RADIO TEST REPORT

Test Report No. : 32AE0317-SH-02-A

Applicant	:	**Canon Inc.**
Type of Equipment	:	**Wireless Module**
Model No.	:	**ZC-ST**
FCC ID	:	**AZD220**
Test regulation	:	**FCC Part15 Subpart C: 2012**
Test result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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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: March 30 to April 14, 2012

Representative test engineer:

Akio Hayashi
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Toyokazu Imamura
Leader of WiSE Japan,
UL Verification Service

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

JAB Testing
RTL02610

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

REVISION HISTORY

Original Test Report No.: 32AE0317-SH-02-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32AE0317-SH-02-A	May 22, 2012	-	-
1	32AE0317-SH-02-A	August 6, 2012	1-2 4	P1-2: Update P4: Correction: Serial No. and Receipt Date of Sample

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Contents

Page

SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 JAPAN
Telephone Number	:	+81-3-3757-6798
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.	:	ZC-ST
Serial No.	:	Refer to 4.2 in this report.
Rating	:	DC3.3V
Receipt Date of Sample	:	March 30, 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: ZC-ST (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-HT20) / 40MHz (IEEE 802.11n-HT40) Channel spacing: 5MHz
Type of modulation	:	DSSS: CCK,DQPSK, DBPSK OFDM: 64QAM, 16QAM, QPSK, BPSK
Antenna type	:	λ/4 Monopole
Antenna connector type	:	None
Antenna gain with cable loss	:	-0.4 dBi
ITU code	:	D1D, G1D
Operation temperature range	:	0 to +60 deg.C.

FCC 15.31 (e)
The host device provides the RF module with stable power supply (DC3.3V), therefore, the equipment complies with the requirement.

FCC 15.203
The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement.

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.

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	29.2dB Freq.: 0.49543MHz Detector: Quasi-Peak Phase: L1 Mode: Tx 2437MHz, IEEE 802.11b	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	5.1dB Freq.: 2483.500MHz Detector: Average Polarization: Vertical Mode: Tx 2452MHz, IEEE 802.11n (HT40)	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.

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 test report has enough margin, more than site margin.

Antenna port conducted test

Power measurement uncertainty above 1GHz for this test was: (±) 1.5dB
Spurious emission (Conducted) measurement (below 1GHz) uncertainty for this test was: (±) 1.7dB
Spurious emission (Conducted) measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Spurious emission (Conducted) measurement (3G-18GHz) uncertainty for this test was: (±) 3.0dB
Spurious emission (Conducted) measurement (18G-26.5GHz) uncertainty for this test was: (±) 2.9dB
Bandwidth measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone number : +81 463 50 6400
Facsimile number : +81 463 50 6401
JAB Accreditation No. : RTL02610

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☒ 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.

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

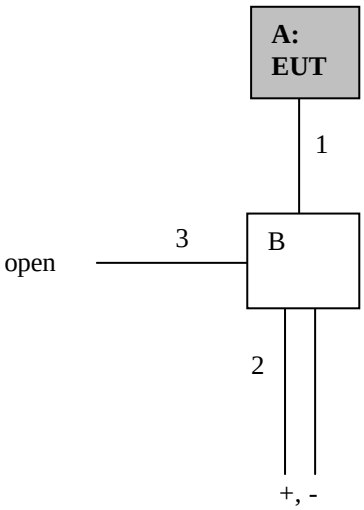
4.1 Operating mode

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)
All items	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	12dBm	11Mbps, PN9
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	12dBm	24Mbps, PN9
	Transmitting IEEE 802.11n-20	2412MHz, 2437MHz, 2462MHz	12dBm	MCS3, PN9
	Transmitting IEEE 802.11n-40	2422MHz, 2437MHz, 2452MHz	12dBm	MCS3, PN9
*1) The power is controlled by the software: Tera Term Ver4.67. *2) The worst condition was determined based on the test result of Maximum Peak Output Power.				

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	ZC-ST	ES40197 *1) ES40268 *2)	Canon	EUT
B	WLAN-Jig	-	-	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 (+, -)	1.5	Unshielded	Unshielded	-
3	Jig	0.05	Unshielded	Unshielded	-

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

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.

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 7: Maximum peak output power

Test procedure
The Maximum Peak Output Power was measured with a power meter connected to the antenna port.

Detection type: Peak / Average *1)
*1) Average detector was used only for "Reference data of SAR testing".

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

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.

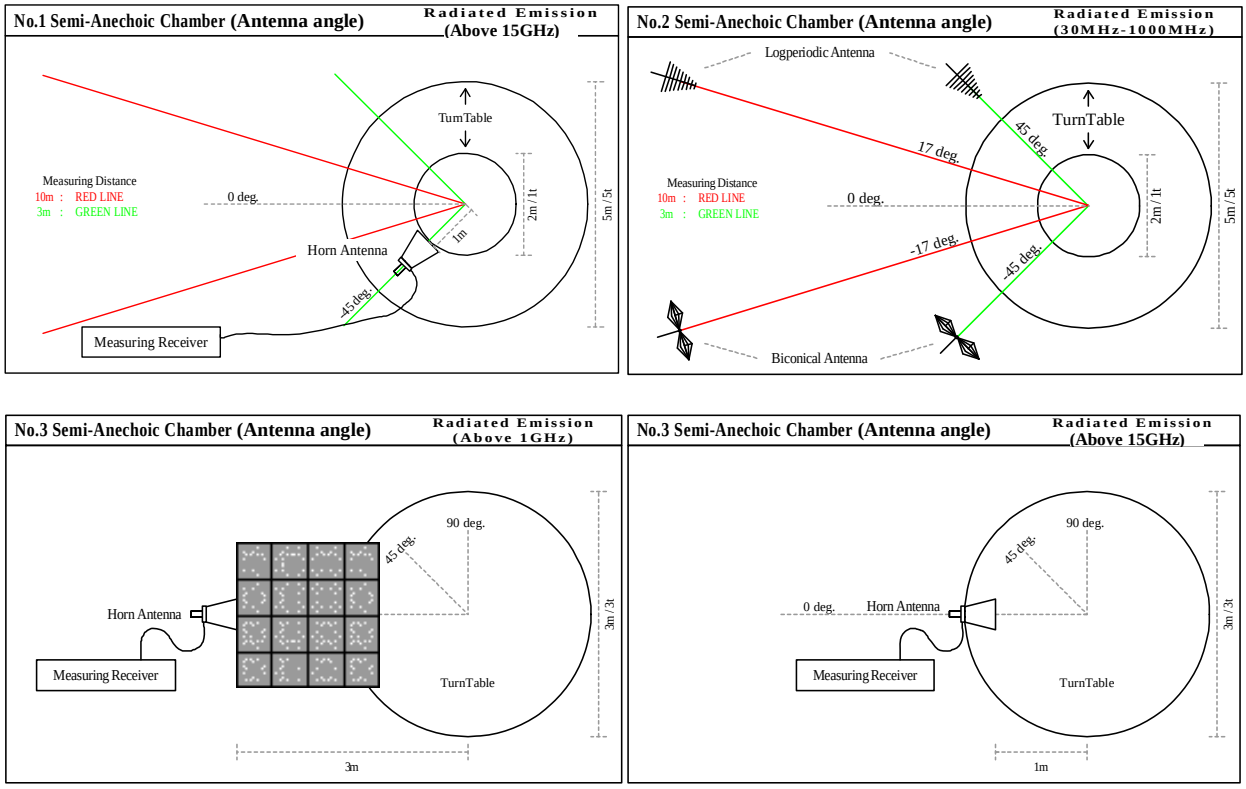
Frequency	30-1000MHz	1-25GHz		20dBc
Detection type	Quasi-Peak	Peak	* Average	Peak
IF Bandwidth	120kHz	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz	RBW: 100kHz VBW: 300kHz

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

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	Z	X	Z
Vertical	Y	Z	Y	Z

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 6th 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

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

DATA OF CONDUCTED EMISSION TEST

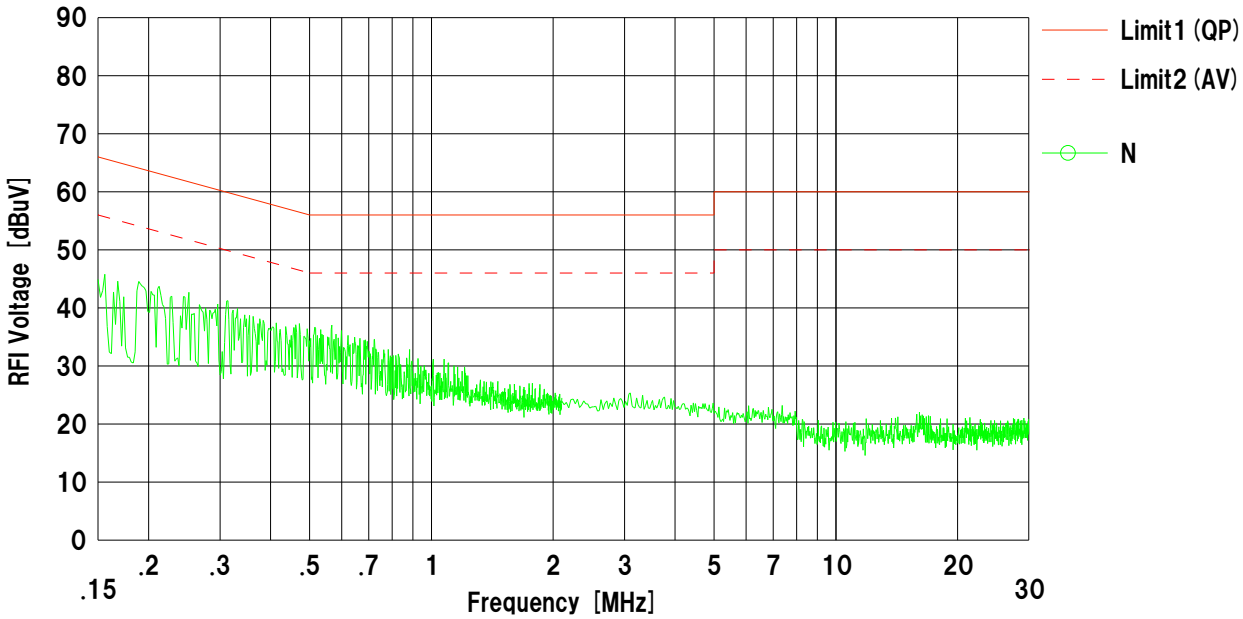
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

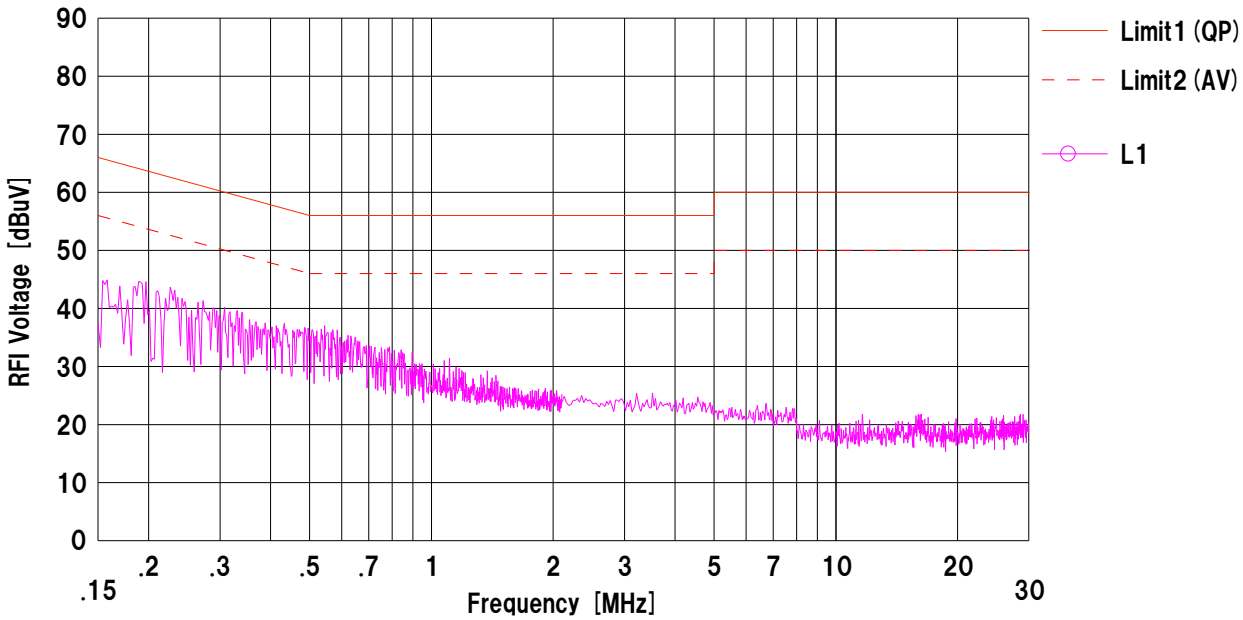
Company	: CANON INC.	Mode	: Tx 11b 2412MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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.1 Shielded Room
Date:2012/04/14

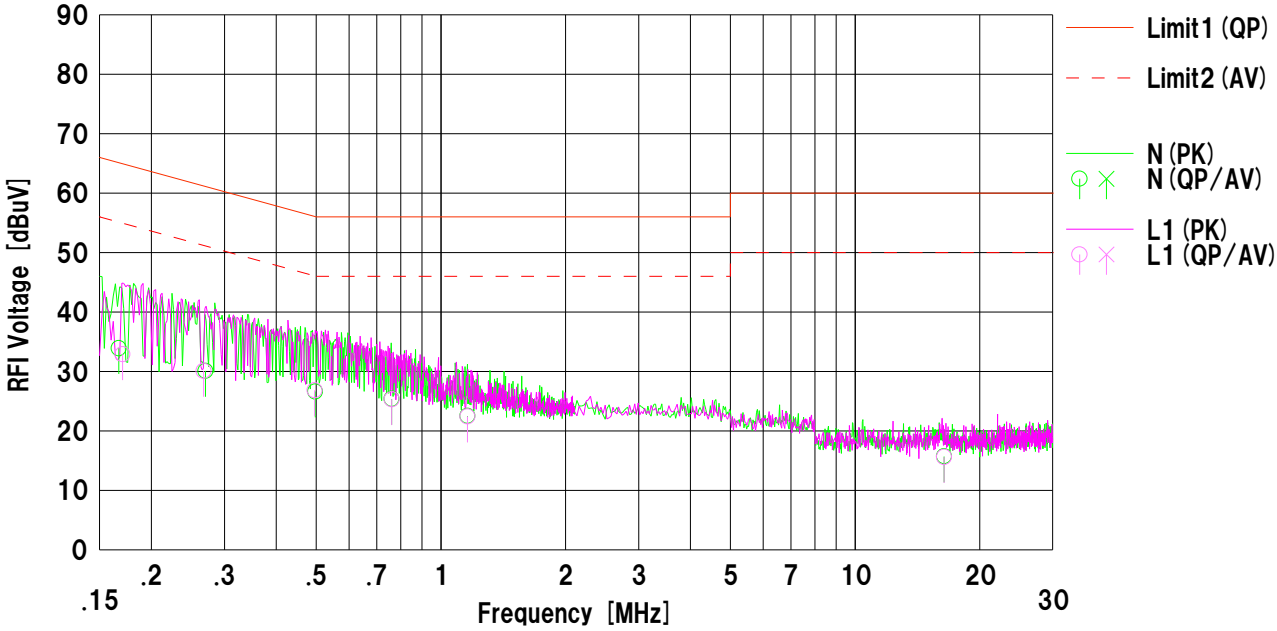
Company : CANON INC.
Kind of EUT : Wireless Module
Model No. : ZC-ST
Serial No. : ES40268

Mode : Tx 11b 2437MHz
Report No. : 32AE0317-SH-02-A
Power : DC3.3V
Temp./Humi. : 22deg.C. / 47%RH

Remarks : -

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

Engineer : Kenichi Adachi



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	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.16673	21.4	---	12.5	33.9	---	65.1	55.1	31.2	---	N	
2	0.27004	17.6	---	12.5	30.1	---	61.1	51.1	31.0	---	N	
3	0.49723	14.1	---	12.5	26.6	---	56.0	46.0	29.4	---	N	
4	0.76032	12.8	---	12.6	25.4	---	56.0	46.0	30.6	---	N	
5	1.15794	9.9	---	12.6	22.5	---	56.0	46.0	33.5	---	N	
6	16.40765	2.2	---	13.5	15.7	---	60.0	50.0	44.3	---	N	
7	0.17038	20.4	---	12.5	32.9	---	64.9	54.9	32.0	---	L1	
8	0.26720	17.6	---	12.5	30.1	---	61.2	51.2	31.1	---	L1	
9	0.49543	14.3	---	12.5	26.8	---	56.0	46.0	29.2	---	L1	
10	0.76109	12.7	---	12.6	25.3	---	56.0	46.0	30.7	---	L1	
11	1.15872	9.8	---	12.6	22.4	---	56.0	46.0	33.6	---	L1	
12	16.40765	2.1	---	13.5	15.6	---	60.0	50.0	44.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

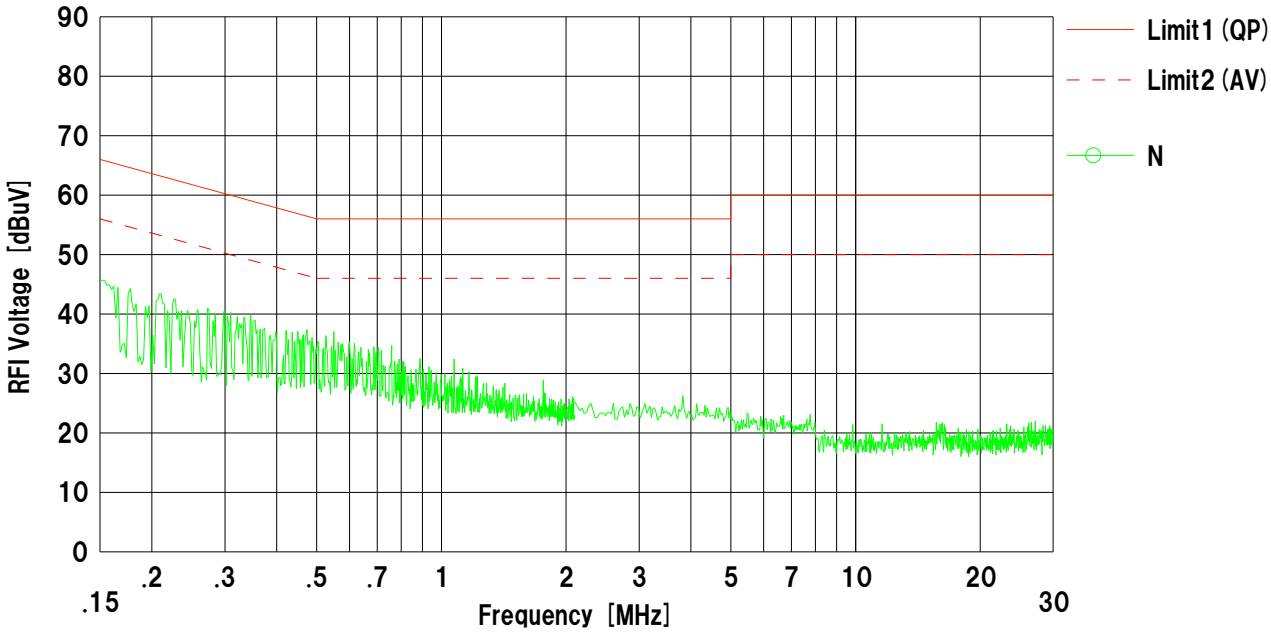
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

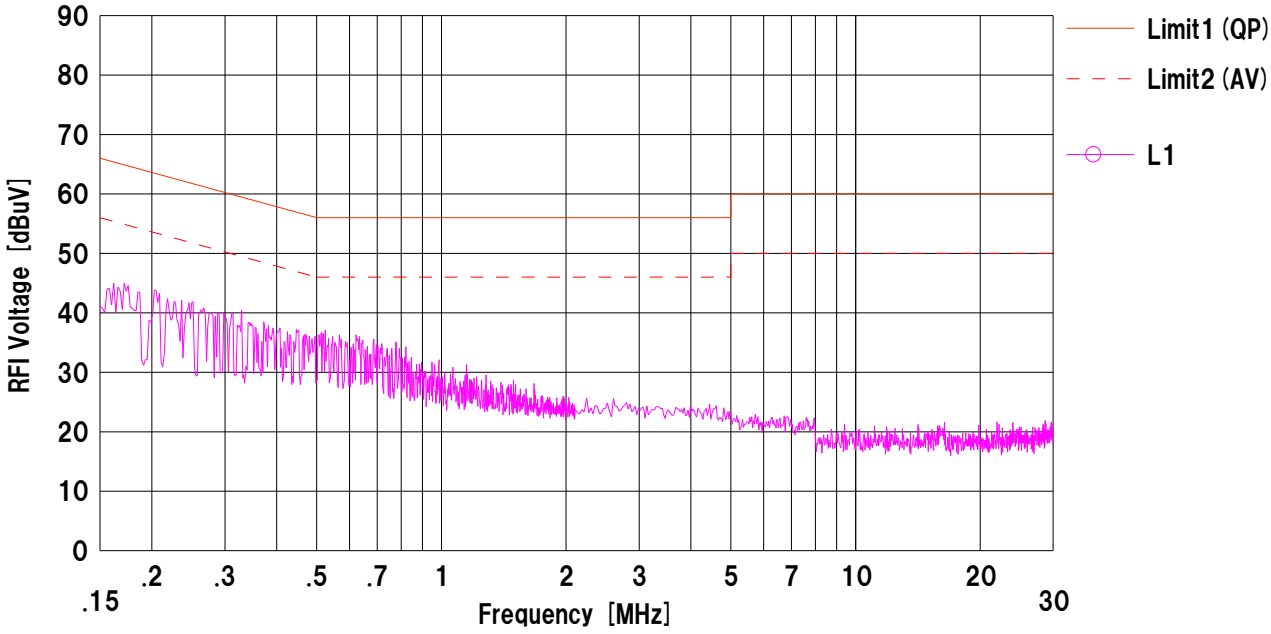
Company	: CANON INC.	Mode	: Tx 11b 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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

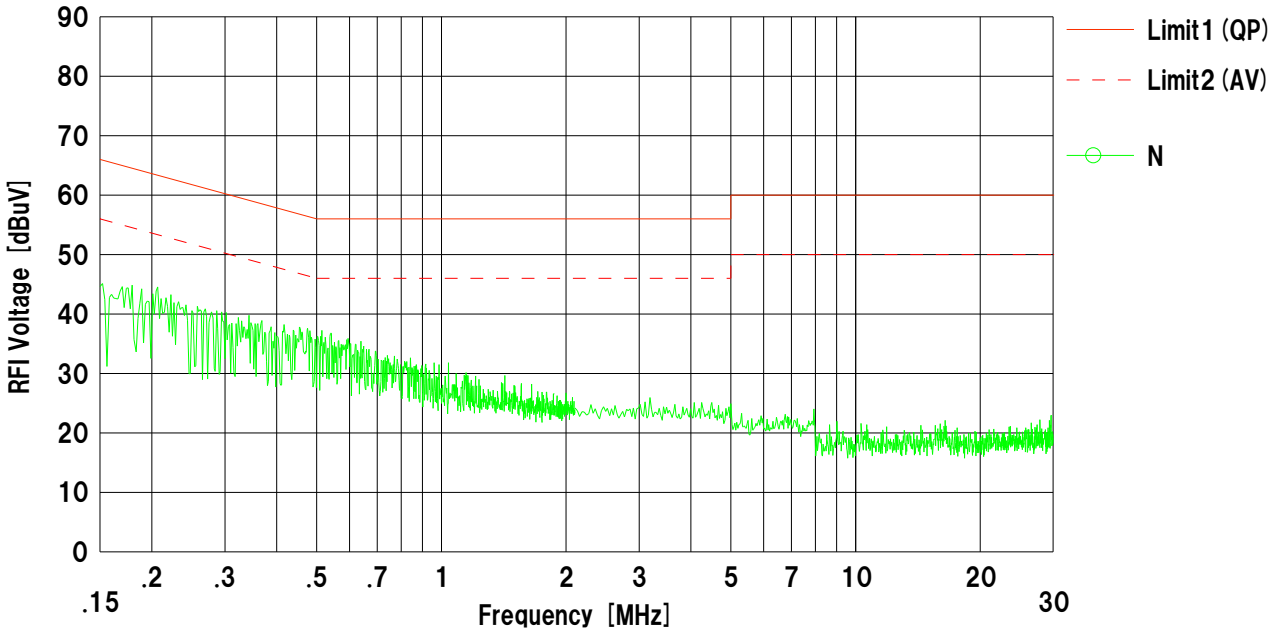
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

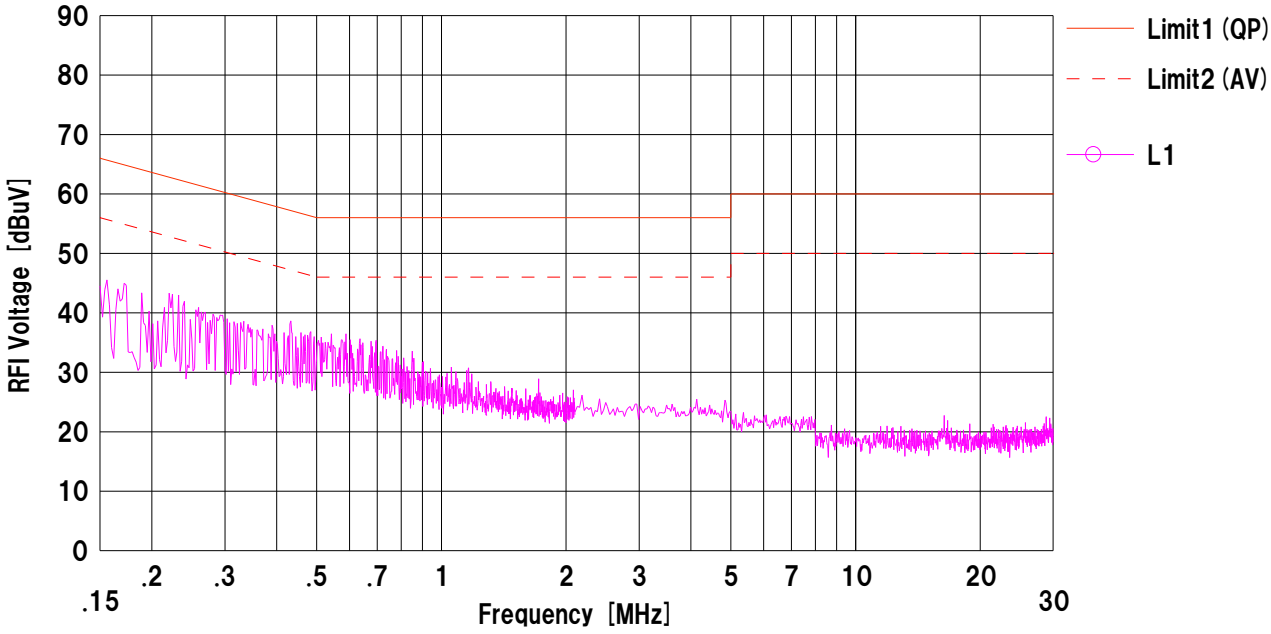
Company	: CANON INC.	Mode	: Tx 11g 2412MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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.1 Shielded Room
Date:2012/04/14

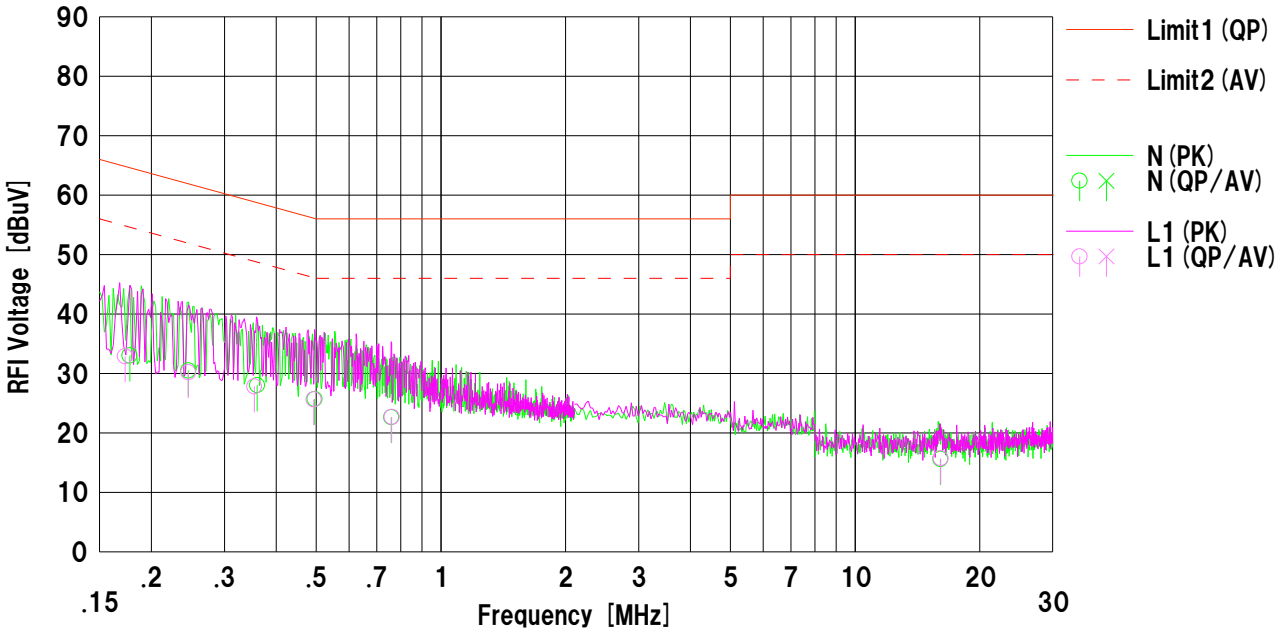
Company : CANON INC.
Kind of EUT : Wireless Module
Model No. : ZC-ST
Serial No. : ES40268

Mode : Tx 11g 2437MHz
Report No. : 32AE0317-SH-02-A
Power : DC3.3V
Temp./Humi. : 22deg.C. / 47%RH

Remarks : -

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

Engineer : Kenichi Adachi



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	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.17723	20.5	---	12.5	33.0	---	64.6	54.6	31.6	---	N	
2	0.24552	18.0	---	12.5	30.5	---	61.9	51.9	31.4	---	N	
3	0.36003	15.5	---	12.5	28.0	---	58.7	48.7	30.7	---	N	
4	0.49552	13.2	---	12.5	25.7	---	56.0	46.0	30.3	---	N	
5	0.75879	10.0	---	12.6	22.6	---	56.0	46.0	33.4	---	N	
6	16.07764	2.1	---	13.5	15.6	---	60.0	50.0	44.4	---	N	
7	0.17264	20.4	---	12.5	32.9	---	64.8	54.8	31.9	---	L1	
8	0.24552	17.7	---	12.5	30.2	---	61.9	51.9	31.7	---	L1	
9	0.35418	15.3	---	12.5	27.8	---	58.8	48.8	31.0	---	L1	
10	0.49326	13.1	---	12.5	25.6	---	56.1	46.1	30.5	---	L1	
11	0.76131	10.1	---	12.6	22.7	---	56.0	46.0	33.3	---	L1	
12	16.08680	2.2	---	13.5	15.7	---	60.0	50.0	44.3	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

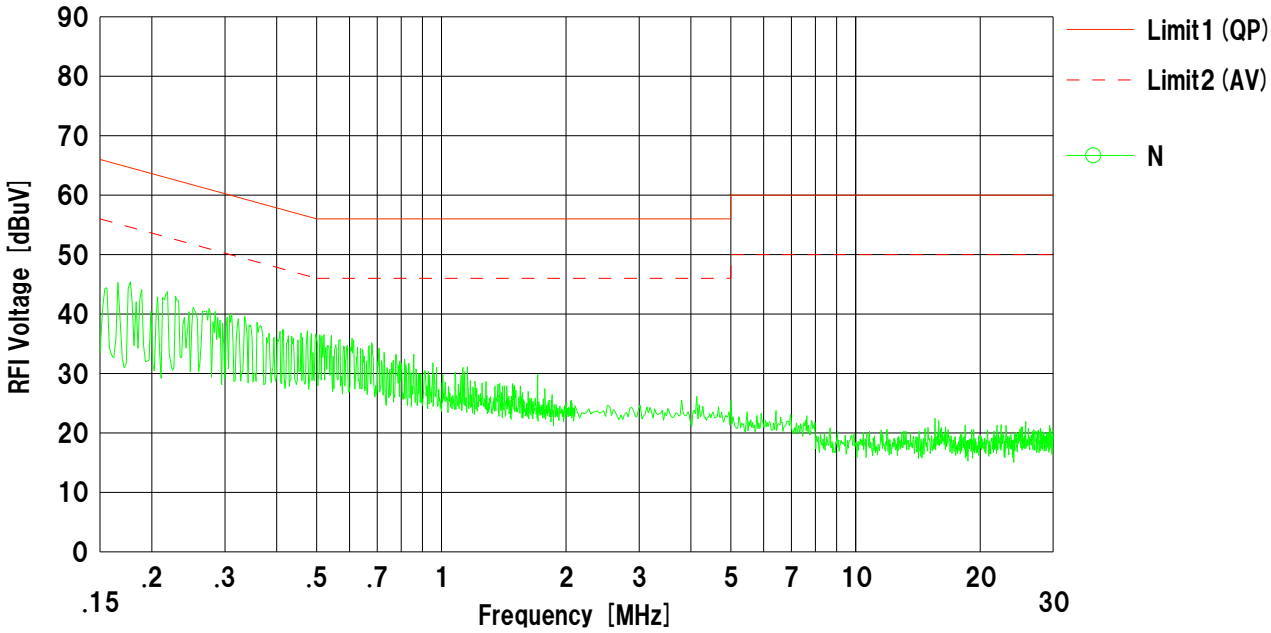
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

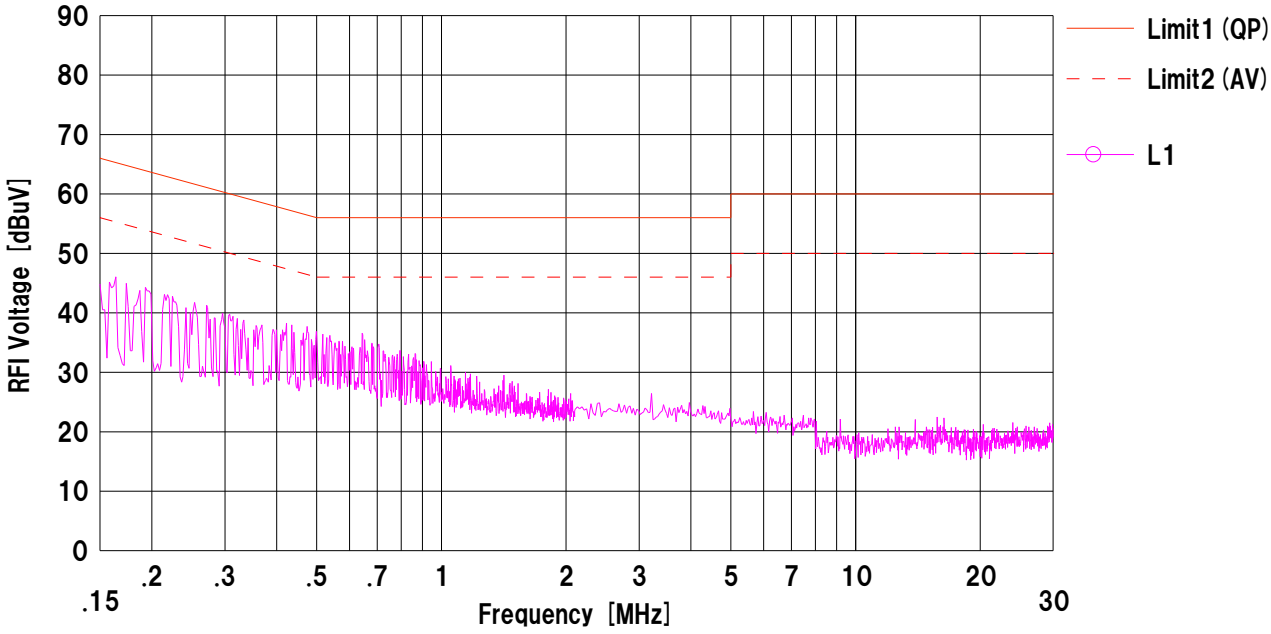
Company	: CANON INC.	Mode	: Tx 11g 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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

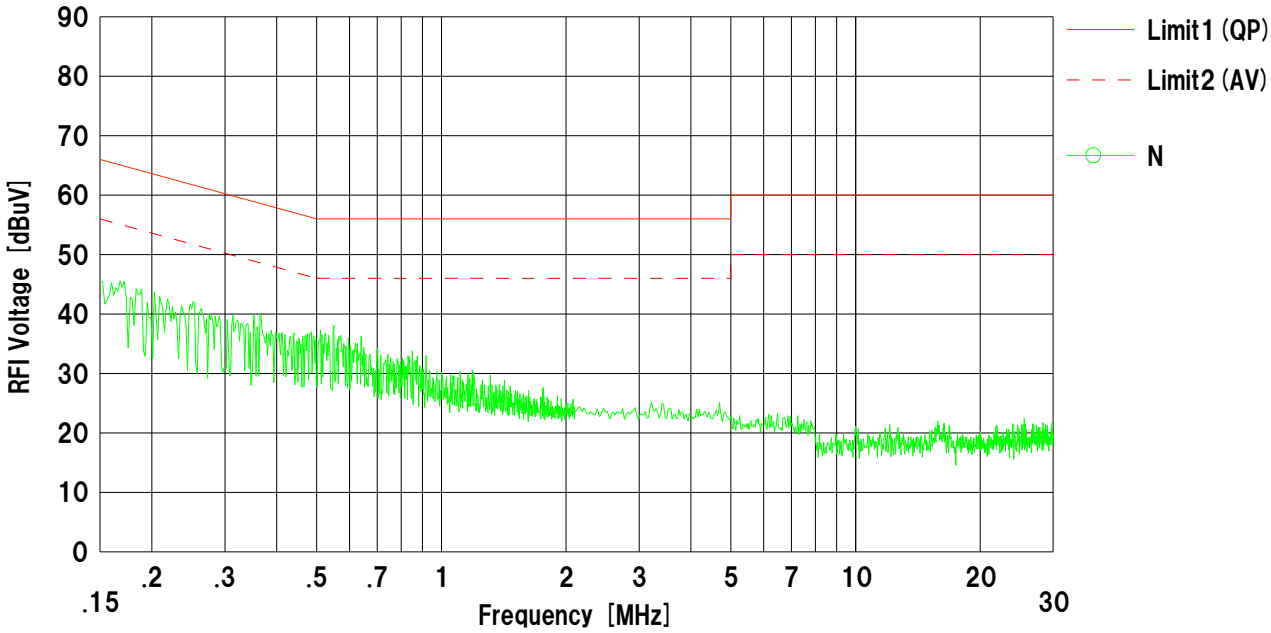
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

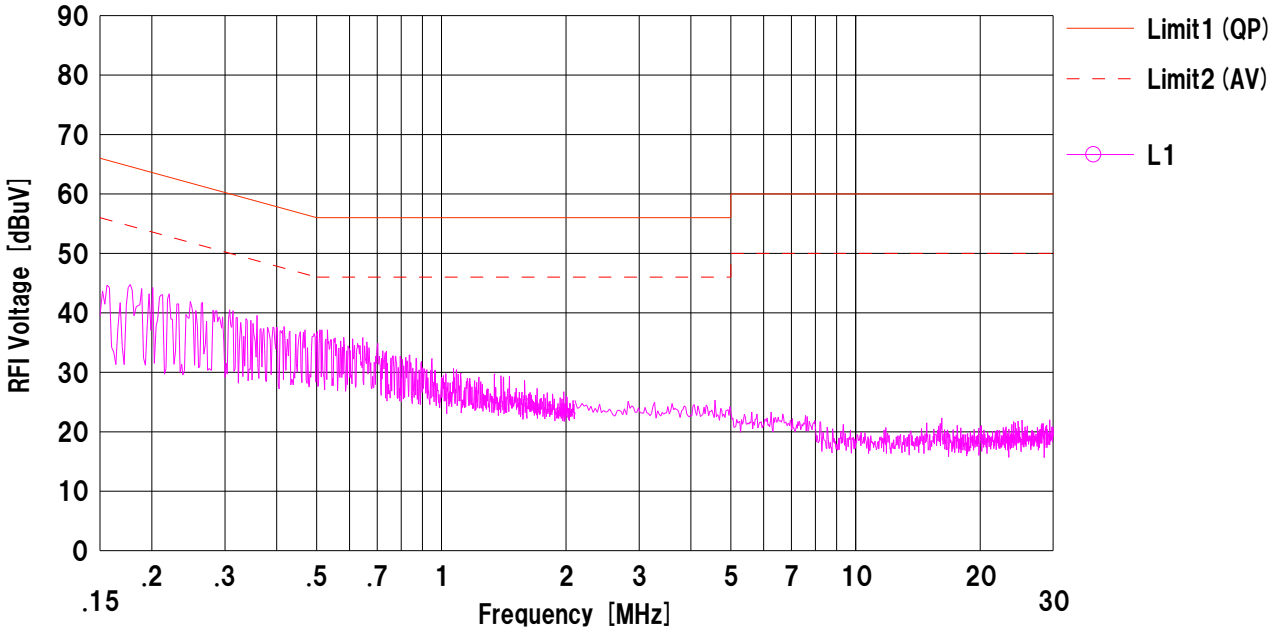
Company	: CANON INC.	Mode	: Tx 11n-20HT 2412MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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.1 Shielded Room
Date:2012/04/14

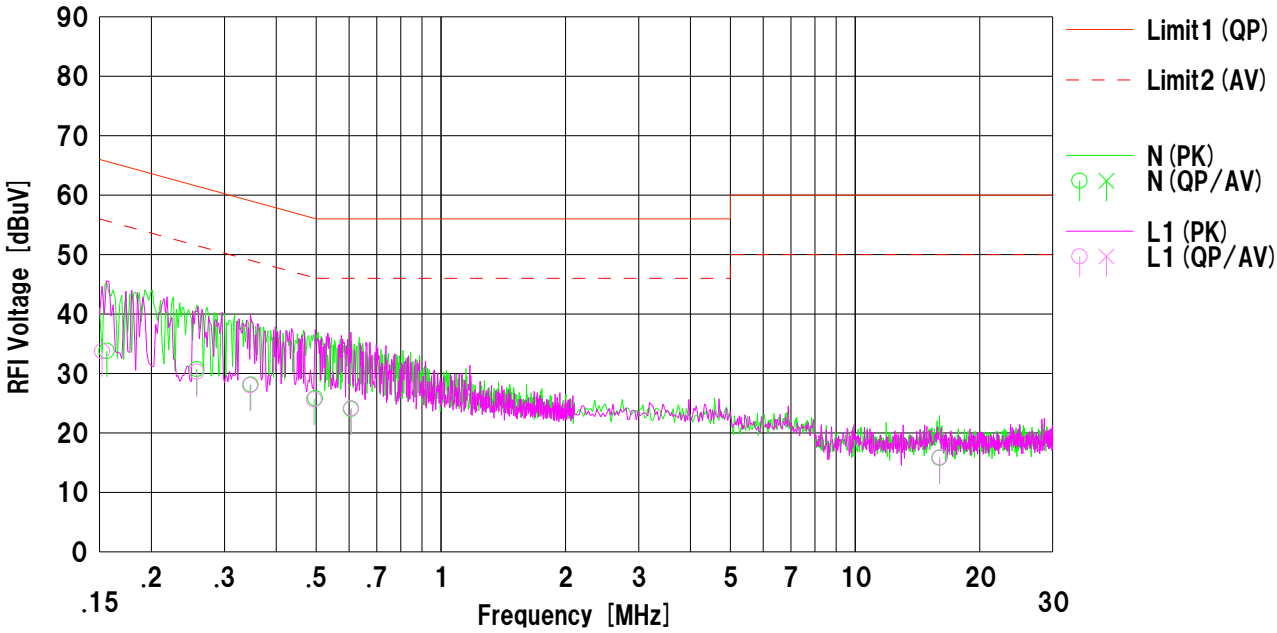
Company : CANON INC.
Kind of EUT : Wireless Module
Model No. : ZC-ST
Serial No. : ES40268

Mode : Tx 11n-20HT 2437MHz
Report No. : 32AE0317-SH-02-A
Power : DC3.3V
Temp./Humi. : 22deg.C. / 47%RH

Remarks : -

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

Engineer : Kenichi Adachi



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15593	21.3	---	12.5	33.8	---	65.6	55.6	31.8	---	N	
2	0.25701	18.2	---	12.5	30.7	---	61.5	51.5	30.8	---	N	
3	0.34746	15.6	---	12.5	28.1	---	59.0	49.0	30.9	---	N	
4	0.49738	13.3	---	12.5	25.8	---	56.0	46.0	30.2	---	N	
5	0.60683	11.4	---	12.6	24.0	---	56.0	46.0	32.0	---	N	
6	15.99937	2.3	---	13.5	15.8	---	60.0	50.0	44.2	---	N	
7	0.15206	21.2	---	12.5	33.7	---	65.8	55.8	32.1	---	L1	
8	0.25729	17.8	---	12.5	30.3	---	61.5	51.5	31.2	---	L1	
9	0.34622	15.5	---	12.5	28.0	---	59.0	49.0	31.0	---	L1	
10	0.49402	13.1	---	12.5	25.6	---	56.0	46.0	30.4	---	L1	
11	0.60725	11.5	---	12.6	24.1	---	56.0	46.0	31.9	---	L1	
12	16.00860	2.4	---	13.5	15.9	---	60.0	50.0	44.1	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

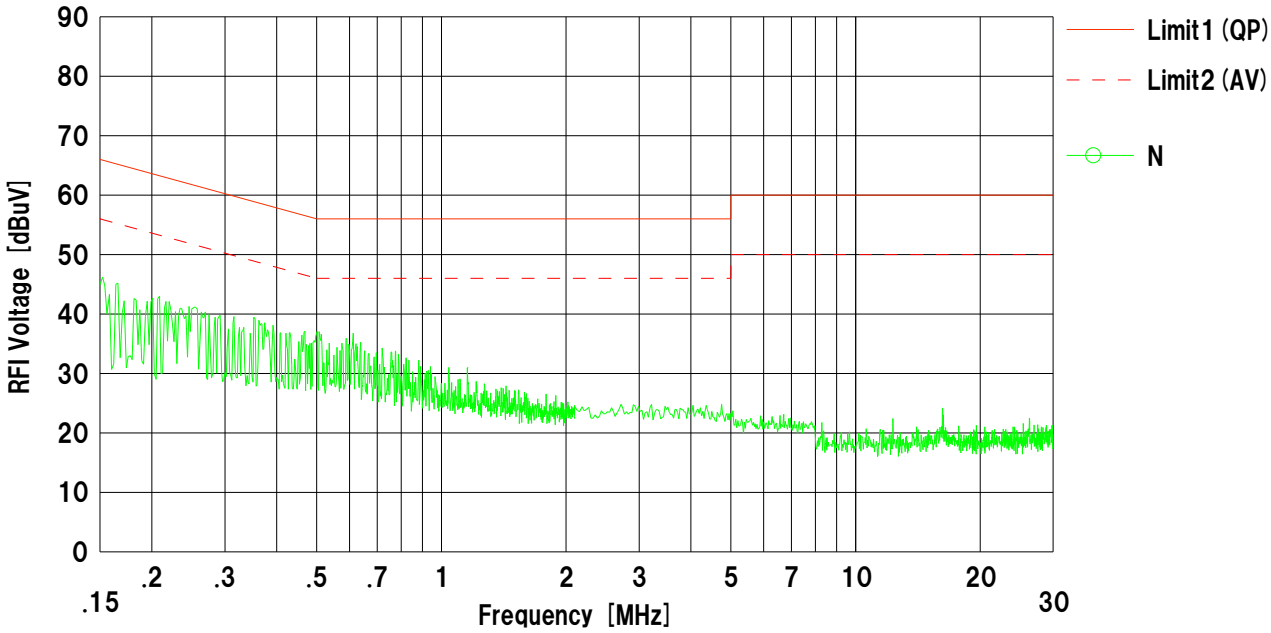
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

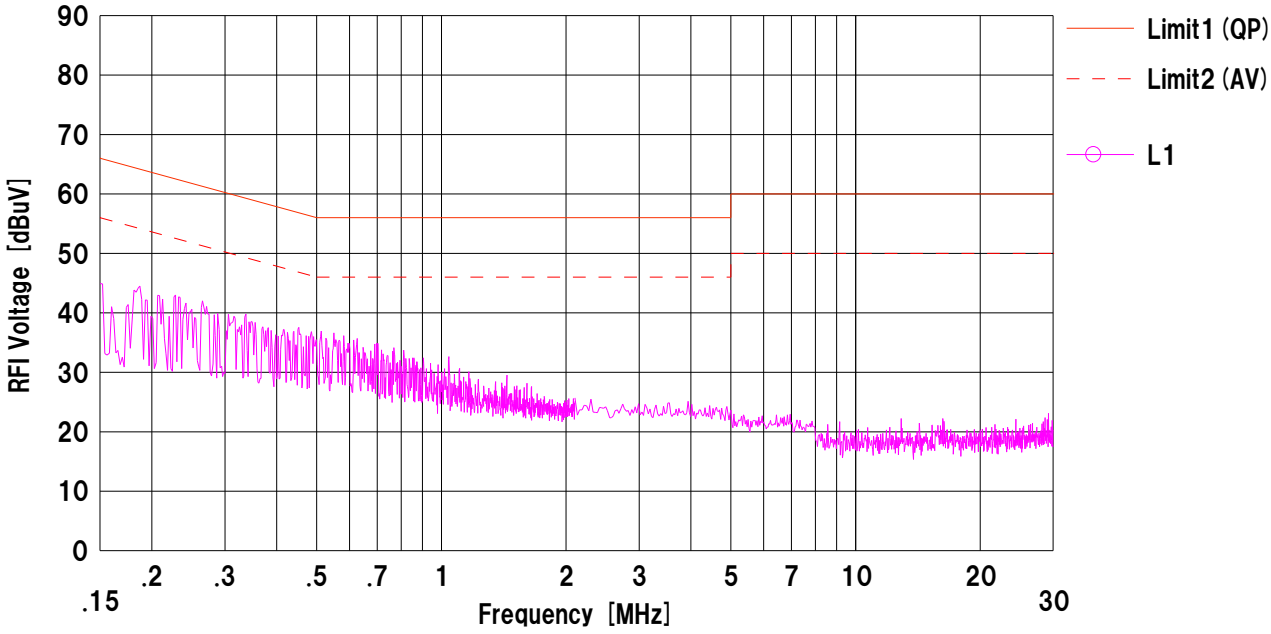
Company	: CANON INC.	Mode	: Tx 11n-20HT 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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

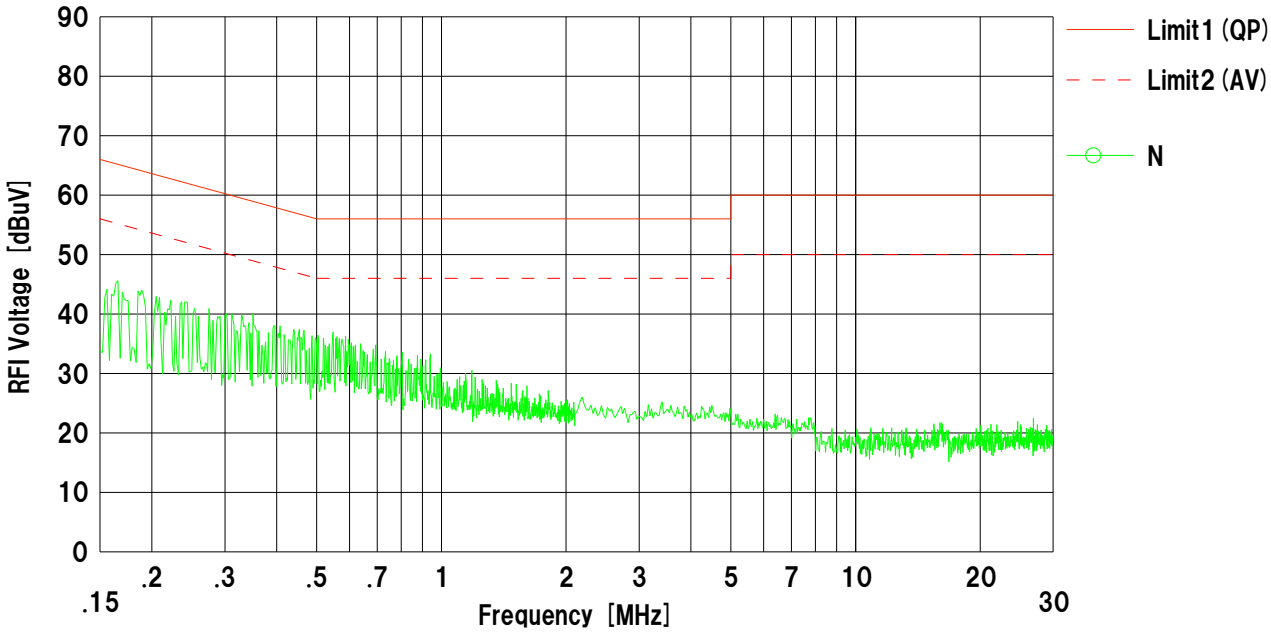
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

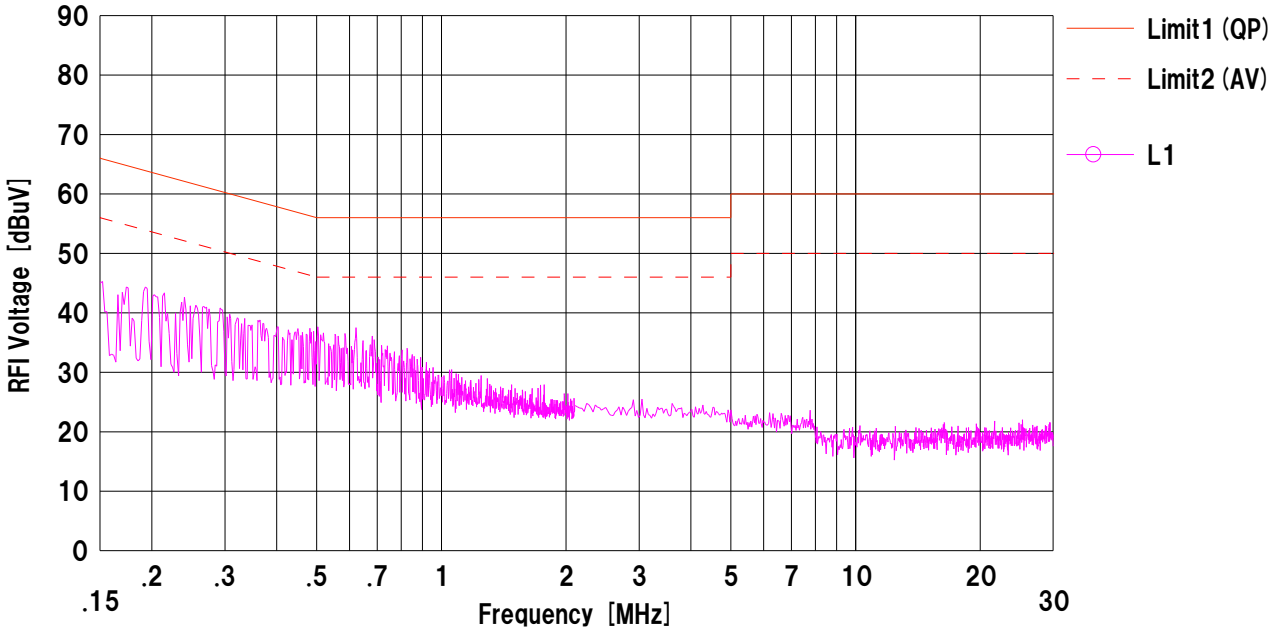
Company	: CANON INC.	Mode	: Tx 11n-40HT 2422MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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.1 Shielded Room
Date:2012/04/14

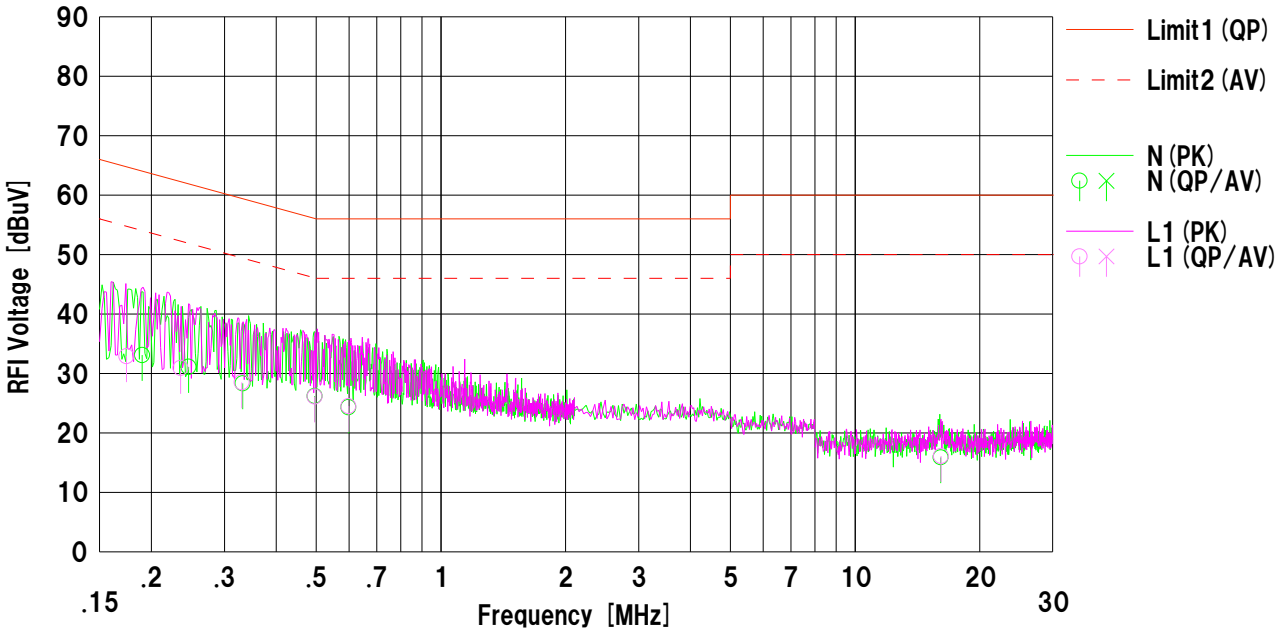
Company : CANON INC.
Kind of EUT : Wireless Module
Model No. : ZC-ST
Serial No. : ES40268

Mode : Tx 11n-40HT 2437MHz
Report No. : 32AE0317-SH-02-A
Power : DC3.3V
Temp./Humi. : 22deg.C. / 47%RH

Remarks : -

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

Engineer : Kenichi Adachi



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.18988	20.6	---	12.5	33.1	---	64.0	54.0	30.9	---	N	
2	0.24591	18.6	---	12.5	31.1	---	61.8	51.8	30.7	---	N	
3	0.33228	15.8	---	12.5	28.3	---	59.3	49.3	31.0	---	N	
4	0.49572	13.7	---	12.5	26.2	---	56.0	46.0	29.8	---	N	
5	0.59842	11.7	---	12.6	24.3	---	56.0	46.0	31.7	---	N	
6	16.10151	2.4	---	13.5	15.9	---	60.0	50.0	44.1	---	N	
7	0.17410	20.4	---	12.5	32.9	---	64.7	54.7	31.8	---	L1	
8	0.23518	18.4	---	12.5	30.9	---	62.2	52.2	31.3	---	L1	
9	0.33061	16.0	---	12.5	28.5	---	59.4	49.4	30.9	---	L1	
10	0.49541	13.6	---	12.5	26.1	---	56.0	46.0	29.9	---	L1	
11	0.59840	11.9	---	12.6	24.5	---	56.0	46.0	31.5	---	L1	
12	16.12486	2.6	---	13.5	16.1	---	60.0	50.0	43.9	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

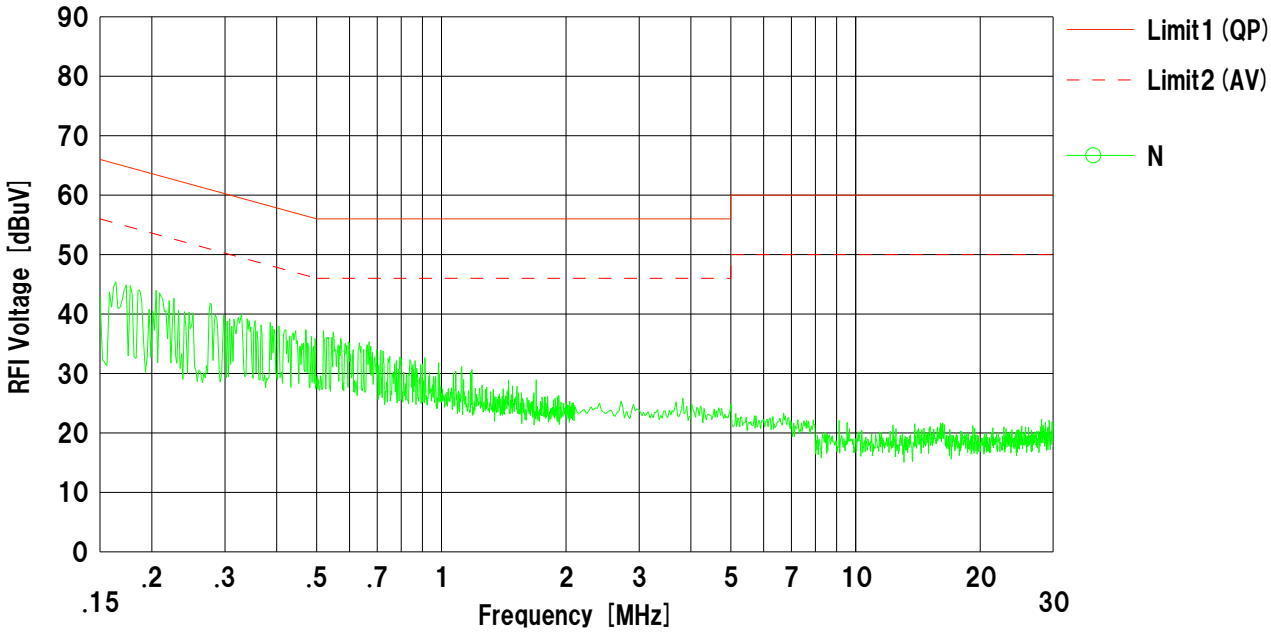
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date:2012/04/14

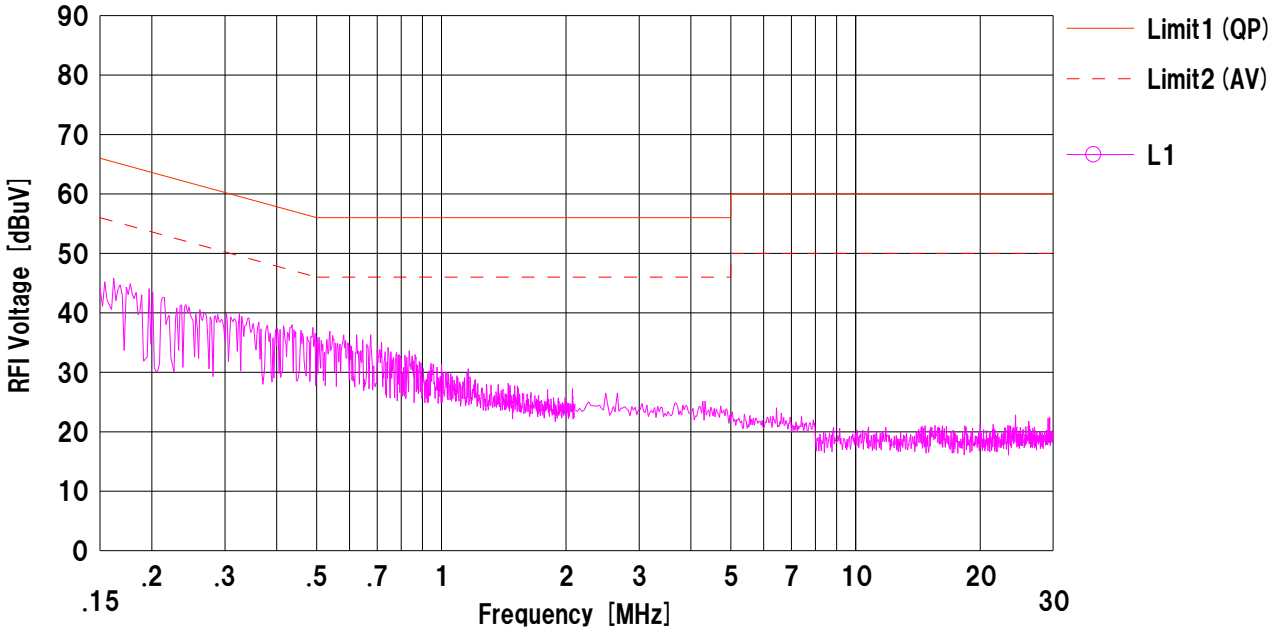
Company	: CANON INC.	Mode	: Tx 11n-40HT 2452MHz
Kind of EUT	: Wireless Module	Report No.	: 32AE0317-SH-02-A
Model No.	: ZC-ST	Power	: DC3.3V
Serial No.	: ES40268	Temp./Humi.	: 22deg.C. / 47%RH

Remarks : -

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

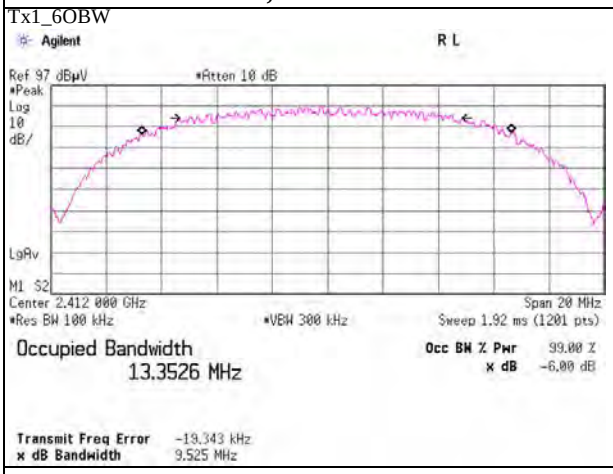
-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.525	> 0.500
2437.0000	9.523	> 0.500
2462.0000	9.524	> 0.500

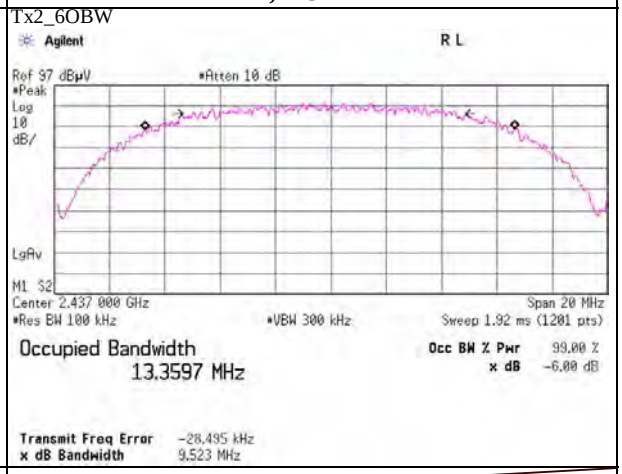
Tx, 2412MHz

Tx1_6OBW



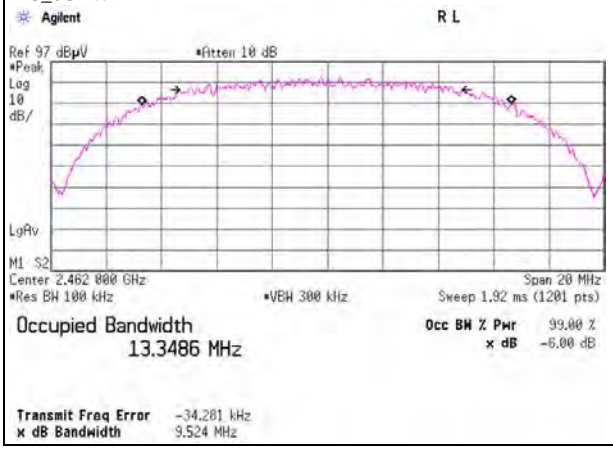
Tx, 2437MHz

Tx2_6OBW



Tx, 2462MHz

Tx3_6OBW



UL Japan, Inc.

Shonan EMC Lab.

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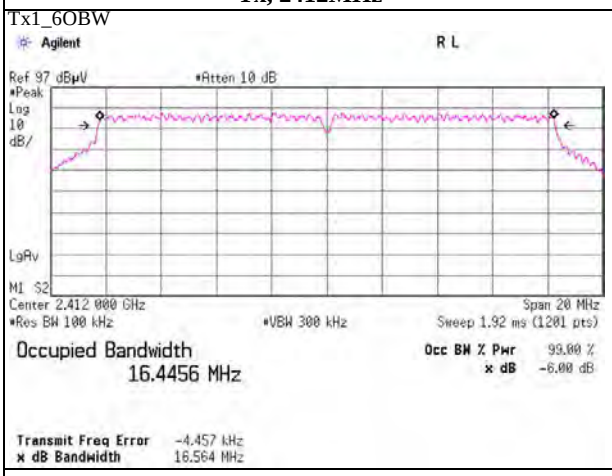
-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.564	> 0.500
2437.0000	16.534	> 0.500
2462.0000	16.556	> 0.500

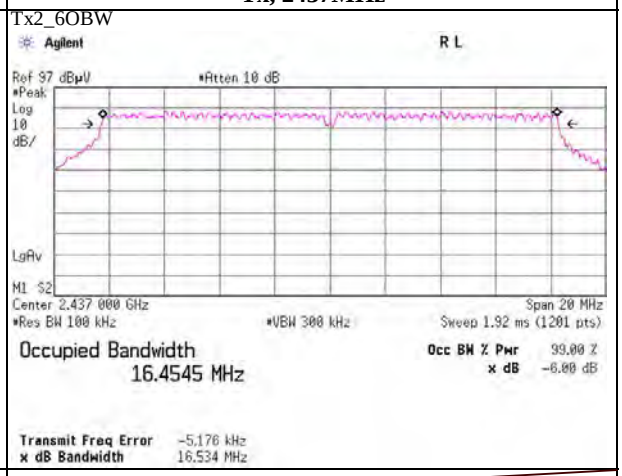
Tx, 2412MHz

Tx1_6OBW



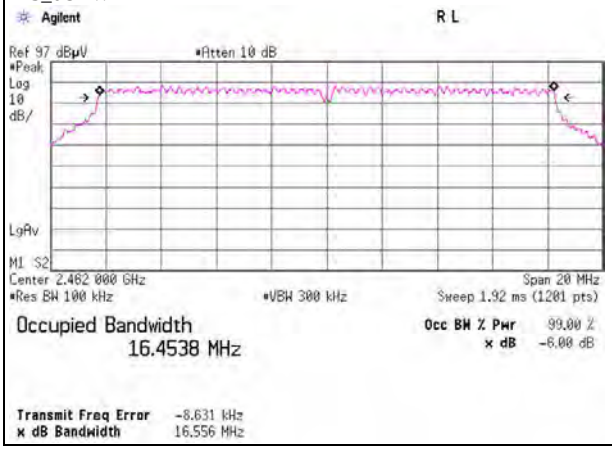
Tx, 2437MHz

Tx2_6OBW



Tx, 2462MHz

Tx3_6OBW



UL Japan, Inc.

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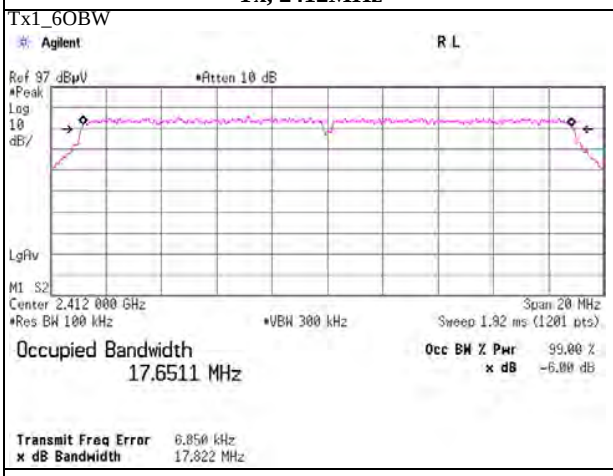
-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.822	> 0.500
2437.0000	17.802	> 0.500
2462.0000	17.812	> 0.500

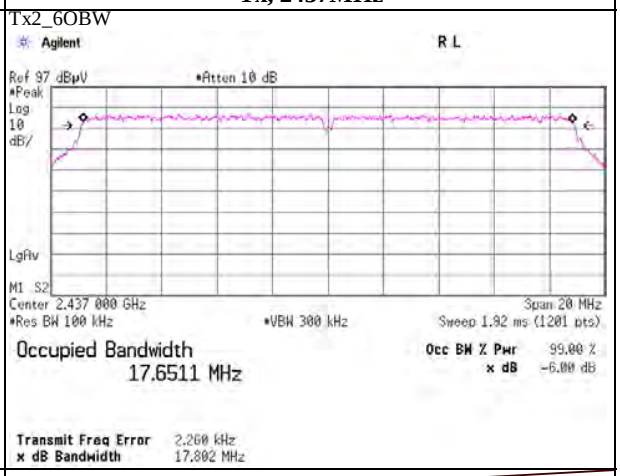
Tx, 2412MHz

Tx1_6OBW



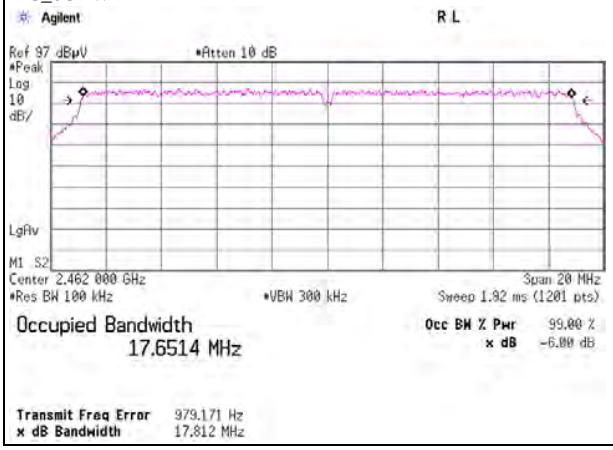
Tx, 2437MHz

Tx2_6OBW



Tx, 2462MHz

Tx3_6OBW



UL Japan, Inc.

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Facsimile : +81 463 50 6401

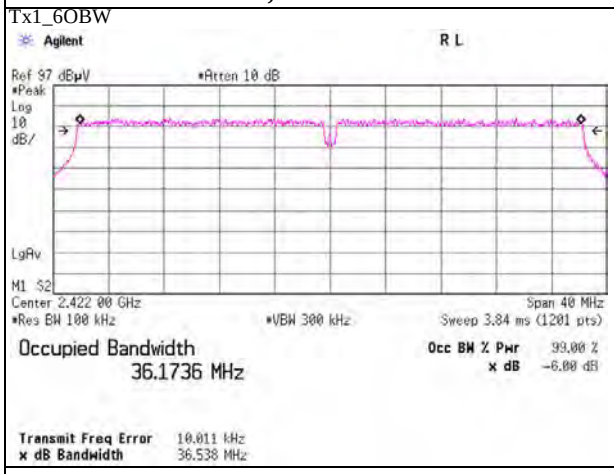
-6dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.538	> 0.500
2437.0000	36.511	> 0.500
2452.0000	36.525	> 0.500

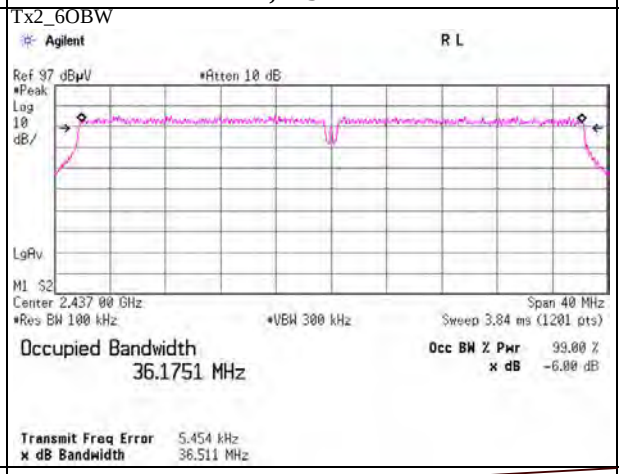
Tx, 2422MHz

Tx1_6OBW



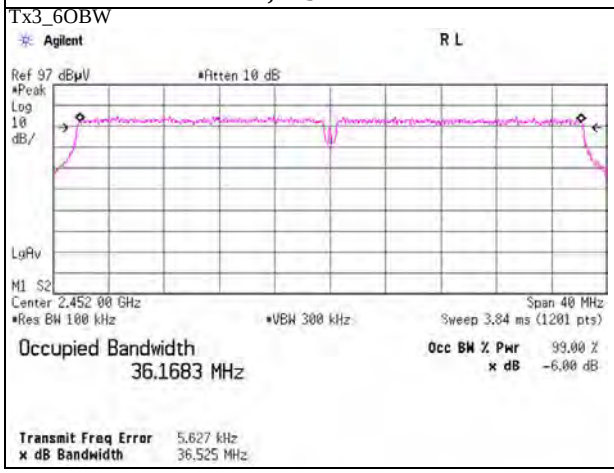
Tx, 2437MHz

Tx2_6OBW



Tx, 2452MHz

Tx3_6OBW



UL Japan, Inc.

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room	
Date	3/30/2012		
Temperature / Humidity	25deg.C , 40%RH		
Engineer	Akio Hayashi		
Mode	Tx, IEEE802.11b, PN9,	worst data mode :	11 Mbps

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

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-5.65	0.74	20.01	15.10	32.36	30.00	1000	14.90
Mid	2437.0	-5.35	0.74	20.01	15.40	34.67	30.00	1000	14.60
High	2462.0	-5.36	0.75	20.01	15.40	34.67	30.00	1000	14.60

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

[Pre check]

Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
1	2437.0	-5.51	0.74	20.01	15.24	33.42	30.00	1000	14.76	
2	2437.0	-5.43	0.74	20.01	15.32	34.04	30.00	1000	14.68	
5.5	2437.0	-5.85	0.74	20.01	14.90	30.90	30.00	1000	15.10	
11	2437.0	-5.35	0.74	20.01	**15.40**	34.67	30.00	1000	**14.60**	**Worst**

Reference data for SAR testing (* P/M: Power Meter, AV: Average)

Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
1	2437.0	-8.22	0.74	20.01	12.53	17.91
2	2437.0	-8.09	0.74	20.01	12.66	18.45
5.5	2437.0	-8.01	0.74	20.01	12.74	18.79
11	2437.0	-7.98	0.74	20.01	12.77	18.92

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room	
Date	3/30/2012		
Temperature / Humidity	25deg.C , 40%RH		
Engineer	Akio Hayashi		
Mode	Tx, IEEE802.11g, PN9,	worst data mode :	24 Mbps

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

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.36	0.74	20.01	20.39	109.40	30.00	1000	9.61
Mid	2437.0	-0.08	0.74	20.01	20.67	116.68	30.00	1000	9.33
High	2462.0	-0.15	0.75	20.01	20.61	115.08	30.00	1000	9.39

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

[Pre check]

Data rate	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
6	2437.0	-0.30	0.74	20.01	20.45	110.92	30.00	1000	9.55	
9	2437.0	-0.43	0.74	20.01	20.32	107.65	30.00	1000	9.68	
12	2437.0	-0.20	0.74	20.01	20.55	113.50	30.00	1000	9.45	
18	2437.0	-0.66	0.74	20.01	20.09	102.09	30.00	1000	9.91	
24	2437.0	-0.08	0.74	20.01	**20.67**	116.68	30.00	1000	**9.33**	**Worst**
36	2437.0	-0.16	0.74	20.01	20.59	114.55	30.00	1000	9.41	
48	2437.0	-0.40	0.74	20.01	20.35	108.39	30.00	1000	9.65	
54	2437.0	-0.20	0.74	20.01	20.55	113.50	30.00	1000	9.45	

Reference data for SAR testing (* P/M: Power Meter, AV: Average)

Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
6	2437.0	-7.99	0.74	20.01	12.76	18.88
9	2437.0	-8.12	0.74	20.01	12.63	18.32
12	2437.0	-8.16	0.74	20.01	12.59	18.16
18	2437.0	-8.07	0.74	20.01	12.68	18.54
24	2437.0	-8.23	0.74	20.01	12.52	17.86
36	2437.0	-8.17	0.74	20.01	12.58	18.11
48	2437.0	-8.16	0.74	20.01	12.59	18.16
54	2437.0	-8.18	0.74	20.01	12.57	18.07

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room	
Date	3/30/2012		
Temperature / Humidity	25deg.C , 40%RH		
Engineer	Akio Hayashi		
Mode	Tx, IEEE802.11n(HT20), PN9,	worst data mode :	3 (MCS)

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

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.70	0.74	20.01	20.05	101.16	30.00	1000	9.95
Mid	2437.0	-0.46	0.74	20.01	20.29	106.91	30.00	1000	9.71
High	2462.0	-0.46	0.75	20.01	20.30	107.15	30.00	1000	9.70

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

[Pre check]

Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	2437.0	-0.65	0.74	20.01	20.10	102.33	30.00	1000	9.90	
1	2437.0	-0.54	0.74	20.01	20.21	104.95	30.00	1000	9.79	
2	2437.0	-0.59	0.74	20.01	20.16	103.75	30.00	1000	9.84	
3	2437.0	-0.46	0.74	20.01	**20.29**	106.91	30.00	1000	**9.71**	**Worst**
4	2437.0	-0.51	0.74	20.01	20.24	105.68	30.00	1000	9.76	
5	2437.0	-0.52	0.74	20.01	20.23	105.44	30.00	1000	9.77	
6	2437.0	-0.55	0.74	20.01	20.20	104.71	30.00	1000	9.80	
7	2437.0	-0.59	0.74	20.01	20.16	103.75	30.00	1000	9.84	

Reference data for SAR testing (* P/M: Power Meter, AV: Average)

Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
0	2437.0	-8.04	0.74	20.01	12.71	18.66
1	2437.0	-8.08	0.74	20.01	12.67	18.49
2	2437.0	-7.99	0.74	20.01	12.76	18.88
3	2437.0	-8.01	0.74	20.01	12.74	18.79
4	2437.0	-8.04	0.74	20.01	12.71	18.66
5	2437.0	-8.09	0.74	20.01	12.66	18.45
6	2437.0	-8.11	0.74	20.01	12.64	18.37
7	2437.0	-7.96	0.74	20.01	12.79	19.01

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room	
Date	3/30/2012		
Temperature / Humidity	25deg.C , 40%RH		
Engineer	Akio Hayashi		
Mode	Tx, IEEE802.11n(HT40), PN9,	worst data mode :	3 (MCS)

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

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	-0.30	0.74	20.01	20.45	110.92	30.00	1000	9.55
Mid	2437.0	-0.32	0.74	20.01	20.43	110.41	30.00	1000	9.57
High	2452.0	-0.25	0.75	20.01	20.51	112.46	30.00	1000	9.49

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

[Pre check]

Mode	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	
(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
0	2437.0	-0.74	0.74	20.01	20.01	100.23	30.00	1000	9.99	
1	2437.0	-0.73	0.74	20.01	20.02	100.46	30.00	1000	9.98	
2	2437.0	-0.49	0.74	20.01	20.26	106.17	30.00	1000	9.74	
3	2437.0	-0.32	0.74	20.01	**20.43**	110.41	30.00	1000	**9.57**	**Worst**
4	2437.0	-0.41	0.74	20.01	20.34	108.14	30.00	1000	9.66	
5	2437.0	-0.35	0.74	20.01	20.40	109.65	30.00	1000	9.60	
6	2437.0	-0.50	0.74	20.01	20.25	105.93	30.00	1000	9.75	
7	2437.0	-0.75	0.74	20.01	20.00	100.00	30.00	1000	10.00	

Reference data for SAR testing (* P/M: Power Meter, AV: Average)

Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
0	2437.0	-8.48	0.74	20.01	12.27	16.87
1	2437.0	-8.51	0.74	20.01	12.24	16.75
2	2437.0	-8.59	0.74	20.01	12.16	16.44
3	2437.0	-8.47	0.74	20.01	12.28	16.90
4	2437.0	-8.60	0.74	20.01	12.15	16.41
5	2437.0	-8.57	0.74	20.01	12.18	16.52
6	2437.0	-8.56	0.74	20.01	12.19	16.56
7	2437.0	-8.54	0.74	20.01	12.21	16.63

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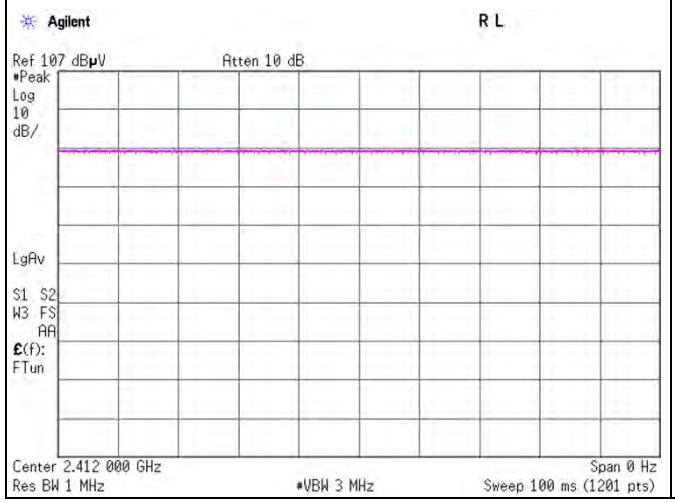
Burst rate confirmation

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

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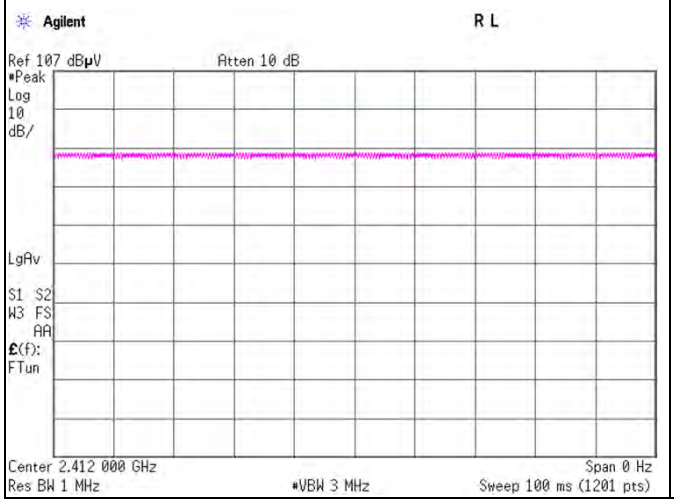
Burst rate confirmation

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

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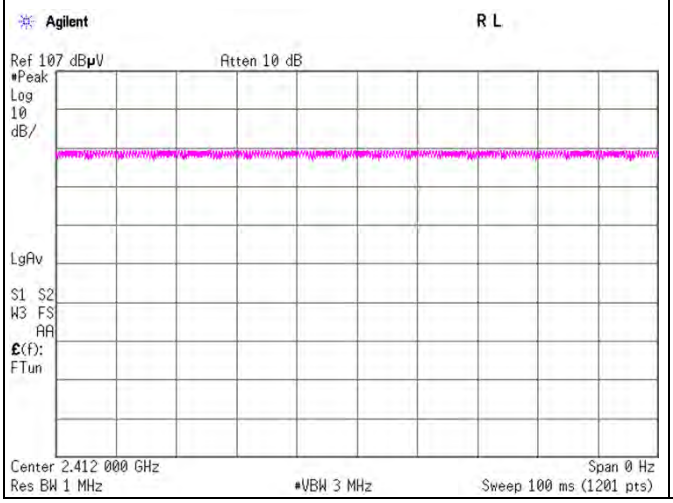
Burst rate confirmation

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)	
	

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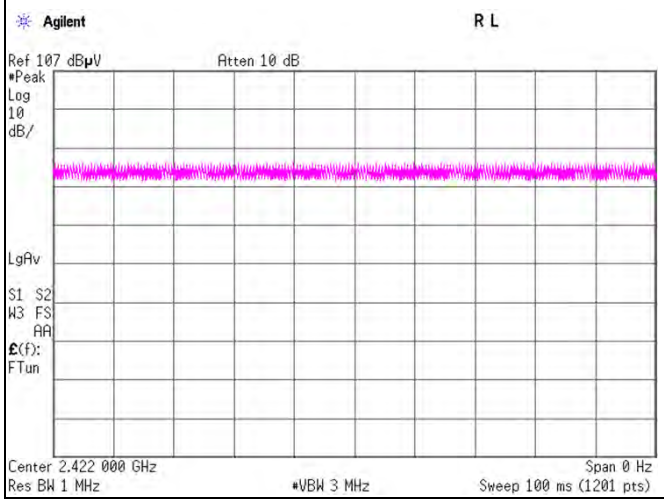
Burst rate confirmation

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)	
	

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2412 MHz			
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps			

(* 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.	931.140	QP	20.9	22.2	10.1	31.0	22.2	46.0	23.8	100	203	
Hori.	2390.000	PK	44.7	27.2	24.1	41.1	54.9	73.9	19.0	100	358	
Hori.	4824.000	PK	50.4	31.1	5.9	41.0	46.4	73.9	27.5	100	238	
Hori.	6432.000	PK	49.6	34.5	6.7	40.4	50.4	73.9	23.5	174	216	
Hori.	7236.000	PK	47.7	36.6	7.4	41.3	50.4	73.9	23.5	100	0	
Hori.	9648.000	PK	44.6	38.2	8.6	38.8	52.6	73.9	21.3	100	0	
Hori.	12060.000	PK	46.0	39.3	10.2	39.2	56.3	73.9	17.6	100	0	
Hori.	2390.000	AV	35.8	27.2	24.1	41.1	46.0	53.9	7.9	100	358	
Hori.	4824.000	AV	38.6	31.1	5.9	41.0	34.6	53.9	19.3	100	238	
Hori.	6432.000	AV	41.7	34.5	6.7	40.4	42.5	53.9	11.4	174	216	
Hori.	7236.000	AV	36.5	36.6	7.4	41.3	39.2	53.9	14.7	100	0	
Hori.	9648.000	AV	33.8	38.2	8.6	38.8	41.8	53.9	12.1	100	0	
Hori.	12060.000	AV	35.0	39.3	10.2	39.2	45.3	53.9	8.6	100	0	
Vert.	46.554	QP	29.6	12.3	7.2	31.8	17.3	40.0	22.7	100	300	
Vert.	2390.000	PK	43.4	27.2	24.1	41.1	53.6	73.9	20.3	102	106	
Vert.	4824.000	PK	49.0	31.1	5.9	41.0	45.0	73.9	28.9	100	280	
Vert.	6432.000	PK	48.1	34.5	6.7	40.4	48.9	73.9	25.0	100	216	
Vert.	7236.000	PK	47.7	36.6	7.4	41.3	50.4	73.9	23.5	100	0	
Vert.	9648.000	PK	45.4	38.2	8.6	38.8	53.4	73.9	20.5	100	0	
Vert.	12060.000	PK	47.1	39.3	10.2	39.2	57.4	73.9	16.5	100	0	
Vert.	2390.000	AV	35.7	27.2	24.1	41.1	45.9	53.9	8.0	102	106	
Vert.	4824.000	AV	37.2	31.1	5.9	41.0	33.2	53.9	20.7	100	280	
Vert.	6432.000	AV	38.9	34.5	6.7	40.4	39.7	53.9	14.2	100	216	
Vert.	7236.000	AV	36.7	36.6	7.4	41.3	39.4	53.9	14.5	100	0	
Vert.	9648.000	AV	34.6	38.2	8.6	38.8	42.6	53.9	11.3	100	0	
Vert.	12060.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	0	

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

*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	84.3	27.3	24.1	41.1	94.6	-	-	Carrier
Hori.	2400.000	PK	37.2	27.3	24.1	41.1	47.5	74.6	27.1	
Vert.	2412.000	PK	86.3	27.3	24.1	41.1	96.6	-	-	Carrier
Vert.	2400.000	PK	38.8	27.3	24.1	41.1	49.1	76.6	27.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2437 MHz			
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps			

(* 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.	931.211	QP	20.8	22.2	10.1	31.0	22.1	46.0	23.9	150	353	
Hori.	4874.000	PK	48.6	31.2	5.9	41.0	44.7	73.9	29.2	100	234	
Hori.	6498.667	PK	49.3	34.6	6.7	40.4	50.2	73.9	23.7	167	219	
Hori.	7311.000	PK	47.8	36.7	7.5	41.4	50.6	73.9	23.3	100	0	
Hori.	9748.000	PK	45.0	38.5	8.6	38.8	53.3	73.9	20.6	100	0	
Hori.	12185.000	PK	45.8	39.3	10.2	39.2	56.1	73.9	17.8	100	0	
Hori.	4874.000	AV	36.9	31.2	5.9	41.0	33.0	53.9	20.9	100	234	
Hori.	6498.667	AV	40.5	34.6	6.7	40.4	41.4	53.9	12.5	167	219	
Hori.	7311.000	AV	36.0	36.7	7.5	41.4	38.8	53.9	15.1	100	0	
Hori.	9748.000	AV	33.9	38.5	8.6	38.8	42.2	53.9	11.7	100	0	
Hori.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	
Vert.	46.462	QP	29.6	12.4	7.2	31.8	17.4	40.0	22.6	100	185	
Vert.	4874.000	PK	47.8	31.2	5.9	41.0	43.9	73.9	30.0	100	192	
Vert.	6498.667	PK	47.7	34.6	6.7	40.4	48.6	73.9	25.3	100	215	
Vert.	7311.000	PK	48.1	36.7	7.5	41.4	50.9	73.9	23.0	100	0	
Vert.	9748.000	PK	45.6	38.5	8.6	38.8	53.9	73.9	20.0	100	0	
Vert.	12185.000	PK	45.6	39.3	10.2	39.2	55.9	73.9	18.0	100	0	
Vert.	4874.000	AV	35.8	31.2	5.9	41.0	31.9	53.9	22.0	100	192	
Vert.	6498.667	AV	38.2	34.6	6.7	40.4	39.1	53.9	14.8	100	215	
Vert.	7311.000	AV	36.0	36.7	7.5	41.4	38.8	53.9	15.1	100	0	
Vert.	9748.000	AV	34.7	38.5	8.6	38.8	43.0	53.9	10.9	100	0	
Vert.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps			

(* 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.	926.575	QP	20.9	22.2	10.1	31.1	22.1	46.0	23.9	100	3	
Hori.	2483.500	PK	43.8	27.5	24.1	41.1	54.3	73.9	19.6	100	358	
Hori.	4924.000	PK	49.9	31.3	5.9	40.9	46.2	73.9	27.7	100	245	
Hori.	6565.333	PK	48.9	34.8	6.9	40.5	50.1	73.9	23.8	163	227	
Hori.	7386.000	PK	47.1	36.9	7.5	41.4	50.1	73.9	23.8	100	0	
Hori.	9848.000	PK	44.3	38.7	8.6	38.8	52.8	73.9	21.1	100	0	
Hori.	12310.000	PK	45.5	39.4	10.2	39.2	55.9	73.9	18.0	100	0	
Hori.	2483.500	AV	35.7	27.5	24.1	41.1	46.2	53.9	7.7	100	358	
Hori.	4924.000	AV	37.5	31.3	5.9	40.9	33.8	53.9	20.1	100	245	
Hori.	6565.333	AV	39.9	34.8	6.9	40.5	41.1	53.9	12.8	163	227	
Hori.	7386.000	AV	36.3	36.9	7.5	41.4	39.3	53.9	14.6	100	0	
Hori.	9848.000	AV	34.0	38.7	8.6	38.8	42.5	53.9	11.4	100	0	
Hori.	12310.000	AV	33.7	39.4	10.2	39.2	44.1	53.9	9.8	100	0	
Vert.	46.560	QP	29.8	12.3	7.2	31.8	17.5	40.0	22.5	100	330	
Vert.	2483.500	PK	43.1	27.5	24.1	41.1	53.6	73.9	20.3	100	47	
Vert.	4924.000	PK	48.7	31.3	5.9	40.9	45.0	73.9	28.9	100	281	
Vert.	6565.333	PK	48.6	34.8	6.9	40.5	49.8	73.9	24.1	100	214	
Vert.	7386.000	PK	48.3	36.9	7.5	41.4	51.3	73.9	22.6	100	0	
Vert.	9848.000	PK	45.5	38.7	8.6	38.8	54.0	73.9	19.9	100	0	
Vert.	12310.000	PK	44.5	39.4	10.2	39.2	54.9	73.9	19.0	100	0	
Vert.	2483.500	AV	35.6	27.5	24.1	41.1	46.1	53.9	7.8	100	47	
Vert.	4924.000	AV	36.4	31.3	5.9	40.9	32.7	53.9	21.2	100	281	
Vert.	6565.333	AV	38.9	34.8	6.9	40.5	40.1	53.9	13.8	100	214	
Vert.	7386.000	AV	36.1	36.9	7.5	41.4	39.1	53.9	14.8	100	0	
Vert.	9848.000	AV	34.3	38.7	8.6	38.8	42.8	53.9	11.1	100	0	
Vert.	12310.000	AV	33.7	39.4	10.2	39.2	44.1	53.9	9.8	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
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.	930.629	QP	20.9	22.2	10.1	31.0	22.2	46.0	23.8	100	180	
Hori.	2390.000	PK	47.4	27.2	24.1	41.1	57.6	73.9	16.3	100	358	
Hori.	4824.000	PK	46.4	31.1	5.9	41.0	42.4	73.9	31.5	100	0	
Hori.	6432.000	PK	50.9	34.5	6.7	40.4	51.7	73.9	22.2	105	221	
Hori.	7236.000	PK	47.9	36.6	7.4	41.3	50.6	73.9	23.3	100	0	
Hori.	9648.000	PK	44.7	38.2	8.6	38.8	52.7	73.9	21.2	100	0	
Hori.	12060.000	PK	46.6	39.3	10.2	39.2	56.9	73.9	17.0	100	0	
Hori.	2390.000	AV	36.6	27.2	24.1	41.1	46.8	53.9	7.1	100	358	
Hori.	4824.000	AV	35.8	31.1	5.9	41.0	31.8	53.9	22.1	100	0	
Hori.	6432.000	AV	44.7	34.5	6.7	40.4	45.5	53.9	8.4	105	221	
Hori.	7236.000	AV	36.5	36.6	7.4	41.3	39.2	53.9	14.7	100	0	
Hori.	9648.000	AV	34.1	38.2	8.6	38.8	42.1	53.9	11.8	100	0	
Hori.	12060.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	0	
Vert.	46.481	QP	29.1	12.4	7.2	31.8	16.9	40.0	23.1	100	13	
Vert.	2390.000	PK	46.8	27.2	24.1	41.1	57.0	73.9	16.9	100	110	
Vert.	4824.000	PK	47.3	31.1	5.9	41.0	43.3	73.9	30.6	100	0	
Vert.	6432.000	PK	49.5	34.5	6.7	40.4	50.3	73.9	23.6	100	219	
Vert.	7236.000	PK	47.5	36.6	7.4	41.3	50.2	73.9	23.7	100	0	
Vert.	9648.000	PK	46.3	38.2	8.6	38.8	54.3	73.9	19.6	100	0	
Vert.	12060.000	PK	47.3	39.3	10.2	39.2	57.6	73.9	16.3	100	0	
Vert.	2390.000	AV	36.5	27.2	24.1	41.1	46.7	53.9	7.2	100	110	
Vert.	4824.000	AV	35.9	31.1	5.9	41.0	31.9	53.9	22.0	100	0	
Vert.	6432.000	AV	41.6	34.5	6.7	40.4	42.4	53.9	11.5	100	219	
Vert.	7236.000	AV	36.7	36.6	7.4	41.3	39.4	53.9	14.5	100	0	
Vert.	9648.000	AV	35.1	38.2	8.6	38.8	43.1	53.9	10.8	100	0	
Vert.	12060.000	AV	35.5	39.3	10.2	39.2	45.8	53.9	8.1	100	0	

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

*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	81.7	27.3	24.1	41.1	92.0	-	-	Carrier
Hori.	2400.000	PK	43.6	27.3	24.1	41.1	53.9	72.0	18.1	
Vert.	2412.000	PK	83.4	27.3	24.1	41.1	93.7	-	-	Carrier
Vert.	2400.000	PK	45.2	27.3	24.1	41.1	55.5	73.7	18.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
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.	931.140	QP	21.0	22.2	10.1	31.0	22.3	46.0	23.7	100	251	
Hori.	4874.000	PK	47.0	31.2	5.9	41.0	43.1	73.9	30.8	100	0	
Hori.	6498.667	PK	49.4	34.6	6.7	40.4	50.3	73.9	23.6	115	218	
Hori.	7311.000	PK	47.5	36.7	7.5	41.4	50.3	73.9	23.6	100	0	
Hori.	9748.000	PK	45.8	38.5	8.6	38.8	54.1	73.9	19.8	100	0	
Hori.	12185.000	PK	46.7	39.3	10.2	39.2	57.0	73.9	16.9	100	0	
Hori.	4874.000	AV	37.2	31.2	5.9	41.0	33.3	53.9	20.6	100	0	
Hori.	6498.667	AV	40.2	34.6	6.7	40.4	41.1	53.9	12.8	115	218	
Hori.	7311.000	AV	36.1	36.7	7.5	41.4	38.9	53.9	15.0	100	0	
Hori.	9748.000	AV	33.9	38.5	8.6	38.8	42.2	53.9	11.7	100	0	
Hori.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	
Vert.	46.557	QP	29.8	12.4	7.2	31.8	17.6	40.0	22.4	100	327	
Vert.	4874.000	PK	47.3	31.2	5.9	41.0	43.4	73.9	30.5	100	0	
Vert.	6498.667	PK	49.3	34.6	6.7	40.4	50.2	73.9	23.7	100	219	
Vert.	7311.000	PK	47.7	36.7	7.5	41.4	50.5	73.9	23.4	100	0	
Vert.	9748.000	PK	45.0	38.5	8.6	38.8	53.3	73.9	20.6	100	0	
Vert.	12185.000	PK	45.8	39.3	10.2	39.2	56.1	73.9	17.8	100	0	
Vert.	4874.000	AV	36.1	31.2	5.9	41.0	32.2	53.9	21.7	100	0	
Vert.	6498.667	AV	38.4	34.6	6.7	40.4	39.3	53.9	14.6	100	219	
Vert.	7311.000	AV	36.0	36.7	7.5	41.4	38.8	53.9	15.1	100	0	
Vert.	9748.000	AV	34.2	38.5	8.6	38.8	42.5	53.9	11.4	100	0	
Vert.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 11, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	21 deg.C , 46%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Wataru Kojima
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.	931.912	QP	20.9	22.2	10.2	31.0	22.3	46.0	23.7	150	358	
Hori.	2483.500	PK	44.6	27.5	24.1	41.1	55.1	73.9	18.8	100	332	
Hori.	4924.000	PK	49.1	31.3	5.9	40.9	45.4	73.9	28.5	100	242	
Hori.	6565.333	PK	48.5	34.8	6.9	40.5	49.7	73.9	24.2	160	221	
Hori.	7386.000	PK	47.6	36.9	7.5	41.4	50.6	73.9	23.3	100	0	
Hori.	9848.000	PK	44.8	38.7	8.6	38.8	53.3	73.9	20.6	100	0	
Hori.	12310.000	PK	45.0	39.4	10.2	39.2	55.4	73.9	18.5	100	0	
Hori.	2483.500	AV	35.8	27.5	24.1	41.1	46.3	53.9	7.6	100	332	
Hori.	4924.000	AV	38.2	31.3	5.9	40.9	34.5	53.9	19.4	100	242	
Hori.	6565.333	AV	40.1	34.8	6.9	40.5	41.3	53.9	12.6	160	221	
Hori.	7386.000	AV	36.3	36.9	7.5	41.4	39.3	53.9	14.6	100	0	
Hori.	9848.000	AV	34.0	38.7	8.6	38.8	42.5	53.9	11.4	100	0	
Hori.	12310.000	AV	33.7	39.4	10.2	39.2	44.1	53.9	9.8	100	0	
Vert.	46.559	QP	29.5	12.3	7.2	31.8	17.2	40.0	22.8	100	11	
Vert.	2483.500	PK	43.9	27.5	24.1	41.1	54.4	73.9	19.5	100	208	
Vert.	4924.000	PK	47.3	31.3	5.9	40.9	43.6	73.9	30.3	100	0	
Vert.	6565.333	PK	47.9	34.8	6.9	40.5	49.1	73.9	24.8	100	213	
Vert.	7386.000	PK	47.2	36.9	7.5	41.4	50.2	73.9	23.7	100	0	
Vert.	9848.000	PK	45.3	38.7	8.6	38.8	53.8	73.9	20.1	100	0	
Vert.	12310.000	PK	45.0	39.4	10.2	39.2	55.4	73.9	18.5	100	0	
Vert.	2483.500	AV	35.8	27.5	24.1	41.1	46.3	53.9	7.6	100	208	
Vert.	4924.000	AV	36.7	31.3	5.9	40.9	33.0	53.9	20.9	100	0	
Vert.	6565.333	AV	38.8	34.8	6.9	40.5	40.0	53.9	13.9	100	213	
Vert.	7386.000	AV	36.1	36.9	7.5	41.4	39.1	53.9	14.8	100	0	
Vert.	9848.000	AV	34.2	38.7	8.6	38.8	42.7	53.9	11.2	100	0	
Vert.	12310.000	AV	33.6	39.4	10.2	39.2	44.0	53.9	9.9	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2412 MHz			
	Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)			

(* 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.	939.948	QP	20.3	22.4	10.2	30.7	22.2	46.0	23.8	100	103	
Hori.	2390.000	PK	48.6	27.2	24.1	41.1	58.8	73.9	15.1	100	2	
Hori.	4824.000	PK	49.9	31.1	5.9	41.0	45.9	73.9	28.0	108	241	
Hori.	6432.000	PK	49.7	34.5	6.7	40.4	50.5	73.9	23.4	110	218	
Hori.	7236.000	PK	47.5	36.6	7.4	41.3	50.2	73.9	23.7	100	0	
Hori.	9648.000	PK	44.3	38.2	8.6	38.8	52.3	73.9	21.6	100	0	
Hori.	12060.000	PK	47.3	39.3	10.2	39.2	57.6	73.9	16.3	100	0	
Hori.	2390.000	AV	36.5	27.2	24.1	41.1	46.7	53.9	7.2	100	2	
Hori.	4824.000	AV	38.1	31.1	5.9	41.0	34.1	53.9	19.8	108	241	
Hori.	6432.000	AV	41.6	34.5	6.7	40.4	42.4	53.9	11.5	110	218	
Hori.	7236.000	AV	36.6	36.6	7.4	41.3	39.3	53.9	14.6	100	0	
Hori.	9648.000	AV	33.8	38.2	8.6	38.8	41.8	53.9	12.1	100	0	
Hori.	12060.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	0	
Vert.	46.101	QP	24.8	12.3	7.2	31.9	12.4	40.0	27.6	100	59	
Vert.	2390.000	PK	48.7	27.2	24.1	41.1	58.9	73.9	15.0	100	325	
Vert.	4824.000	PK	48.2	31.1	5.9	41.0	44.2	73.9	29.7	100	291	
Vert.	6432.000	PK	48.3	34.5	6.7	40.4	49.1	73.9	24.8	100	222	
Vert.	7236.000	PK	47.7	36.6	7.4	41.3	50.4	73.9	23.5	100	0	
Vert.	9648.000	PK	45.9	38.2	8.6	38.8	53.9	73.9	20.0	100	0	
Vert.	12060.000	PK	46.7	39.3	10.2	39.2	57.0	73.9	16.9	100	0	
Vert.	2390.000	AV	36.4	27.2	24.1	41.1	46.6	53.9	7.3	100	325	
Vert.	4824.000	AV	37.0	31.1	5.9	41.0	33.0	53.9	20.9	100	291	
Vert.	6432.000	AV	38.8	34.5	6.7	40.4	39.6	53.9	14.3	100	222	
Vert.	7236.000	AV	36.6	36.6	7.4	41.3	39.3	53.9	14.6	100	0	
Vert.	9648.000	AV	34.1	38.2	8.6	38.8	42.1	53.9	11.8	100	0	
Vert.	12060.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	0	

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

*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	80.6	27.3	24.1	41.1	90.9	-	-	Carrier
Hori.	2400.000	PK	41.8	27.3	24.1	41.1	52.1	70.9	18.8	
Vert.	2412.000	PK	81.8	27.3	24.1	41.1	92.1	-	-	Carrier
Vert.	2400.000	PK	42.1	27.3	24.1	41.1	52.4	72.1	19.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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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 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2437 MHz			
	Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)			

(* 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.	930.585	QP	19.9	22.4	10.1	30.7	21.7	46.0	24.3	100	113	
Hori.	4874.000	PK	48.9	31.2	5.9	41.0	45.0	73.9	28.9	104	237	
Hori.	6498.667	PK	49.0	34.6	6.7	40.4	49.9	73.9	24.0	160	216	
Hori.	7311.000	PK	47.8	36.7	7.5	41.4	50.6	73.9	23.3	100	0	
Hori.	9748.000	PK	45.1	38.5	8.6	38.8	53.4	73.9	20.5	100	0	
Hori.	12185.000	PK	46.5	39.3	10.2	39.2	56.8	73.9	17.1	100	0	
Hori.	4874.000	AV	37.0	31.2	5.9	41.0	33.1	53.9	20.8	104	237	
Hori.	6498.667	AV	40.5	34.6	6.7	40.4	41.4	53.9	12.5	160	216	
Hori.	7311.000	AV	36.1	36.7	7.5	41.4	38.9	53.9	15.0	100	0	
Hori.	9748.000	AV	34.1	38.5	8.6	38.8	42.4	53.9	11.5	100	0	
Hori.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	
Vert.	46.572	QP	28.5	12.1	7.2	31.9	15.9	40.0	24.1	100	90	
Vert.	4874.000	PK	46.8	31.2	5.9	41.0	42.9	73.9	31.0	100	0	
Vert.	6498.667	PK	48.9	34.6	6.7	40.4	49.8	73.9	24.1	100	214	
Vert.	7311.000	PK	47.5	36.7	7.5	41.4	50.3	73.9	23.6	100	0	
Vert.	9748.000	PK	44.7	38.5	8.6	38.8	53.0	73.9	20.9	100	0	
Vert.	12185.000	PK	45.8	39.3	10.2	39.2	56.1	73.9	17.8	100	0	
Vert.	4874.000	AV	35.8	31.2	5.9	41.0	31.9	53.9	22.0	100	0	
Vert.	6498.667	AV	39.3	34.6	6.7	40.4	40.2	53.9	13.7	100	214	
Vert.	7311.000	AV	36.1	36.7	7.5	41.4	38.9	53.9	15.0	100	0	
Vert.	9748.000	AV	33.9	38.5	8.6	38.8	42.2	53.9	11.7	100	0	
Vert.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)			

(* 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.	931.807	QP	19.9	22.4	10.1	30.7	21.7	46.0	24.3	100	191	
Hori.	2483.500	PK	44.3	27.5	24.1	41.1	54.8	73.9	19.1	100	71	
Hori.	4924.000	PK	49.8	31.3	5.9	40.9	46.1	73.9	27.8	109	243	
Hori.	6565.333	PK	48.9	34.8	6.9	40.5	50.1	73.9	23.8	164	225	
Hori.	7386.000	PK	48.4	36.9	7.5	41.4	51.4	73.9	22.5	100	0	
Hori.	9848.000	PK	46.1	38.7	8.6	38.8	54.6	73.9	19.3	100	0	
Hori.	12310.000	PK	45.5	39.4	10.2	39.2	55.9	73.9	18.0	100	0	
Hori.	2483.500	AV	36.1	27.5	24.1	41.1	46.6	53.9	7.3	100	71	
Hori.	4924.000	AV	37.5	31.3	5.9	40.9	33.8	53.9	20.1	109	243	
Hori.	6565.333	AV	40.1	34.8	6.9	40.5	41.3	53.9	12.6	164	225	
Hori.	7386.000	AV	36.3	36.9	7.5	41.4	39.3	53.9	14.6	100	0	
Hori.	9848.000	AV	33.6	38.7	8.6	38.8	42.1	53.9	11.8	100	0	
Hori.	12310.000	AV	33.8	39.4	10.2	39.2	44.2	53.9	9.7	100	0	
Vert.	46.566	QP	28.6	12.1	7.2	31.9	16.0	40.0	24.0	100	94	
Vert.	2483.500	PK	47.3	27.5	24.1	41.1	57.8	73.9	16.1	100	232	
Vert.	4924.000	PK	47.9	31.3	5.9	40.9	44.2	73.9	29.7	100	282	
Vert.	6565.333	PK	49.3	34.8	6.9	40.5	50.5	73.9	23.4	100	215	
Vert.	7386.000	PK	47.9	36.9	7.5	41.4	50.9	73.9	23.0	100	0	
Vert.	9848.000	PK	46.3	38.7	8.6	38.8	54.8	73.9	19.1	100	0	
Vert.	12310.000	PK	45.2	39.4	10.2	39.2	55.6	73.9	18.3	100	0	
Vert.	2483.500	AV	36.4	27.5	24.1	41.1	46.9	53.9	7.0	100	232	
Vert.	4924.000	AV	36.4	31.3	5.9	40.9	32.7	53.9	21.2	100	282	
Vert.	6565.333	AV	38.8	34.8	6.9	40.5	40.0	53.9	13.9	100	215	
Vert.	7386.000	AV	36.1	36.9	7.5	41.4	39.1	53.9	14.8	100	0	
Vert.	9848.000	AV	34.0	38.7	8.6	38.8	42.5	53.9	11.4	100	0	
Vert.	12310.000	AV	33.7	39.4	10.2	39.2	44.1	53.9	9.8	100	0	

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

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

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2422 MHz			
	Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)			

(* 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.	953.322	QP	20.0	22.6	10.2	30.5	22.3	46.0	23.7	152	100	
Hori.	2390.000	PK	48.3	27.2	24.1	41.1	58.5	73.9	15.4	100	310	
Hori.	4844.000	PK	48.9	31.1	5.9	41.0	44.9	73.9	29.0	114	233	
Hori.	6458.667	PK	49.0	34.5	6.7	40.4	49.8	73.9	24.1	156	221	
Hori.	7266.000	PK	47.8	36.6	7.4	41.3	50.5	73.9	23.4	100	0	
Hori.	9688.000	PK	45.6	38.3	8.6	38.8	53.7	73.9	20.2	100	0	
Hori.	12110.000	PK	45.9	39.3	10.1	39.2	56.1	73.9	17.8	100	0	
Hori.	2390.000	AV	37.7	27.2	24.1	41.1	47.9	53.9	6.0	100	310	
Hori.	4844.000	AV	37.4	31.1	5.9	41.0	33.4	53.9	20.5	114	233	
Hori.	6458.667	AV	40.7	34.5	6.7	40.4	41.5	53.9	12.4	156	221	
Hori.	7266.000	AV	36.5	36.6	7.4	41.3	39.2	53.9	14.7	100	0	
Hori.	9688.000	AV	33.9	38.3	8.6	38.8	42.0	53.9	11.9	100	0	
Hori.	12110.000	AV	34.8	39.3	10.1	39.2	45.0	53.9	8.9	100	0	
Vert.	46.577	QP	28.8	12.1	7.2	31.9	16.2	40.0	23.8	100	95	
Vert.	2390.000	PK	48.9	27.2	24.1	41.1	59.1	73.9	14.8	100	93	
Vert.	4844.000	PK	47.2	31.1	5.9	41.0	43.2	73.9	30.7	100	0	
Vert.	6458.667	PK	49.0	34.5	6.7	40.4	49.8	73.9	24.1	100	216	
Vert.	7266.000	PK	48.2	36.6	7.4	41.3	50.9	73.9	23.0	100	0	
Vert.	9688.000	PK	45.0	38.3	8.6	38.8	53.1	73.9	20.8	100	0	
Vert.	12110.000	PK	46.0	39.3	10.1	39.2	56.2	73.9	17.7	100	0	
Vert.	2390.000	AV	38.1	27.2	24.1	41.1	48.3	53.9	5.6	100	93	
Vert.	4844.000	AV	36.4	31.1	5.9	41.0	32.4	53.9	21.5	100	0	
Vert.	6458.667	AV	38.8	34.5	6.7	40.4	39.6	53.9	14.3	100	216	
Vert.	7266.000	AV	36.5	36.6	7.4	41.3	39.2	53.9	14.7	100	0	
Vert.	9688.000	AV	34.4	38.3	8.6	38.8	42.5	53.9	11.4	100	0	
Vert.	12110.000	AV	34.9	39.3	10.1	39.2	45.1	53.9	8.8	100	0	

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

*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.	2422.000	PK	79.4	27.3	24.1	41.1	89.7	-	-	Carrier
Hori.	2400.000	PK	41.0	27.3	24.1	41.1	51.3	69.7	18.4	
Vert.	2422.000	PK	79.5	27.3	24.1	41.1	89.8	-	-	Carrier
Vert.	2400.000	PK	42.2	27.3	24.1	41.1	52.5	69.8	17.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 13GHz)) - Gain(Amprifier)

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 & No.2 & No.3 Semi Anechoic Chamber		
Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2437 MHz			
	Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)			

(* 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.	944.783	QP	20.3	22.5	10.2	30.6	22.4	46.0	23.6	150	113	
Hori.	4874.000	PK	48.6	31.2	5.9	41.0	44.7	73.9	29.2	100	236	
Hori.	6498.667	PK	48.9	34.6	6.7	40.4	49.8	73.9	24.1	169	220	
Hori.	7311.000	PK	47.6	36.7	7.5	41.4	50.4	73.9	23.5	100	0	
Hori.	9748.000	PK	45.4	38.5	8.6	38.8	53.7	73.9	20.2	100	0	
Hori.	12185.000	PK	46.1	39.3	10.2	39.2	56.4	73.9	17.5	100	0	
Hori.	4874.000	AV	37.5	31.2	5.9	41.0	33.6	53.9	20.3	100	236	
Hori.	6498.667	AV	40.3	34.6	6.7	40.4	41.2	53.9	12.7	169	220	
Hori.	7311.000	AV	36.0	36.7	7.5	41.4	38.8	53.9	15.1	100	0	
Hori.	9748.000	AV	33.8	38.5	8.6	38.8	42.1	53.9	11.8	100	0	
Hori.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	
Vert.	46.572	QP	28.9	12.1	7.2	31.9	16.3	40.0	23.7	100	92	
Vert.	4874.000	PK	46.7	31.2	5.9	41.0	42.8	73.9	31.1	100	0	
Vert.	6498.667	PK	48.2	34.6	6.7	40.4	49.1	73.9	24.8	100	212	
Vert.	7311.000	PK	47.5	36.7	7.5	41.4	50.3	73.9	23.6	100	0	
Vert.	9748.000	PK	46.0	38.5	8.6	38.8	54.3	73.9	19.6	100	0	
Vert.	12185.000	PK	45.5	39.3	10.2	39.2	55.8	73.9	18.1	100	0	
Vert.	4874.000	AV	36.0	31.2	5.9	41.0	32.1	53.9	21.8	100	0	
Vert.	6498.667	AV	39.0	34.6	6.7	40.4	39.9	53.9	14.0	100	212	
Vert.	7311.000	AV	36.0	36.7	7.5	41.4	38.8	53.9	15.1	100	0	
Vert.	9748.000	AV	34.2	38.5	8.6	38.8	42.5	53.9	11.4	100	0	
Vert.	12185.000	AV	34.6	39.3	10.2	39.2	44.9	53.9	9.0	100	0	

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

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

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

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

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Date	April 1, 2012	April 4, 2012	April 10, 2012	April 12, 2012
Temperature / Humidity	22 deg.C , 38%RH	21 deg.C , 35%RH	23 deg.C , 47%RH	22 deg.C , 48%RH
Engineer	Makoto Hosaka	Makoto Hosaka	Wataru Kojima	Hikaru Shirasawa
Mode	Tx, 2452 MHz			
	Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)			

(* 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.	940.910	QP	20.2	22.4	10.2	30.7	22.1	46.0	23.9	149	274	
Hori.	2483.500	PK	44.9	27.5	24.1	41.1	55.4	73.9	18.5	100	344	
Hori.	4904.000	PK	48.2	31.3	5.9	40.9	44.5	73.9	29.4	100	239	
Hori.	6538.667	PK	49.0	34.7	6.7	40.5	49.9	73.9	24.0	163	220	
Hori.	7356.000	PK	47.5	36.8	7.5	41.4	50.4	73.9	23.5	100	0	
Hori.	9808.000	PK	44.8	38.6	8.7	38.8	53.3	73.9	20.6	100	0	
Hori.	12260.000	PK	44.7	39.3	10.2	39.2	55.0	73.9	18.9	100	0	
Hori.	2483.500	AV	37.5	27.5	24.1	41.1	48.0	53.9	5.9	100	344	
Hori.	4904.000	AV	36.8	31.3	5.9	40.9	33.1	53.9	20.8	100	239	
Hori.	6538.667	AV	40.1	34.7	6.7	40.5	41.0	53.9	12.9	163	220	
Hori.	7356.000	AV	36.2	36.8	7.5	41.4	39.1	53.9	14.8	100	0	
Hori.	9808.000	AV	33.5	38.6	8.7	38.8	42.0	53.9	11.9	100	0	
Hori.	12260.000	AV	33.8	39.3	10.2	39.2	44.1	53.9	9.8	100	0	
Vert.	46.571	QP	29.0	12.1	7.2	31.9	16.4	40.0	23.6	100	118	
Vert.	2483.500	PK	46.9	27.5	24.1	41.1	57.4	73.9	16.5	100	109	
Vert.	4904.000	PK	47.1	31.3	5.9	40.9	43.4	73.9	30.5	100	0	
Vert.	6538.667	PK	48.6	34.7	6.7	40.5	49.5	73.9	24.4	110	214	
Vert.	7356.000	PK	47.4	36.8	7.5	41.4	50.3	73.9	23.6	100	0	
Vert.	9808.000	PK	45.1	38.6	8.7	38.8	53.6	73.9	20.3	100	0	
Vert.	12260.000	PK	46.7	39.3	10.2	39.2	57.0	73.9	16.9	100	0	
Vert.	2483.500	AV	38.3	27.5	24.1	41.1	48.8	53.9	5.1	100	109	
Vert.	4904.000	AV	36.0	31.3	5.9	40.9	32.3	53.9	21.6	100	0	
Vert.	6538.667	AV	38.7	34.7	6.7	40.5	39.6	53.9	14.3	110	214	
Vert.	7356.000	AV	36.1	36.8	7.5	41.4	39.0	53.9	14.9	100	0	
Vert.	9808.000	AV	33.9	38.6	8.7	38.8	42.4	53.9	11.5	100	0	
Vert.	12260.000	AV	34.9	39.3	10.2	39.2	45.2	53.9	8.7	100	0	

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

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

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

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

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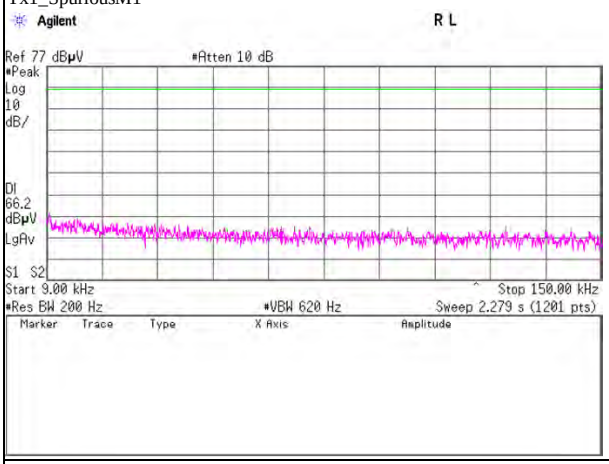
Spurious emission (Conducted)

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

Tx, 2412MHz (Below 1GHz)

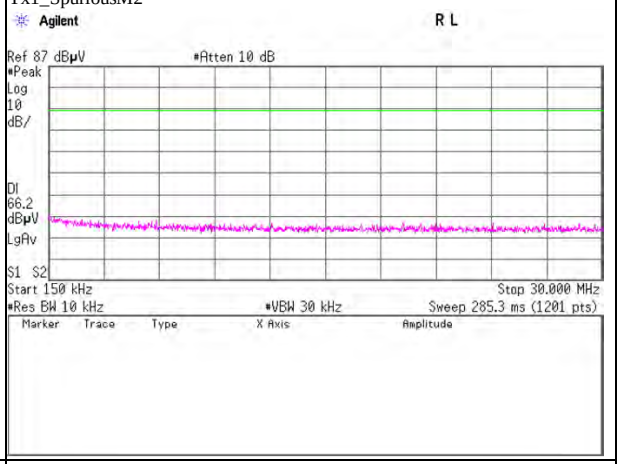
9kHz - 150kHz

Tx1_SpuriousM1



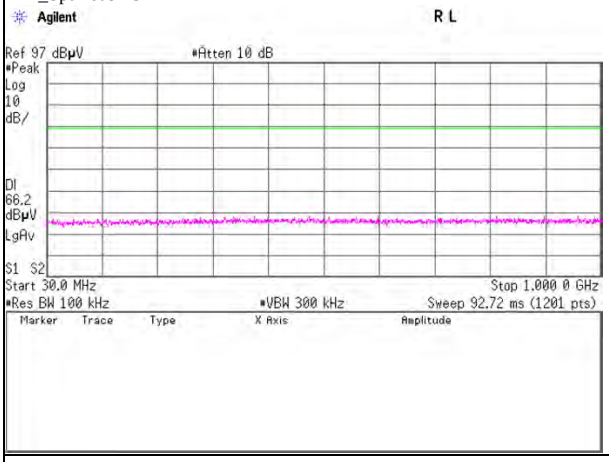
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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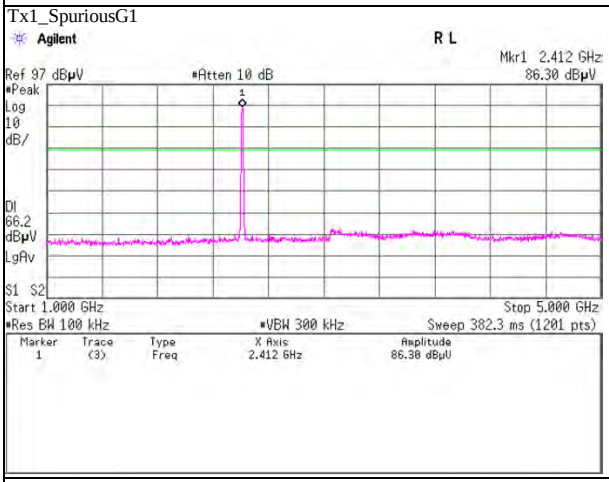
Spurious emission (Conducted)

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

Tx, 2412MHz (Above 1GHz)

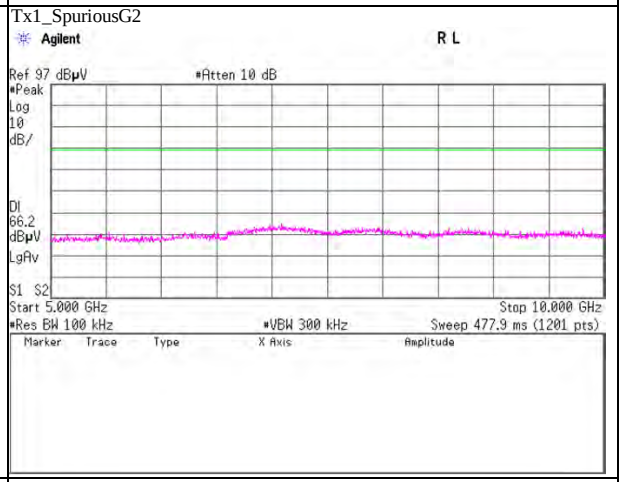
1GHz - 5GHz

Tx1_SpuriousG1



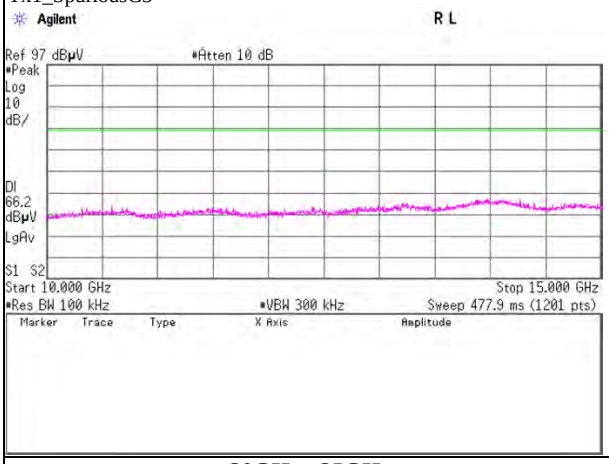
5GHz - 10GHz

Tx1_SpuriousG2



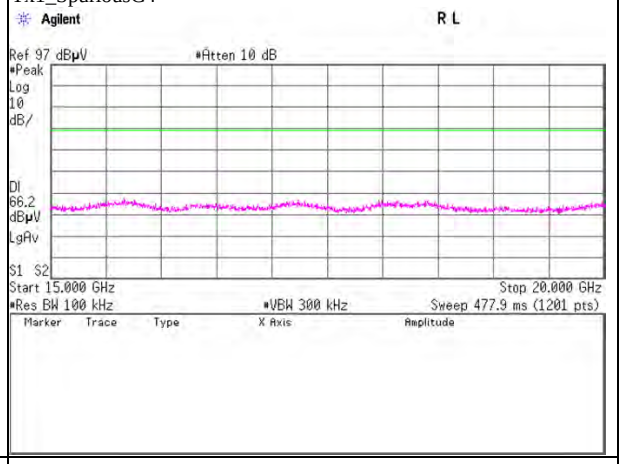
10GHz - 15GHz

Tx1_SpuriousG3



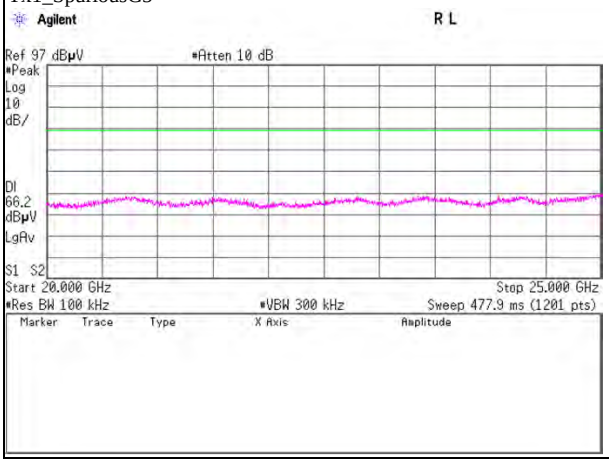
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



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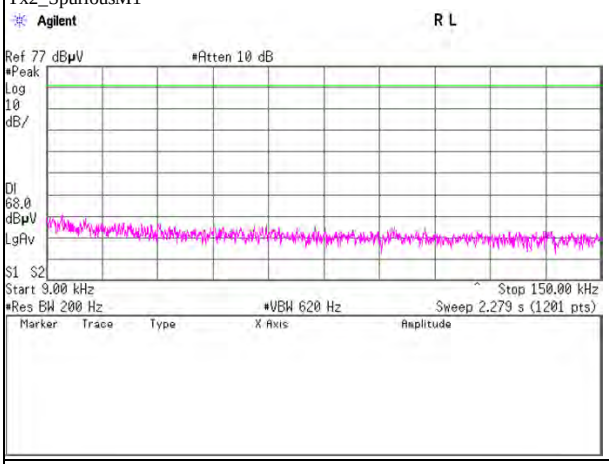
Spurious emission (Conducted)

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

Tx, 2437MHz (Below 1GHz)

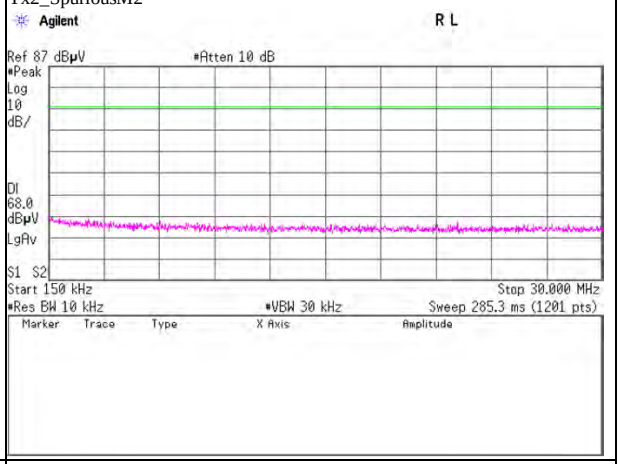
9kHz - 150kHz

Tx2_SpuriousM1



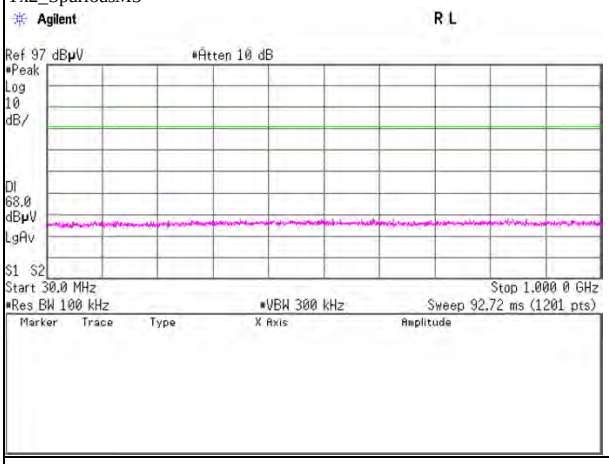
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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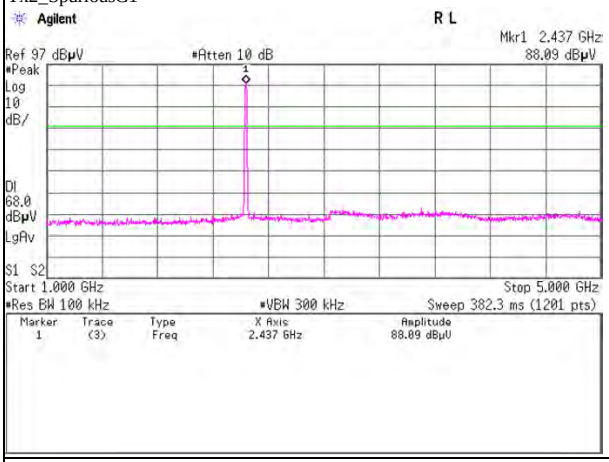
Spurious emission (Conducted)

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

Tx, 2437MHz (Above 1GHz)

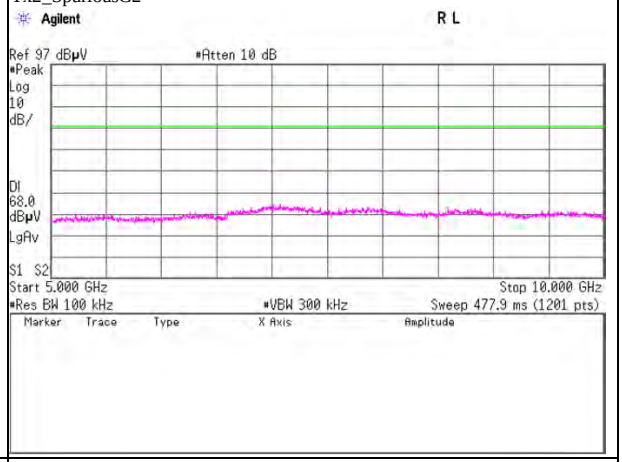
1GHz - 5GHz

Tx2_SpuriousG1



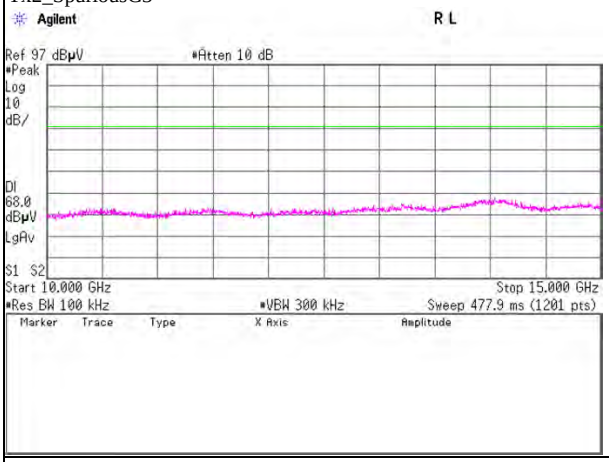
5GHz - 10GHz

Tx2_SpuriousG2



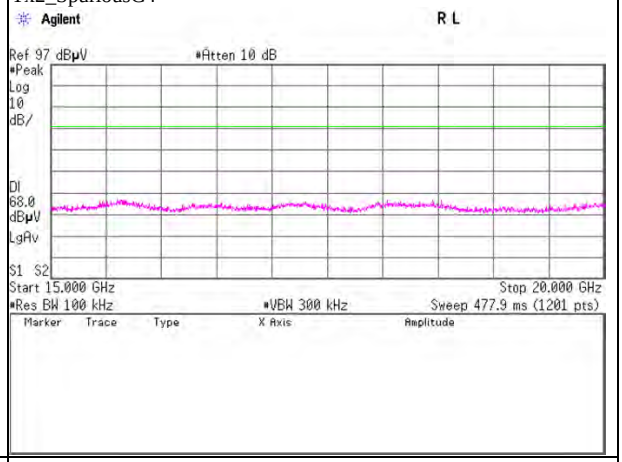
10GHz - 15GHz

Tx2_SpuriousG3



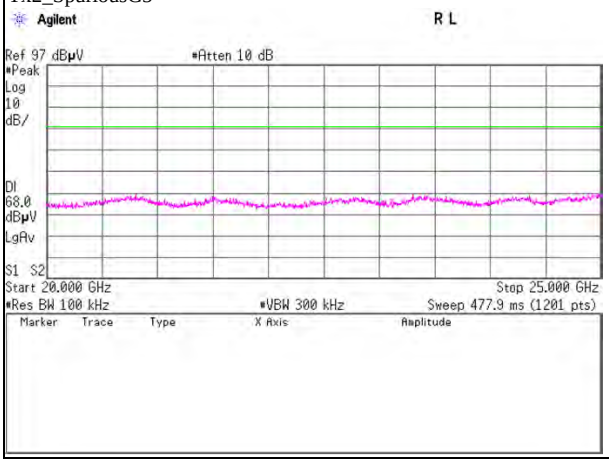
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



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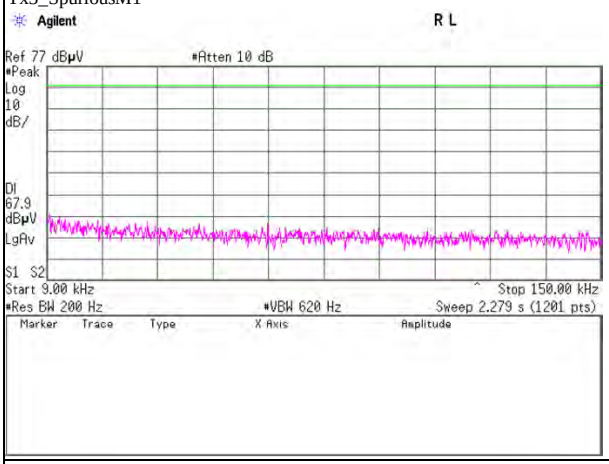
Spurious emission (Conducted)

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

Tx, 2462MHz (Below 1GHz)

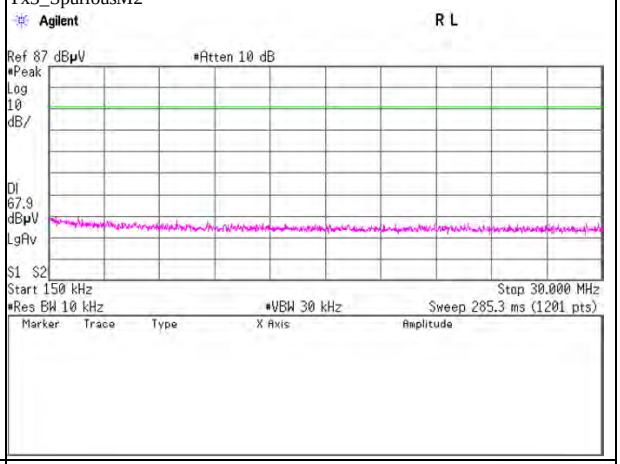
9kHz - 150kHz

Tx3_SpuriousM1



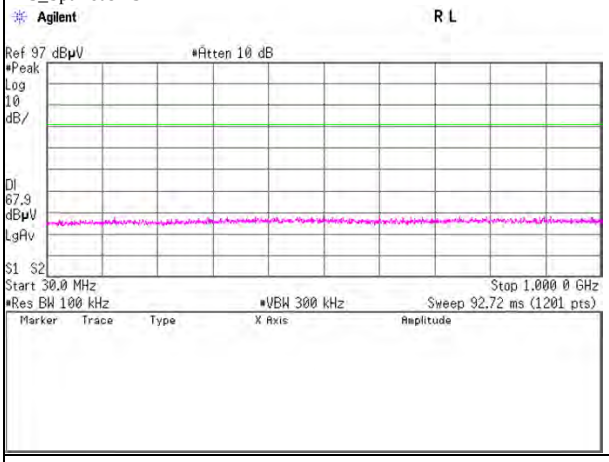
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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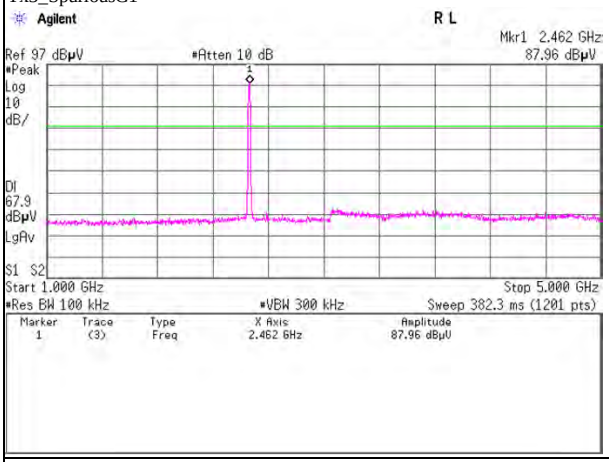
Spurious emission (Conducted)

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

Tx, 2462MHz (Above 1GHz)

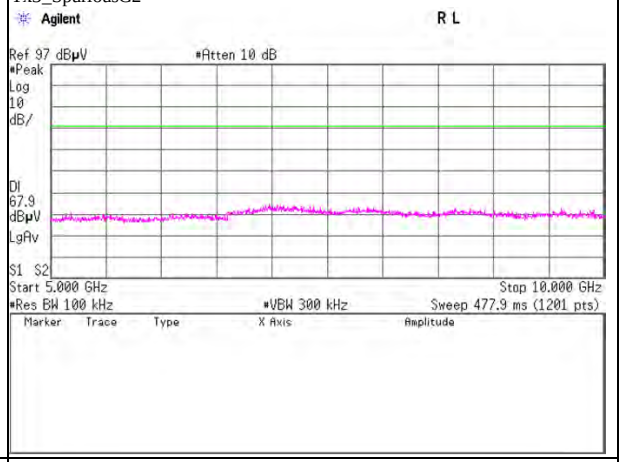
1GHz - 5GHz

Tx3_SpuriousG1



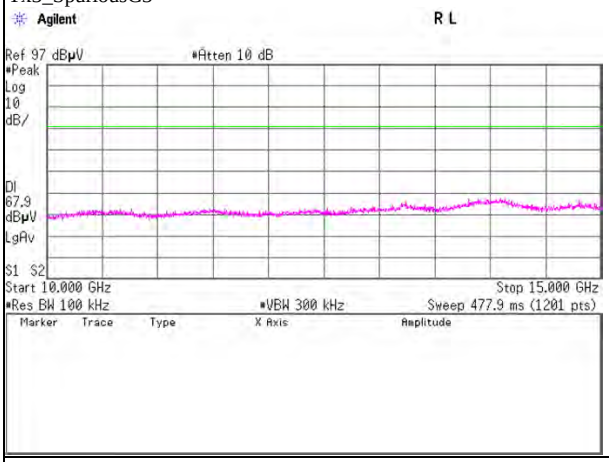
5GHz - 10GHz

Tx3_SpuriousG2



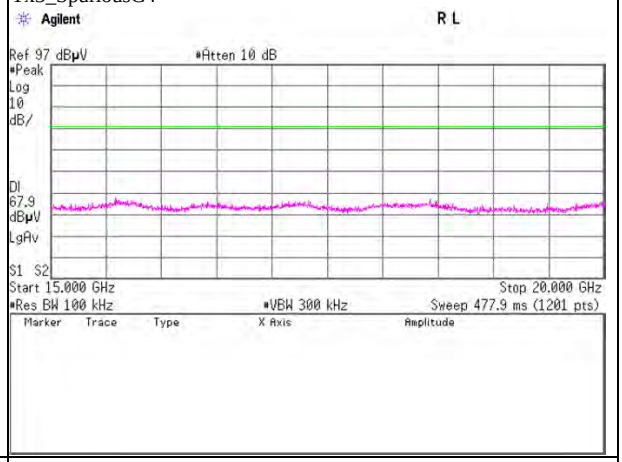
10GHz - 15GHz

Tx3_SpuriousG3



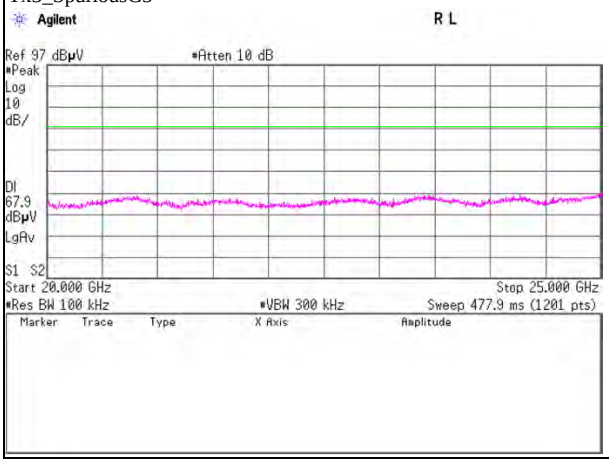
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



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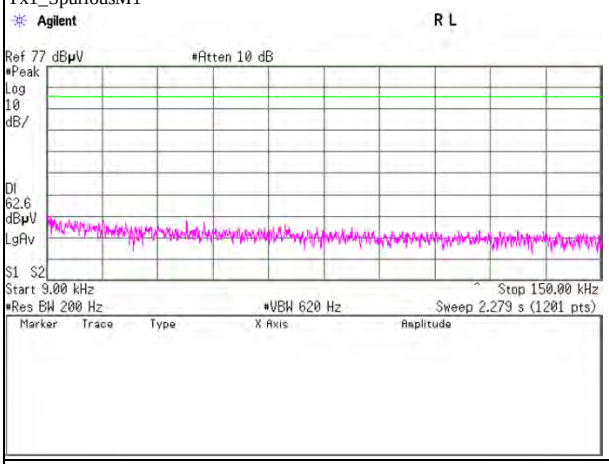
Spurious emission (Conducted)

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

Tx, 2412MHz (Below 1GHz)

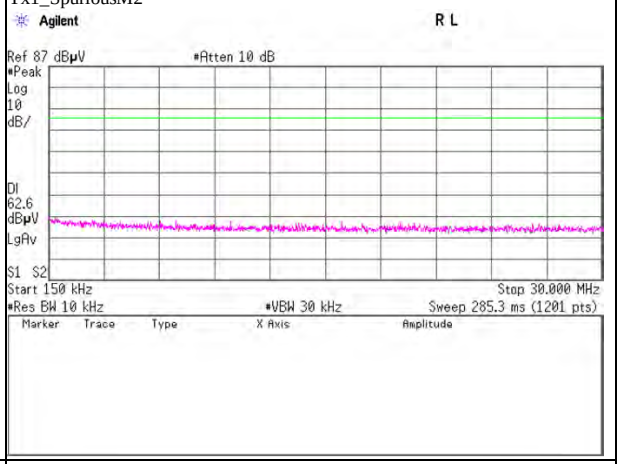
9kHz - 150kHz

Tx1_SpuriousM1



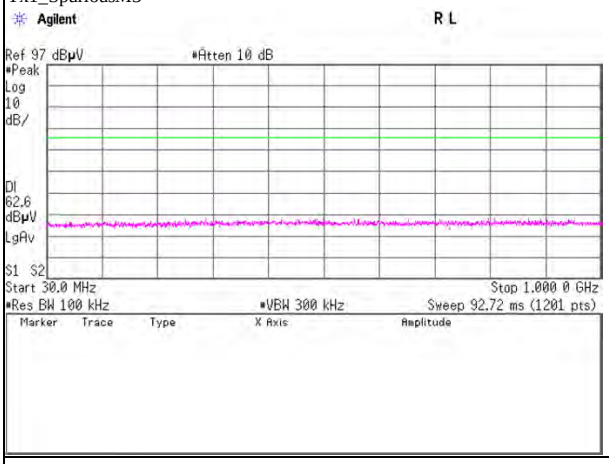
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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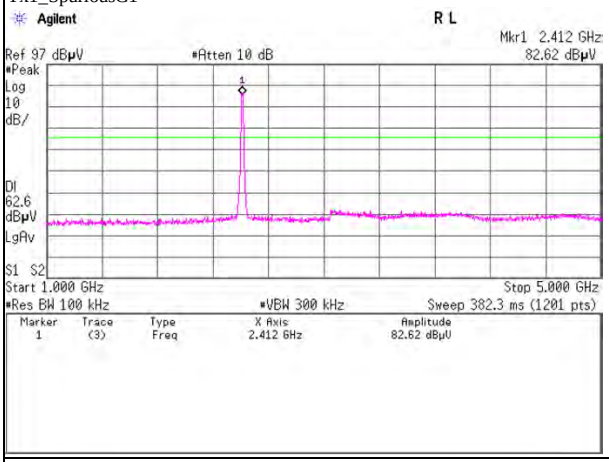
Spurious emission (Conducted)

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

Tx, 2412MHz (Above 1GHz)

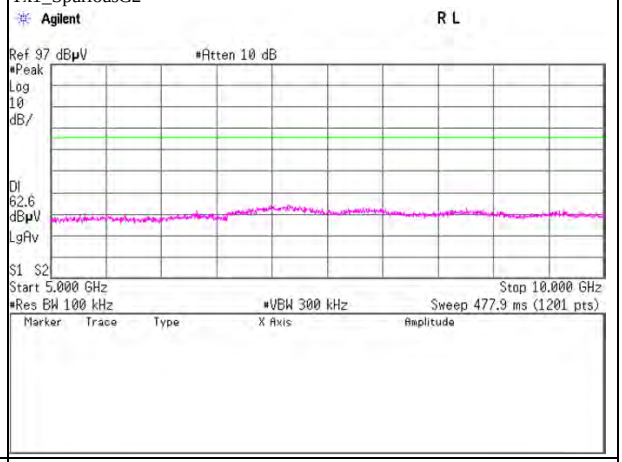
1GHz - 5GHz

Tx1_SpuriousG1



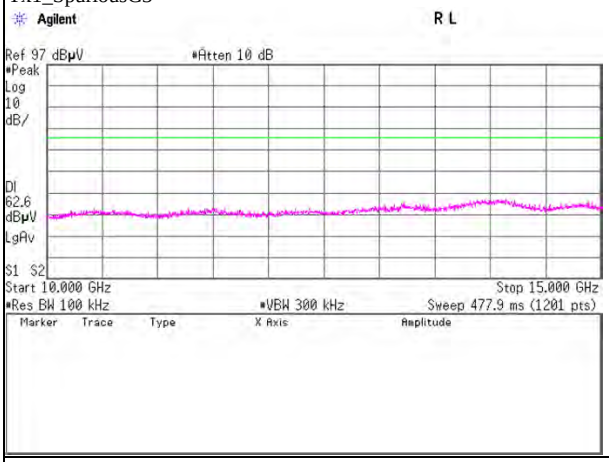
5GHz - 10GHz

Tx1_SpuriousG2



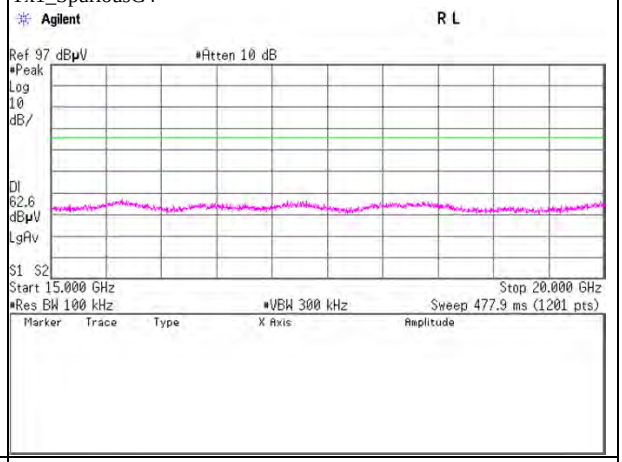
10GHz - 15GHz

Tx1_SpuriousG3



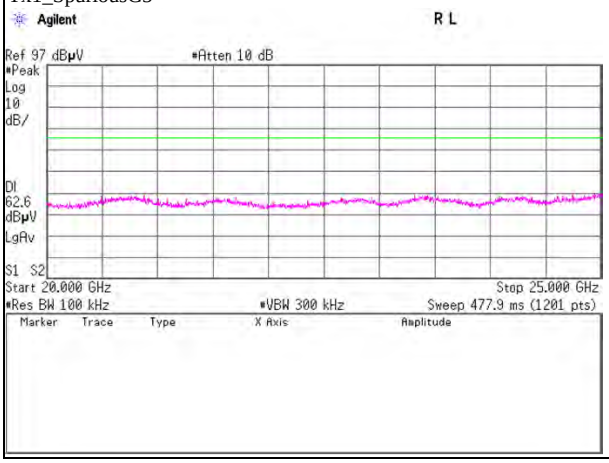
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



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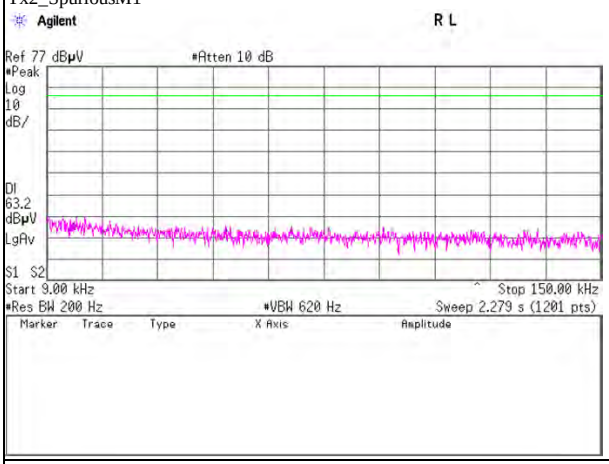
Spurious emission (Conducted)

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

Tx, 2437MHz (Below 1GHz)

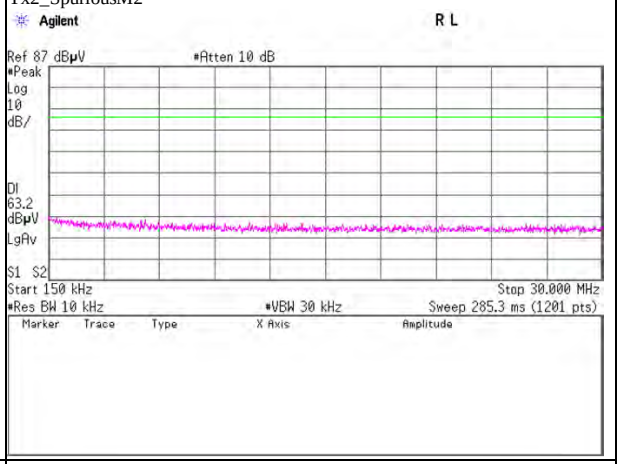
9kHz - 150kHz

Tx2_SpuriousM1



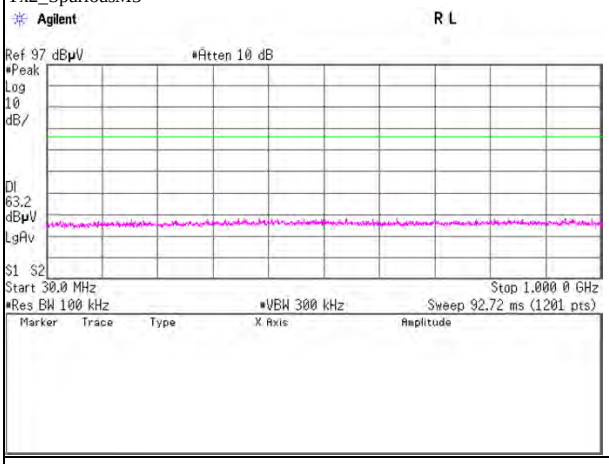
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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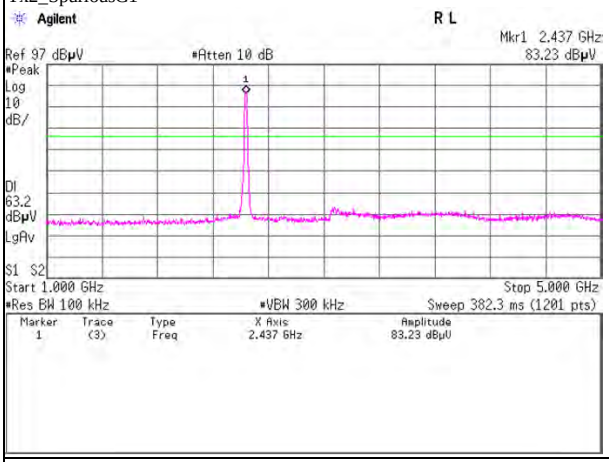
Spurious emission (Conducted)

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

Tx, 2437MHz (Above 1GHz)

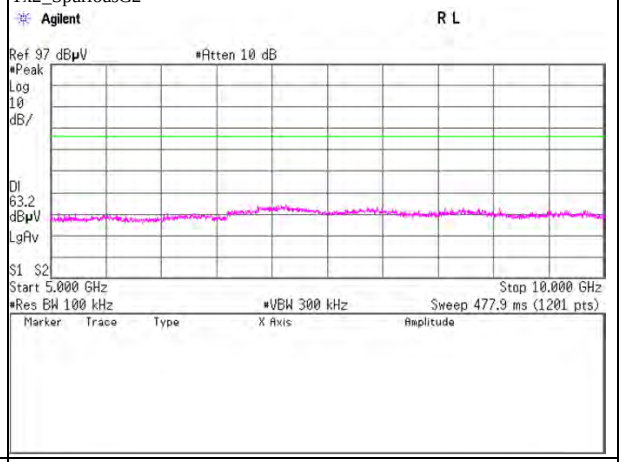
1GHz - 5GHz

Tx2_SpuriousG1



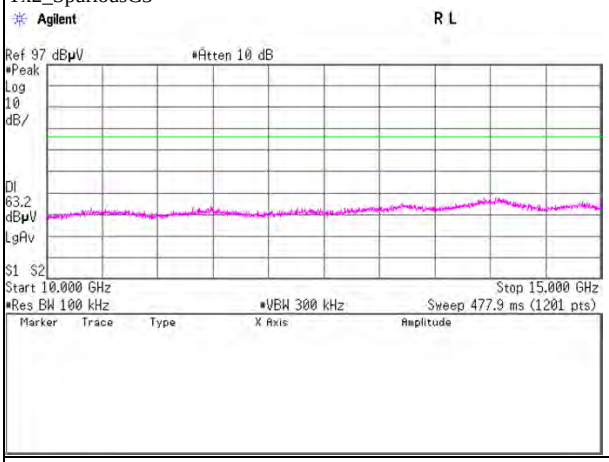
5GHz - 10GHz

Tx2_SpuriousG2



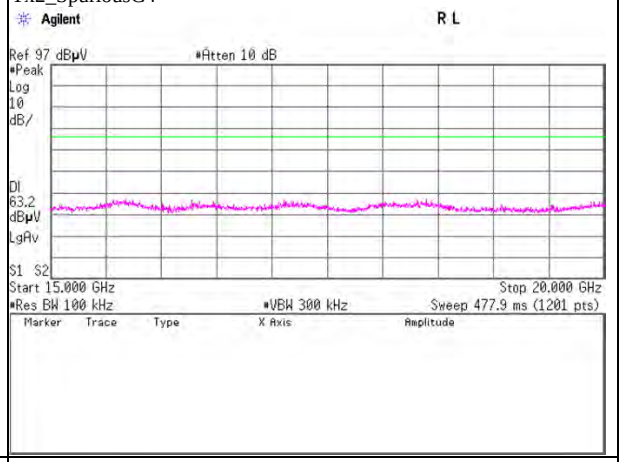
10GHz - 15GHz

Tx2_SpuriousG3



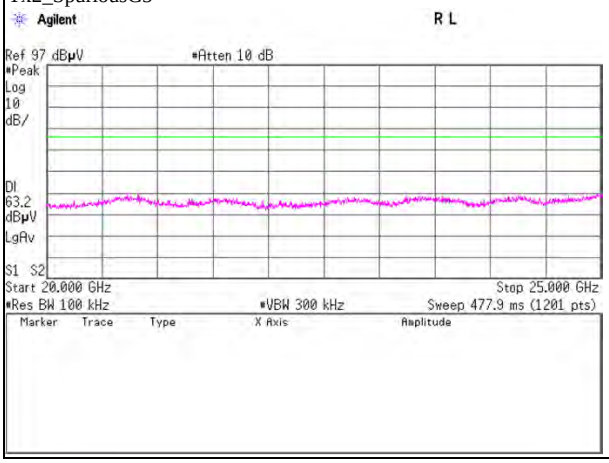
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



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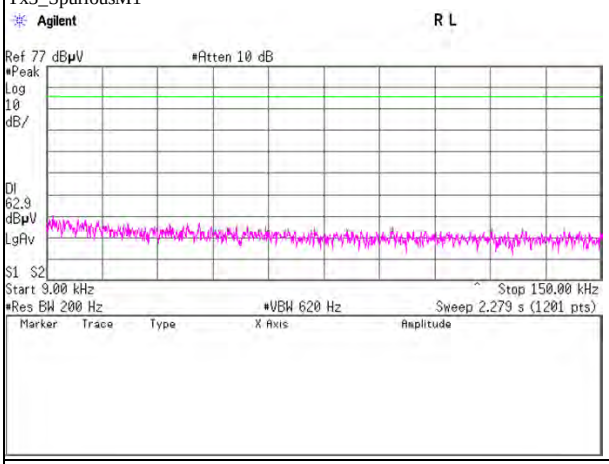
Spurious emission (Conducted)

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

Tx, 2462MHz (Below 1GHz)

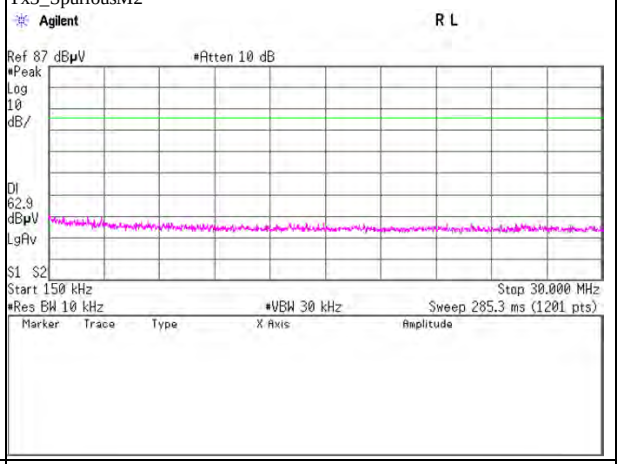
9kHz - 150kHz

Tx3_SpuriousM1



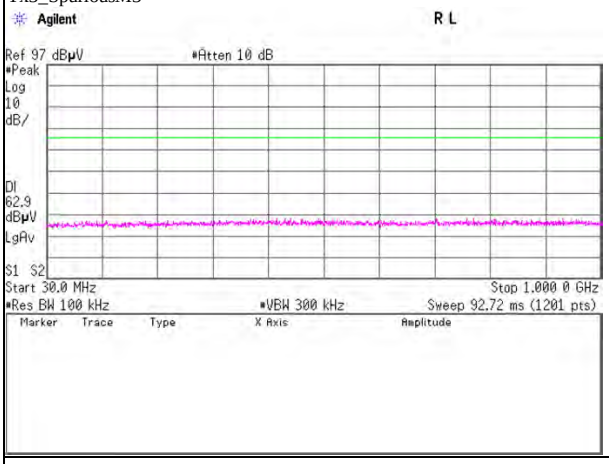
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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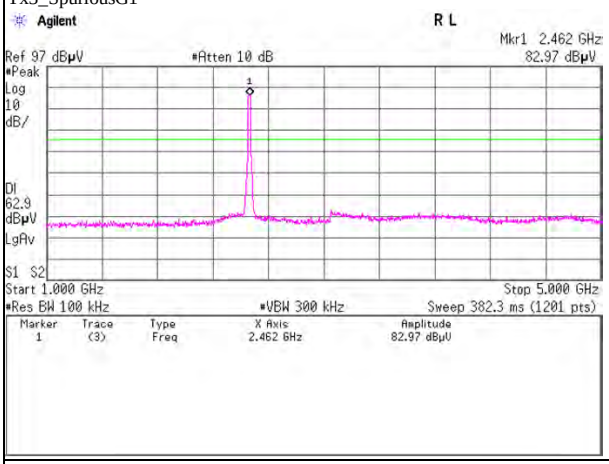
Spurious emission (Conducted)

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

Tx, 2462MHz (Above 1GHz)

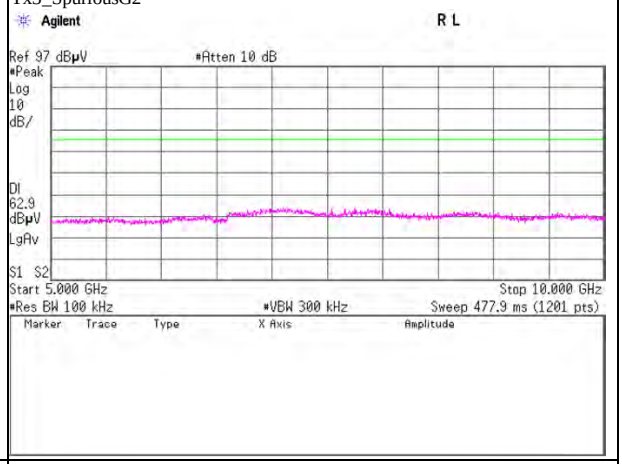
1GHz - 5GHz

Tx3_SpuriousG1



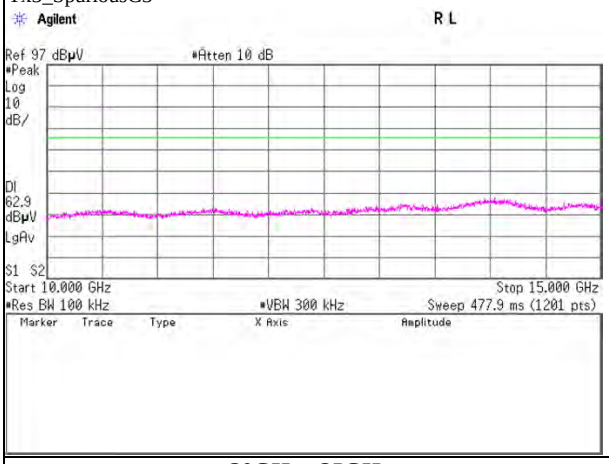
5GHz - 10GHz

Tx3_SpuriousG2



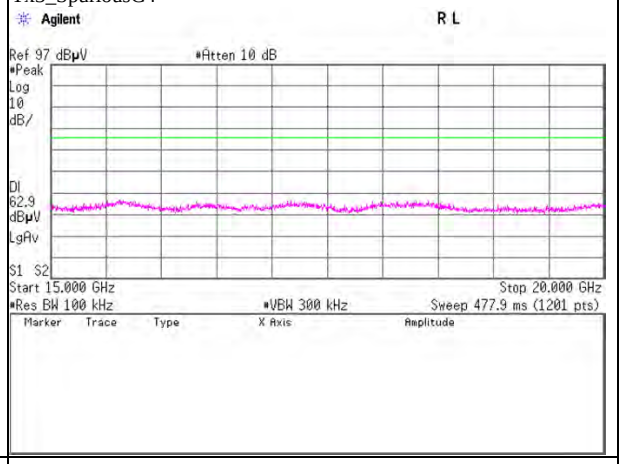
10GHz - 15GHz

Tx3_SpuriousG3



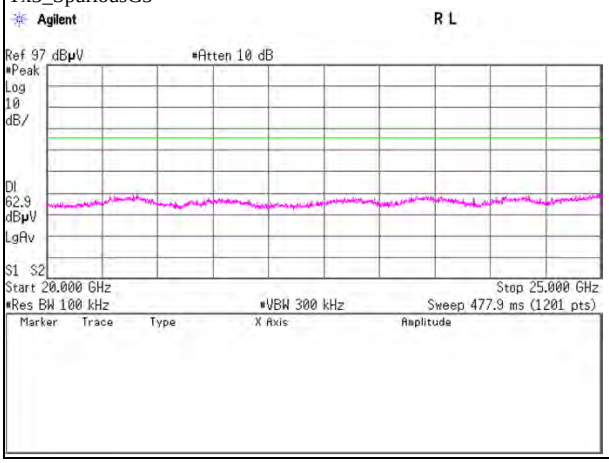
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



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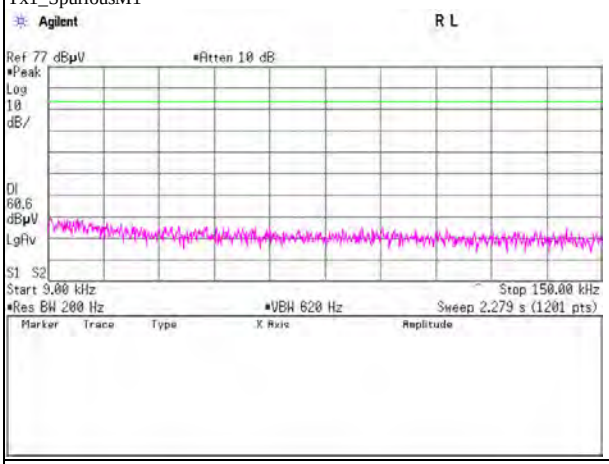
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2412MHz (Below 1GHz)

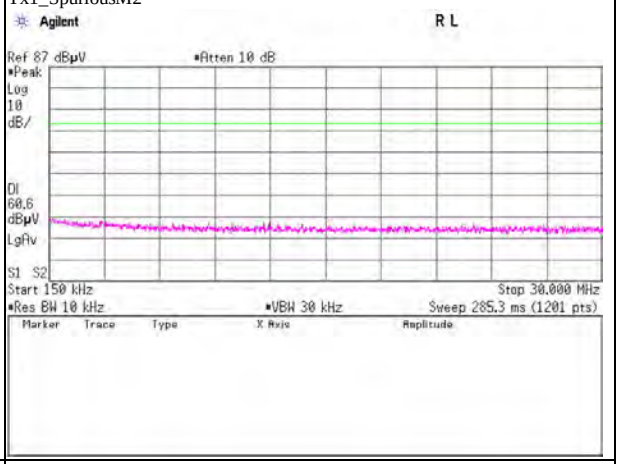
9kHz - 150kHz

Tx1_SpuriousM1



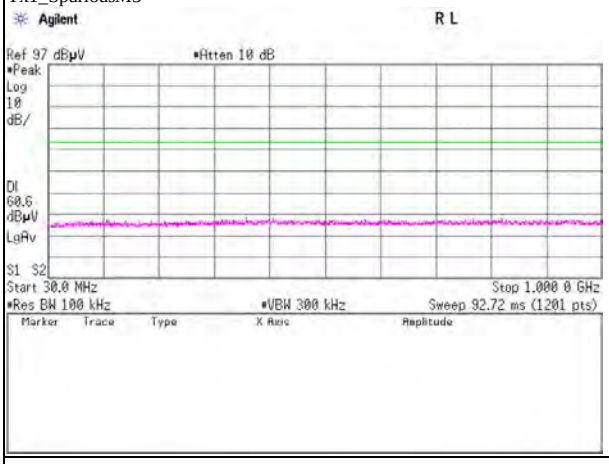
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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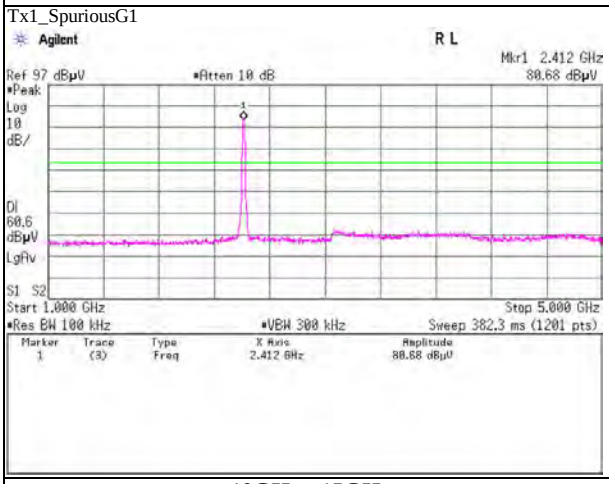
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2412MHz (Above 1GHz)

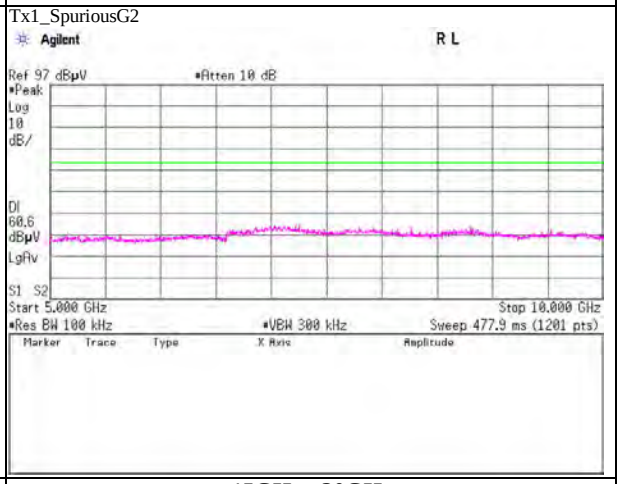
1GHz - 5GHz

Tx1_SpuriousG1



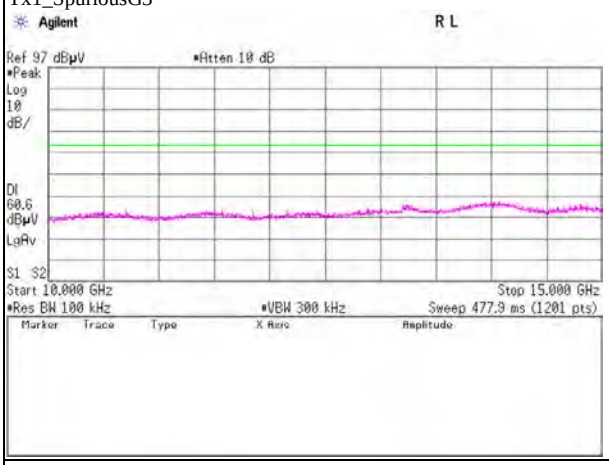
5GHz - 10GHz

Tx1_SpuriousG2



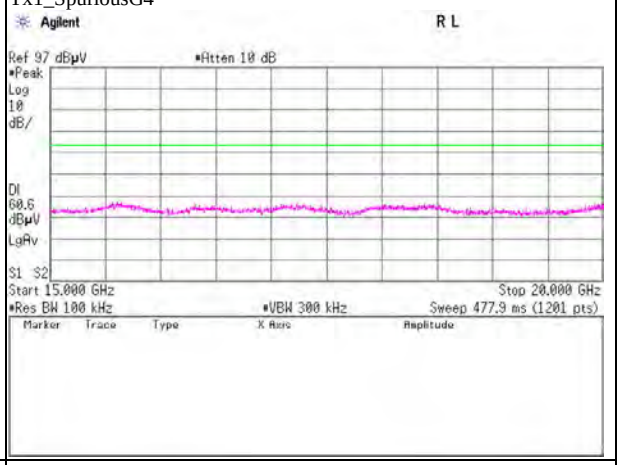
10GHz - 15GHz

Tx1_SpuriousG3



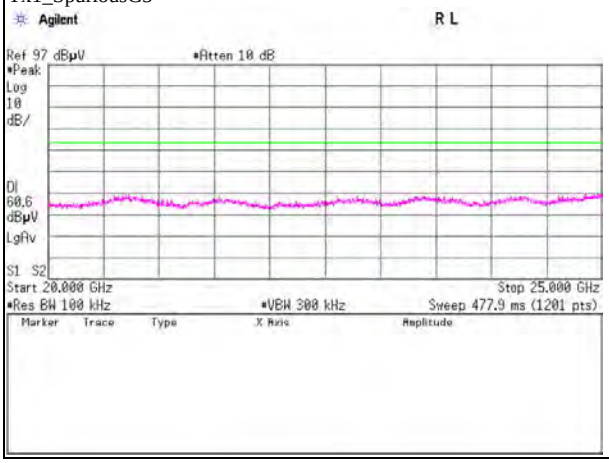
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



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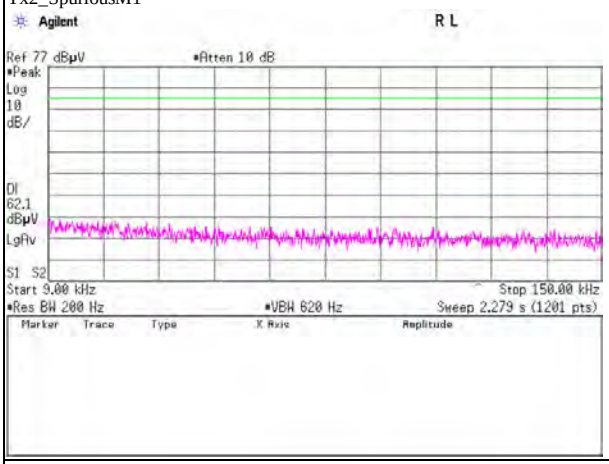
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2437MHz (Below 1GHz)

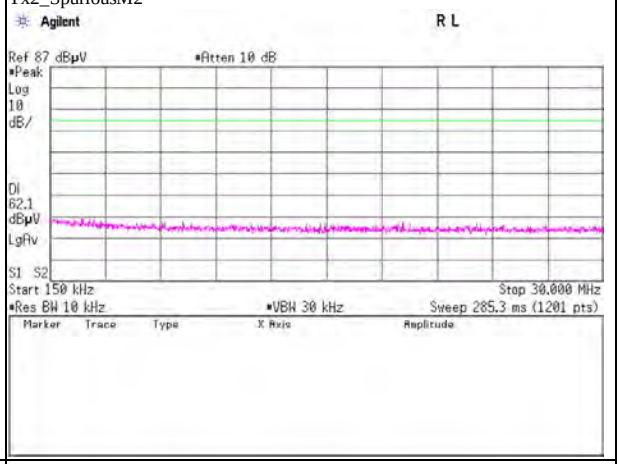
9kHz - 150kHz

Tx2_SpuriousM1



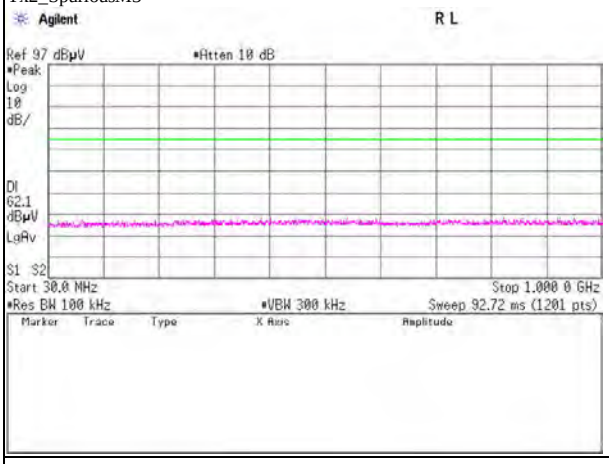
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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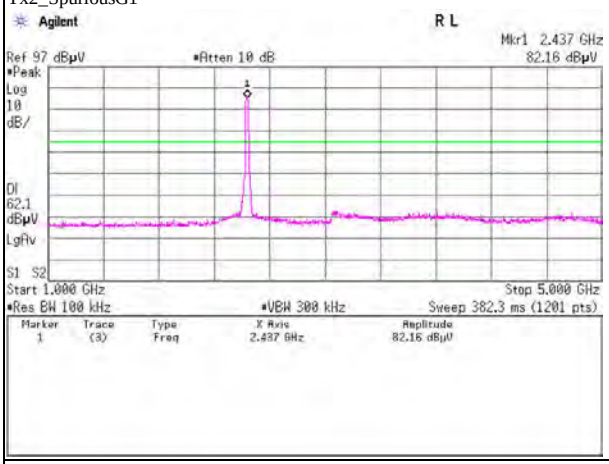
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2437MHz (Above 1GHz)

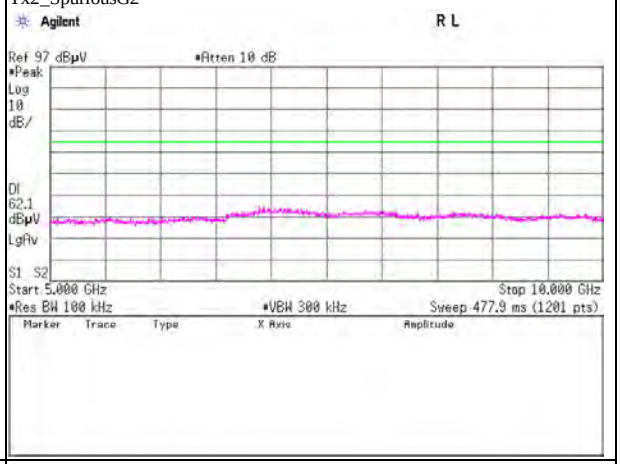
1GHz - 5GHz

Tx2_SpuriousG1



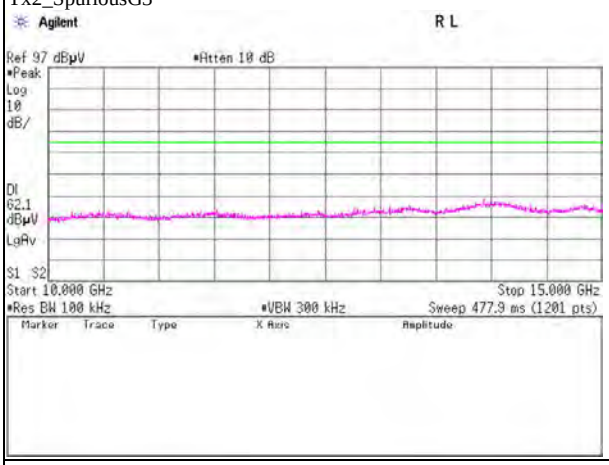
5GHz - 10GHz

Tx2_SpuriousG2



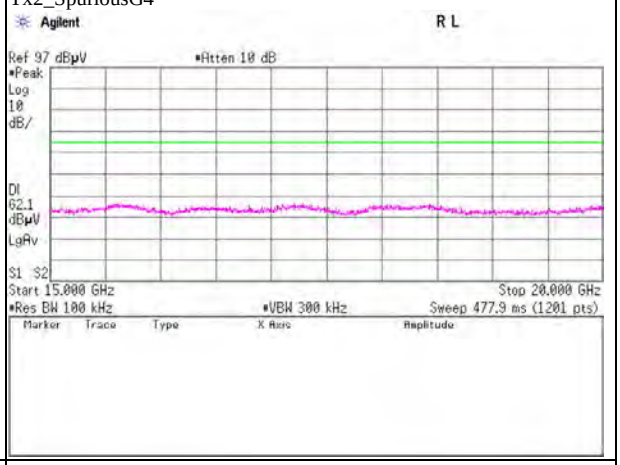
10GHz - 15GHz

Tx2_SpuriousG3



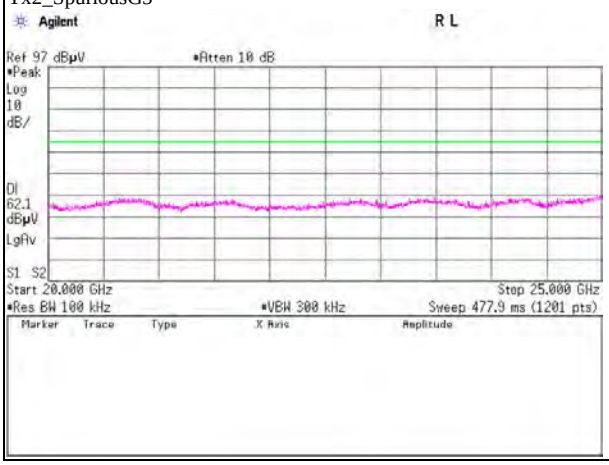
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



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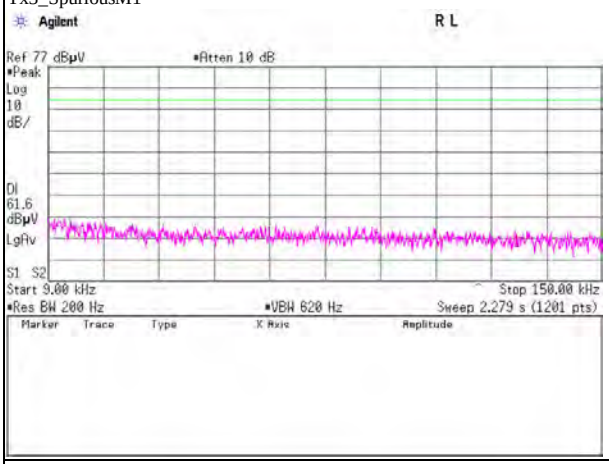
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2462MHz (Below 1GHz)

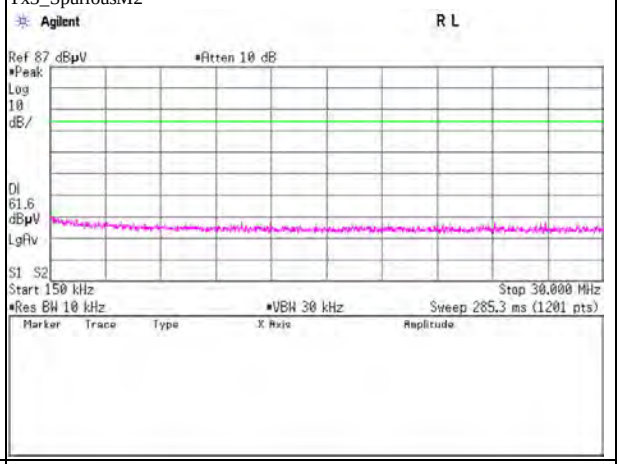
9kHz - 150kHz

Tx3_SpuriousM1



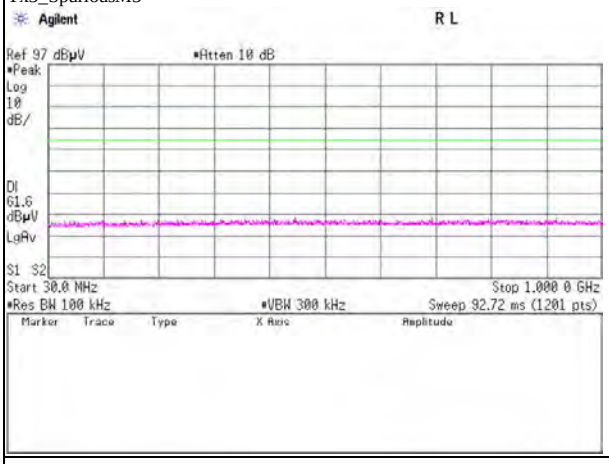
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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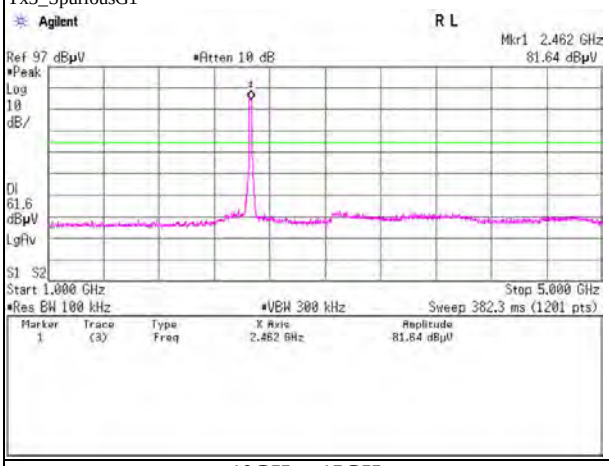
Spurious emission (Conducted)

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)

Tx, 2462MHz (Above 1GHz)

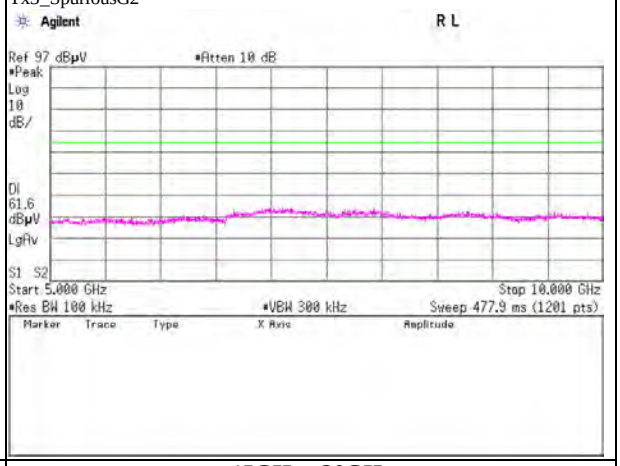
1GHz - 5GHz

Tx3_SpuriousG1



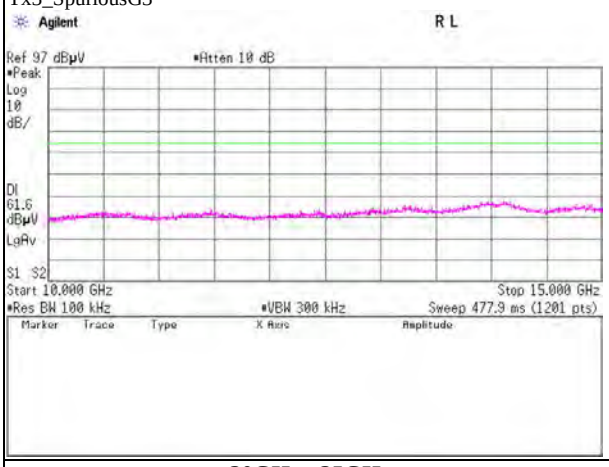
5GHz - 10GHz

Tx3_SpuriousG2



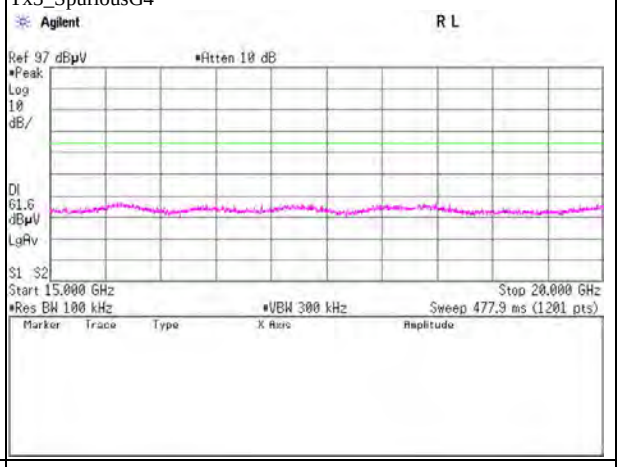
10GHz - 15GHz

Tx3_SpuriousG3



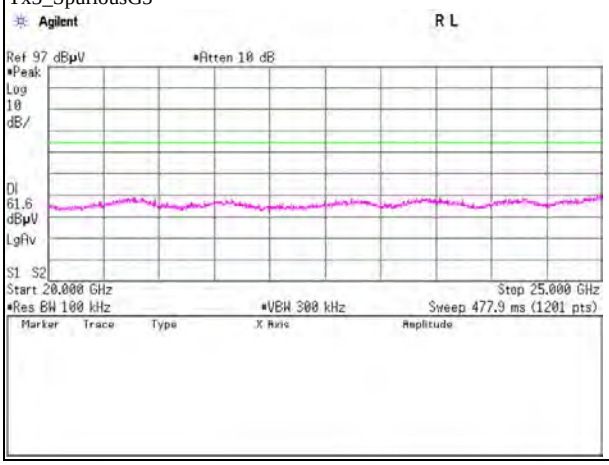
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



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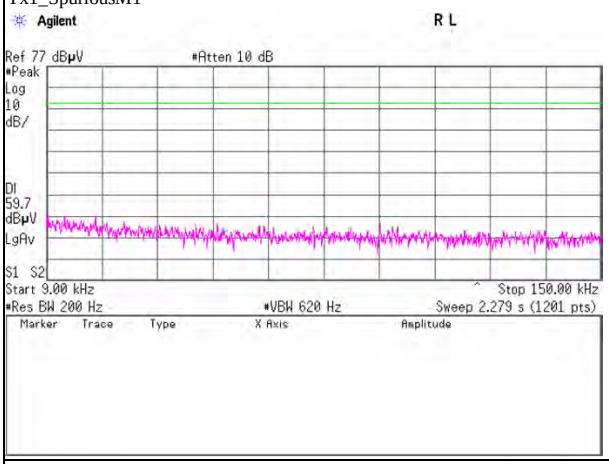
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2422MHz (Below 1GHz)

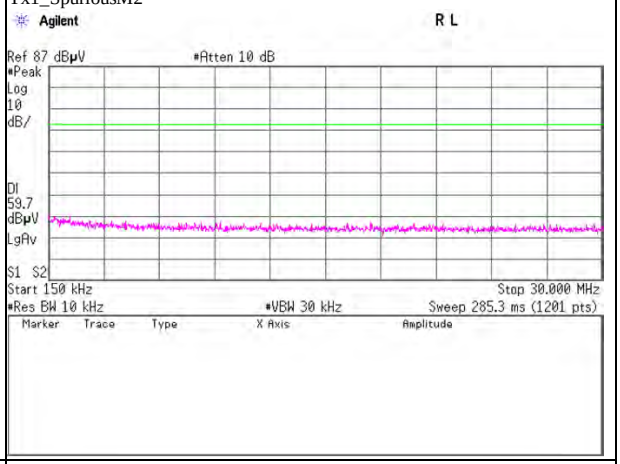
9kHz - 150kHz

Tx1_SpuriousM1



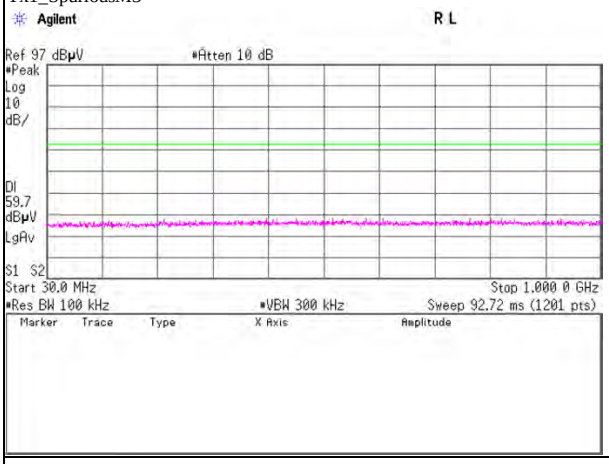
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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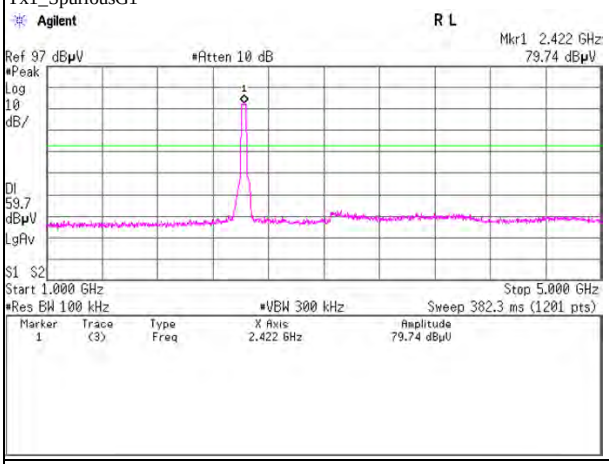
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2422MHz (Above 1GHz)

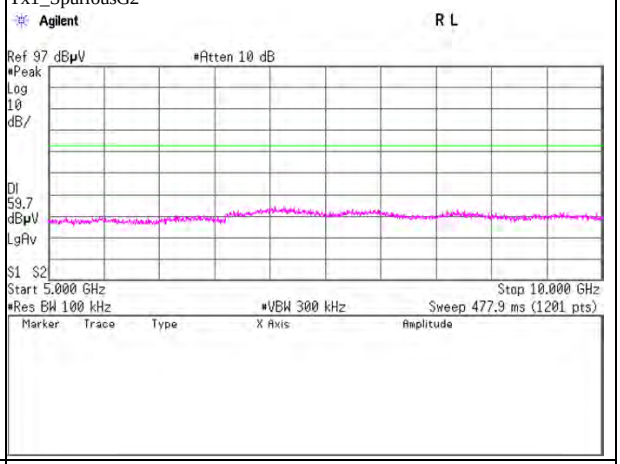
1GHz - 5GHz

Tx1_SpuriousG1



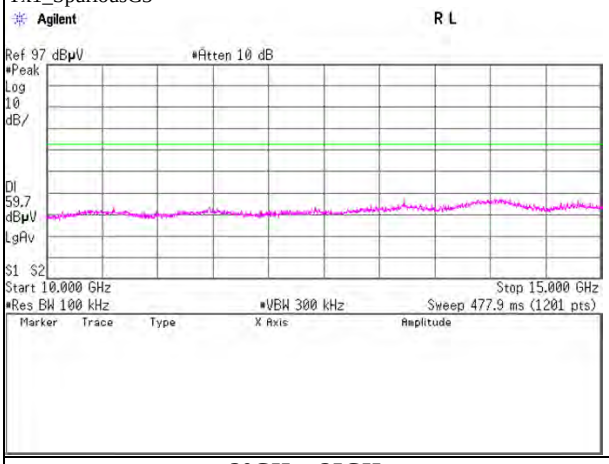
5GHz - 10GHz

Tx1_SpuriousG2



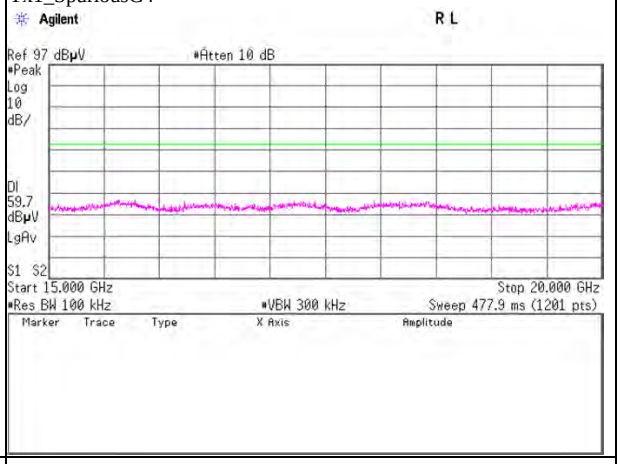
10GHz - 15GHz

Tx1_SpuriousG3



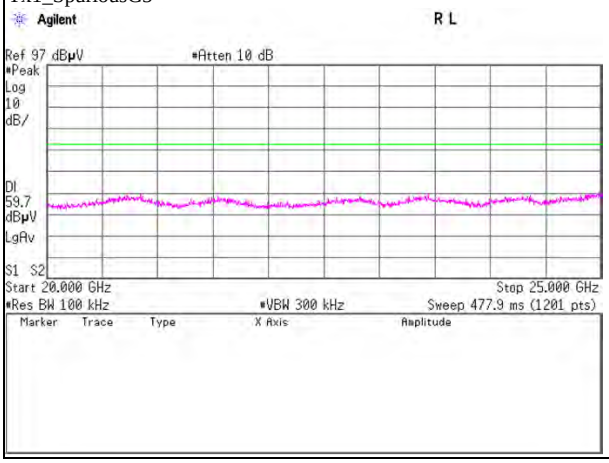
15GHz - 20GHz

Tx1_SpuriousG4



20GHz - 25GHz

Tx1_SpuriousG5



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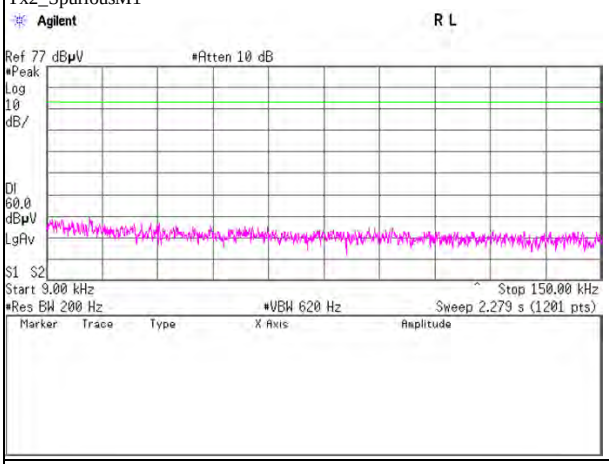
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2437MHz (Below 1GHz)

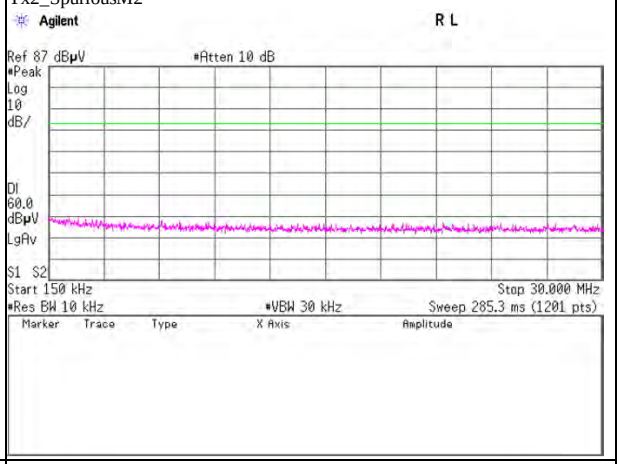
9kHz - 150kHz

Tx2_SpuriousM1



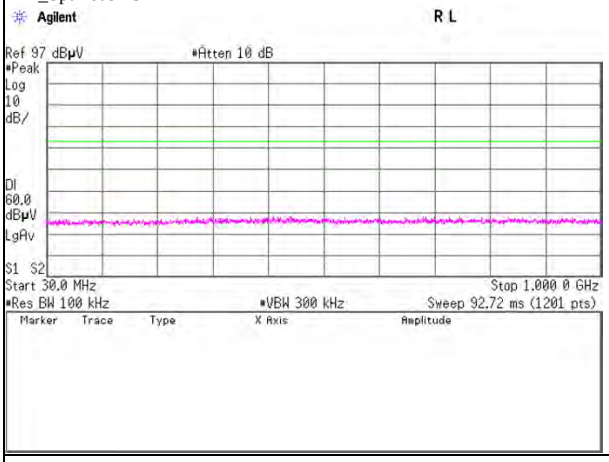
150kHz - 30MHz

Tx2_SpuriousM2



30MHz - 1GHz

Tx2_SpuriousM3



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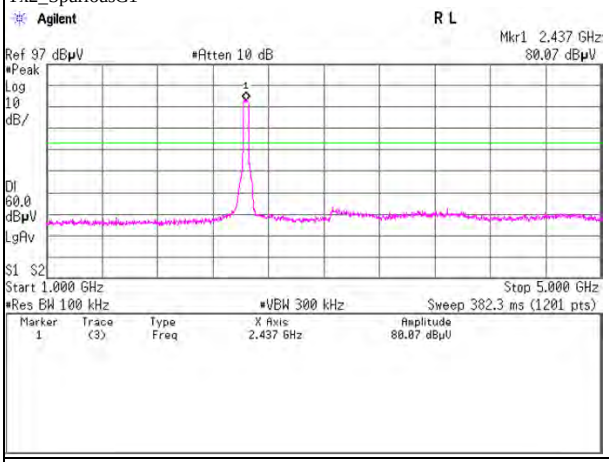
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2437MHz (Above 1GHz)

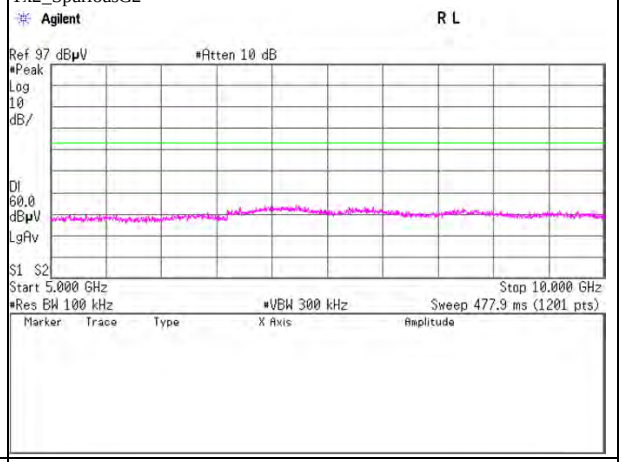
1GHz - 5GHz

Tx2_SpuriousG1



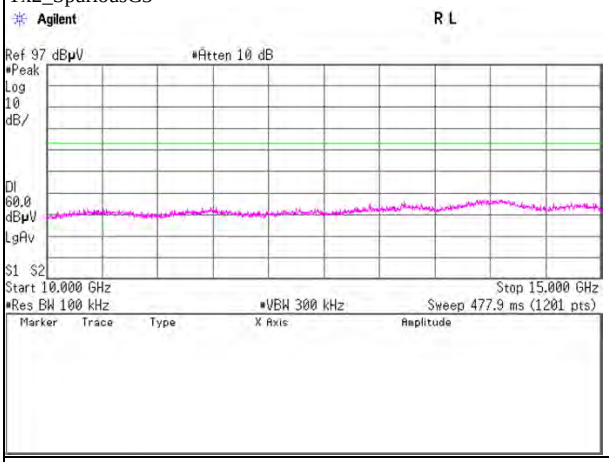
5GHz - 10GHz

Tx2_SpuriousG2



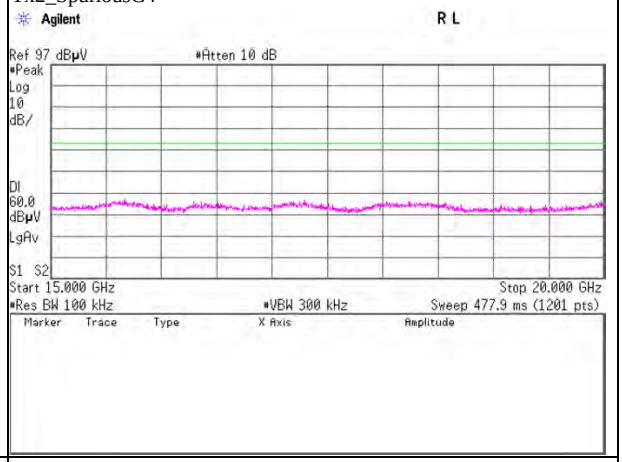
10GHz - 15GHz

Tx2_SpuriousG3



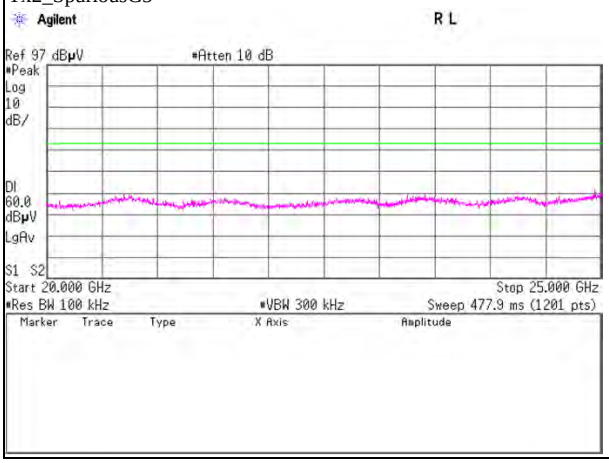
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



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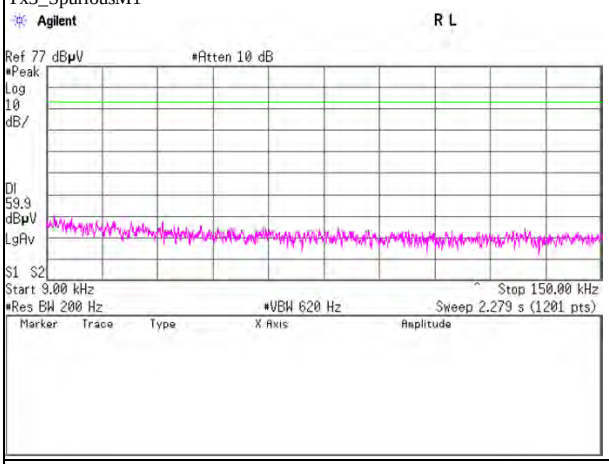
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2452MHz (Below 1GHz)

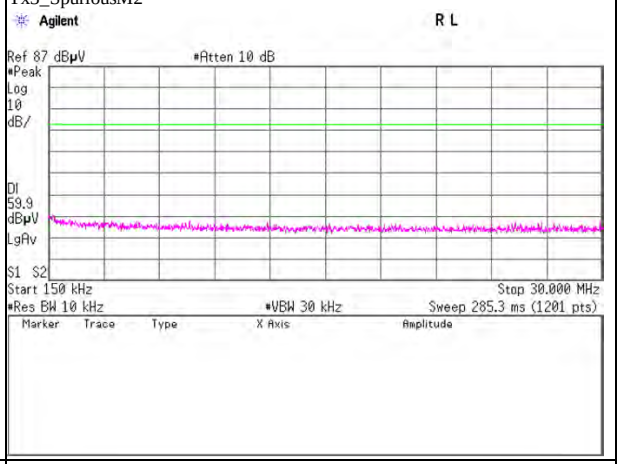
9kHz - 150kHz

Tx3_SpuriousM1



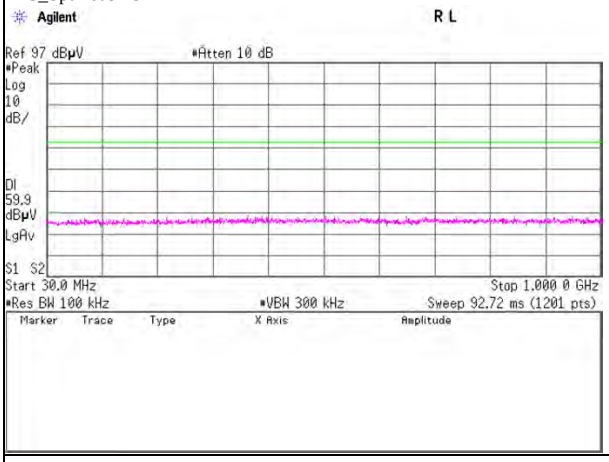
150kHz - 30MHz

Tx3_SpuriousM2



30MHz - 1GHz

Tx3_SpuriousM3



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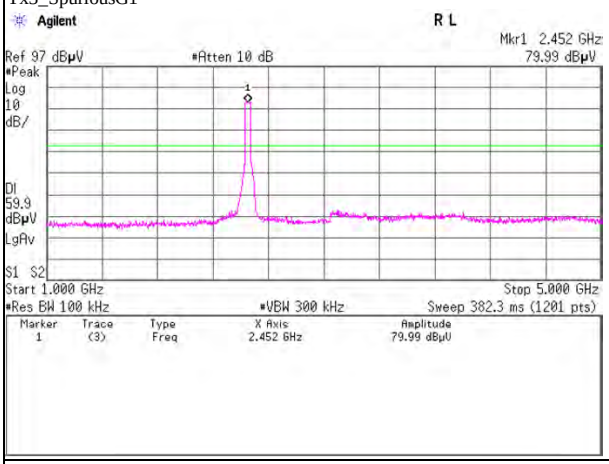
Spurious emission (Conducted)

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)

Tx, 2452MHz (Above 1GHz)

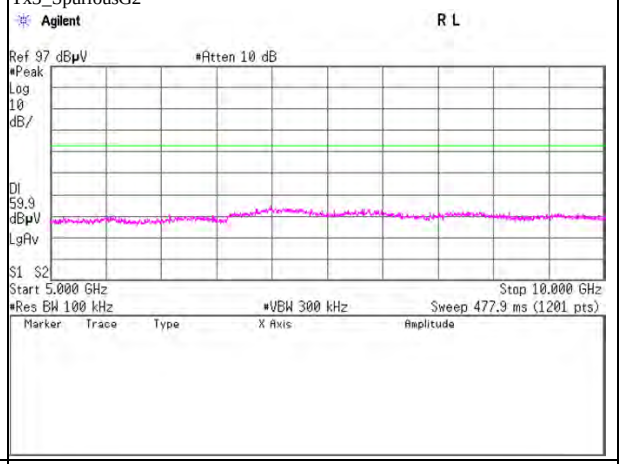
1GHz - 5GHz

Tx3_SpuriousG1



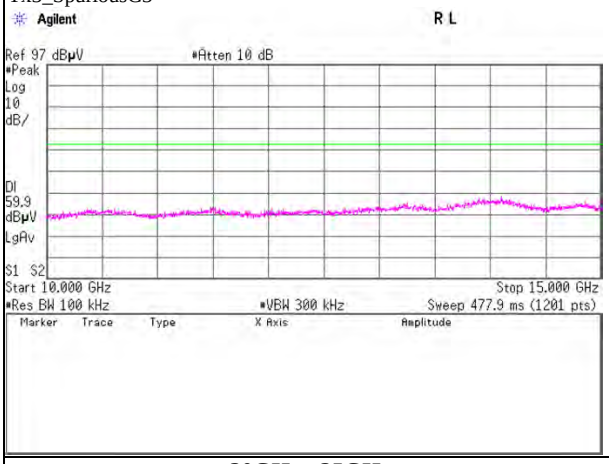
5GHz - 10GHz

Tx3_SpuriousG2



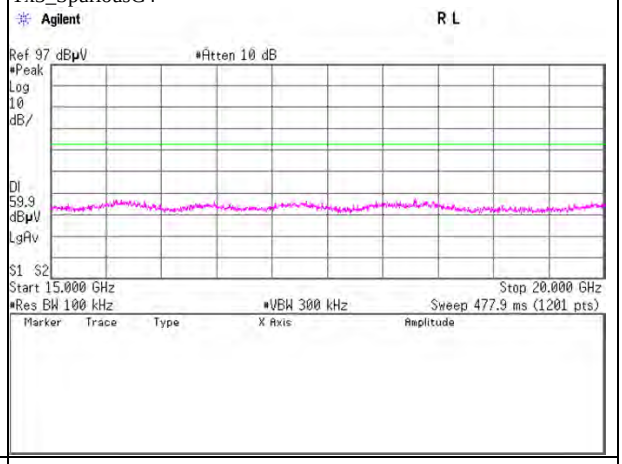
10GHz - 15GHz

Tx3_SpuriousG3



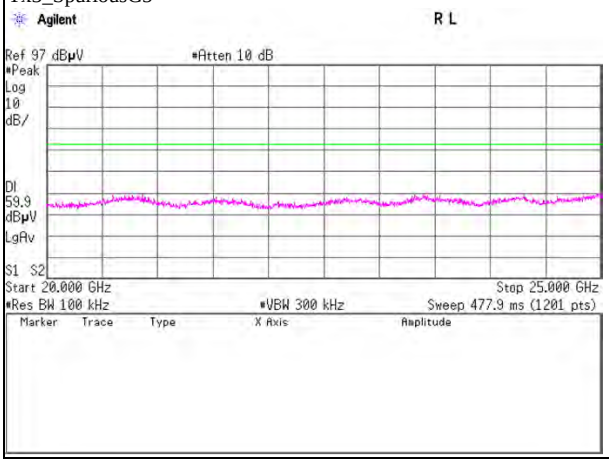
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



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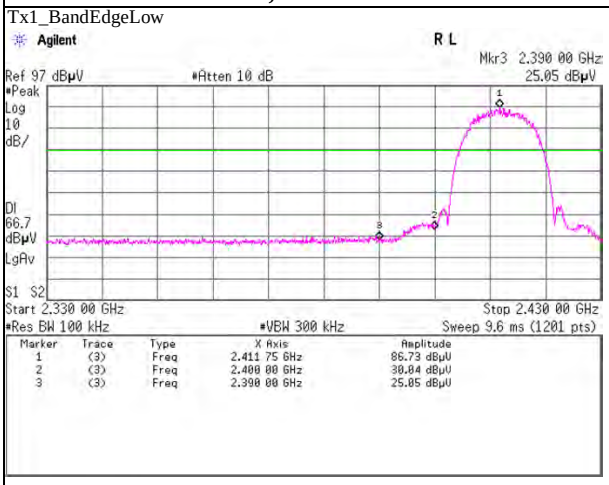
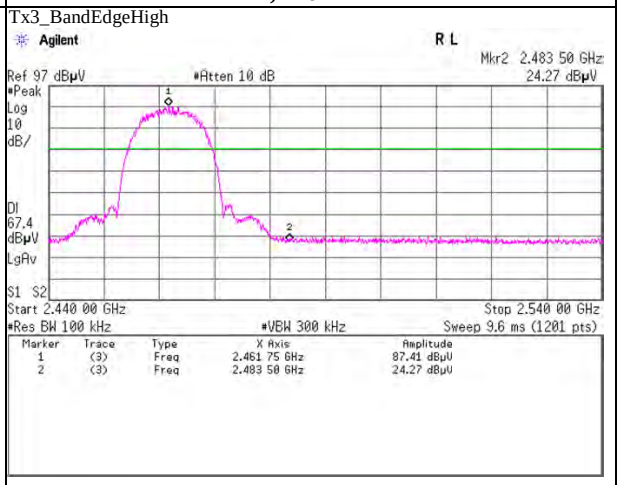
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11b, PN9, worst data mode 11Mbps	
Tx, 2412MHz	**Tx, 2462MHz**
Tx1_BandEdgeLow	Tx3_BandEdgeHigh





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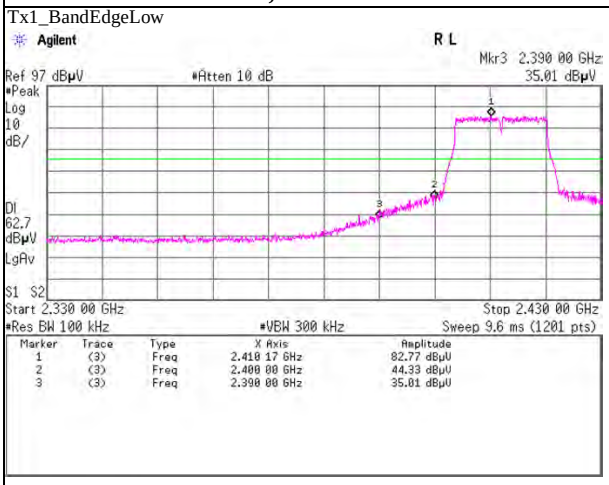
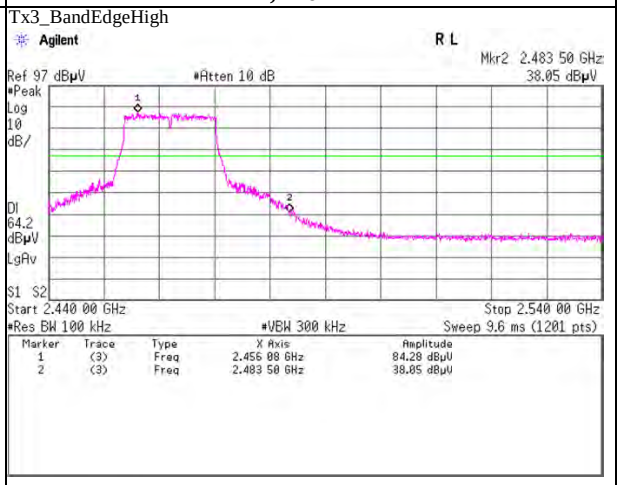
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11g, PN9, worst data mode 24Mbps	
Tx, 2412MHz	**Tx, 2462MHz**
Tx1_BandEdgeLow	Tx3_BandEdgeHigh





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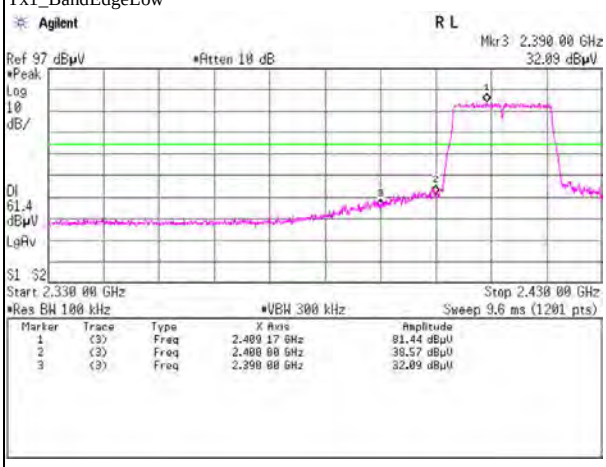
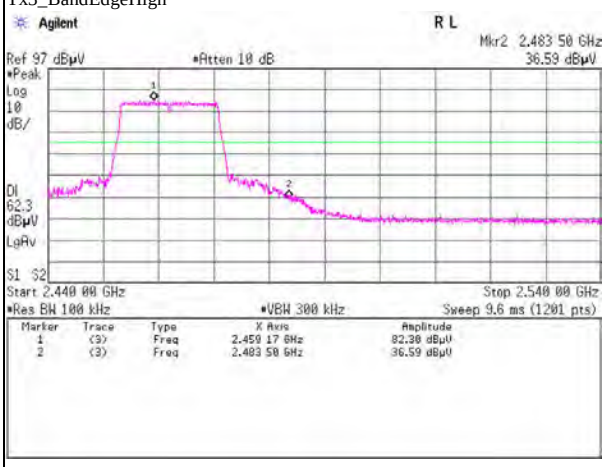
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)	
Tx, 2412MHz	**Tx, 2462MHz**
Tx1_BandEdgeLow	Tx3_BandEdgeHigh





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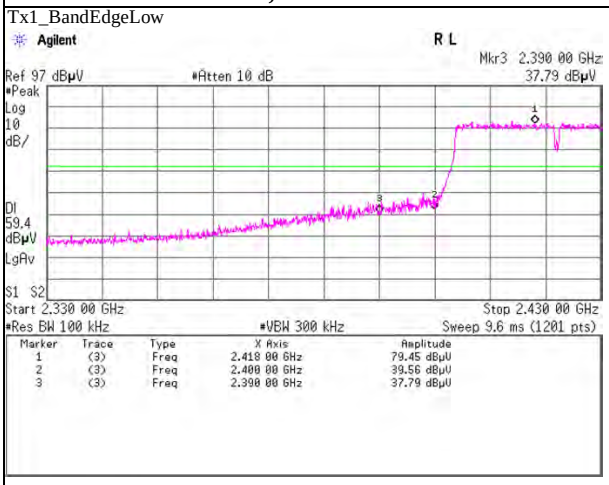
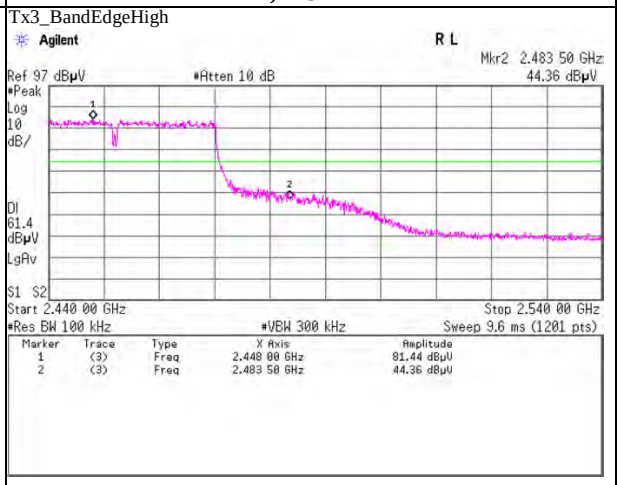
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)	
Tx, 2422MHz	**Tx, 2452MHz**
Tx1_BandEdgeLow	Tx3_BandEdgeHigh





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Power Density

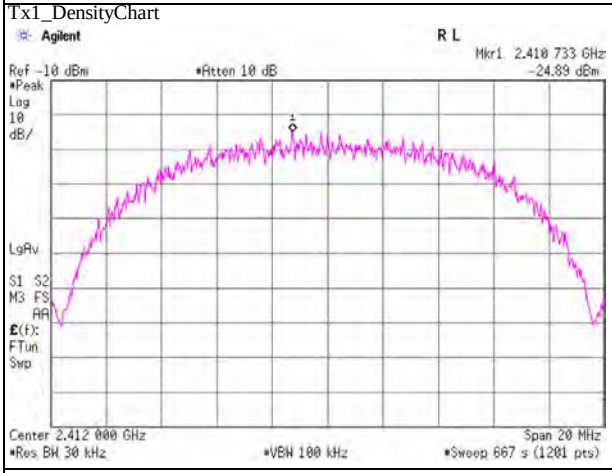
Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2410.73	-24.89	0.74	20.01	-4.14	8.00	12.14
2437.0000	2435.73	-23.81	0.74	20.01	-3.06	8.00	11.06
2462.0000	2460.73	-22.84	0.75	20.01	-2.08	8.00	10.08

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

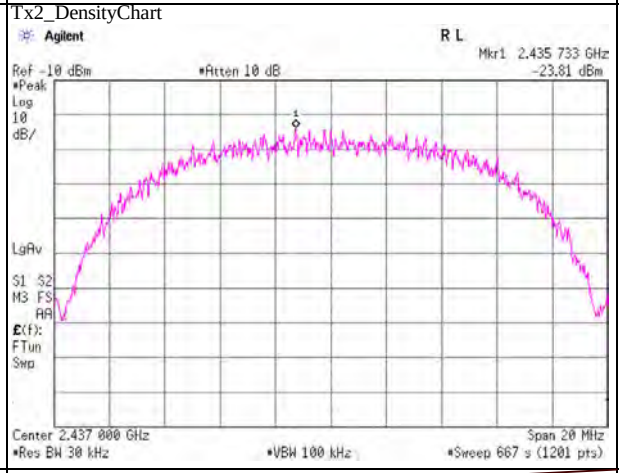
Tx, 2412MHz

Tx1_DensityChart



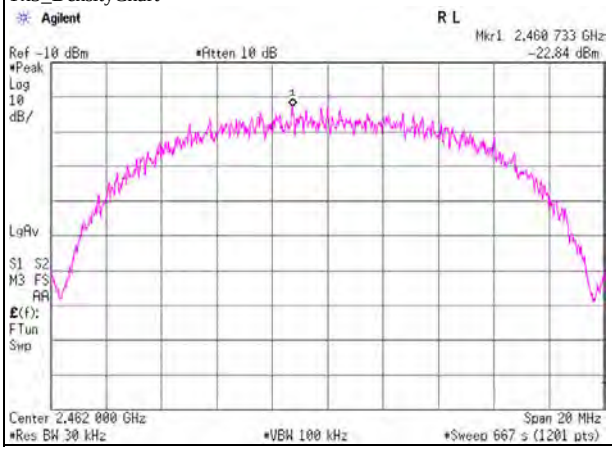
Tx, 2437MHz

Tx2_DensityChart



Tx, 2462MHz

Tx3_DensityChart



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Power Density

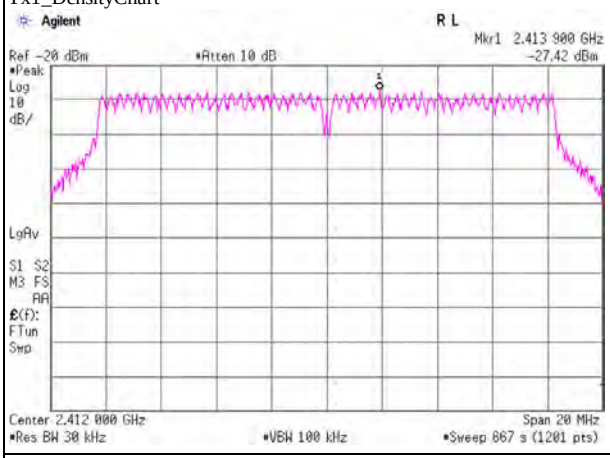
Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2413.90	-27.43	0.74	20.01	-6.68	8.00	14.68
2437.0000	2438.57	-26.86	0.74	20.01	-6.11	8.00	14.11
2462.0000	2459.48	-26.82	0.75	20.01	-6.06	8.00	14.06

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

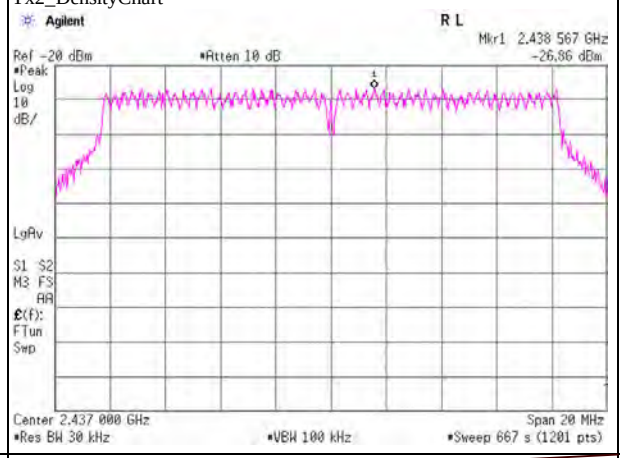
Tx, 2412MHz

Tx1_DensityChart



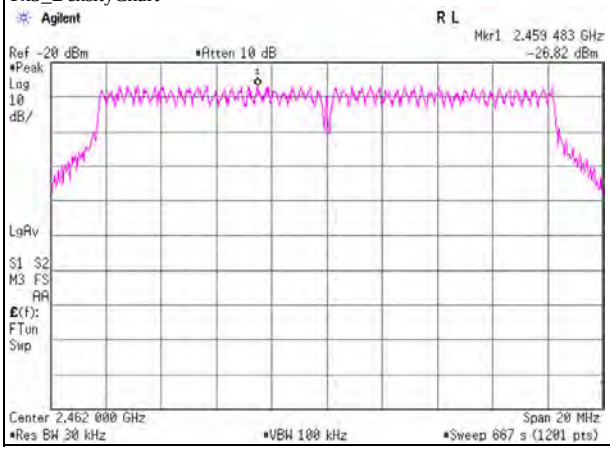
Tx, 2437MHz

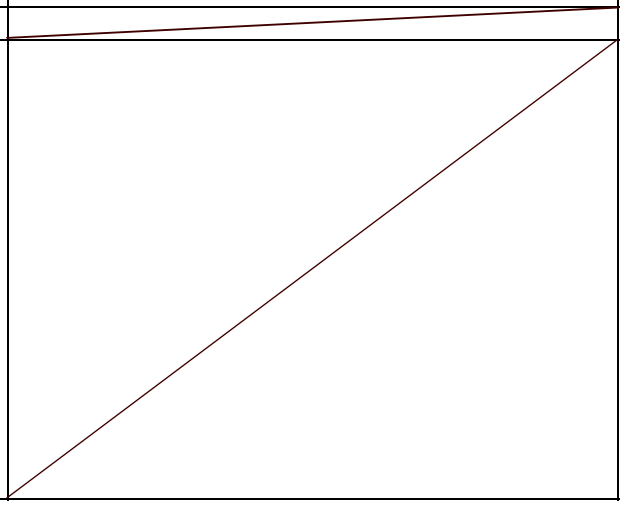
Tx2_DensityChart



Tx, 2462MHz

Tx3_DensityChart





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Power Density

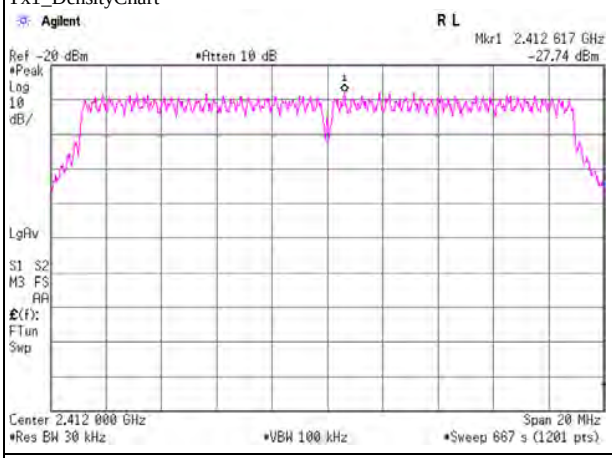
Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.62	-27.74	0.74	20.01	-6.99	8.00	14.99
2437.0000	2437.62	-26.19	0.74	20.01	-5.44	8.00	13.44
2462.0000	2462.62	-26.10	0.75	20.01	-5.34	8.00	13.34

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

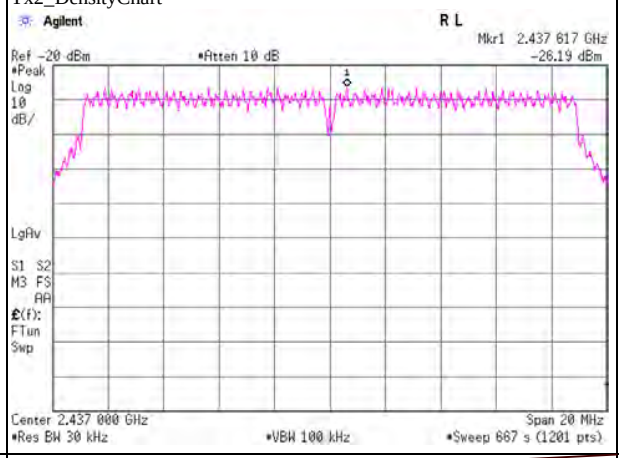
Tx, 2412MHz

Tx1_DensityChart



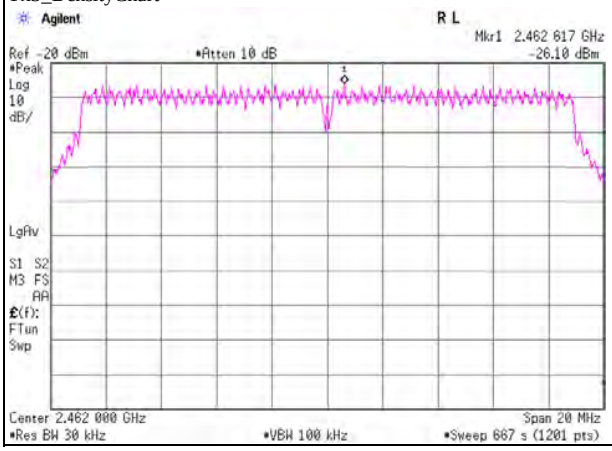
Tx, 2437MHz

Tx2_DensityChart



Tx, 2462MHz

Tx3_DensityChart



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Power Density

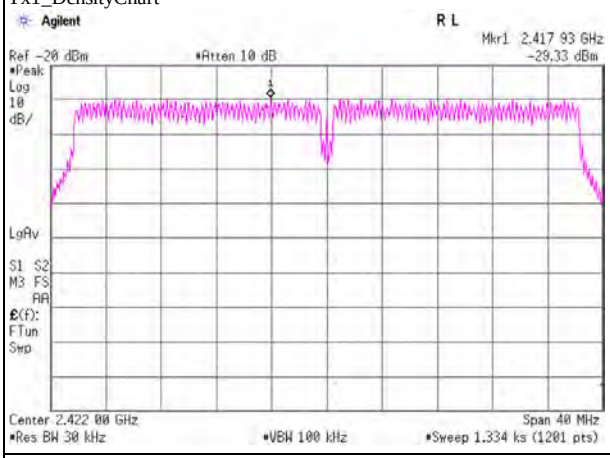
Test place	UL Japan, Inc. Shonan EMC Lab.	No.6 Shielded Room
Date	2012/4/6	
Temperature / Humidity	22deg.C , 46%RH	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)	

Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2417.93	-29.33	0.74	20.01	-8.58	8.00	16.58
2437.0000	2432.93	-28.95	0.74	20.01	-8.20	8.00	16.20
2452.0000	2447.93	-28.69	0.74	20.01	-7.94	8.00	15.94

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss

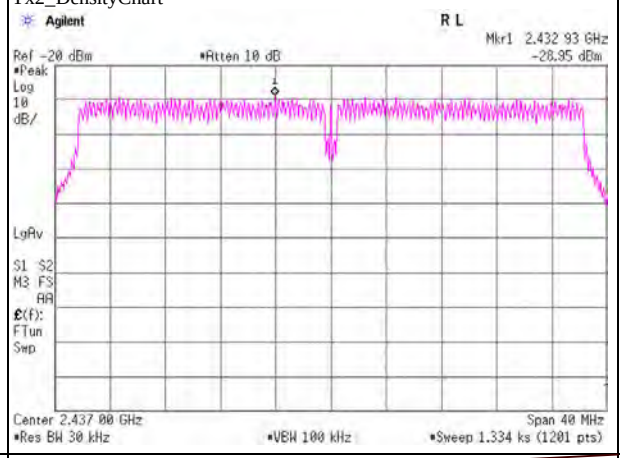
Tx, 2422MHz

Tx1_DensityChart



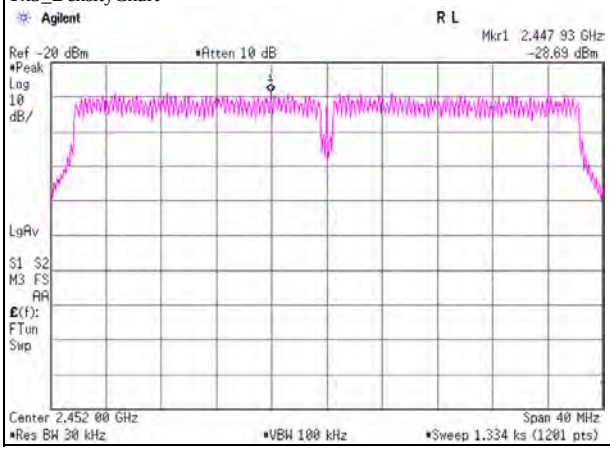
Tx, 2437MHz

Tx2_DensityChart



Tx, 2452MHz

Tx3_DensityChart



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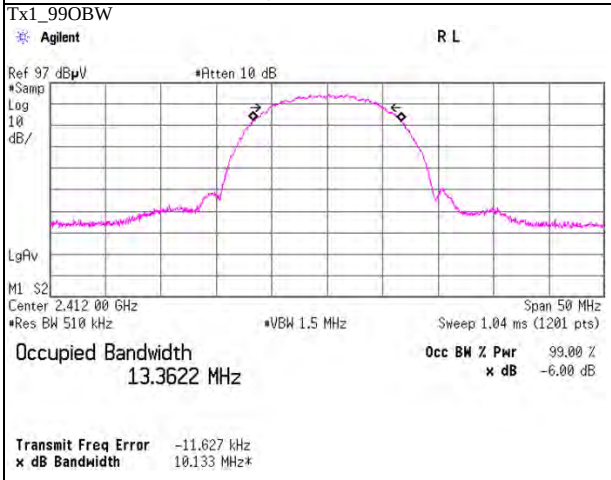
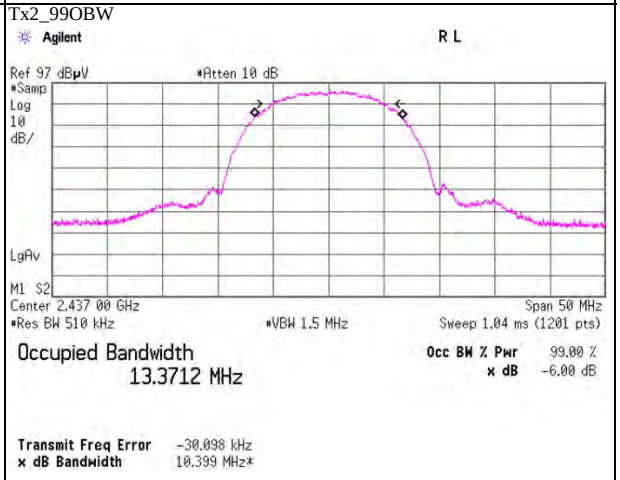
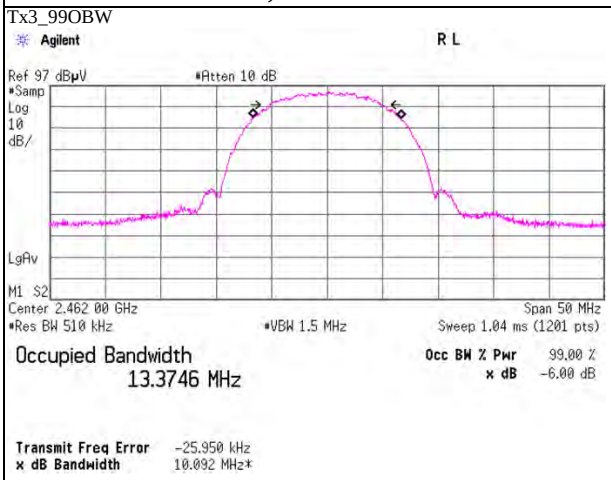
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst data mode 11Mbps	
Tx, 2412MHz	**Tx, 2437MHz**
Tx1_99OBW	Tx2_99OBW
	
Tx, 2462MHz	
Tx3_99OBW	
	

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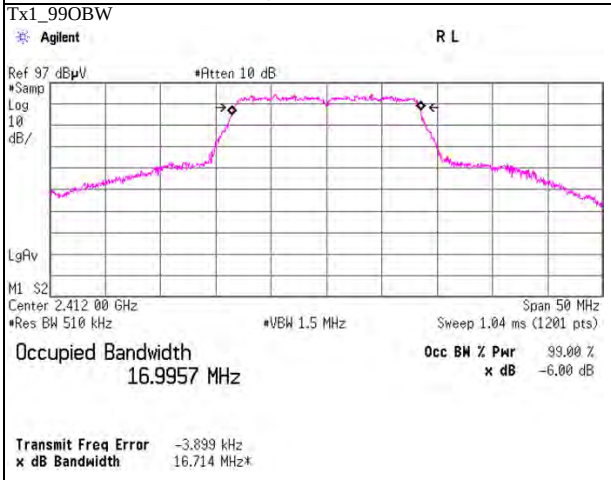
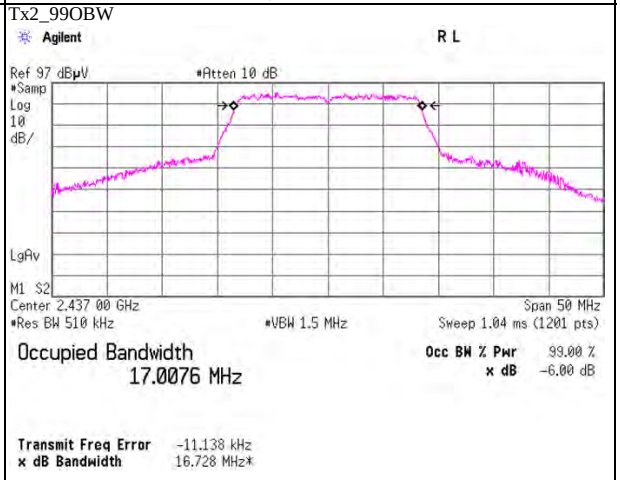
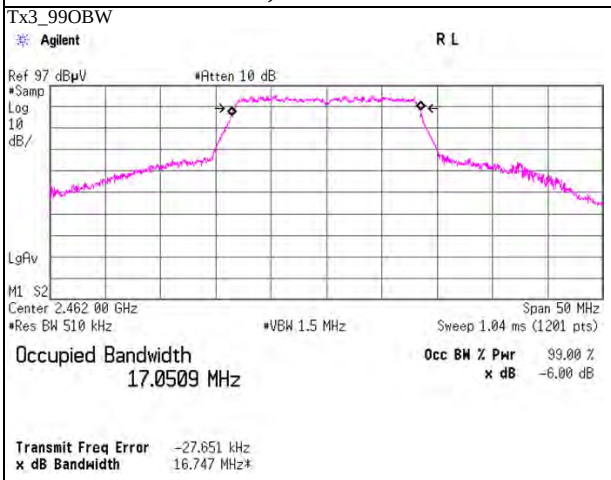
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst data mode 24Mbps	
Tx, 2412MHz	**Tx, 2437MHz**
Tx1_99OBW 	Tx2_99OBW 
Tx, 2462MHz	
Tx3_99OBW 	

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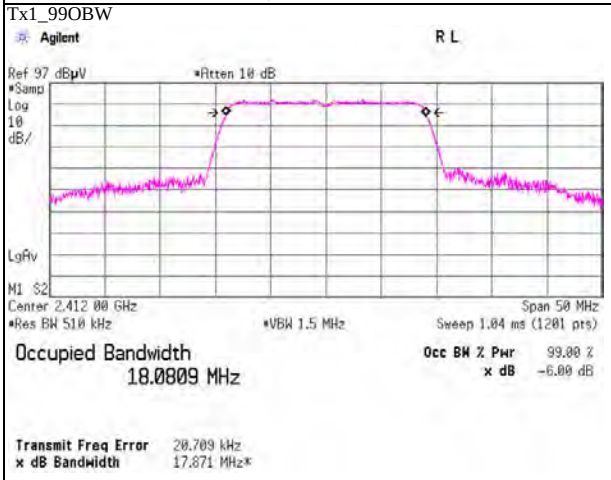
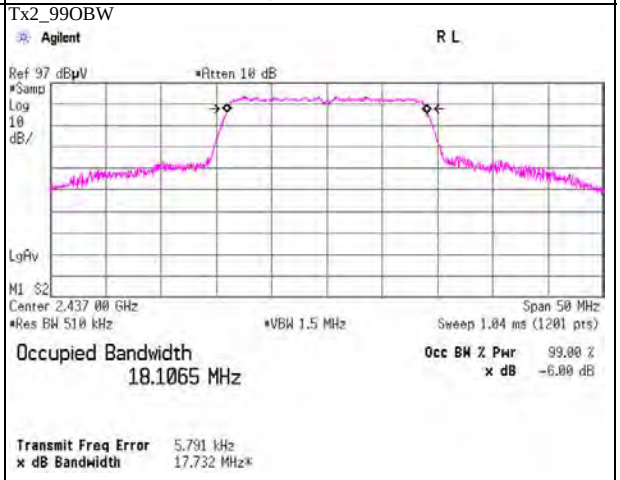
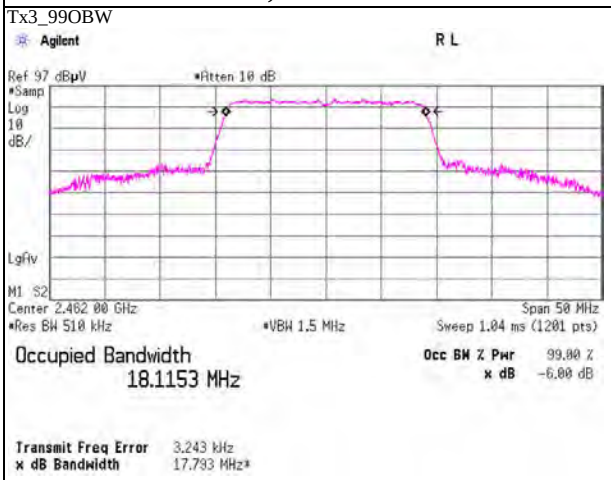
99% Occupied Bandwidth

Tx, IEEE802.11n(HT20), PN9, worst data mode 3(MCS)	
Tx, 2412MHz	**Tx, 2437MHz**
Tx1_99OBW 	Tx2_99OBW 
Tx, 2462MHz	
Tx3_99OBW 	

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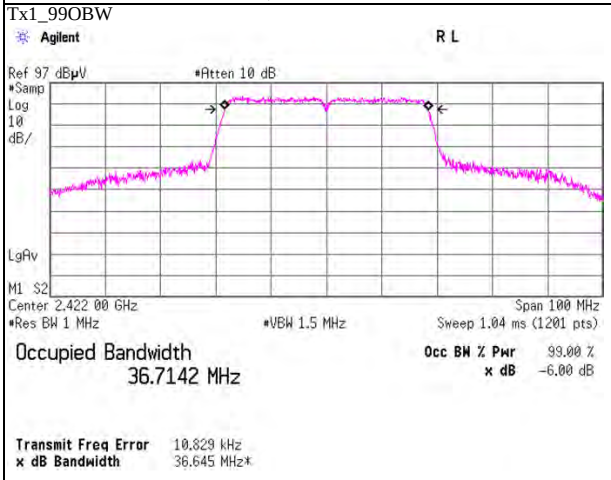
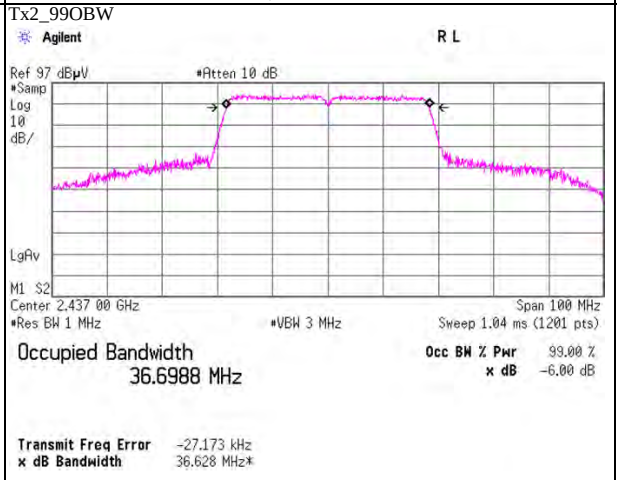
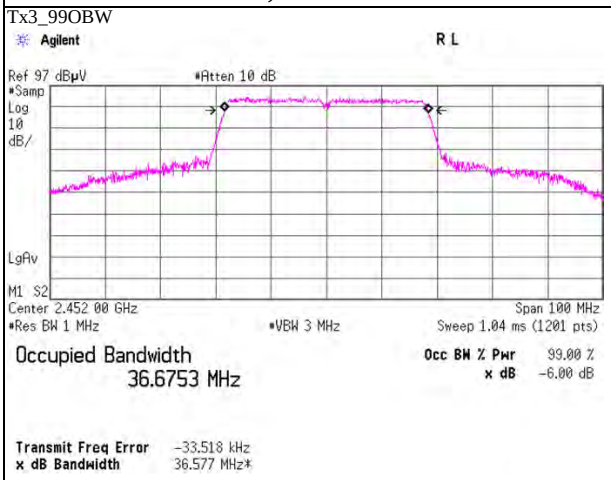
99% Occupied Bandwidth

Tx, IEEE802.11n(HT40), PN9, worst data mode 3(MCS)	
Tx, 2422MHz	**Tx, 2437MHz**
Tx1_99OBW 	Tx2_99OBW 
Tx, 2452MHz	
Tx3_99OBW 	

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APPENDIX
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-10	Humidity Indicator	A&D	AD-5681	4064561	AT	2012/02/06 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2011/04/12 * 12
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	AT	2011/12/27 * 12
SCC-H3	Microwave cable	Hirose Electric	U.FL-2LP-066J1-A-(200)	-	AT	Pre Check
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 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	2011/05/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2011/08/28 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2012/03/16 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
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-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	2011/05/27 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2011/08/11 * 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	-
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2012/03/30 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2012/03/12 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2012/03/12 * 12
SAF-01	Pre Amplifier	SONOMA	310N	290211	RE	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
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2011/09/01 * 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 disturbance voltage

APPENDIX
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
SAT3-02	Attenuator	JFW	50HF-003N	-	RE	2012/02/10 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2011/11/16 * 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	UHALP 9108-A 0893	RE	2011/11/16 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
STR-02	Test Receiver	Rohde & Schwarz	ESCI	100575	RE	2011/08/04 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2011/09/25 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE,CE	-
SCC-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2012/04/10 * 12
SLS-02	LISN	Rohde & Schwarz	ENV216	100512	CE(EUT)	2012/02/28 * 12
SAT3-03	Attenuator	JFW	50HF-003N	-	CE	2012/02/17 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2012/03/26 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	CE	2011/10/22 * 12
SJM-12	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 ,