



RADIO TEST REPORT

Test Report No. : 32CE0083-SH-01-A

Applicant : Honda Engineering Co., Ltd.

Type of Equipment : Wireless LAN Card

Model No. : E1600-12A

FCC ID : N43E160012A

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 16 to July 6, 2012

Representative test engineer:

Makoto Hosaka
Engineer of WiSE Japan,
UL Verification Service

Approved by :

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 : Honda Engineering Co., Ltd.
Address : 6-1 Hagadai, Haga-machi, Haga-gun, Tochigi, 321-3395 Japan
Telephone Number : +81-28-677-6946
Facsimile Number : +81-28-677-6946
Contact Person : Kazumori Sakai

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

2.1 Identification of E.U.T.

Type of Equipment : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56
Rating : DC3.3V
Receipt Date of Sample : January 19, 2012
Country of Mass-production : Japan
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No modification by the test lab.

2.2 Product description

Model: E1600-12A (referred to as the EUT in this report) is a Wireless LAN Card.

Clock frequency(ies) in the system : 20MHz

Radio specification

Equipment type : Transceiver
Frequency of operation : 2412-2462MHz
Bandwidth & channel spacing : 20MHz & 5MHz
Type of modulation : DSSS: CCK,DQPSK, DBPSK
OFDM: 16QAM, 64QAM, QPSK, BPSK
Antenna type : Chip antenna x2 (Main, AUX)
Antenna connector type : U.FL
Antenna gain with cable loss : 0.64dBi
ITU code : D1D, G1D
Operation temperature range : 0 to +45 deg.C.

FCC 15.31 (e)

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

FCC 15.203

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

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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 March 30, 2012 and effective April 30, 2012

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz,
and 5725-5850MHz

* The revision on March 30, 2012 does not affect the test specification applied to the EUT.

The EUT complies with FCC Part 15 Subpart B. Refer to the test report 32CE0083-SH-01-C.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2009 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A	11.1dB Freq.: 0.40994MHz Detector: Average Phase: N Mode: Tx 2412MHz, IEEE 802.11g	Complied
6dB bandwidth	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(2) & 15.209	Conducted	N/A	* See data	Complied
Maximum peak output power	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(3) & 15.209	Conducted	N/A		Complied
Spurious emission & Restricted band edges	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.109, 15.247 (d) & 15.209	Conducted / Radiated	N/A	3.1dB Freq.: 4874.000MHz Detector: Average Polarization: Horizontal Mode: Tx 2437MHz, IEEE 802.11b	Complied
Power density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (e) & 15.209	Conducted	N/A	* See data	Complied

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

These tests were also referred to "Guidance on Measurement for Digital Transmission Systems Section15.247".

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) AMN/LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.6 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	5.0 dB
	300MHz-1GHz	5.0 dB	5.2 dB	5.0 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.8 dB	4.3 dB	4.4 dB

*1: SAC=Semi-Anechoic Chamber

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

Conducted emission test

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

Radiated emission test

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

Antenna port conducted test

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

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

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

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

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

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

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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 Full-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

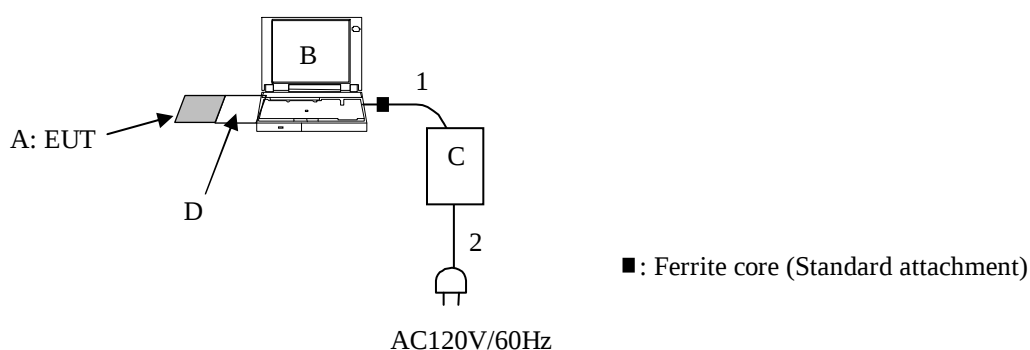
The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Test item	Mode *1)	Tested frequency	Power setting *1)	Worst data rate *2)
All items	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	Fixed	2Mbps, PN9
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	Fixed	24Mbps, PN9

*1) Software: SCU Version 2.03.47 and SMU Version 3.3.8 and SRU Version 3.3.9
 *2) The worst condition was determined based on the test result of Maximum Peak Output Power.
 *3) Although the EUT has two antennas, only the main antenna is used for transmission, therefore the main antenna has been used for the testing.

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 LAN Card	E1600-12A	MAC:001723146B56	Honda Engineering	EUT
B	Laptop computer	ThinkPad T42 (2373-L32)	L3-NHT3Y	IBM	-
C	AC adaptor	08K8208	11S08K8208Z1Z9MA568 6XM	IBM	-
D	Extended card	P6003	-	Panasonic	-

List of cables used

No.	Cable	Length (m)	Shield-Cable	Shield-Connector	Remarks
1	DC	1.8	Unshielded	Unshielded	-
2	AC	1.0	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 host device 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 PC within a shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN) via PC. 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.

Summary of the test results: Pass
Refer to APPENDIX 1

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SECTION 7: 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

SECTION 8: Spurious emission (Antenna port conducted)

Test procedure

The spurious emission 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. 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: 10Hz	RBW: 100kHz VBW: 300kHz

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

* When measured Average, VBW is not subject of changing value. Therefore, AV (=Average) has been measured with VBW=10Hz.

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	1-15GHz	15-25GHz
Horizontal	Z	Y	Y	Y
Vertical	Z	Y	X	Y

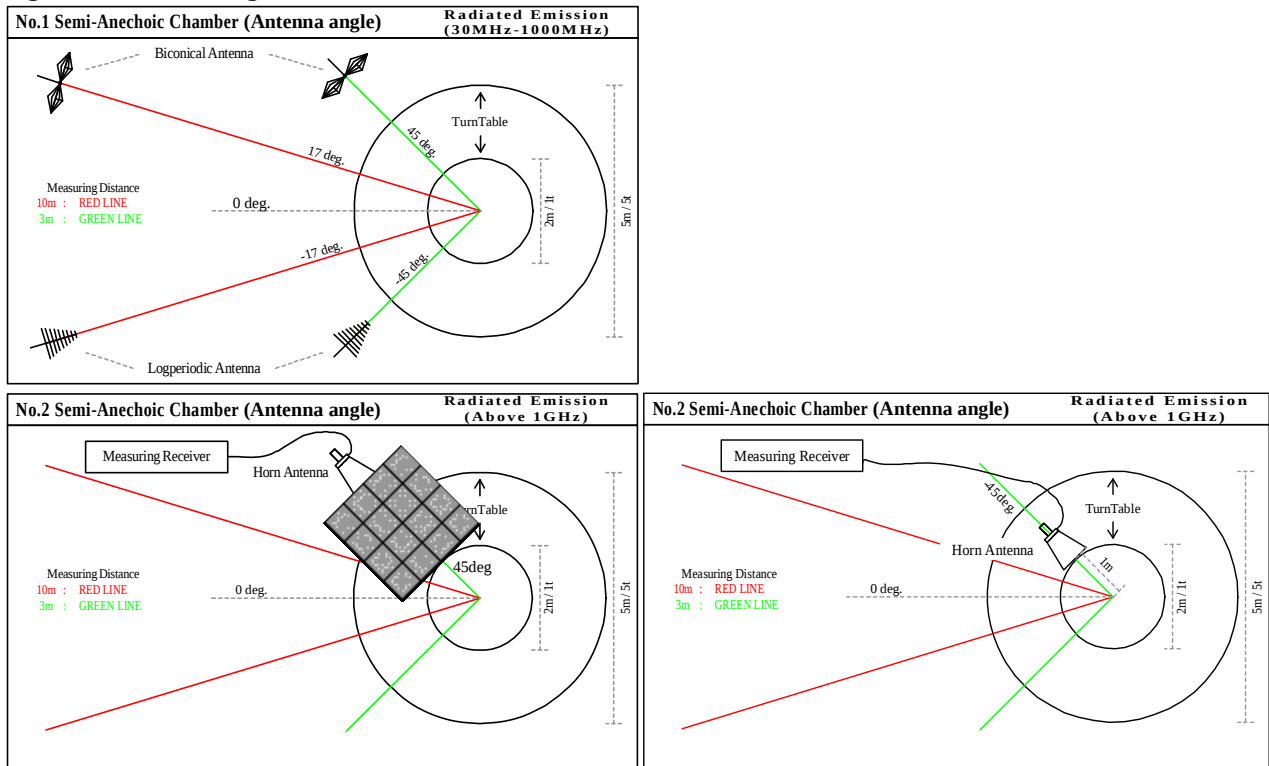
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Figure 1. Antenna angle

9.5 Band edge

Band edge level at 2400MHz and 2398MHz 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 9th order harmonics.
Refer to APPENDIX 1

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 *1)
RBW / VBW : 30kHz / 100kHz *2)

*1) PSD Option 1 of " Measurement of Digital Transmission Systems Operating under Section 15.247".

*2) The test was not performed at RBW: 3kHz that was stated in the Regulation. However, the measurement value with RBW: 3kHz is less than the value of RBW: 30kHz and the test data met the limit with RBW: 30kHz.

Summary of the test results: Pass
Refer to APPENDIX 1

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Contents of APPENDIXES

APPENDIX 1: Test data

Conducted emission
6dB bandwidth
Maximum peak 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.3 Shielded Room
Date : 2012/04/18

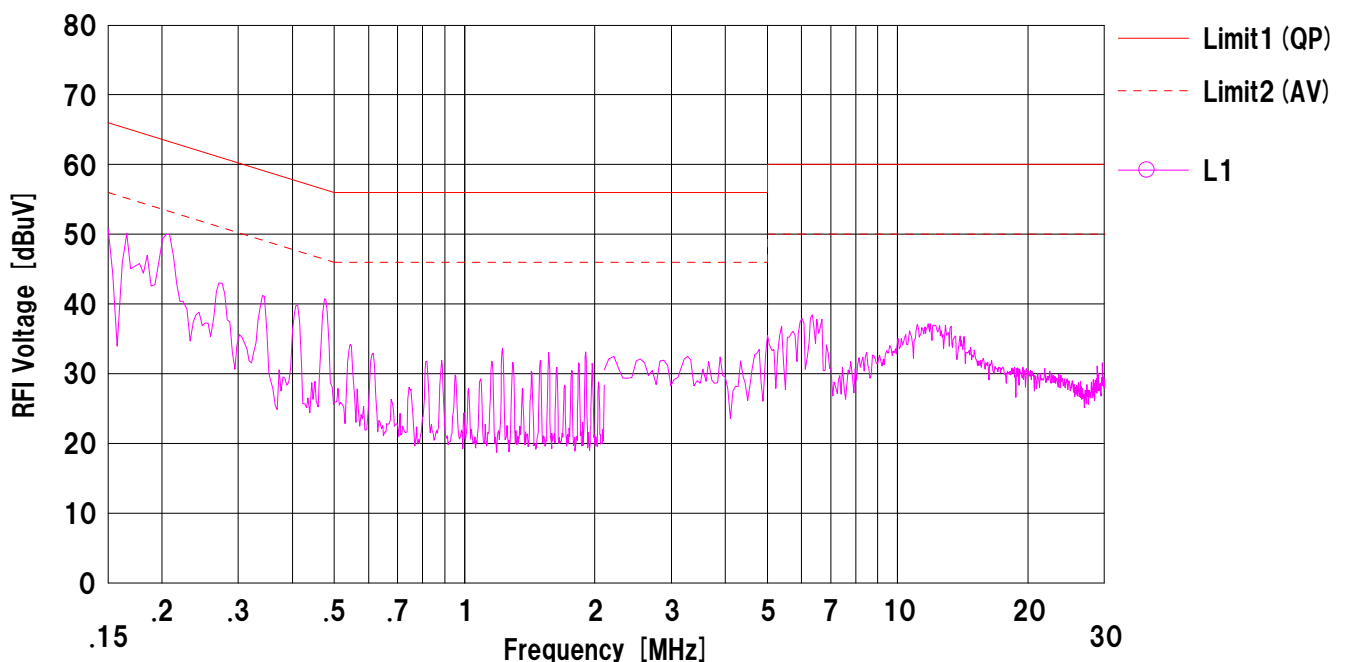
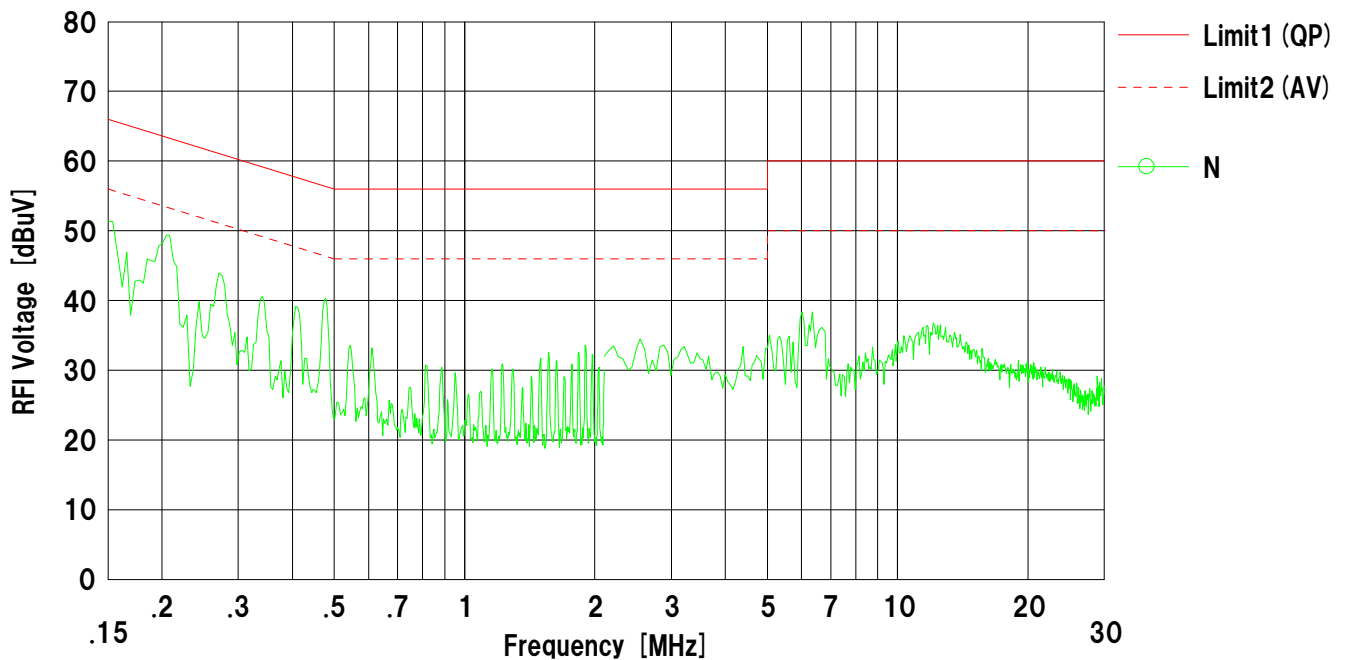
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11b, 2Mbps, 2412MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

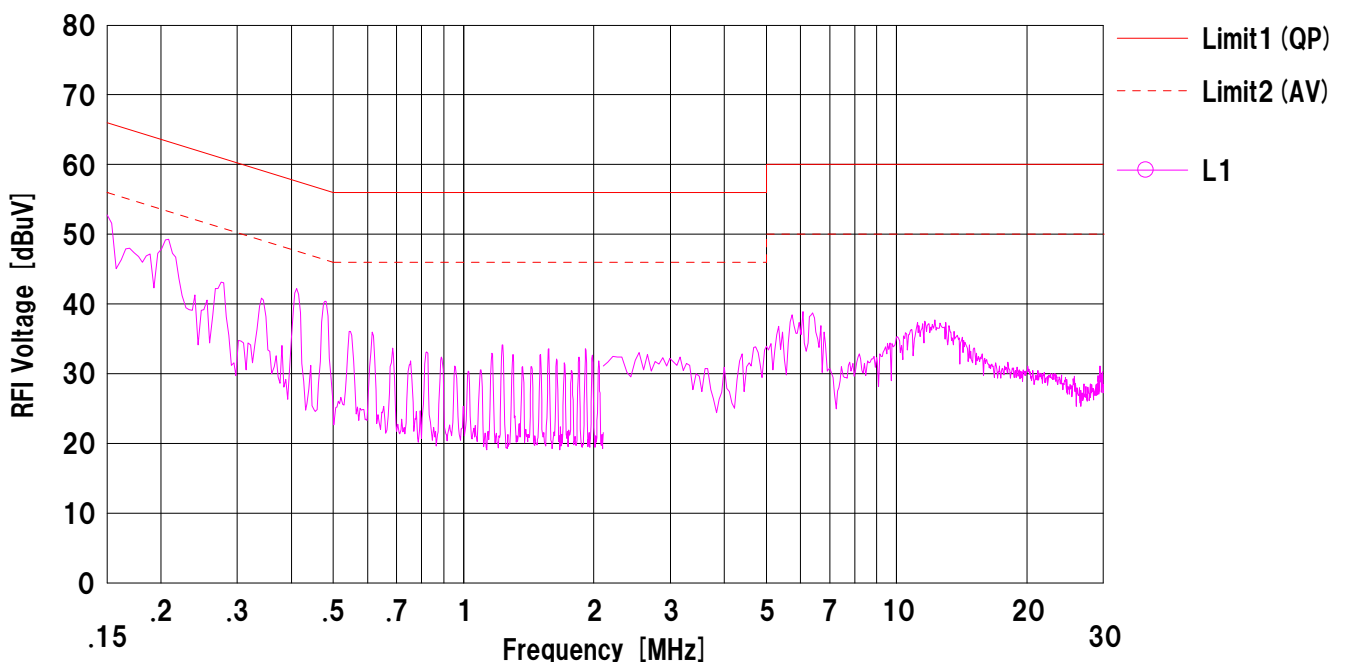
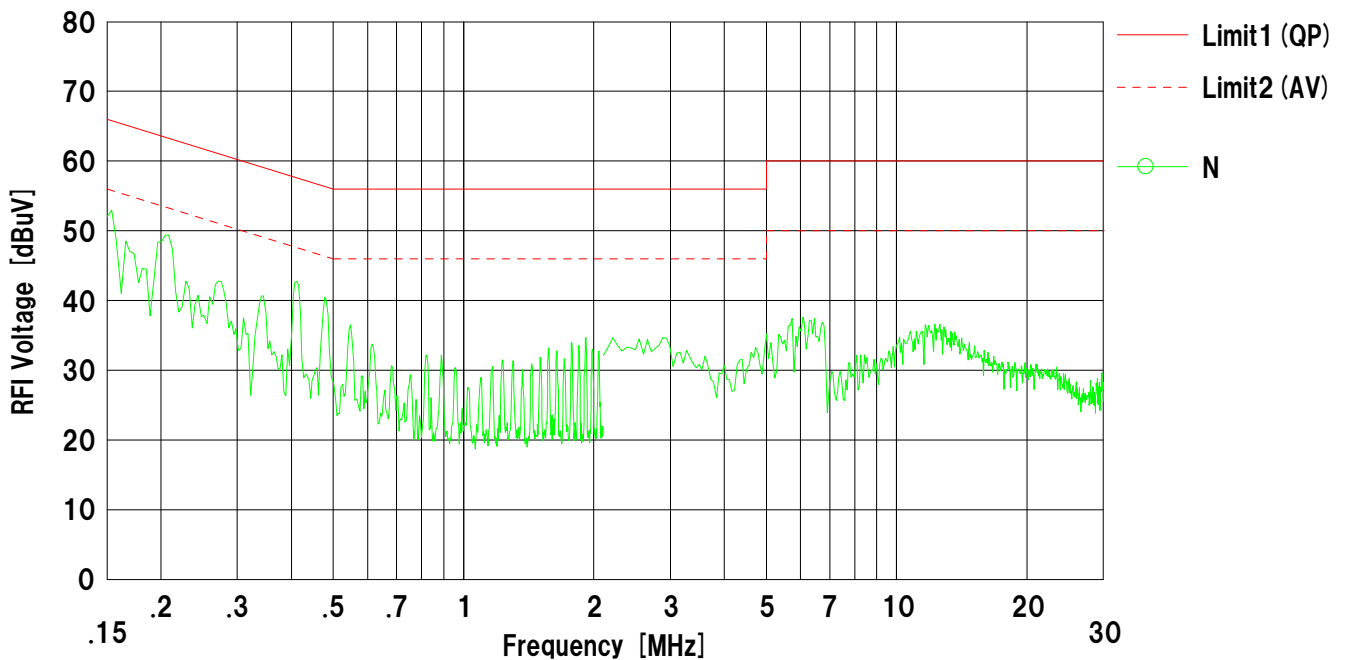
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Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

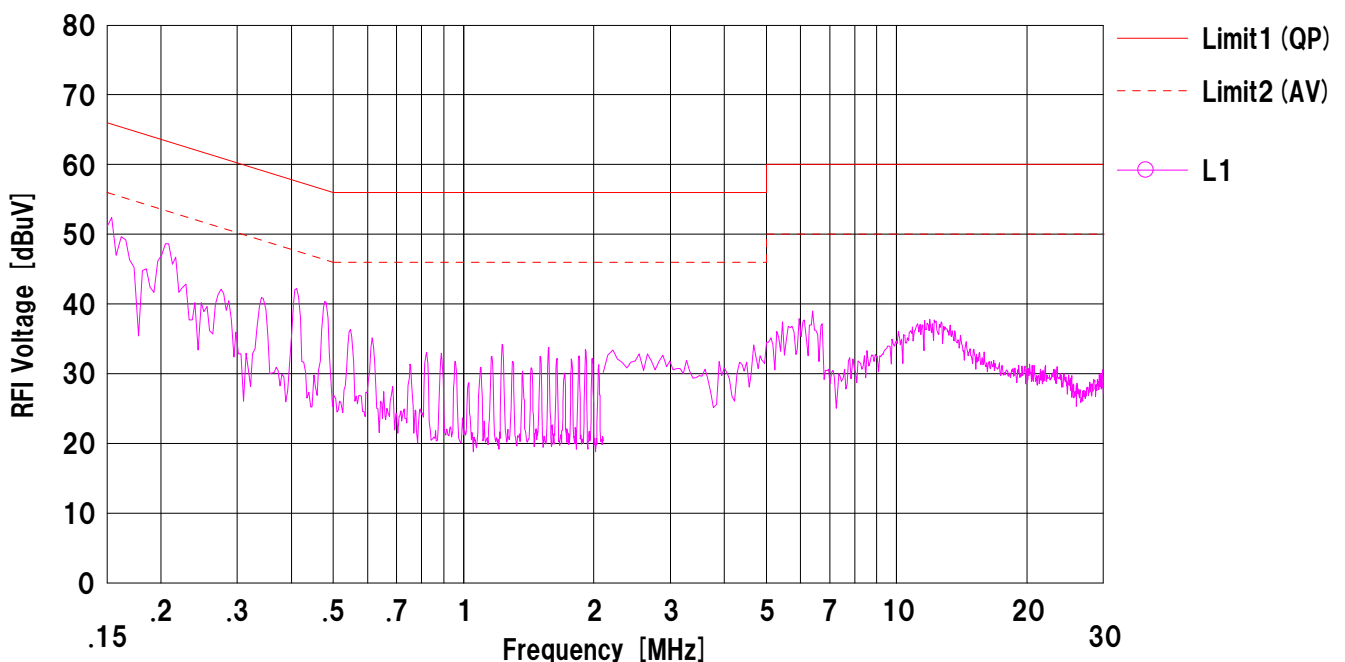
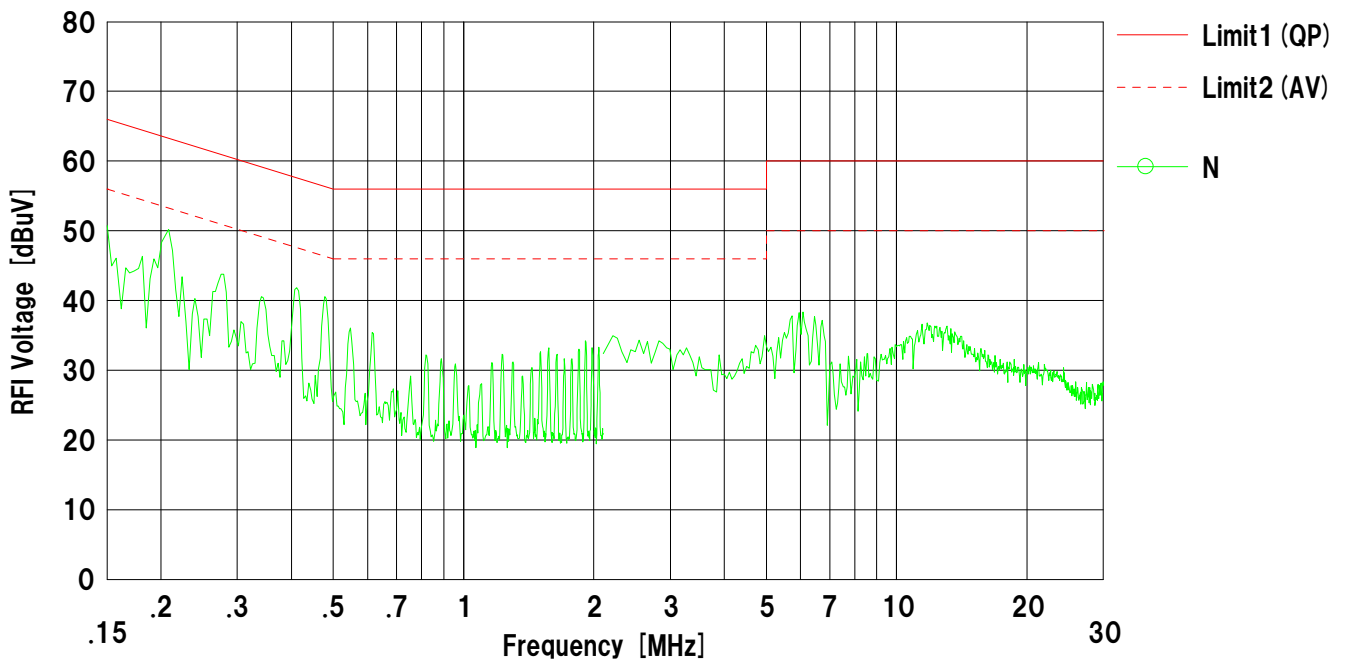
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Mode : Transmitting, 11b, 2Mbps, 2462MHz
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Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

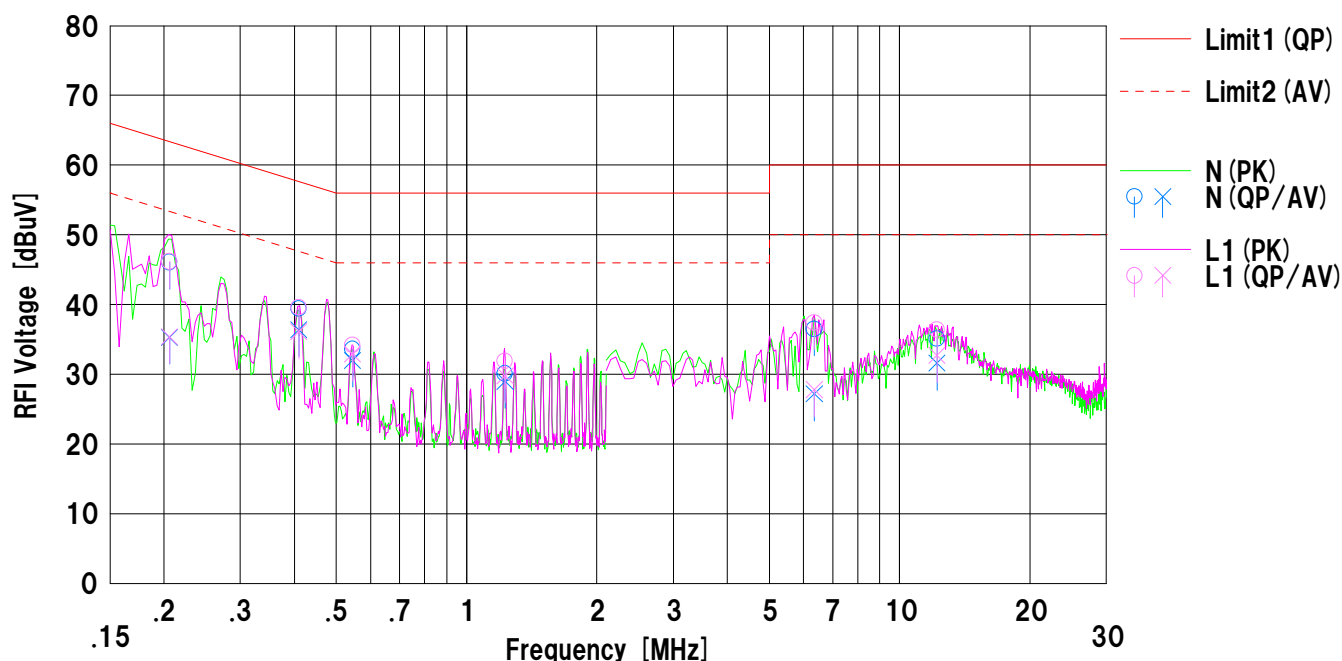
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11b, 2Mbps, 2412MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.20614	33.4	22.6	12.7	46.1	35.3	63.3	53.3	17.2	18.0	N	
2	0.40992	26.7	23.7	12.7	39.4	36.4	57.6	47.6	18.2	11.2	N	
3	0.54535	20.9	19.3	12.7	33.6	32.0	56.0	46.0	22.4	14.0	N	
4	1.22714	17.4	16.3	12.7	30.1	29.0	56.0	46.0	25.9	17.0	N	
5	6.35499	23.5	14.2	13.0	36.5	27.2	60.0	50.0	23.5	22.8	N	
6	12.19354	21.9	18.4	13.2	35.1	31.6	60.0	50.0	24.9	18.4	N	
7	0.20614	33.5	22.7	12.7	46.2	35.4	63.3	53.3	17.1	17.9	L1	
8	0.40992	26.9	23.4	12.7	39.6	36.1	57.6	47.6	18.0	11.5	L1	
9	0.54535	21.5	20.2	12.7	34.2	32.9	56.0	46.0	21.8	13.1	L1	
10	1.22714	19.2	17.1	12.7	31.9	29.8	56.0	46.0	24.1	16.2	L1	
11	6.35499	24.4	14.8	13.0	37.4	27.8	60.0	50.0	22.6	22.2	L1	
12	12.19354	23.2	19.5	13.2	36.4	32.7	60.0	50.0	23.6	17.3	L1	

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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

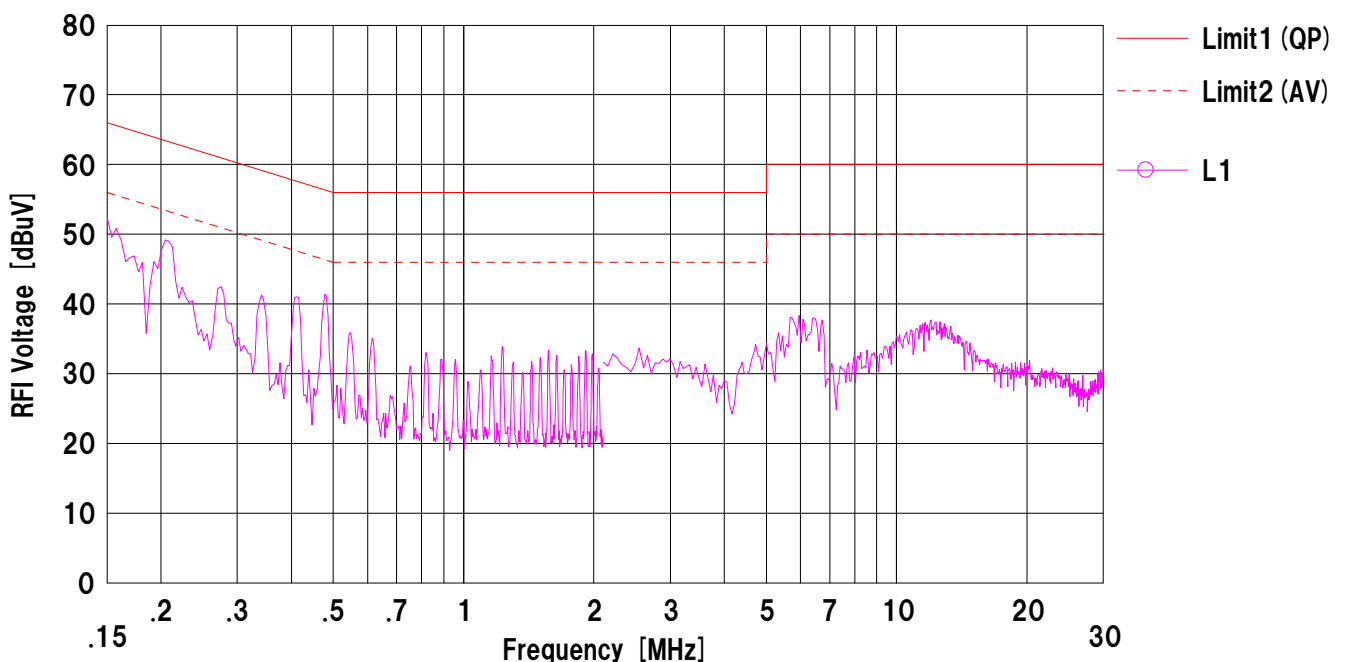
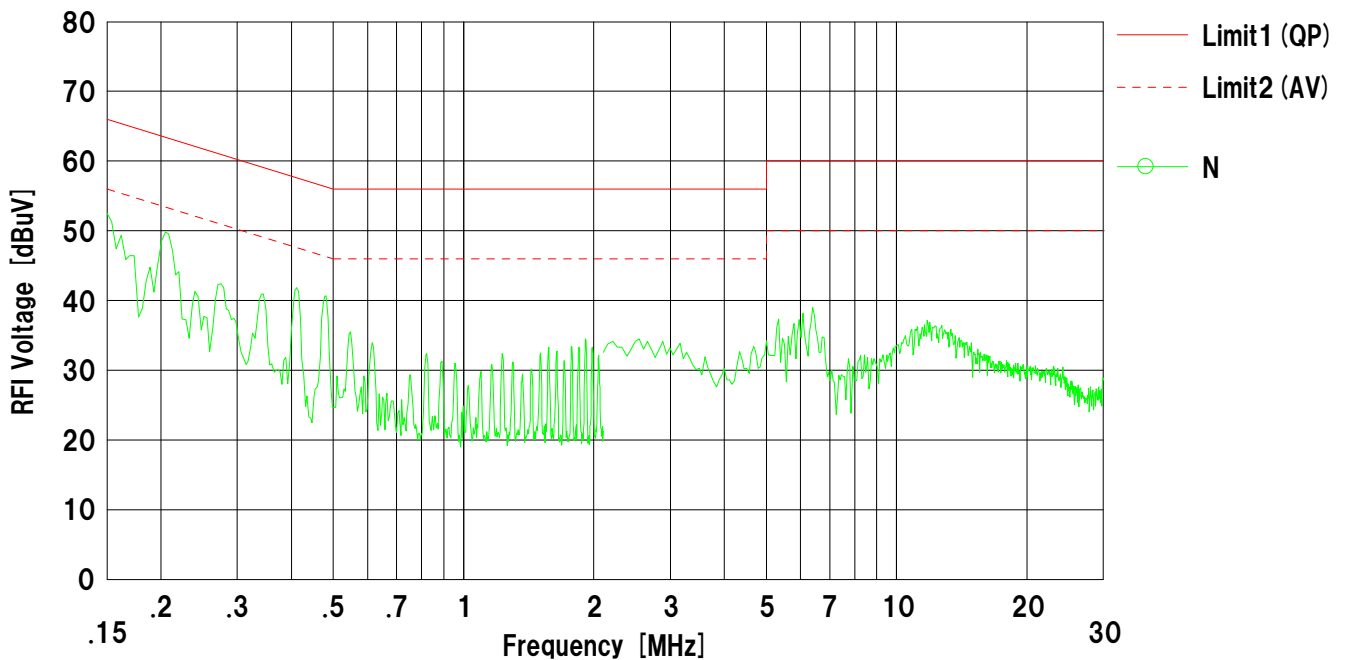
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11g, 24Mbps, 2412MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

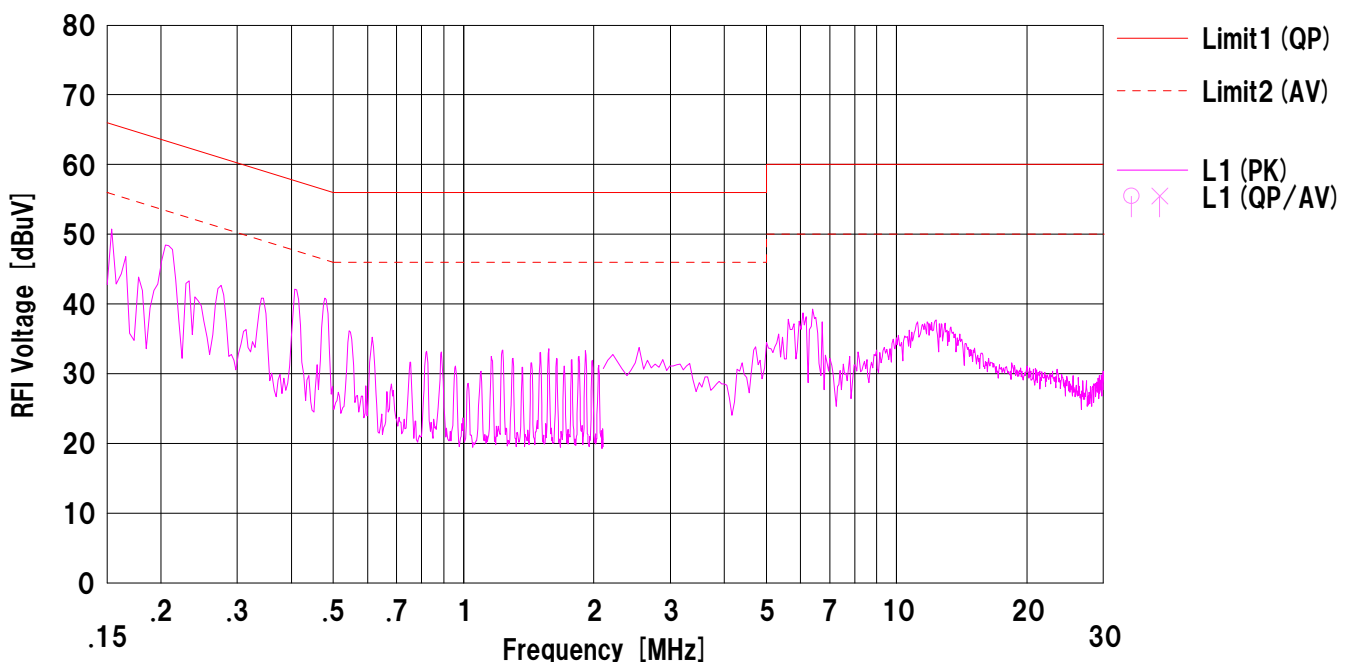
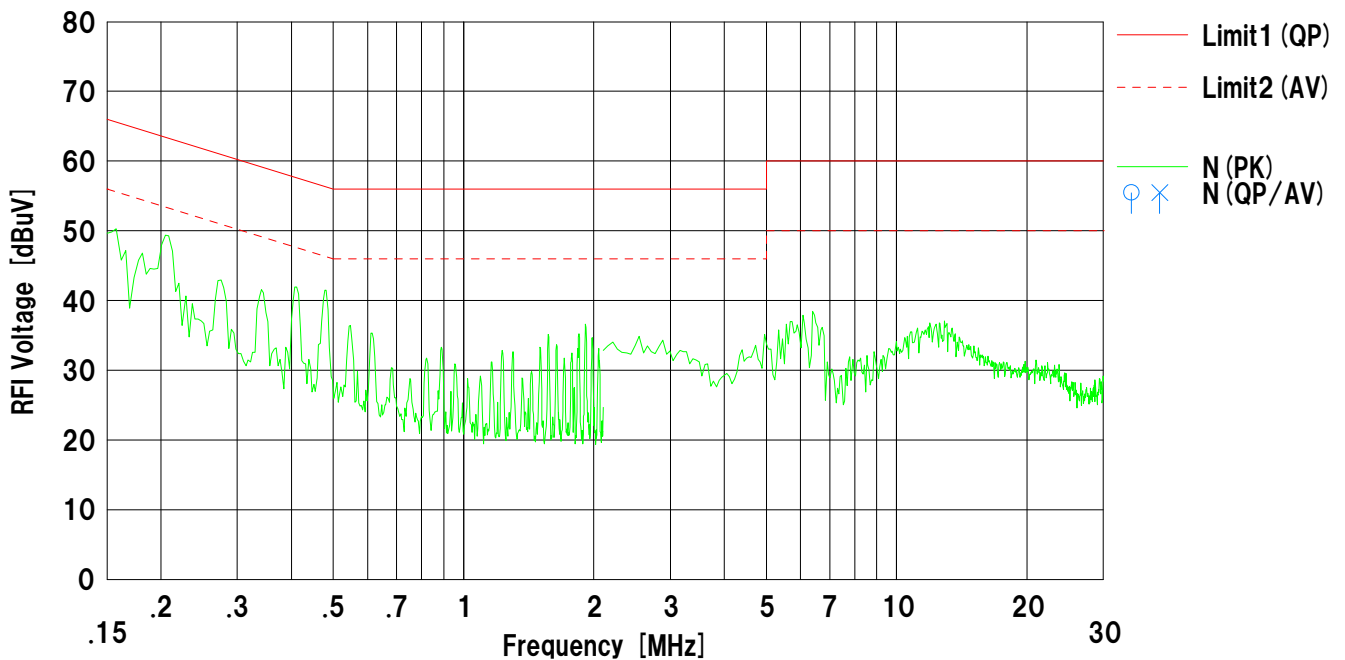
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11g, 24Mbps, 2437MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

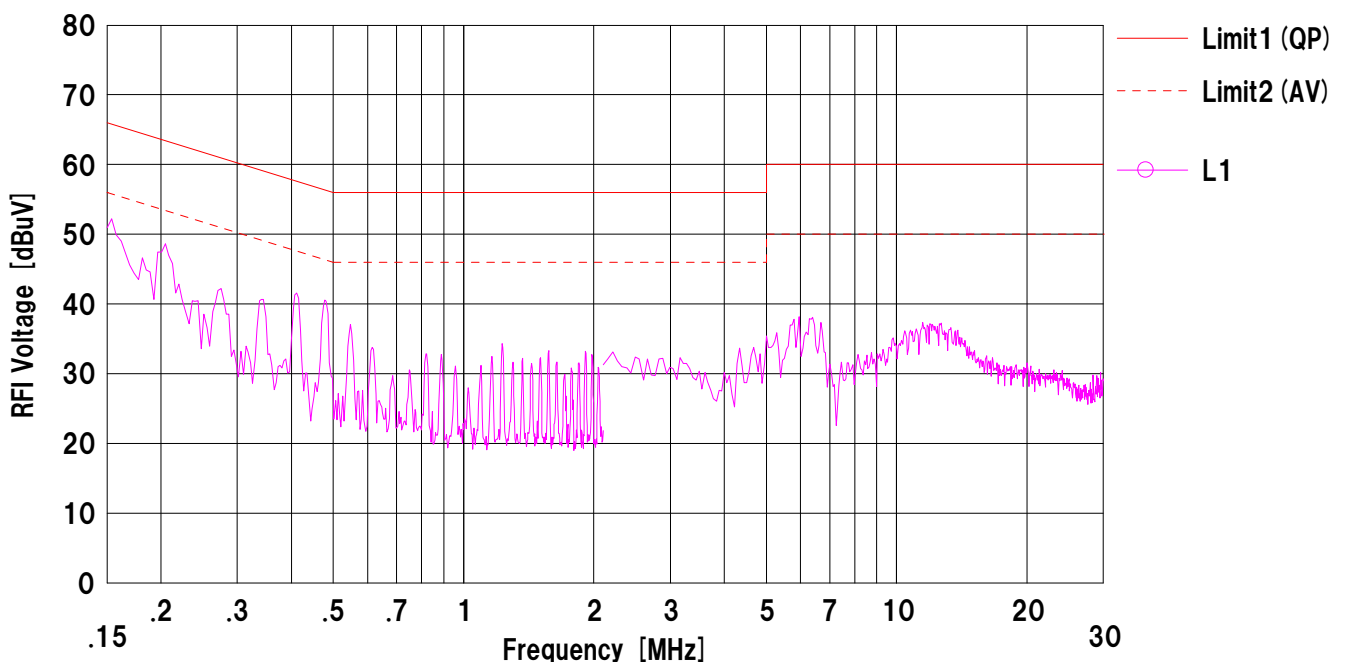
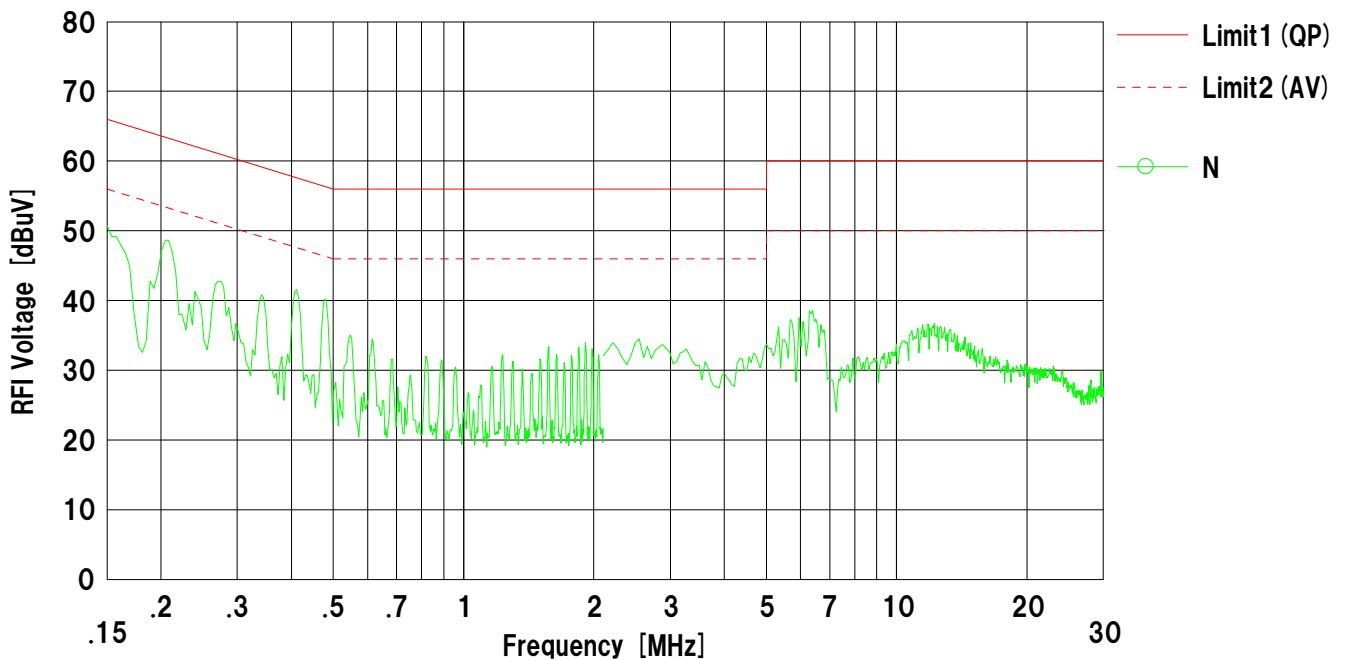
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11g, 24Mbps, 2462MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



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

DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/04/18

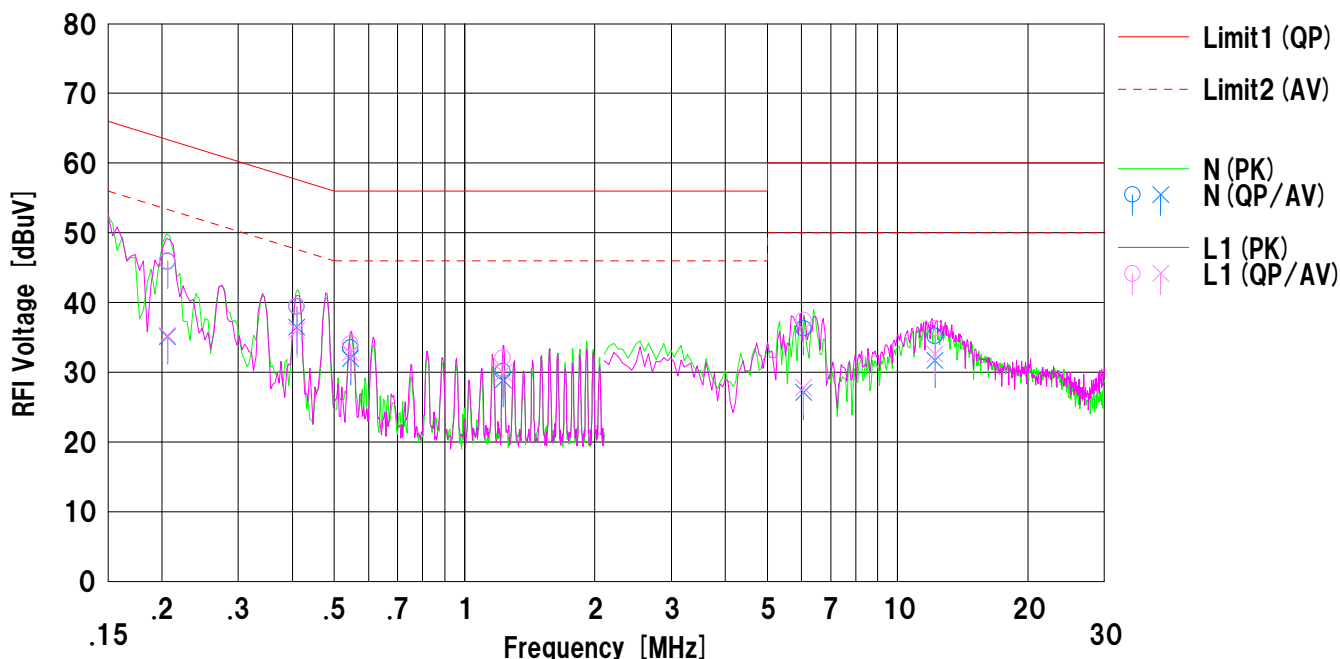
Company : Honda Engineering Co., Ltd.
Kind of EUT : Wireless LAN Card
Model No. : E1600-12A
Serial No. : MAC:001723146B56

Mode : Transmitting, 11g, 24Mbps, 2412MHz
Report No. : 32CE0083-SH-01-A
Power : AC120V/60Hz (Host device) (EUT3.3V)
Temp./Humi. : 26deg.C / 39%RH

Remarks : with Host device (PC)

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

Engineer : Kenichi Adachi



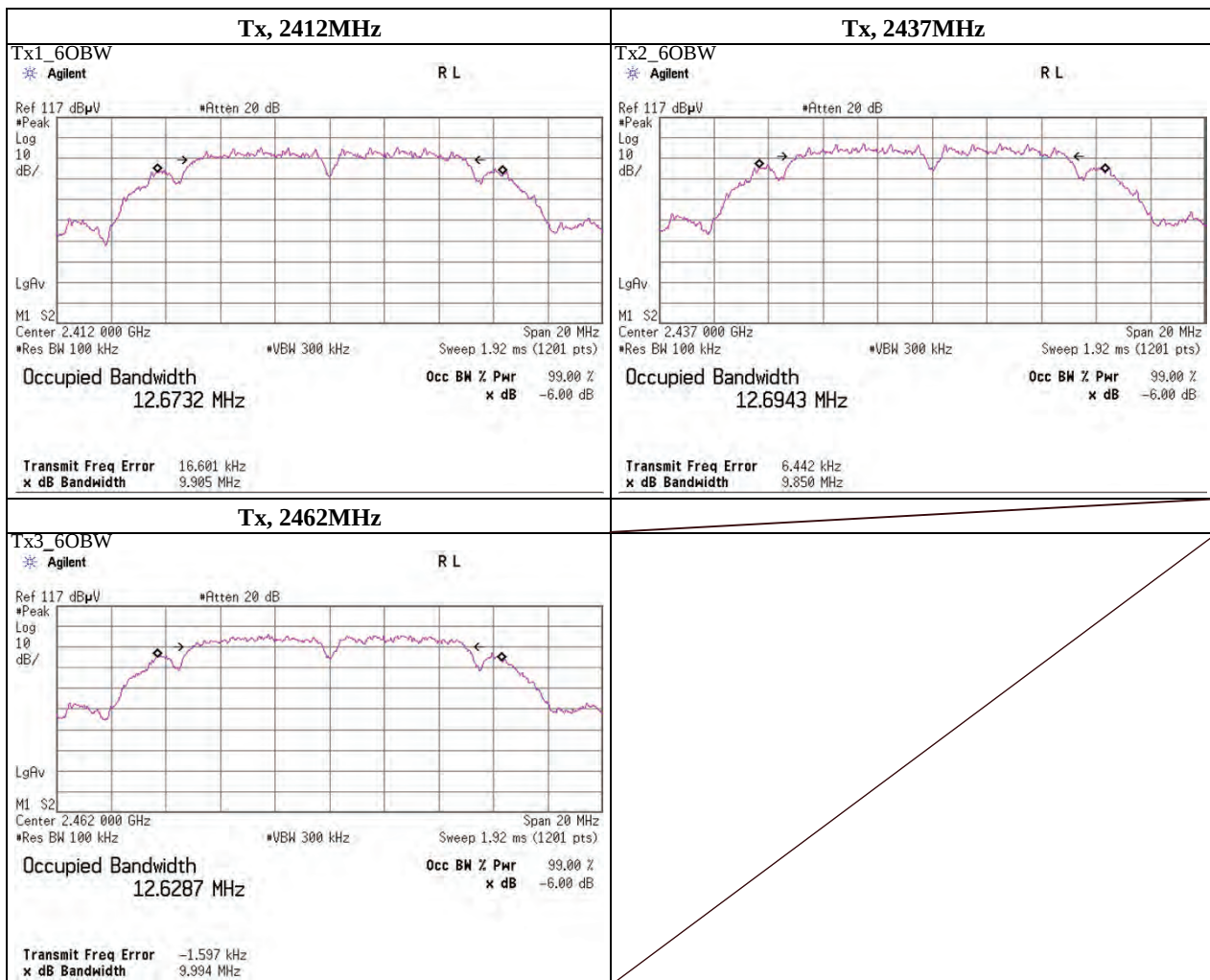
No.	Freq. [MHz]	Reading		C.Fac [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.20612	33.2	22.4	12.7	45.9	35.1	63.3	53.3	17.4	18.2	N	
2	0.40994	26.7	23.8	12.7	39.4	36.5	57.6	47.6	18.2	11.1	N	
3	0.54533	20.8	19.3	12.7	33.5	32.0	56.0	46.0	22.5	14.0	N	
4	1.22723	17.4	16.2	12.7	30.1	28.9	56.0	46.0	25.9	17.1	N	
5	6.06290	23.3	14.1	13.0	36.3	27.1	60.0	50.0	23.7	22.9	N	
6	12.19334	22.0	18.5	13.2	35.2	31.7	60.0	50.0	24.8	18.3	N	
7	0.20612	33.3	22.6	12.7	46.0	35.3	63.3	53.3	17.3	18.0	L1	
8	0.40994	26.8	23.3	12.7	39.5	36.0	57.6	47.6	18.1	11.6	L1	
9	0.54533	21.4	20.1	12.7	34.1	32.8	56.0	46.0	21.9	13.2	L1	
10	1.22723	19.4	17.2	12.7	32.1	29.9	56.0	46.0	23.9	16.1	L1	
11	6.06290	24.5	14.8	13.0	37.5	27.8	60.0	50.0	22.5	22.2	L1	
12	12.19334	23.1	19.4	13.2	36.3	32.6	60.0	50.0	23.7	17.4	L1	

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

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	April 12, 2012	
Temperature / Humidity	23deg.C , 52%RH	
Engineer	Makoto Hosaka	
Mode	Tx, IEEE802.11b, PN9, worst data mode 2Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.905	> 0.500
2437.0000	9.850	> 0.500
2462.0000	9.994	> 0.500

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

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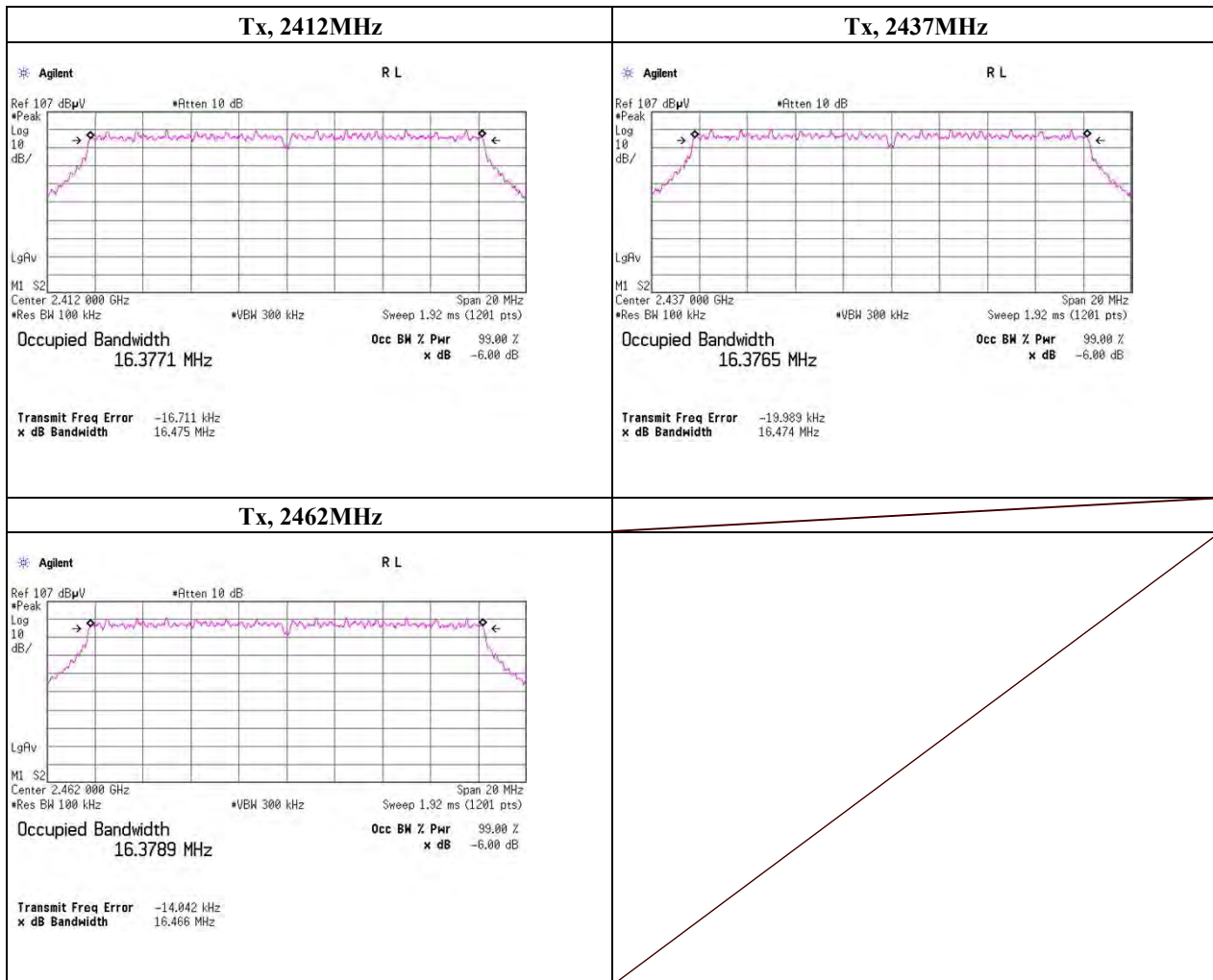
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	April 12, 2012	
Temperature / Humidity	23deg.C , 52%RH	
Engineer	Makoto Hosaka	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.475	> 0.500
2437.0000	16.474	> 0.500
2462.0000	16.466	> 0.500

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

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date February 16, 2012
 Temperature / Humidity 23deg.C , 43%RH
 Engineer Kenichi Adachi
 Mode Tx, IEEE802.11b, PN9, worst data mode : 2 Mbps

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

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	10.50	2.01	9.68	22.19	165.58	30.00	1000	7.81
Mid	2437.0	10.62	2.01	9.68	22.31	170.22	30.00	1000	7.69
High	2462.0	10.95	2.02	9.68	22.65	184.08	30.00	1000	7.35

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

[Pre check]

(Used Gate mode)

	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	10.24	2.01	9.68	21.93	155.96	30.00	1000	8.07
	2	2437.0	10.62	2.01	9.68	22.31	170.22	30.00	1000	7.69
	5.5	2437.0	10.51	2.01	9.68	22.20	165.96	30.00	1000	7.80
	11	2437.0	10.02	2.01	9.68	21.71	148.25	30.00	1000	8.29

Worst

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

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Shonan EMC Lab.

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Peak Output Power (Conducted)

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
 Date February 16, 2012
 Temperature / Humidity 23deg.C , 43%RH
 Engineer Kenichi Adachi
 Mode Tx, IEEE802.11g, PN9, worst data mode : 24 Mbps

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

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	11.67	2.01	9.68	23.36	216.77	30.00	1000	6.64
Mid	2437.0	12.45	2.01	9.68	24.14	259.42	30.00	1000	5.86
High	2462.0	11.87	2.02	9.68	23.57	227.51	30.00	1000	6.43

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

[Pre check]

(Used Gate mode)

	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	12.40	2.01	9.68	24.09	256.45	30.00	1000	5.91
	9	2437.0	11.25	2.01	9.68	22.94	196.79	30.00	1000	7.06
	12	2437.0	11.73	2.01	9.68	23.42	219.79	30.00	1000	6.58
	18	2437.0	12.08	2.01	9.68	23.77	238.23	30.00	1000	6.23
	24	2437.0	12.45	2.01	9.68	24.14	259.42	30.00	1000	5.86
	36	2437.0	12.07	2.01	9.68	23.76	237.68	30.00	1000	6.24
	48	2437.0	12.12	2.01	9.68	23.81	240.44	30.00	1000	6.19
	54	2437.0	12.17	2.01	9.68	23.86	243.22	30.00	1000	6.14

Worst

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber
Date March 23, 2012 March 26, 2012
Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
Engineer Makoto Hosaka Makoto Hosaka
Mode Tx, 2412 MHz
 Tx, IEEE802.11b, PN9, worst data mode 2Mbps

(* 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.	190.115	QP	34.2	16.1	8.8	31.8	27.3	43.5	16.2	145	144	
Hori.	213.878	QP	35.2	16.6	9.1	31.7	29.2	43.5	14.3	150	327	
Hori.	337.829	QP	35.3	14.8	7.1	31.7	25.5	46.0	20.5	100	78	
Hori.	532.400	QP	35.7	18.0	8.3	31.9	30.1	46.0	15.9	150	233	
Hori.	1608.000	PK	45.4	25.1	23.2	38.6	55.1	73.9	18.8	126	60	
Hori.	2390.000	PK	46.1	27.2	24.0	38.2	59.1	73.9	14.8	100	113	
Hori.	3216.000	PK	45.7	28.8	5.3	37.9	41.9	73.9	32.0	100	140	
Hori.	4824.000	PK	55.9	31.2	5.8	37.0	55.9	73.9	18.0	112	194	
Hori.	7236.000	PK	46.4	36.5	7.3	39.0	51.2	73.9	22.7	100	0	
Hori.	9648.000	PK	47.4	38.4	8.5	37.2	57.1	73.9	16.8	100	156	
Hori.	12060.000	PK	46.3	39.3	9.9	37.9	57.6	73.9	16.3	100	0	
Hori.	19295.860	PK	53.5	40.0	-2.6	47.6	43.3	73.9	30.6	129	351	
Hori.	1608.000	AV	31.5	25.1	23.2	38.6	41.2	53.9	12.7	126	60	(AV) VBW:10Hz
Hori.	2390.000	AV	35.1	27.2	24.0	38.2	48.1	53.9	5.8	100	113	(AV) VBW:10Hz
Hori.	3216.000	AV	31.9	28.8	5.3	37.9	28.1	53.9	25.8	100	140	(AV) VBW:10Hz
Hori.	4824.000	AV	50.3	31.2	5.8	37.0	50.3	53.9	3.6	112	194	(AV) VBW:10Hz
Hori.	7236.000	AV	31.6	36.5	7.3	39.0	36.4	53.9	17.5	100	0	(AV) VBW:10Hz
Hori.	9648.000	AV	38.4	38.4	8.5	37.2	48.1	53.9	5.8	100	156	(AV) VBW:10Hz
Hori.	12060.000	AV	31.6	39.3	9.9	37.9	42.9	53.9	11.0	100	0	(AV) VBW:10Hz
Hori.	19295.860	AV	46.8	40.0	-2.6	47.6	36.6	53.9	17.3	129	351	(AV) VBW:10Hz
Vert.	337.053	QP	38.7	14.8	7.1	31.7	28.9	46.0	17.1	100	15	
Vert.	349.048	QP	37.9	15.0	7.2	31.7	28.4	46.0	17.6	100	355	
Vert.	366.556	QP	37.5	15.3	7.3	31.7	28.4	46.0	17.6	100	356	
Vert.	499.432	QP	42.1	17.6	8.1	31.9	35.9	46.0	10.1	100	186	
Vert.	1608.000	PK	45.7	25.1	23.2	38.6	55.4	73.9	18.5	119	51	
Vert.	2390.000	PK	45.0	27.2	24.0	38.2	58.0	73.9	15.9	124	317	
Vert.	3216.000	PK	45.1	28.8	5.3	37.9	41.3	73.9	32.6	100	0	
Vert.	4824.000	PK	55.4	31.2	5.8	37.0	55.4	73.9	18.5	126	81	
Vert.	7236.000	PK	46.8	36.5	7.3	39.0	51.6	73.9	22.3	100	0	
Vert.	9648.000	PK	47.1	38.4	8.5	37.2	56.8	73.9	17.1	152	280	
Vert.	12060.000	PK	45.8	39.3	9.9	37.9	57.1	73.9	16.8	100	0	
Vert.	19295.850	PK	53.8	40.0	-2.6	47.6	43.6	73.9	30.3	128	352	
Vert.	1608.000	AV	31.6	25.1	23.2	38.6	41.3	53.9	12.6	119	51	(AV) VBW:10Hz
Vert.	2390.000	AV	33.4	27.2	24.0	38.2	46.4	53.9	7.5	124	317	(AV) VBW:10Hz
Vert.	3216.000	AV	30.8	28.8	5.3	37.9	27.0	53.9	26.9	100	0	(AV) VBW:10Hz
Vert.	4824.000	AV	50.1	31.2	5.8	37.0	50.1	53.9	3.8	126	81	(AV) VBW:10Hz
Vert.	7236.000	AV	32.4	36.5	7.3	39.0	37.2	53.9	16.7	100	0	(AV) VBW:10Hz
Vert.	9648.000	AV	36.4	38.4	8.5	37.2	46.1	53.9	7.8	152	280	(AV) VBW:10Hz
Vert.	12060.000	AV	31.3	39.3	9.9	37.9	42.6	53.9	11.3	100	0	(AV) VBW:10Hz
Vert.	19295.850	AV	47.1	40.0	-2.6	47.6	36.9	53.9	17.0	128	352	(AV) VBW:10Hz

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

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

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412	PK	89.4	27.3	24.0	38.2	102.5	-	-	carrier
Hori.	2398	PK	43.2	27.3	24.0	38.2	56.3	82.5	26.2	
Hori.	2400	PK	45.1	27.3	24.0	38.2	58.2	82.5	24.3	
Vert.	2412	PK	87.1	27.3	24.0	38.2	100.2	-	-	carrier
Vert.	2398	PK	39.8	27.3	24.0	38.2	52.9	80.2	27.3	
Vert.	2400	PK	41.6	27.3	24.0	38.2	54.7	80.2	25.5	

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

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

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber
Date March 23, 2012 March 26, 2012
Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
Engineer Makoto Hosaka Makoto Hosaka
Mode Tx, 2437 MHz
 Tx, IEEE802.11b, PN9, worst data mode 2Mbps

(* 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.	209.805	QP	35.4	16.5	9.1	31.7	29.3	43.5	14.2	152	12	
Hori.	215.443	QP	35.4	16.6	9.1	31.7	29.4	43.5	14.1	150	136	
Hori.	318.102	QP	39.7	14.4	6.9	31.7	29.3	46.0	16.7	100	59	
Hori.	814.900	QP	25.5	21.0	9.6	31.7	24.4	46.0	21.6	150	237	
Hori.	1624.667	PK	45.3	25.2	23.2	38.6	55.1	73.9	18.8	100	44	
Hori.	3249.333	PK	44.5	28.8	5.3	37.9	40.7	73.9	33.2	100	152	
Hori.	4874.000	PK	55.9	31.3	5.8	36.9	56.1	73.9	17.8	111	192	
Hori.	7311.000	PK	46.4	36.7	7.5	39.0	51.6	73.9	22.3	100	169	
Hori.	9748.000	PK	45.6	38.6	8.5	37.2	55.5	73.9	18.4	100	158	
Hori.	12185.000	PK	44.8	39.4	9.8	37.7	56.3	73.9	17.6	100	0	
Hori.	19495.930	PK	51.8	40.1	-2.6	47.4	41.9	73.9	32.0	130	40	
Hori.	1624.667	AV	31.7	25.2	23.2	38.6	41.5	53.9	12.4	100	44	(AV) VBW:10Hz
Hori.	3249.333	AV	32.1	28.8	5.3	37.9	28.3	53.9	25.6	100	152	(AV) VBW:10Hz
Hori.	4874.000	AV	50.6	31.3	5.8	36.9	50.8	53.9	3.1	111	192	(AV) VBW:10Hz
Hori.	7311.000	AV	33.9	36.7	7.5	39.0	39.1	53.9	14.8	100	169	(AV) VBW:10Hz
Hori.	9748.000	AV	35.8	38.6	8.5	37.2	45.7	53.9	8.2	100	158	(AV) VBW:10Hz
Hori.	12185.000	AV	30.7	39.4	9.8	37.7	42.2	53.9	11.7	100	0	(AV) VBW:10Hz
Hori.	19495.930	AV	41.8	40.1	-2.6	47.4	31.9	53.9	22.0	130	40	(AV) VBW:10Hz
Vert.	345.451	QP	37.2	14.9	7.1	31.7	27.5	46.0	18.5	100	11	
Vert.	364.572	QP	42.2	15.3	7.3	31.7	33.1	46.0	12.9	100	16	
Vert.	433.056	QP	43.2	16.5	7.8	31.8	35.7	46.0	10.3	100	9	
Vert.	498.088	QP	36.7	17.6	8.1	31.9	30.5	46.0	15.5	100	145	
Vert.	814.900	QP	25.9	21.0	9.6	31.7	24.8	46.0	21.2	100	111	
Vert.	1624.667	PK	44.6	25.2	23.2	38.6	54.4	73.9	19.5	120	56	
Vert.	3249.333	PK	44.0	28.8	5.3	37.9	40.2	73.9	33.7	100	0	
Vert.	4874.000	PK	54.7	31.3	5.8	36.9	54.9	73.9	19.0	100	215	
Vert.	7311.000	PK	46.2	36.7	7.5	39.0	51.4	73.9	22.5	122	42	
Vert.	9748.000	PK	46.5	38.6	8.5	37.2	56.4	73.9	17.5	147	212	
Vert.	12185.000	PK	44.7	39.4	9.8	37.7	56.2	73.9	17.7	100	0	
Vert.	19495.790	PK	50.8	40.1	-2.6	47.4	40.9	73.9	33.0	125	351	
Vert.	1624.667	AV	31.9	25.2	23.2	38.6	41.7	53.9	12.2	120	56	(AV) VBW:10Hz
Vert.	3249.333	AV	30.8	28.8	5.3	37.9	27.0	53.9	26.9	100	0	(AV) VBW:10Hz
Vert.	4874.000	AV	49.5	31.3	5.8	36.9	49.7	53.9	4.2	100	215	(AV) VBW:10Hz
Vert.	7311.000	AV	33.6	36.7	7.5	39.0	38.8	53.9	15.1	122	42	(AV) VBW:10Hz
Vert.	9748.000	AV	36.7	38.6	8.5	37.2	46.6	53.9	7.3	147	212	(AV) VBW:10Hz
Vert.	12185.000	AV	30.9	39.4	9.8	37.7	42.4	53.9	11.5	100	0	(AV) VBW:10Hz
Vert.	19495.790	AV	43.4	40.1	-2.6	47.4	33.5	53.9	20.4	125	351	(AV) VBW:10Hz

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

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

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

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

Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber
Date March 23, 2012 March 26, 2012
Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
Engineer Makoto Hosaka Makoto Hosaka
Mode Tx, 2462 MHz
 Tx, IEEE802.11b, PN9, worst data mode 2Mbps

(* 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.	204.953	QP	37.2	16.4	9.0	31.7	30.9	43.5	12.6	155	352	
Hori.	214.422	QP	35.7	16.6	9.1	31.7	29.7	43.5	13.8	150	347	
Hori.	332.114	QP	41.6	14.7	7.0	31.7	31.6	46.0	14.4	100	275	
Hori.	817.300	QP	25.8	21.0	9.6	31.7	24.7	46.0	21.3	100	357	
Hori.	1641.333	PK	45.2	25.2	23.3	38.6	55.1	73.9	18.8	114	47	
Hori.	2483.500	PK	43.5	27.5	24.0	38.1	56.9	73.9	17.0	100	115	
Hori.	2494.500	PK	44.4	27.6	24.0	38.1	57.9	73.9	16.0	100	115	
Hori.	3282.667	PK	46.0	28.8	5.3	37.9	42.2	73.9	31.7	100	145	
Hori.	4924.000	PK	53.2	31.5	5.8	36.9	53.6	73.9	20.3	100	204	
Hori.	7386.000	PK	46.7	36.9	7.5	39.0	52.1	73.9	21.8	100	180	
Hori.	9848.000	PK	44.5	38.8	8.4	37.2	54.5	73.9	19.4	100	152	
Hori.	12310.000	PK	43.9	39.4	9.8	37.6	55.5	73.9	18.4	100	0	
Hori.	19695.030	PK	52.7	40.1	-2.5	47.2	43.1	73.9	30.8	129	20	
Hori.	1641.333	AV	32.9	25.2	23.3	38.6	42.8	53.9	11.1	114	47	(AV) VBW:10Hz
Hori.	2483.500	AV	32.5	27.5	24.0	38.1	45.9	53.9	8.0	100	115	(AV) VBW:10Hz
Hori.	2494.500	AV	32.4	27.6	24.0	38.1	45.9	53.9	8.0	100	115	(AV) VBW:10Hz
Hori.	3282.667	AV	31.8	28.8	5.3	37.9	28.0	53.9	25.9	100	145	(AV) VBW:10Hz
Hori.	4924.000	AV	47.0	31.5	5.8	36.9	47.4	53.9	6.5	100	204	(AV) VBW:10Hz
Hori.	7386.000	AV	34.0	36.9	7.5	39.0	39.4	53.9	14.5	100	180	(AV) VBW:10Hz
Hori.	9848.000	AV	32.3	38.8	8.4	37.2	42.3	53.9	11.6	100	152	(AV) VBW:10Hz
Hori.	12310.000	AV	30.2	39.4	9.8	37.6	41.8	53.9	12.1	100	0	(AV) VBW:10Hz
Hori.	19695.030	AV	42.9	40.1	-2.5	47.2	33.3	53.9	20.6	129	20	(AV) VBW:10Hz
Vert.	332.147	QP	40.4	14.7	7.0	31.7	30.4	46.0	15.6	100	356	
Vert.	432.989	QP	43.2	16.5	7.8	31.8	35.7	46.0	10.3	100	236	
Vert.	499.585	QP	42.1	17.6	8.1	31.9	35.9	46.0	10.1	100	141	
Vert.	817.300	QP	26.2	21.0	9.6	31.7	25.1	46.0	20.9	100	344	
Vert.	1641.333	PK	45.1	25.2	23.3	38.6	55.0	73.9	18.9	100	55	
Vert.	2483.500	PK	44.4	27.5	24.0	38.1	57.8	73.9	16.1	100	346	
Vert.	2494.500	PK	43.2	27.6	24.0	38.1	56.7	73.9	17.2	100	346	
Vert.	3282.667	PK	44.9	28.8	5.3	37.9	41.1	73.9	32.8	100	0	
Vert.	4924.000	PK	56.0	31.5	5.8	36.9	56.4	73.9	17.5	100	81	
Vert.	7386.000	PK	46.2	36.9	7.5	39.0	51.6	73.9	22.3	100	46	
Vert.	9848.000	PK	44.8	38.8	8.4	37.2	54.8	73.9	19.1	159	213	
Vert.	12310.000	PK	44.1	39.4	9.8	37.6	55.7	73.9	18.2	100	0	
Vert.	19695.030	PK	52.4	40.1	-2.5	47.2	42.8	73.9	31.1	129	351	
Vert.	1641.333	AV	32.1	25.2	23.3	38.6	42.0	53.9	11.9	100	55	(AV) VBW:10Hz
Vert.	2483.500	AV	32.5	27.5	24.0	38.1	45.9	53.9	8.0	100	346	(AV) VBW:10Hz
Vert.	2494.500	AV	32.4	27.6	24.0	38.1	45.9	53.9	8.0	100	346	(AV) VBW:10Hz
Vert.	3282.667	AV	30.7	28.8	5.3	37.9	26.9	53.9	27.0	100	0	(AV) VBW:10Hz
Vert.	4924.000	AV	50.3	31.5	5.8	36.9	50.7	53.9	3.2	100	81	(AV) VBW:10Hz
Vert.	7386.000	AV	33.3	36.9	7.5	39.0	38.7	53.9	15.2	100	46	(AV) VBW:10Hz
Vert.	9848.000	AV	32.6	38.8	8.4	37.2	42.6	53.9	11.3	159	213	(AV) VBW:10Hz
Vert.	12310.000	AV	30.1	39.4	9.8	37.6	41.7	53.9	12.2	100	0	(AV) VBW:10Hz
Vert.	19695.030	AV	42.3	40.1	-2.5	47.2	32.7	53.9	21.2	129	351	(AV) VBW:10Hz

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

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

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

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

UL Japan, Inc.

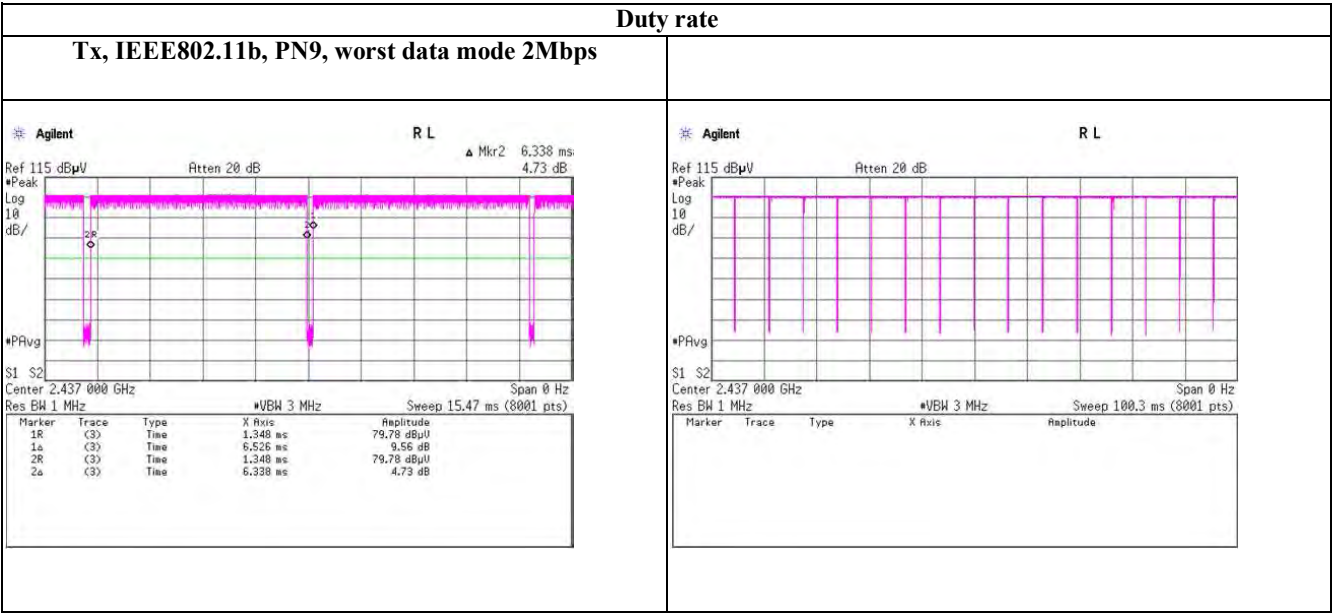
Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious Emission (Radiated)



Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1and 2 Semi Anechoic Chamber
Date March 23, 2012 March 26, 2012
Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
Engineer Makoto Hosaka Makoto Hosaka
Mode Tx, 2412 MHz
 Tx, IEEE802.11g, PN9, worst data mode 24Mbps

(* 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.	193.078	QP	36.8	16.1	8.8	31.8	29.9	43.5	13.6	155	13	
Hori.	204.949	QP	40.4	16.4	9.0	31.7	34.1	43.5	9.4	152	7	
Hori.	211.448	QP	39.5	16.5	9.1	31.7	33.4	43.5	10.1	150	351	
Hori.	226.584	QP	40.6	16.8	9.2	31.7	34.9	46.0	11.1	158	231	
Hori.	832.679	QP	28.4	21.2	9.7	31.6	27.7	46.0	18.3	149	137	
Hori.	1608.000	PK	44.0	25.1	23.2	38.6	53.7	73.9	20.2	126	60	
Hori.	2390.000	PK	46.7	27.2	24.0	38.2	59.7	73.9	14.2	100	119	
Hori.	3216.000	PK	46.0	28.8	5.3	37.9	42.2	73.9	31.7	100	114	
Hori.	4824.000	PK	51.8	31.2	5.8	37.0	51.8	73.9	22.1	100	199	
Hori.	7236.000	PK	48.7	36.5	7.3	39.0	53.5	73.9	20.4	100	183	
Hori.	9648.000	PK	42.9	38.4	8.5	37.2	52.6	73.9	21.3	100	0	
Hori.	12060.000	PK	45.4	39.3	9.9	37.9	56.7	73.9	17.2	100	0	
Hori.	1608.000	AV	30.3	25.1	23.2	38.6	40.0	53.9	13.9	126	60	(AV) VBW:10Hz
Hori.	2390.000	AV	33.8	27.2	24.0	38.2	46.8	53.9	7.1	100	119	(AV) VBW:10Hz
Hori.	3216.000	AV	34.6	28.8	5.3	37.9	30.8	53.9	23.1	100	114	(AV) VBW:10Hz
Hori.	4824.000	AV	36.0	31.2	5.8	37.0	36.0	53.9	17.9	100	199	(AV) VBW:10Hz
Hori.	7236.000	AV	33.4	36.5	7.3	39.0	38.2	53.9	15.7	100	183	(AV) VBW:10Hz
Hori.	9648.000	AV	29.8	38.4	8.5	37.2	39.5	53.9	14.4	100	0	(AV) VBW:10Hz
Hori.	12060.000	AV	31.3	39.3	9.9	37.9	42.6	53.9	11.3	100	0	(AV) VBW:10Hz
Vert.	336.507	QP	45.2	14.8	7.1	31.7	35.4	46.0	10.6	100	351	
Vert.	347.574	QP	44.6	15.0	7.2	31.7	35.1	46.0	10.9	100	358	
Vert.	364.507	QP	45.0	15.3	7.3	31.7	35.9	46.0	10.1	100	351	
Vert.	1608.000	PK	44.8	25.1	23.2	38.6	54.5	73.9	19.4	117	135	
Vert.	2390.000	PK	44.3	27.2	24.0	38.2	57.3	73.9	16.6	100	312	
Vert.	3216.000	PK	44.8	28.8	5.3	37.9	41.0	73.9	32.9	100	0	
Vert.	4824.000	PK	50.4	31.2	5.8	37.0	50.4	73.9	23.5	100	79	
Vert.	7236.000	PK	46.0	36.5	7.3	39.0	50.8	73.9	23.1	100	0	
Vert.	9648.000	PK	44.0	38.4	8.5	37.2	53.7	73.9	20.2	100	0	
Vert.	12060.000	PK	44.8	39.3	9.9	37.9	56.1	73.9	17.8	100	0	
Vert.	1608.000	AV	31.2	25.1	23.2	38.6	40.9	53.9	13.0	117	135	(AV) VBW:10Hz
Vert.	2390.000	AV	33.0	27.2	24.0	38.2	46.0	53.9	7.9	100	312	(AV) VBW:10Hz
Vert.	3216.000	AV	30.7	28.8	5.3	37.9	26.9	53.9	27.0	100	0	(AV) VBW:10Hz
Vert.	4824.000	AV	35.3	31.2	5.8	37.0	35.3	53.9	18.6	100	79	(AV) VBW:10Hz
Vert.	7236.000	AV	32.4	36.5	7.3	39.0	37.2	53.9	16.7	100	0	(AV) VBW:10Hz
Vert.	9648.000	AV	30.2	38.4	8.5	37.2	39.9	53.9	14.0	100	0	(AV) VBW:10Hz
Vert.	12060.000	AV	31.4	39.3	9.9	37.9	42.7	53.9	11.2	100	0	(AV) VBW:10Hz

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

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

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.3	27.3	24.0	38.2	96.4	-	-	carrier
Hori.	2400.000	PK	45.7	27.3	24.0	38.2	58.8	76.4	17.6	
Vert.	2412.000	PK	81.5	27.3	24.0	38.2	94.6	-	-	carrier
Vert.	2400.000	PK	42.6	27.3	24.0	38.2	55.7	74.6	18.9	

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

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Shonan EMC Lab.

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1and 2 Semi Anechoic Chamber
 Date March 23, 2012 March 26, 2012
 Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2437 MHz
 Tx, IEEE802.11g, PN9, worst data mode 24Mbps

(* 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.	204.703	QP	40.3	16.4	9.0	31.7	34.0	43.5	9.5	154	14	
Hori.	210.372	QP	39.7	16.5	9.1	31.7	33.6	43.5	9.9	152	36	
Hori.	226.820	QP	40.6	16.8	9.2	31.7	34.9	46.0	11.1	150	118	
Hori.	349.850	QP	45.2	15.0	7.2	31.7	35.7	46.0	10.3	100	191	
Hori.	364.428	QP	45.3	15.3	7.3	31.7	36.2	46.0	9.8	100	350	
Hori.	1624.667	PK	44.4	25.2	23.2	38.6	54.2	73.9	19.7	100	0	
Hori.	3249.333	PK	45.2	28.8	5.3	37.9	41.4	73.9	32.5	100	144	
Hori.	4874.000	PK	48.2	31.3	5.8	36.9	48.4	73.9	25.5	118	193	
Hori.	7311.000	PK	45.2	36.7	7.5	39.0	50.4	73.9	23.5	100	0	
Hori.	9748.000	PK	43.6	38.6	8.5	37.2	53.5	73.9	20.4	100	0	
Hori.	12185.000	PK	44.7	39.4	9.8	37.7	56.2	73.9	17.7	100	0	
Hori.	1624.667	AV	31.3	25.2	23.2	38.6	41.1	53.9	12.8	100	0	(AV) VBW:10Hz
Hori.	3249.333	AV	31.5	28.8	5.3	37.9	27.7	53.9	26.2	100	144	(AV) VBW:10Hz
Hori.	4874.000	AV	33.0	31.3	5.8	36.9	33.2	53.9	20.7	118	193	(AV) VBW:10Hz
Hori.	7311.000	AV	31.9	36.7	7.5	39.0	37.1	53.9	16.8	100	0	(AV) VBW:10Hz
Hori.	9748.000	AV	29.9	38.6	8.5	37.2	39.8	53.9	14.1	100	0	(AV) VBW:10Hz
Hori.	12185.000	AV	30.8	39.4	9.8	37.7	42.3	53.9	11.6	100	0	(AV) VBW:10Hz
Vert.	345.365	QP	43.8	14.9	7.1	31.7	34.1	46.0	11.9	100	338	
Vert.	364.513	QP	45.0	15.3	7.3	31.7	35.9	46.0	10.1	100	20	
Vert.	497.097	QP	41.6	17.6	8.1	31.9	35.4	46.0	10.6	100	152	
Vert.	1624.667	PK	45.2	25.2	23.2	38.6	55.0	73.9	18.9	118	43	
Vert.	3249.333	PK	44.5	28.8	5.3	37.9	40.7	73.9	33.2	100	0	
Vert.	4874.000	PK	47.9	31.3	5.8	36.9	48.1	73.9	25.8	100	81	
Vert.	7311.000	PK	45.4	36.7	7.5	39.0	50.6	73.9	23.3	100	0	
Vert.	9748.000	PK	43.1	38.6	8.5	37.2	53.0	73.9	20.9	100	0	
Vert.	12185.000	PK	44.7	39.4	9.8	37.7	56.2	73.9	17.7	100	0	
Vert.	1624.667	AV	31.6	25.2	23.2	38.6	41.4	53.9	12.5	118	43	(AV) VBW:10Hz
Vert.	3249.333	AV	30.5	28.8	5.3	37.9	26.7	53.9	27.2	100	0	(AV) VBW:10Hz
Vert.	4874.000	AV	33.1	31.3	5.8	36.9	33.3	53.9	20.6	100	81	(AV) VBW:10Hz
Vert.	7311.000	AV	31.7	36.7	7.5	39.0	36.9	53.9	17.0	100	0	(AV) VBW:10Hz
Vert.	9748.000	AV	29.8	38.6	8.5	37.2	39.7	53.9	14.2	100	0	(AV) VBW:10Hz
Vert.	12185.000	AV	30.7	39.4	9.8	37.7	42.2	53.9	11.7	100	0	(AV) VBW:10Hz

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

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

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

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

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Shonan EMC Lab.

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

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Radiated Emission

Test place UL Japan, Inc. Shonan EMC Lab. No.1and 2 Semi Anechoic Chamber
 Date March 23, 2012 March 26, 2012
 Temperature / Humidity 22 deg.C , 38%RH 22 deg.C , 30%RH
 Engineer Makoto Hosaka Makoto Hosaka
 Mode Tx, 2462 MHz
 Tx, IEEE802.11g, PN9, worst data mode 24Mbps

(* 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.	191.140	QP	36.9	16.1	8.8	31.8	30.0	43.5	13.5	151	164	
Hori.	203.329	QP	40.4	16.4	9.0	31.7	34.1	43.5	9.4	155	351	
Hori.	217.645	QP	40.7	16.7	9.1	31.7	34.8	46.0	11.2	153	24	
Hori.	224.421	QP	41.6	16.8	9.2	31.7	35.9	46.0	10.1	150	358	
Hori.	321.007	QP	44.2	14.5	6.9	31.7	33.9	46.0	12.1	100	258	
Hori.	349.708	QP	43.7	15.0	7.2	31.7	34.2	46.0	11.8	100	181	
Hori.	364.401	QP	44.8	15.3	7.3	31.7	35.7	46.0	10.3	100	136	
Hori.	1641.333	PK	44.6	25.2	23.3	38.6	54.5	73.9	19.4	100	40	
Hori.	2483.500	PK	43.9	27.5	24.0	38.1	57.3	73.9	16.6	100	113	
Hori.	3282.667	PK	46.0	28.8	5.3	37.9	42.2	73.9	31.7	100	145	
Hori.	4924.000	PK	51.7	31.5	5.8	36.9	52.1	73.9	21.8	100	173	
Hori.	7386.000	PK	50.7	36.9	7.5	39.0	56.1	73.9	17.8	100	193	
Hori.	9848.000	PK	42.9	38.8	8.4	37.2	52.9	73.9	21.0	100	0	
Hori.	12310.000	PK	43.9	39.4	9.8	37.6	55.5	73.9	18.4	100	0	
Hori.	1641.333	AV	31.0	25.2	23.3	38.6	40.9	53.9	13.0	100	40	(AV) VBW:10Hz
Hori.	2483.500	AV	32.7	27.5	24.0	38.1	46.1	53.9	7.8	100	113	(AV) VBW:10Hz
Hori.	3282.667	AV	31.7	28.8	5.3	37.9	27.9	53.9	26.0	100	145	(AV) VBW:10Hz
Hori.	4924.000	AV	35.6	31.5	5.8	36.9	36.0	53.9	17.9	100	173	(AV) VBW:10Hz
Hori.	7386.000	AV	33.1	36.9	7.5	39.0	38.5	53.9	15.4	100	193	(AV) VBW:10Hz
Hori.	9848.000	AV	29.9	38.8	8.4	37.2	39.9	53.9	14.0	100	0	(AV) VBW:10Hz
Hori.	12310.000	AV	30.2	39.4	9.8	37.6	41.8	53.9	12.1	100	0	(AV) VBW:10Hz
Vert.	341.212	QP	45.7	14.9	7.1	31.7	36.0	46.0	10.0	100	357	
Vert.	349.852	QP	45.3	15.0	7.2	31.7	35.8	46.0	10.2	100	204	
Vert.	364.477	QP	45.0	15.3	7.3	31.7	35.9	46.0	10.1	100	352	
Vert.	496.699	QP	41.3	17.6	8.1	31.9	35.1	46.0	10.9	100	150	
Vert.	1641.333	PK	44.4	25.2	23.3	38.6	54.3	73.9	19.6	100	56	
Vert.	2483.500	PK	46.0	27.5	24.0	38.1	59.4	73.9	14.5	100	311	
Vert.	3282.667	PK	44.9	28.8	5.3	37.9	41.1	73.9	32.8	100	0	
Vert.	4924.000	PK	49.8	31.5	5.8	36.9	50.2	73.9	23.7	100	82	
Vert.	7386.000	PK	46.0	36.9	7.5	39.0	51.4	73.9	22.5	100	46	
Vert.	9848.000	PK	43.2	38.8	8.4	37.2	53.2	73.9	20.7	100	0	
Vert.	12310.000	PK	43.7	39.4	9.8	37.6	55.3	73.9	18.6	100	0	
Vert.	1641.333	AV	31.3	25.2	23.3	38.6	41.2	53.9	12.7	100	56	(AV) VBW:10Hz
Vert.	2483.500	AV	33.2	27.5	24.0	38.1	46.6	53.9	7.3	100	311	(AV) VBW:10Hz
Vert.	3282.667	AV	30.7	28.8	5.3	37.9	26.9	53.9	27.0	100	0	(AV) VBW:10Hz
Vert.	4924.000	AV	34.5	31.5	5.8	36.9	34.9	53.9	19.0	100	82	(AV) VBW:10Hz
Vert.	7386.000	AV	31.8	36.9	7.5	39.0	37.2	53.9	16.7	100	46	(AV) VBW:10Hz
Vert.	9848.000	AV	30.1	38.8	8.4	37.2	40.1	53.9	13.8	100	0	(AV) VBW:10Hz
Vert.	12310.000	AV	30.1	39.4	9.8	37.6	41.7	53.9	12.2	100	0	(AV) VBW:10Hz

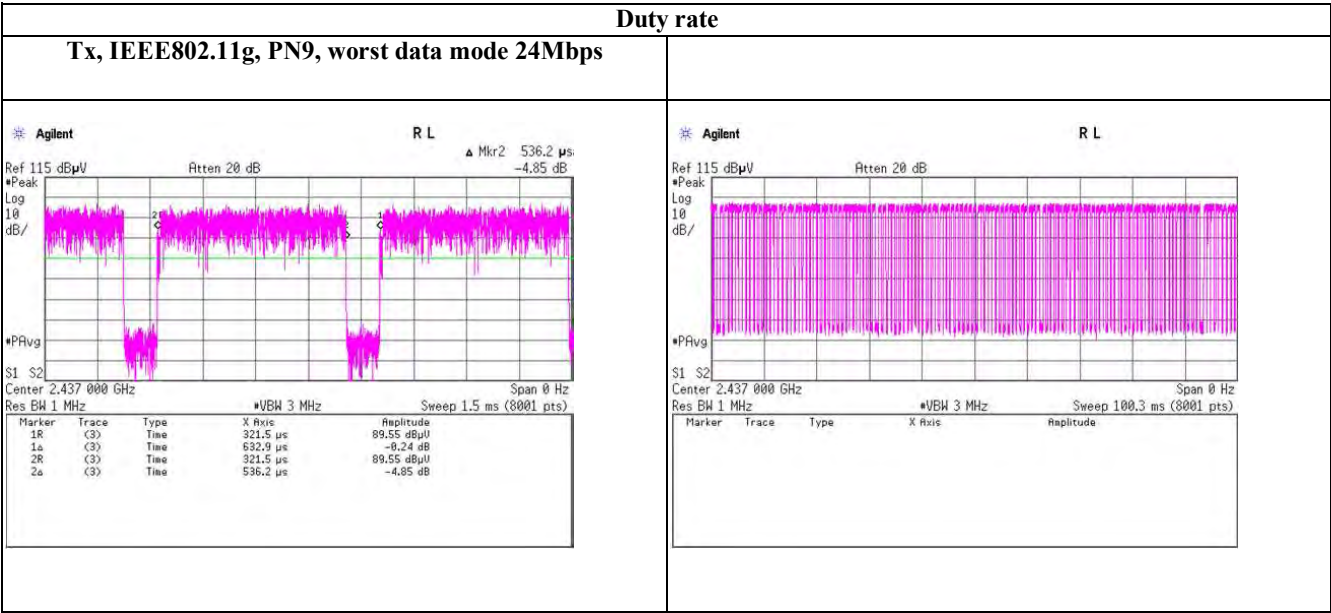
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 15GHz)) - Gain(Amplifier)

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

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

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

Spurious Emission (Radiated)



Spurious emission (Conducted)**Tx, IEEE802.11b, PN9, worst data mode 2Mbps****Tx, 2412MHz (1/2)****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**

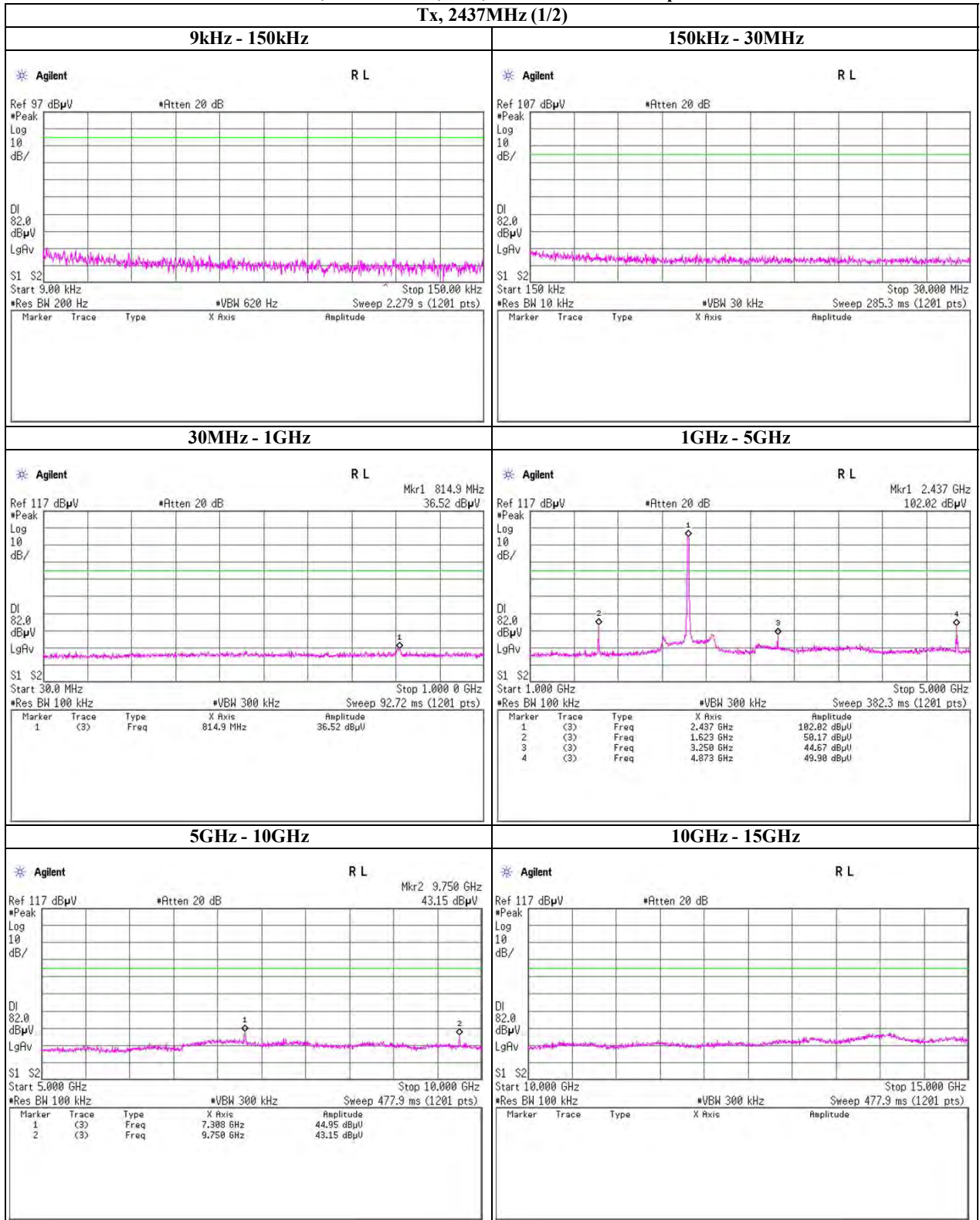
Spurious emission (Conducted)
Tx, IEEE802.11b, PN9, worst data mode 2Mbps



Spurious emission (Conducted)

Tx, IEEE802.11b, PN9, worst data mode 2Mbps

Tx, 2437MHz (1/2)

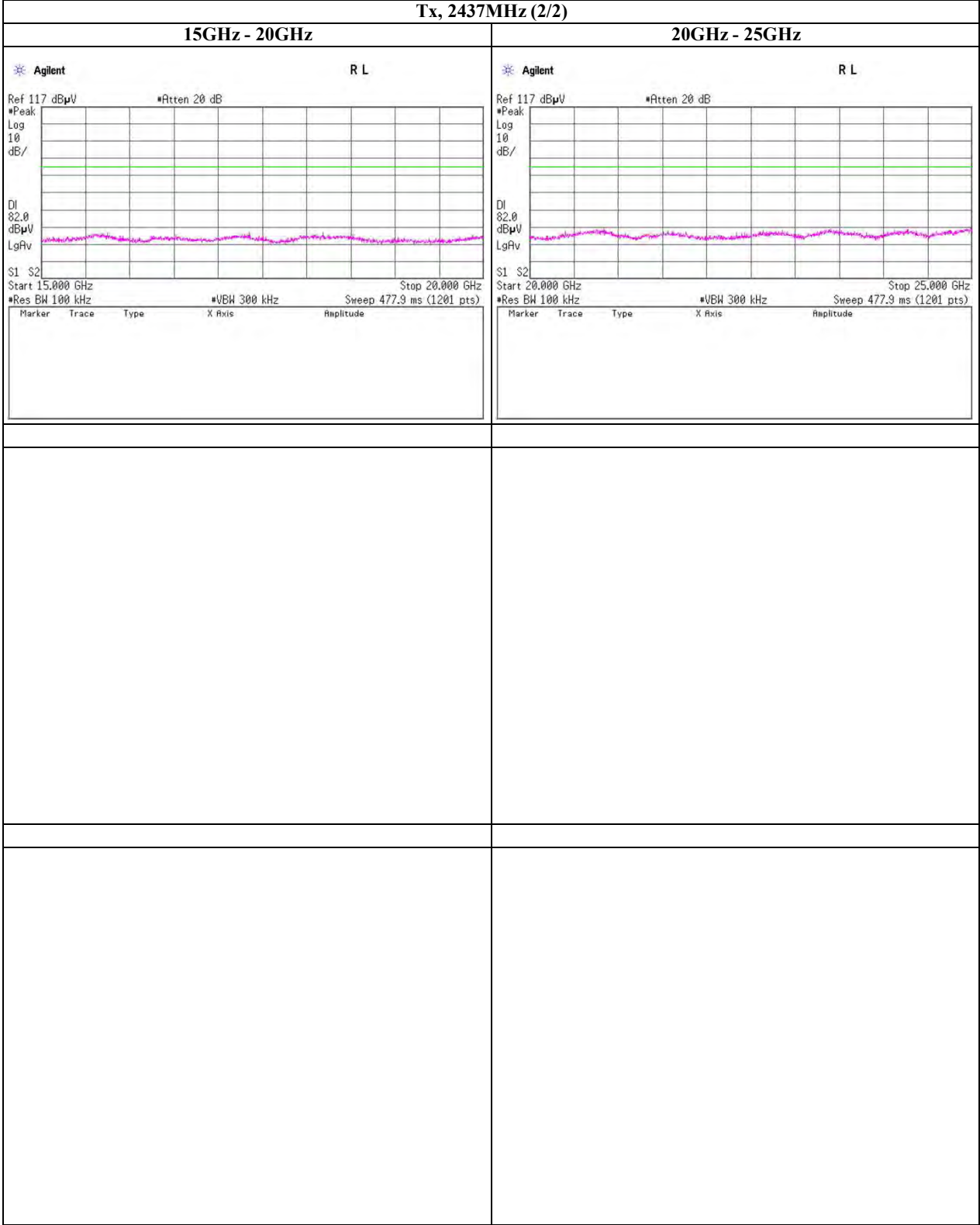
**UL Japan, Inc.****Shonan EMC Lab.**

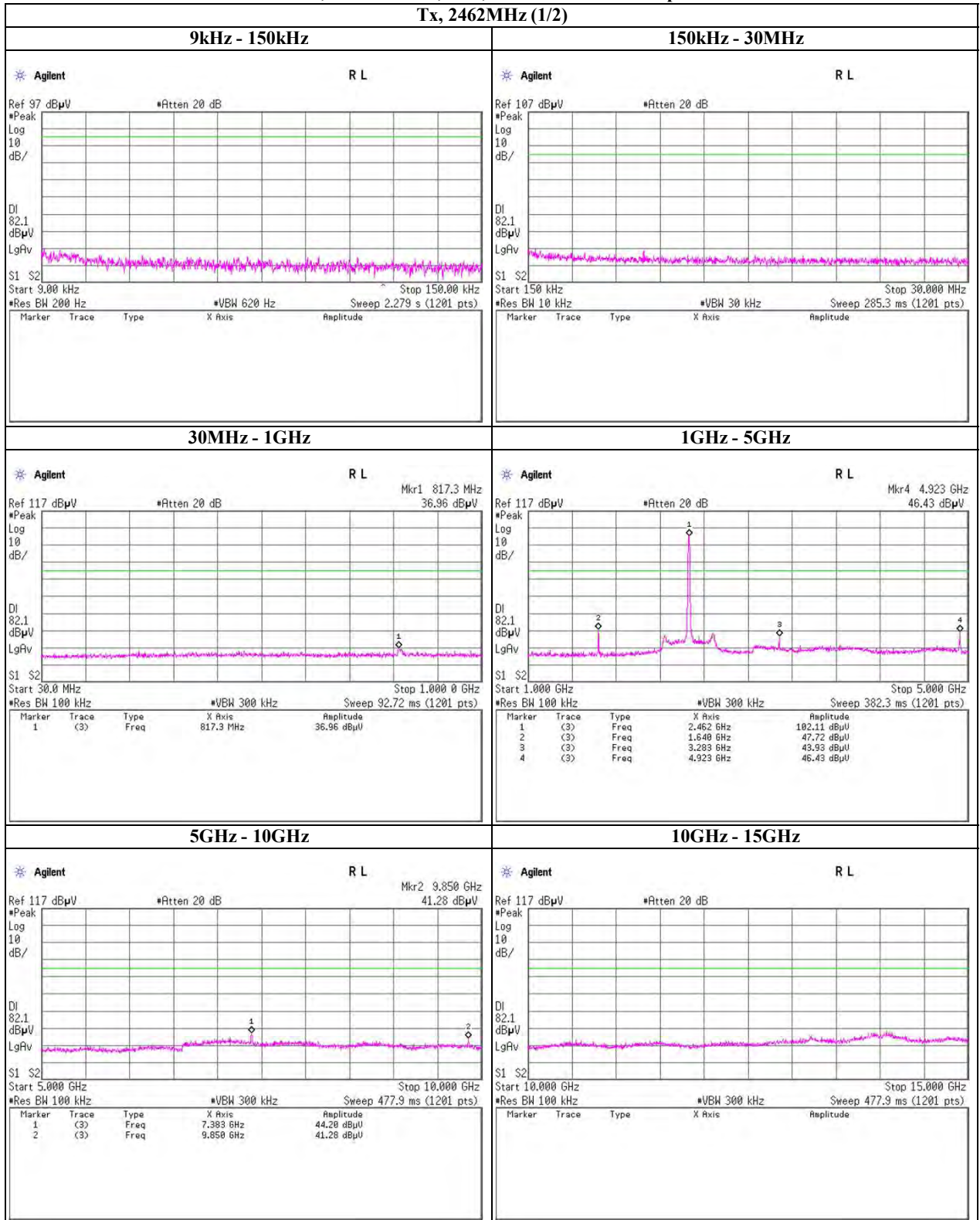
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN

Telephone : +81 463 50 6400

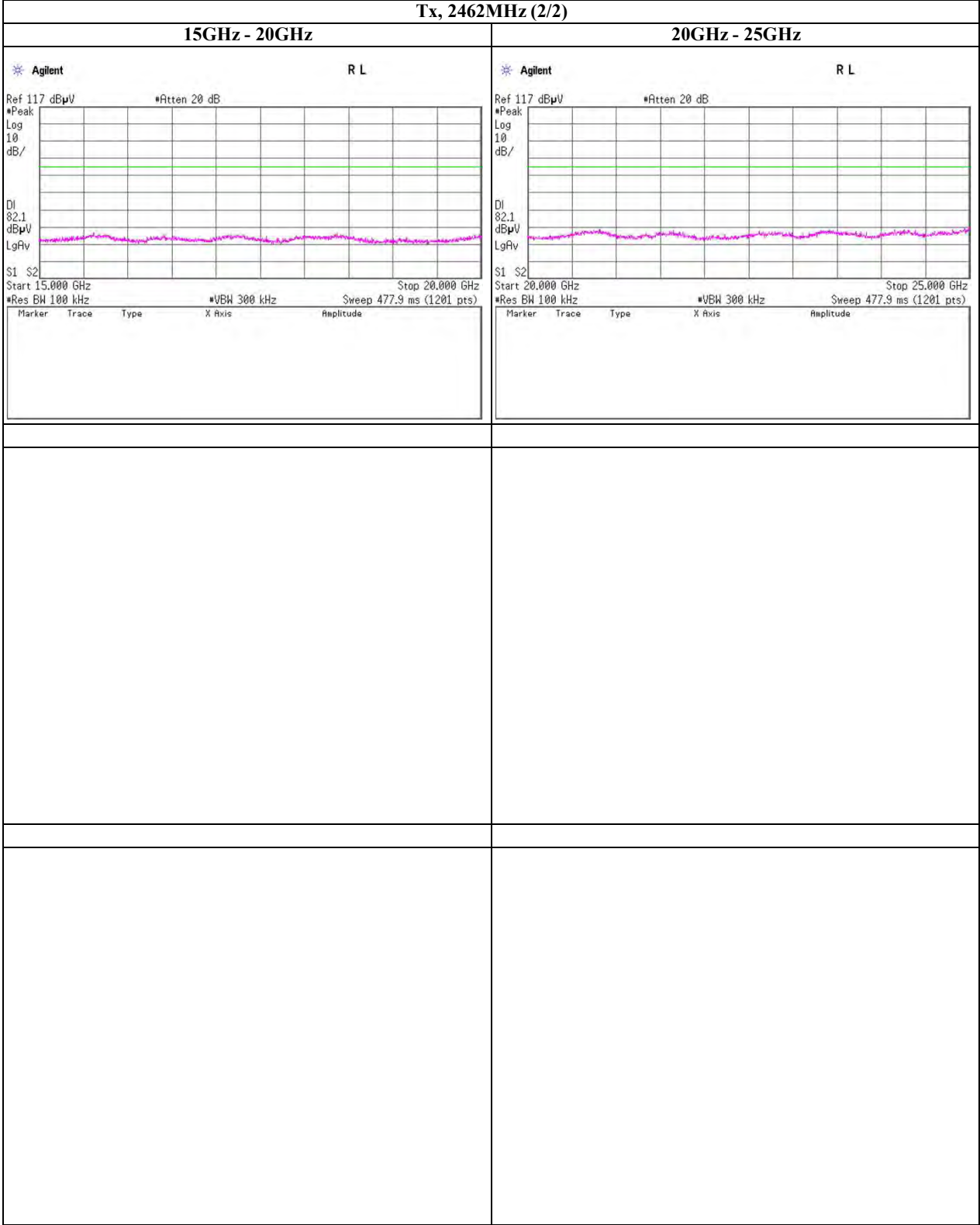
Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11b, PN9, worst data mode 2Mbps



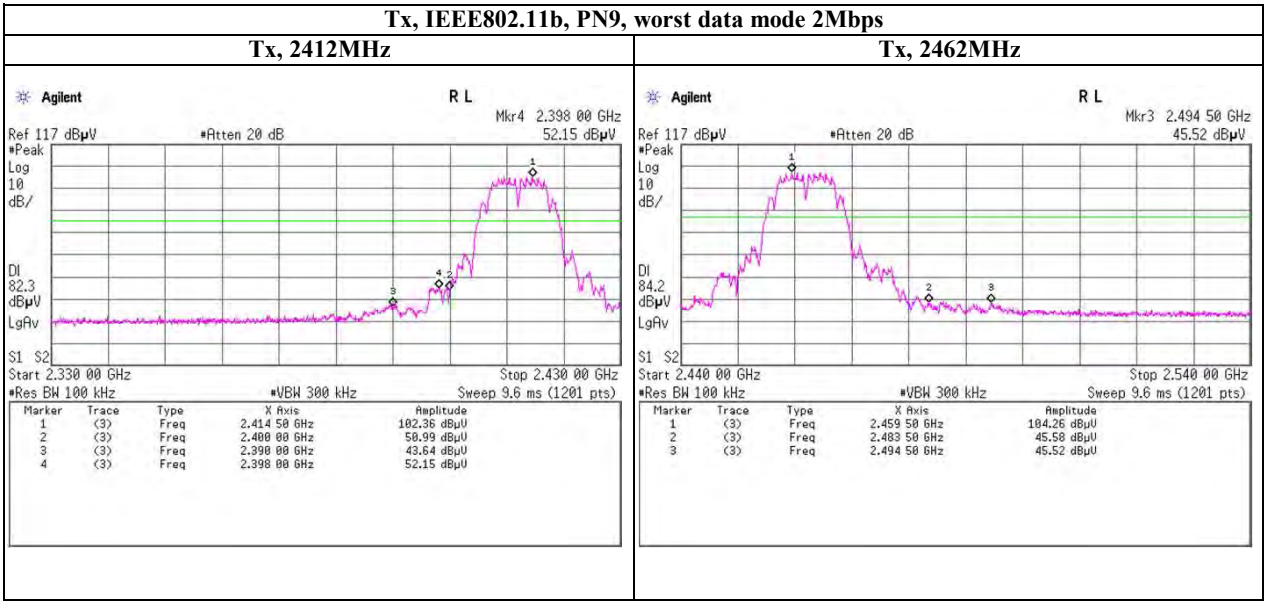
Spurious emission (Conducted)**Tx, IEEE802.11b, PN9, worst data mode 2Mbps****Tx, 2462MHz (1/2)****UL Japan, Inc.****Shonan EMC Lab.****1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN****Telephone : +81 463 50 6400****Facsimile : +81 463 50 6401**

Spurious emission (Conducted)
Tx, IEEE802.11b, PN9, worst data mode 2Mbps



Spurious emission (Conducted)

Band Edge compliance



UL Japan, Inc.

Shonan EMC Lab.

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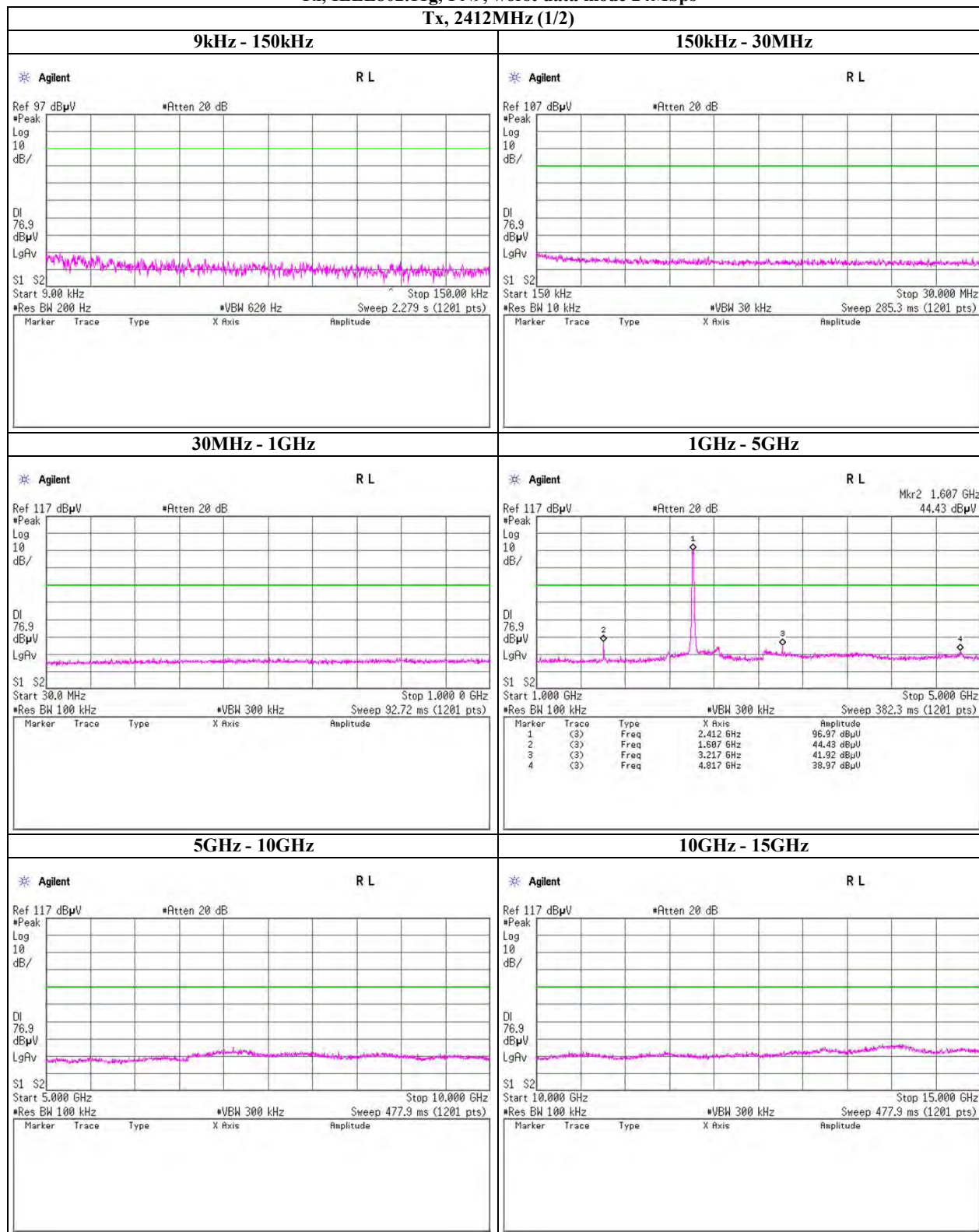
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 24Mbps

Tx, 2412MHz (1/2)



UL Japan, Inc.

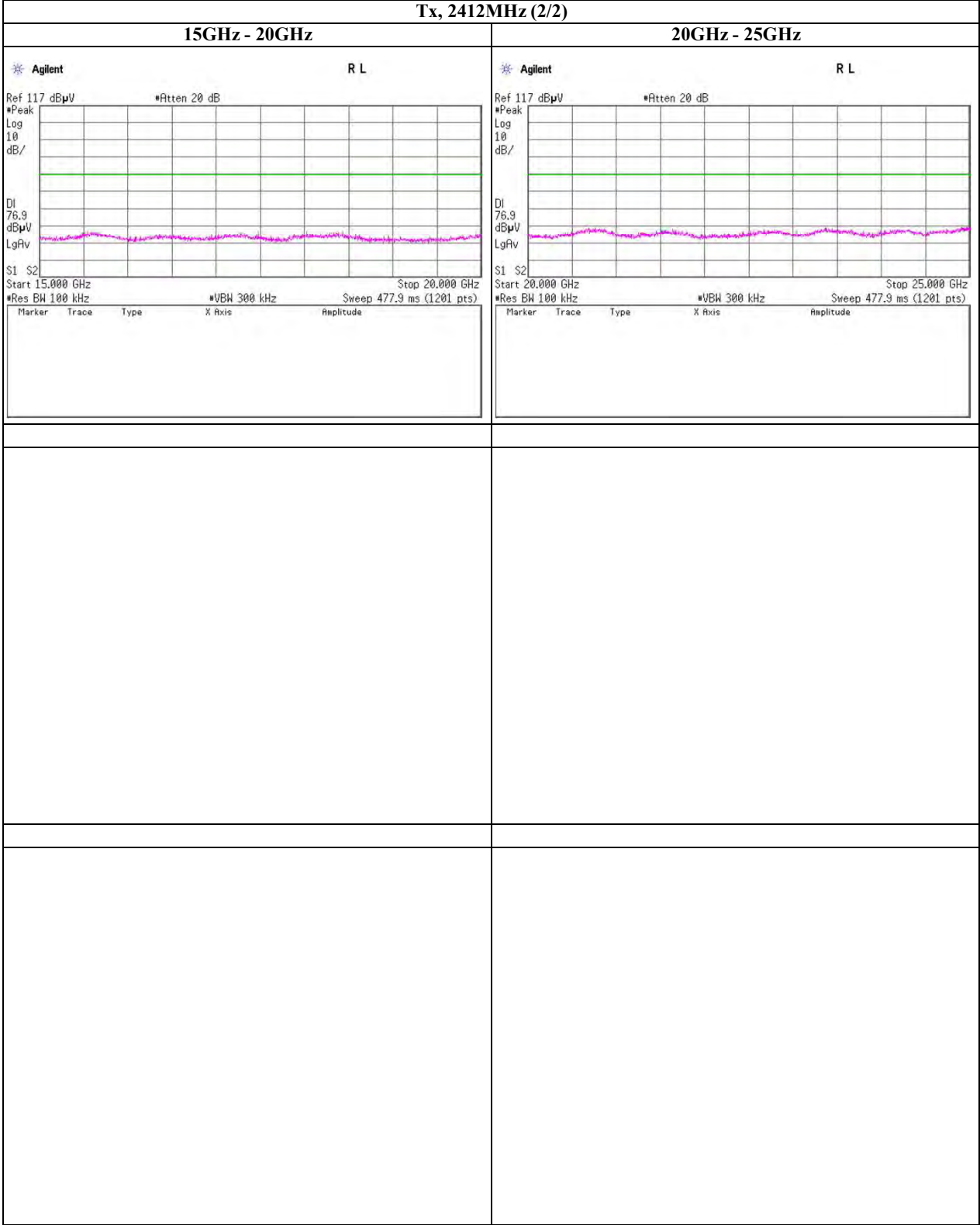
Shonan EMC Lab.

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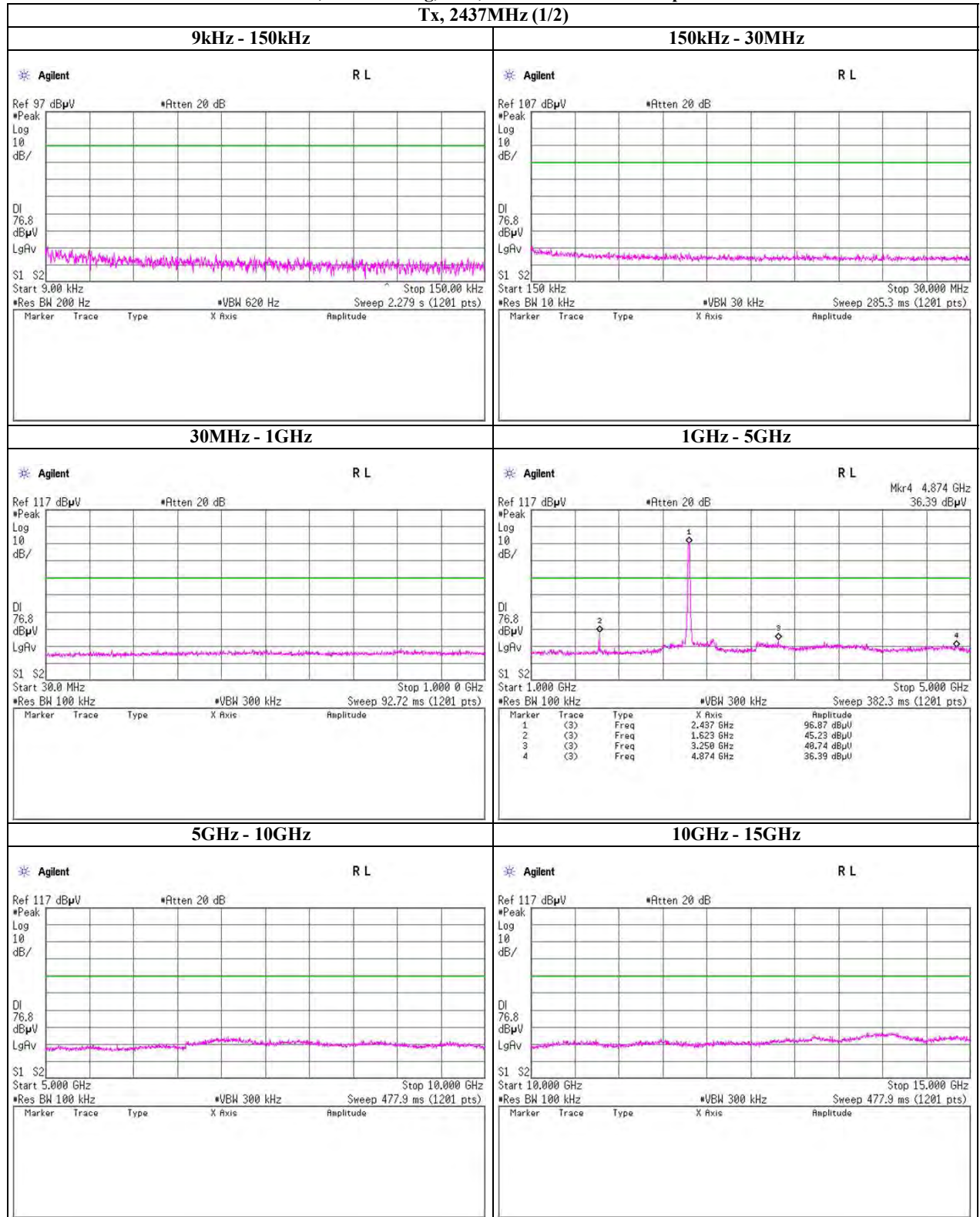
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 24Mbps



Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 24Mbps
Tx, 2437MHz (1/2)



UL Japan, Inc.

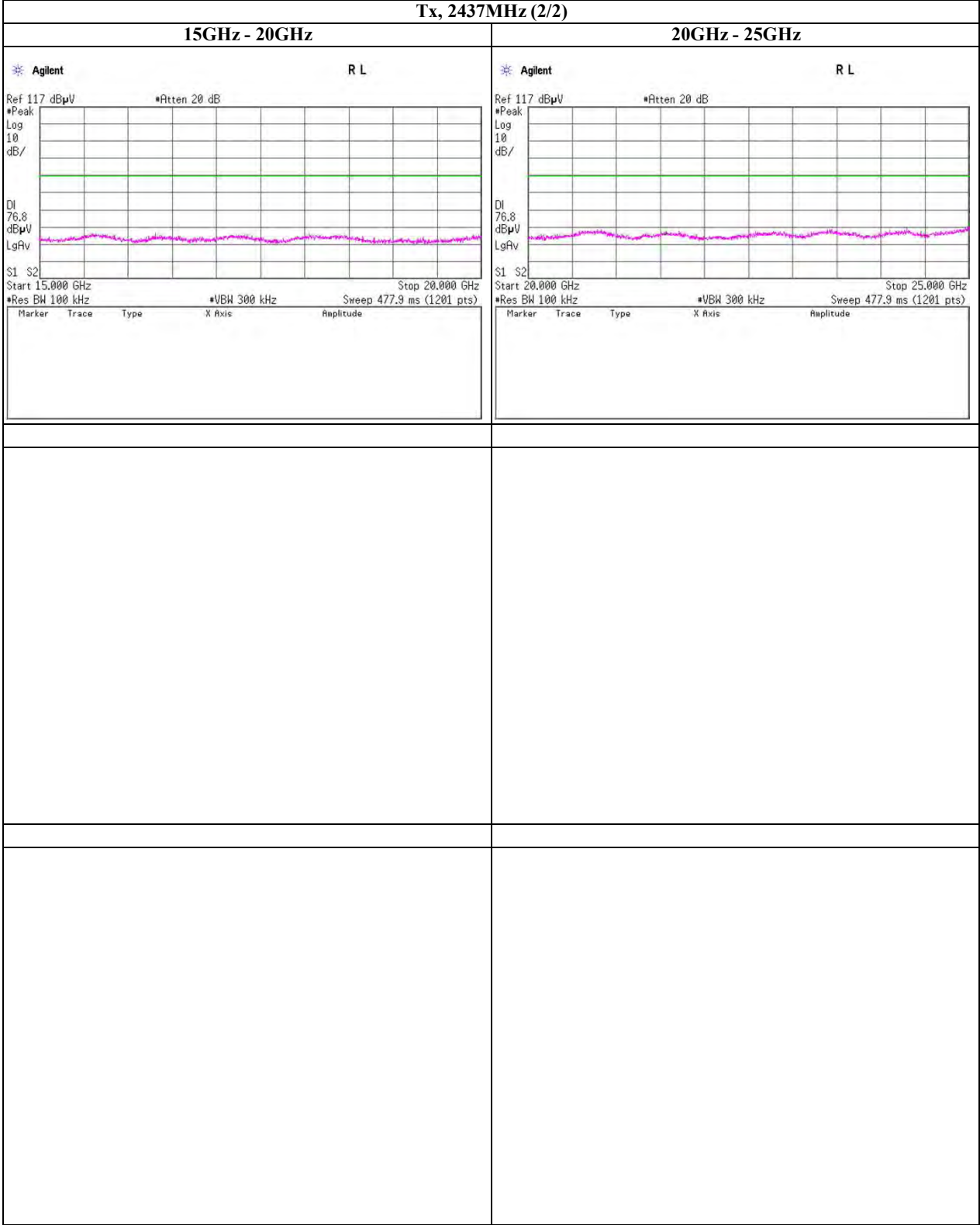
Shonan EMC Lab.

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Facsimile : +81 463 50 6401

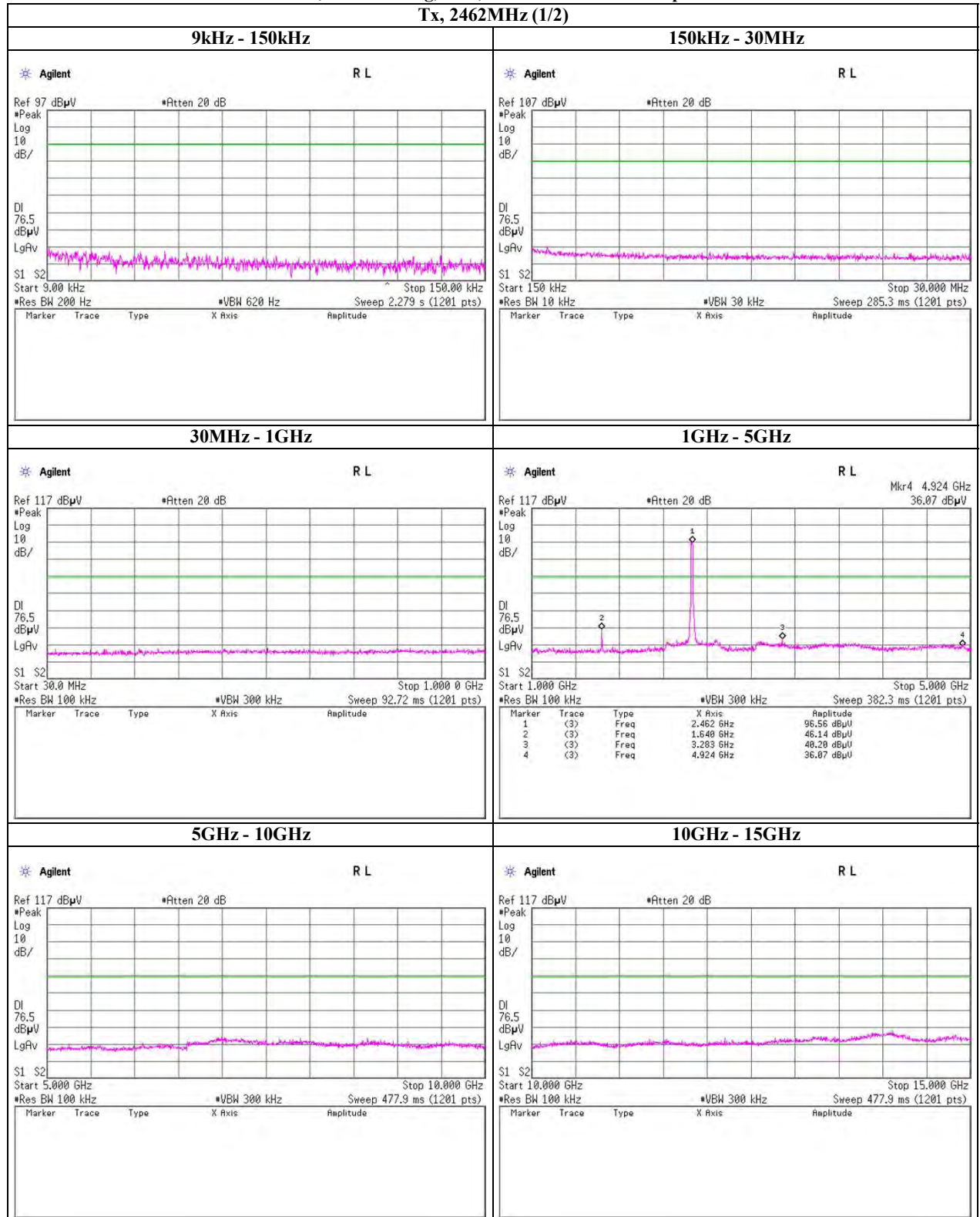
Spurious emission (Conducted)
Tx, IEEE802.11g, PN9, worst data mode 24Mbps



Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 24Mbps

Tx, 2462MHz (1/2)



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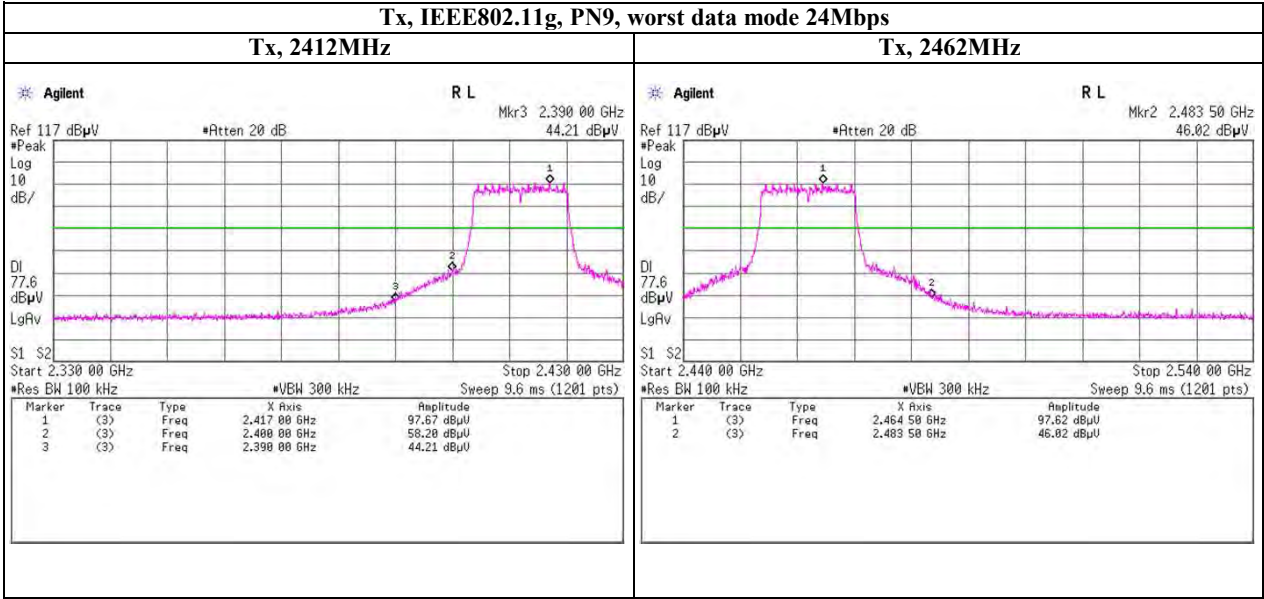
Tx, IEEE802.11g, PN9, worst data mode 24Mbps



Facsimile : +81 463 50 6401

Spurious emission (Conducted)

Band Edge compliance



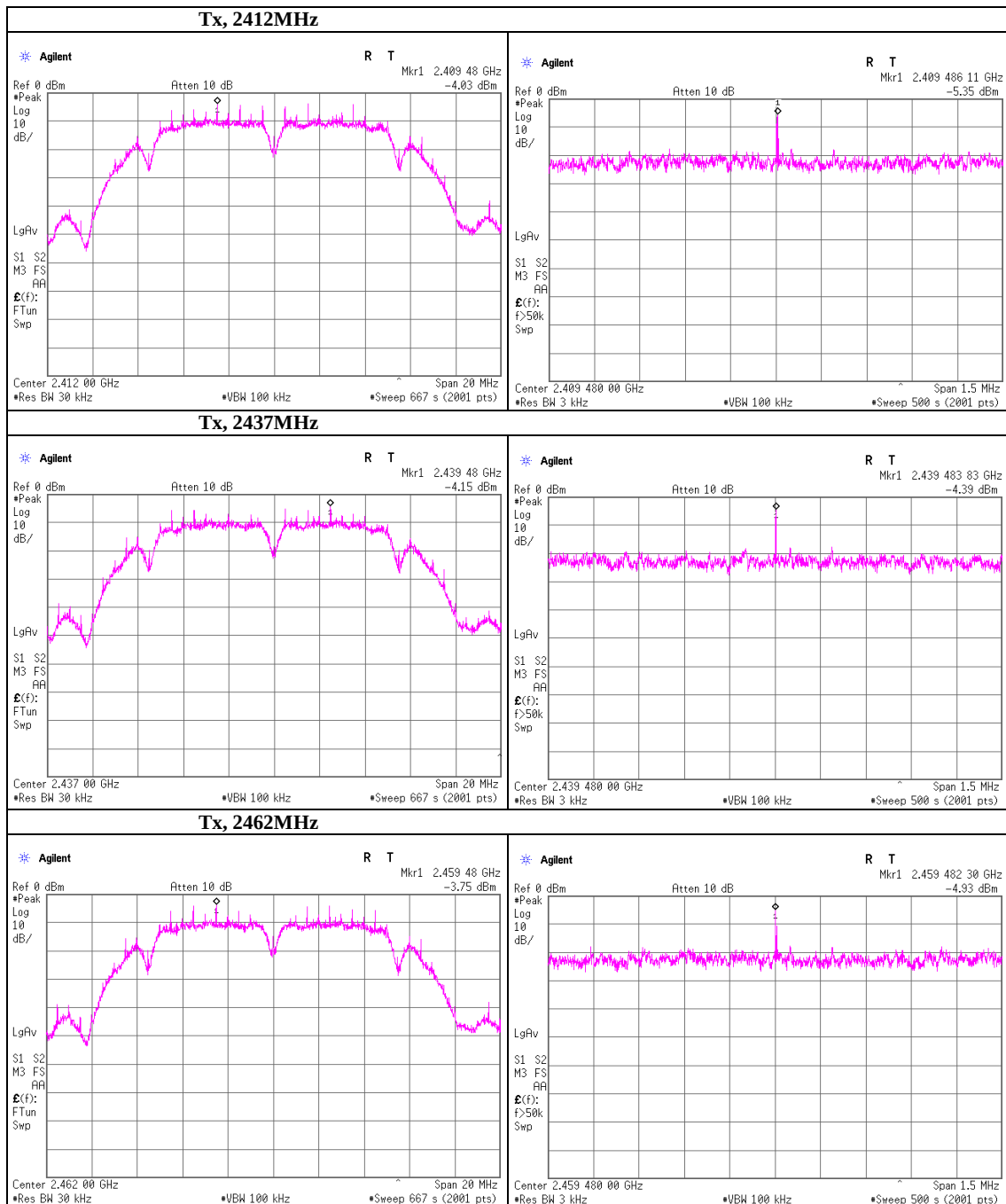
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	July 6, 2012	
Temperature / Humidity	26deg.C , 59%RH	
Engineer	Kenichi Adachi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 2Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2409.49	-5.35	2.01	9.68	6.34	8.00	1.66
2437.0000	2439.48	-4.39	2.01	9.68	7.30	8.00	0.70
2462.0000	2459.48	-4.93	2.02	9.68	6.77	8.00	1.23

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

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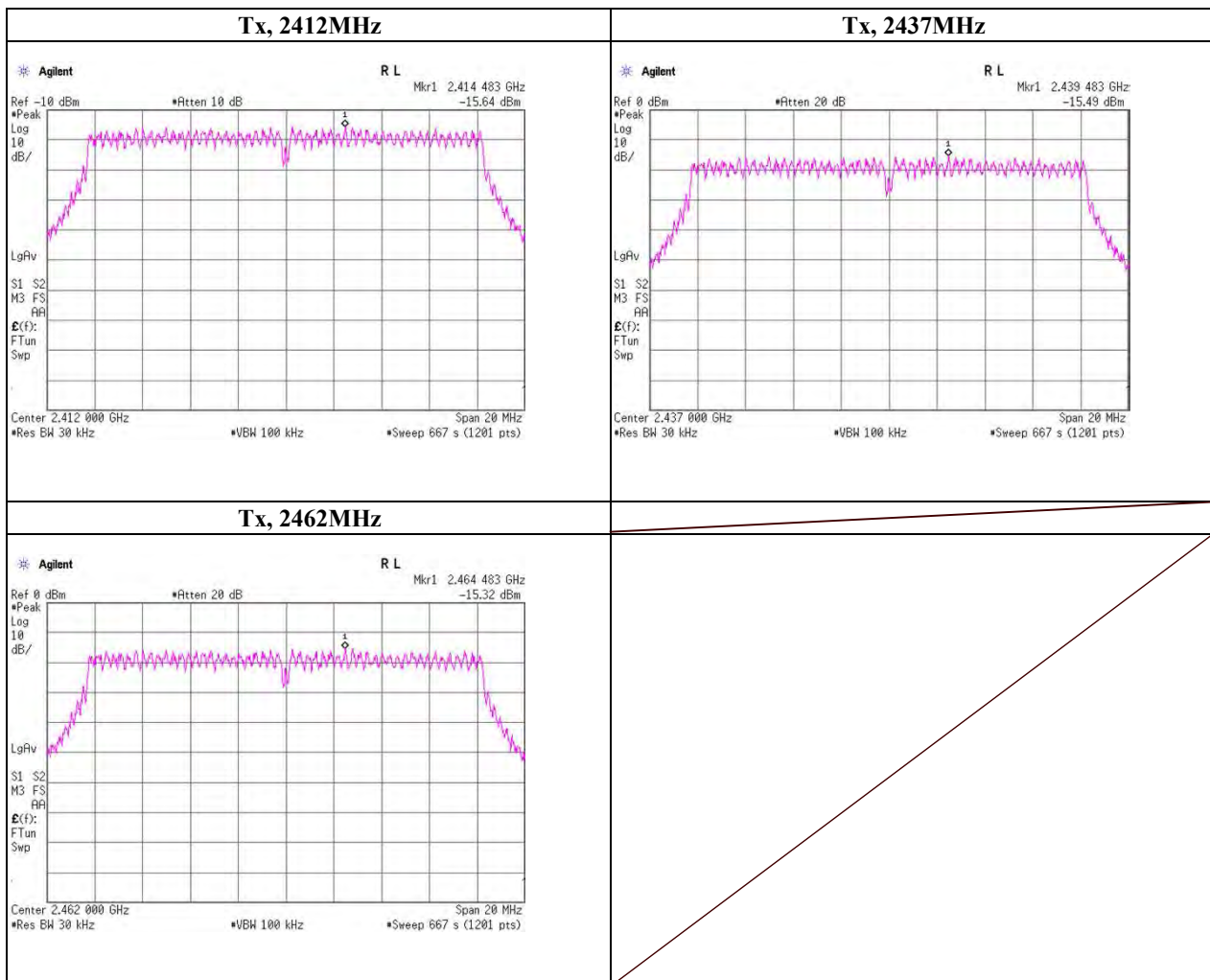
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	April 12, 2012	
Temperature / Humidity	23deg.C , 52%RH	
Engineer	Makoto Hosaka	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2414.48	-15.64	2.01	9.68	-3.95	8.00	11.95
2437.0000	2439.48	-15.49	2.01	9.68	-3.80	8.00	11.80
2462.0000	2464.48	-15.32	2.02	9.68	-3.62	8.00	11.62

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss



UL Japan, Inc.

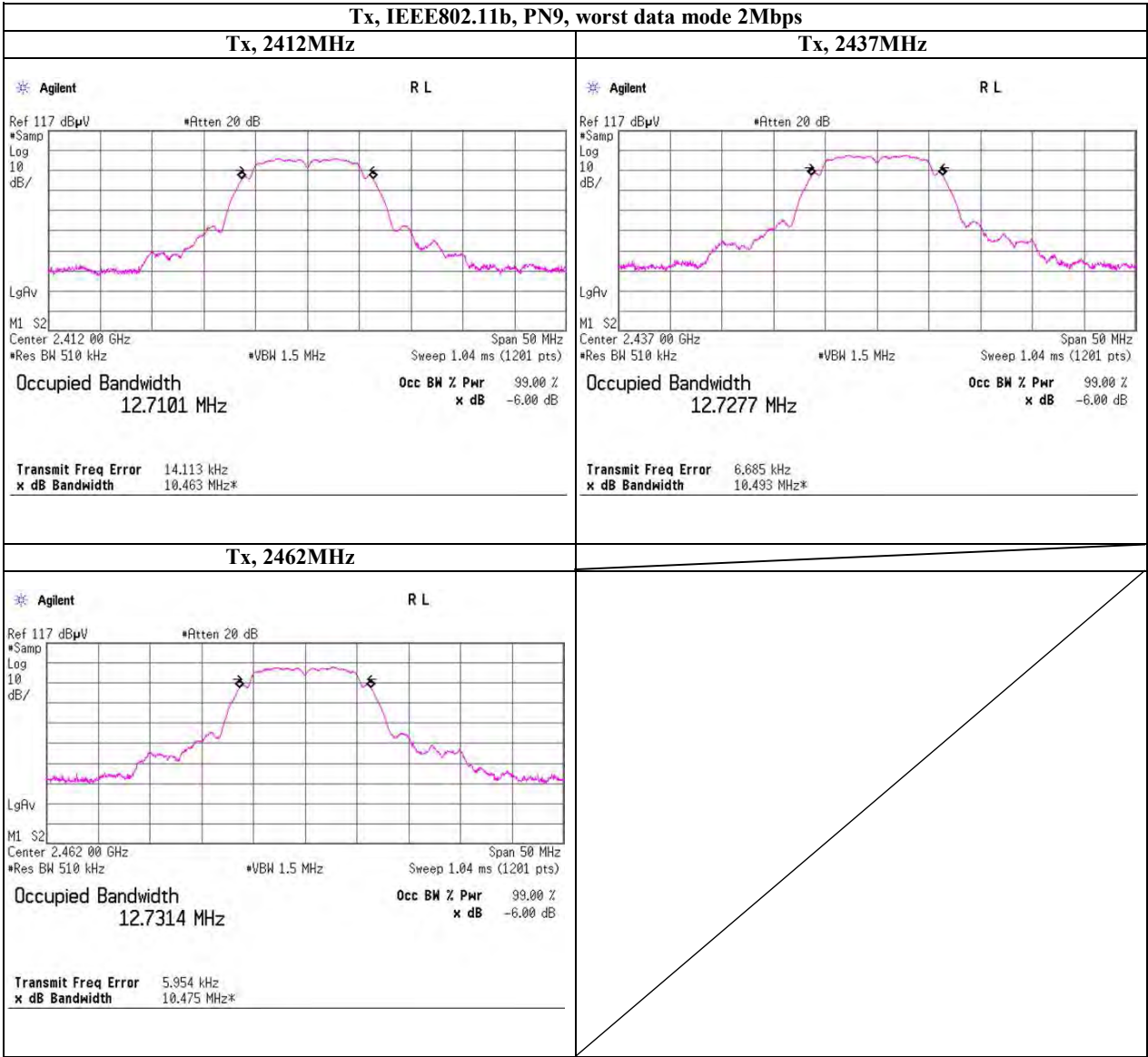
Shonan EMC Lab.

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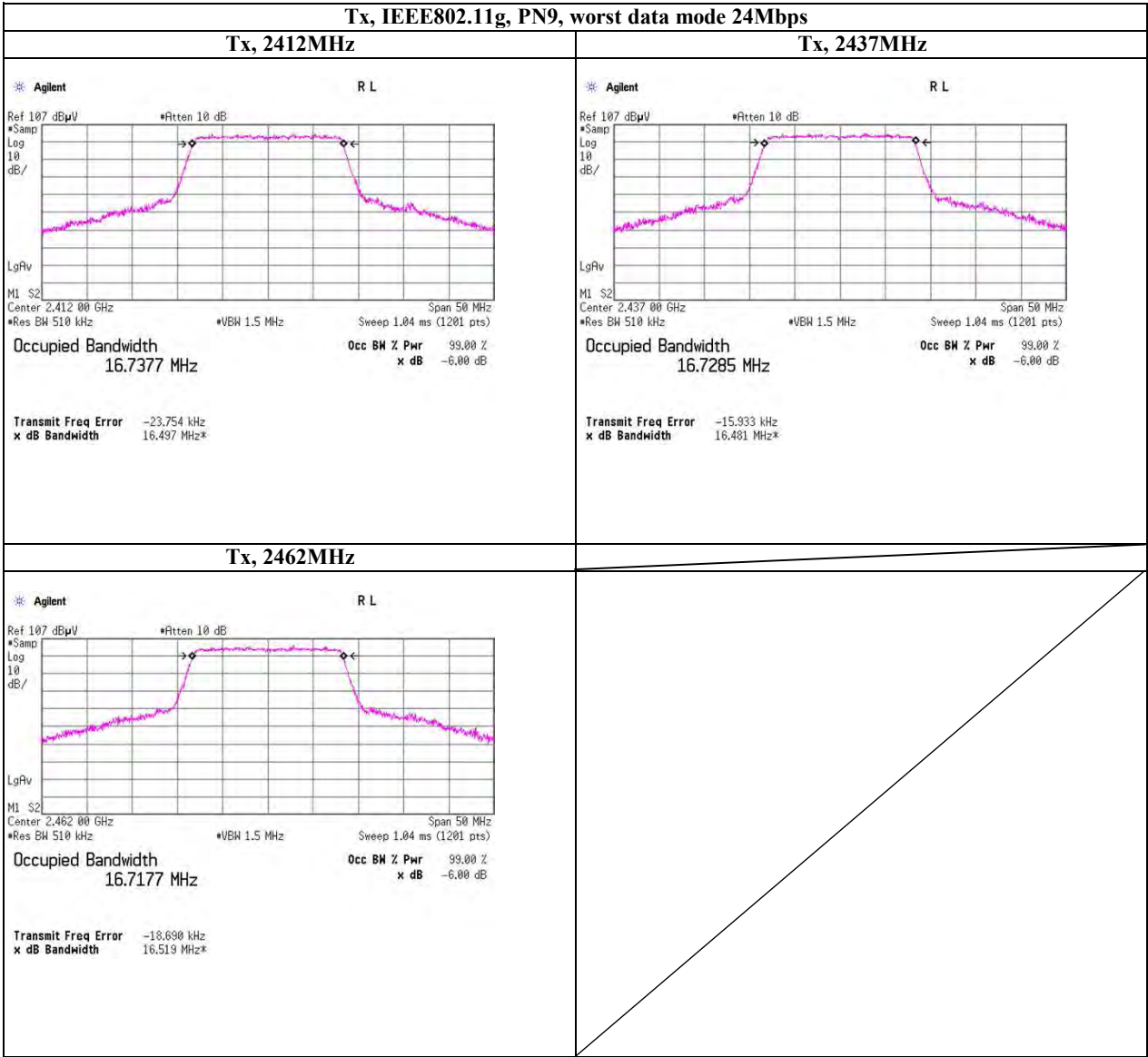
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99% Occupied Bandwidth



99% Occupied Bandwidth



APPENDIX 2

Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
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	2011/05/27 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2011/08/28 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2012/03/16 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE, CE	-
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2011/12/27 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2011/12/27 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	2012/02/10 * 12
SAT6-05	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SAT3-04	Attenuator	JFW	50HF-003N	-	RE	2012/02/10 * 12
SBA-01	Biconical Antenna	Schwarzbeck	BBA9106	91032664	RE	2011/10/15 * 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-A 0888	RE	2011/11/23 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2012/02/06 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE	2011/10/22 * 12
SJM-12	Measure	PROMART	SEN1935	-	RE	-
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2011/09/01 * 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
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2012/03/16 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2011/11/09 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2012/03/12 * 12
SCC-H3	Microwave cable	Hirose Electric	U.FL-2LP-066J1-A-(200)	-	AT	Pre Check
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2011/04/12 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2012/04/10 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE	2012/02/28 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2012/03/26 * 12
STR-03	Test Receiver	Rohde & Schwarz	ES140	100054/040	CE	2011/07/28 * 12
SJM-10	Measure	PROMART	SEN1935	-	CE	-

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 tests