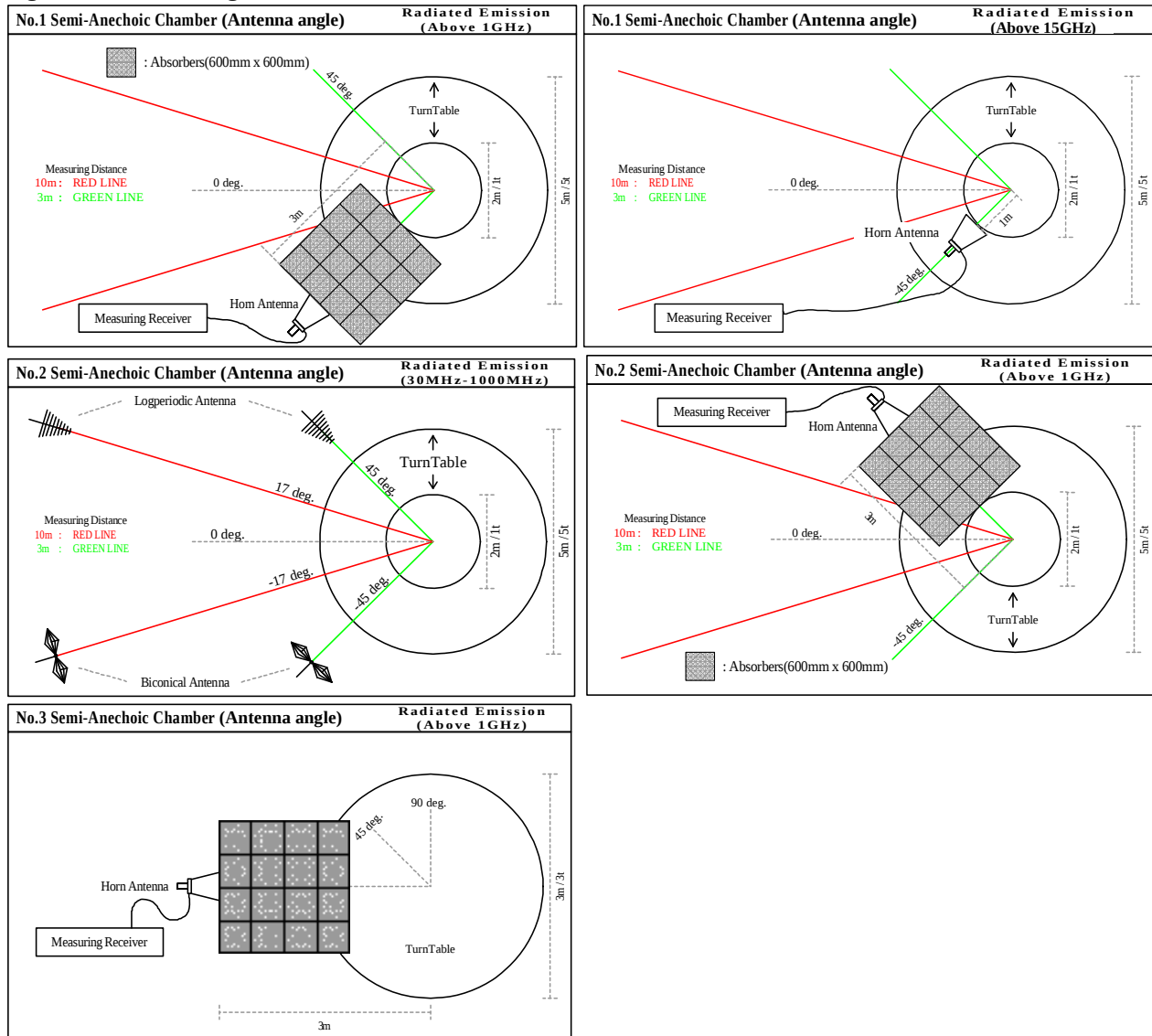
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Figure 1. Antenna angle



9.5 Band edge

Band edge level at 2400MHz is less than 20dB of peak point of the carrier. Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209. Refer to the data.

9.6 Results

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

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SECTION 10: Peak Power density

Test procedure

The peak power density was measured with a spectrum analyzer connected to the antenna port.

Instrument used : Spectrum Analyzer

RBW / VBW : 3kHz / 9.1kHz

The test was measured based on Method 9.1 Option 1 of “Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247”.

Summary of the test results: Pass

Refer to APPENDIX 1

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Contents of APPENDIXES

APPENDIX 1: Data of radio tests

Conducted emission
6dB bandwidth
Maximum peak conducted output power
Radiated emission
Spurious emission (Antenna port conducted)
Peak power density
99% Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of the worst position

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DATA OF CONDUCTED EMISSION TEST

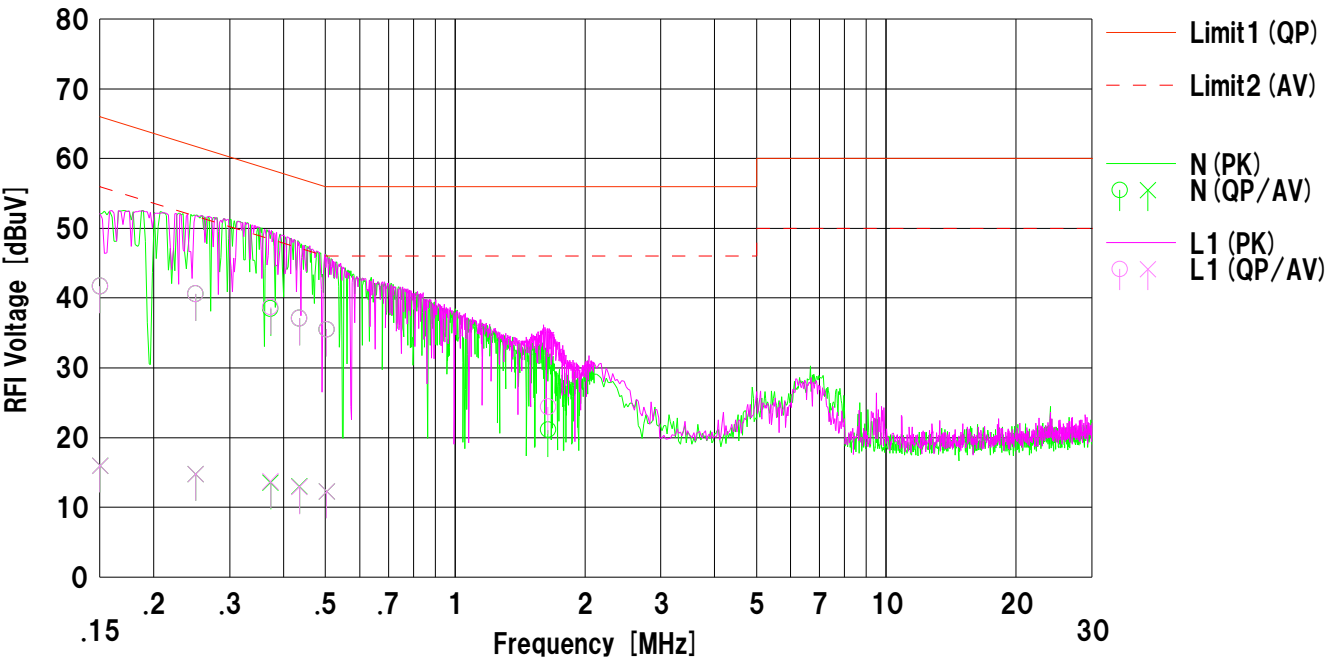
UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date : 2013/01/27

Company : Canon Inc.
Kind of EUT : Wireless Module
Model No. : CH9-1346
Serial No. : ES3006
Remarks : -

Mode : Tx 11n-40HT 2437MHz
Report No. : 4786002229S-E
Power : AC 120V / 60Hz
Temp./Humi. : 20deg.C. / 34%RH

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

Engineer : Makoto Hosaka

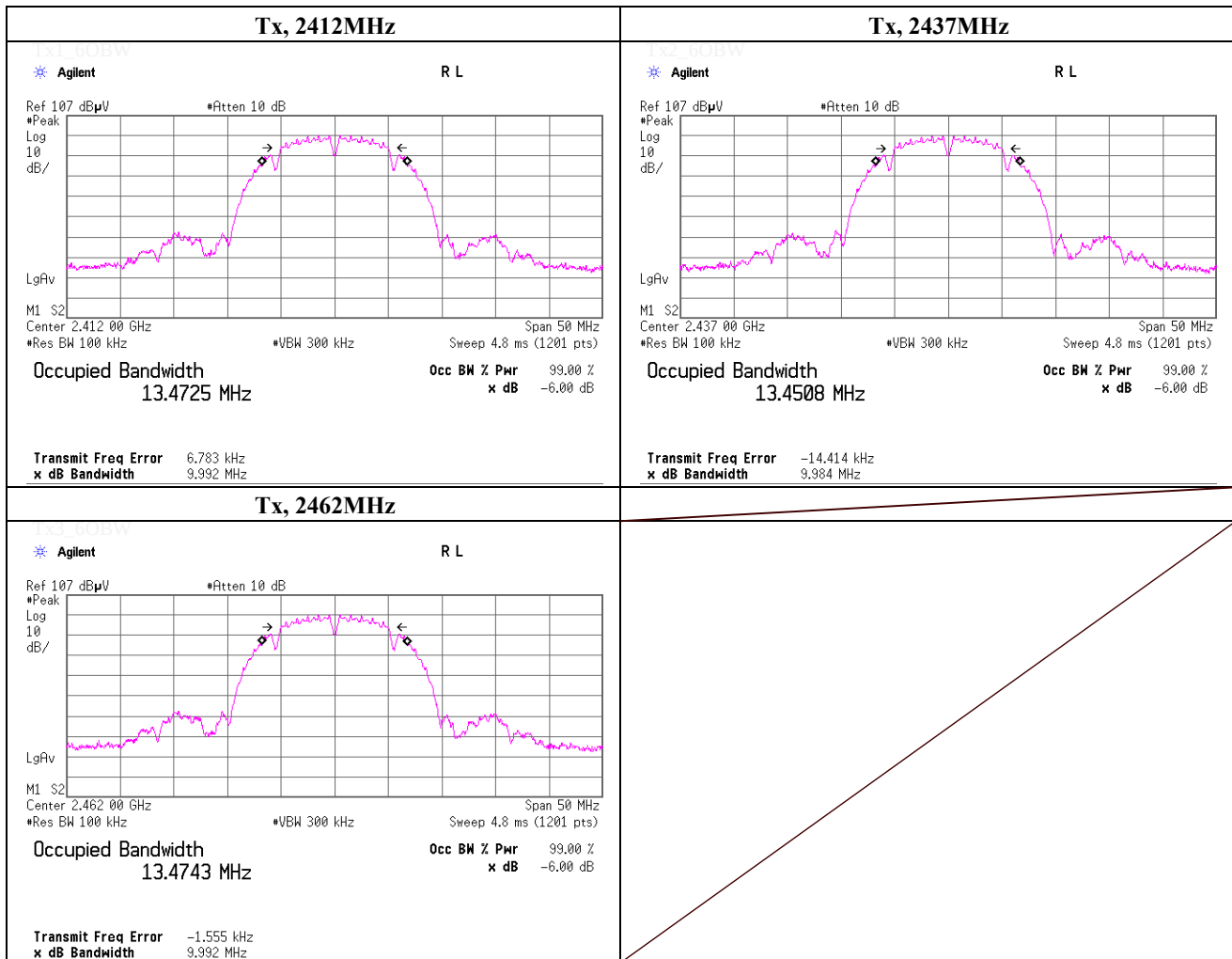


No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	29.1	3.4	12.6	41.7	16.0	66.0	56.0	24.3	40.0	N	
2	0.25035	28.0	2.2	12.6	40.6	14.8	61.7	51.7	21.1	36.9	N	
3	0.37340	25.9	1.0	12.6	38.5	13.6	58.4	48.4	19.9	34.8	N	
4	0.43515	24.5	0.4	12.6	37.1	13.0	57.1	47.1	20.0	34.1	N	
5	0.50371	22.9	-0.3	12.6	35.5	12.3	56.0	46.0	20.5	33.7	N	
6	1.64357	8.4	---	12.7	21.1	---	56.0	46.0	34.9	---	N	
7	0.15000	29.1	3.4	12.6	41.7	16.0	66.0	56.0	24.3	40.0	L1	
8	0.25035	28.0	2.2	12.6	40.6	14.8	61.7	51.7	21.1	36.9	L1	
9	0.37340	26.1	1.1	12.6	38.7	13.7	58.4	48.4	19.7	34.7	L1	
10	0.43515	24.5	0.3	12.6	37.1	12.9	57.1	47.1	20.0	34.2	L1	
11	0.50371	22.9	-0.3	12.6	35.5	12.3	56.0	46.0	20.5	33.7	L1	
12	1.64357	11.7	---	12.7	24.4	---	56.0	46.0	31.6	---	L1	

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.992	> 0.500
2437.0000	9.984	> 0.500
2462.0000	9.992	> 0.500

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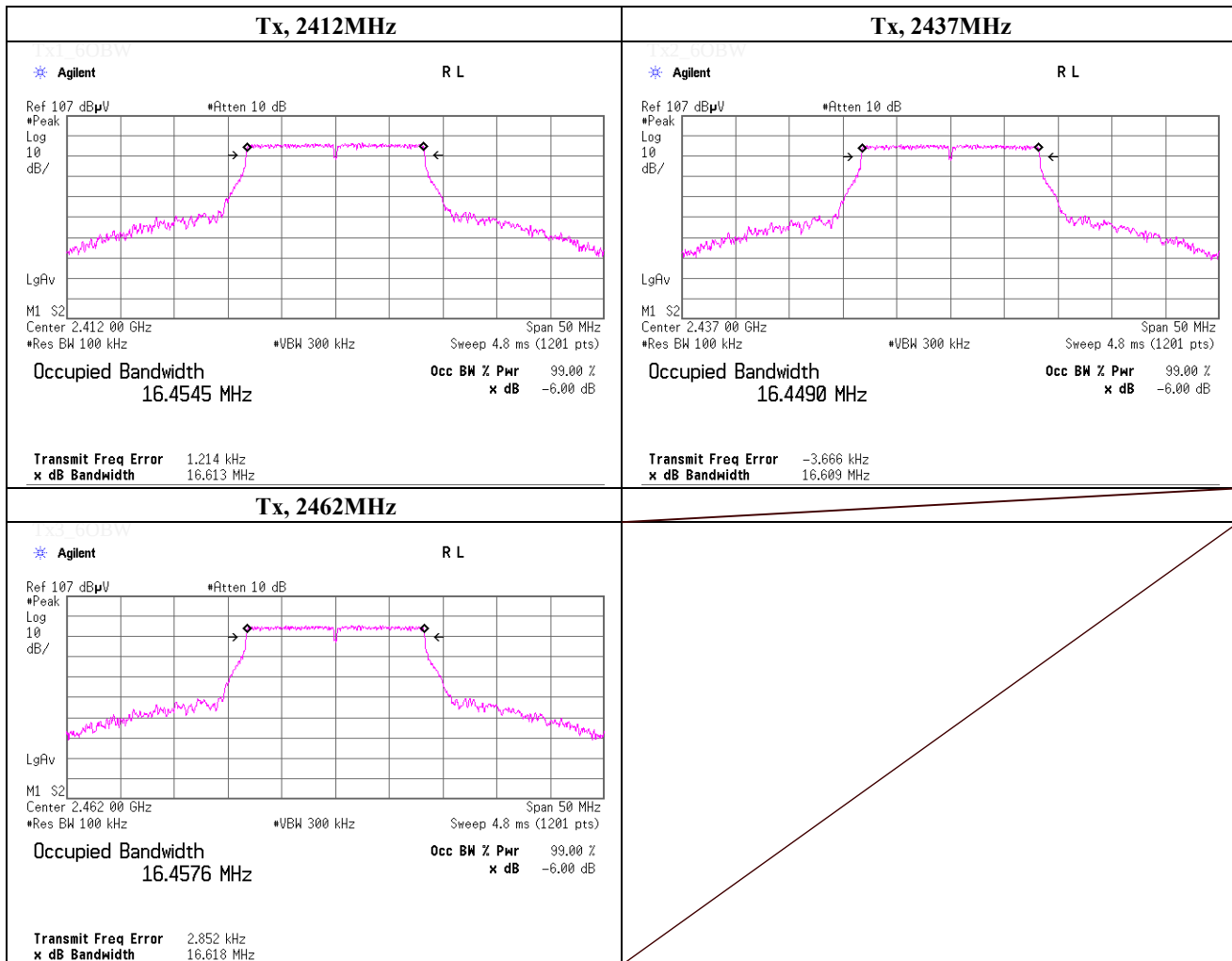
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-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.613	> 0.500
2437.0000	16.609	> 0.500
2462.0000	16.618	> 0.500

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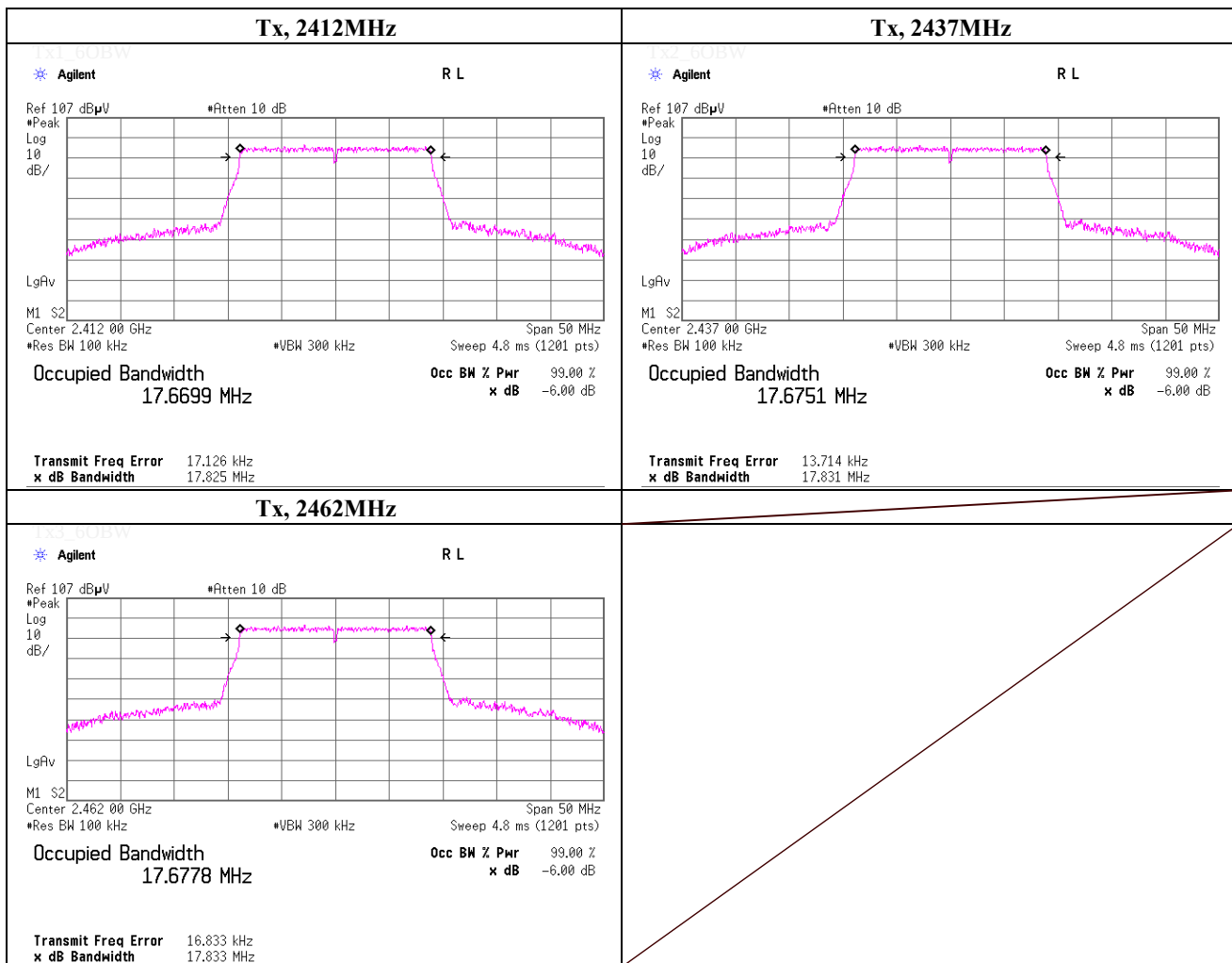
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-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.825	> 0.500
2437.0000	17.831	> 0.500
2462.0000	17.833	> 0.500

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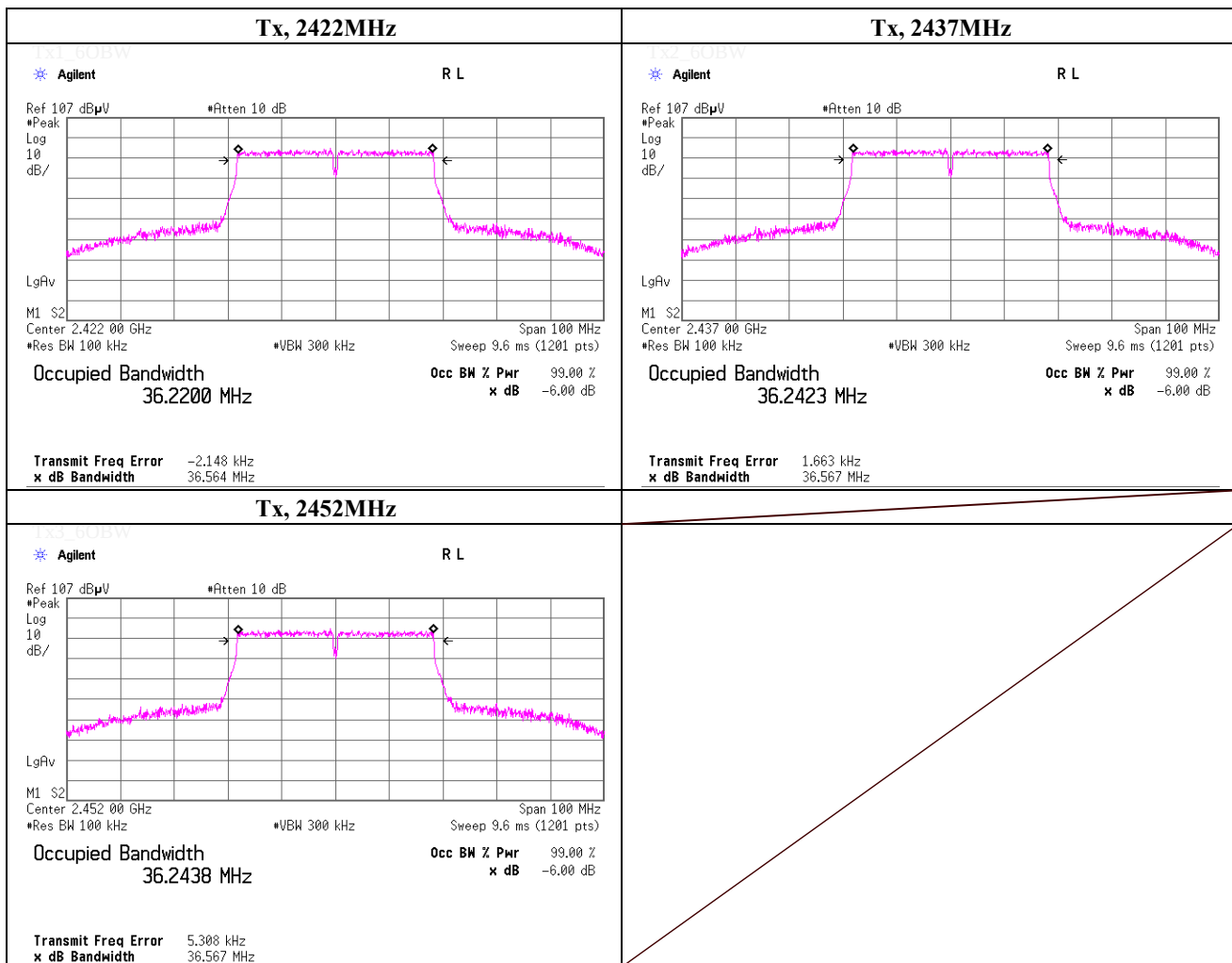
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-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.564	> 0.500
2437.0000	36.567	> 0.500
2452.0000	36.567	> 0.500

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Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date January 24, 2013
 Temperature / Humidity 23deg.C , 29%RH
 Engineer Tatsuya Arai
 Mode Tx, IEEE802.11b, PN9, worst data mode : 1 Mbps

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

Ch	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	3.25	1.34	9.97	14.56	28.58	30.00	1000	15.44
Mid	2437.0	3.12	1.34	9.97	14.43	27.73	30.00	1000	15.57
High	2462.0	3.43	1.34	9.97	14.74	29.79	30.00	1000	15.26

Sample Calculation:

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

[Pre check]

	Data rate [Mbps]	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
	1	2437.0	3.12	1.34	9.97	14.43	27.73	30.00	1000	15.57
	2	2437.0	3.10	1.34	9.97	14.41	27.61	30.00	1000	15.59
	5.5	2437.0	2.62	1.34	9.97	13.93	24.72	30.00	1000	16.07
	11	2437.0	3.09	1.34	9.97	14.40	27.54	30.00	1000	15.60

Worst

Reference data for SAR testing

(* AV: Average)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
	1	2437.0	0.53	1.34	9.97	11.84	15.28
	2	2437.0	0.52	1.34	9.97	11.83	15.24
	5.5	2437.0	0.50	1.34	9.97	11.81	15.17
	11	2437.0	0.49	1.34	9.97	11.80	15.14

Sample Calculation:

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

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Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date December 19, 2012
 Temperature / Humidity 22deg.C , 27%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11g, PN9, worst data mode : 6 Mbps

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

Ch	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	8.97	1.34	9.97	20.28	106.66	30.00	1000	9.72
Mid	2437.0	9.29	1.34	9.97	20.60	114.82	30.00	1000	9.40
High	2462.0	8.96	1.34	9.97	20.27	106.41	30.00	1000	9.73

Sample Calculation:

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

[Pre check]

	Data rate [Mbps]	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
	6	2437.0	9.29	1.34	9.97	20.60	114.82	30.00	1000	9.40
	9	2437.0	8.92	1.34	9.97	20.23	105.44	30.00	1000	9.77
	12	2437.0	9.24	1.34	9.97	20.55	113.50	30.00	1000	9.45
	18	2437.0	8.46	1.34	9.97	19.77	94.84	30.00	1000	10.23
	24	2437.0	9.21	1.34	9.97	20.52	112.72	30.00	1000	9.48
	36	2437.0	9.22	1.34	9.97	20.53	112.98	30.00	1000	9.47
	48	2437.0	8.90	1.34	9.97	20.21	104.95	30.00	1000	9.79
	54	2437.0	9.11	1.34	9.97	20.42	110.15	30.00	1000	9.58

Worst**Reference data for SAR testing**

(* AV: Average)

	Data rate [Mbps]	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
	6	2437.0	0.68	1.34	9.97	11.99	15.81
	9	2437.0	0.55	1.34	9.97	11.86	15.35
	12	2437.0	0.63	1.34	9.97	11.94	15.63
	18	2437.0	0.46	1.34	9.97	11.77	15.03
	24	2437.0	0.47	1.34	9.97	11.78	15.07
	36	2437.0	0.50	1.34	9.97	11.81	15.17
	48	2437.0	0.45	1.34	9.97	11.76	15.00
	54	2437.0	0.50	1.34	9.97	11.81	15.17

Sample Calculation:

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

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Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date December 19, 2012
 Temperature / Humidity 22deg.C , 27%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11n-20HT, PN9, worst data mode : 0 (MCS)

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

Ch	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	8.46	1.34	9.97	19.77	94.84	30.00	1000	10.23
Mid	2437.0	8.64	1.34	9.97	19.95	98.86	30.00	1000	10.05
High	2462.0	8.41	1.34	9.97	19.72	93.76	30.00	1000	10.28

Sample Calculation:

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

[Pre check]

	Mode (MCS)	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
	0	2437.0	8.64	1.34	9.97	19.95	98.86	30.00	1000	10.05
	1	2437.0	8.51	1.34	9.97	19.82	95.94	30.00	1000	10.18
	2	2437.0	8.46	1.34	9.97	19.77	94.84	30.00	1000	10.23
	3	2437.0	8.48	1.34	9.97	19.79	95.28	30.00	1000	10.21
	4	2437.0	8.57	1.34	9.97	19.88	97.27	30.00	1000	10.12
	5	2437.0	8.49	1.34	9.97	19.80	95.50	30.00	1000	10.20
	6	2437.0	8.43	1.34	9.97	19.74	94.19	30.00	1000	10.26
	7	2437.0	8.45	1.34	9.97	19.76	94.62	30.00	1000	10.24

Worst

Reference data for SAR testing

(* AV: Average)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
	0	2437.0	0.57	1.34	9.97	11.88	15.42
	1	2437.0	0.53	1.34	9.97	11.84	15.28
	2	2437.0	0.49	1.34	9.97	11.80	15.14
	3	2437.0	0.42	1.34	9.97	11.73	14.89
	4	2437.0	0.53	1.34	9.97	11.84	15.28
	5	2437.0	0.43	1.34	9.97	11.74	14.93
	6	2437.0	0.48	1.34	9.97	11.79	15.10
	7	2437.0	0.41	1.34	9.97	11.72	14.86

Sample Calculation:

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

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Maximum Peak Conducted Output Power

(Option 3)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date December 19, 2012
 Temperature / Humidity 22deg.C , 27%RH
 Engineer Shinichi Takano
 Mode Tx, IEEE802.11n-40HT, PN9, worst data mode : 5 (MCS)

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

Ch	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	9.24	1.34	9.97	20.55	113.50	30.00	1000	9.45
Mid	2437.0	9.67	1.34	9.97	20.98	125.31	30.00	1000	9.02
High	2452.0	9.18	1.34	9.97	20.49	111.94	30.00	1000	9.51

Sample Calculation:

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

[Pre check]

	Mode (MCS)	Freq. [MHz]	P/M (Peak) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin
						[dBm]	[mW]	[dBm]	[mW]	[dB]
	0	2437.0	9.58	1.34	9.97	20.89	122.74	30.00	1000	9.11
	1	2437.0	9.45	1.34	9.97	20.76	119.12	30.00	1000	9.24
	2	2437.0	9.52	1.34	9.97	20.83	121.06	30.00	1000	9.17
	3	2437.0	9.62	1.34	9.97	20.93	123.88	30.00	1000	9.07
	4	2437.0	9.55	1.34	9.97	20.86	121.90	30.00	1000	9.14
	5	2437.0	9.67	1.34	9.97	20.98	125.31	30.00	1000	9.02
	6	2437.0	9.47	1.34	9.97	20.78	119.67	30.00	1000	9.22
	7	2437.0	8.58	1.34	9.97	19.89	97.50	30.00	1000	10.11

Worst**Reference data for SAR testing**

(* AV: Average)

	Mode (MCS)	Freq. [MHz]	P/M (AV) Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result	
						[dBm]	[mW]
	0	2437.0	0.73	1.34	9.97	12.04	16.00
	1	2437.0	0.66	1.34	9.97	11.97	15.74
	2	2437.0	0.74	1.34	9.97	12.05	16.03
	3	2437.0	0.70	1.34	9.97	12.01	15.89
	4	2437.0	0.76	1.34	9.97	12.07	16.11
	5	2437.0	0.77	1.34	9.97	12.08	16.14
	6	2437.0	0.68	1.34	9.97	11.99	15.81
	7	2437.0	0.29	1.34	9.97	11.60	14.45

Sample Calculation:

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

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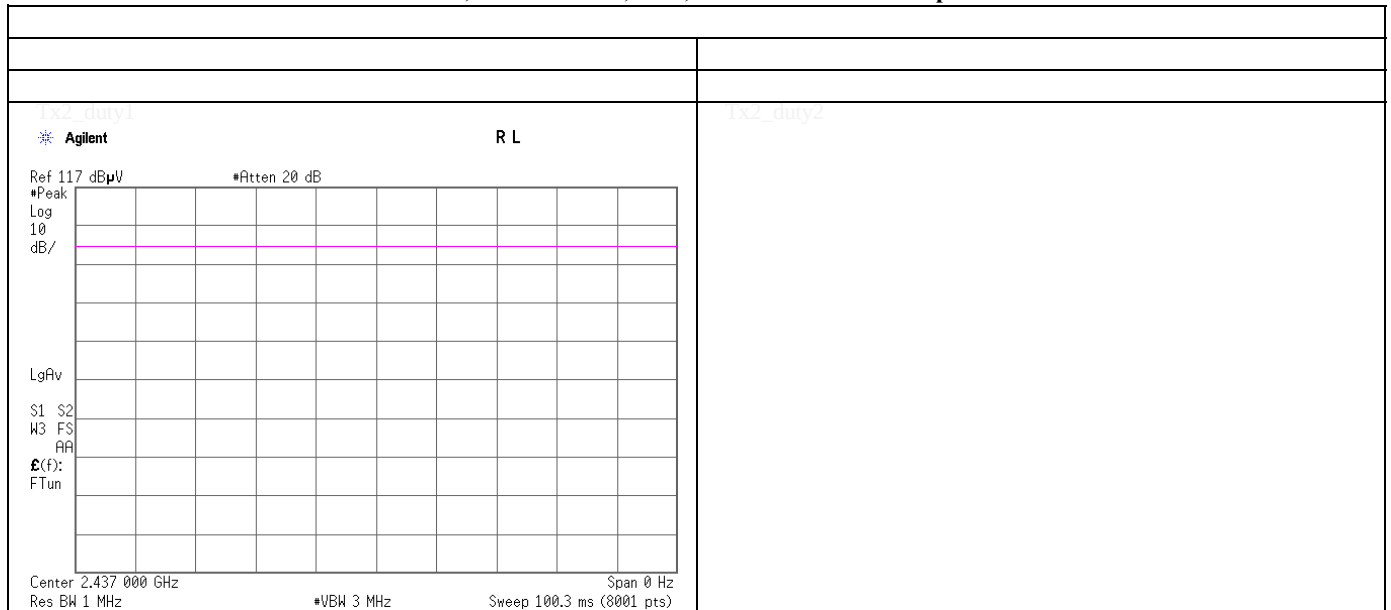
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Burst rate confirmation

Tx, IEEE802.11b, PN9, worst data mode 1Mbps



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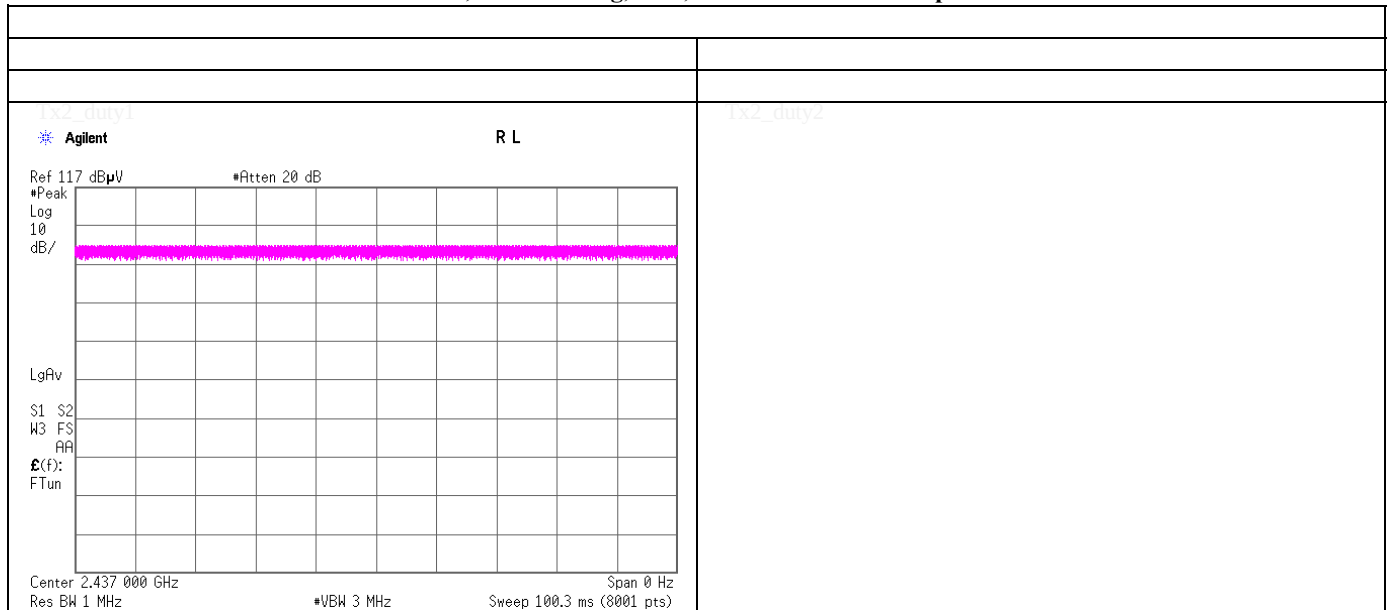
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Burst rate confirmation

Tx, IEEE802.11g, PN9, worst data mode 6Mbps



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Shonan EMC Lab.

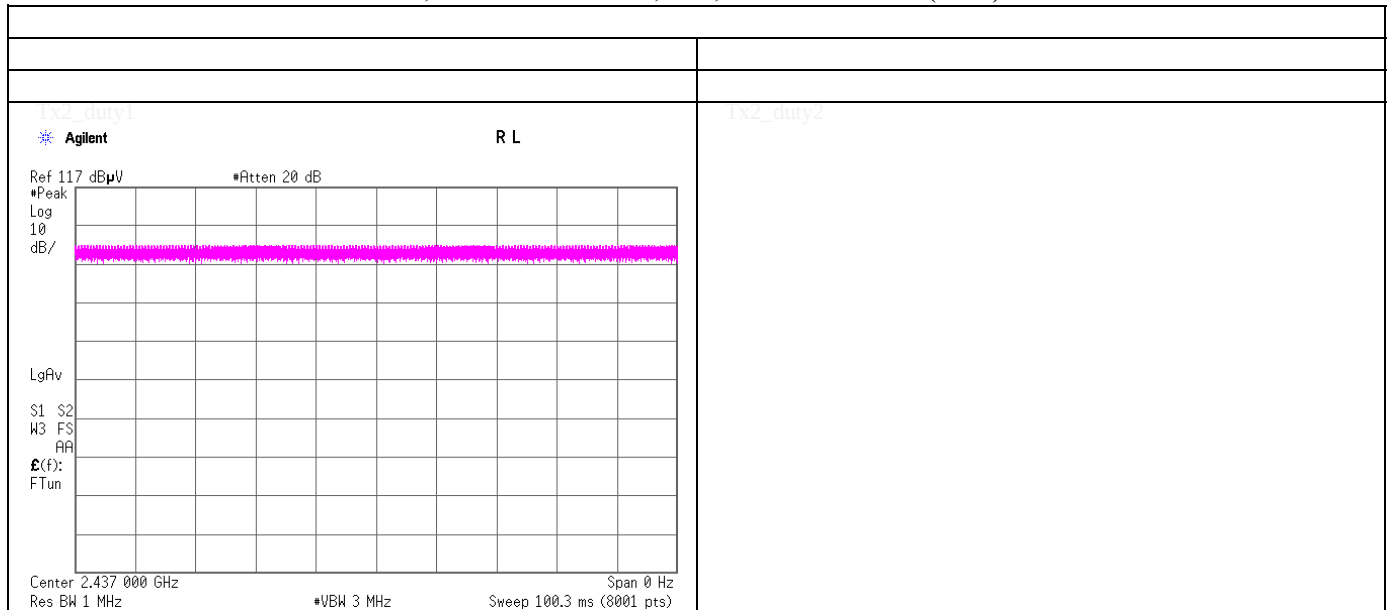
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Burst rate confirmation

Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)



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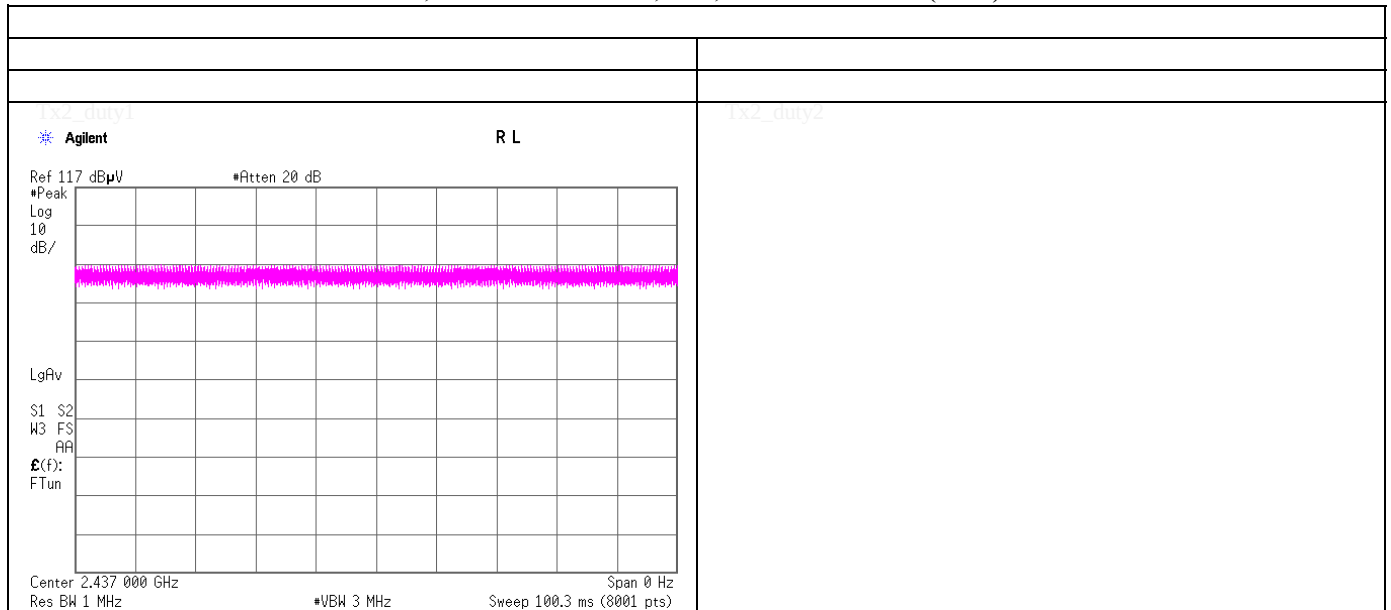
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Burst rate confirmation

Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)



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Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2412 MHz Tx, IEEE802.11b, 1Mbps			

(* 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.	2390.000	PK	44.2	27.2	24.3	38.2	57.5	73.9	16.4	146	236	
Hori.	4824.000	PK	49.2	31.2	6.4	41.6	45.2	73.9	28.7	100	0	
Hori.	6432.058	PK	49.0	34.6	7.2	40.9	49.9	73.9	24.0	100	321	
Hori.	7236.000	PK	48.5	36.1	7.7	41.2	51.1	73.9	22.8	100	0	
Hori.	9648.000	PK	47.9	38.1	9.0	40.4	54.6	73.9	19.3	100	0	
Hori.	12060.000	PK	46.4	39.0	10.3	39.4	56.3	73.9	17.6	100	0	
Hori.	2390.000	AV	34.5	27.2	24.3	38.2	47.8	53.9	6.1	146	236	
Hori.	4824.000	AV	35.7	31.2	6.4	41.6	31.7	53.9	22.2	100	0	
Hori.	6432.058	AV	41.4	34.6	7.2	40.9	42.3	53.9	11.6	100	321	
Hori.	7236.000	AV	36.8	36.1	7.7	41.2	39.4	53.9	14.5	100	0	
Hori.	9648.000	AV	36.3	38.1	9.0	40.4	43.0	53.9	10.9	100	0	
Hori.	12060.000	AV	34.1	39.0	10.3	39.4	44.0	53.9	9.9	100	0	
Vert.	2390.000	PK	44.9	27.2	24.3	38.2	58.2	73.9	15.7	100	130	
Vert.	4824.000	PK	47.7	31.2	6.4	41.6	43.7	73.9	30.2	100	0	
Vert.	6432.058	PK	49.3	34.6	7.2	40.9	50.2	73.9	23.7	100	316	
Vert.	7236.000	PK	48.3	36.1	7.7	41.2	50.9	73.9	23.0	100	0	
Vert.	9648.000	PK	48.0	38.1	9.0	40.4	54.7	73.9	19.2	100	0	
Vert.	12060.000	PK	46.8	39.0	10.3	39.4	56.7	73.9	17.2	100	0	
Vert.	2390.000	AV	34.5	27.2	24.3	38.2	47.8	53.9	6.1	100	130	
Vert.	4824.000	AV	35.6	31.2	6.4	41.6	31.6	53.9	22.3	100	0	
Vert.	6432.058	AV	41.5	34.6	7.2	40.9	42.4	53.9	11.5	100	316	
Vert.	7236.000	AV	36.9	36.1	7.7	41.2	39.5	53.9	14.4	100	0	
Vert.	9648.000	AV	36.3	38.1	9.0	40.4	43.0	53.9	10.9	100	0	
Vert.	12060.000	AV	34.1	39.0	10.3	39.4	44.0	53.9	9.9	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

*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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	82.6	27.3	24.3	38.2	96.0	-	-	
Hori.	2397.000	PK	37.2	27.3	24.3	38.2	50.6	76.0	25.4	
Hori.	2400.000	PK	35.2	27.3	24.3	38.2	48.6	76.0	27.4	
Vert.	2412.000	PK	82.9	27.3	24.3	38.2	96.3	-	-	
Vert.	2397.000	PK	37.3	27.3	24.3	38.2	50.7	76.3	25.6	
Vert.	2400.000	PK	35.7	27.3	24.3	38.2	49.1	76.3	27.2	

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

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Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2437 MHz Tx, IEEE802.11b, 1Mbps			

(* 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.	4874.000	PK	47.7	31.3	6.4	41.5	43.9	73.9	30.0	100	0	
Hori.	6498.699	PK	49.9	34.8	7.3	40.9	51.1	73.9	22.8	100	306	
Hori.	7311.000	PK	45.7	36.1	7.9	41.2	48.5	73.9	25.4	100	0	
Hori.	9748.000	PK	45.8	38.1	8.9	40.4	52.4	73.9	21.5	100	0	
Hori.	12185.000	PK	45.3	38.9	10.3	39.2	55.3	73.9	18.6	100	0	
Hori.	4874.000	AV	35.4	31.3	6.4	41.5	31.6	53.9	22.3	100	0	
Hori.	6498.699	AV	41.5	34.8	7.3	40.9	42.7	53.9	11.2	100	306	
Hori.	7311.000	AV	34.5	36.1	7.9	41.2	37.3	53.9	16.6	100	0	
Hori.	9748.000	AV	33.8	38.1	8.9	40.4	40.4	53.9	13.5	100	0	
Hori.	12185.000	AV	32.7	38.9	10.3	39.2	42.7	53.9	11.2	100	0	
Vert.	4874.000	PK	47.9	31.3	6.4	41.5	44.1	73.9	29.8	100	0	
Vert.	6498.699	PK	50.1	34.8	7.3	40.9	51.3	73.9	22.6	100	315	
Vert.	7311.000	PK	50.0	36.1	7.9	41.2	52.8	73.9	21.1	100	0	
Vert.	9748.000	PK	45.8	38.1	8.9	40.4	52.4	73.9	21.5	100	0	
Vert.	12185.000	PK	45.5	38.9	10.3	39.2	55.5	73.9	18.4	100	0	
Vert.	4874.000	AV	35.5	31.3	6.4	41.5	31.7	53.9	22.2	100	0	
Vert.	6498.699	AV	42.1	34.8	7.3	40.9	43.3	53.9	10.6	100	315	
Vert.	7311.000	AV	34.4	36.1	7.9	41.2	37.2	53.9	16.7	100	0	
Vert.	9748.000	AV	33.9	38.1	8.9	40.4	40.5	53.9	13.4	100	0	
Vert.	12185.000	AV	32.8	38.9	10.3	39.2	42.8	53.9	11.1	100	0	

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

Distance factor : 15GHz ~40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2462 MHz Tx, IEEE802.11b, 1Mbps			

(* 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.	2483.500	PK	43.9	27.4	24.3	38.1	57.5	73.9	16.4	100	0	
Hori.	4924.000	PK	46.8	31.4	6.5	41.5	43.2	73.9	30.7	100	0	
Hori.	6565.406	PK	50.2	34.9	7.2	41.0	51.3	73.9	22.6	100	305	
Hori.	7386.000	PK	46.5	36.2	7.9	41.3	49.3	73.9	24.6	100	0	
Hori.	9848.000	PK	43.2	38.1	8.9	40.4	49.8	73.9	24.1	100	0	
Hori.	12310.000	PK	42.4	38.9	10.3	39.1	52.5	73.9	21.4	100	0	
Hori.	2483.500	AV	34.6	27.4	24.3	38.1	48.2	53.9	5.7	100	0	
Hori.	4924.000	AV	35.5	31.4	6.5	41.5	31.9	53.9	22.0	100	0	
Hori.	6565.406	AV	42.2	34.9	7.2	41.0	43.3	53.9	10.6	100	305	
Hori.	7386.000	AV	35.0	36.2	7.9	41.3	37.8	53.9	16.1	100	0	
Hori.	9848.000	AV	34.6	38.1	8.9	40.4	41.2	53.9	12.7	100	0	
Hori.	12310.000	AV	31.2	38.9	10.3	39.1	41.3	53.9	12.6	100	0	
Vert.	2483.500	PK	43.8	27.4	24.3	38.1	57.4	73.9	16.5	100	131	
Vert.	4924.000	PK	47.2	31.4	6.5	41.5	43.6	73.9	30.3	100	0	
Vert.	6565.406	PK	49.7	34.9	7.2	41.0	50.8	73.9	23.1	100	310	
Vert.	7386.000	PK	46.4	36.2	7.9	41.3	49.2	73.9	24.7	100	0	
Vert.	9848.000	PK	46.0	38.1	8.9	40.4	52.6	73.9	21.3	100	0	
Vert.	12310.000	PK	42.7	38.9	10.3	39.1	52.8	73.9	21.1	100	0	
Vert.	2483.500	AV	34.5	27.4	24.3	38.1	48.1	53.9	5.8	100	131	
Vert.	4924.000	AV	35.6	31.4	6.5	41.5	32.0	53.9	21.9	100	0	
Vert.	6565.406	AV	42.3	34.9	7.2	41.0	43.4	53.9	10.5	100	310	
Vert.	7386.000	AV	35.1	36.2	7.9	41.3	37.9	53.9	16.0	100	0	
Vert.	9848.000	AV	34.6	38.1	8.9	40.4	41.2	53.9	12.7	100	0	
Vert.	12310.000	AV	31.2	38.9	10.3	39.1	41.3	53.9	12.6	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2412 MHz Tx, IEEE802.11g, 6Mbps			

(* 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.	2390.000	PK	48.0	27.2	24.3	38.2	61.3	73.9	12.6	144	228	
Hori.	4824.000	PK	46.9	31.2	6.4	41.6	42.9	73.9	31.0	100	0	
Hori.	6431.981	PK	49.5	34.6	7.2	40.9	50.4	73.9	23.5	100	296	
Hori.	7236.000	PK	47.0	36.1	7.7	41.2	49.6	73.9	24.3	100	0	
Hori.	9648.000	PK	46.4	38.1	9.0	40.4	53.1	73.9	20.8	100	0	
Hori.	12060.000	PK	44.3	39.0	10.3	39.4	54.2	73.9	19.7	100	0	
Hori.	2390.000	AV	35.7	27.2	24.3	38.2	49.0	53.9	4.9	144	228	
Hori.	4824.000	AV	35.4	31.2	6.4	41.6	31.4	53.9	22.5	100	0	
Hori.	6431.981	AV	41.8	34.6	7.2	40.9	42.7	53.9	11.2	100	296	
Hori.	7236.000	AV	35.4	36.1	7.7	41.2	38.0	53.9	15.9	100	0	
Hori.	9648.000	AV	34.6	38.1	9.0	40.4	41.3	53.9	12.6	100	0	
Hori.	12060.000	AV	33.4	39.0	10.3	39.4	43.3	53.9	10.6	100	0	
Vert.	2390.000	PK	48.4	27.2	24.3	38.2	61.7	73.9	12.2	100	132	
Vert.	4824.000	PK	47.6	31.2	6.4	41.6	43.6	73.9	30.3	100	0	
Vert.	6431.981	PK	49.0	34.6	7.2	40.9	49.9	73.9	24.0	100	314	
Vert.	7236.000	PK	46.7	36.1	7.7	41.2	49.3	73.9	24.6	100	0	
Vert.	9648.000	PK	46.7	38.1	9.0	40.4	53.4	73.9	20.5	100	0	
Vert.	12060.000	PK	44.6	39.0	10.3	39.4	54.5	73.9	19.4	100	0	
Vert.	2390.000	AV	35.5	27.2	24.3	38.2	48.8	53.9	5.1	100	132	
Vert.	4824.000	AV	35.4	31.2	6.4	41.6	31.4	53.9	22.5	100	0	
Vert.	6431.981	AV	40.7	34.6	7.2	40.9	41.6	53.9	12.3	100	314	
Vert.	7236.000	AV	35.2	36.1	7.7	41.2	37.8	53.9	16.1	100	0	
Vert.	9648.000	AV	34.6	38.1	9.0	40.4	41.3	53.9	12.6	100	0	
Vert.	12060.000	AV	33.4	39.0	10.3	39.4	43.3	53.9	10.6	100	0	

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

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

*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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	79.2	27.3	24.3	38.2	92.6	-	-	
Hori.	2400.000	PK	42.8	27.3	24.3	38.2	56.2	72.6	16.4	
Vert.	2412.000	PK	79.5	27.3	24.3	38.2	92.9	-	-	
Vert.	2400.000	PK	43.5	27.3	24.3	38.2	56.9	72.9	16.0	

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

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Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2437 MHz Tx, IEEE802.11g, 6Mbps			

(* 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.	4874.000	PK	46.6	31.3	6.4	41.5	42.8	73.9	31.1	100	0	
Hori.	6498.720	PK	49.4	34.8	7.3	40.9	50.6	73.9	23.3	100	299	
Hori.	7311.000	PK	46.1	36.1	7.9	41.2	48.9	73.9	25.0	100	0	
Hori.	9748.000	PK	46.1	38.1	8.9	40.4	52.7	73.9	21.2	100	0	
Hori.	12185.000	PK	44.8	38.9	10.3	39.2	54.8	73.9	19.1	100	0	
Hori.	4874.000	AV	34.8	31.3	6.4	41.5	31.0	53.9	22.9	100	0	
Hori.	6498.720	AV	42.3	34.8	7.3	40.9	43.5	53.9	10.4	100	299	
Hori.	7311.000	AV	34.5	36.1	7.9	41.2	37.3	53.9	16.6	100	0	
Hori.	9748.000	AV	34.0	38.1	8.9	40.4	40.6	53.9	13.3	100	0	
Hori.	12185.000	AV	33.1	38.9	10.3	39.2	43.1	53.9	10.8	100	0	
Vert.	4874.000	PK	46.6	31.3	6.4	41.5	42.8	73.9	31.1	100	0	
Vert.	6498.720	PK	49.5	34.8	7.3	40.9	50.7	73.9	23.2	100	313	
Vert.	7311.000	PK	46.5	36.1	7.9	41.2	49.3	73.9	24.6	100	0	
Vert.	9748.000	PK	45.1	38.1	8.9	40.4	51.7	73.9	22.2	100	0	
Vert.	12185.000	PK	44.7	38.9	10.3	39.2	54.7	73.9	19.2	100	0	
Vert.	4874.000	AV	34.7	31.3	6.4	41.5	30.9	53.9	23.0	100	0	
Vert.	6498.720	AV	42.0	34.8	7.3	40.9	43.2	53.9	10.7	100	313	
Vert.	7311.000	AV	34.5	36.1	7.9	41.2	37.3	53.9	16.6	100	0	
Vert.	9748.000	AV	33.9	38.1	8.9	40.4	40.5	53.9	13.4	100	0	
Vert.	12185.000	AV	33.1	38.9	10.3	39.2	43.1	53.9	10.8	100	0	

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

Distance factor : 15GHz ~40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 28, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	23 deg.C, 34 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima	Wataru Kojima
Mode	Tx, 2462 MHz Tx, IEEE802.11g, 6Mbps			

(* 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.	2483.500	PK	48.6	27.4	24.3	38.1	62.2	73.9	11.7	140	236	
Hori.	4924.000	PK	47.5	31.4	6.5	41.5	43.9	73.9	30.0	100	0	
Hori.	6565.402	PK	49.9	34.9	7.2	41.0	51.0	73.9	22.9	100	302	
Hori.	7386.000	PK	46.9	36.2	7.9	41.3	49.7	73.9	24.2	100	0	
Hori.	9848.000	PK	45.7	38.1	8.9	40.4	52.3	73.9	21.6	100	0	
Hori.	12310.000	PK	43.4	38.9	10.3	39.1	53.5	73.9	20.4	100	0	
Hori.	2483.500	AV	35.7	27.4	24.3	38.1	49.3	53.9	4.6	140	236	
Hori.	4924.000	AV	35.2	31.4	6.5	41.5	31.6	53.9	22.3	100	0	
Hori.	6565.402	AV	42.9	34.9	7.2	41.0	44.0	53.9	9.9	100	302	
Hori.	7386.000	AV	34.6	36.2	7.9	41.3	37.4	53.9	16.5	100	0	
Hori.	9848.000	AV	33.4	38.1	8.9	40.4	40.0	53.9	13.9	100	0	
Hori.	12310.000	AV	30.7	38.9	10.3	39.1	40.8	53.9	13.1	100	0	
Vert.	2483.500	PK	49.1	27.4	24.3	38.1	62.7	73.9	11.2	100	132	
Vert.	4924.000	PK	46.5	31.4	6.5	41.5	42.9	73.9	31.0	100	0	
Vert.	6565.402	PK	49.7	34.9	7.2	41.0	50.8	73.9	23.1	100	309	
Vert.	7386.000	PK	46.5	36.2	7.9	41.3	49.3	73.9	24.6	100	0	
Vert.	9848.000	PK	46.0	38.1	8.9	40.4	52.6	73.9	21.3	100	0	
Vert.	12310.000	PK	43.5	38.9	10.3	39.1	53.6	73.9	20.3	100	0	
Vert.	2483.500	AV	35.6	27.4	24.3	38.1	49.2	53.9	4.7	100	132	
Vert.	4924.000	AV	35.2	31.4	6.5	41.5	31.6	53.9	22.3	100	0	
Vert.	6565.402	AV	42.7	34.9	7.2	41.0	43.8	53.9	10.1	100	309	
Vert.	7386.000	AV	34.6	36.2	7.9	41.3	37.4	53.9	16.5	100	0	
Vert.	9848.000	AV	33.4	38.1	8.9	40.4	40.0	53.9	13.9	100	0	
Vert.	12310.000	AV	30.6	38.9	10.3	39.1	40.7	53.9	13.2	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n 20HT, MCS0		

(* 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.	2390.000	PK	48.1	27.2	24.3	38.2	61.4	73.9	12.5	100	229	
Hori.	4824.000	PK	45.1	31.2	6.4	41.6	41.1	73.9	32.8	100	0	
Hori.	6432.069	PK	49.2	34.6	7.2	40.9	50.1	73.9	23.8	100	297	
Hori.	7236.000	PK	46.2	36.1	7.7	41.2	48.8	73.9	25.1	100	0	
Hori.	9648.000	PK	45.0	38.1	9.0	40.4	51.7	73.9	22.2	100	0	
Hori.	12060.000	PK	46.0	39.0	10.3	39.4	55.9	73.9	18.0	100	0	
Hori.	2390.000	AV	35.9	27.2	24.3	38.2	49.2	53.9	4.7	100	229	
Hori.	4824.000	AV	34.4	31.2	6.4	41.6	30.4	53.9	23.5	100	0	
Hori.	6432.069	AV	42.1	34.6	7.2	40.9	43.0	53.9	10.9	100	297	
Hori.	7236.000	AV	34.3	36.1	7.7	41.2	36.9	53.9	17.0	100	0	
Hori.	9648.000	AV	34.1	38.1	9.0	40.4	40.8	53.9	13.1	100	0	
Hori.	12060.000	AV	33.7	39.0	10.3	39.4	43.6	53.9	10.3	100	0	
Vert.	2390.000	PK	48.4	27.2	24.3	38.2	61.7	73.9	12.2	100	163	
Vert.	4824.000	PK	46.0	31.2	6.4	41.6	42.0	73.9	31.9	100	0	
Vert.	6432.069	PK	49.0	34.6	7.2	40.9	49.9	73.9	24.0	100	311	
Vert.	7236.000	PK	45.8	36.1	7.7	41.2	48.4	73.9	25.5	100	0	
Vert.	9648.000	PK	45.8	38.1	9.0	40.4	52.5	73.9	21.4	100	0	
Vert.	12060.000	PK	44.6	39.0	10.3	39.4	54.5	73.9	19.4	100	0	
Vert.	2390.000	AV	36.4	27.2	24.3	38.2	49.7	53.9	4.2	100	163	
Vert.	4824.000	AV	34.5	31.2	6.4	41.6	30.5	53.9	23.4	100	0	
Vert.	6432.069	AV	41.5	34.6	7.2	40.9	42.4	53.9	11.5	100	311	
Vert.	7236.000	AV	34.3	36.1	7.7	41.2	36.9	53.9	17.0	100	0	
Vert.	9648.000	AV	34.1	38.1	9.0	40.4	40.8	53.9	13.1	100	0	
Vert.	12060.000	AV	33.7	39.0	10.3	39.4	43.6	53.9	10.3	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

*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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	79.9	27.3	24.3	38.2	93.3	-	-	
Hori.	2400.000	PK	40.1	27.3	24.3	38.2	53.5	73.3	19.8	
Vert.	2412.000	PK	79.9	27.3	24.3	38.2	93.3	-	-	
Vert.	2400.000	PK	40.1	27.3	24.3	38.2	53.5	73.3	19.8	

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

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Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n 20HT, MCS0		

(* 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.	4874.000	PK	45.8	31.3	6.4	41.5	42.0	73.9	31.9	100	0	
Hori.	6498.765	PK	50.2	34.8	7.3	40.9	51.4	73.9	22.5	100	291	
Hori.	7311.000	PK	45.9	36.1	7.9	41.2	48.7	73.9	25.2	100	0	
Hori.	9748.000	PK	46.3	38.1	8.9	40.4	52.9	73.9	21.0	100	0	
Hori.	12185.000	PK	44.5	38.9	10.3	39.2	54.5	73.9	19.4	100	0	
Hori.	4874.000	AV	34.5	31.3	6.4	41.5	30.7	53.9	23.2	100	0	
Hori.	6498.765	AV	42.3	34.8	7.3	40.9	43.5	53.9	10.4	100	291	
Hori.	7311.000	AV	34.4	36.1	7.9	41.2	37.2	53.9	16.7	100	0	
Hori.	9748.000	AV	33.8	38.1	8.9	40.4	40.4	53.9	13.5	100	0	
Hori.	12185.000	AV	33.3	38.9	10.3	39.2	43.3	53.9	10.6	100	0	
Vert.	4874.000	PK	45.4	31.3	6.4	41.5	41.6	73.9	32.3	100	0	
Vert.	6498.765	PK	49.8	34.8	7.3	40.9	51.0	73.9	22.9	100	317	
Vert.	7311.000	PK	46.0	36.1	7.9	41.2	48.8	73.9	25.1	100	0	
Vert.	9748.000	PK	46.1	38.1	8.9	40.4	52.7	73.9	21.2	100	0	
Vert.	12185.000	PK	45.3	38.9	10.3	39.2	55.3	73.9	18.6	100	0	
Vert.	4874.000	AV	34.5	31.3	6.4	41.5	30.7	53.9	23.2	100	0	
Vert.	6498.765	AV	41.8	34.8	7.3	40.9	43.0	53.9	10.9	100	317	
Vert.	7311.000	AV	34.4	36.1	7.9	41.2	37.2	53.9	16.7	100	0	
Vert.	9748.000	AV	33.8	38.1	8.9	40.4	40.4	53.9	13.5	100	0	
Vert.	12185.000	AV	33.2	38.9	10.3	39.2	43.2	53.9	10.7	100	0	

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

Distance factor : 15GHz ~40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11n 20HT, MCS0		

(* 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.	2483.500	PK	46.9	27.4	24.3	38.1	60.5	73.9	13.4	141	231	
Hori.	4924.000	PK	46.5	31.4	6.5	41.5	42.9	73.9	31.0	100	0	
Hori.	6565.389	PK	49.4	34.9	7.2	41.0	50.5	73.9	23.4	100	299	
Hori.	7386.000	PK	46.2	36.2	7.9	41.3	49.0	73.9	24.9	100	0	
Hori.	9848.000	PK	46.0	38.1	8.9	40.4	52.6	73.9	21.3	100	0	
Hori.	12310.000	PK	43.5	38.9	10.3	39.1	53.6	73.9	20.3	100	0	
Hori.	2483.500	AV	35.3	27.4	24.3	38.1	48.9	53.9	5.0	141	231	
Hori.	4924.000	AV	35.3	31.4	6.5	41.5	31.7	53.9	22.2	100	0	
Hori.	6565.389	AV	42.6	34.9	7.2	41.0	43.7	53.9	10.2	100	299	
Hori.	7386.000	AV	35.0	36.2	7.9	41.3	37.8	53.9	16.1	100	0	
Hori.	9848.000	AV	34.1	38.1	8.9	40.4	40.7	53.9	13.2	100	0	
Hori.	12310.000	AV	32.0	38.9	10.3	39.1	42.1	53.9	11.8	100	0	
Vert.	2483.500	PK	47.2	27.4	24.3	38.1	60.8	73.9	13.1	100	129	
Vert.	4924.000	PK	46.5	31.4	6.5	41.5	42.9	73.9	31.0	100	0	
Vert.	6565.389	PK	49.4	34.9	7.2	41.0	50.5	73.9	23.4	100	312	
Vert.	7386.000	PK	46.6	36.2	7.9	41.3	49.4	73.9	24.5	100	0	
Vert.	9848.000	PK	45.8	38.1	8.9	40.4	52.4	73.9	21.5	100	0	
Vert.	12310.000	PK	43.7	38.9	10.3	39.1	53.8	73.9	20.1	100	0	
Vert.	2483.500	AV	35.4	27.4	24.3	38.1	49.0	53.9	4.9	100	129	
Vert.	4924.000	AV	35.3	31.4	6.5	41.5	31.7	53.9	22.2	100	0	
Vert.	6565.389	AV	42.7	34.9	7.2	41.0	43.8	53.9	10.1	100	312	
Vert.	7386.000	AV	35.0	36.2	7.9	41.3	37.8	53.9	16.1	100	0	
Vert.	9848.000	AV	34.1	38.1	8.9	40.4	40.7	53.9	13.2	100	0	
Vert.	12310.000	AV	32.0	38.9	10.3	39.1	42.1	53.9	11.8	100	0	

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

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

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	December 19, 2012	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	22 deg.C, 32 %RH	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Shinichi Takano	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2422 MHz Tx, IEEE802.11n 40HT, MCS5			

(* 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.	2390.000	PK	62.4	27.4	14.2	41.4	62.6	73.9	11.3	203	113	
Hori.	4844.000	PK	46.6	31.3	6.4	41.6	42.7	73.9	31.2	100	0	
Hori.	6458.745	PK	50.1	34.6	7.3	40.9	51.1	73.9	22.8	100	292	
Hori.	7266.000	PK	46.7	36.1	7.7	41.2	49.3	73.9	24.6	100	0	
Hori.	9688.000	PK	44.8	38.1	8.9	40.4	51.4	73.9	22.5	100	0	
Hori.	12110.000	PK	43.7	39.0	10.3	39.3	53.7	73.9	20.2	100	0	
Hori.	2390.000	AV	50.4	27.4	14.2	41.4	50.6	53.9	3.3	203	113	
Hori.	4844.000	AV	35.5	31.3	6.4	41.6	31.6	53.9	22.3	100	0	
Hori.	6458.745	AV	41.9	34.6	7.3	40.9	42.9	53.9	11.0	100	292	
Hori.	7266.000	AV	35.5	36.1	7.7	41.2	38.1	53.9	15.8	100	0	
Hori.	9688.000	AV	33.2	38.1	8.9	40.4	39.8	53.9	14.1	100	0	
Hori.	12110.000	AV	32.9	39.0	10.3	39.3	42.9	53.9	11.0	100	0	
Vert.	2390.000	PK	63.9	27.4	14.2	41.4	64.1	73.9	9.8	100	75	
Vert.	4844.000	PK	47.5	31.3	6.4	41.6	43.6	73.9	30.3	100	0	
Vert.	6458.745	PK	49.9	34.6	7.3	40.9	50.9	73.9	23.0	100	317	
Vert.	7266.000	PK	47.2	36.1	7.7	41.2	49.8	73.9	24.1	100	0	
Vert.	9688.000	PK	44.7	38.1	8.9	40.4	51.3	73.9	22.6	100	0	
Vert.	12110.000	PK	44.0	39.0	10.3	39.3	54.0	73.9	19.9	100	0	
Vert.	2390.000	AV	51.5	27.4	14.2	41.4	51.7	53.9	2.2	100	75	
Vert.	4844.000	AV	35.5	31.3	6.4	41.6	31.6	53.9	22.3	100	0	
Vert.	6458.745	AV	41.5	34.6	7.3	40.9	42.5	53.9	11.4	100	317	
Vert.	7266.000	AV	35.5	36.1	7.7	41.2	38.1	53.9	15.8	100	0	
Vert.	9688.000	AV	33.2	38.1	8.9	40.4	39.8	53.9	14.1	100	0	
Vert.	12110.000	AV	32.9	39.0	10.3	39.3	42.9	53.9	11.0	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

*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.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	91.4	27.5	14.2	41.4	91.7	-	-	
Hori.	2400.000	PK	52.3	27.4	14.2	41.4	52.5	71.7	19.2	
Vert.	2422.000	PK	91.8	27.5	14.2	41.4	92.1	-	-	
Vert.	2400.000	PK	55.5	27.4	14.2	41.4	55.7	72.1	16.4	

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

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Radiated Emission

Test place	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n 40HT, MCS5		

(* 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.	160.684	QP	22.4	15.5	8.9	31.8	15.0	43.5	28.5	300	175	
Hori.	4874.000	PK	45.9	31.3	6.4	41.5	42.1	73.9	31.8	100	0	
Hori.	6498.747	PK	49.3	34.8	7.3	40.9	50.5	73.9	23.4	100	297	
Hori.	7311.000	PK	46.0	36.1	7.9	41.2	48.8	73.9	25.1	100	0	
Hori.	9748.000	PK	46.3	38.1	8.9	40.4	52.9	73.9	21.0	100	0	
Hori.	12185.000	PK	44.4	38.9	10.3	39.2	54.4	73.9	19.5	100	0	
Hori.	4874.000	AV	34.5	31.3	6.4	41.5	30.7	53.9	23.2	100	0	
Hori.	6498.747	AV	42.1	34.8	7.3	40.9	43.3	53.9	10.6	100	297	
Hori.	7311.000	AV	34.4	36.1	7.9	41.2	37.2	53.9	16.7	100	0	
Hori.	9748.000	AV	33.8	38.1	8.9	40.4	40.4	53.9	13.5	100	0	
Hori.	12185.000	AV	33.3	38.9	10.3	39.2	43.3	53.9	10.6	100	0	
Vert.	56.536	QP	35.3	9.3	7.2	31.9	19.9	40.0	20.1	100	131	
Vert.	60.861	QP	38.2	8.2	7.0	31.9	21.5	40.0	18.5	100	133	
Vert.	63.019	QP	31.9	7.8	7.1	31.9	14.9	40.0	25.1	100	116	
Vert.	65.170	QP	30.8	7.5	7.0	31.9	13.4	40.0	26.6	100	194	
Vert.	67.365	QP	31.2	7.1	7.1	31.9	13.5	40.0	26.5	100	194	
Vert.	106.664	QP	22.2	11.6	8.0	31.9	9.9	43.5	33.6	100	301	
Vert.	4874.000	PK	46.0	31.3	6.4	41.5	42.2	73.9	31.7	100	0	
Vert.	6498.747	PK	50.8	34.8	7.3	40.9	52.0	73.9	21.9	100	314	
Vert.	7311.000	PK	46.0	36.1	7.9	41.2	48.8	73.9	25.1	100	0	
Vert.	9748.000	PK	46.2	38.1	8.9	40.4	52.8	73.9	21.1	100	0	
Vert.	12185.000	PK	44.9	38.9	10.3	39.2	54.9	73.9	19.0	100	0	
Vert.	4874.000	AV	34.5	31.3	6.4	41.5	30.7	53.9	23.2	100	0	
Vert.	6498.747	AV	41.9	34.8	7.3	40.9	43.1	53.9	10.8	100	314	
Vert.	7311.000	AV	34.4	36.1	7.9	41.2	37.2	53.9	16.7	100	0	
Vert.	9748.000	AV	33.8	38.1	8.9	40.4	40.4	53.9	13.5	100	0	
Vert.	12185.000	AV	33.2	38.9	10.3	39.2	43.2	53.9	10.7	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

Radiated Emission

Test place	No.3 Semi Anechoic Chamber	No.2 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber	No.1 Semi Anechoic Chamber
Date	December 19, 2012	January 27, 2013	January 29, 2013	January 30, 2013
Temperature / Humidity	22 deg.C, 32 %RH	21 deg.C, 32 %RH	22 deg.C, 34 %RH	20 deg.C, 31 %RH
Engineer	Shinichi Takano	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2452 MHz Tx, IEEE802.11n 40HT, MCS5			

(* 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.	2483.500	PK	64.8	27.5	14.3	41.4	65.2	73.9	8.7	100	102	
Hori.	4904.000	PK	46.7	31.4	6.5	41.5	43.1	73.9	30.8	100	0	
Hori.	6538.780	PK	49.9	34.8	7.3	40.9	51.1	73.9	22.8	100	292	
Hori.	7356.000	PK	46.4	36.2	7.8	41.3	49.1	73.9	24.8	100	0	
Hori.	9808.000	PK	45.4	38.1	9.0	40.4	52.1	73.9	21.8	100	0	
Hori.	12260.000	PK	44.8	38.9	10.3	39.2	54.8	73.9	19.1	100	0	
Hori.	2483.500	AV	49.4	27.5	14.3	41.4	49.8	53.9	4.1	100	102	
Hori.	4904.000	AV	35.0	31.4	6.5	41.5	31.4	53.9	22.5	100	0	
Hori.	6538.780	AV	42.4	34.8	7.3	40.9	43.6	53.9	10.3	100	292	
Hori.	7356.000	AV	34.9	36.2	7.8	41.3	37.6	53.9	16.3	100	0	
Hori.	9808.000	AV	33.9	38.1	9.0	40.4	40.6	53.9	13.3	100	0	
Hori.	12260.000	AV	32.7	38.9	10.3	39.2	42.7	53.9	11.2	100	0	
Vert.	2483.500	PK	67.0	27.5	14.3	41.4	67.4	73.9	6.5	100	135	
Vert.	4904.000	PK	47.3	31.4	6.5	41.5	43.7	73.9	30.2	100	0	
Vert.	6538.780	PK	49.5	34.8	7.3	40.9	50.7	73.9	23.2	100	321	
Vert.	7356.000	PK	46.0	36.2	7.8	41.3	48.7	73.9	25.2	100	0	
Vert.	9808.000	PK	45.6	38.1	9.0	40.4	52.3	73.9	21.6	100	0	
Vert.	12260.000	PK	44.1	38.9	10.3	39.2	54.1	73.9	19.8	100	0	
Vert.	2483.500	AV	49.9	27.5	14.3	41.4	50.3	53.9	3.6	100	135	
Vert.	4904.000	AV	35.0	31.4	6.5	41.5	31.4	53.9	22.5	100	0	
Vert.	6538.780	AV	41.1	34.8	7.3	40.9	42.3	53.9	11.6	100	321	
Vert.	7356.000	AV	34.9	36.2	7.8	41.3	37.6	53.9	16.3	100	0	
Vert.	9808.000	AV	33.8	38.1	9.0	40.4	40.5	53.9	13.4	100	0	
Vert.	12260.000	AV	32.7	38.9	10.3	39.2	42.7	53.9	11.2	100	0	

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

Distance factor : 15GHz-40GHz : $20\log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

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

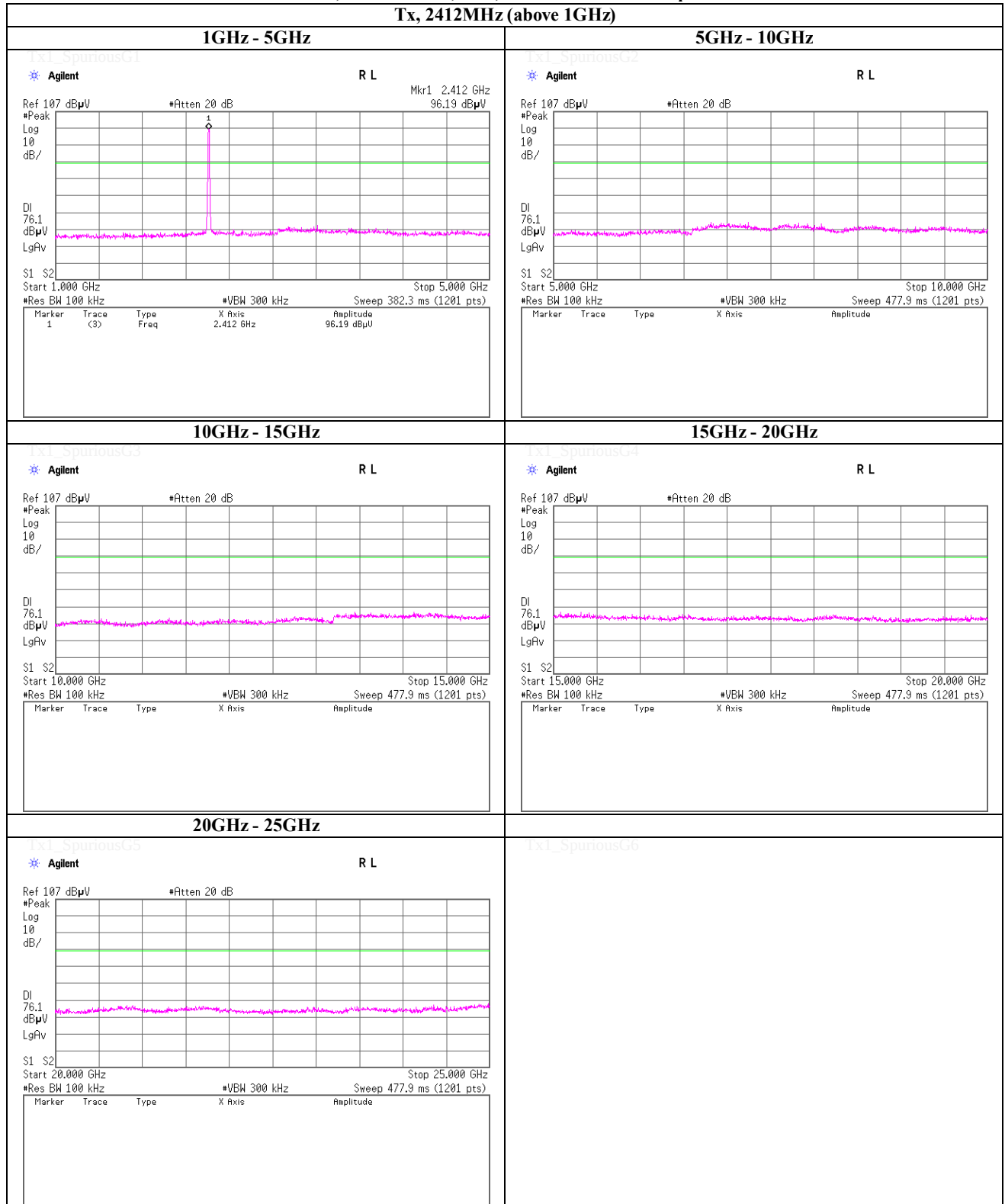
UL Japan, Inc.

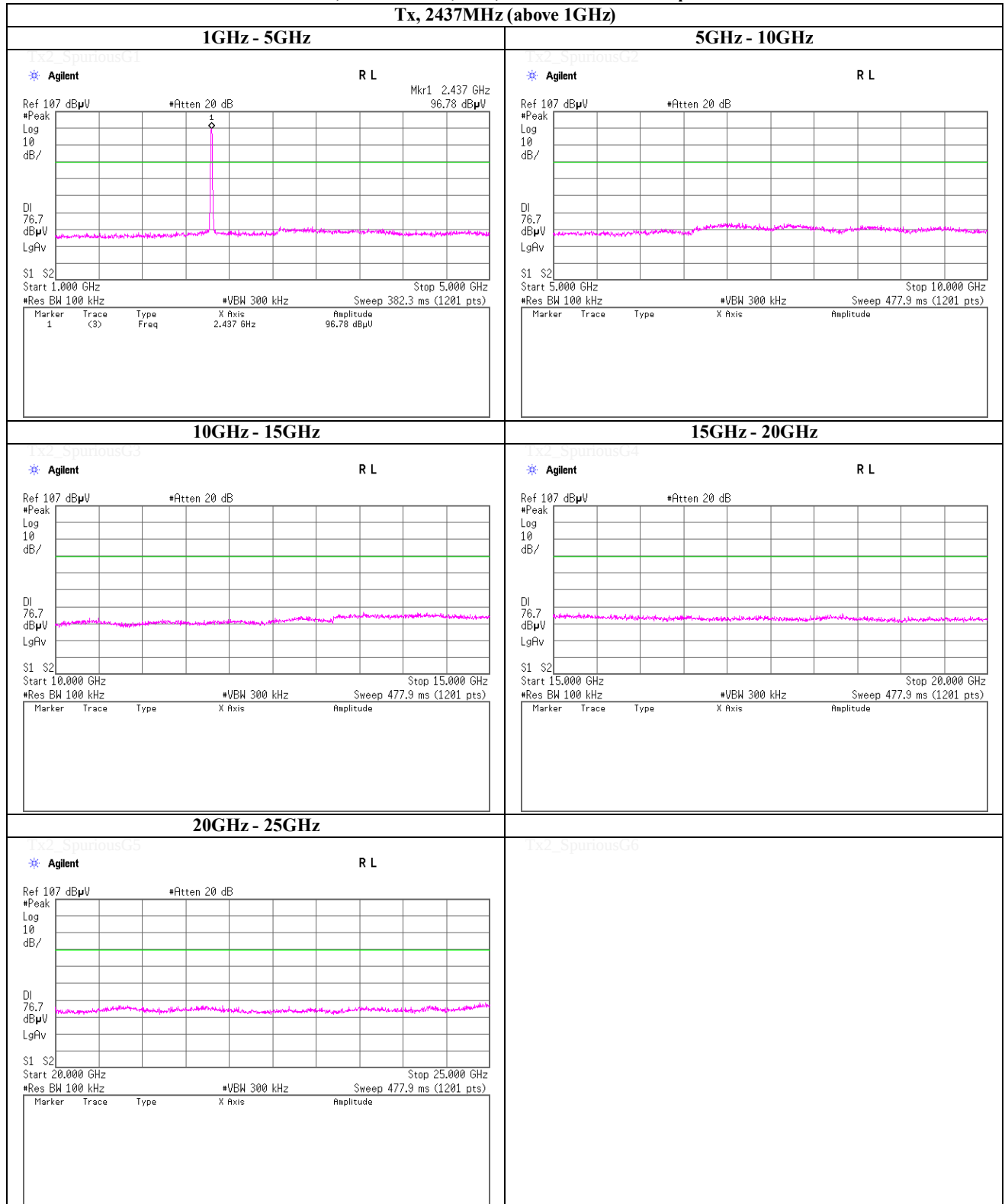
Shonan EMC Lab.

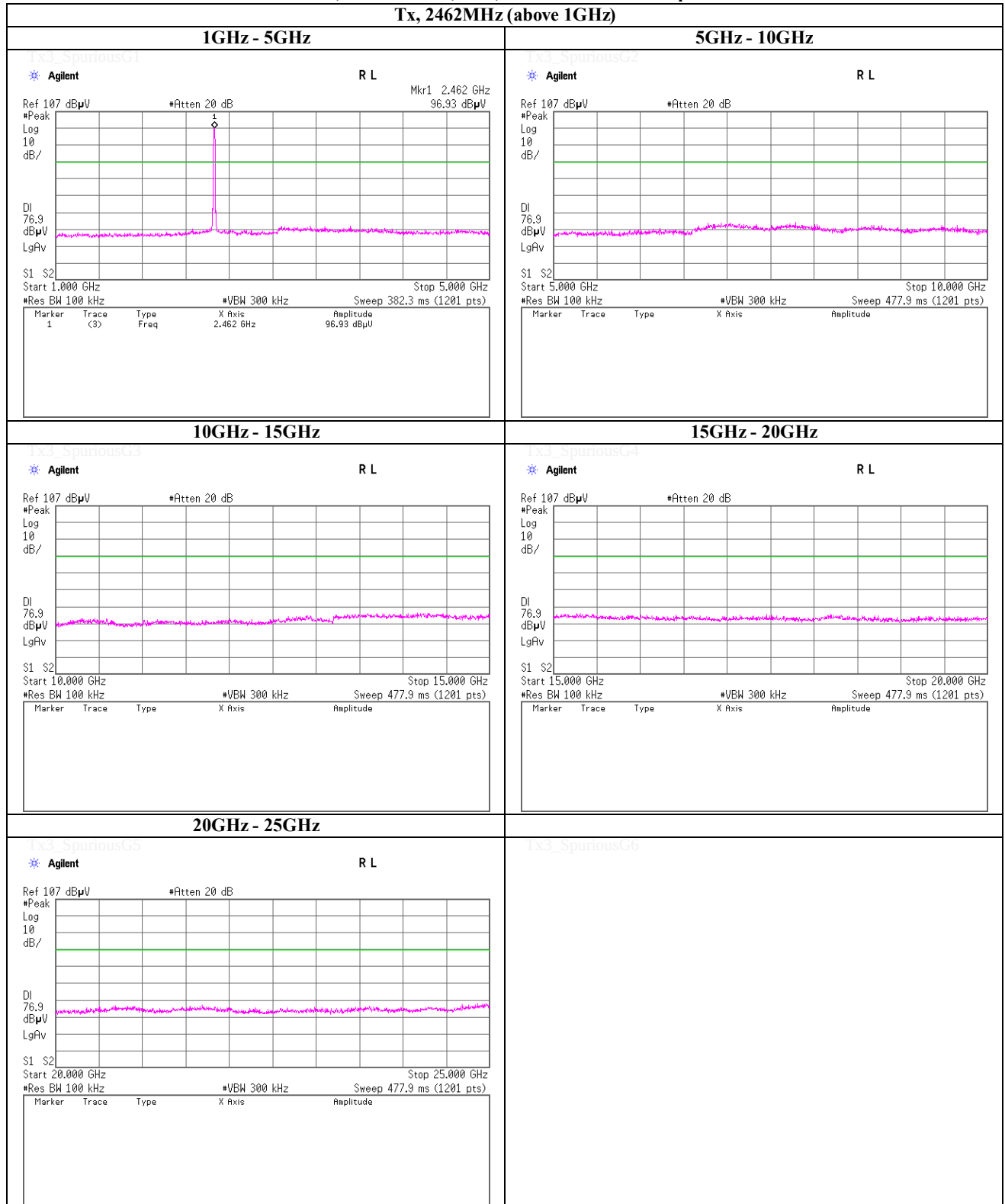
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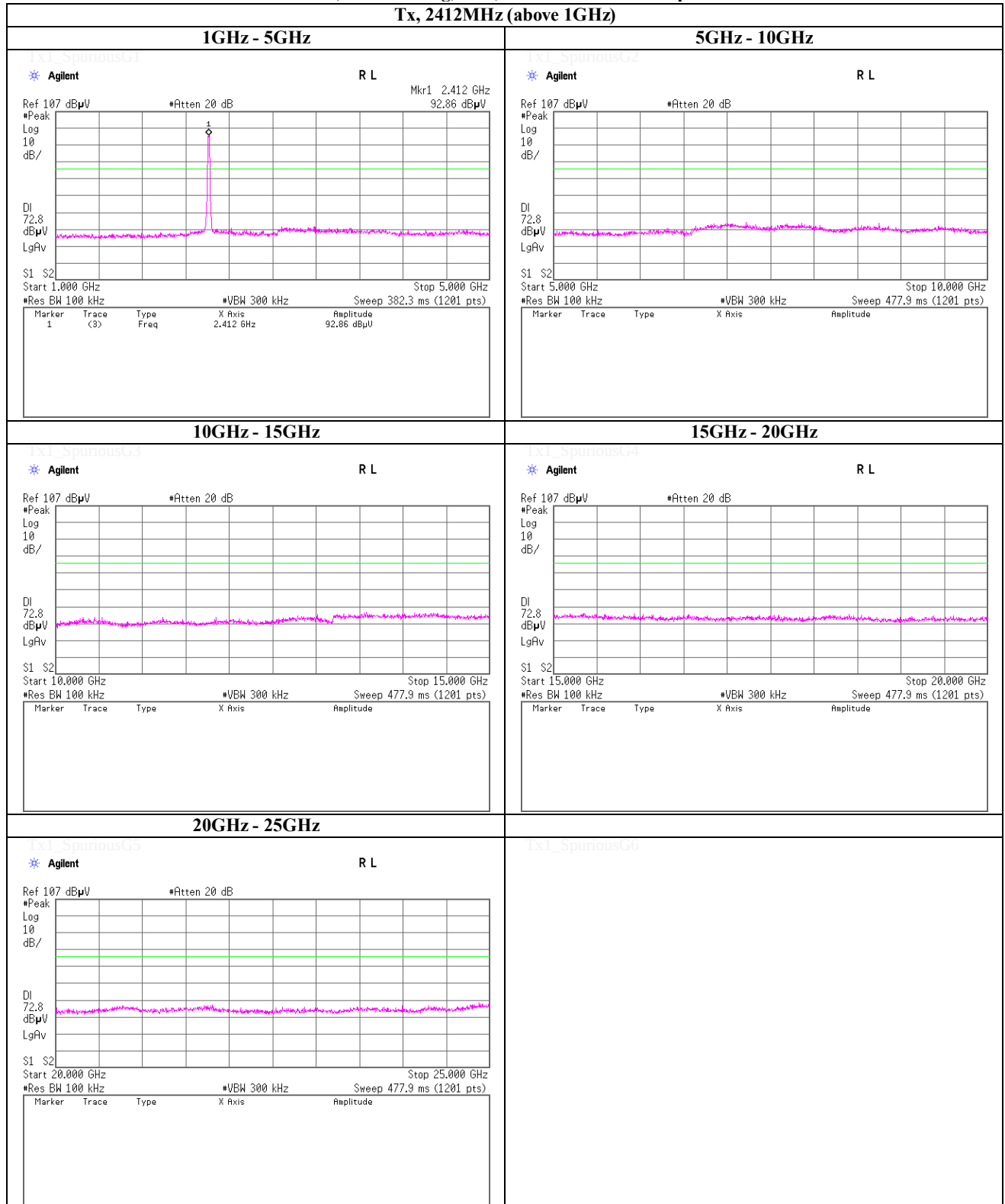
Telephone : +81 463 50 6400

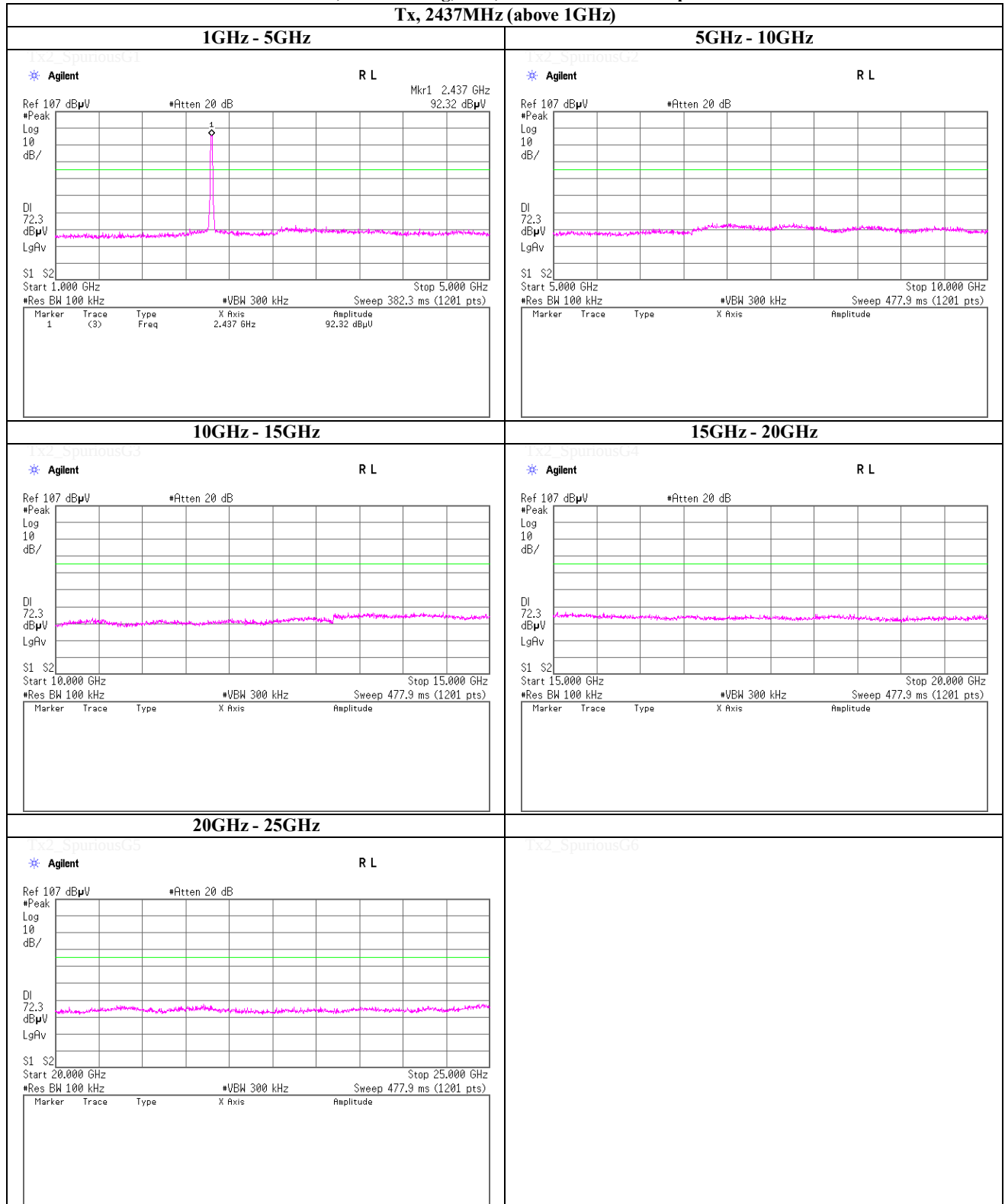
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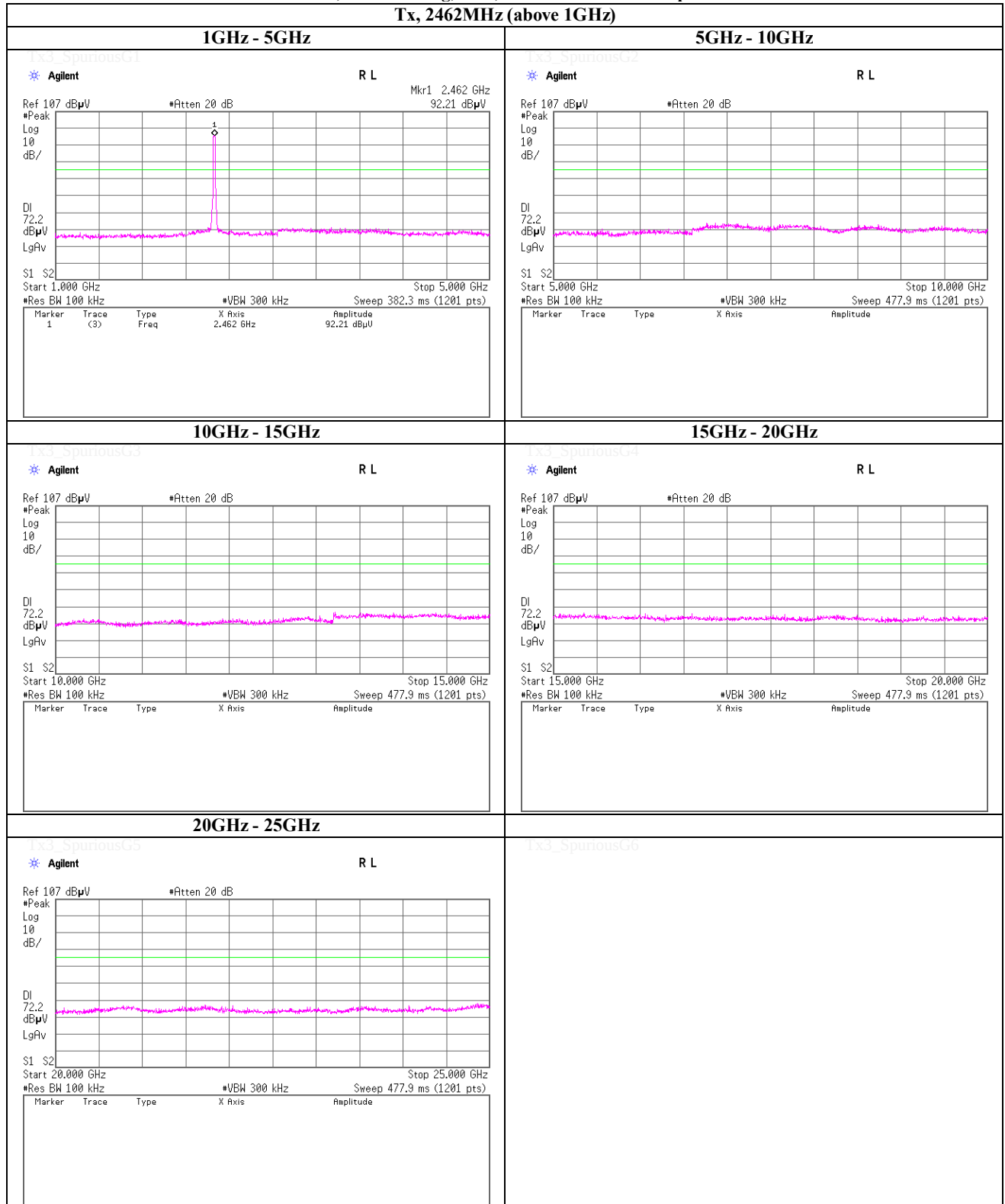
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11b, PN9, worst data mode 1Mbps****Tx, 2412MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

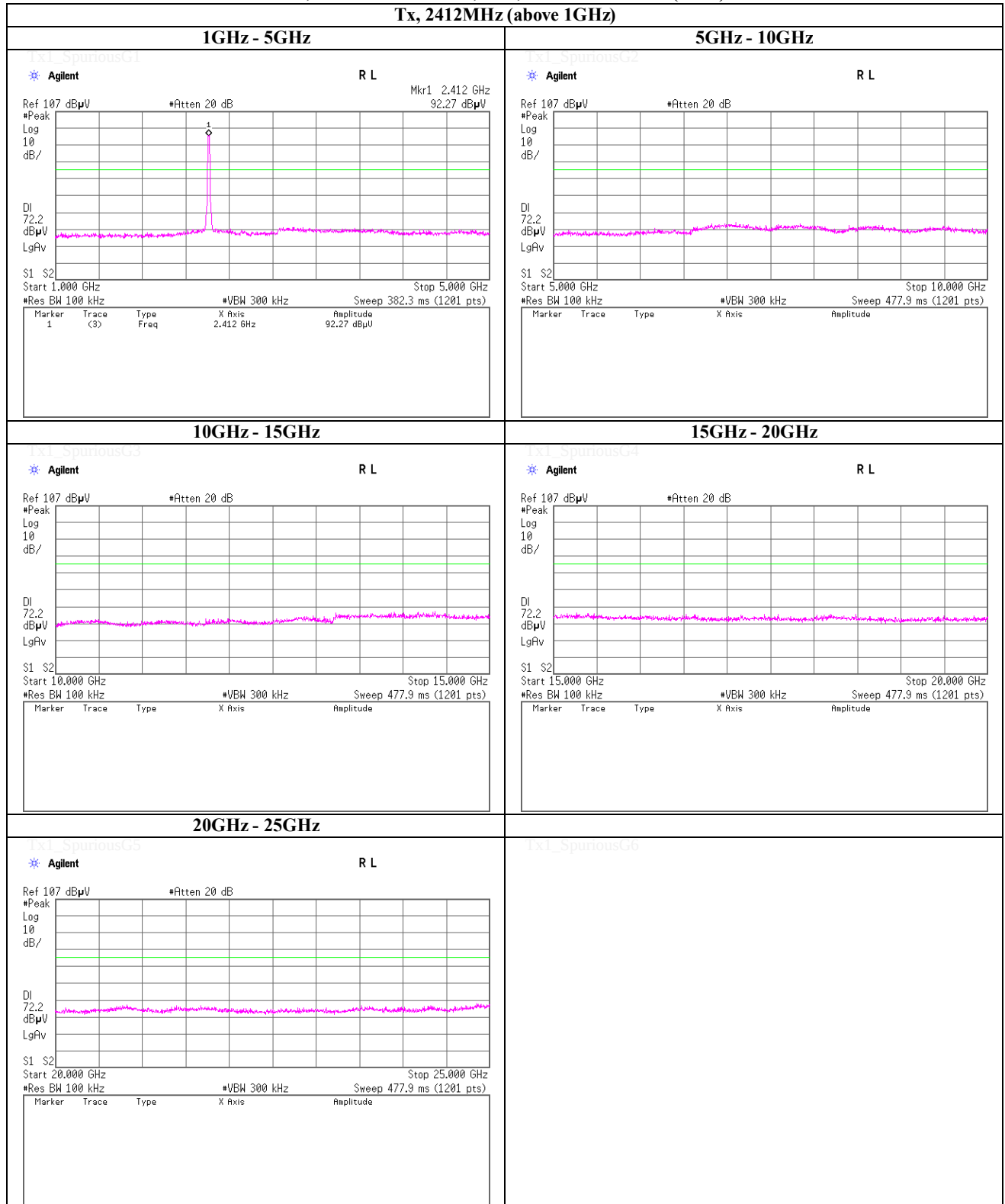
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11b, PN9, worst data mode 1Mbps****Tx, 2437MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

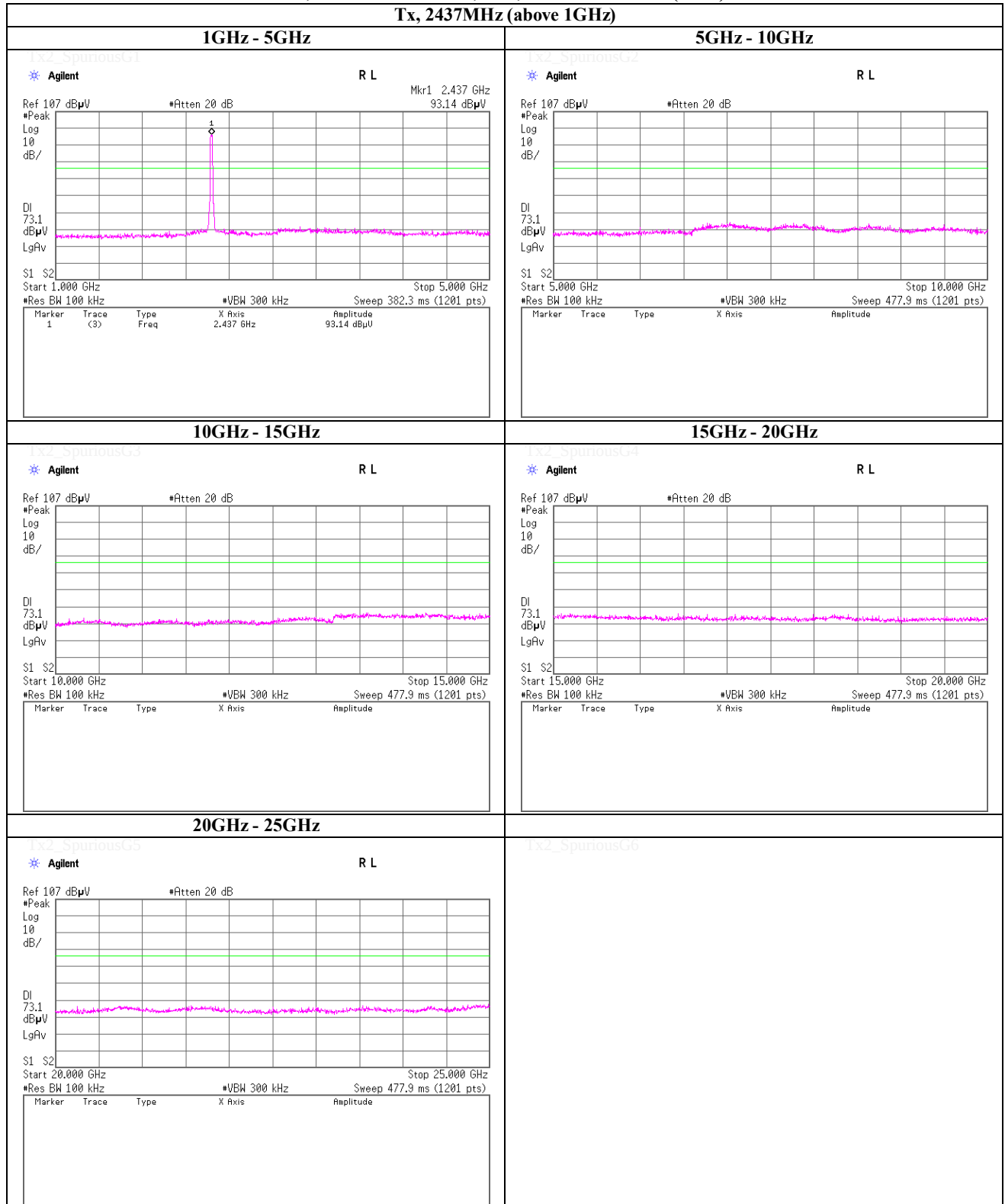
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11b, PN9, worst data mode 1Mbps****Tx, 2462MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11g, PN9, worst data mode 6Mbps****Tx, 2412MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11g, PN9, worst data mode 6Mbps****Tx, 2437MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11g, PN9, worst data mode 6Mbps****Tx, 2462MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

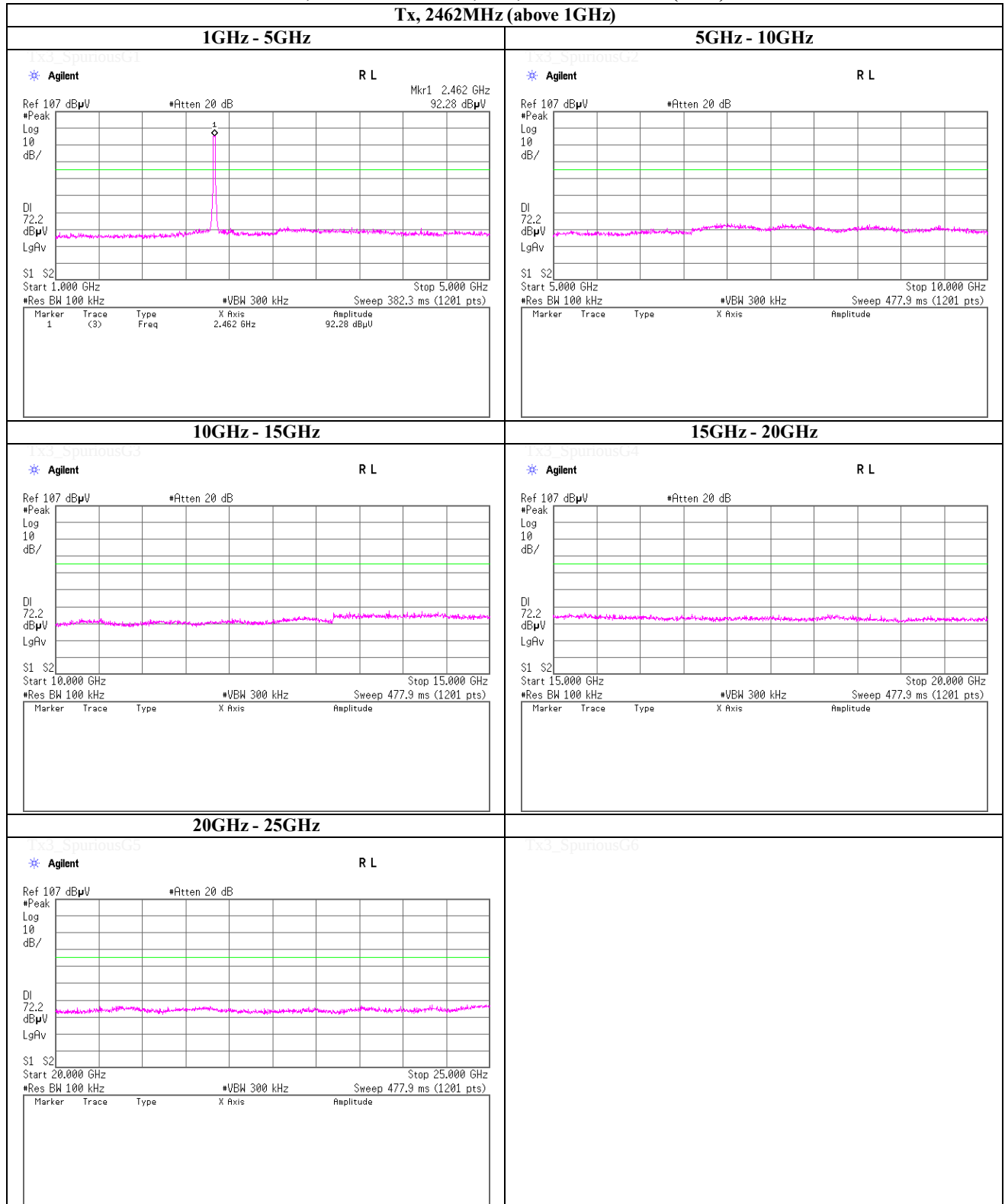
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)****Tx, 2412MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)****Tx, 2437MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.**

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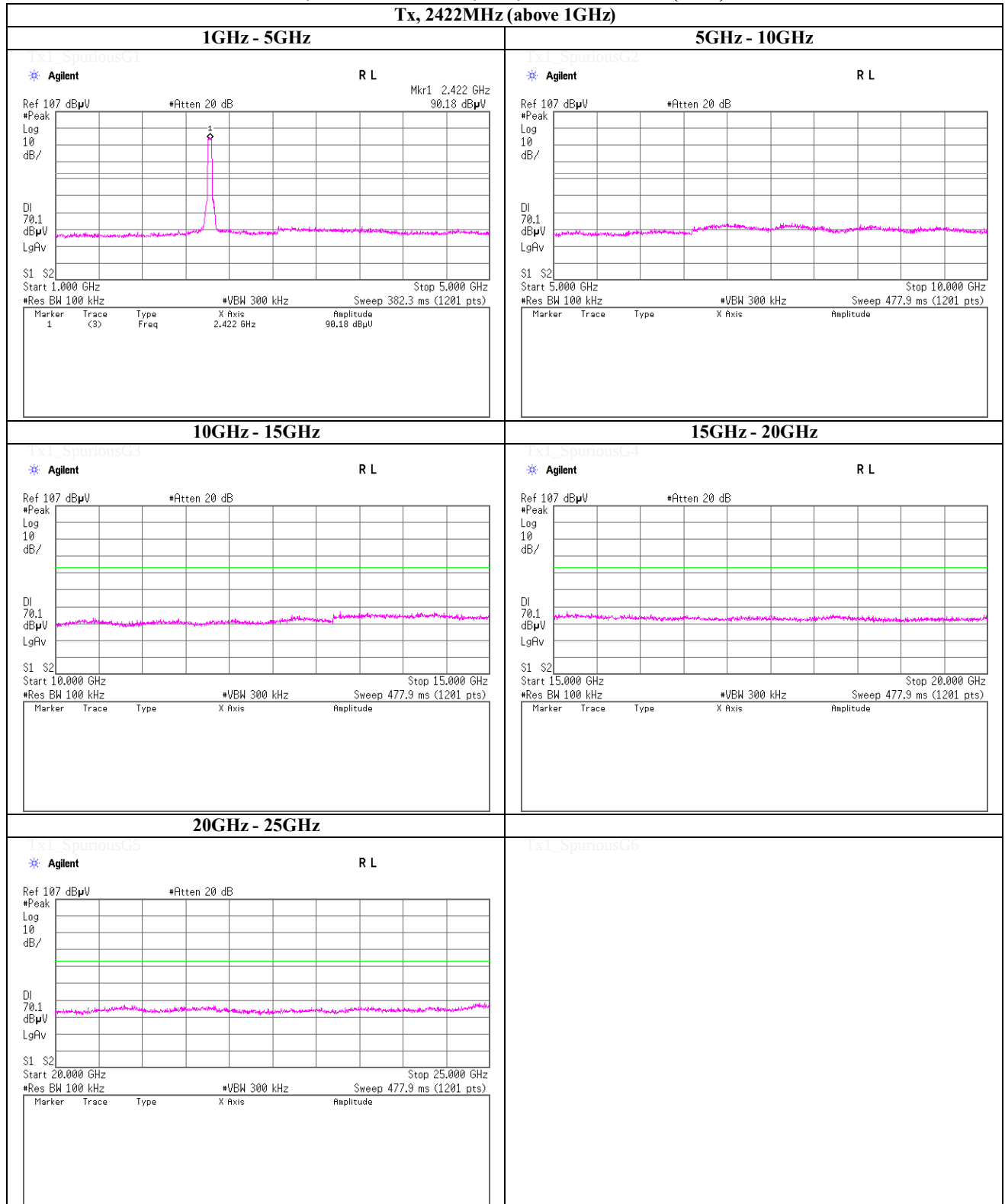
Facsimile : +81 463 50 6401

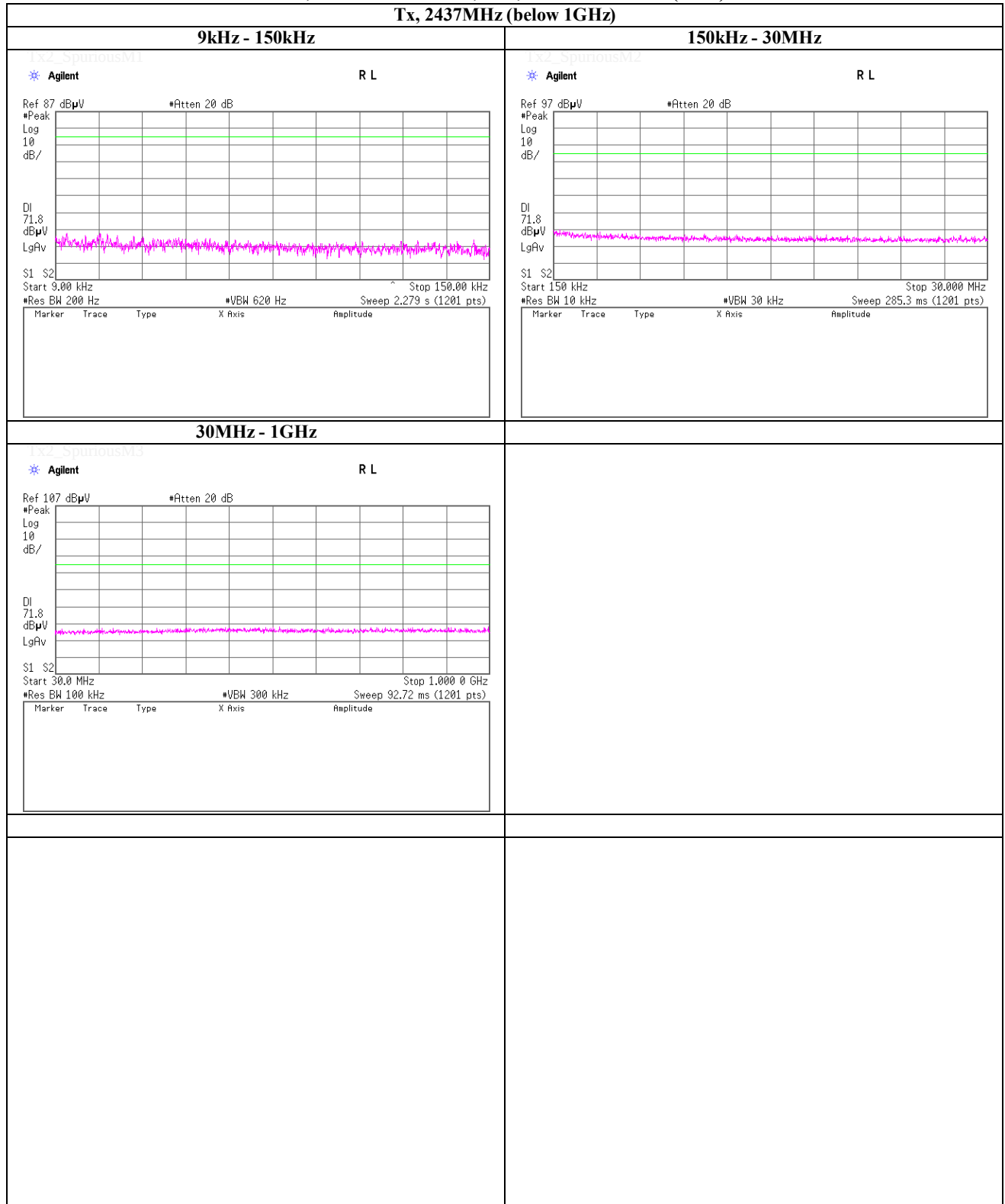
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)****Tx, 2462MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.**

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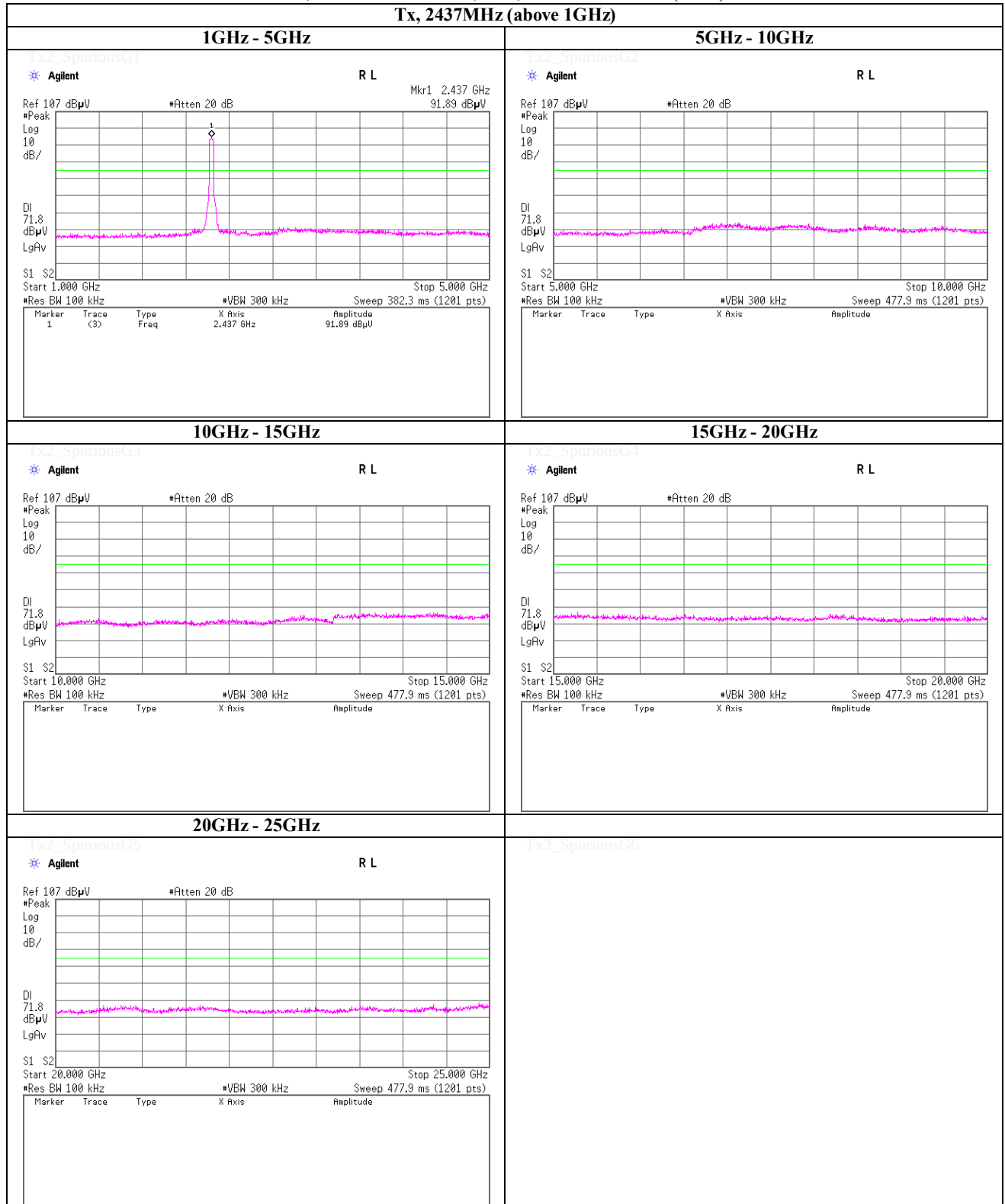
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)****Tx, 2422MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)****Tx, 2437MHz (below 1GHz)****UL Japan, Inc.****Shonan EMC Lab.**

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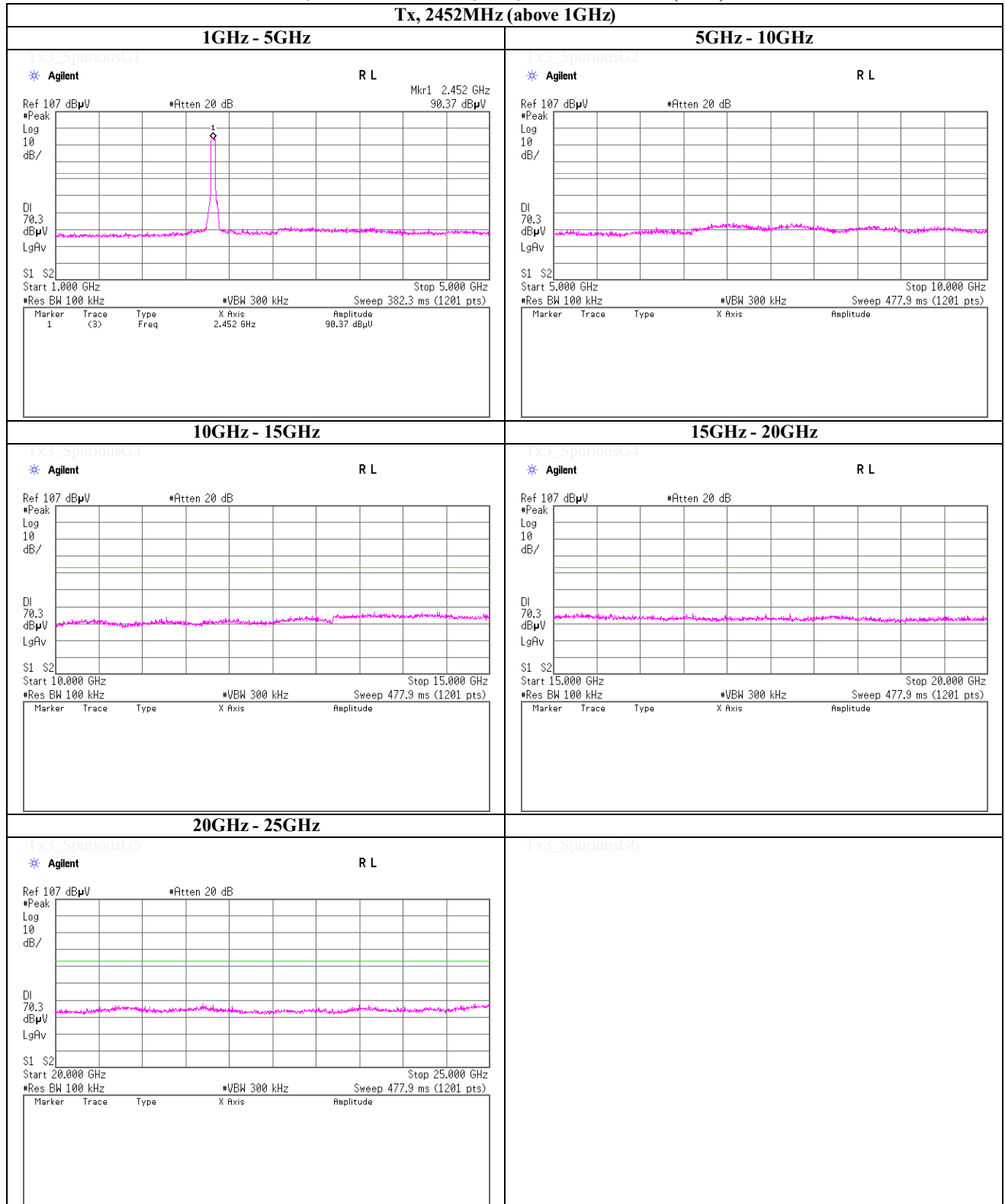
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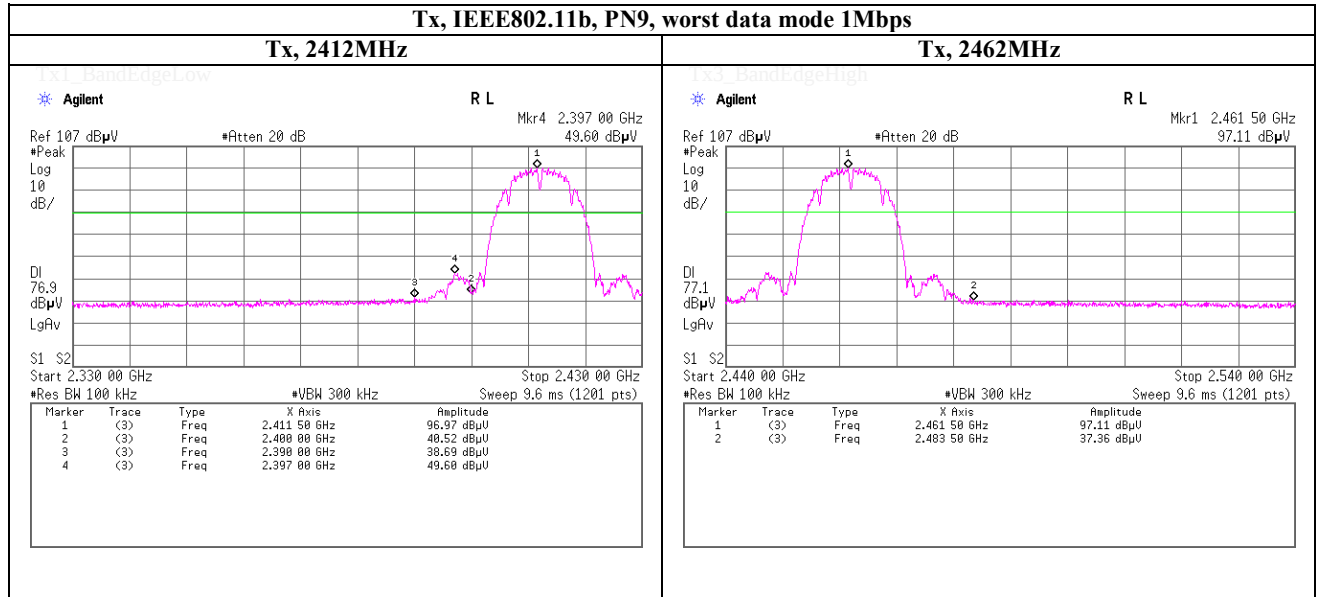
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)****Tx, 2437MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.**

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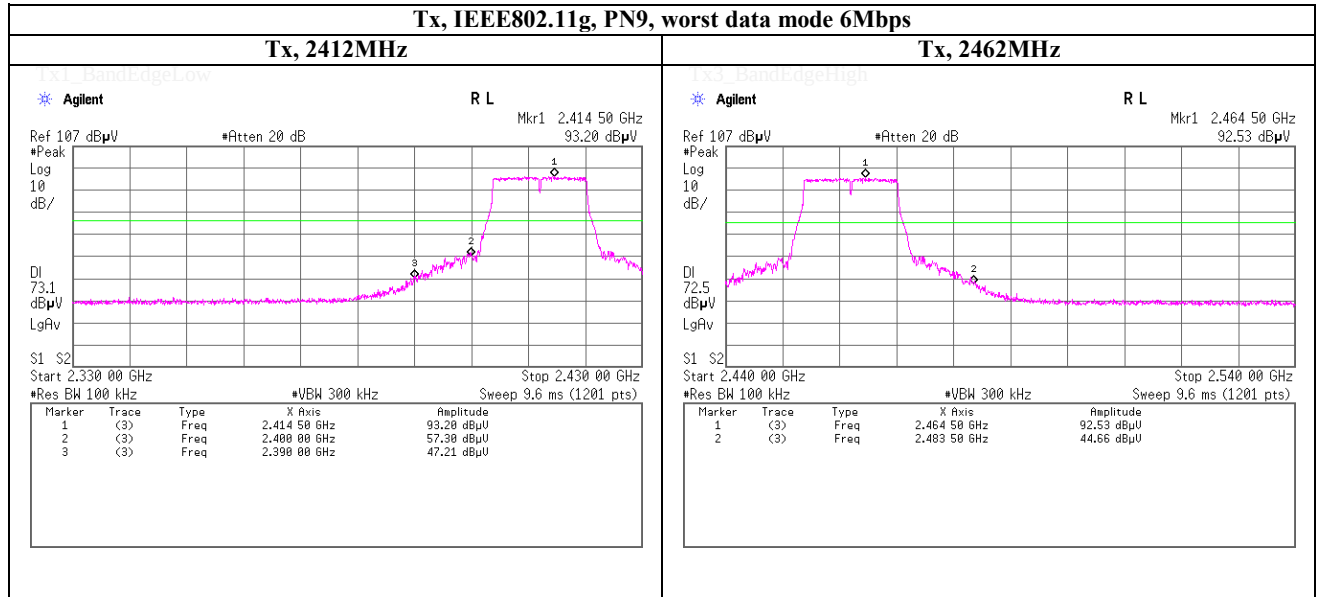
(Reference chart) Spurious emission (Conducted)**Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)****Tx, 2452MHz (above 1GHz)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

(Reference chart) Spurious emission (Conducted)**Band Edge compliance****UL Japan, Inc.****Shonan EMC Lab.**

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Telephone : +81 463 50 6400

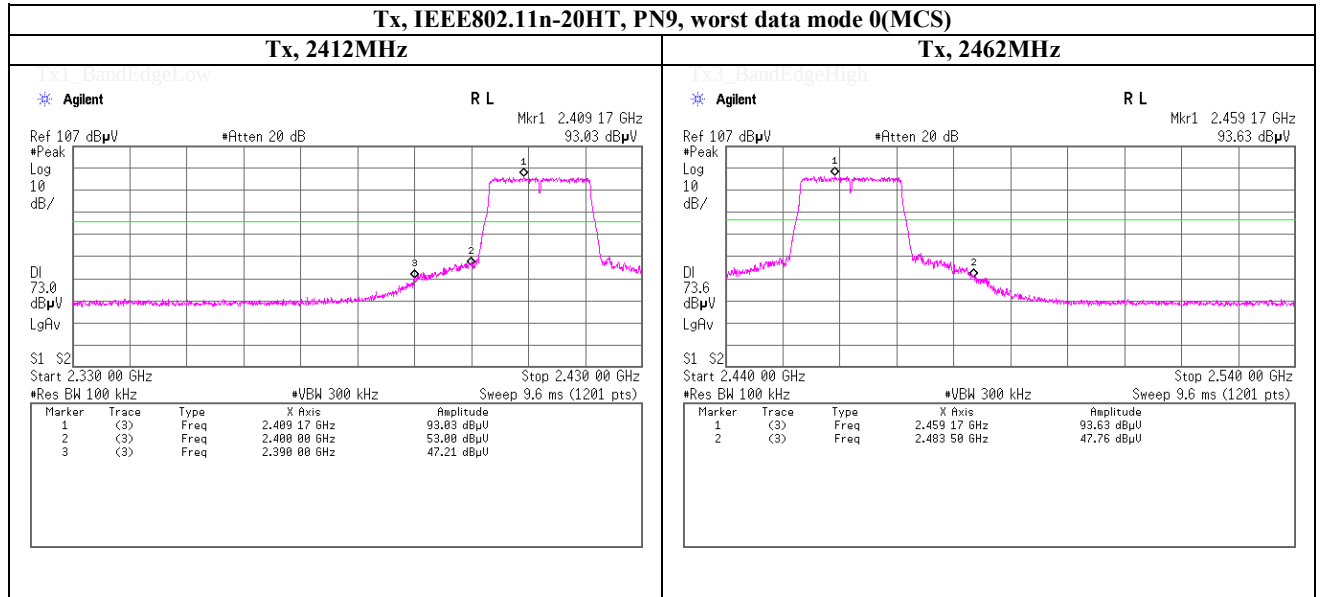
Facsimile : +81 463 50 6401

(Reference chart) Spurious emission (Conducted)**Band Edge compliance****UL Japan, Inc.****Shonan EMC Lab.**

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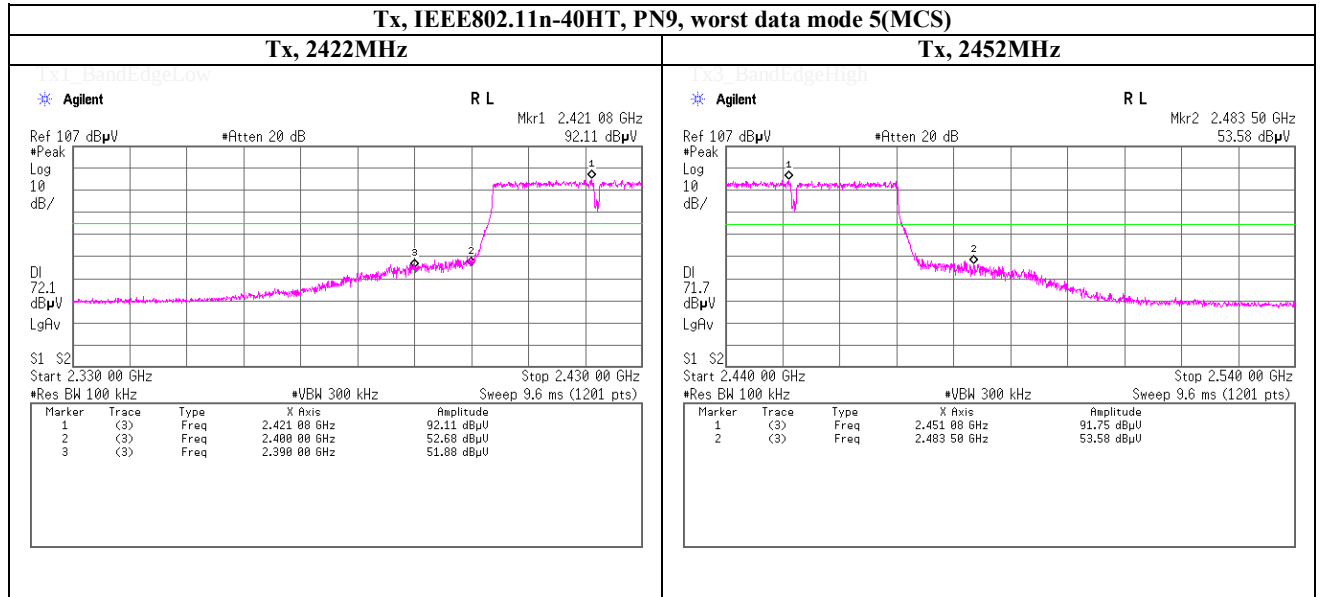
Facsimile : +81 463 50 6401

(Reference chart) Spurious emission (Conducted)**Band Edge compliance****UL Japan, Inc.****Shonan EMC Lab.**

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(Reference chart) Spurious emission (Conducted)**Band Edge compliance****UL Japan, Inc.****Shonan EMC Lab.**

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Maximum Power Spectral Density

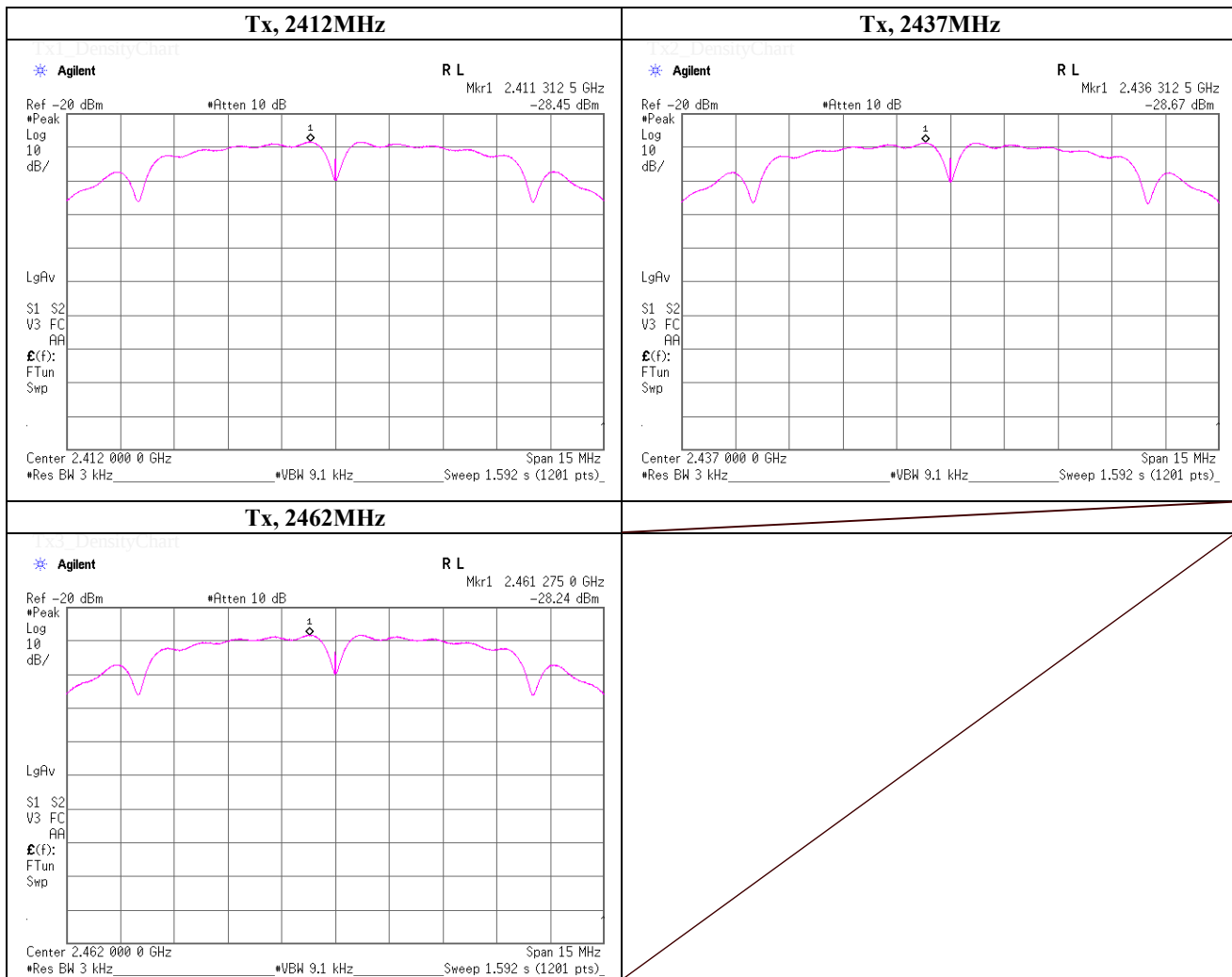
(Option 1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2411.31	-28.45	1.34	9.97	-17.14	8.00	25.14
2437.0000	2436.31	-28.67	1.34	9.97	-17.36	8.00	25.36
2462.0000	2461.28	-28.24	1.34	9.97	-16.93	8.00	24.93

Sample Calculation:

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

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

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Maximum Power Spectral Density

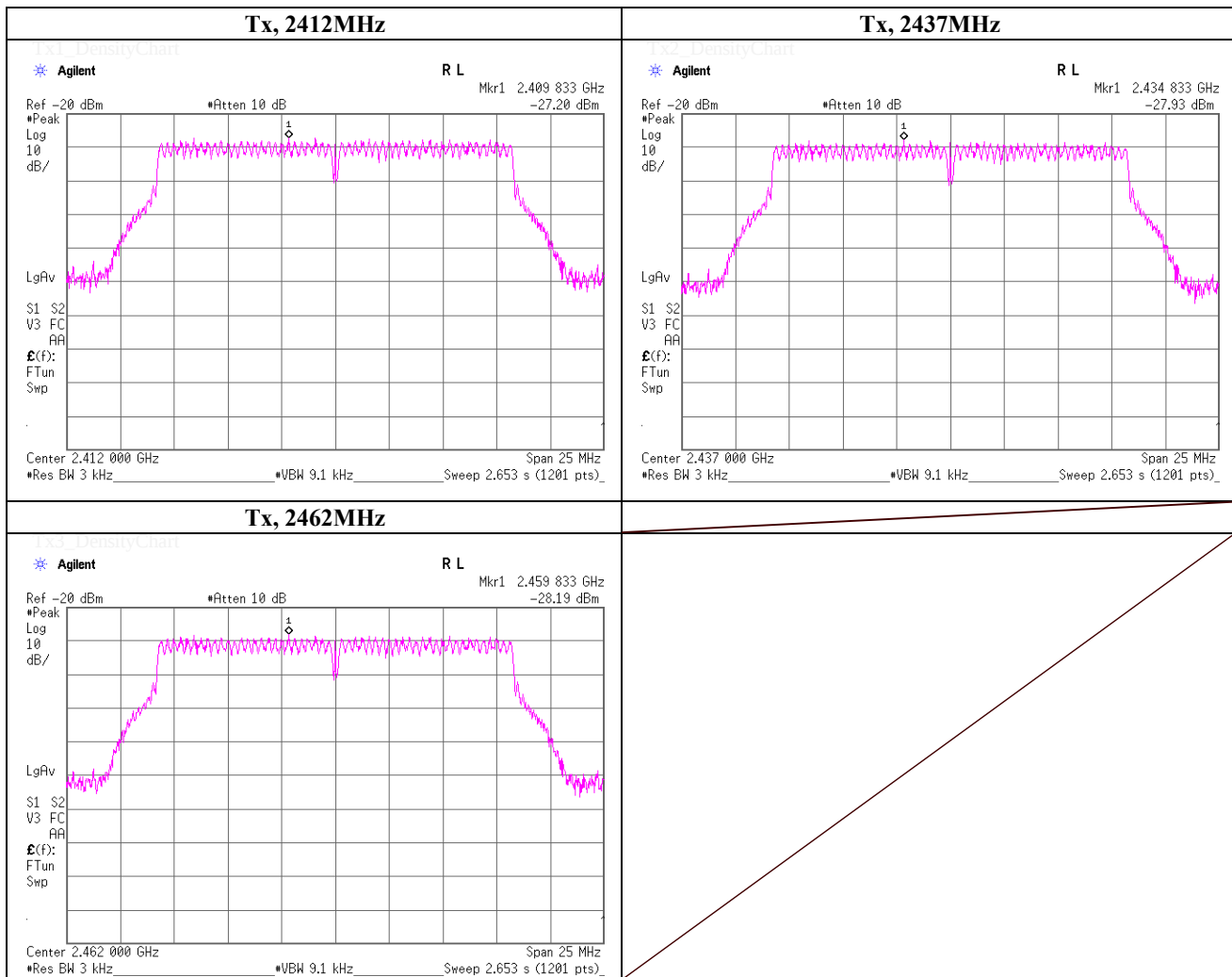
(Option 1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2409.83	-27.20	1.34	9.97	-15.89	8.00	23.89
2437.0000	2434.83	-27.93	1.34	9.97	-16.62	8.00	24.62
2462.0000	2459.83	-28.19	1.34	9.97	-16.88	8.00	24.88

Sample Calculation:

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

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

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Maximum Power Spectral Density

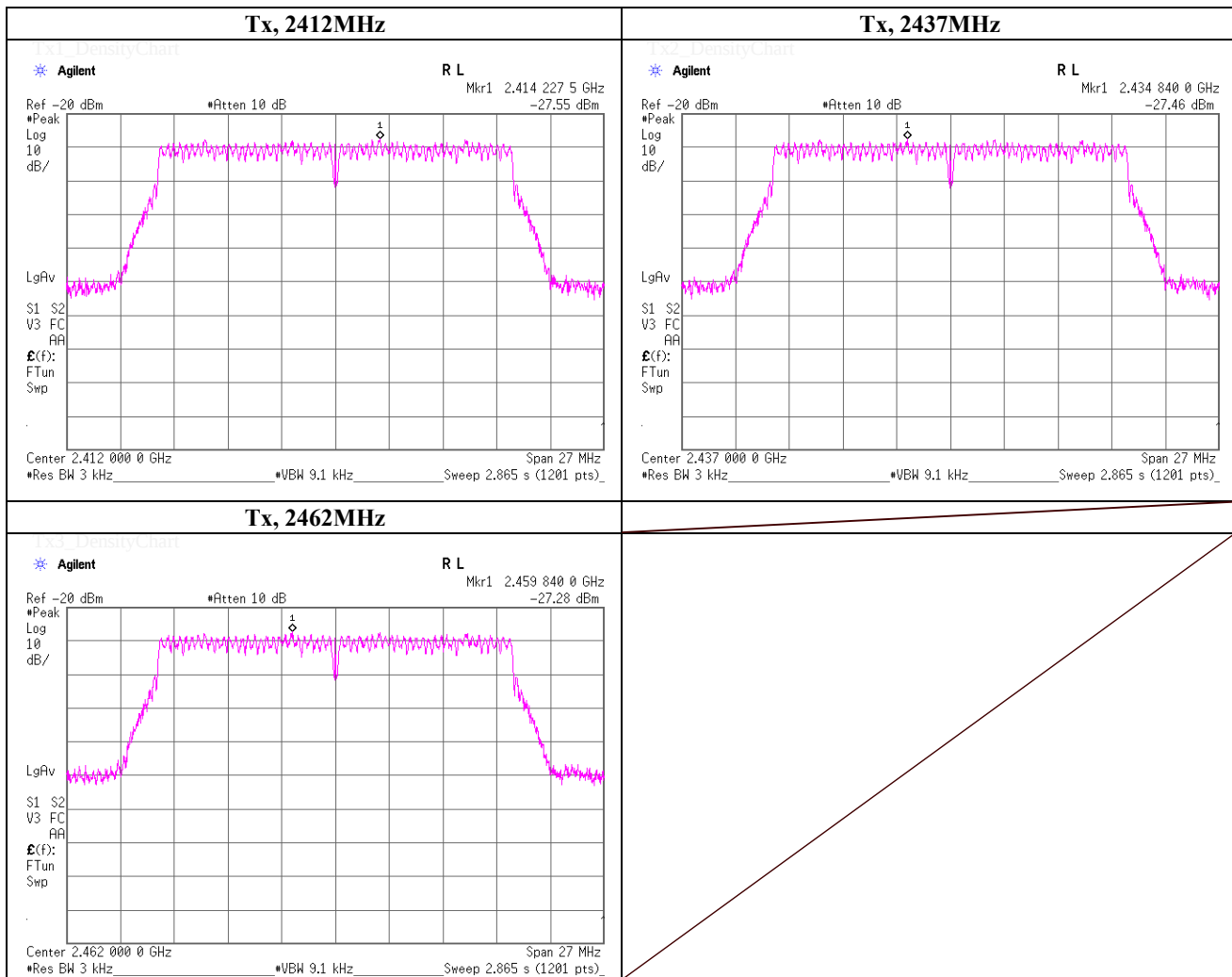
(Option 1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 0(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2414.23	-27.55	1.34	9.97	-16.24	8.00	24.24
2437.0000	2434.84	-27.46	1.34	9.97	-16.15	8.00	24.15
2462.0000	2459.84	-27.28	1.34	9.97	-15.97	8.00	23.97

Sample Calculation:

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

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Maximum Power Spectral Density

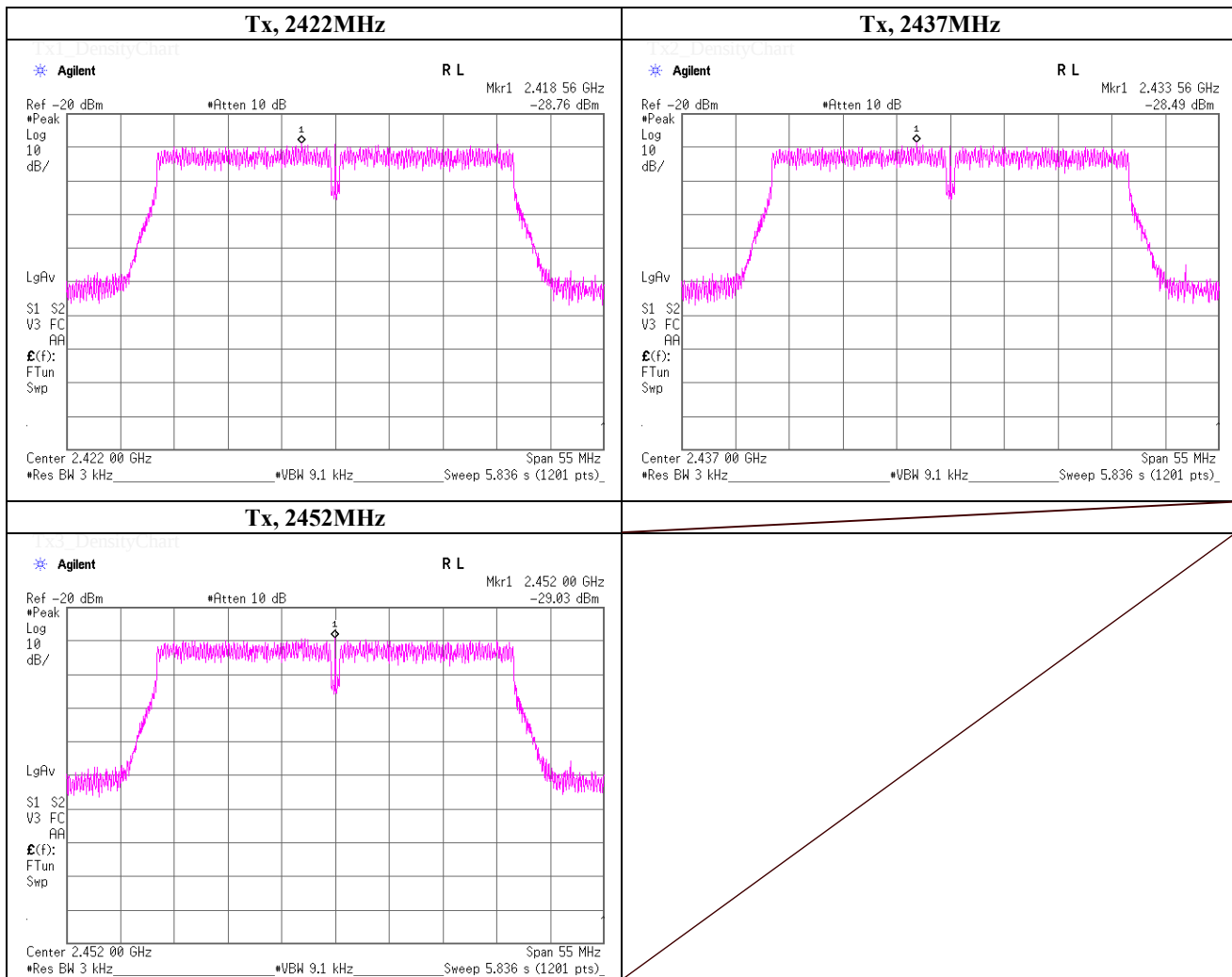
(Option 1)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	January 9, 2012	
Temperature / Humidity	23deg.C , 54%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2418.56	-28.76	1.34	9.97	-17.45	8.00	25.45
2437.0000	2433.56	-28.49	1.34	9.97	-17.18	8.00	25.18
2452.0000	2452.00	-29.03	1.34	9.97	-17.72	8.00	25.72

Sample Calculation:

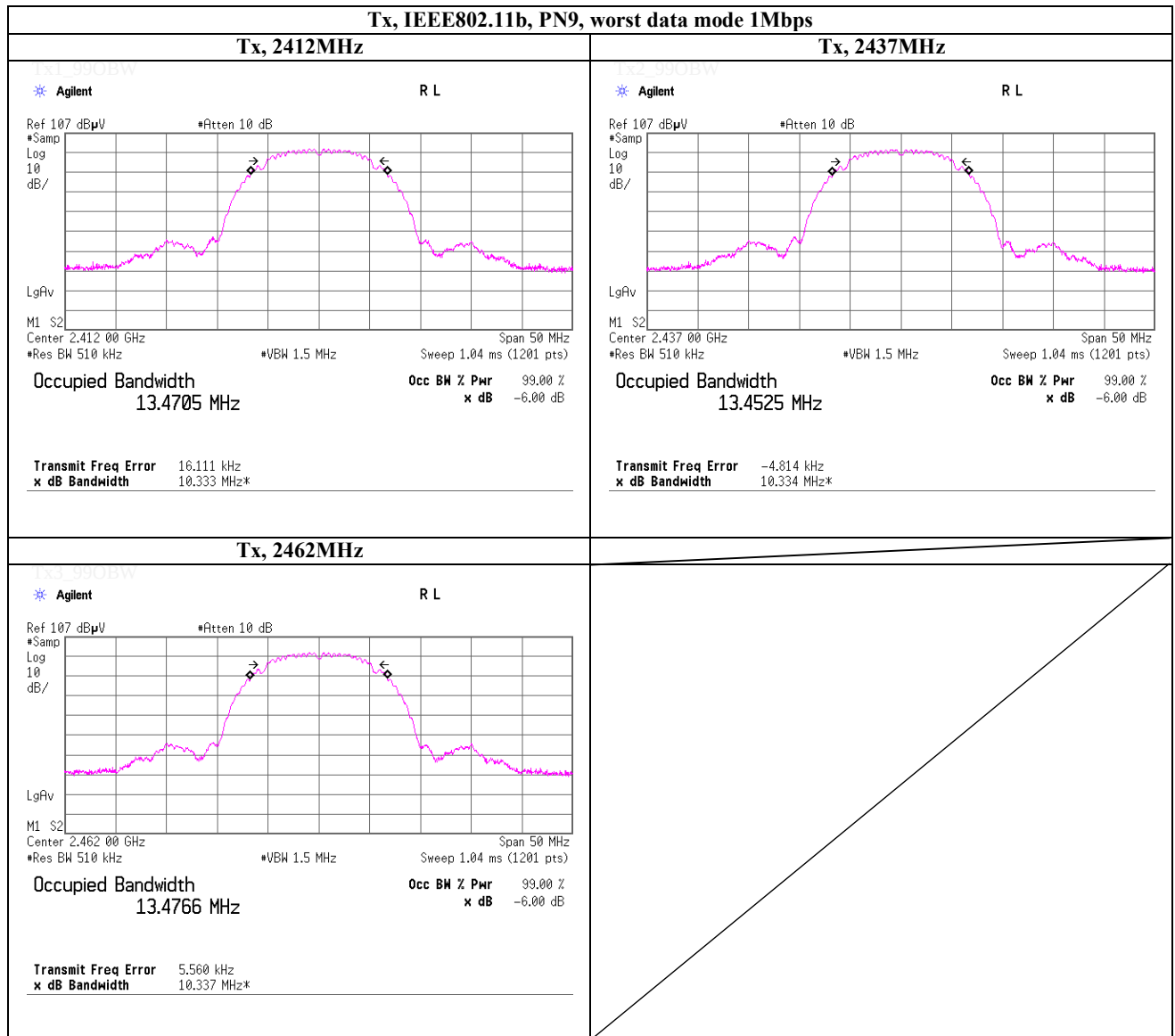
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss

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

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

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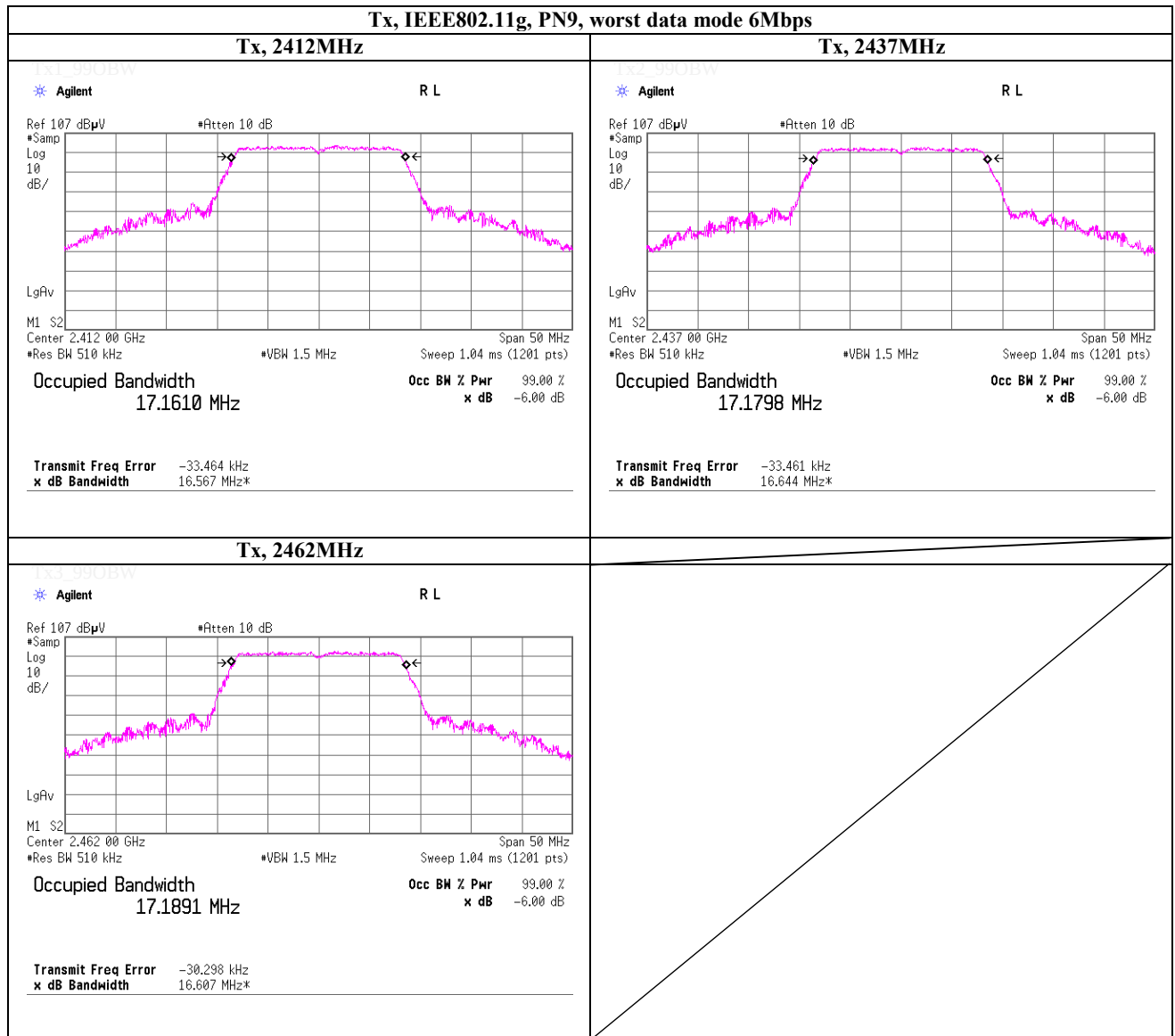
Facsimile : +81 463 50 6401

99% Occupied Bandwidth**UL Japan, Inc.****Shonan EMC Lab.**

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

Telephone : +81 463 50 6400

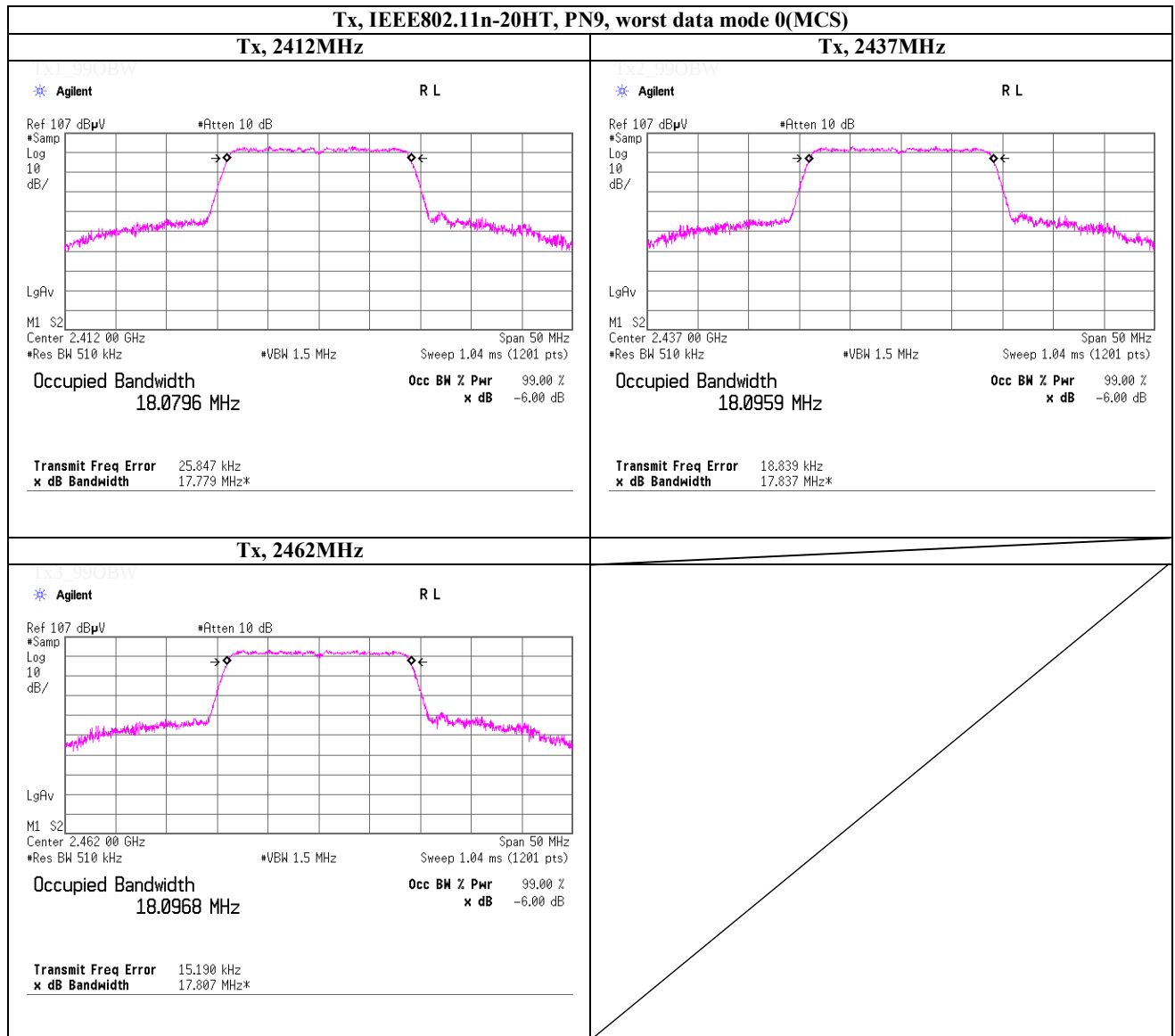
Facsimile : +81 463 50 6401

99% Occupied Bandwidth**UL Japan, Inc.****Shonan EMC Lab.**

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Telephone : +81 463 50 6400

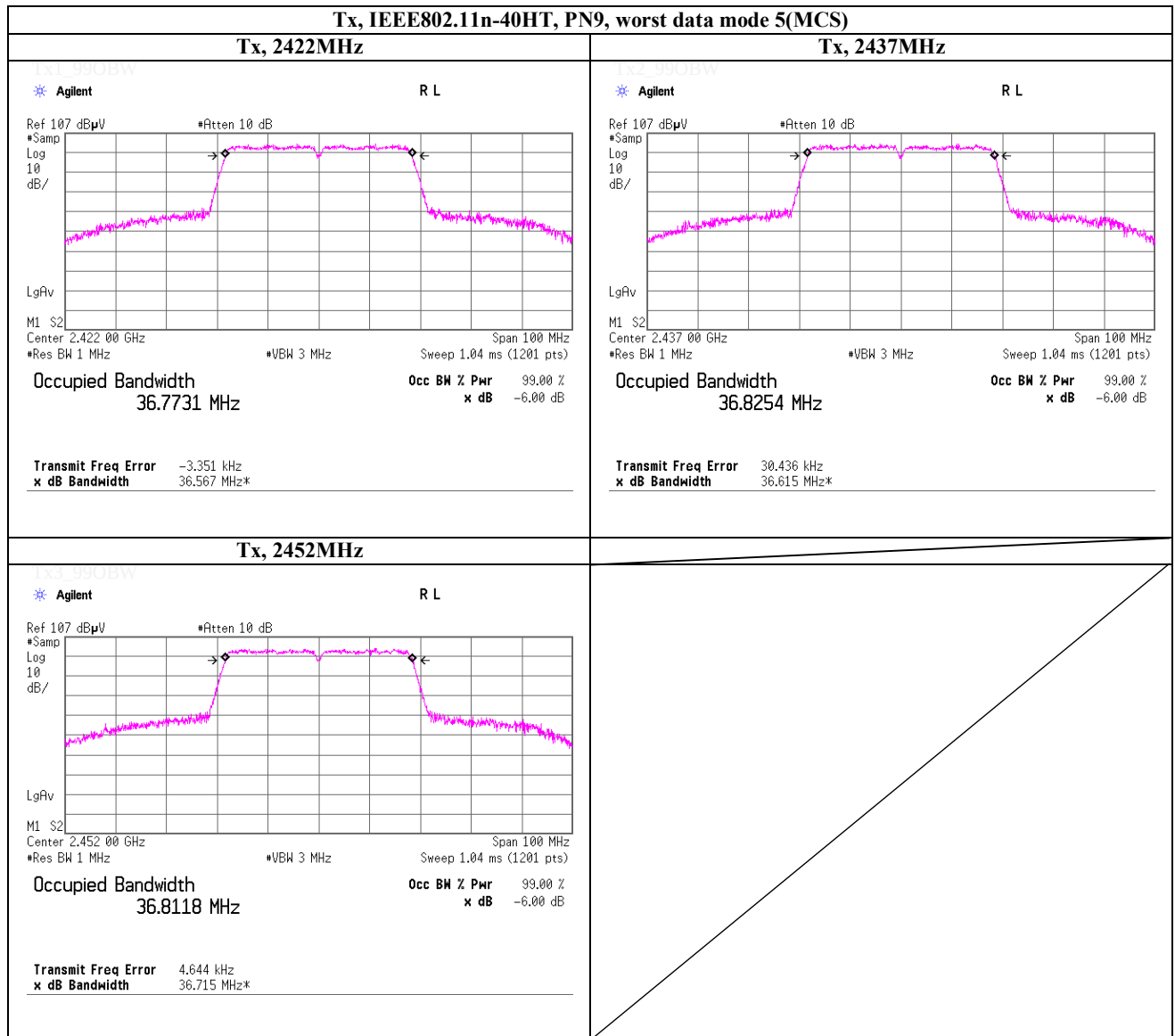
Facsimile : +81 463 50 6401

99% Occupied Bandwidth**UL Japan, Inc.****Shonan EMC Lab.**

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APPENDIX 2

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
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2012/03/12 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2012/04/06 * 12
SOS-07	Humidity Indicator	A&D	AD-5681	4063359	AT	2012/02/06 * 12
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
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,AT	2012/03/16 * 12
SJM-11	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE ,CE	-
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	2012/02/06 * 12
SJM-08	Measure	PROMART	SEN1935	-	RE	-
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
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	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 :

CE: Conducted emission ,

RE: Radiated emission ,

AT: Antenna terminal conducted test

APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2012/02/10 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
KAT3-11	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2012/08/07 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2012/11/18 * 12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2012/04/10 * 12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2012/04/10 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP9108-A 0893	RE	2012/11/18 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
STR-02	Test Receiver	Rohde & Schwarz	ESCI	100575	RE/CE	2012/09/03 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE/CE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2012/09/21 * 12
SCC-B12/B13/SRSE-02	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-270(RF Selector)	CE	2012/04/10 * 12
SLS-03	LISN	Rohde & Schwarz	ENV216	100513	CE	2012/02/23 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SOS-04	Humidity Indicator	A&D	AD-5681	4061512	CE	2012/03/26 * 12
STM-03	Terminator	TME	CT-01 BP	-	CE	2013/01/16 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2012/03/12 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104A	46498/4A	RE	2012/04/10 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2012/05/22 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2012/08/17 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2013/01/08 * 12
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2012/12/18 * 12

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

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

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

Test Item :

CE: Conducted emission ,

RE: Radiated emission ,

AT: Antenna terminal conducted test