RADIO TEST REPORT

Test Report No.: 32IE0081-SH-02-A

Applicant	**:**	**Canon Inc.**
Type of Equipment	**:**	**Wireless Module**
Model No.	**:**	**WM218**
FCC ID	**:**	**AZD218**
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.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
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: August 20 to 29, 2012

Tested by:

Tatsuya Arai
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
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Contents

REVISION HISTORY

Original Test Report No.: 32IE0081-SH-02-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	32IE0081-SH-02-A	September 13, 2012	-	-
1	32IE0081-SH-02-A	November 20, 2012	1, 3, 12	P12: Correction of *1) in SECTION 9

SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo, 146-8501 Japan
Telephone Number	:	+81-3-3757-6218
Facsimile Number	:	+81-3-3757-8431
Contact Person	:	Ryoji Kon

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless Module
Model Number	:	WM218
Serial Number	:	34F
Rating	:	DC3.3V
Country of Mass-production	:	Philippines
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Receipt Date of Sample	:	August 6, 2012
Modification of EUT	:	No modification by the test lab.

2.2 Product description

Model: WM218 (referred to as the EUT in this report) is a Wireless Module.

Clock frequency(ies) in the system : 32kHz, 38.4MHz

<Radio part>

Equipment type	:	Transceiver
Frequency of operation	:	2412-2462MHz (IEEE 802.11b, 11g, 11n-HT20) 2422-2452MHz (IEEE 802.11n-HT40)
Bandwidth	:	20MHz (IEEE 802.11b, 11g, 11n-HT20), 40MHz (IEEE 802.11n-HT40)
Channel spacing	:	5MHz
Type of modulation	:	DSSS (IEEE 802.11b), OFDM (IEEE 802.11g/n)
Antenna type	:	Monopole type chip
Antenna connector type	:	Microwave coaxial (MURATA MM8030-2610)
Antenna gain	:	-0.94 dBi
ITU code	:	D1D, G1D
Operation temperature range	:	-20 to +55 deg.C

FCC 15.31 (e) / 212
The module is constantly provided the stable voltage from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC 15.203 / 212
The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement. The antenna connector is a unique type and not used by end user.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2012, final revised on August 13, 2012 and effective September 12, 2012
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.209 Radiated emission limits, general requirements
Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

* The revision on August 13, 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	16.8dB Freq.: 0.21700MHz Detector: Average Phase: N Mode: Tx 2412MHz, IEEE 802.11g	Complied
6dB bandwidth	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (a)(2)	Conducted	N/A	* See data	Complied
Maximum peak output power	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (b)(3)	Conducted	N/A		Complied
Out of band 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	1.4dB Freq.: 336.008MHz Detector: Quasi-Peak Polarization: Horizontal Mode: Tx 2412MHz, IEEE 802.11g	Complied
Power density	ANSI C63.4:2009 13. Measurement of intentional radiators	FCC 15.247 (e)	Conducted	N/A	* See data	Complied
Note: UL Japan's EMI 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) LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.5 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	4.9 dB
	300MHz-1GHz	5.0 dB	5.2 dB	4.9 dB
	1GHz-15GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	15GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.6 dB	4.3 dB	4.4 dB

*1: SAC=Semi-Anechoic Chamber
*2: SR= Shielded Room is applied besides radiated emission

Conducted emission test

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

Radiated emission test

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

Antenna port conducted test

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

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 semi-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☒ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

3.6 Test setup, Data of EMI & Test instruments

Refer to APPENDIX 3 to 3.

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

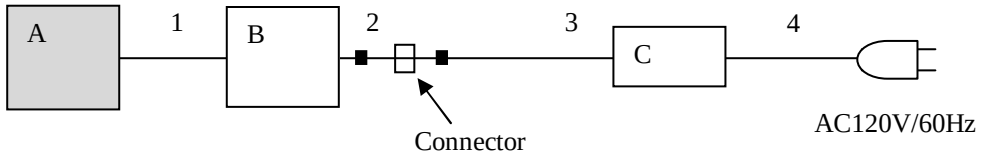
4.1 Operating mode

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
Conducted emission Radiated emission (below 1GHz) *3)	Transmitting IEEE 802.11g	2412MHz	Max.: 12dBm Min.: 10dBm	6Mbps, PN9
Other items	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	Max.: 14dBm Min.: 11dBm	1Mbps, PN9
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	Max.: 12dBm Min.: 10dBm	6Mbps, PN9
	Transmitting IEEE 802.11n-20	2412MHz, 2437MHz, 2462MHz	Max.: 12dBm Min.: 10dBm	MCS3, PN9
	Transmitting IEEE 802.11n-40	2422MHz, 2437MHz, 2452MHz	Max.: 11dBm Min.: 9dBm	MCS5, PN9
*1) The actual output power differs from the setting value. Based on the specifications, the maximum and minimum values are set. Software used for the test: RFTEST ver .14.0 *2) The worst condition was determined based on the test result of Maximum Peak Output Power. *3) Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing- Managing Complex Regulatory Approvals - "of TCB Council Workshop October 2009.				

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

4.2 Configuration and peripherals

■: Ferrite core (Standard attachment)



* 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	WM218	34F	Canon	EUT
B	Digital Camera	PC1739	431030032124	Canon	-
C	Compact Power Adapter	CA-DC10 N	1152	Canon	-

List of cables used

No.	Cable Name	Length (m)	Shield		Remark
			Cable	Connector	
1	Jig	0.15	Unshielded	Unshielded	-
2	DC	0.15	Unshielded	Unshielded	-
3	DC	1.9	Unshielded	Unshielded	-
4	AC	1.9	Unshielded	Unshielded	-

SECTION 5: Conducted emission

5.1 Operating environment

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

5.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 0.8m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN.
Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.
Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

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

5.4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT via host device within a Shielded room. The EUT was connected to a Line Impedance Stabilization Network (LISN) via host device.
An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, an average detector.
The conducted emission measurements were made with the following detection of the test receiver.

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

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

SECTION 6: Radiated emission

6.1 Operating environment

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

6.2 Test configuration

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

6.3 Test conditions

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

6.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 15GHz) / 1m (above 15GHz) (Refer to Figure 1). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detection.

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

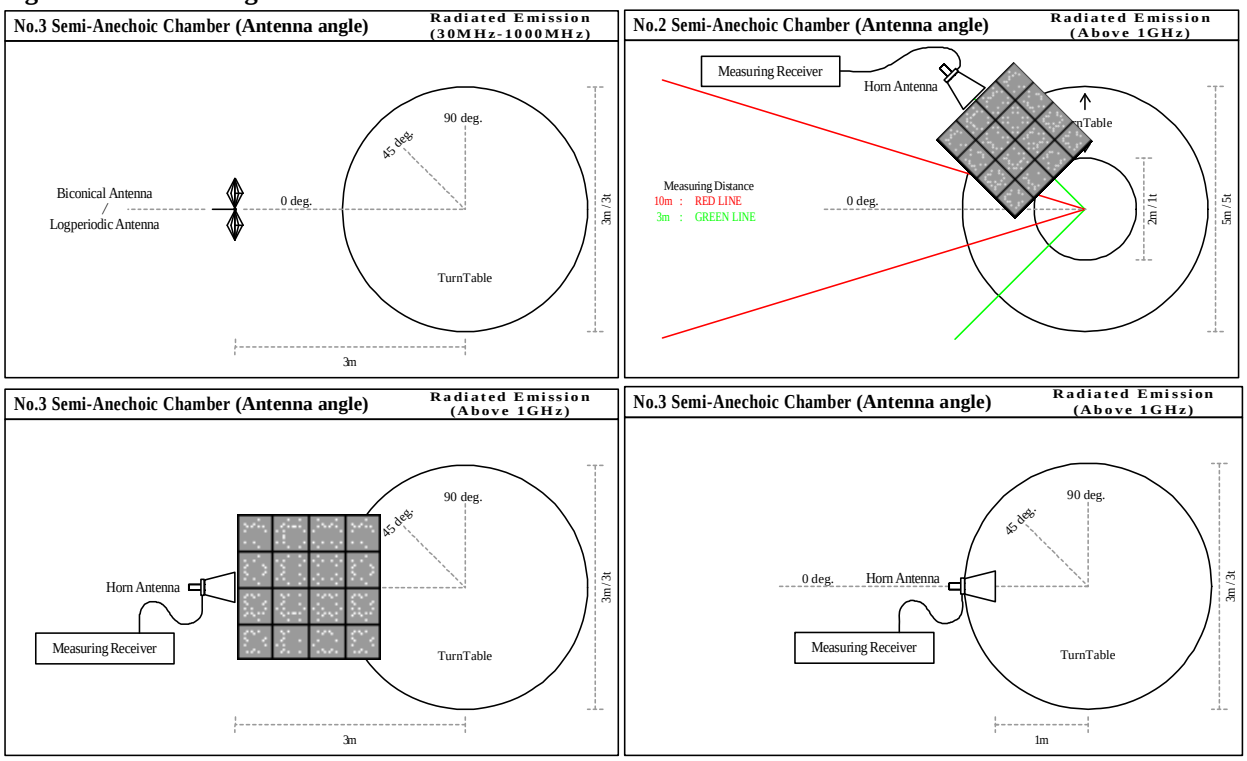
*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

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.

Worst case:

Antenna polarization	Carrier (Band edge)	Spurious			
		Below 1GHz	1-2.8GHz	2.8-15GHz	15-25GHz
Horizontal	X	Z	X	X	X
Vertical	Y	Z	Y	Y	Y

Figure 1. Antenna angle



6.5 Band edge

Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209 and band edge level at 2400MHz is below the 20dBc. Refer to the data.

6.6 Results

Summary of the test results : Pass

* No noise was detected above the 5th order harmonics.

Refer to APPENDIX 1

SECTION 7: Out of band emissions (Antenna port conducted)

Test procedure
The Out of Band Emissions was measured with a spectrum analyzer connected to the antenna port.
In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.
In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9kHz-150kHz:RBW=200Hz, 150kHz-30MHz:RBW=10kHz)

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 8: 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 9: 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)

Summary of the test results: Pass
Refer to APPENDIX 1

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

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

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

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of worst position

APPENDIX 1: Data of Radio tests

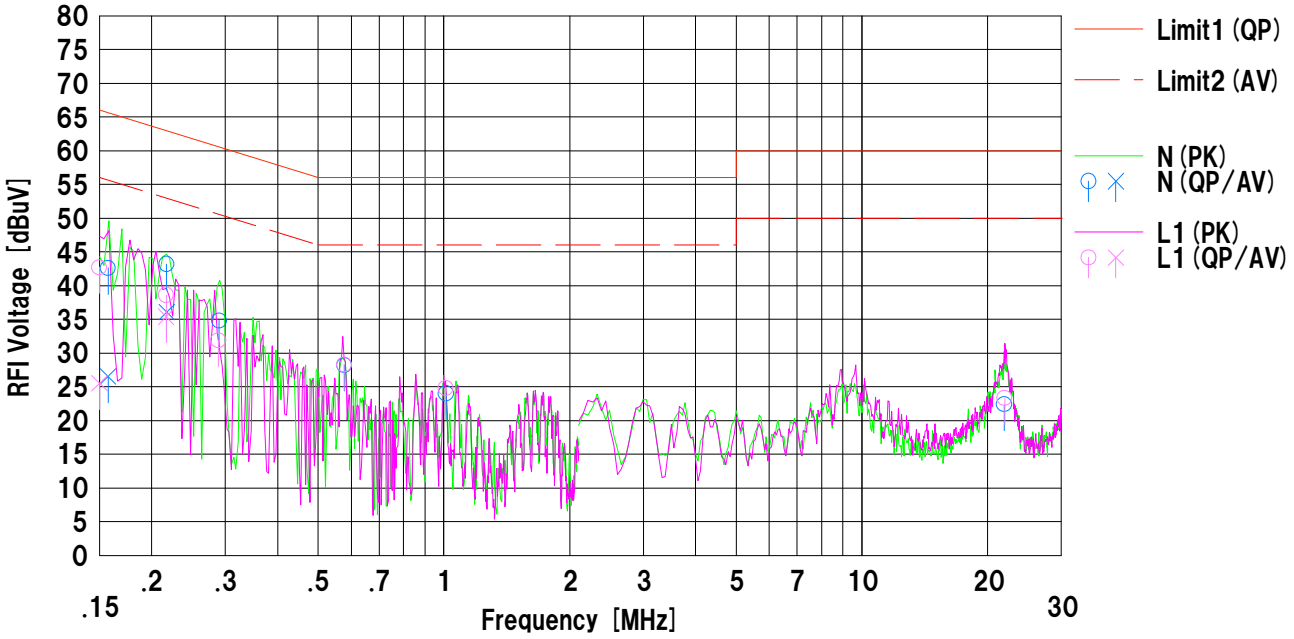
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/08/28

Company	: Canon Inc.	Mode	: Tx 11g 2412MHz Power 12dBm
Kind of EUT	: Wireless Module	Report No.	: 32IE0081-SH-02-A
Model No.	: WM218	Power	: AC 120V / 60Hz
Serial No.	: 34F	Temp./Humi.	: 26deg.C. / 58%RH
Remarks	: -		

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

Engineer : Tatsuya Arai



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	0.15725	29.9	13.8	12.7	42.6	26.5	65.6	55.6	23.0	29.1	N	
2	0.21700	30.5	23.4	12.7	43.2	36.1	62.9	52.9	19.7	16.8	N	
3	0.28988	22.1	---	12.7	34.8	---	60.5	50.5	25.7	---	N	
4	0.57825	15.5	---	12.7	28.2	---	56.0	46.0	27.8	---	N	
5	1.01250	11.3	---	12.7	24.0	---	56.0	46.0	32.0	---	N	
6	21.91500	8.8	---	13.6	22.4	---	60.0	50.0	37.6	---	N	
7	0.15000	30.0	12.8	12.7	42.7	25.5	66.0	56.0	23.3	30.5	L1	
8	0.21650	25.9	22.7	12.7	38.6	35.4	62.9	52.9	24.3	17.5	L1	
9	0.28900	19.2	---	12.7	31.9	---	60.5	50.5	28.6	---	L1	
10	0.57713	15.6	---	12.7	28.3	---	56.0	46.0	27.7	---	L1	
11	1.01025	12.1	---	12.7	24.8	---	56.0	46.0	31.2	---	L1	
12	21.94500	9.7	---	13.6	23.3	---	60.0	50.0	36.7	---	L1	

Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2012/08/28

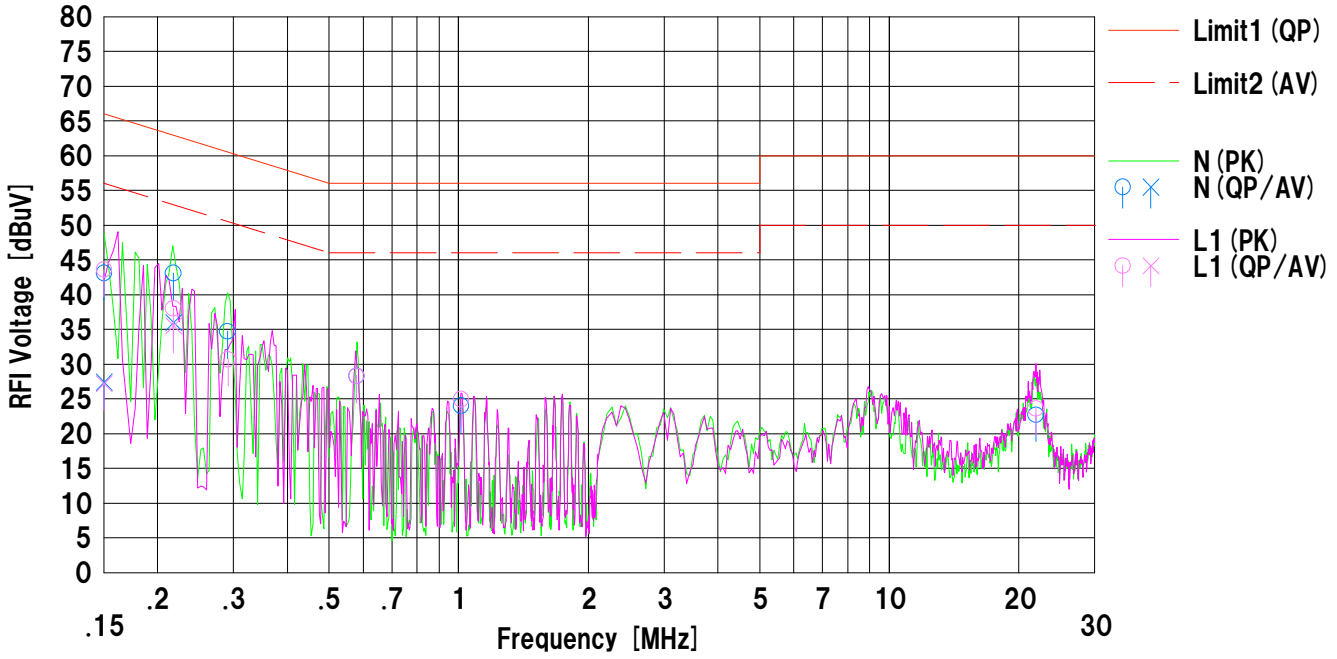
Company : Canon Inc.
Kind of EUT : Wireless Module
Model No. : WM218
Serial No. : 34F

Mode : Tx 11g 2412MHz Power 10dBm
Report No. : 32IE0081-SH-02-A
Power : AC 120V / 60Hz
Temp./Humi. : 26deg.C. / 58%RH

Remarks : -

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

Engineer : Tatsuya Arai



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	0.15018	30.4	14.7	12.7	43.1	27.4	65.9	55.9	22.8	28.5	N	
2	0.21775	30.4	23.3	12.7	43.1	36.0	62.9	52.9	19.8	16.9	N	
3	0.29075	22.0	---	12.7	34.7	---	60.5	50.5	25.8	---	N	
4	0.57975	15.6	---	12.7	28.3	---	56.0	46.0	27.7	---	N	
5	1.01400	11.3	---	12.7	24.0	---	56.0	46.0	32.0	---	N	
6	21.91900	9.1	---	13.6	22.7	---	60.0	50.0	37.3	---	N	
7	0.15018	30.9	14.5	12.7	43.6	27.2	65.9	55.9	22.3	28.7	L1	
8	0.21775	25.3	22.8	12.7	38.0	35.5	62.9	52.9	24.9	17.4	L1	
9	0.29125	18.0	---	12.7	30.7	---	60.4	50.4	29.7	---	L1	
10	0.57975	15.6	---	12.7	28.3	---	56.0	46.0	27.7	---	L1	
11	1.01425	12.2	---	12.7	24.9	---	56.0	46.0	31.1	---	L1	
12	21.91900	10.0	---	13.6	23.6	---	60.0	50.0	36.4	---	L1	

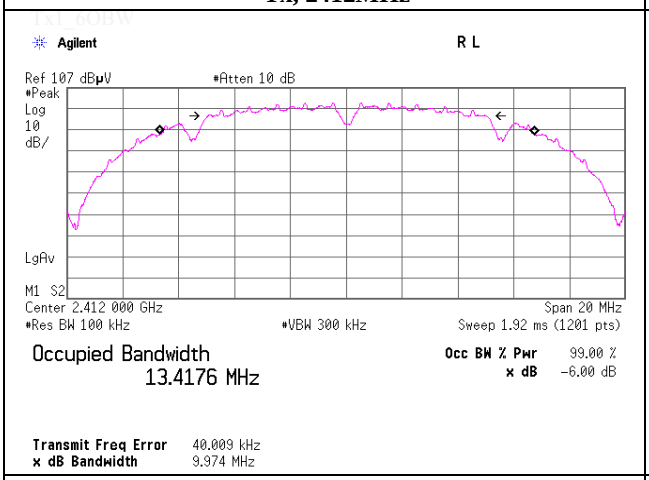
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+ATT) [dB]
LISN:SLS-05

-6dB Bandwidth

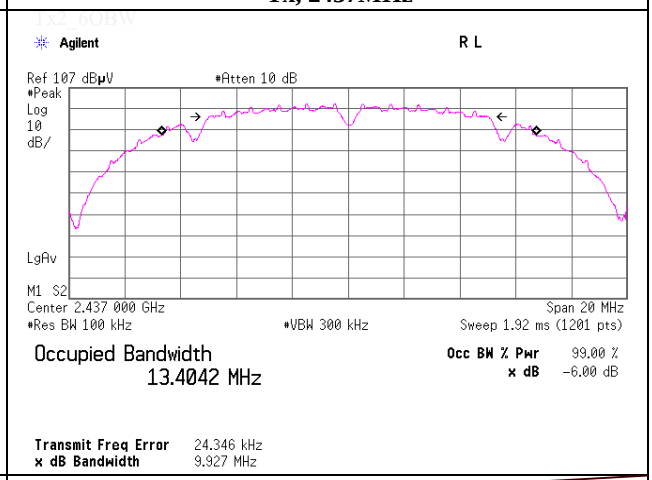
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.974	> 0.500
2437.0000	9.927	> 0.500
2462.0000	9.932	> 0.500

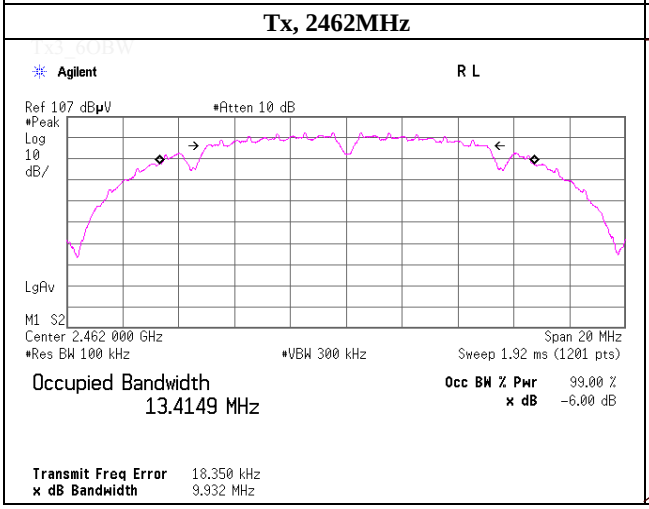
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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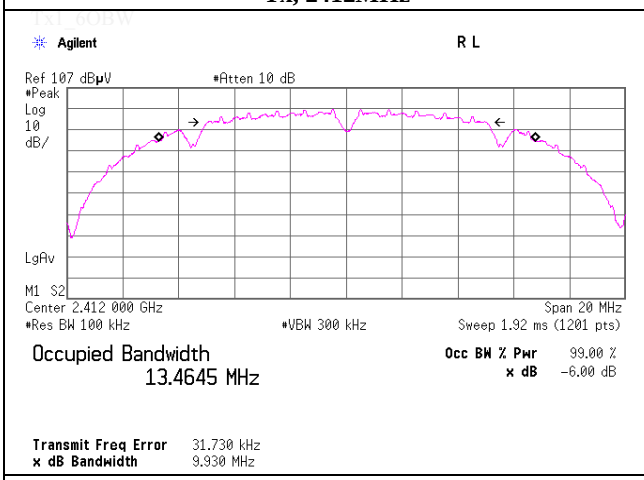
-6dB Bandwidth

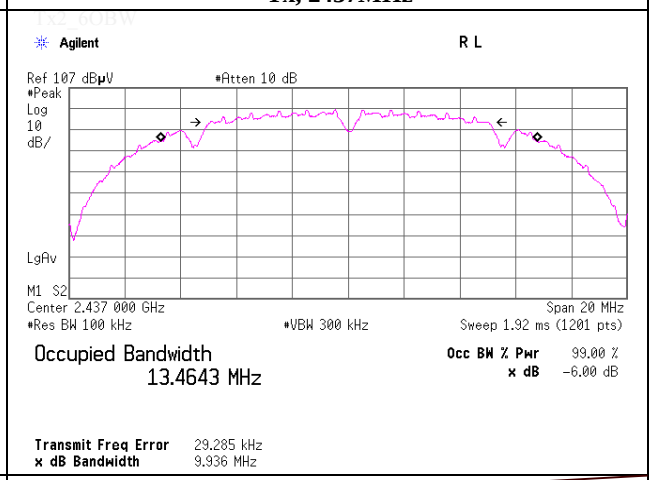
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.930	> 0.500
2437.0000	9.936	> 0.500
2462.0000	10.003	> 0.500

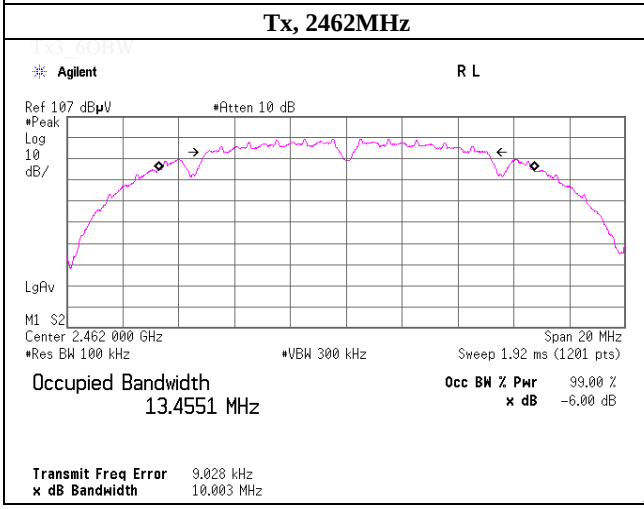
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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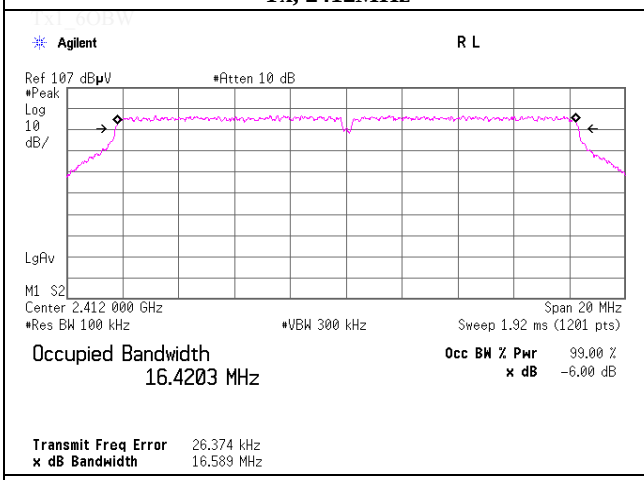
-6dB Bandwidth

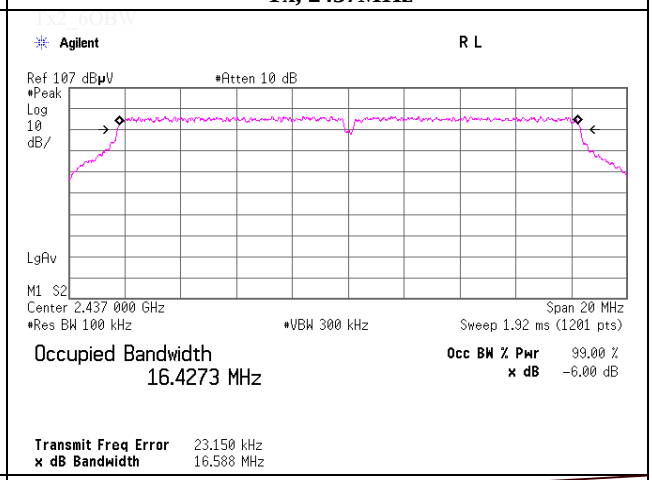
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.589	> 0.500
2437.0000	16.588	> 0.500
2462.0000	16.581	> 0.500

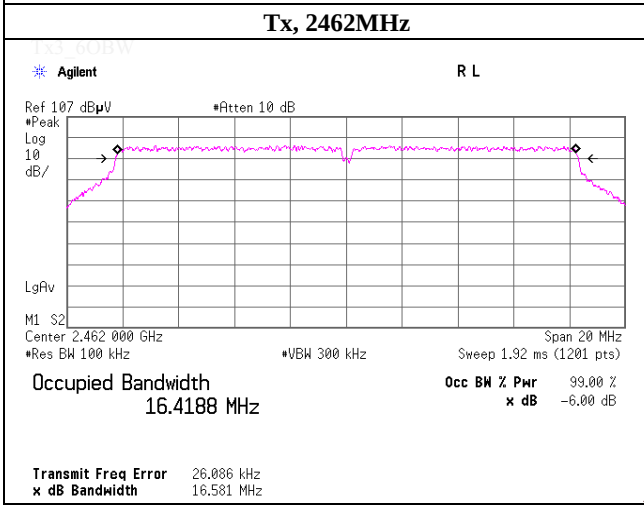
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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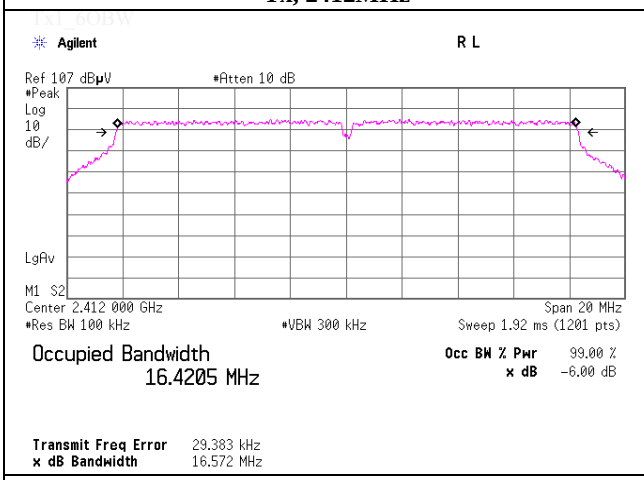
-6dB Bandwidth

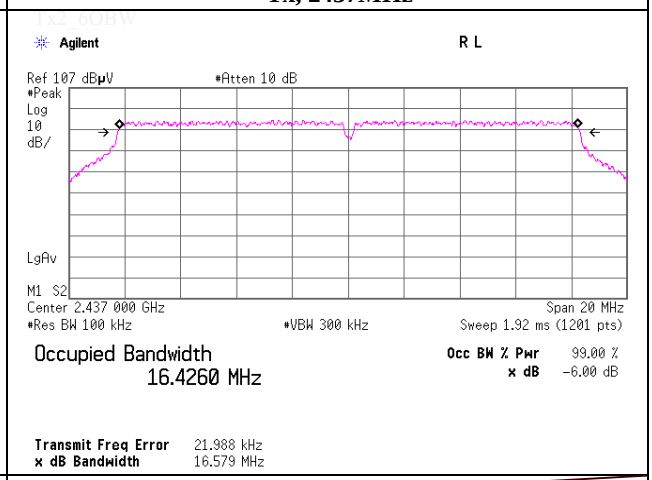
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.572	> 0.500
2437.0000	16.579	> 0.500
2462.0000	16.586	> 0.500

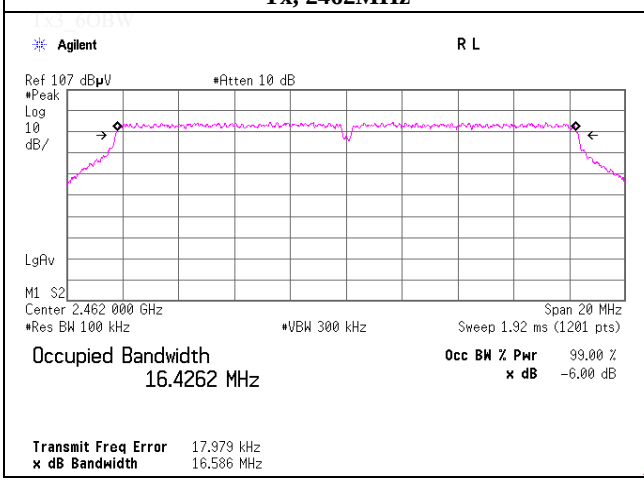
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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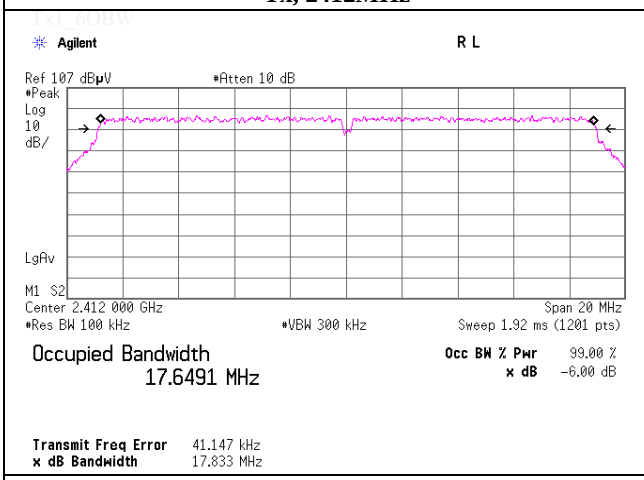
-6dB Bandwidth

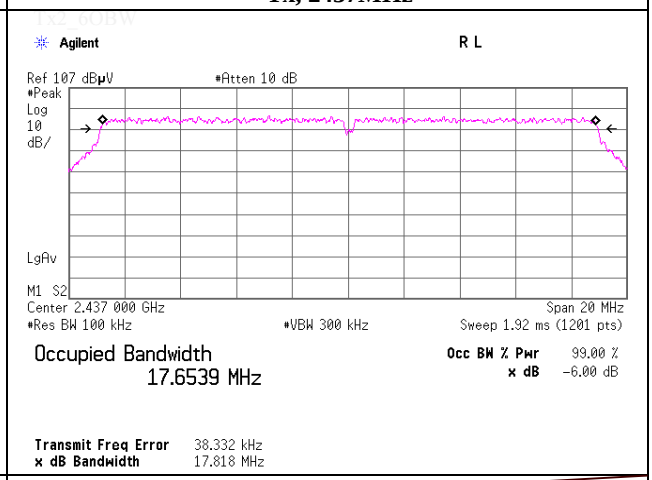
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.833	> 0.500
2437.0000	17.818	> 0.500
2462.0000	17.814	> 0.500

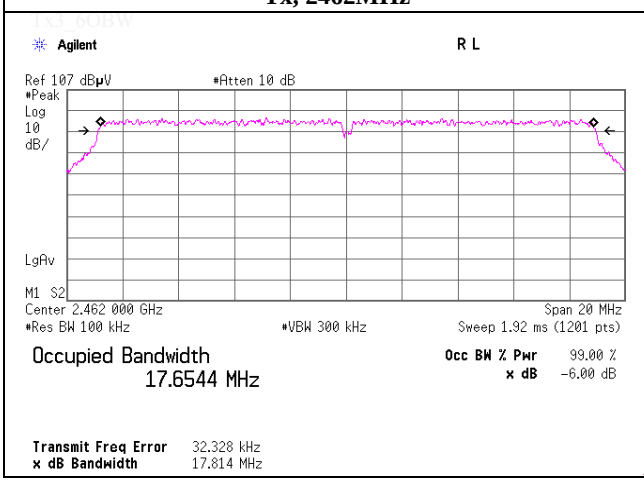
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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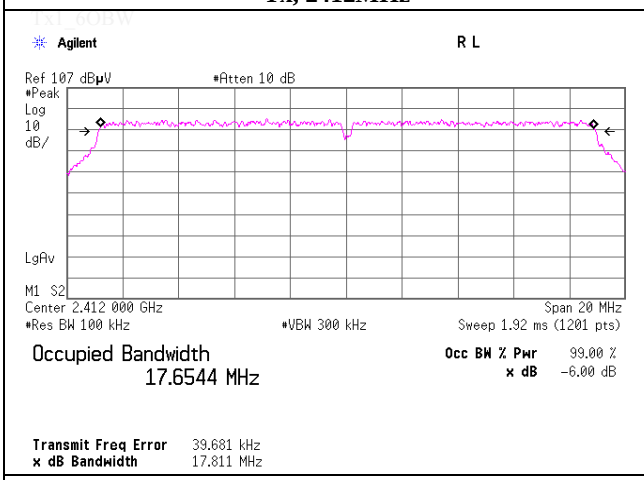
-6dB Bandwidth

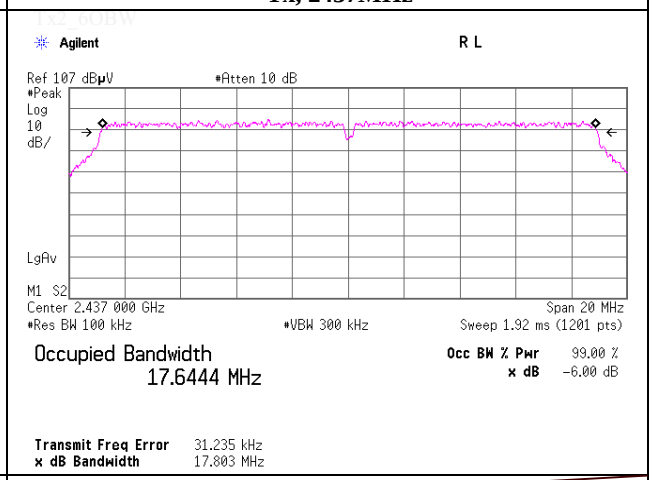
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.811	> 0.500
2437.0000	17.803	> 0.500
2462.0000	17.824	> 0.500

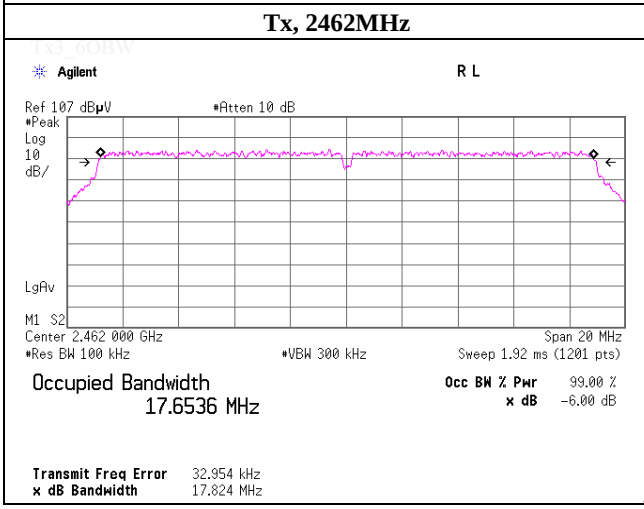
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz

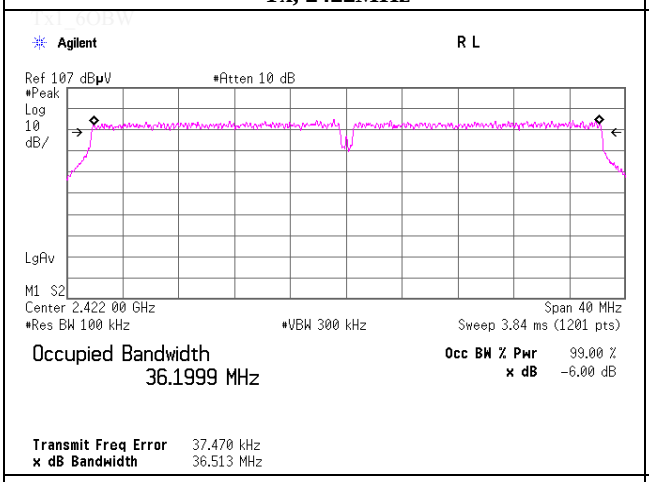


-6dB Bandwidth

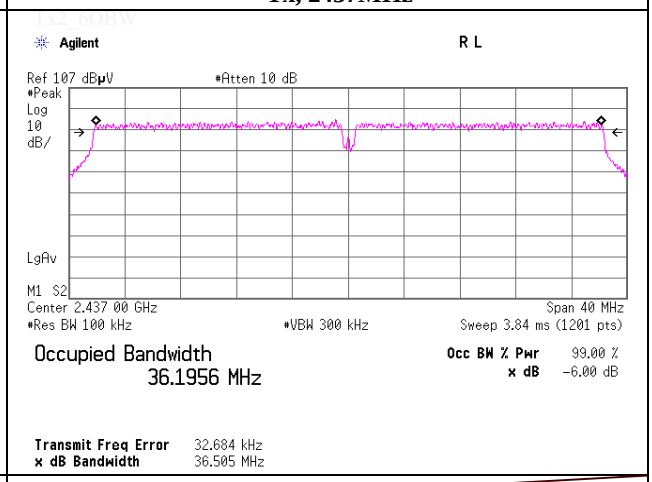
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.513	> 0.500
2437.0000	36.505	> 0.500
2452.0000	36.540	> 0.500

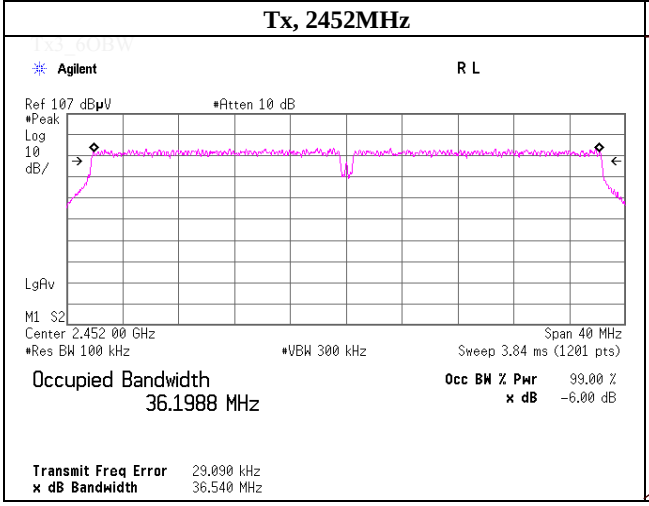
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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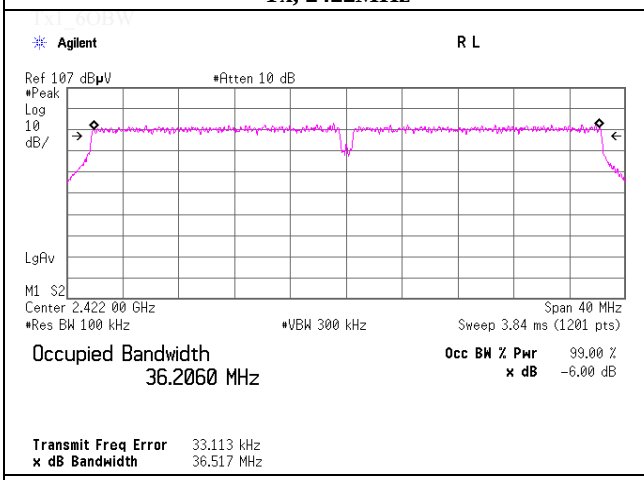
-6dB Bandwidth

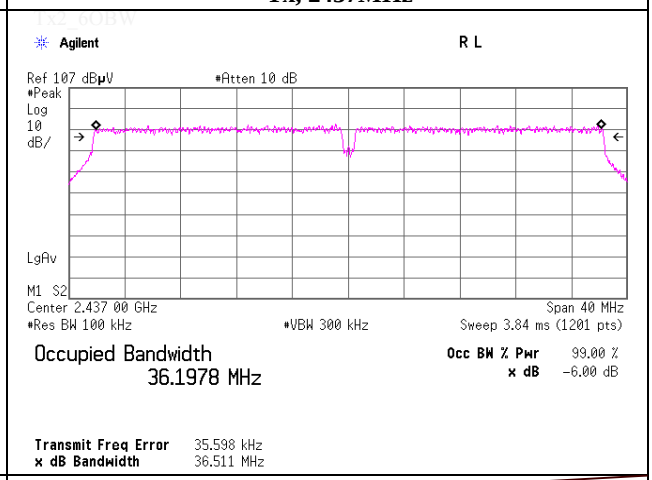
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.517	> 0.500
2437.0000	36.511	> 0.500
2452.0000	36.514	> 0.500

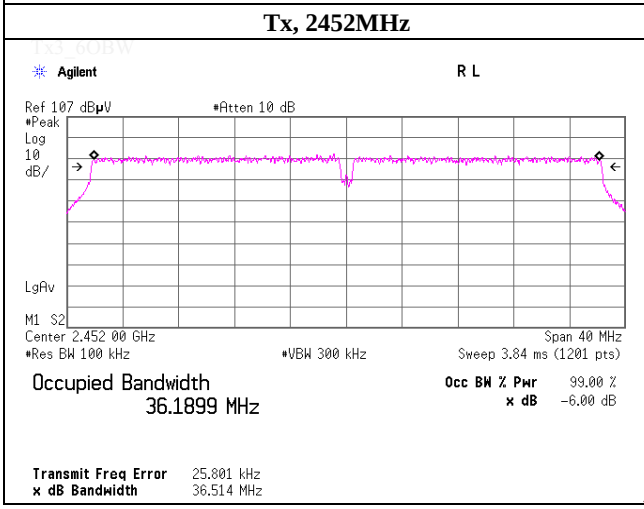
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11b, PN9, power setting 14dBm	worst data mode :	1 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	5.86	1.00	9.97	16.83	48.19	30.00	1000	13.17
Mid	2437.0	5.53	1.00	9.97	16.50	44.67	30.00	1000	13.50
High	2462.0	5.33	1.00	9.97	16.30	42.66	30.00	1000	13.70

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + 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	2412.0	5.86	1.00	9.97	**16.83**	48.19	30.00	1000	**13.17**	**Worst**
	2	2412.0	5.82	1.00	9.97	16.79	47.75	30.00	1000	13.21	
	5.5	2412.0	5.27	1.00	9.97	16.24	42.07	30.00	1000	13.76	
	11	2412.0	5.81	1.00	9.97	16.78	47.64	30.00	1000	13.22	

Reference data for SAR testing (* AV: Average)

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	Data rate	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	1	2412.0	3.20	1.00	9.97	14.17	26.12
	2	2412.0	3.22	1.00	9.97	14.19	26.24
	5.5	2412.0	3.31	1.00	9.97	14.28	26.79
	11	2412.0	3.27	1.00	9.97	14.24	26.55

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room		
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11b, PN9, power setting 11dBm	worst data mode :	1 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	2.93	1.00	9.97	13.90	24.55	30.00	1000	16.10
Mid	2437.0	2.42	1.00	9.97	13.39	21.83	30.00	1000	16.61
High	2462.0	2.37	1.00	9.97	13.34	21.58	30.00	1000	16.66

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11g, PN9, power setting 12dBm	worst data mode :	6 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	10.44	1.00	9.97	21.41	138.36	30.00	1000	8.59
Mid	2437.0	10.21	1.00	9.97	21.18	131.22	30.00	1000	8.82
High	2462.0	10.05	1.00	9.97	21.02	126.47	30.00	1000	8.98

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + 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	2412.0	10.44	1.00	9.97	**21.41**	138.36	30.00	1000	**8.59**	**Worst**
9	2412.0	9.84	1.00	9.97	20.81	120.50	30.00	1000	9.19	
12	2412.0	10.23	1.00	9.97	21.20	131.83	30.00	1000	8.80	
18	2412.0	9.82	1.00	9.97	20.79	119.95	30.00	1000	9.21	
24	2412.0	10.42	1.00	9.97	21.39	137.72	30.00	1000	8.61	
36	2412.0	10.27	1.00	9.97	21.24	133.05	30.00	1000	8.76	
48	2412.0	10.04	1.00	9.97	21.01	126.18	30.00	1000	8.99	
54	2412.0	10.24	1.00	9.97	21.21	132.13	30.00	1000	8.79	

Reference data for SAR testing (* AV: Average)

Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
Data rate	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
6	2412.0	1.16	1.00	9.97	12.13	16.33
9	2412.0	1.11	1.00	9.97	12.08	16.14
12	2412.0	1.08	1.00	9.97	12.05	16.03
18	2412.0	1.17	1.00	9.97	12.14	16.37
24	2412.0	1.06	1.00	9.97	12.03	15.96
36	2412.0	0.98	1.00	9.97	11.95	15.67
48	2412.0	1.05	1.00	9.97	12.02	15.92
54	2412.0	1.04	1.00	9.97	12.01	15.89

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11g, PN9, power setting 10dBm	worst data mode :	6 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	8.51	1.00	9.97	19.48	88.72	30.00	1000	10.52
Mid	2437.0	8.38	1.00	9.97	19.35	86.10	30.00	1000	10.65
High	2462.0	8.24	1.00	9.97	19.21	83.37	30.00	1000	10.79

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n-20HT, PN9, power setting 12dBm	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	9.81	1.00	9.97	20.78	119.67	30.00	1000	9.22
Mid	2437.0	9.46	1.00	9.97	20.43	110.41	30.00	1000	9.57
High	2462.0	9.38	1.00	9.97	20.35	108.39	30.00	1000	9.65

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + 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	2412.0	9.76	1.00	9.97	20.73	118.30	30.00	1000	9.27	
	1	2412.0	9.78	1.00	9.97	20.75	118.85	30.00	1000	9.25	
	2	2412.0	9.73	1.00	9.97	20.70	117.49	30.00	1000	9.30	
	3	2412.0	9.81	1.00	9.97	**20.78**	119.67	30.00	1000	**9.22**	**Worst**
	4	2412.0	9.72	1.00	9.97	20.69	117.22	30.00	1000	9.31	
	5	2412.0	9.77	1.00	9.97	20.74	118.58	30.00	1000	9.26	
	6	2412.0	9.75	1.00	9.97	20.72	118.03	30.00	1000	9.28	
	7	2412.0	9.73	1.00	9.97	20.70	117.49	30.00	1000	9.30	

Reference data for SAR testing (* AV: Average)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	Mode	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	0	2412.0	1.06	1.00	9.97	12.03	15.96
	1	2412.0	1.09	1.00	9.97	12.06	16.07
	2	2412.0	1.08	1.00	9.97	12.05	16.03
	3	2412.0	1.11	1.00	9.97	12.08	16.14
	4	2412.0	1.07	1.00	9.97	12.04	16.00
	5	2412.0	1.14	1.00	9.97	12.11	16.26
	6	2412.0	1.16	1.00	9.97	12.13	16.33
	7	2412.0	1.13	1.00	9.97	12.10	16.22

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room		
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n-20HT, PN9, power setting 10dBm	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	8.17	1.00	9.97	19.14	82.04	30.00	1000	10.86
Mid	2437.0	7.86	1.00	9.97	18.83	76.38	30.00	1000	11.17
High	2462.0	7.63	1.00	9.97	18.60	72.44	30.00	1000	11.40

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room		
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n-40HT, PN9, power setting 11dBm	worst data mode :	5 (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	9.92	1.00	9.97	20.89	122.74	30.00	1000	9.11
Mid	2437.0	9.76	1.00	9.97	20.73	118.30	30.00	1000	9.27
High	2452.0	9.65	1.00	9.97	20.62	115.35	30.00	1000	9.38

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + 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	2422.0	9.24	1.00	9.97	20.21	104.95	30.00	1000	9.79	
	1	2422.0	9.19	1.00	9.97	20.16	103.75	30.00	1000	9.84	
	2	2422.0	9.60	1.00	9.97	20.57	114.02	30.00	1000	9.43	
	3	2422.0	9.81	1.00	9.97	20.78	119.67	30.00	1000	9.22	
	4	2422.0	9.88	1.00	9.97	20.85	121.62	30.00	1000	9.15	
	5	2422.0	9.92	1.00	9.97	**20.89**	122.74	30.00	1000	**9.11**	**Worst**
	6	2422.0	9.52	1.00	9.97	20.49	111.94	30.00	1000	9.51	
	7	2422.0	9.28	1.00	9.97	20.25	105.93	30.00	1000	9.75	

Reference data for SAR testing (* AV: Average)

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	Mode	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	0	2422.0	0.30	1.00	9.97	11.27	13.40
	1	2422.0	0.35	1.00	9.97	11.32	13.55
	2	2422.0	0.23	1.00	9.97	11.20	13.18
	3	2422.0	0.28	1.00	9.97	11.25	13.34
	4	2422.0	0.29	1.00	9.97	11.26	13.37
	5	2422.0	0.28	1.00	9.97	11.25	13.34
	6	2422.0	0.33	1.00	9.97	11.30	13.49
	7	2422.0	0.20	1.00	9.97	11.17	13.09

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

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room		
Date	August 20, 2012		
Temperature / Humidity	27deg.C , 56%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n-40HT, PN9, power setting 9dBm	worst data mode :	5 (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	8.35	1.00	9.97	19.32	85.51	30.00	1000	10.68
Mid	2437.0	8.34	1.00	9.97	19.31	85.31	30.00	1000	10.69
High	2452.0	7.86	1.00	9.97	18.83	76.38	30.00	1000	11.17

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	54.6	27.2	24.4	38.2	68.0	73.9	5.9	106	150	
Hori.	4824.000	PK	48.8	30.8	6.6	37.0	49.2	73.9	24.7	100	148	
Hori.	6432.495	PK	50.1	34.5	7.6	38.3	53.9	73.9	20.0	102	195	
Hori.	7236.000	PK	46.4	36.2	8.0	39.0	51.6	73.9	22.3	100	198	
Hori.	9648.000	PK	45.0	38.3	9.2	37.2	55.3	73.9	18.6	100	144	
Hori.	12060.000	PK	43.4	39.2	10.5	37.9	55.2	73.9	18.7	100	0	
Hori.	2390.000	AV	31.6	27.2	24.4	38.2	45.0	53.9	8.9	106	150	
Hori.	4824.000	AV	42.0	30.8	6.6	37.0	42.4	53.9	11.5	100	148	
Hori.	6432.495	AV	44.4	34.5	7.6	38.3	48.2	53.9	**5.7**	102	195	
Hori.	7236.000	AV	35.8	36.2	8.0	39.0	41.0	53.9	12.9	100	198	
Hori.	9648.000	AV	35.7	38.3	9.2	37.2	46.0	53.9	7.9	100	144	
Hori.	12060.000	AV	32.7	39.2	10.5	37.9	44.5	53.9	9.4	100	0	
Vert.	2390.000	PK	52.4	27.2	24.4	38.2	65.8	73.9	8.1	118	192	
Vert.	4824.000	PK	48.5	30.8	6.6	37.0	48.9	73.9	25.0	100	87	
Vert.	6432.495	PK	48.5	34.5	7.6	38.3	52.3	73.9	21.6	103	296	
Vert.	7236.000	PK	46.4	36.2	8.0	39.0	51.6	73.9	22.3	100	221	
Vert.	9648.000	PK	45.3	38.3	9.2	37.2	55.6	73.9	18.3	100	229	
Vert.	12060.000	PK	43.7	39.2	10.5	37.9	55.5	73.9	18.4	100	0	
Vert.	2390.000	AV	31.5	27.2	24.4	38.2	44.9	53.9	9.0	118	192	
Vert.	4824.000	AV	41.2	30.8	6.6	37.0	41.6	53.9	12.3	100	87	
Vert.	6432.495	AV	41.7	34.5	7.6	38.3	45.5	53.9	8.4	103	296	
Vert.	7236.000	AV	37.2	36.2	8.0	39.0	42.4	53.9	11.5	100	221	
Vert.	9648.000	AV	36.4	38.3	9.2	37.2	46.7	53.9	7.2	100	229	
Vert.	12060.000	AV	32.8	39.2	10.5	37.9	44.6	53.9	9.3	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.5	27.3	24.4	38.2	97.0	-	-	Carrier
Hori.	2397.080	PK	55.7	27.3	24.4	38.2	69.2	77.0	7.8	
Hori.	2400.000	PK	41.0	27.3	24.4	38.2	54.5	77.0	22.5	
Vert.	2412.000	PK	79.3	27.3	24.4	38.2	92.8	-	-	Carrier
Vert.	2397.080	PK	50.4	27.3	24.4	38.2	63.9	72.8	8.9	
Vert.	2400.000	PK	38.7	27.3	24.4	38.2	52.2	72.8	20.6	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	49.1	31.0	6.6	36.9	49.8	73.9	24.1	100	334	
Hori.	6497.999	PK	49.6	34.7	7.6	38.4	53.5	73.9	20.4	100	198	
Hori.	7311.000	PK	46.0	36.2	8.2	39.0	51.4	73.9	22.5	100	217	
Hori.	9748.000	PK	44.7	38.4	9.3	37.2	55.2	73.9	18.7	100	146	
Hori.	12185.000	PK	44.0	39.2	10.5	37.7	56.0	73.9	17.9	100	0	
Hori.	4874.000	AV	43.4	31.0	6.6	36.9	44.1	53.9	9.8	100	334	
Hori.	6497.999	AV	44.4	34.7	7.6	38.4	48.3	53.9	5.6	100	198	
Hori.	7311.000	AV	35.2	36.2	8.2	39.0	40.6	53.9	13.3	100	217	
Hori.	9748.000	AV	36.1	38.4	9.3	37.2	46.6	53.9	7.3	100	146	
Hori.	12185.000	AV	32.6	39.2	10.5	37.7	44.6	53.9	9.3	100	0	
Vert.	4874.000	PK	49.5	31.0	6.6	36.9	50.2	73.9	23.7	100	198	
Vert.	6497.999	PK	48.1	34.7	7.6	38.4	52.0	73.9	21.9	183	304	
Vert.	7311.000	PK	46.8	36.2	8.2	39.0	52.2	73.9	21.7	100	226	
Vert.	9748.000	PK	47.5	38.4	9.3	37.2	58.0	73.9	15.9	179	233	
Vert.	12185.000	PK	43.9	39.2	10.5	37.7	55.9	73.9	18.0	100	0	
Vert.	4874.000	AV	43.3	31.0	6.6	36.9	44.0	53.9	9.9	100	198	
Vert.	6497.999	AV	41.3	34.7	7.6	38.4	45.2	53.9	8.7	183	304	
Vert.	7311.000	AV	36.3	36.2	8.2	39.0	41.7	53.9	12.2	100	226	
Vert.	9748.000	AV	38.6	38.4	9.3	37.2	49.1	53.9	**4.8**	179	233	
Vert.	12185.000	AV	32.6	39.2	10.5	37.7	44.6	53.9	9.3	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	52.1	27.4	24.4	38.1	65.8	73.9	8.1	104	157	
Hori.	4924.000	PK	52.2	31.1	6.6	36.9	53.0	73.9	20.9	100	339	
Hori.	6565.537	PK	50.2	34.9	7.7	38.5	54.3	73.9	19.6	100	201	
Hori.	7386.000	PK	45.5	36.3	8.3	39.0	51.1	73.9	22.8	100	216	
Hori.	9848.000	PK	44.6	38.6	9.3	37.2	55.3	73.9	18.6	100	128	
Hori.	12310.000	PK	43.8	39.1	10.7	37.6	56.0	73.9	17.9	100	0	
Hori.	2483.500	AV	32.6	27.4	24.4	38.1	46.3	53.9	7.6	104	157	
Hori.	4924.000	AV	47.6	31.1	6.6	36.9	48.4	53.9	5.5	100	339	
Hori.	6565.537	AV	44.9	34.9	7.7	38.5	49.0	53.9	4.9	100	201	
Hori.	7386.000	AV	34.8	36.3	8.3	39.0	40.4	53.9	13.5	100	216	
Hori.	9848.000	AV	36.6	38.6	9.3	37.2	47.3	53.9	6.6	100	128	
Hori.	12310.000	AV	32.6	39.1	10.7	37.6	44.8	53.9	9.1	100	0	
Vert.	2483.500	PK	51.8	27.4	24.4	38.1	65.5	73.9	8.4	148	197	
Vert.	4924.000	PK	50.7	31.1	6.6	36.9	51.5	73.9	22.4	100	198	
Vert.	6565.537	PK	48.5	34.9	7.7	38.5	52.6	73.9	21.3	185	295	
Vert.	7386.000	PK	46.2	36.3	8.3	39.0	51.8	73.9	22.1	100	218	
Vert.	9848.000	PK	46.7	38.6	9.3	37.2	57.4	73.9	16.5	157	237	
Vert.	12310.000	PK	44.6	39.1	10.7	37.6	56.8	73.9	17.1	100	0	
Vert.	2483.500	AV	32.7	27.4	24.4	38.1	46.4	53.9	7.5	148	197	
Vert.	4924.000	AV	44.4	31.1	6.6	36.9	45.2	53.9	8.7	100	198	
Vert.	6565.537	AV	42.2	34.9	7.7	38.5	46.3	53.9	7.6	185	295	
Vert.	7386.000	AV	35.5	36.3	8.3	39.0	41.1	53.9	12.8	100	218	
Vert.	9848.000	AV	39.5	38.6	9.3	37.2	50.2	53.9	**3.7**	157	237	
Vert.	12310.000	AV	32.5	39.1	10.7	37.6	44.7	53.9	9.2	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	53.1	27.2	24.4	38.2	66.5	73.9	7.4	106	150	
Hori.	4824.000	PK	52.4	31.1	6.8	41.2	49.1	73.9	24.8	111	97	
Hori.	6432.175	PK	52.0	34.9	7.5	40.6	53.8	73.9	20.1	100	144	
Hori.	7236.000	PK	48.5	36.6	8.5	41.4	52.2	73.9	21.7	100	312	
Hori.	9648.000	PK	45.1	38.6	9.4	38.9	54.2	73.9	19.7	100	359	
Hori.	12060.000	PK	47.5	39.5	10.7	39.4	58.3	73.9	15.6	100	0	
Hori.	2390.000	AV	31.7	27.2	24.4	38.2	45.1	53.9	8.8	106	150	
Hori.	4824.000	AV	46.1	31.1	6.8	41.2	42.8	53.9	11.1	111	97	
Hori.	6432.175	AV	46.3	34.9	7.5	40.6	48.1	53.9	**5.8**	100	144	
Hori.	7236.000	AV	35.8	36.6	8.5	41.4	39.5	53.9	14.4	100	312	
Hori.	9648.000	AV	33.0	38.6	9.4	38.9	42.1	53.9	11.8	100	359	
Hori.	12060.000	AV	34.1	39.5	10.7	39.4	44.9	53.9	9.0	100	0	
Vert.	2390.000	PK	50.1	27.2	24.4	38.2	63.5	73.9	10.4	118	192	
Vert.	4824.000	PK	50.9	31.1	6.8	41.2	47.6	73.9	26.3	113	184	
Vert.	6432.175	PK	49.9	34.9	7.5	40.6	51.7	73.9	22.2	100	243	
Vert.	7236.000	PK	48.2	36.6	8.5	41.4	51.9	73.9	22.0	100	359	
Vert.	9648.000	PK	46.0	38.6	9.4	38.9	55.1	73.9	18.8	100	0	
Vert.	12060.000	PK	46.9	39.5	10.7	39.4	57.7	73.9	16.2	100	359	
Vert.	2390.000	AV	31.5	27.2	24.4	38.2	44.9	53.9	9.0	118	192	
Vert.	4824.000	AV	43.3	31.1	6.8	41.2	40.0	53.9	13.9	113	184	
Vert.	6432.175	AV	43.3	34.9	7.5	40.6	45.1	53.9	8.8	100	243	
Vert.	7236.000	AV	36.0	36.6	8.5	41.4	39.7	53.9	14.2	100	359	
Vert.	9648.000	AV	33.0	38.6	9.4	38.9	42.1	53.9	11.8	100	0	
Vert.	12060.000	AV	34.0	39.5	10.7	39.4	44.8	53.9	9.1	100	359	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	81.2	27.3	24.4	38.2	94.7	-	-	Carrier
Hori.	2397.080	PK	54.6	27.3	24.4	38.2	68.1	74.7	6.6	
Hori.	2400.000	PK	37.7	27.3	24.4	38.2	51.2	74.7	23.5	
Vert.	2412.000	PK	75.3	27.3	24.4	38.2	88.8	-	-	Carrier
Vert.	2397.080	PK	49.8	27.3	24.4	38.2	63.3	68.8	5.5	
Vert.	2400.000	PK	36.1	27.3	24.4	38.2	49.6	68.8	19.2	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	50.8	31.3	6.9	41.1	47.9	73.9	26.0	106	94	
Hori.	6499.013	PK	51.0	35.2	7.5	40.7	53.0	73.9	20.9	100	150	
Hori.	7311.000	PK	48.6	36.6	8.6	41.4	52.4	73.9	21.5	100	359	
Hori.	9748.000	PK	45.7	38.7	9.5	38.9	55.0	73.9	18.9	100	359	
Hori.	12185.000	PK	46.4	39.5	10.7	39.3	57.3	73.9	16.6	100	0	
Hori.	4874.000	AV	44.1	31.3	6.9	41.1	41.2	53.9	12.7	106	94	
Hori.	6499.013	AV	46.1	35.2	7.5	40.7	48.1	53.9	**5.8**	100	150	
Hori.	7311.000	AV	34.7	36.6	8.6	41.4	38.5	53.9	15.4	100	359	
Hori.	9748.000	AV	32.0	38.7	9.5	38.9	41.3	53.9	12.6	100	359	
Hori.	12185.000	AV	32.2	39.5	10.7	39.3	43.1	53.9	10.8	100	0	
Vert.	4874.000	PK	51.7	31.3	6.9	41.1	48.8	73.9	25.1	100	0	
Vert.	6499.013	PK	50.2	35.2	7.5	40.7	52.2	73.9	21.7	100	232	
Vert.	7311.000	PK	47.9	36.6	8.6	41.4	51.7	73.9	22.2	100	359	
Vert.	9748.000	PK	45.0	38.7	9.5	38.9	54.3	73.9	19.6	100	0	
Vert.	12185.000	PK	46.1	39.5	10.7	39.3	57.0	73.9	16.9	100	359	
Vert.	4874.000	AV	45.1	31.3	6.9	41.1	42.2	53.9	11.7	100	0	
Vert.	6499.013	AV	42.8	35.2	7.5	40.7	44.8	53.9	9.1	100	232	
Vert.	7311.000	AV	34.7	36.6	8.6	41.4	38.5	53.9	15.4	100	359	
Vert.	9748.000	AV	32.6	38.7	9.5	38.9	41.9	53.9	12.0	100	0	
Vert.	12185.000	AV	32.3	39.5	10.7	39.3	43.2	53.9	10.7	100	359	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	51.2	27.4	24.4	38.1	64.9	73.9	9.0	104	157	
Hori.	4924.000	PK	51.3	31.5	6.9	41.0	48.7	73.9	25.2	100	292	
Hori.	6565.715	PK	50.9	35.3	7.7	40.8	53.1	73.9	20.8	100	136	
Hori.	7386.000	PK	47.9	36.7	8.7	41.5	51.8	73.9	22.1	100	359	
Hori.	9848.000	PK	45.1	38.9	9.5	38.9	54.6	73.9	19.3	100	359	
Hori.	12310.000	PK	44.5	39.5	10.8	39.3	55.5	73.9	18.4	100	0	
Hori.	2483.500	AV	32.1	27.4	24.4	38.1	45.8	53.9	8.1	104	157	
Hori.	4924.000	AV	44.8	31.5	6.9	41.0	42.2	53.9	11.7	100	292	
Hori.	6565.715	AV	44.0	35.3	7.7	40.8	46.2	53.9	**7.7**	100	136	
Hori.	7386.000	AV	34.8	36.7	8.7	41.5	38.7	53.9	15.2	100	359	
Hori.	9848.000	AV	32.2	38.9	9.5	38.9	41.7	53.9	12.2	100	359	
Hori.	12310.000	AV	31.6	39.5	10.8	39.3	42.6	53.9	11.3	100	0	
Vert.	2483.500	PK	50.9	27.4	24.4	38.1	64.6	73.9	9.3	148	197	
Vert.	4924.000	PK	50.8	31.5	6.9	41.0	48.2	73.9	25.7	100	153	
Vert.	6565.715	PK	50.0	35.3	7.7	40.8	52.2	73.9	21.7	100	121	
Vert.	7386.000	PK	47.6	36.7	8.7	41.5	51.5	73.9	22.4	100	359	
Vert.	9848.000	PK	45.0	38.9	9.5	38.9	54.5	73.9	19.4	100	183	
Vert.	12310.000	PK	44.4	39.5	10.8	39.3	55.4	73.9	18.5	100	359	
Vert.	2483.500	AV	32.2	27.4	24.4	38.1	45.9	53.9	8.0	148	197	
Vert.	4924.000	AV	43.6	31.5	6.9	41.0	41.0	53.9	12.9	100	153	
Vert.	6565.715	AV	41.3	35.3	7.7	40.8	43.5	53.9	10.4	100	121	
Vert.	7386.000	AV	34.5	36.7	8.7	41.5	38.4	53.9	15.5	100	359	
Vert.	9848.000	AV	32.1	38.9	9.5	38.9	41.6	53.9	12.3	100	183	
Vert.	12310.000	AV	31.5	39.5	10.8	39.3	42.5	53.9	11.4	100	359	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber		
Date	August 23, 2012	August 25, 2012	August 27, 2012	August 29, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH	25 deg.C, 57%RH
Engineer	Shinichi Takano (No.2 SAC)	Tatsuya Arai (No.2 SAC)	Tatsuya Arai (No.3 SAC)	Akira Sato (No.3 SAC)
Mode	Tx, 2412 MHz			
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm			

(* 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.	240.000	QP	49.3	16.9	8.2	32.0	42.4	46.0	3.6	146	84	
Hori.	336.008	QP	53.1	14.8	8.7	32.0	44.6	46.0	**1.4**	100	240	
Hori.	432.022	QP	47.9	16.8	9.2	32.0	41.9	46.0	4.1	100	53	
Hori.	624.009	QP	46.9	19.4	9.9	32.0	44.2	46.0	1.8	161	32	
Hori.	672.009	QP	40.4	20.1	10.0	31.9	38.6	46.0	7.4	151	49	
Hori.	2390.000	PK	53.2	27.2	24.4	38.2	66.6	73.9	7.3	106	157	
Hori.	4824.000	PK	46.5	30.8	6.6	37.0	46.9	73.9	27.0	100	146	
Hori.	6432.047	PK	49.6	34.5	7.6	38.3	53.4	73.9	20.5	100	205	
Hori.	7236.000	PK	45.8	36.2	8.0	39.0	51.0	73.9	22.9	100	205	
Hori.	9648.000	PK	42.4	38.3	9.2	37.2	52.7	73.9	21.2	100	0	
Hori.	12060.000	PK	44.8	39.2	10.5	37.9	56.6	73.9	17.3	100	0	
Hori.	2390.000	AV	33.6	27.2	24.4	38.2	47.0	53.9	6.9	106	157	
Hori.	4824.000	AV	33.7	30.8	6.6	37.0	34.1	53.9	19.8	100	146	
Hori.	6432.047	AV	44.5	34.5	7.6	38.3	48.3	53.9	5.6	100	205	
Hori.	7236.000	AV	34.8	36.2	8.0	39.0	40.0	53.9	13.9	100	205	
Hori.	9648.000	AV	31.1	38.3	9.2	37.2	41.4	53.9	12.5	100	0	
Hori.	12060.000	AV	32.8	39.2	10.5	37.9	44.6	53.9	9.3	100	0	
Vert.	48.004	QP	51.6	11.7	6.8	32.2	37.9	40.0	2.1	104	257	
Vert.	624.004	QP	45.0	19.4	9.9	32.0	42.3	46.0	3.7	100	79	
Vert.	2390.000	PK	48.4	27.2	24.4	38.2	61.8	73.9	12.1	107	171	
Vert.	4824.000	PK	44.6	30.8	6.6	37.0	45.0	73.9	28.9	100	69	
Vert.	6432.047	PK	48.7	34.5	7.6	38.3	52.5	73.9	21.4	186	289	
Vert.	7236.000	PK	46.7	36.2	8.0	39.0	51.9	73.9	22.0	100	222	
Vert.	9648.000	PK	42.3	38.3	9.2	37.2	52.6	73.9	21.3	100	0	
Vert.	12060.000	PK	43.4	39.2	10.5	37.9	55.2	73.9	18.7	100	0	
Vert.	2390.000	AV	32.3	27.2	24.4	38.2	45.7	53.9	8.2	107	171	
Vert.	4824.000	AV	33.6	30.8	6.6	37.0	34.0	53.9	19.9	100	69	
Vert.	6432.047	AV	42.1	34.5	7.6	38.3	45.9	53.9	8.0	186	289	
Vert.	7236.000	AV	35.3	36.2	8.0	39.0	40.5	53.9	13.4	100	222	
Vert.	9648.000	AV	30.9	38.3	9.2	37.2	41.2	53.9	12.7	100	0	
Vert.	12060.000	AV	32.7	39.2	10.5	37.9	44.5	53.9	9.4	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	78.2	27.3	24.4	38.2	91.7	-	-	Carrier
Hori.	2400.000	PK	44.2	27.3	24.4	38.2	57.7	71.7	14.0	
Vert.	2412.000	PK	76.4	27.3	24.4	38.2	89.9	-	-	Carrier
Vert.	2400.000	PK	41.4	27.3	24.4	38.2	54.9	69.9	15.0	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	45.7	31.0	6.6	36.9	46.4	73.9	27.5	100	337	
Hori.	6498.023	PK	49.4	34.7	7.6	38.4	53.3	73.9	20.6	100	196	
Hori.	7311.000	PK	45.4	36.2	8.2	39.0	50.8	73.9	23.1	100	0	
Hori.	9748.000	PK	42.0	38.4	9.3	37.2	52.5	73.9	21.4	100	0	
Hori.	12185.000	PK	44.0	39.2	10.5	37.7	56.0	73.9	17.9	100	0	
Hori.	4874.000	AV	34.3	31.0	6.6	36.9	35.0	53.9	18.9	100	337	
Hori.	6498.023	AV	44.3	34.7	7.6	38.4	48.2	53.9	**5.7**	100	196	
Hori.	7311.000	AV	34.3	36.2	8.2	39.0	39.7	53.9	14.2	100	0	
Hori.	9748.000	AV	31.3	38.4	9.3	37.2	41.8	53.9	12.1	100	0	
Hori.	12185.000	AV	32.6	39.2	10.5	37.7	44.6	53.9	9.3	100	0	
Vert.	4874.000	PK	45.4	31.0	6.6	36.9	46.1	73.9	27.8	100	98	
Vert.	6498.023	PK	48.1	34.7	7.6	38.4	52.0	73.9	21.9	186	299	
Vert.	7311.000	PK	45.0	36.2	8.2	39.0	50.4	73.9	23.5	100	230	
Vert.	9748.000	PK	42.9	38.4	9.3	37.2	53.4	73.9	20.5	100	237	
Vert.	12185.000	PK	44.1	39.2	10.5	37.7	56.1	73.9	17.8	100	0	
Vert.	4874.000	AV	33.9	31.0	6.6	36.9	34.6	53.9	19.3	100	98	
Vert.	6498.023	AV	42.7	34.7	7.6	38.4	46.6	53.9	7.3	186	299	
Vert.	7311.000	AV	34.7	36.2	8.2	39.0	40.1	53.9	13.8	100	230	
Vert.	9748.000	AV	31.9	38.4	9.3	37.2	42.4	53.9	11.5	100	237	
Vert.	12185.000	AV	32.7	39.2	10.5	37.7	44.7	53.9	9.2	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	52.0	27.4	24.4	38.1	65.7	73.9	8.2	103	159	
Hori.	4924.000	PK	48.7	31.1	6.6	36.9	49.5	73.9	24.4	100	334	
Hori.	6565.568	PK	50.1	34.9	7.7	38.5	54.2	73.9	19.7	100	199	
Hori.	7386.000	PK	44.8	36.3	8.3	39.0	50.4	73.9	23.5	100	0	
Hori.	9848.000	PK	42.3	38.6	9.3	37.2	53.0	73.9	20.9	100	0	
Hori.	12310.000	PK	44.2	39.1	10.7	37.6	56.4	73.9	17.5	100	0	
Hori.	2483.500	AV	32.6	27.4	24.4	38.1	46.3	53.9	7.6	103	159	
Hori.	4924.000	AV	36.1	31.1	6.6	36.9	36.9	53.9	17.0	100	334	
Hori.	6565.568	AV	45.1	34.9	7.7	38.5	49.2	53.9	**4.7**	100	199	
Hori.	7386.000	AV	34.5	36.3	8.3	39.0	40.1	53.9	13.8	100	0	
Hori.	9848.000	AV	31.5	38.6	9.3	37.2	42.2	53.9	11.7	100	0	
Hori.	12310.000	AV	32.6	39.1	10.7	37.6	44.8	53.9	9.1	100	0	
Vert.	2483.500	PK	50.7	27.4	24.4	38.1	64.4	73.9	9.5	106	163	
Vert.	4924.000	PK	46.7	31.1	6.6	36.9	47.5	73.9	26.4	100	195	
Vert.	6565.568	PK	49.0	34.9	7.7	38.5	53.1	73.9	20.8	193	295	
Vert.	7386.000	PK	45.4	36.3	8.3	39.0	51.0	73.9	22.9	100	0	
Vert.	9848.000	PK	43.6	38.6	9.3	37.2	54.3	73.9	19.6	100	235	
Vert.	12310.000	PK	43.0	39.1	10.7	37.6	55.2	73.9	18.7	100	0	
Vert.	2483.500	AV	32.2	27.4	24.4	38.1	45.9	53.9	8.0	106	163	
Vert.	4924.000	AV	35.2	31.1	6.6	36.9	36.0	53.9	17.9	100	195	
Vert.	6565.568	AV	43.2	34.9	7.7	38.5	47.3	53.9	6.6	193	295	
Vert.	7386.000	AV	34.5	36.3	8.3	39.0	40.1	53.9	13.8	100	0	
Vert.	9848.000	AV	31.8	38.6	9.3	37.2	42.5	53.9	11.4	100	235	
Vert.	12310.000	AV	32.5	39.1	10.7	37.6	44.7	53.9	9.2	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber		
Date	August 23, 2012	August 27, 2012	August 27, 2012	August 29, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH	25 deg.C, 57%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai	Akira Sato
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2412 MHz			
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm			

(* 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.	240.000	QP	49.4	16.9	8.2	32.0	42.5	46.0	3.5	137	75	
Hori.	336.002	QP	52.6	14.8	8.7	32.0	44.1	46.0	**1.9**	100	74	
Hori.	431.999	QP	47.8	16.8	9.2	32.0	41.8	46.0	4.2	100	45	
Hori.	623.995	QP	44.5	19.4	9.9	32.0	41.8	46.0	4.2	166	4	
Hori.	672.000	QP	40.6	20.1	10.0	31.9	38.8	46.0	7.2	154	50	
Hori.	2390.000	PK	50.1	27.2	24.4	38.2	63.5	73.9	10.4	106	157	
Hori.	4824.000	PK	48.0	31.1	6.8	41.2	44.7	73.9	29.2	100	96	
Hori.	6432.290	PK	51.7	34.9	7.5	40.6	53.5	73.9	20.4	100	136	
Hori.	7236.000	PK	49.2	36.6	8.5	41.4	52.9	73.9	21.0	100	0	
Hori.	9648.000	PK	46.3	38.6	9.4	38.9	55.4	73.9	18.5	100	359	
Hori.	12060.000	PK	47.4	39.5	10.7	39.4	58.2	73.9	15.7	100	0	
Hori.	2390.000	AV	32.2	27.2	24.4	38.2	45.6	53.9	8.3	106	157	
Hori.	4824.000	AV	36.4	31.1	6.8	41.2	33.1	53.9	20.8	100	96	
Hori.	6432.290	AV	45.7	34.9	7.5	40.6	47.5	53.9	6.4	100	136	
Hori.	7236.000	AV	35.9	36.6	8.5	41.4	39.6	53.9	14.3	100	0	
Hori.	9648.000	AV	33.1	38.6	9.4	38.9	42.2	53.9	11.7	100	359	
Hori.	12060.000	AV	34.1	39.5	10.7	39.4	44.9	53.9	9.0	100	0	
Vert.	48.001	QP	51.6	11.7	6.8	32.2	37.9	40.0	2.1	100	244	
Vert.	624.005	QP	43.5	19.4	9.9	32.0	40.8	46.0	5.2	100	84	
Vert.	2390.000	PK	47.1	27.2	24.4	38.2	60.5	73.9	13.4	107	171	
Vert.	4824.000	PK	48.0	31.1	6.8	41.2	44.7	73.9	29.2	100	0	
Vert.	6432.290	PK	51.4	34.9	7.5	40.6	53.2	73.9	20.7	100	136	
Vert.	7236.000	PK	49.2	36.6	8.5	41.4	52.9	73.9	21.0	100	359	
Vert.	9648.000	PK	46.4	38.6	9.4	38.9	55.5	73.9	18.4	100	0	
Vert.	12060.000	PK	47.3	39.5	10.7	39.4	58.1	73.9	15.8	100	359	
Vert.	2390.000	AV	31.7	27.2	24.4	38.2	45.1	53.9	8.8	107	171	
Vert.	4824.000	AV	35.4	31.1	6.8	41.2	32.1	53.9	21.8	100	0	
Vert.	6432.290	AV	44.2	34.9	7.5	40.6	46.0	53.9	7.9	100	136	
Vert.	7236.000	AV	35.9	36.6	8.5	41.4	39.6	53.9	14.3	100	359	
Vert.	9648.000	AV	32.5	38.6	9.4	38.9	41.6	53.9	12.3	100	0	
Vert.	12060.000	AV	33.9	39.5	10.7	39.4	44.7	53.9	9.2	100	359	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	76.3	27.3	24.4	38.2	89.8	-	-	Carrier
Hori.	2400.000	PK	40.6	27.3	24.4	38.2	54.1	69.8	15.7	
Vert.	2412.000	PK	74.1	27.3	24.4	38.2	87.6	-	-	Carrier
Vert.	2400.000	PK	38.4	27.3	24.4	38.2	51.9	67.6	15.7	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	47.7	31.3	6.9	41.1	44.8	73.9	29.1	100	224	
Hori.	6498.898	PK	50.9	35.2	7.5	40.7	52.9	73.9	21.0	100	135	
Hori.	7311.000	PK	47.0	36.6	8.6	41.4	50.8	73.9	23.1	100	0	
Hori.	9748.000	PK	45.7	38.7	9.5	38.9	55.0	73.9	18.9	100	359	
Hori.	12185.000	PK	45.9	39.5	10.7	39.3	56.8	73.9	17.1	100	0	
Hori.	4874.000	AV	35.8	31.3	6.9	41.1	32.9	53.9	21.0	100	224	
Hori.	6498.898	AV	45.1	35.2	7.5	40.7	47.1	53.9	**6.8**	100	135	
Hori.	7311.000	AV	35.2	36.6	8.6	41.4	39.0	53.9	14.9	100	0	
Hori.	9748.000	AV	32.7	38.7	9.5	38.9	42.0	53.9	11.9	100	359	
Hori.	12185.000	AV	32.7	39.5	10.7	39.3	43.6	53.9	10.3	100	0	
Vert.	4874.000	PK	48.2	31.3	6.9	41.1	45.3	73.9	28.6	100	14	
Vert.	6498.898	PK	49.4	35.2	7.5	40.7	51.4	73.9	22.5	100	0	
Vert.	7311.000	PK	48.0	36.6	8.6	41.4	51.8	73.9	22.1	100	359	
Vert.	9748.000	PK	45.6	38.7	9.5	38.9	54.9	73.9	19.0	100	359	
Vert.	12185.000	PK	45.7	39.5	10.7	39.3	56.6	73.9	17.3	100	0	
Vert.	4874.000	AV	35.3	31.3	6.9	41.1	32.4	53.9	21.5	100	14	
Vert.	6498.898	AV	41.7	35.2	7.5	40.7	43.7	53.9	10.2	100	0	
Vert.	7311.000	AV	34.9	36.6	8.6	41.4	38.7	53.9	15.2	100	359	
Vert.	9748.000	AV	32.2	38.7	9.5	38.9	41.5	53.9	12.4	100	359	
Vert.	12185.000	AV	32.5	39.5	10.7	39.3	43.4	53.9	10.5	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	51.5	27.4	24.4	38.1	65.2	73.9	8.7	103	159	
Hori.	4924.000	PK	48.8	31.5	6.9	41.0	46.2	73.9	27.7	100	291	
Hori.	6565.718	PK	50.7	35.3	7.7	40.8	52.9	73.9	21.0	100	137	
Hori.	7386.000	PK	47.1	36.7	8.7	41.5	51.0	73.9	22.9	100	0	
Hori.	9848.000	PK	44.2	38.9	9.5	38.9	53.7	73.9	20.2	100	359	
Hori.	12310.000	PK	44.1	39.5	10.8	39.3	55.1	73.9	18.8	100	0	
Hori.	2483.500	AV	31.7	27.4	24.4	38.1	45.4	53.9	8.5	103	159	
Hori.	4924.000	AV	35.8	31.5	6.9	41.0	33.2	53.9	20.7	100	291	
Hori.	6565.718	AV	45.5	35.3	7.7	40.8	47.7	53.9	**6.2**	100	137	
Hori.	7386.000	AV	35.0	36.7	8.7	41.5	38.9	53.9	15.0	100	0	
Hori.	9848.000	AV	32.0	38.9	9.5	38.9	41.5	53.9	12.4	100	359	
Hori.	12310.000	AV	31.7	39.5	10.8	39.3	42.7	53.9	11.2	100	0	
Vert.	2483.500	PK	49.7	27.4	24.4	38.1	63.4	73.9	10.5	106	163	
Vert.	4924.000	PK	47.3	31.5	6.9	41.0	44.7	73.9	29.2	100	359	
Vert.	6565.718	PK	48.3	35.3	7.7	40.8	50.5	73.9	23.4	100	82	
Vert.	7386.000	PK	47.8	36.7	8.7	41.5	51.7	73.9	22.2	100	359	
Vert.	9848.000	PK	44.7	38.9	9.5	38.9	54.2	73.9	19.7	100	359	
Vert.	12310.000	PK	43.8	39.5	10.8	39.3	54.8	73.9	19.1	100	0	
Vert.	2483.500	AV	31.6	27.4	24.4	38.1	45.3	53.9	8.6	106	163	
Vert.	4924.000	AV	36.1	31.5	6.9	41.0	33.5	53.9	20.4	100	359	
Vert.	6565.718	AV	40.0	35.3	7.7	40.8	42.2	53.9	11.7	100	82	
Vert.	7386.000	AV	34.7	36.7	8.7	41.5	38.6	53.9	15.3	100	359	
Vert.	9848.000	AV	31.6	38.9	9.5	38.9	41.1	53.9	12.8	100	359	
Vert.	12310.000	AV	31.6	39.5	10.8	39.3	42.6	53.9	11.3	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	54.8	27.2	24.4	38.2	68.2	73.9	5.7	115	153	
Hori.	4824.000	PK	44.6	30.8	6.6	37.0	45.0	73.9	28.9	100	145	
Hori.	6432.212	PK	50.0	34.5	7.6	38.3	53.8	73.9	20.1	100	194	
Hori.	7236.000	PK	45.6	36.2	8.0	39.0	50.8	73.9	23.1	100	0	
Hori.	9648.000	PK	42.2	38.3	9.2	37.2	52.5	73.9	21.4	100	0	
Hori.	12060.000	PK	43.7	39.2	10.5	37.9	55.5	73.9	18.4	100	0	
Hori.	2390.000	AV	34.5	27.2	24.4	38.2	47.9	53.9	6.0	115	153	
Hori.	4824.000	AV	33.3	30.8	6.6	37.0	33.7	53.9	20.2	100	145	
Hori.	6432.212	AV	45.2	34.5	7.6	38.3	49.0	53.9	**4.9**	100	194	
Hori.	7236.000	AV	34.4	36.2	8.0	39.0	39.6	53.9	14.3	100	0	
Hori.	9648.000	AV	31.2	38.3	9.2	37.2	41.5	53.9	12.4	100	0	
Hori.	12060.000	AV	32.8	39.2	10.5	37.9	44.6	53.9	9.3	100	0	
Vert.	2390.000	PK	48.4	27.2	24.4	38.2	61.8	73.9	12.1	110	223	
Vert.	4824.000	PK	44.8	30.8	6.6	37.0	45.2	73.9	28.7	100	200	
Vert.	6432.212	PK	48.0	34.5	7.6	38.3	51.8	73.9	22.1	104	297	
Vert.	7236.000	PK	46.1	36.2	8.0	39.0	51.3	73.9	22.6	100	231	
Vert.	9648.000	PK	42.0	38.3	9.2	37.2	52.3	73.9	21.6	100	0	
Vert.	12060.000	PK	43.6	39.2	10.5	37.9	55.4	73.9	18.5	100	0	
Vert.	2390.000	AV	32.1	27.2	24.4	38.2	45.5	53.9	8.4	110	223	
Vert.	4824.000	AV	33.3	30.8	6.6	37.0	33.7	53.9	20.2	100	200	
Vert.	6432.212	AV	42.0	34.5	7.6	38.3	45.8	53.9	8.1	104	297	
Vert.	7236.000	AV	34.7	36.2	8.0	39.0	39.9	53.9	14.0	100	231	
Vert.	9648.000	AV	31.1	38.3	9.2	37.2	41.4	53.9	12.5	100	0	
Vert.	12060.000	AV	32.8	39.2	10.5	37.9	44.6	53.9	9.3	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	78.7	27.3	24.4	38.2	92.2	-	-	Carrier
Hori.	2400.000	PK	42.8	27.3	24.4	38.2	56.3	72.2	15.9	
Vert.	2412.000	PK	75.1	27.3	24.4	38.2	88.6	-	-	Carrier
Vert.	2400.000	PK	43.4	27.3	24.4	38.2	56.9	68.6	11.7	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	46.1	31.0	6.6	36.9	46.8	73.9	27.1	100	340	
Hori.	6498.949	PK	49.4	34.7	7.6	38.4	53.3	73.9	20.6	100	197	
Hori.	7311.000	PK	45.2	36.2	8.2	39.0	50.6	73.9	23.3	100	0	
Hori.	9748.000	PK	42.6	38.4	9.3	37.2	53.1	73.9	20.8	100	0	
Hori.	12185.000	PK	43.5	39.2	10.5	37.7	55.5	73.9	18.4	100	0	
Hori.	4874.000	AV	34.4	31.0	6.6	36.9	35.1	53.9	18.8	100	340	
Hori.	6498.949	AV	43.9	34.7	7.6	38.4	47.8	53.9	**6.1**	100	197	
Hori.	7311.000	AV	34.4	36.2	8.2	39.0	39.8	53.9	14.1	100	0	
Hori.	9748.000	AV	31.3	38.4	9.3	37.2	41.8	53.9	12.1	100	0	
Hori.	12185.000	AV	32.7	39.2	10.5	37.7	44.7	53.9	9.2	100	0	
Vert.	4874.000	PK	45.2	31.0	6.6	36.9	45.9	73.9	28.0	100	199	
Vert.	6498.949	PK	48.2	34.7	7.6	38.4	52.1	73.9	21.8	182	298	
Vert.	7311.000	PK	45.9	36.2	8.2	39.0	51.3	73.9	22.6	100	0	
Vert.	9748.000	PK	43.1	38.4	9.3	37.2	53.6	73.9	20.3	100	237	
Vert.	12185.000	PK	42.9	39.2	10.5	37.7	54.9	73.9	19.0	100	0	
Vert.	4874.000	AV	33.6	31.0	6.6	36.9	34.3	53.9	19.6	100	199	
Vert.	6498.949	AV	42.4	34.7	7.6	38.4	46.3	53.9	7.6	182	298	
Vert.	7311.000	AV	34.4	36.2	8.2	39.0	39.8	53.9	14.1	100	0	
Vert.	9748.000	AV	31.7	38.4	9.3	37.2	42.2	53.9	11.7	100	237	
Vert.	12185.000	AV	32.7	39.2	10.5	37.7	44.7	53.9	9.2	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	52.2	27.4	24.4	38.1	65.9	73.9	8.0	103	157	
Hori.	4924.000	PK	48.3	31.1	6.6	36.9	49.1	73.9	24.8	100	339	
Hori.	6565.578	PK	49.9	34.9	7.7	38.5	54.0	73.9	19.9	100	202	
Hori.	7386.000	PK	45.4	36.3	8.3	39.0	51.0	73.9	22.9	100	0	
Hori.	9848.000	PK	43.1	38.6	9.3	37.2	53.8	73.9	20.1	100	0	
Hori.	12310.000	PK	44.1	39.1	10.7	37.6	56.3	73.9	17.6	100	0	
Hori.	2483.500	AV	32.8	27.4	24.4	38.1	46.5	53.9	7.4	103	157	
Hori.	4924.000	AV	36.6	31.1	6.6	36.9	37.4	53.9	16.5	100	339	
Hori.	6565.578	AV	44.5	34.9	7.7	38.5	48.6	53.9	**5.3**	100	202	
Hori.	7386.000	AV	34.5	36.3	8.3	39.0	40.1	53.9	13.8	100	0	
Hori.	9848.000	AV	31.4	38.6	9.3	37.2	42.1	53.9	11.8	100	0	
Hori.	12310.000	AV	32.6	39.1	10.7	37.6	44.8	53.9	9.1	100	0	
Vert.	2483.500	PK	47.9	27.4	24.4	38.1	61.6	73.9	12.3	104	222	
Vert.	4924.000	PK	46.7	31.1	6.6	36.9	47.5	73.9	26.4	100	198	
Vert.	6565.578	PK	49.0	34.9	7.7	38.5	53.1	73.9	20.8	189	297	
Vert.	7386.000	PK	45.9	36.3	8.3	39.0	51.5	73.9	22.4	100	0	
Vert.	9848.000	PK	43.2	38.6	9.3	37.2	53.9	73.9	20.0	100	232	
Vert.	12310.000	PK	43.4	39.1	10.7	37.6	55.6	73.9	18.3	100	0	
Vert.	2483.500	AV	32.6	27.4	24.4	38.1	46.3	53.9	7.6	104	222	
Vert.	4924.000	AV	34.7	31.1	6.6	36.9	35.5	53.9	18.4	100	198	
Vert.	6565.578	AV	43.1	34.9	7.7	38.5	47.2	53.9	6.7	189	297	
Vert.	7386.000	AV	34.5	36.3	8.3	39.0	40.1	53.9	13.8	100	0	
Vert.	9848.000	AV	31.7	38.6	9.3	37.2	42.4	53.9	11.5	100	232	
Vert.	12310.000	AV	32.6	39.1	10.7	37.6	44.8	53.9	9.1	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	53.7	27.2	24.4	38.2	67.1	73.9	6.8	115	153	
Hori.	4824.000	PK	47.8	31.1	6.8	41.2	44.7	73.9	29.4	100	96	
Hori.	6432.429	PK	51.7	34.9	7.5	40.6	53.5	73.9	20.4	100	137	
Hori.	7236.000	PK	48.5	36.6	8.5	41.4	52.9	73.9	21.7	100	0	
Hori.	9648.000	PK	45.3	38.6	9.4	38.9	55.4	73.9	19.5	100	359	
Hori.	12060.000	PK	45.7	39.5	10.7	39.4	58.2	73.9	17.4	100	0	
Hori.	2390.000	AV	32.9	27.2	24.4	38.2	46.3	53.9	7.6	115	153	
Hori.	4824.000	AV	36.6	31.1	6.8	41.2	33.1	53.9	20.6	100	96	
Hori.	6432.429	AV	45.4	34.9	7.5	40.6	47.5	53.9	**6.7**	100	137	
Hori.	7236.000	AV	35.8	36.6	8.5	41.4	39.6	53.9	14.4	100	0	
Hori.	9648.000	AV	32.0	38.6	9.4	38.9	42.2	53.9	12.8	100	359	
Hori.	12060.000	AV	33.0	39.5	10.7	39.4	44.9	53.9	10.1	100	0	
Vert.	2390.000	PK	48.0	27.2	24.4	38.2	61.4	73.9	12.5	110	223	
Vert.	4824.000	PK	48.0	31.1	6.8	41.2	44.7	73.9	29.2	100	190	
Vert.	6432.429	PK	50.8	34.9	7.5	40.6	53.2	73.9	21.3	100	267	
Vert.	7236.000	PK	48.7	36.6	8.5	41.4	52.9	73.9	21.5	100	359	
Vert.	9648.000	PK	45.6	38.6	9.4	38.9	55.5	73.9	19.2	100	359	
Vert.	12060.000	PK	47.1	39.5	10.7	39.4	58.1	73.9	16.0	100	0	
Vert.	2390.000	AV	31.9	27.2	24.4	38.2	45.3	53.9	8.6	110	223	
Vert.	4824.000	AV	35.8	31.1	6.8	41.2	32.1	53.9	21.4	100	190	
Vert.	6432.429	AV	43.7	34.9	7.5	40.6	46.0	53.9	8.4	100	267	
Vert.	7236.000	AV	35.7	36.6	8.5	41.4	39.6	53.9	14.5	100	359	
Vert.	9648.000	AV	32.4	38.6	9.4	38.9	41.6	53.9	12.4	100	359	
Vert.	12060.000	AV	33.8	39.5	10.7	39.4	44.7	53.9	9.3	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	74.1	27.3	24.4	38.2	87.6	-	-	Carrier
Hori.	2400.000	PK	40.7	27.3	24.4	38.2	54.2	67.6	13.4	
Vert.	2412.000	PK	72.3	27.3	24.4	38.2	85.8	-	-	Carrier
Vert.	2400.000	PK	40.6	27.3	24.4	38.2	54.1	65.8	11.7	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	49.2	31.3	6.9	41.1	46.3	73.9	27.6	100	103	
Hori.	6499.068	PK	51.1	35.2	7.5	40.7	53.1	73.9	20.8	100	149	
Hori.	7311.000	PK	48.4	36.6	8.6	41.4	52.2	73.9	21.7	100	0	
Hori.	9748.000	PK	44.9	38.7	9.5	38.9	54.2	73.9	19.7	100	359	
Hori.	12185.000	PK	45.2	39.5	10.7	39.3	56.1	73.9	17.8	100	0	
Hori.	4874.000	AV	36.0	31.3	6.9	41.1	33.1	53.9	20.8	100	103	
Hori.	6499.068	AV	45.1	35.2	7.5	40.7	47.1	53.9	**6.8**	100	149	
Hori.	7311.000	AV	35.1	36.6	8.6	41.4	38.9	53.9	15.0	100	0	
Hori.	9748.000	AV	32.6	38.7	9.5	38.9	41.9	53.9	12.0	100	359	
Hori.	12185.000	AV	32.5	39.5	10.7	39.3	43.4	53.9	10.5	100	0	
Vert.	4874.000	PK	49.2	31.3	6.9	41.1	46.3	73.9	27.6	100	3	
Vert.	6499.068	PK	49.8	35.2	7.5	40.7	51.8	73.9	22.1	100	108	
Vert.	7311.000	PK	47.5	36.6	8.6	41.4	51.3	73.9	22.6	100	359	
Vert.	9748.000	PK	44.4	38.7	9.5	38.9	53.7	73.9	20.2	100	359	
Vert.	12185.000	PK	45.2	39.5	10.7	39.3	56.1	73.9	17.8	100	0	
Vert.	4874.000	AV	35.3	31.3	6.9	41.1	32.4	53.9	21.5	100	3	
Vert.	6499.068	AV	42.8	35.2	7.5	40.7	44.8	53.9	9.1	100	108	
Vert.	7311.000	AV	34.6	36.6	8.6	41.4	38.4	53.9	15.5	100	359	
Vert.	9748.000	AV	32.1	38.7	9.5	38.9	41.4	53.9	12.5	100	359	
Vert.	12185.000	AV	32.3	39.5	10.7	39.3	43.2	53.9	10.7	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2462 MHz		
	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	49.5	27.4	24.4	38.1	63.2	73.9	10.7	103	157	
Hori.	4924.000	PK	49.7	31.5	6.9	41.0	47.1	73.9	26.8	100	213	
Hori.	6565.647	PK	51.1	35.3	7.7	40.8	53.3	73.9	20.6	100	151	
Hori.	7386.000	PK	47.2	36.7	8.7	41.5	51.1	73.9	22.8	100	0	
Hori.	9848.000	PK	44.4	38.9	9.5	38.9	53.9	73.9	20.0	100	359	
Hori.	12310.000	PK	44.9	39.5	10.8	39.3	55.9	73.9	18.0	100	0	
Hori.	2483.500	AV	32.7	27.4	24.4	38.1	46.4	53.9	7.5	103	157	
Hori.	4924.000	AV	36.2	31.5	6.9	41.0	33.6	53.9	20.3	100	213	
Hori.	6565.647	AV	44.6	35.3	7.7	40.8	46.8	53.9	**7.1**	100	151	
Hori.	7386.000	AV	35.1	36.7	8.7	41.5	39.0	53.9	14.9	100	0	
Hori.	9848.000	AV	32.2	38.9	9.5	38.9	41.7	53.9	12.2	100	359	
Hori.	12310.000	AV	32.0	39.5	10.8	39.3	43.0	53.9	10.9	100	0	
Vert.	2483.500	PK	45.6	27.4	24.4	38.1	59.3	73.9	14.6	104	222	
Vert.	4924.000	PK	48.7	31.5	6.9	41.0	46.1	73.9	27.8	100	158	
Vert.	6565.647	PK	49.6	35.3	7.7	40.8	51.8	73.9	22.1	100	269	
Vert.	7386.000	PK	46.3	36.7	8.7	41.5	50.2	73.9	23.7	100	359	
Vert.	9848.000	PK	43.8	38.9	9.5	38.9	53.3	73.9	20.6	100	359	
Vert.	12310.000	PK	44.4	39.5	10.8	39.3	55.4	73.9	18.5	100	0	
Vert.	2483.500	AV	32.2	27.4	24.4	38.1	46.3	53.9	8.0	104	222	
Vert.	4924.000	AV	35.4	31.5	6.9	41.0	32.8	53.9	21.1	100	158	
Vert.	6565.647	AV	41.4	35.3	7.7	40.8	43.6	53.9	10.3	100	269	
Vert.	7386.000	AV	34.5	36.7	8.7	41.5	38.4	53.9	15.5	100	359	
Vert.	9848.000	AV	31.6	38.9	9.5	38.9	41.1	53.9	12.8	100	359	
Vert.	12310.000	AV	31.9	39.5	10.8	39.3	42.9	53.9	11.0	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2422 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	52.3	27.2	24.4	38.2	65.7	73.9	8.2	110	149	
Hori.	4844.000	PK	43.9	30.9	6.6	36.9	44.5	73.9	29.4	100	338	
Hori.	6459.024	PK	49.5	34.6	7.6	38.4	53.3	73.9	20.6	100	200	
Hori.	7266.000	PK	45.7	36.2	8.0	39.0	50.9	73.9	23.0	100	0	
Hori.	9688.000	PK	41.8	38.3	9.2	37.2	52.1	73.9	21.8	100	0	
Hori.	12110.000	PK	43.7	39.2	10.5	37.8	55.6	73.9	18.3	100	0	
Hori.	2390.000	AV	35.8	27.2	24.4	38.2	49.2	53.9	**4.7**	110	149	
Hori.	4844.000	AV	33.3	30.9	6.6	36.9	33.9	53.9	20.0	100	338	
Hori.	6459.024	AV	44.8	34.6	7.6	38.4	48.6	53.9	5.3	100	200	
Hori.	7266.000	AV	34.5	36.2	8.0	39.0	39.7	53.9	14.2	100	0	
Hori.	9688.000	AV	31.2	38.3	9.2	37.2	41.5	53.9	12.4	100	0	
Hori.	12110.000	AV	32.9	39.2	10.5	37.8	44.8	53.9	9.1	100	0	
Vert.	2390.000	PK	50.2	27.2	24.4	38.2	63.6	73.9	10.3	103	193	
Vert.	4844.000	PK	43.1	30.9	6.6	36.9	43.7	73.9	30.2	100	4	
Vert.	6459.024	PK	47.5	34.6	7.6	38.4	51.3	73.9	22.6	100	295	
Vert.	7266.000	PK	45.9	36.2	8.0	39.0	51.1	73.9	22.8	100	0	
Vert.	9688.000	PK	42.2	38.3	9.2	37.2	52.5	73.9	21.4	100	0	
Vert.	12110.000	PK	43.4	39.2	10.5	37.8	55.3	73.9	18.6	100	0	
Vert.	2390.000	AV	32.7	27.2	24.4	38.2	46.1	53.9	7.8	103	193	
Vert.	4844.000	AV	32.1	30.9	6.6	36.9	32.7	53.9	21.2	100	4	
Vert.	6459.024	AV	41.8	34.6	7.6	38.4	45.6	53.9	8.3	100	295	
Vert.	7266.000	AV	34.5	36.2	8.0	39.0	39.7	53.9	14.2	100	0	
Vert.	9688.000	AV	31.1	38.3	9.2	37.2	41.4	53.9	12.5	100	0	
Vert.	12110.000	AV	33.0	39.2	10.5	37.8	44.9	53.9	9.0	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	76.2	27.3	24.4	38.1	89.8	-	-	Carrier
Hori.	2400.000	PK	40.1	27.3	24.4	38.2	53.6	69.8	16.2	
Vert.	2422.000	PK	73.4	27.3	24.4	38.1	87.0	-	-	Carrier
Vert.	2400.000	PK	36.1	27.3	24.4	38.2	49.6	67.0	17.4	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	44.1	31.0	6.6	36.9	44.8	73.9	29.1	100	342	
Hori.	6499.000	PK	50.2	34.7	7.6	38.4	54.1	73.9	19.8	100	198	
Hori.	7311.000	PK	44.8	36.2	8.2	39.0	50.2	73.9	23.7	100	0	
Hori.	9748.000	PK	42.5	38.4	9.3	37.2	53.0	73.9	20.9	100	0	
Hori.	12185.000	PK	43.0	39.2	10.5	37.7	55.0	73.9	18.9	100	0	
Hori.	4874.000	AV	33.1	31.0	6.6	36.9	33.8	53.9	20.1	100	342	
Hori.	6499.000	AV	44.4	34.7	7.6	38.4	48.3	53.9	**5.6**	100	198	
Hori.	7311.000	AV	34.3	36.2	8.2	39.0	39.7	53.9	14.2	100	0	
Hori.	9748.000	AV	31.2	38.4	9.3	37.2	41.7	53.9	12.2	100	0	
Hori.	12185.000	AV	32.7	39.2	10.5	37.7	44.7	53.9	9.2	100	0	
Vert.	4874.000	PK	44.0	31.0	6.6	36.9	44.7	73.9	29.2	100	195	
Vert.	6499.000	PK	48.7	34.7	7.6	38.4	52.6	73.9	21.3	187	300	
Vert.	7311.000	PK	44.8	36.2	8.2	39.0	50.2	73.9	23.7	100	0	
Vert.	9748.000	PK	42.5	38.4	9.3	37.2	53.0	73.9	20.9	100	0	
Vert.	12185.000	PK	43.0	39.2	10.5	37.7	55.0	73.9	18.9	100	0	
Vert.	4874.000	AV	32.8	31.0	6.6	36.9	33.5	53.9	20.4	100	195	
Vert.	6499.000	AV	42.4	34.7	7.6	38.4	46.3	53.9	7.6	187	300	
Vert.	7311.000	AV	34.3	36.2	8.2	39.0	39.7	53.9	14.2	100	0	
Vert.	9748.000	AV	31.3	38.4	9.3	37.2	41.8	53.9	12.1	100	0	
Vert.	12185.000	AV	32.7	39.2	10.5	37.7	44.7	53.9	9.2	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 25, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	25 deg.C , 67%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Tatsuya Arai	Tatsuya Arai
	(No.2 SAC)	(No.2 SAC)	(No.3 SAC)
Mode	Tx, 2452 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	48.7	27.4	24.4	38.1	62.4	73.9	11.5	109	147	
Hori.	4904.000	PK	44.2	31.1	6.6	36.9	45.0	73.9	28.9	100	339	
Hori.	6538.970	PK	50.6	34.8	7.6	38.5	54.5	73.9	19.4	100	198	
Hori.	7356.000	PK	45.1	36.3	8.2	39.0	50.6	73.9	23.3	100	0	
Hori.	9808.000	PK	42.9	38.5	9.3	37.2	53.5	73.9	20.4	100	0	
Hori.	12260.000	PK	43.9	39.2	10.6	37.6	56.1	73.9	17.8	100	0	
Hori.	2483.500	AV	33.4	27.4	24.4	38.1	47.1	53.9	6.8	109	147	
Hori.	4904.000	AV	33.5	31.1	6.6	36.9	34.3	53.9	19.6	100	339	
Hori.	6538.970	AV	45.1	34.8	7.6	38.5	49.0	53.9	**4.9**	100	198	
Hori.	7356.000	AV	34.4	36.3	8.2	39.0	39.9	53.9	14.0	100	0	
Hori.	9808.000	AV	31.4	38.5	9.3	37.2	42.0	53.9	11.9	100	0	
Hori.	12260.000	AV	33.2	39.2	10.6	37.6	45.4	53.9	8.5	100	0	
Vert.	2483.500	PK	48.5	27.4	24.4	38.1	62.2	73.9	11.7	110	328	
Vert.	4904.000	PK	43.7	31.1	6.6	36.9	44.5	73.9	29.4	100	195	
Vert.	6538.970	PK	49.1	34.8	7.6	38.5	53.0	73.9	20.9	179	294	
Vert.	7356.000	PK	45.3	36.3	8.2	39.0	50.8	73.9	23.1	100	0	
Vert.	9808.000	PK	42.7	38.5	9.3	37.2	53.3	73.9	20.6	100	0	
Vert.	12260.000	PK	45.5	39.2	10.6	37.6	57.7	73.9	16.2	100	0	
Vert.	2483.500	AV	32.8	27.4	24.4	38.1	46.5	53.9	7.4	110	328	
Vert.	4904.000	AV	32.9	31.1	6.6	36.9	33.7	53.9	20.2	100	195	
Vert.	6538.970	AV	42.7	34.8	7.6	38.5	46.6	53.9	7.3	179	294	
Vert.	7356.000	AV	34.4	36.3	8.2	39.0	39.9	53.9	14.0	100	0	
Vert.	9808.000	AV	31.4	38.5	9.3	37.2	42.0	53.9	11.9	100	0	
Vert.	12260.000	AV	33.2	39.2	10.6	37.6	45.4	53.9	8.5	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2422 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	49.2	27.2	24.4	38.2	62.6	73.9	11.3	110	149	
Hori.	4844.000	PK	46.9	31.2	6.8	41.1	43.8	73.9	30.1	100	208	
Hori.	6459.100	PK	52.3	35.0	7.5	40.7	54.1	73.9	19.8	100	148	
Hori.	7266.000	PK	47.6	36.6	8.5	41.4	51.3	73.9	22.6	100	0	
Hori.	9688.000	PK	45.8	38.6	9.5	38.9	55.0	73.9	18.9	100	359	
Hori.	12110.000	PK	46.2	39.5	10.7	39.4	57.0	73.9	16.9	100	0	
Hori.	2390.000	AV	33.7	27.2	24.4	38.2	47.1	53.9	6.8	110	149	
Hori.	4844.000	AV	35.7	31.2	6.8	41.1	32.6	53.9	21.3	100	208	
Hori.	6459.100	AV	46.5	35.0	7.5	40.7	48.3	53.9	**5.6**	100	148	
Hori.	7266.000	AV	35.6	36.6	8.5	41.4	39.3	53.9	14.6	100	0	
Hori.	9688.000	AV	32.8	38.6	9.5	38.9	42.0	53.9	11.9	100	359	
Hori.	12110.000	AV	33.3	39.5	10.7	39.4	44.1	53.9	9.8	100	0	
Vert.	2390.000	PK	49.0	27.2	24.4	38.2	62.4	73.9	11.5	103	193	
Vert.	4844.000	PK	48.2	31.2	6.8	41.1	45.1	73.9	28.8	100	156	
Vert.	6459.100	PK	49.9	35.0	7.5	40.7	51.7	73.9	22.2	100	73	
Vert.	7266.000	PK	47.1	36.6	8.5	41.4	50.8	73.9	23.1	100	359	
Vert.	9688.000	PK	44.9	38.6	9.5	38.9	54.1	73.9	19.8	100	359	
Vert.	12110.000	PK	45.1	39.5	10.7	39.4	55.9	73.9	18.0	100	0	
Vert.	2390.000	AV	32.0	27.2	24.4	38.2	45.4	53.9	8.5	103	193	
Vert.	4844.000	AV	34.9	31.2	6.8	41.1	31.8	53.9	22.1	100	156	
Vert.	6459.100	AV	42.6	35.0	7.5	40.7	44.4	53.9	9.5	100	73	
Vert.	7266.000	AV	35.2	36.6	8.5	41.4	38.9	53.9	15.0	100	359	
Vert.	9688.000	AV	32.6	38.6	9.5	38.9	41.8	53.9	12.1	100	359	
Vert.	12110.000	AV	33.4	39.5	10.7	39.4	44.2	53.9	9.7	100	0	

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	74.1	27.3	24.4	38.1	87.7	-	-	Carrier
Hori.	2400.000	PK	37.4	27.3	24.4	38.2	50.9	67.7	16.8	
Vert.	2422.000	PK	71.5	27.3	24.4	38.1	85.1	-	-	Carrier
Vert.	2400.000	PK	35.4	27.3	24.4	38.2	48.9	65.1	16.2	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	48.6	31.3	6.9	41.1	45.7	73.9	28.2	100	94	
Hori.	6499.151	PK	51.7	35.2	7.5	40.7	53.7	73.9	20.2	100	134	
Hori.	7311.000	PK	47.5	36.6	8.6	41.4	51.3	73.9	22.6	100	0	
Hori.	9748.000	PK	44.6	38.7	9.5	38.9	53.9	73.9	20.0	100	359	
Hori.	12185.000	PK	45.1	39.5	10.7	39.3	56.0	73.9	17.9	100	0	
Hori.	4874.000	AV	35.1	31.3	6.9	41.1	32.2	53.9	21.7	100	94	
Hori.	6499.151	AV	45.4	35.2	7.5	40.7	47.4	53.9	**6.5**	100	134	
Hori.	7311.000	AV	34.9	36.6	8.6	41.4	38.7	53.9	15.2	100	0	
Hori.	9748.000	AV	32.5	38.7	9.5	38.9	41.8	53.9	12.1	100	359	
Hori.	12185.000	AV	32.3	39.5	10.7	39.3	43.2	53.9	10.7	100	0	
Vert.	4874.000	PK	46.9	31.3	6.9	41.1	44.0	73.9	29.9	100	0	
Vert.	6499.151	PK	49.8	35.2	7.5	40.7	51.8	73.9	22.1	100	73	
Vert.	7311.000	PK	46.8	36.6	8.6	41.4	50.6	73.9	23.3	100	359	
Vert.	9748.000	PK	45.0	38.7	9.5	38.9	54.3	73.9	19.6	100	359	
Vert.	12185.000	PK	44.4	39.5	10.7	39.3	55.3	73.9	18.6	100	0	
Vert.	4874.000	AV	35.2	31.3	6.9	41.1	32.3	53.9	21.6	100	0	
Vert.	6499.151	AV	41.6	35.2	7.5	40.7	43.6	53.9	10.3	100	73	
Vert.	7311.000	AV	34.5	36.6	8.6	41.4	38.3	53.9	15.6	100	359	
Vert.	9748.000	AV	31.8	38.7	9.5	38.9	41.1	53.9	12.8	100	359	
Vert.	12185.000	AV	32.1	39.5	10.7	39.3	43.0	53.9	10.9	100	0	

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

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.2 and 3 Semi Anechoic Chamber	
Date	August 23, 2012	August 27, 2012	August 27, 2012
Temperature / Humidity	23 deg.C , 61%RH	26 deg.C , 61%RH	25 deg.C , 60%RH
Engineer	Shinichi Takano	Hikaru Shirasawa	Tatsuya Arai
	(No.2 SAC)	(No.3 SAC)	(No.3 SAC)
Mode	Tx, 2452 MHz		
	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2483.500	PK	49.1	27.4	24.4	38.1	62.8	73.9	11.1	109	147	
Hori.	4904.000	PK	47.8	31.4	6.9	41.0	45.1	73.9	28.8	100	114	
Hori.	6539.152	PK	50.9	35.3	7.6	40.7	53.1	73.9	20.8	100	137	
Hori.	7356.000	PK	47.8	36.6	8.7	41.5	51.6	73.9	22.3	100	0	
Hori.	9808.000	PK	44.8	38.8	9.6	38.9	54.3	73.9	19.6	100	359	
Hori.	12260.000	PK	44.5	39.5	10.8	39.3	55.5	73.9	18.4	100	0	
Hori.	2483.500	AV	32.6	27.4	24.4	38.1	46.3	53.9	7.6	109	147	
Hori.	4904.000	AV	35.4	31.4	6.9	41.0	32.7	53.9	21.2	100	114	
Hori.	6539.152	AV	44.4	35.3	7.6	40.7	46.6	53.9	7.3	100	137	
Hori.	7356.000	AV	35.1	36.6	8.7	41.5	38.9	53.9	15.0	100	0	
Hori.	9808.000	AV	32.5	38.8	9.6	38.9	42.0	53.9	11.9	100	359	
Hori.	12260.000	AV	32.0	39.5	10.8	39.3	43.0	53.9	10.9	100	0	
Vert.	2483.500	PK	46.1	27.4	24.4	38.1	59.8	73.9	14.1	110	328	
Vert.	4904.000	PK	46.8	31.4	6.9	41.0	44.1	73.9	29.8	100	0	
Vert.	6539.152	PK	49.0	35.3	7.6	40.7	51.2	73.9	22.7	100	106	
Vert.	7356.000	PK	47.5	36.6	8.7	41.5	51.3	73.9	22.6	100	359	
Vert.	9808.000	PK	43.5	38.8	9.6	38.9	53.0	73.9	20.9	100	359	
Vert.	12260.000	PK	43.8	39.5	10.8	39.3	54.8	73.9	19.1	100	0	
Vert.	2483.500	AV	33.4	27.4	24.4	38.1	47.1	53.9	**6.8**	110	328	
Vert.	4904.000	AV	35.5	31.4	6.9	41.0	32.8	53.9	21.1	100	0	
Vert.	6539.152	AV	41.3	35.3	7.6	40.7	43.5	53.9	10.4	100	106	
Vert.	7356.000	AV	34.6	36.6	8.7	41.5	38.4	53.9	15.5	100	359	
Vert.	9808.000	AV	31.4	38.8	9.6	38.9	40.9	53.9	13.0	100	359	
Vert.	12260.000	AV	31.3	39.5	10.8	39.3	42.3	53.9	11.6	100	0	

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

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

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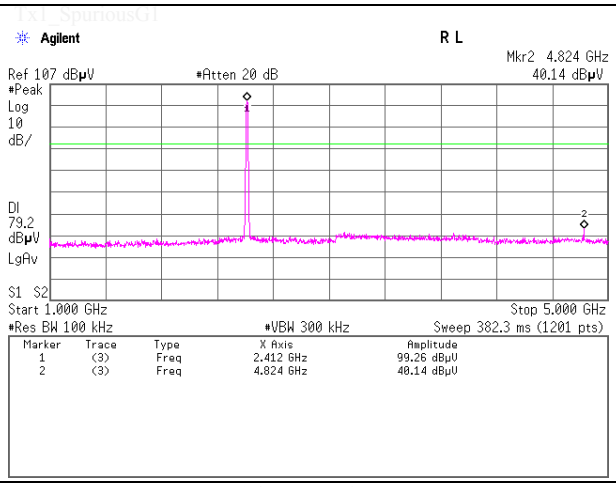
Spurious emission (Conducted)

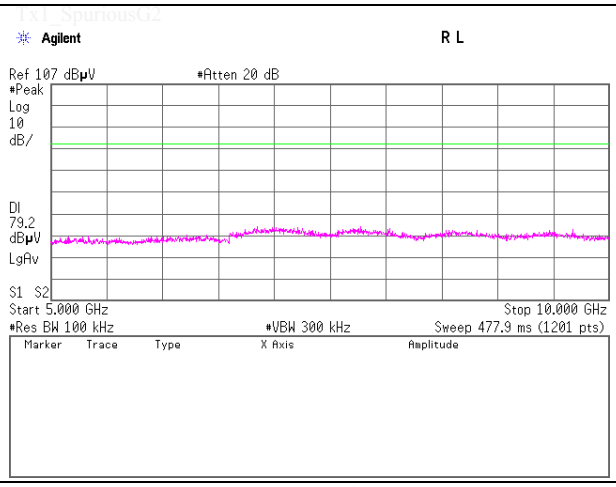
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm

Tx, 2412MHz (above 1GHz)

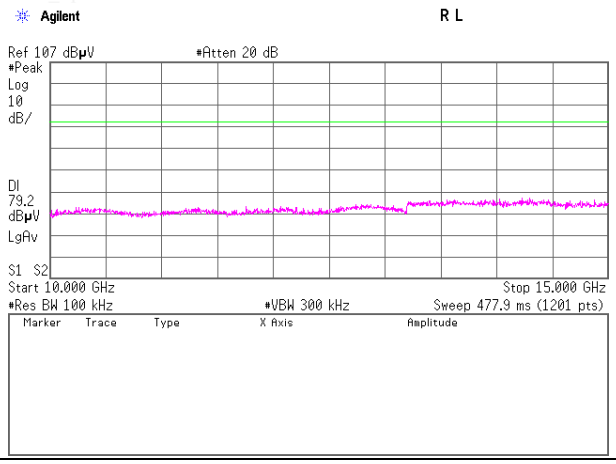
1GHz - 5GHz



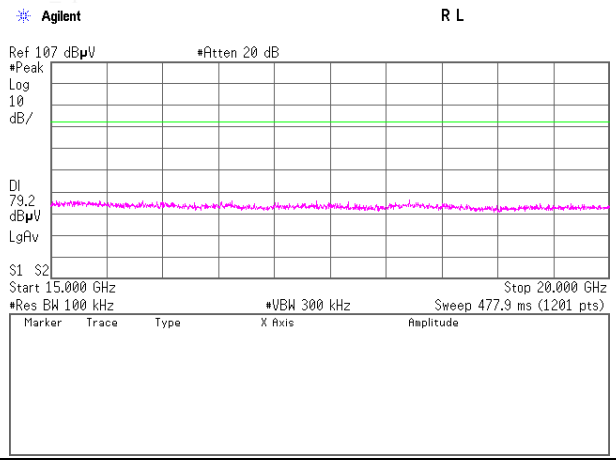
5GHz - 10GHz



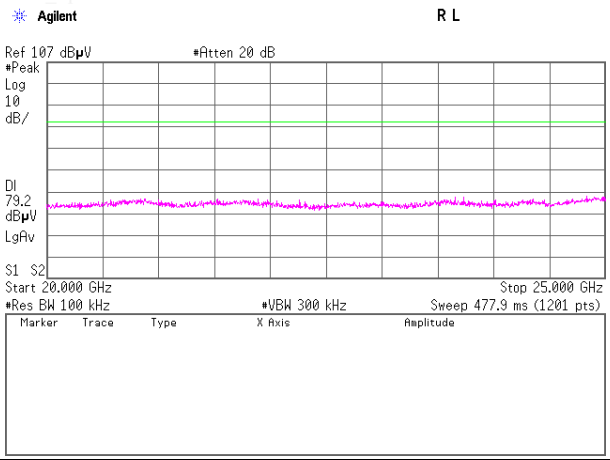
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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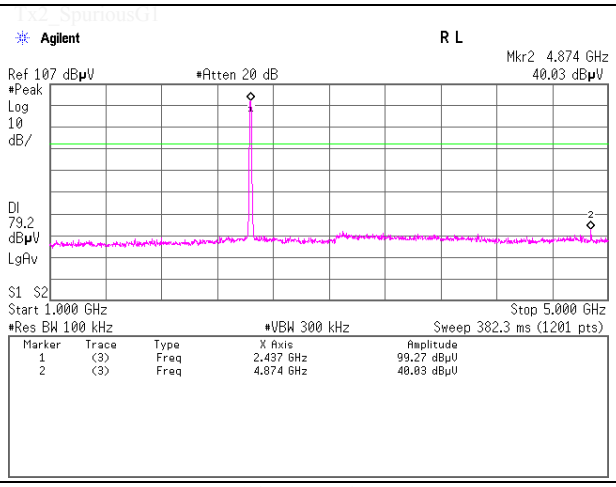
Spurious emission (Conducted)

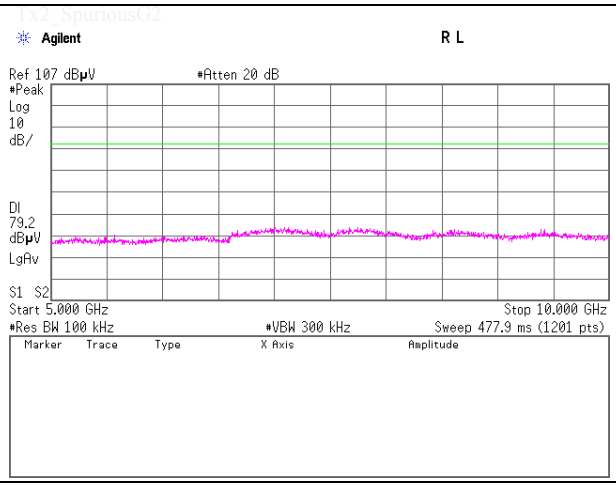
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm

Tx, 2437MHz (above 1GHz)

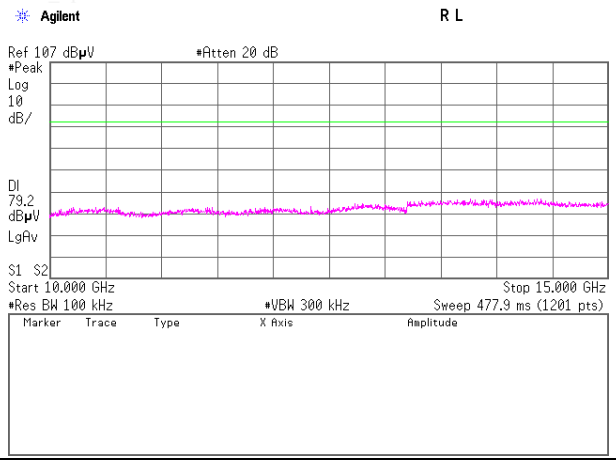
1GHz - 5GHz



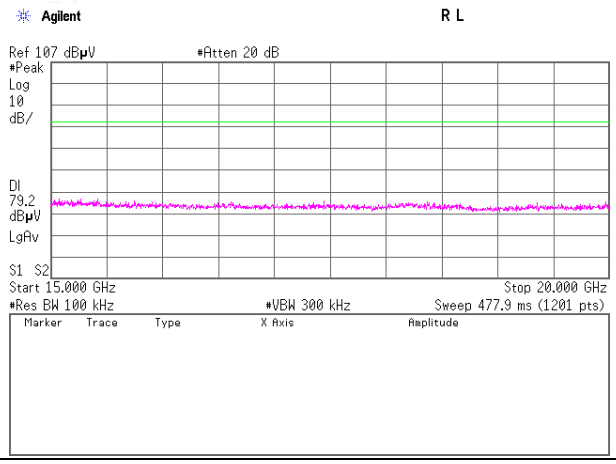
5GHz - 10GHz



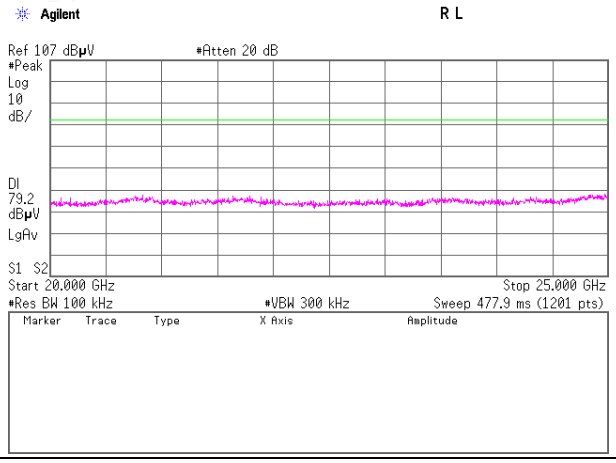
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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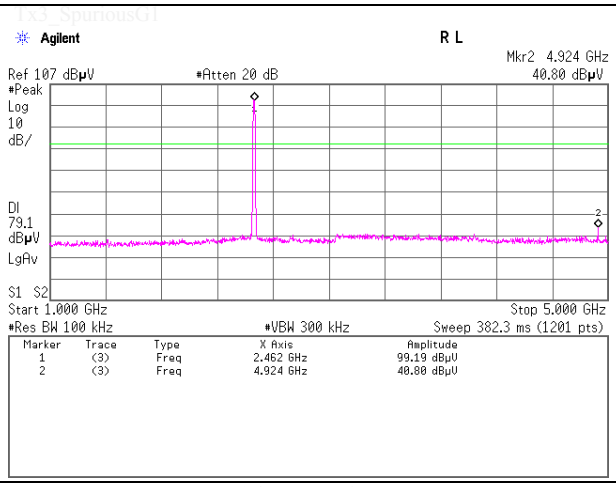
Spurious emission (Conducted)

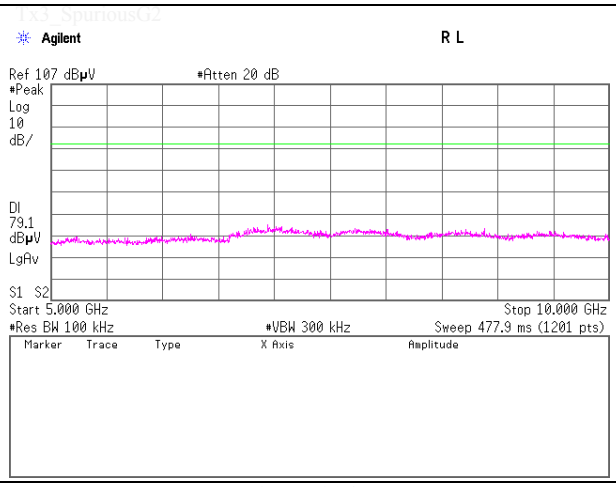
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm

Tx, 2462MHz (above 1GHz)

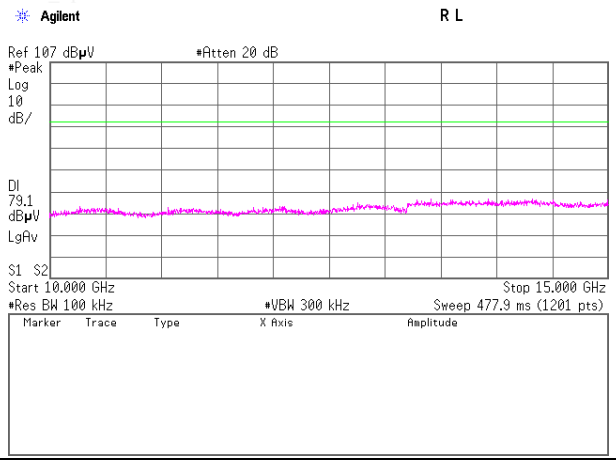
1GHz - 5GHz



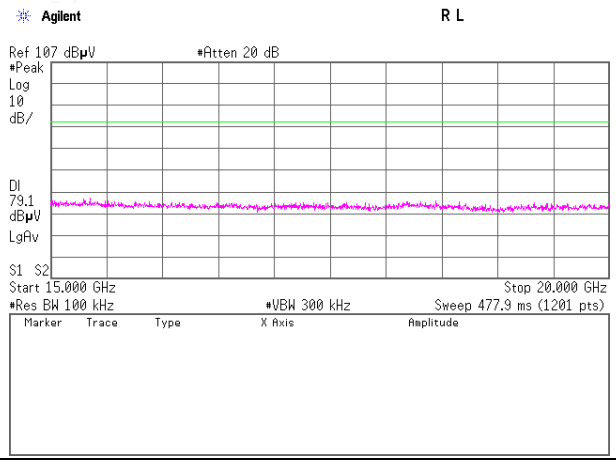
5GHz - 10GHz



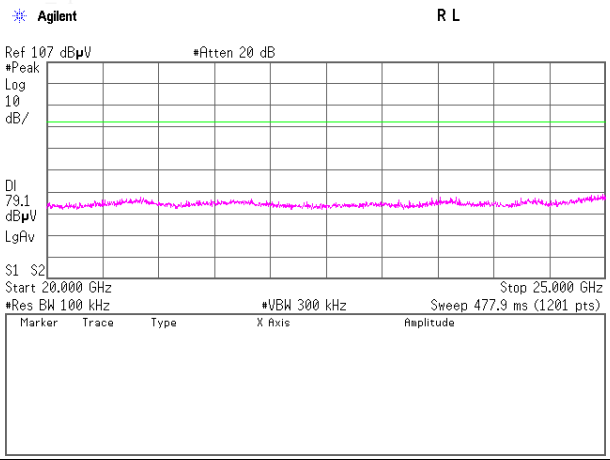
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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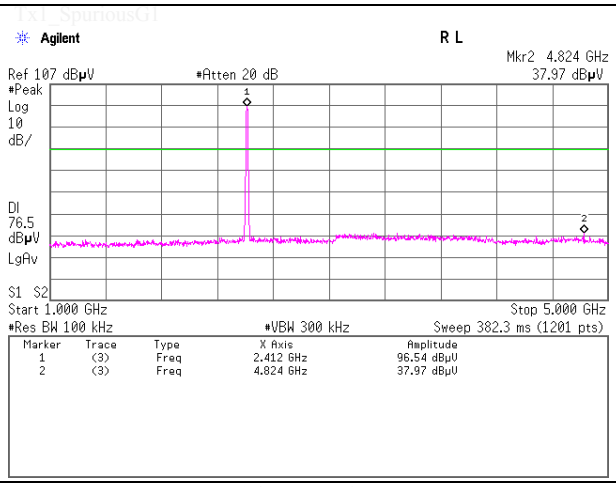
Spurious emission (Conducted)

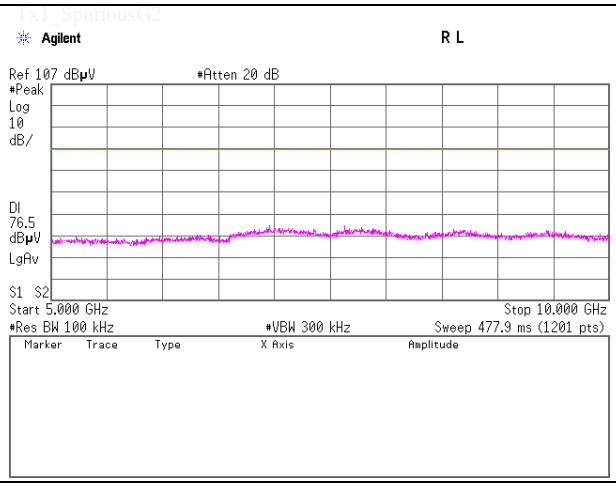
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm

Tx, 2412MHz (above 1GHz)

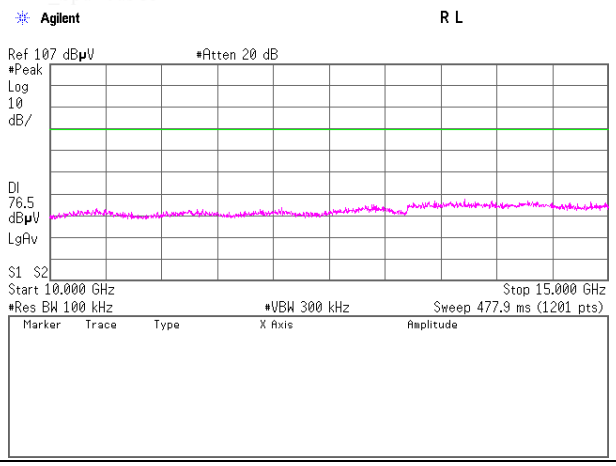
1GHz - 5GHz



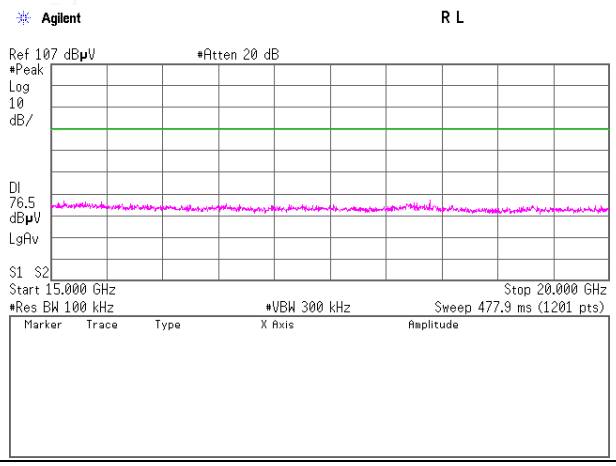
5GHz - 10GHz



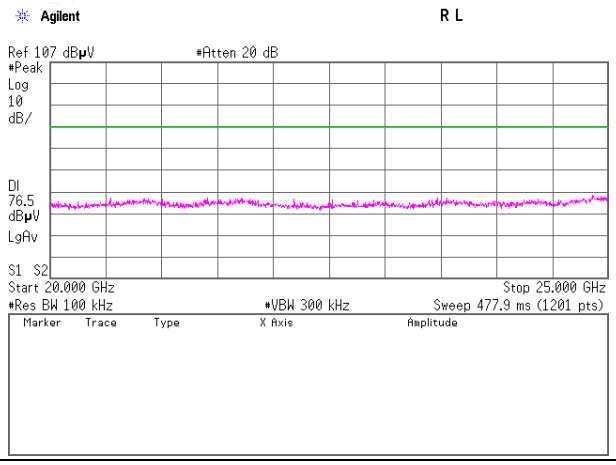
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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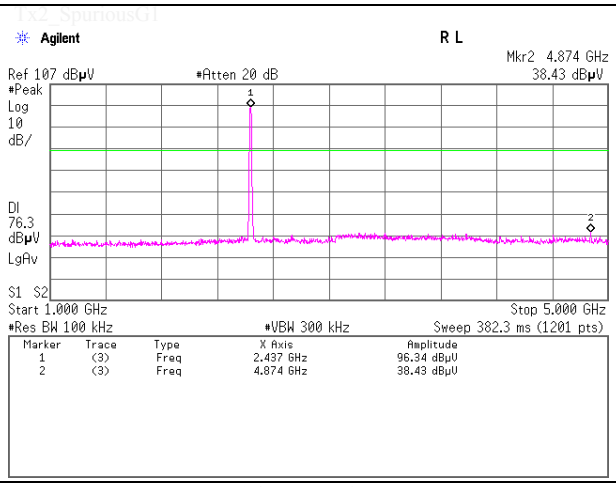
Spurious emission (Conducted)

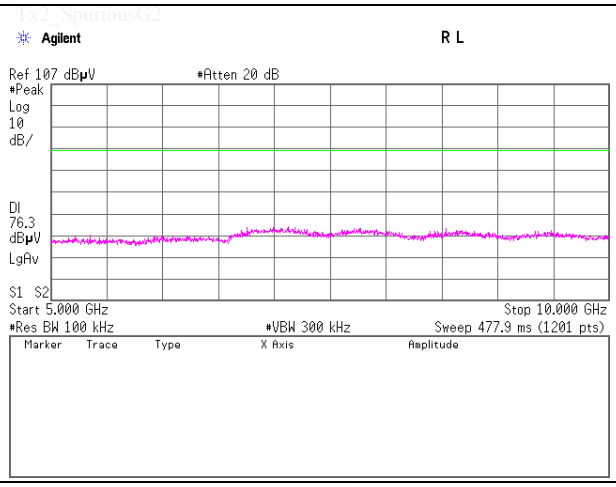
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm

Tx, 2437MHz (above 1GHz)

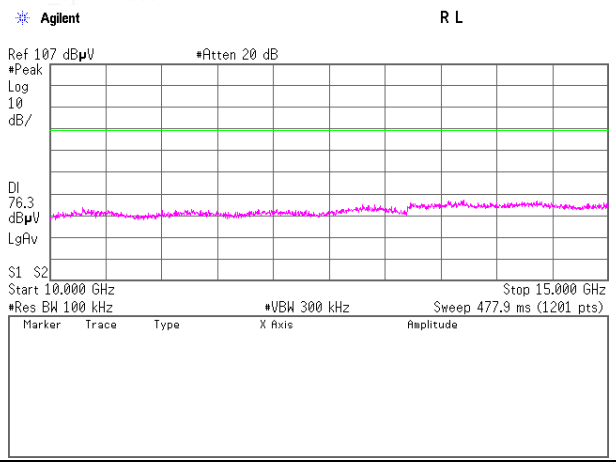
1GHz - 5GHz



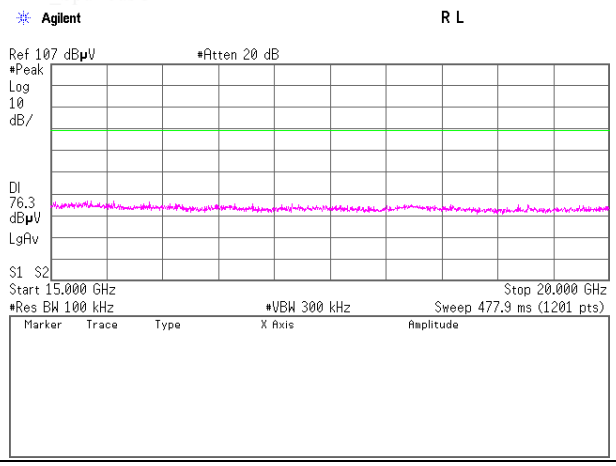
5GHz - 10GHz



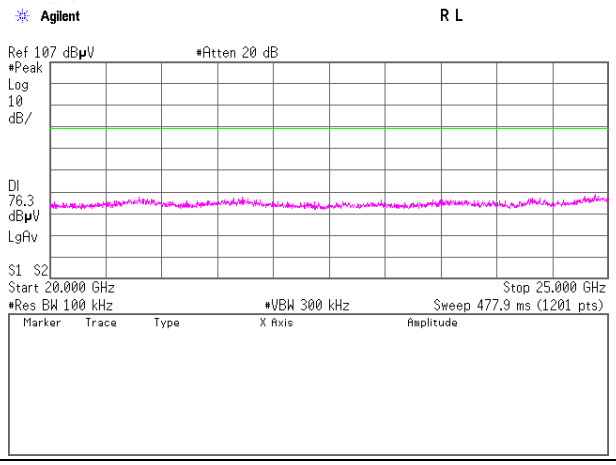
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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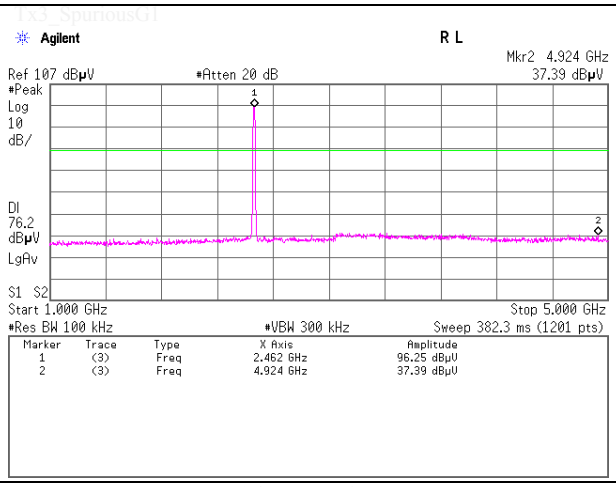
Spurious emission (Conducted)

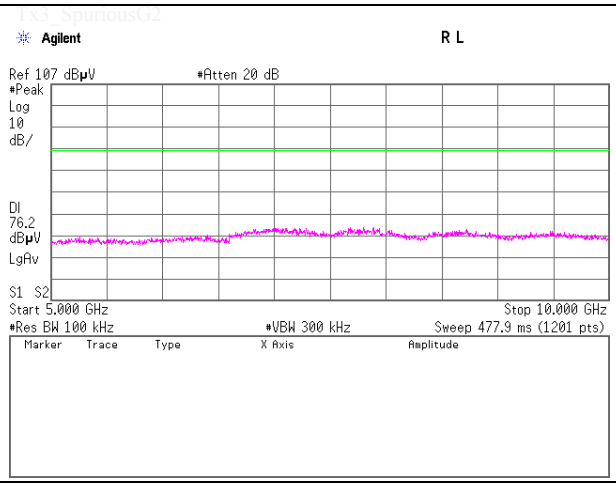
Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm

Tx, 2462MHz (above 1GHz)

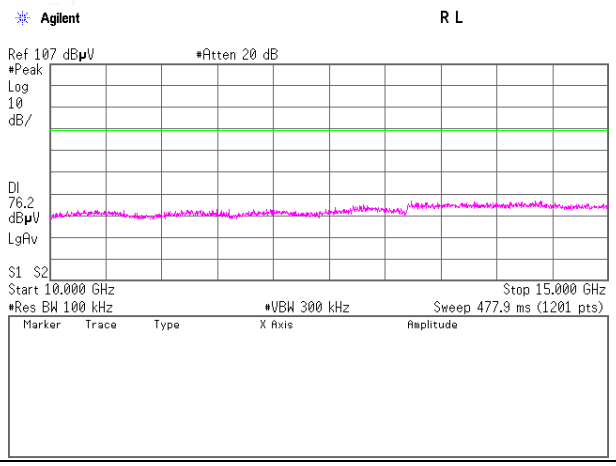
1GHz - 5GHz



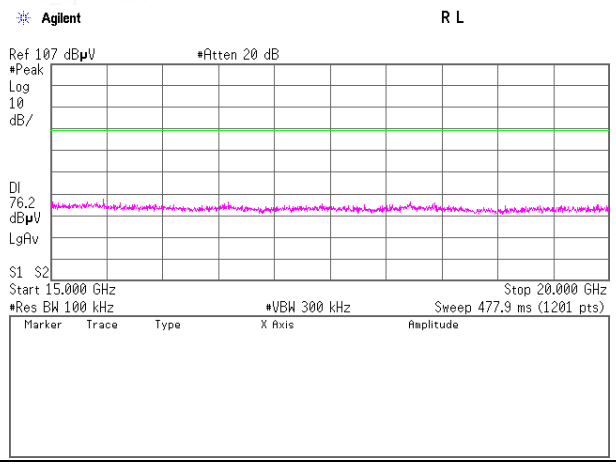
5GHz - 10GHz



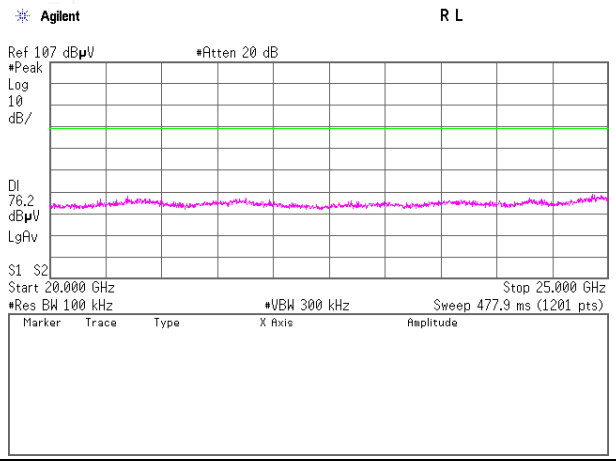
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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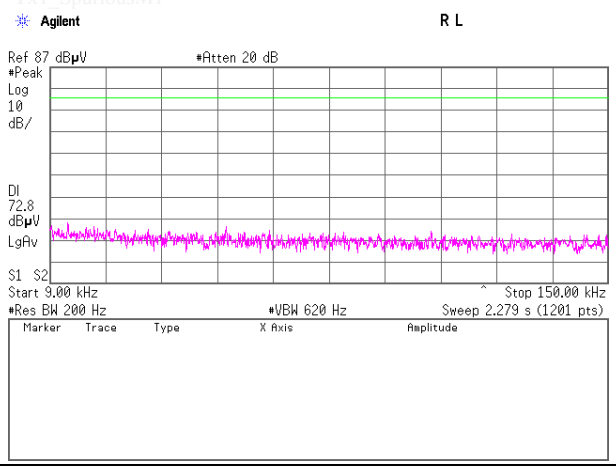
Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm

Tx, 2412MHz (below 1GHz)

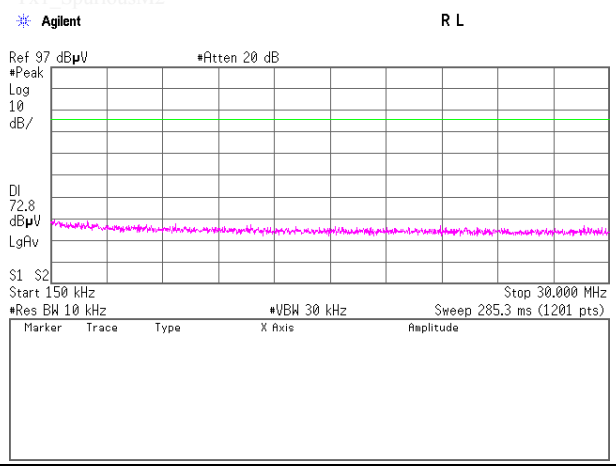
9kHz - 150kHz

Tx1_SpuriousM1



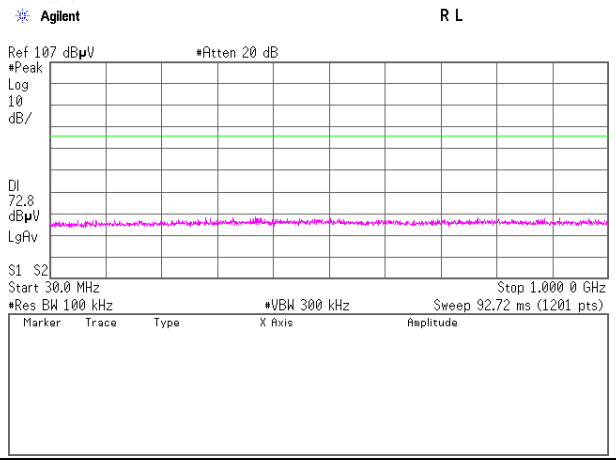
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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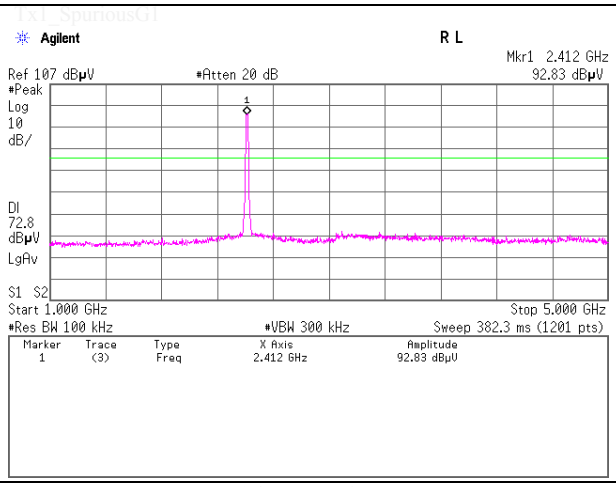
Spurious emission (Conducted)

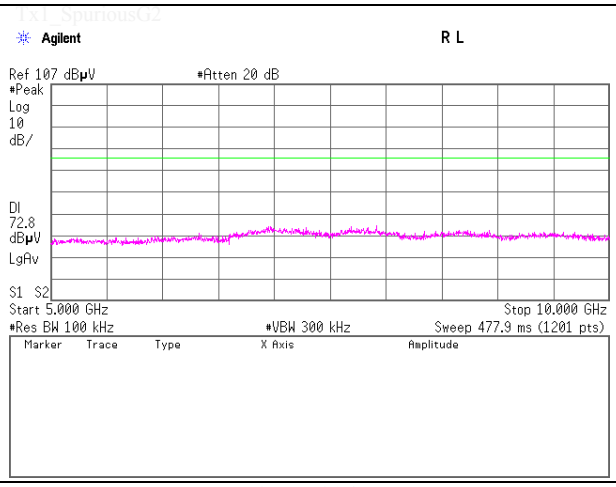
Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm

Tx, 2412MHz (above 1GHz)

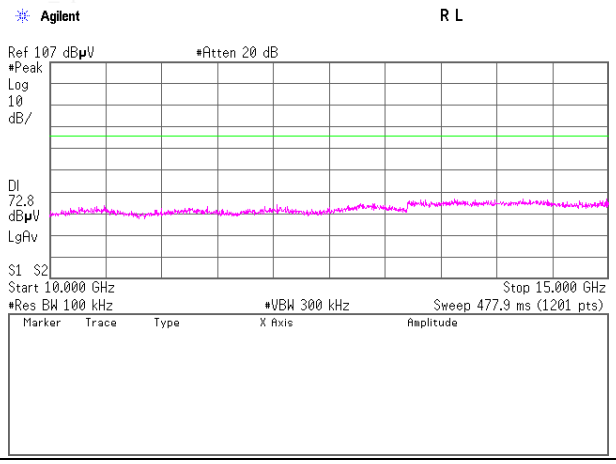
1GHz - 5GHz



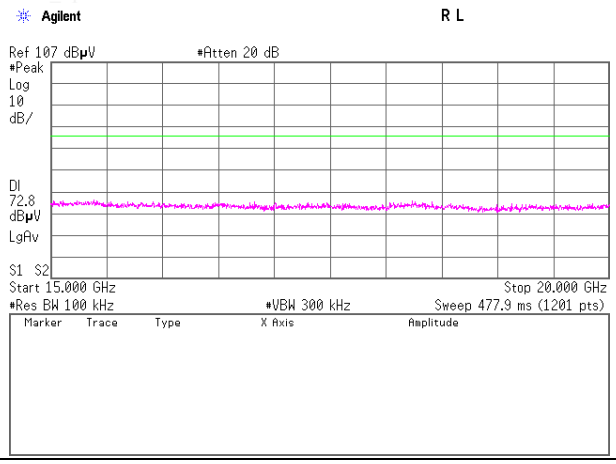
5GHz - 10GHz



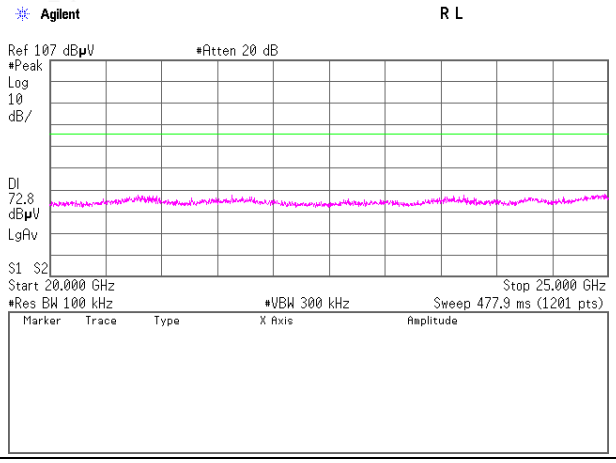
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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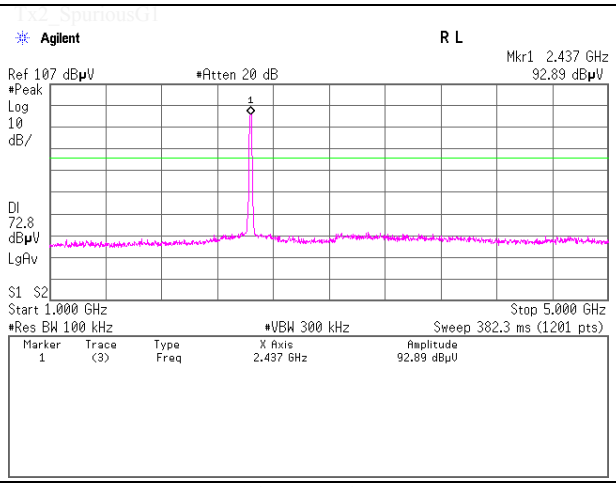
Spurious emission (Conducted)

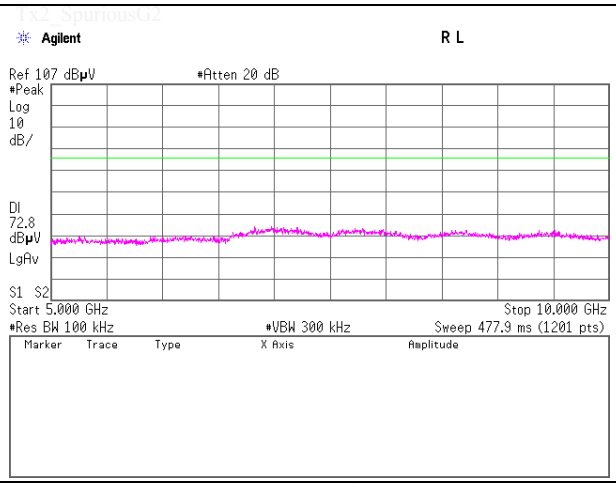
Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm

Tx, 2437MHz (above 1GHz)

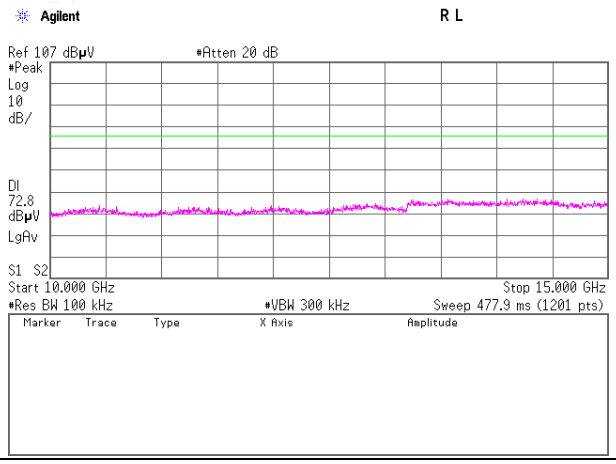
1GHz - 5GHz



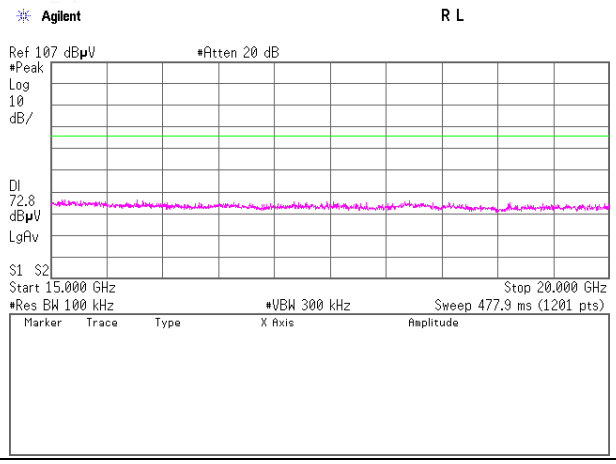
5GHz - 10GHz



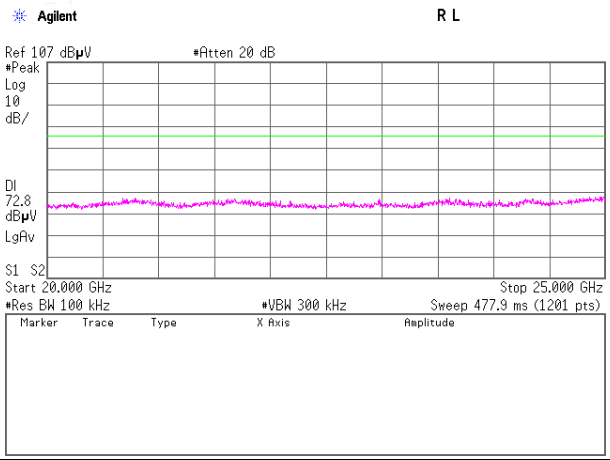
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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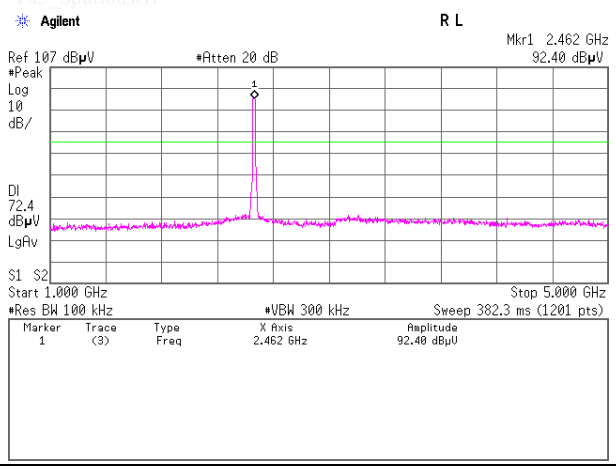
Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm

Tx, 2462MHz (above 1GHz)

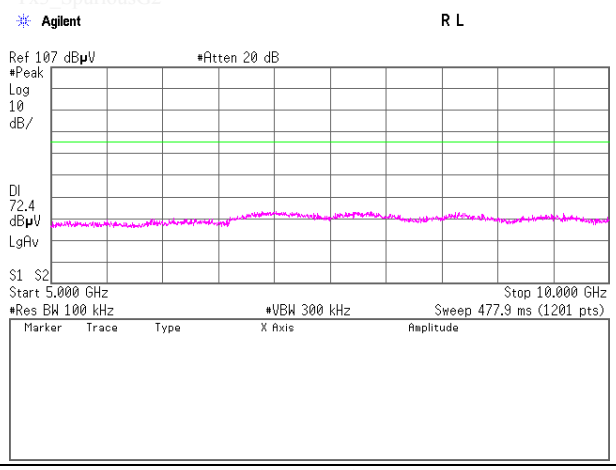
1GHz - 5GHz

Tx3_SpuriousG1



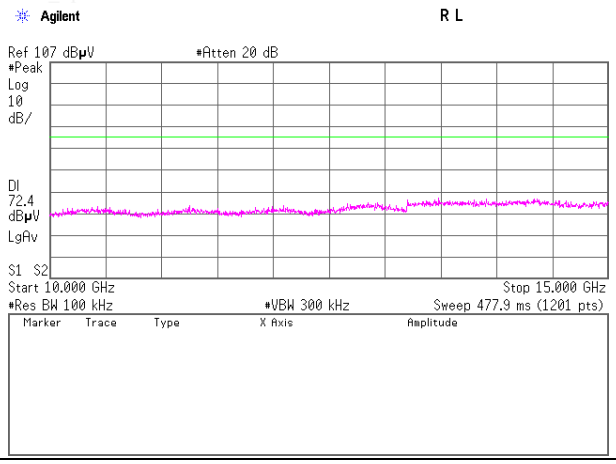
5GHz - 10GHz

Tx3_SpuriousG2



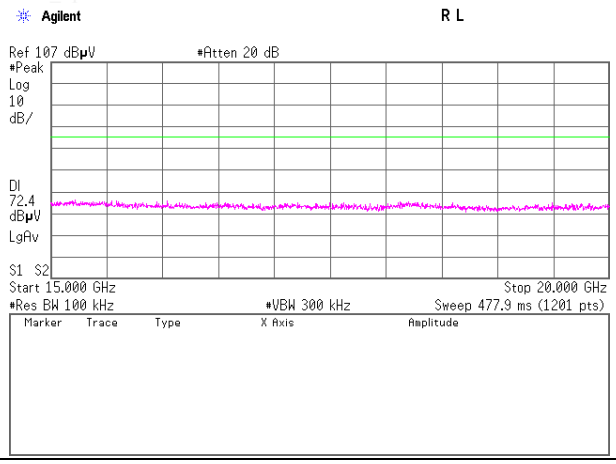
10GHz - 15GHz

Tx3_SpuriousG3



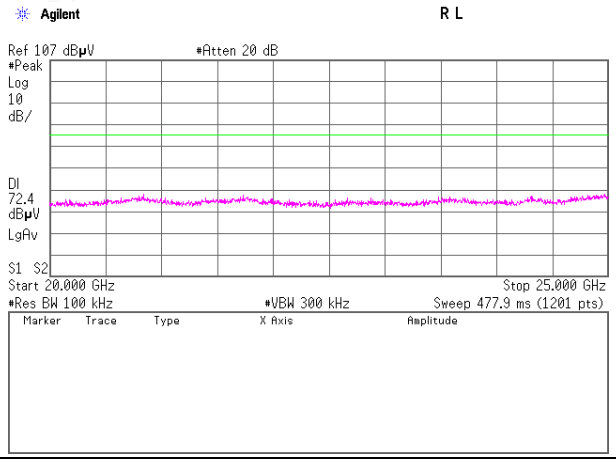
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



Tx3_SpuriousG6

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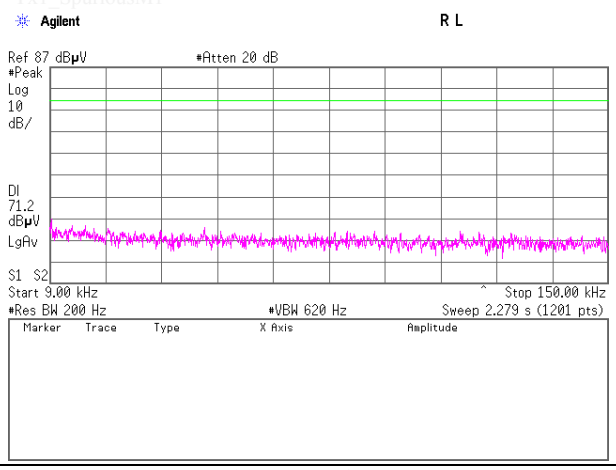
Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm

Tx, 2412MHz (below 1GHz)

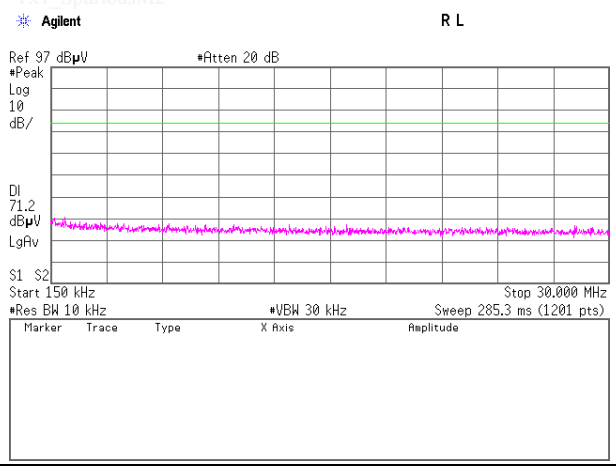
9kHz - 150kHz

Tx1_SpuriousM1



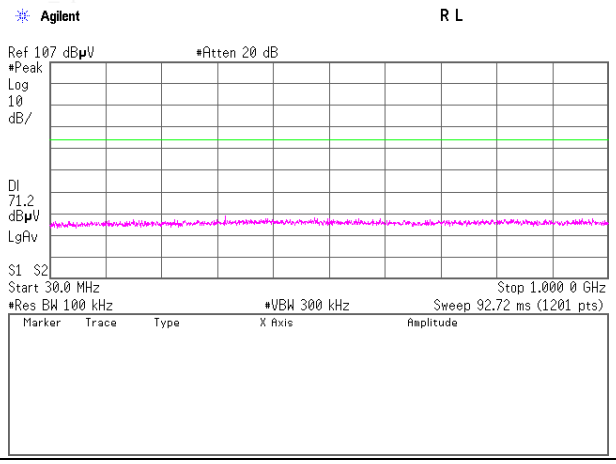
150kHz - 30MHz

Tx1_SpuriousM2



30MHz - 1GHz

Tx1_SpuriousM3



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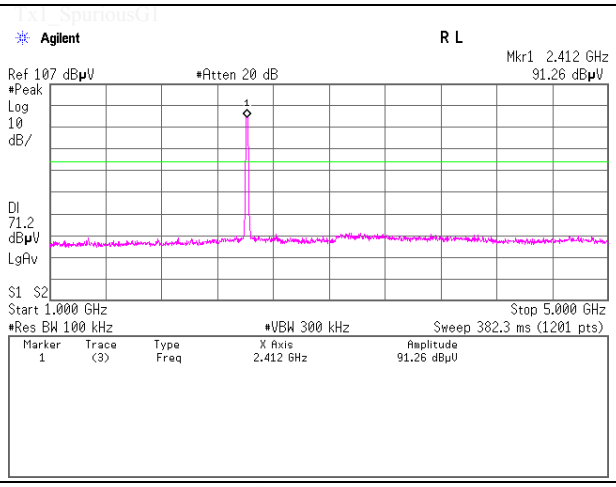
Spurious emission (Conducted)

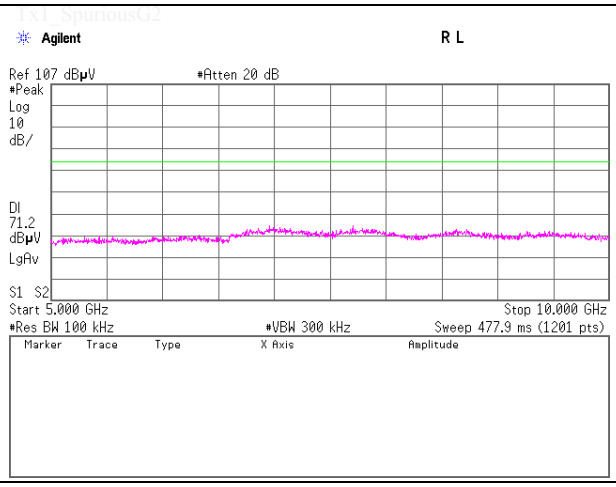
Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm

Tx, 2412MHz (above 1GHz)

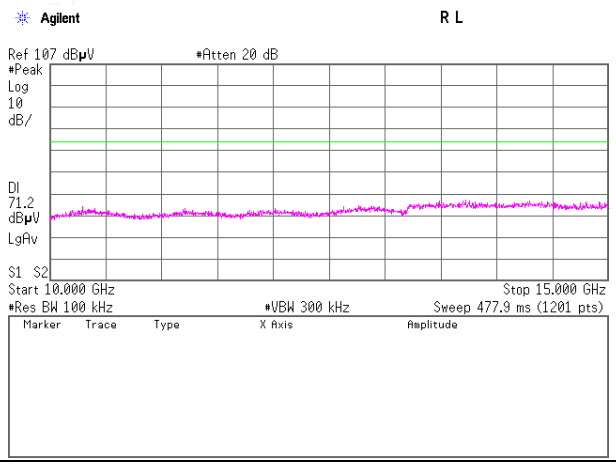
1GHz - 5GHz



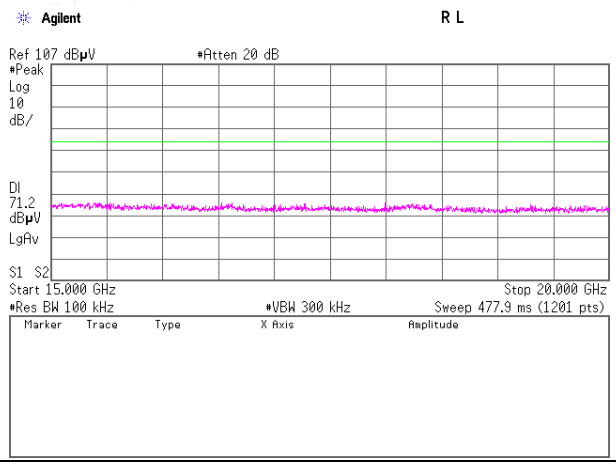
5GHz - 10GHz



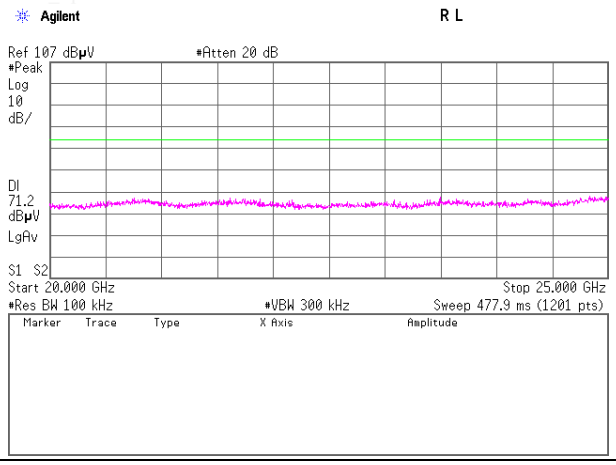
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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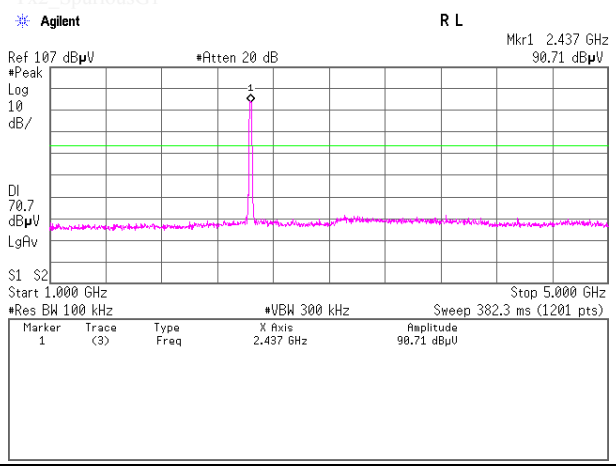
Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm

Tx, 2437MHz (above 1GHz)

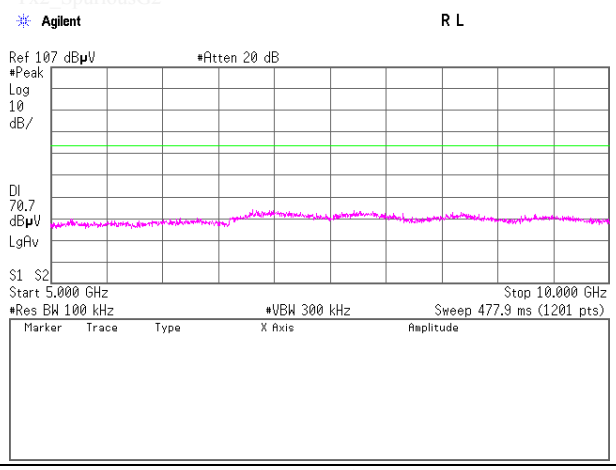
1GHz - 5GHz

Tx2_SpuriousG1



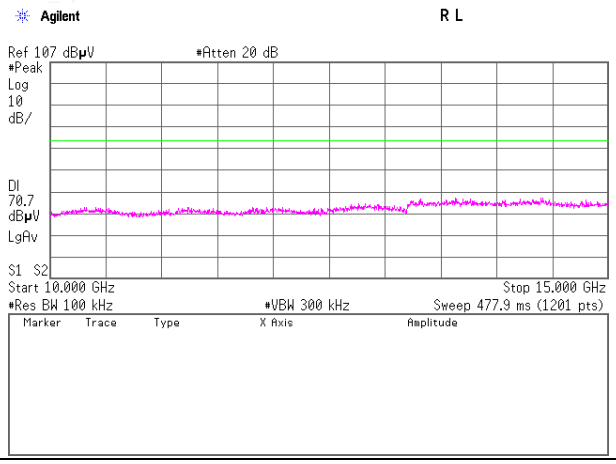
5GHz - 10GHz

Tx2_SpuriousG2



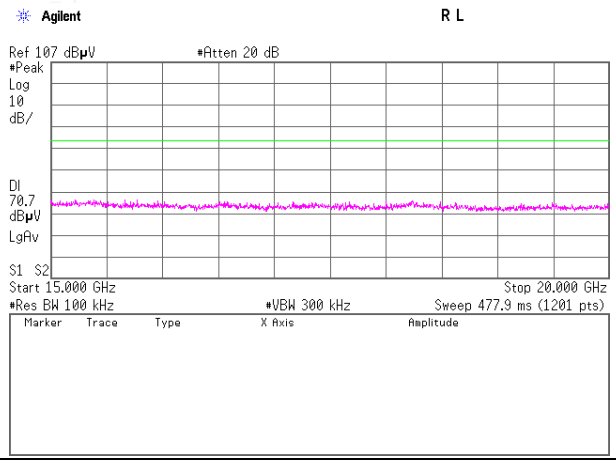
10GHz - 15GHz

Tx2_SpuriousG3



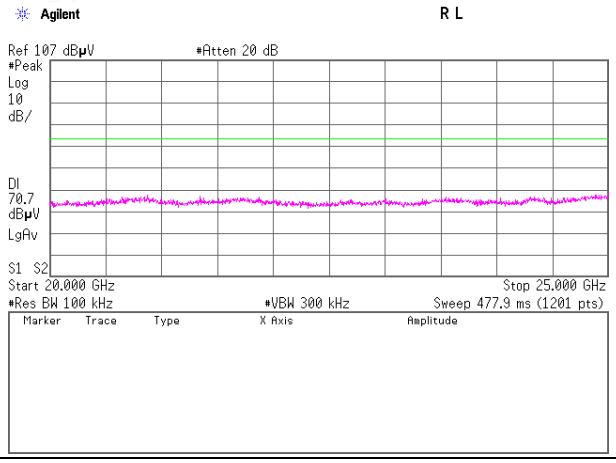
15GHz - 20GHz

Tx2_SpuriousG4



20GHz - 25GHz

Tx2_SpuriousG5



Tx2_SpuriousG6

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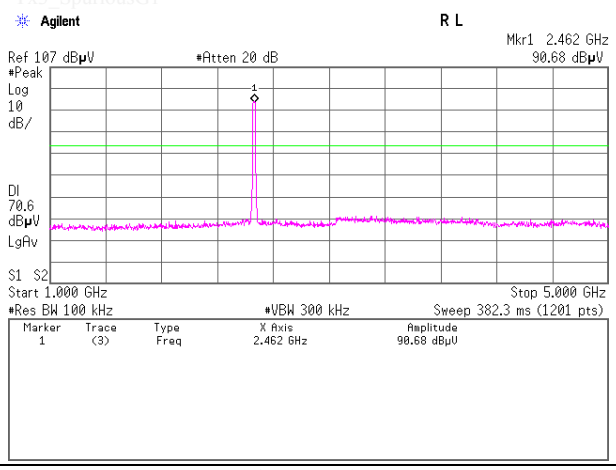
Spurious emission (Conducted)

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm

Tx, 2462MHz (above 1GHz)

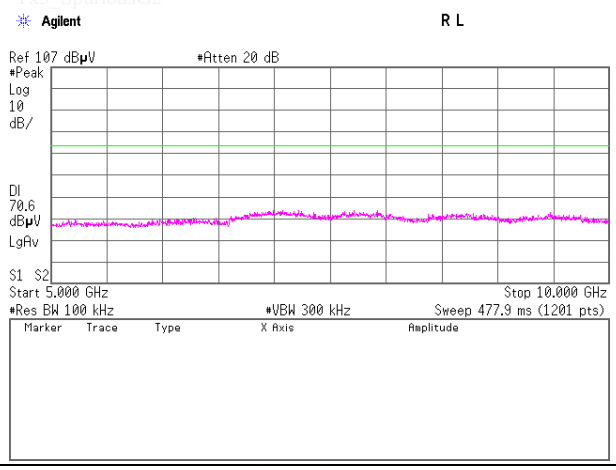
1GHz - 5GHz

Tx3_SpuriousG1



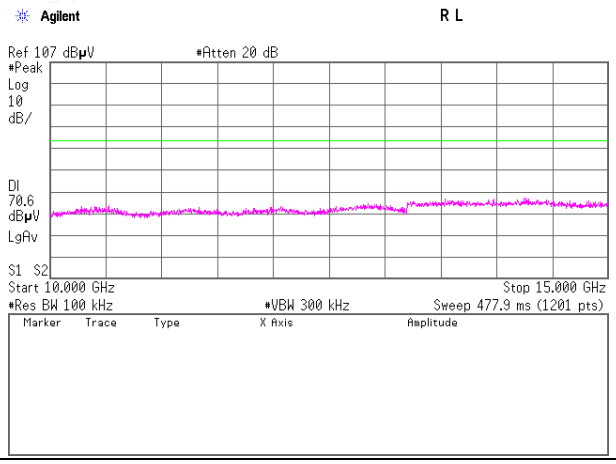
5GHz - 10GHz

Tx3_SpuriousG2



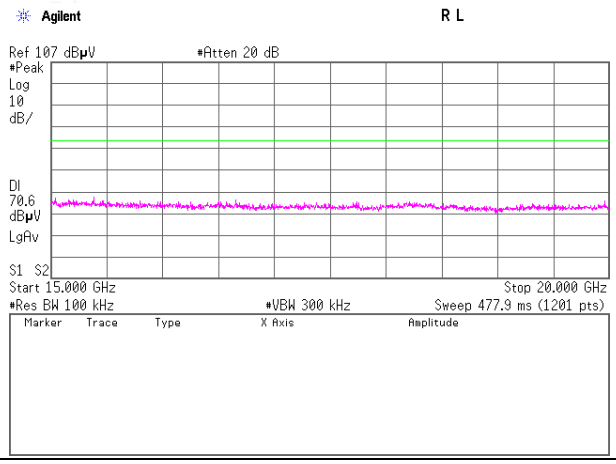
10GHz - 15GHz

Tx3_SpuriousG3



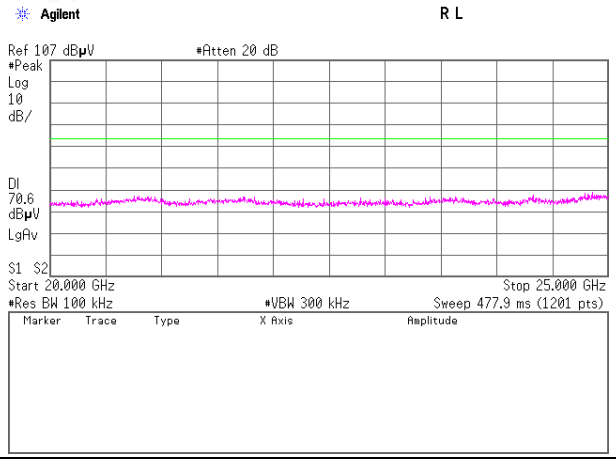
15GHz - 20GHz

Tx3_SpuriousG4



20GHz - 25GHz

Tx3_SpuriousG5



Tx3_SpuriousG6

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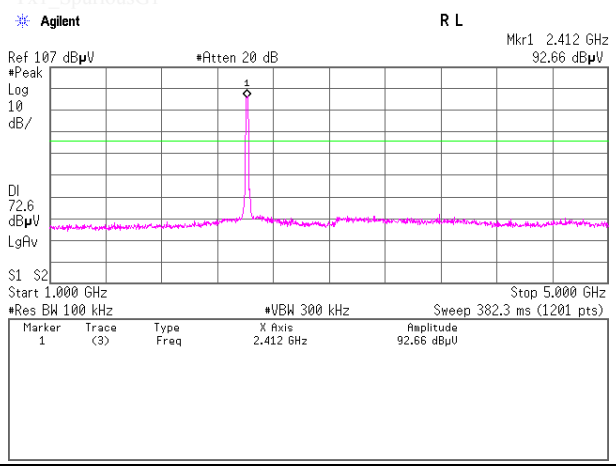
Spurious emission (Conducted)

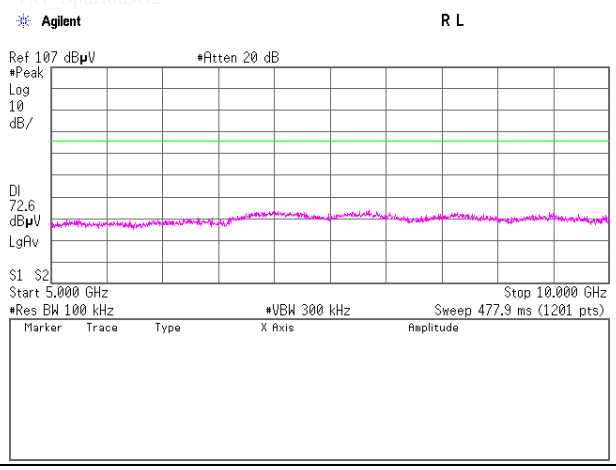
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm

Tx, 2412MHz (above 1GHz)

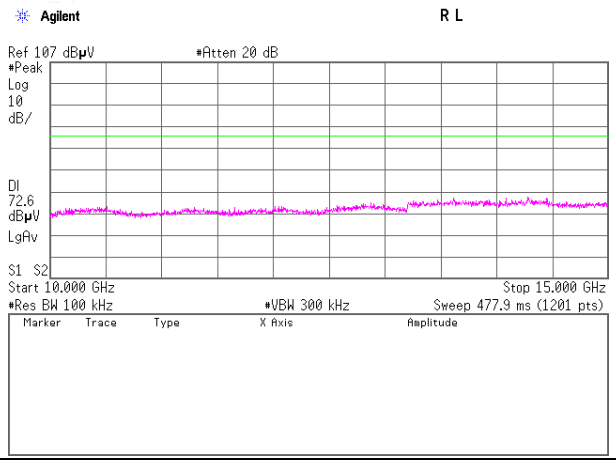
1GHz - 5GHz



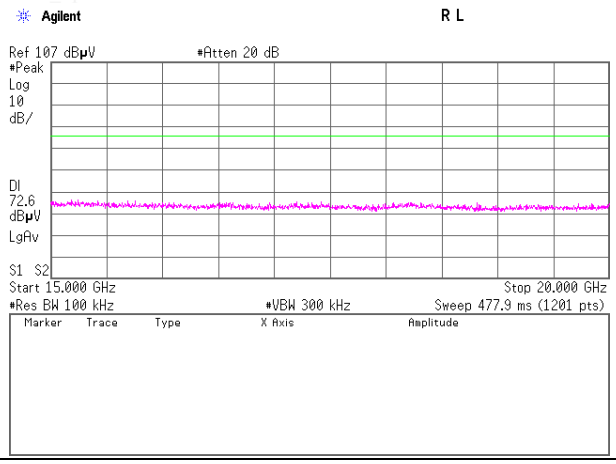
5GHz - 10GHz



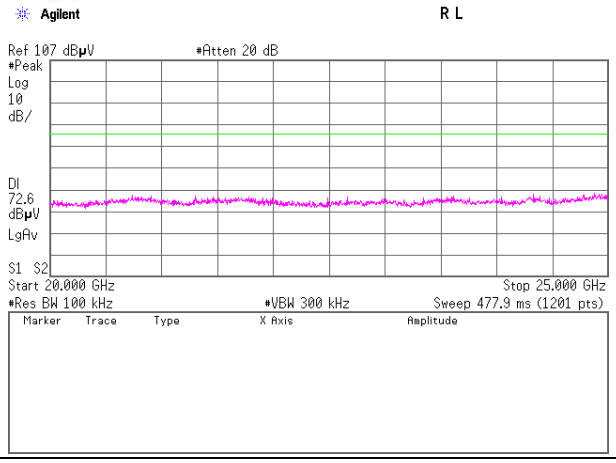
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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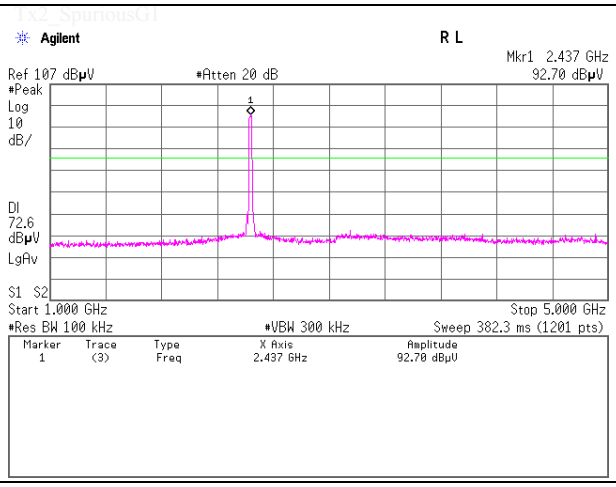
Spurious emission (Conducted)

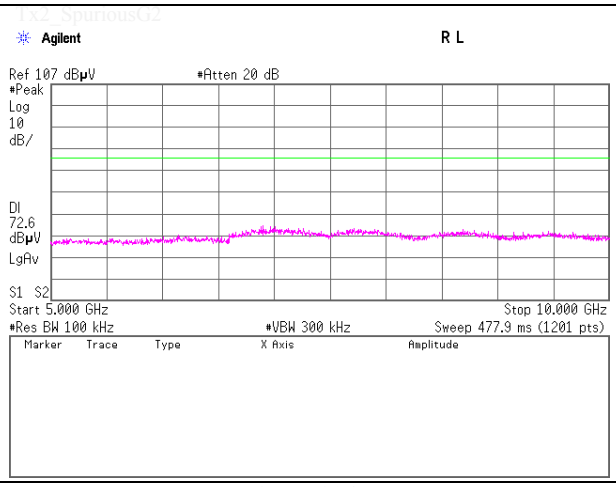
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm

Tx, 2437MHz (above 1GHz)

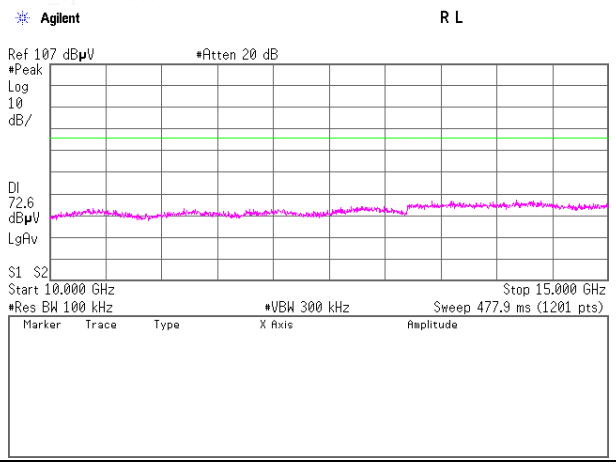
1GHz - 5GHz



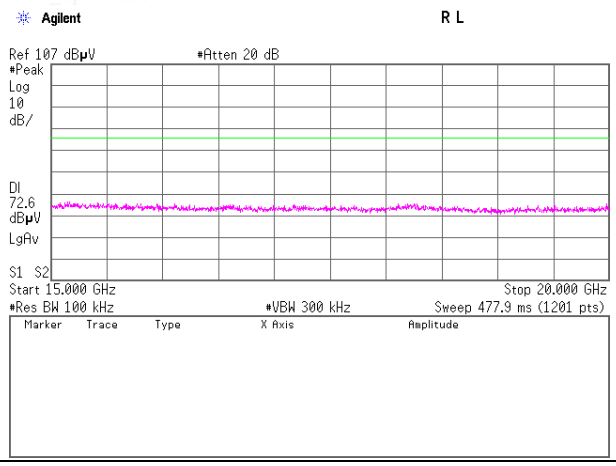
5GHz - 10GHz



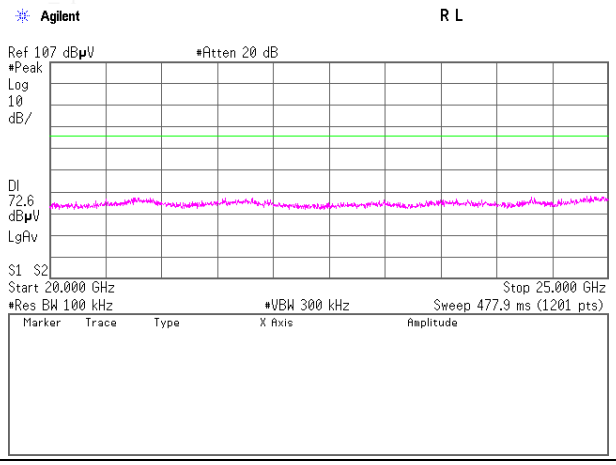
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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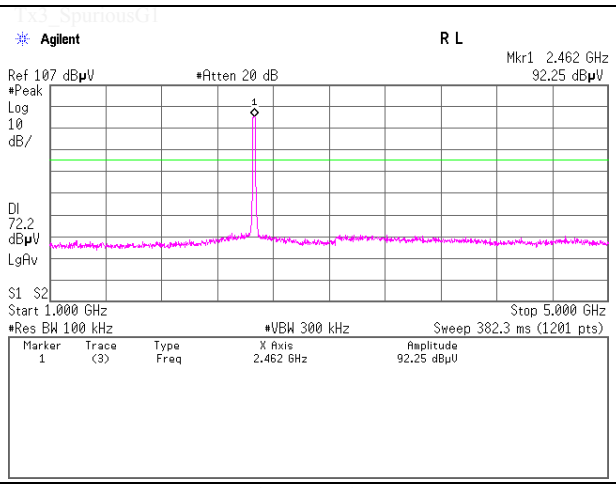
Spurious emission (Conducted)

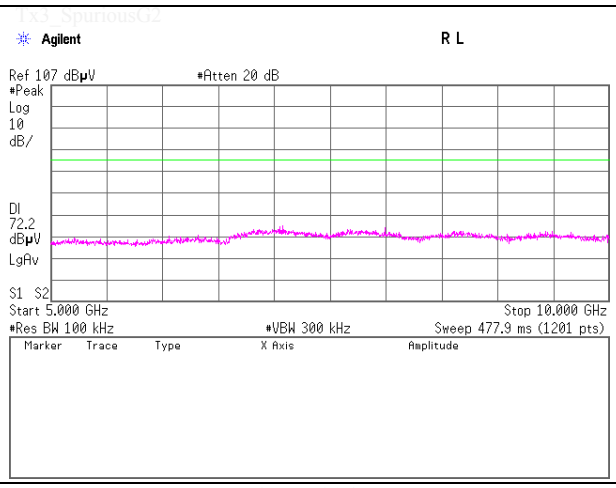
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm

Tx, 2462MHz (above 1GHz)

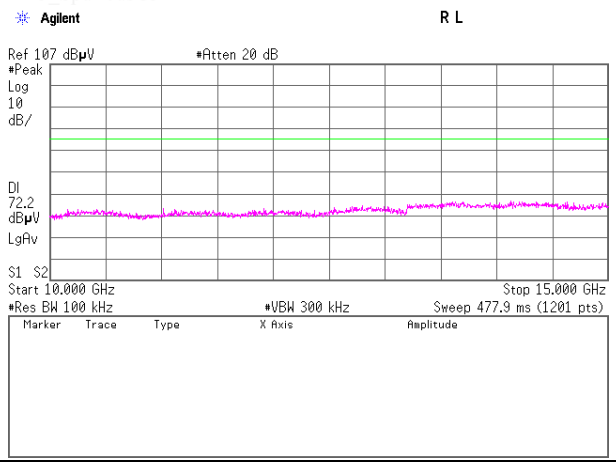
1GHz - 5GHz



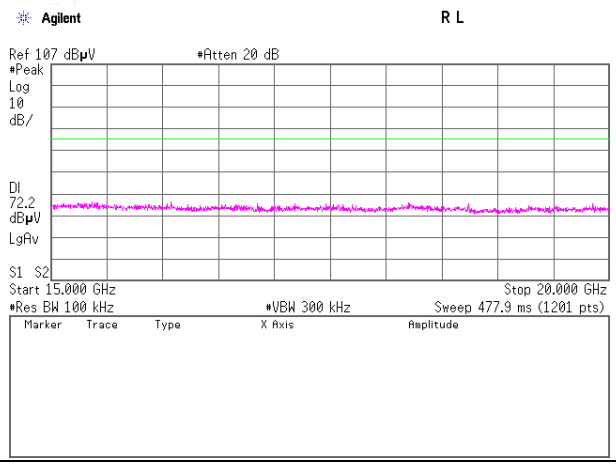
5GHz - 10GHz



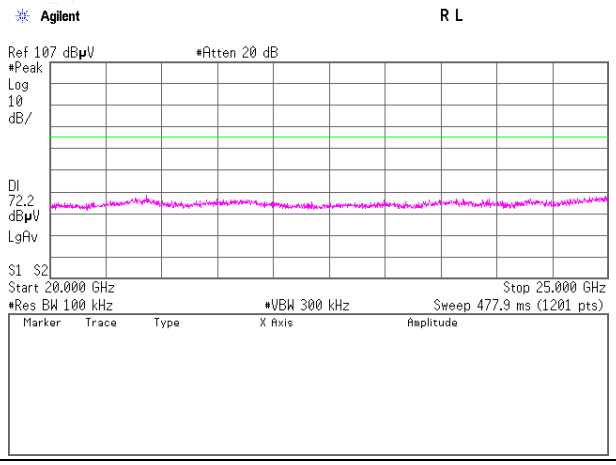
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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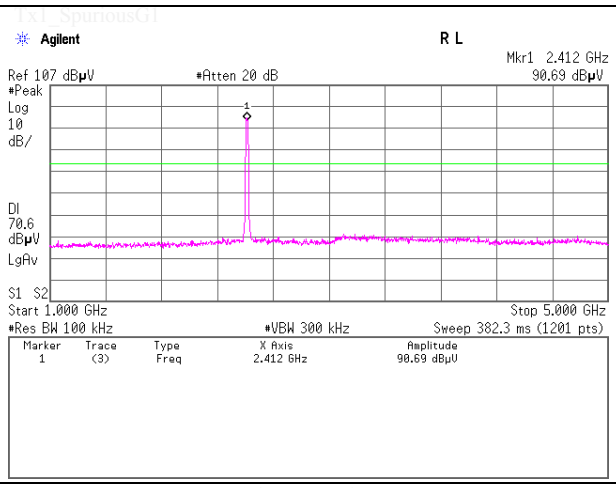
Spurious emission (Conducted)

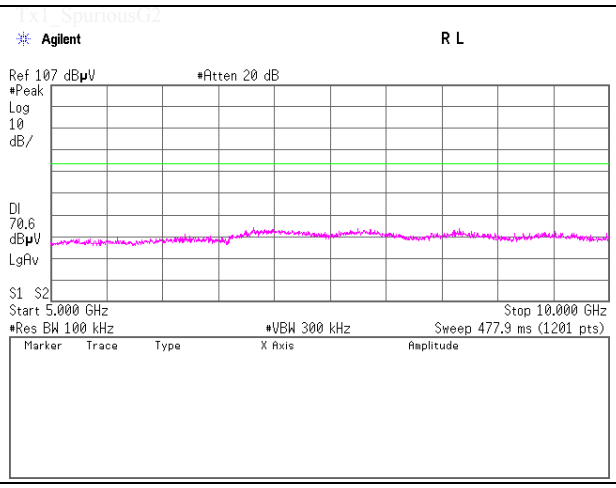
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm

Tx, 2412MHz (above 1GHz)

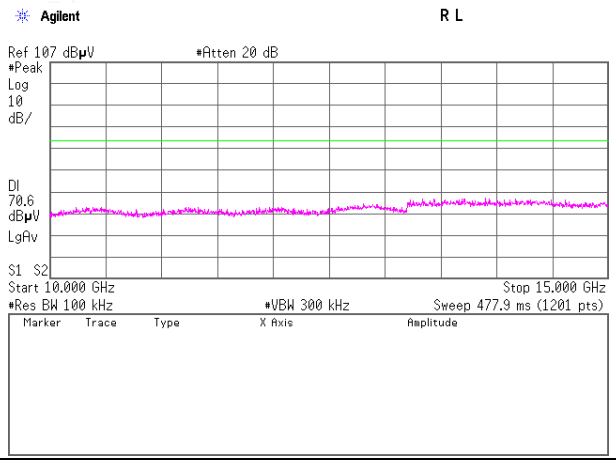
1GHz - 5GHz



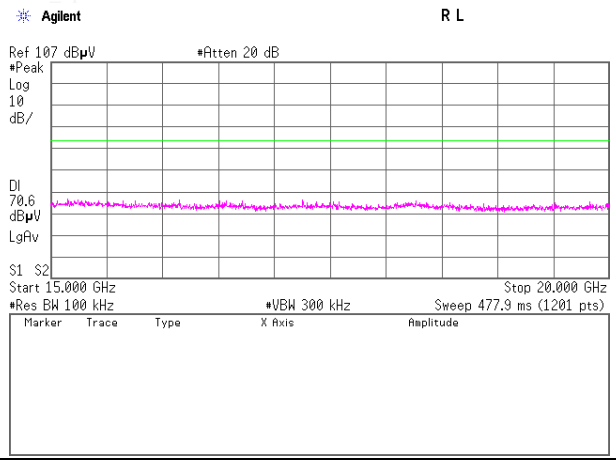
5GHz - 10GHz



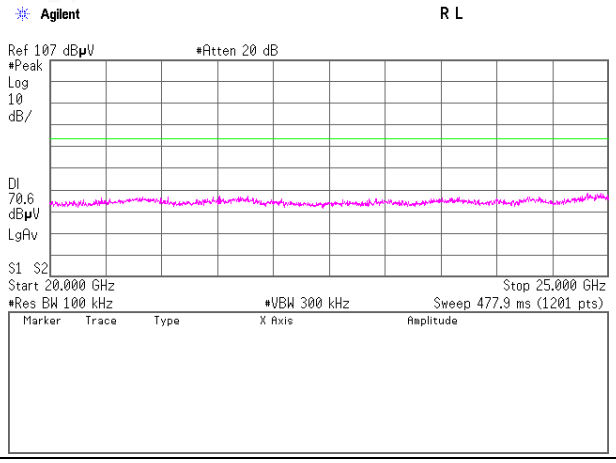
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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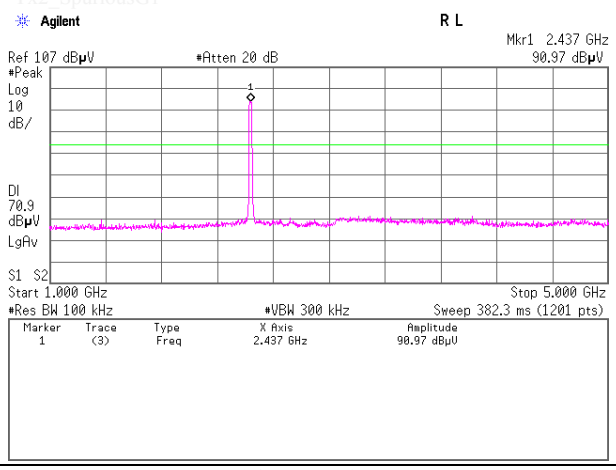
Spurious emission (Conducted)

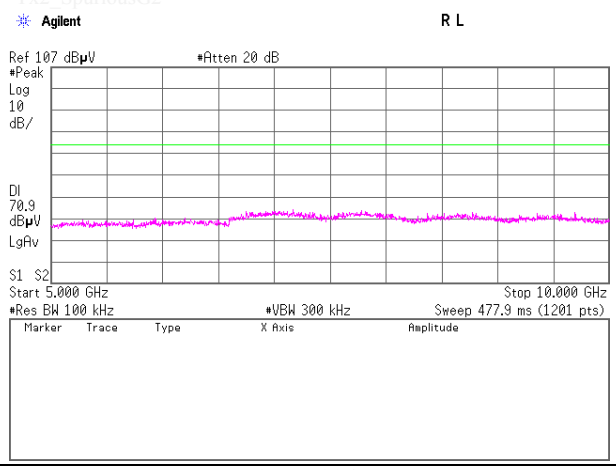
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm

Tx, 2437MHz (above 1GHz)

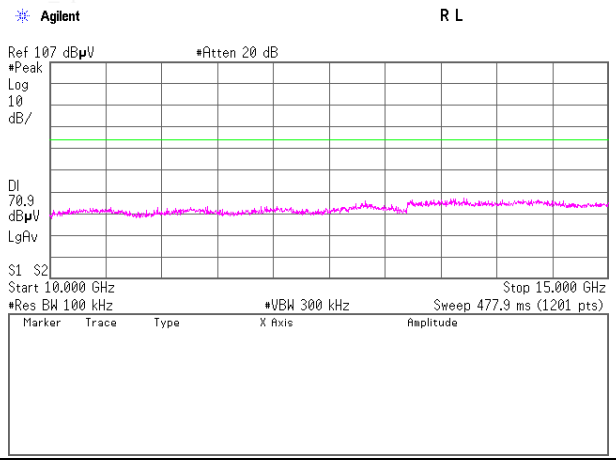
1GHz - 5GHz



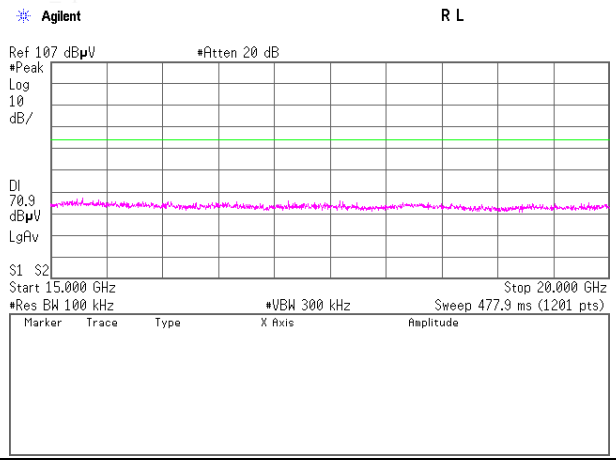
5GHz - 10GHz



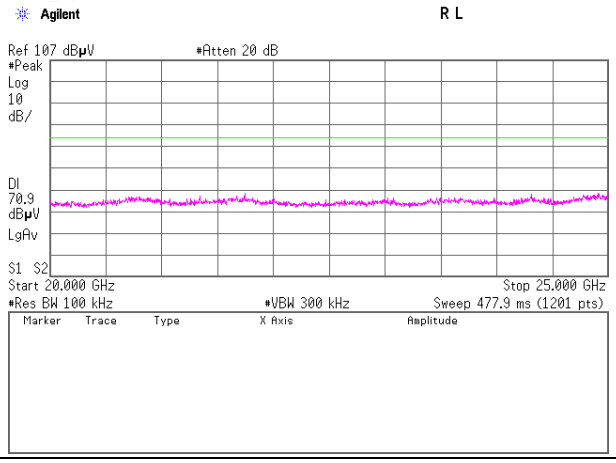
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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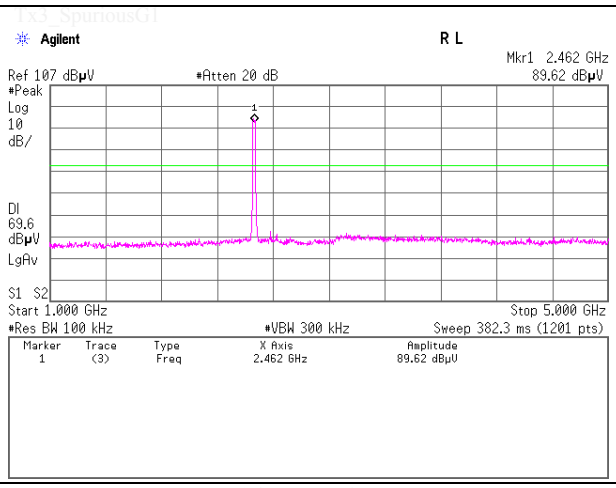
Spurious emission (Conducted)

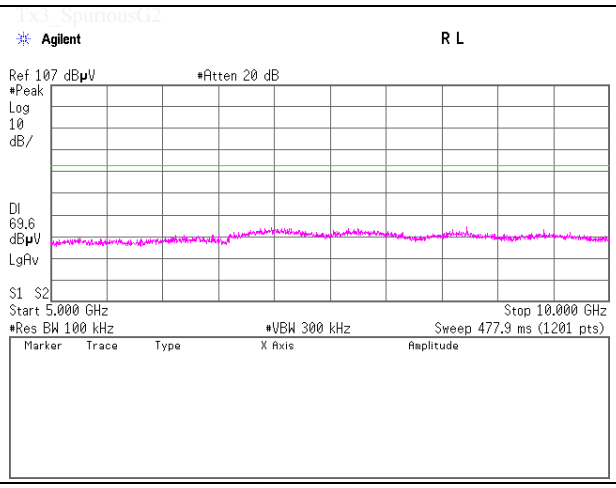
Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm

Tx, 2462MHz (above 1GHz)

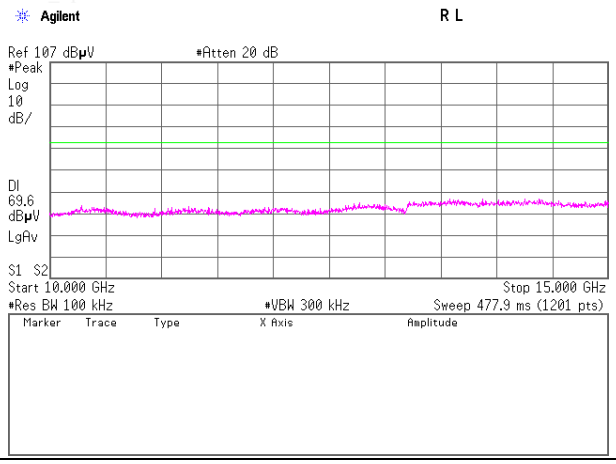
1GHz - 5GHz



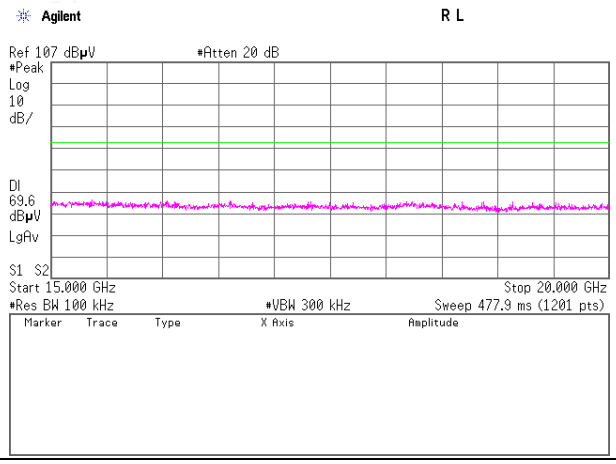
5GHz - 10GHz



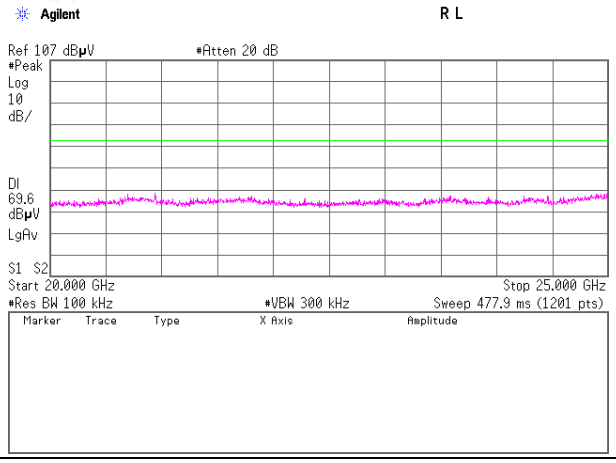
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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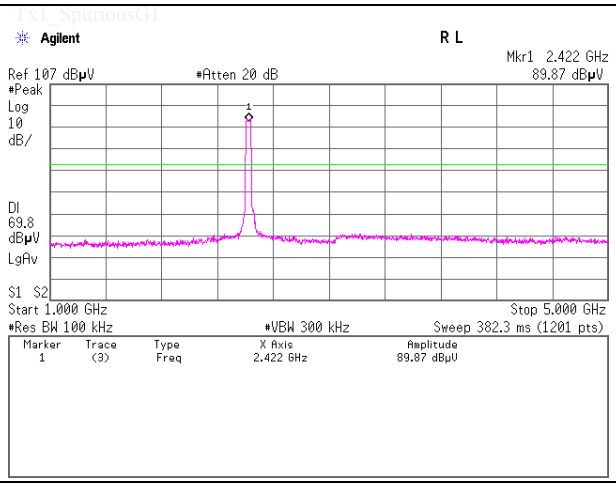
Spurious emission (Conducted)

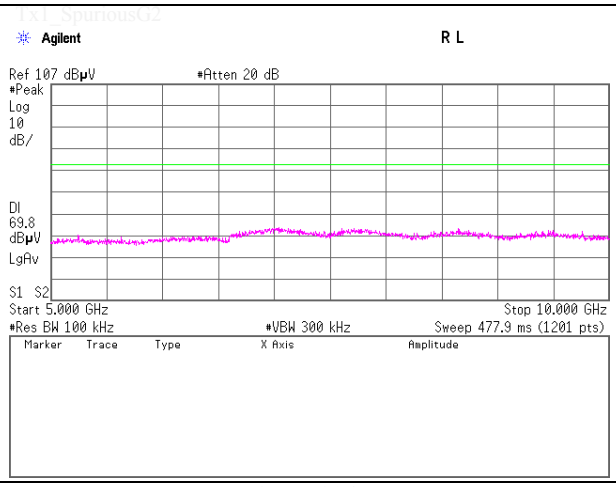
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm

Tx, 2422MHz (above 1GHz)

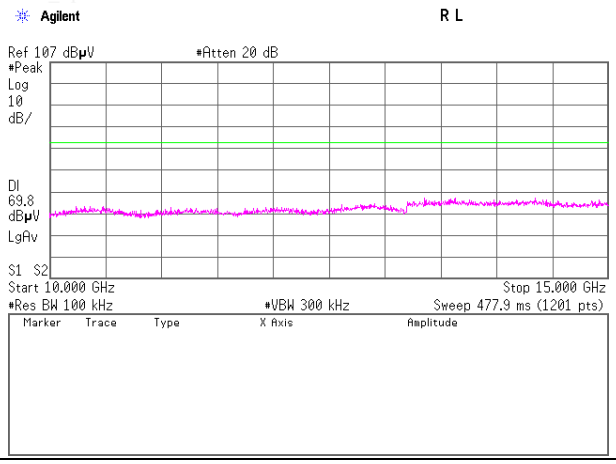
1GHz - 5GHz



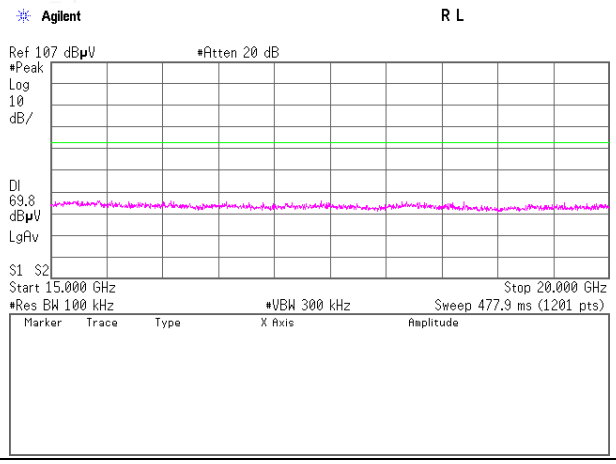
5GHz - 10GHz



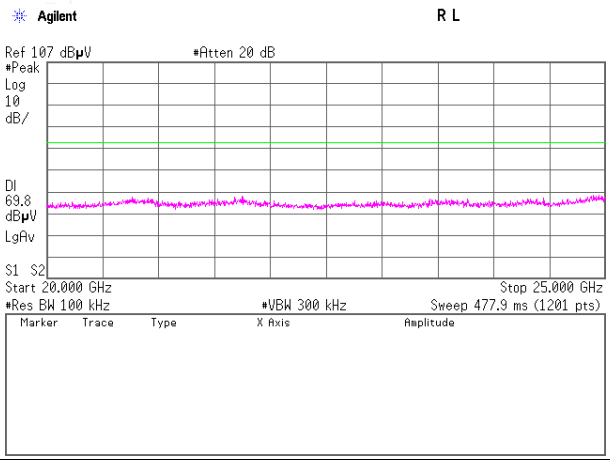
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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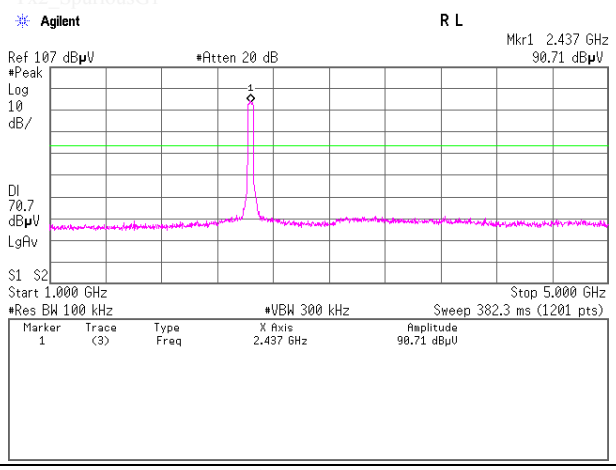
Spurious emission (Conducted)

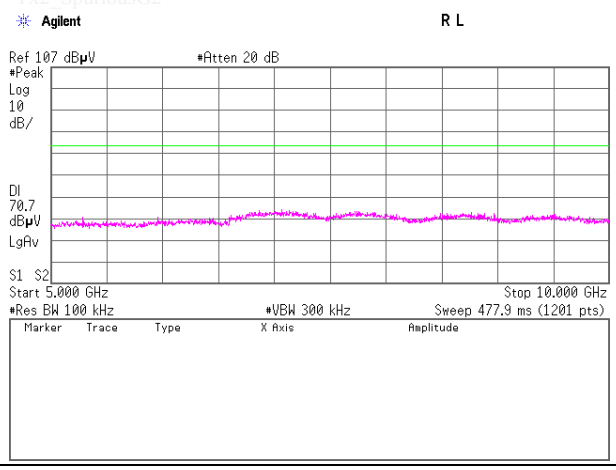
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm

Tx, 2437MHz (above 1GHz)

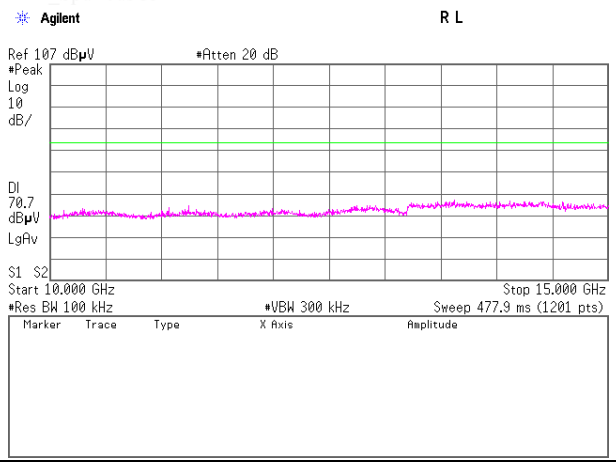
1GHz - 5GHz



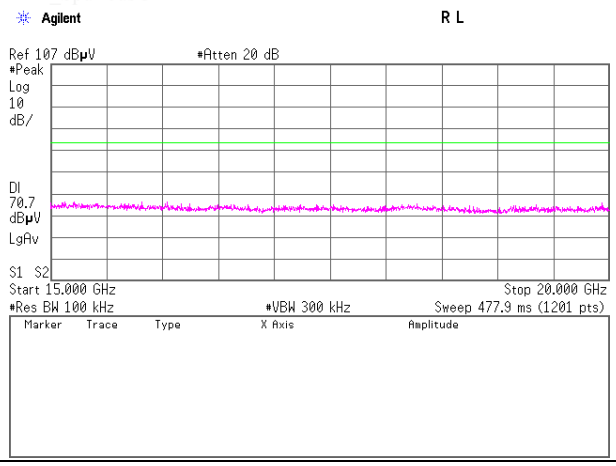
5GHz - 10GHz



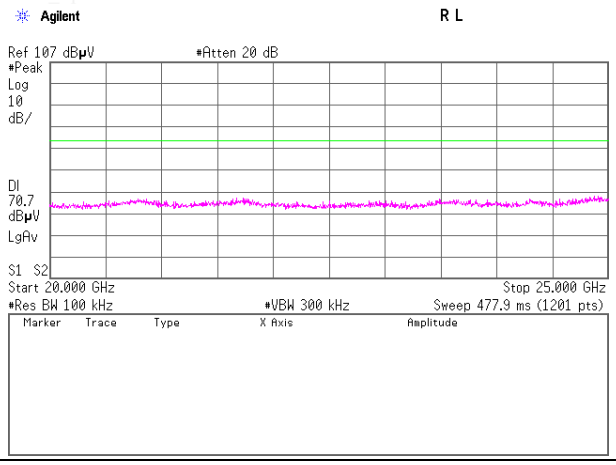
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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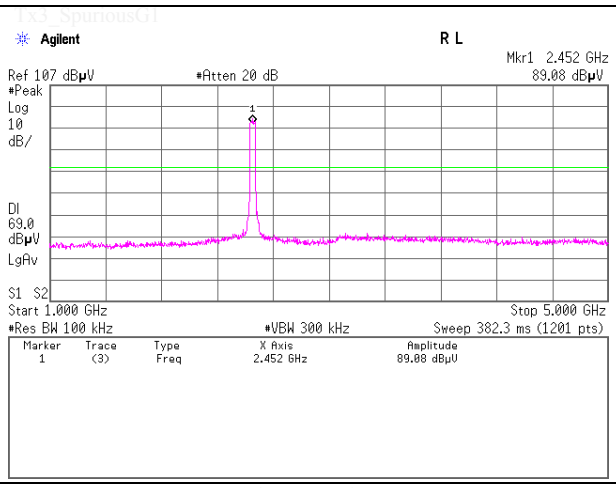
Spurious emission (Conducted)

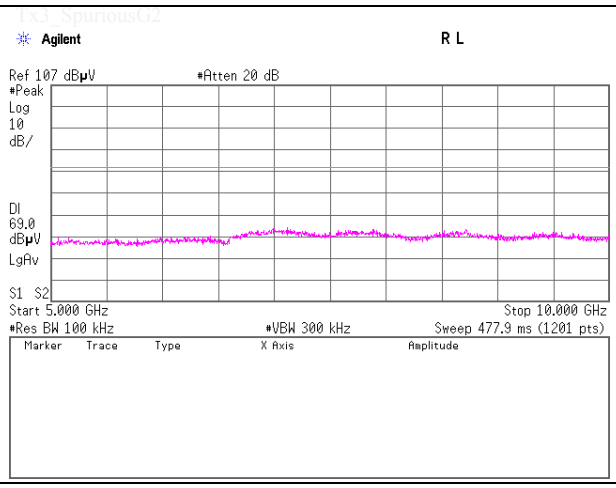
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm

Tx, 2452MHz (above 1GHz)

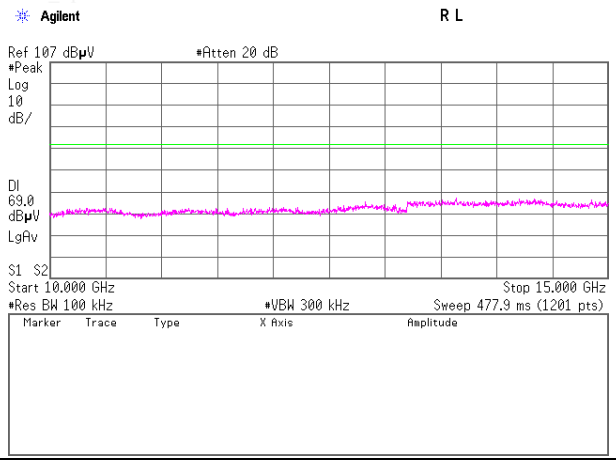
1GHz - 5GHz



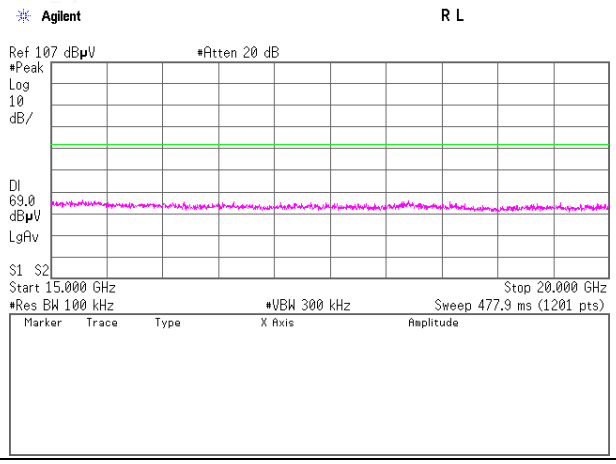
5GHz - 10GHz



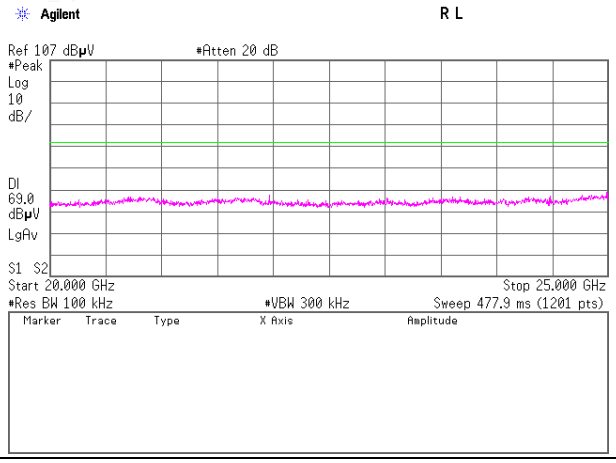
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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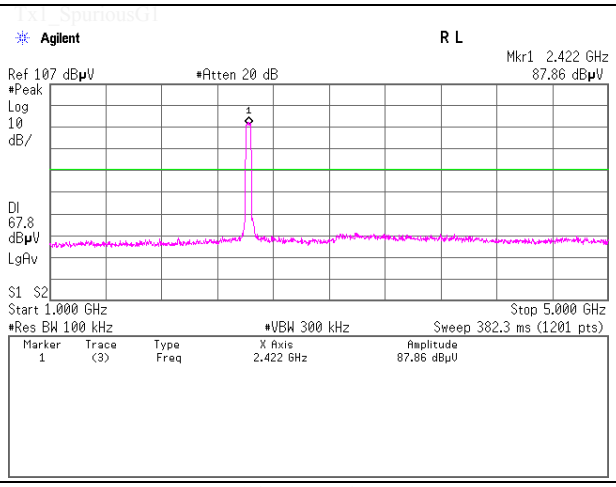
Spurious emission (Conducted)

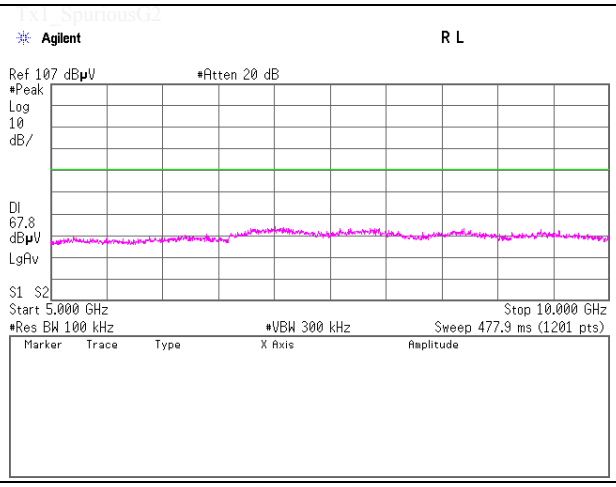
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm

Tx, 2422MHz (above 1GHz)

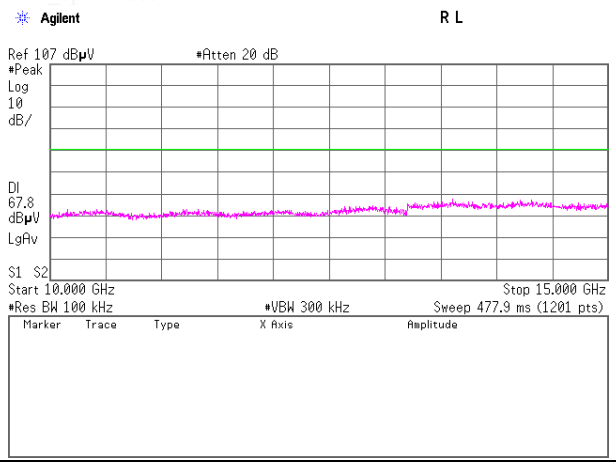
1GHz - 5GHz



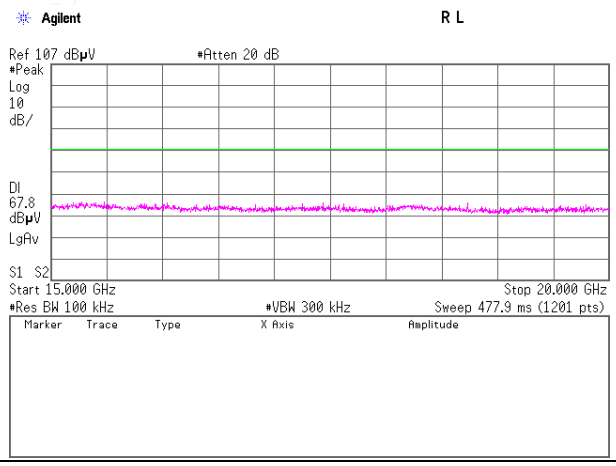
5GHz - 10GHz



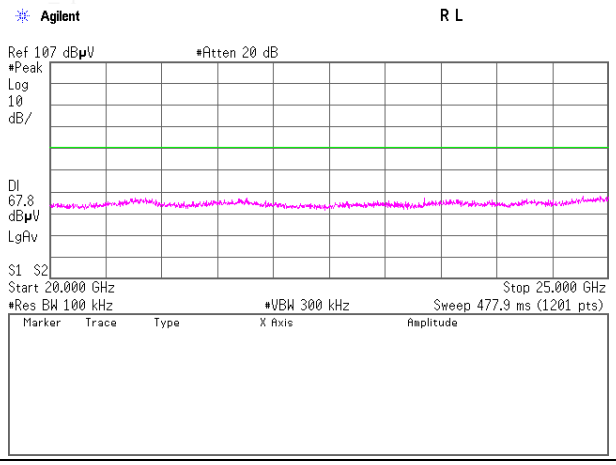
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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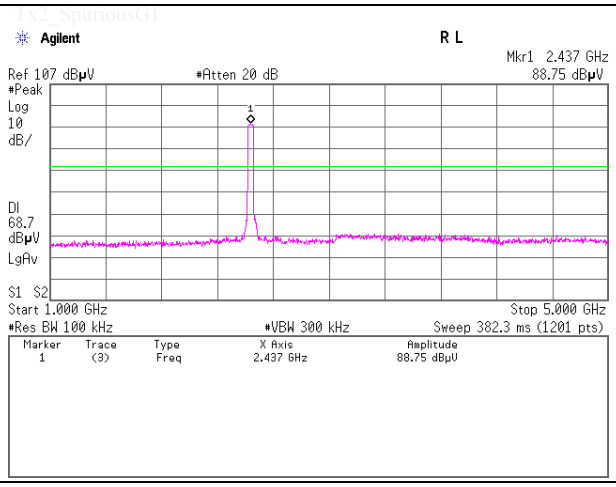
Spurious emission (Conducted)

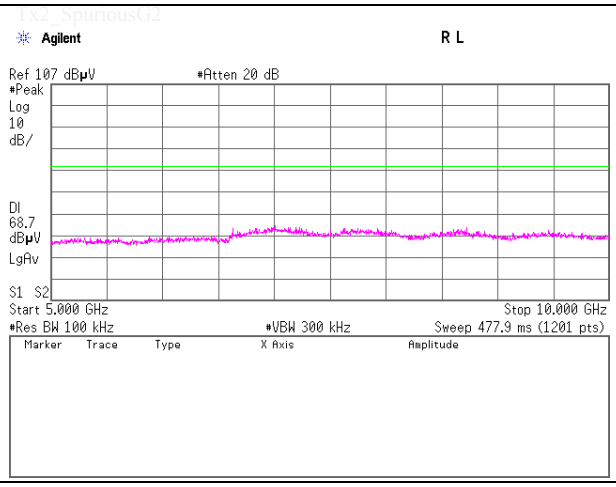
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm

Tx, 2437MHz (above 1GHz)

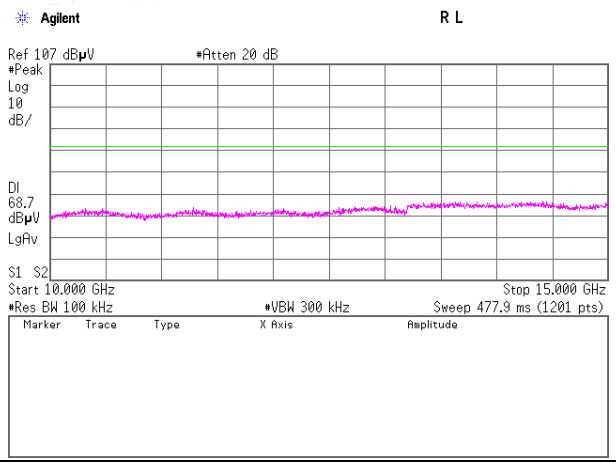
1GHz - 5GHz



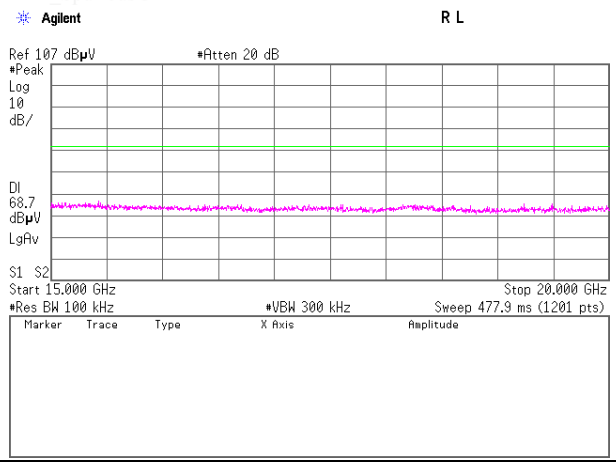
5GHz - 10GHz



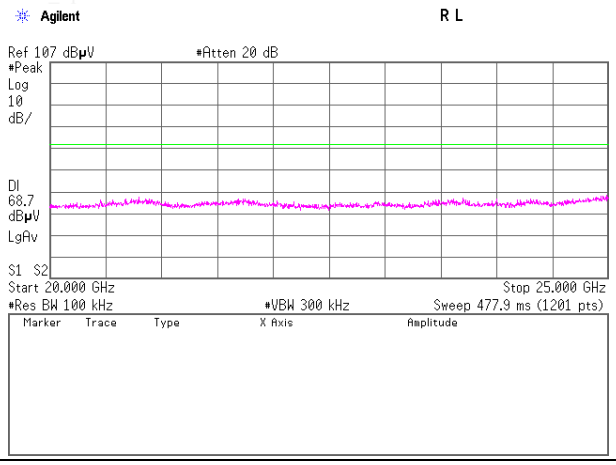
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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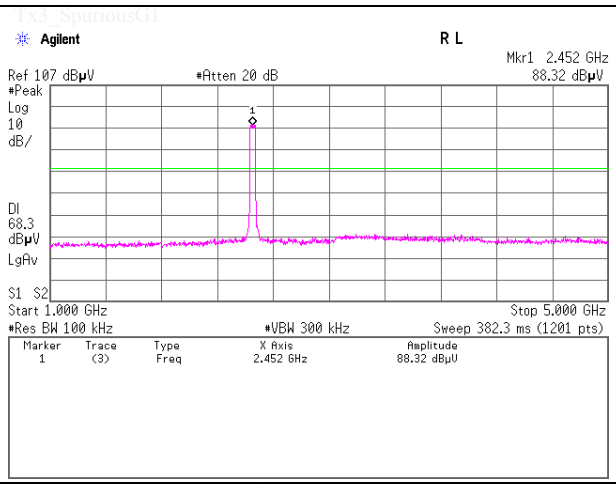
Spurious emission (Conducted)

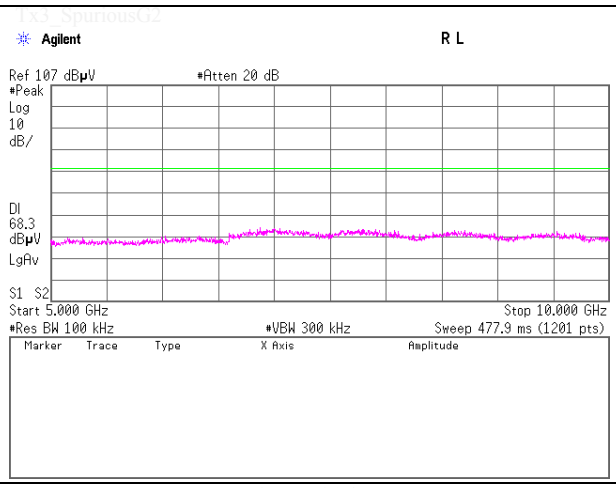
Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm

Tx, 2452MHz (above 1GHz)

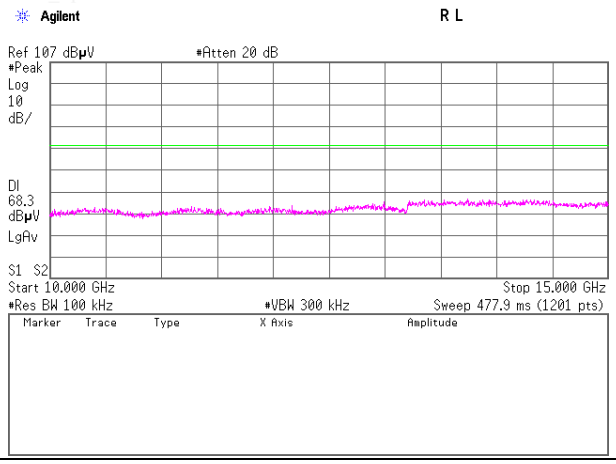
1GHz - 5GHz



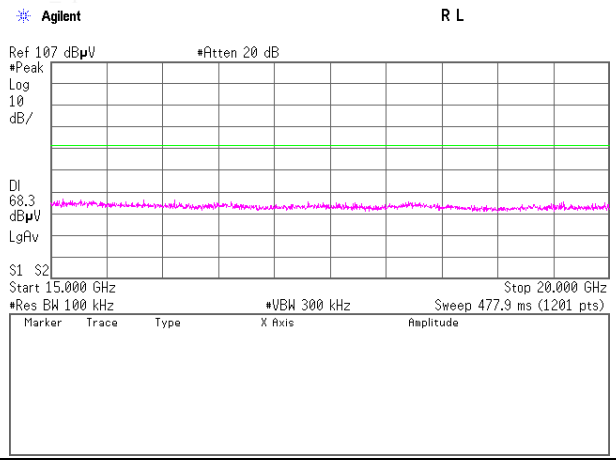
5GHz - 10GHz



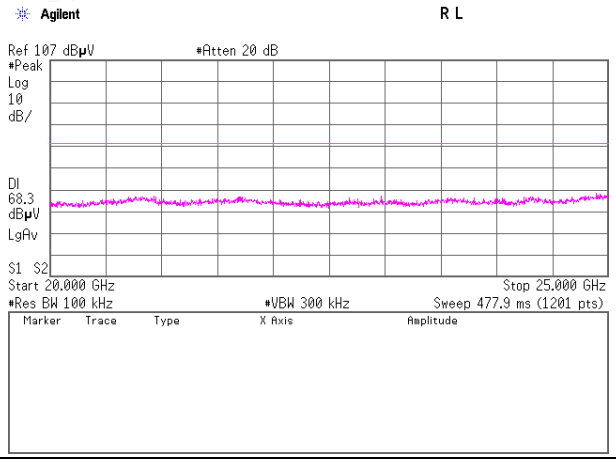
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz



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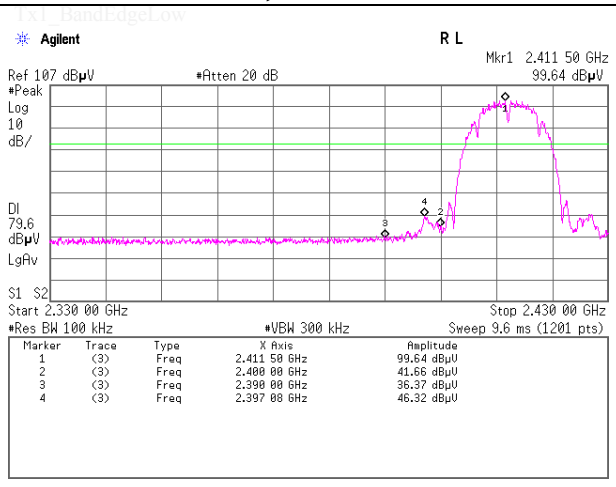
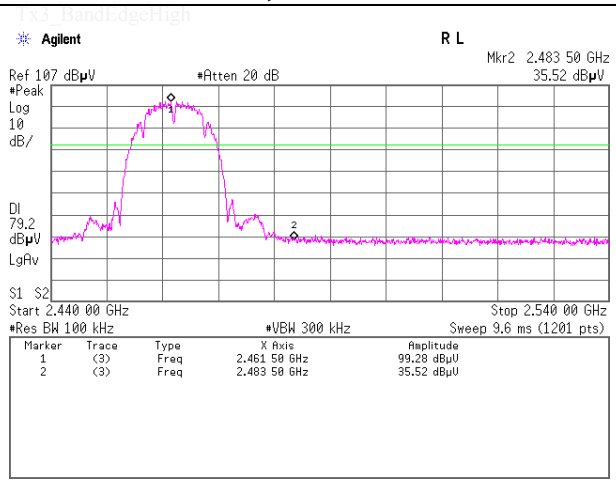
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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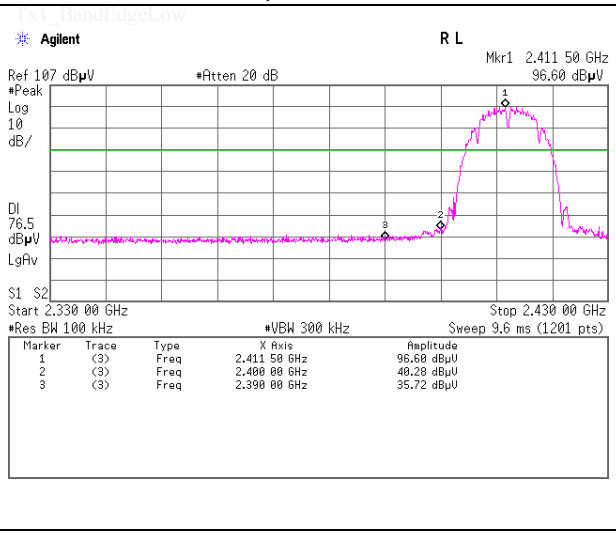
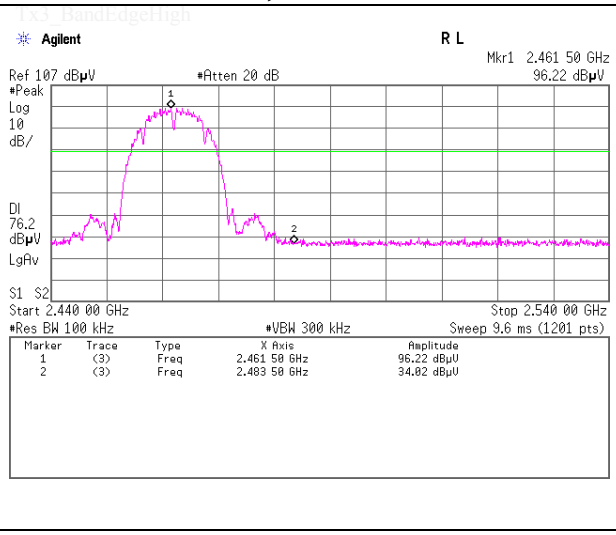
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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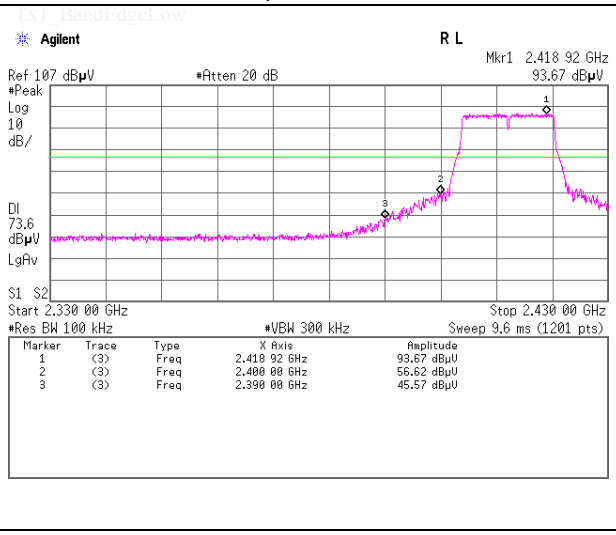
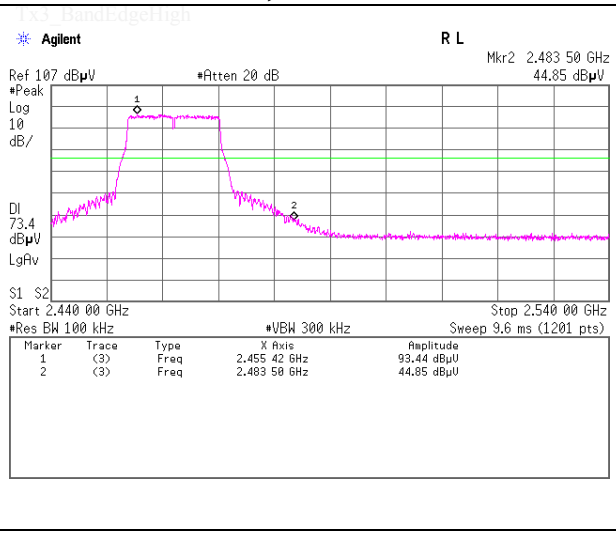
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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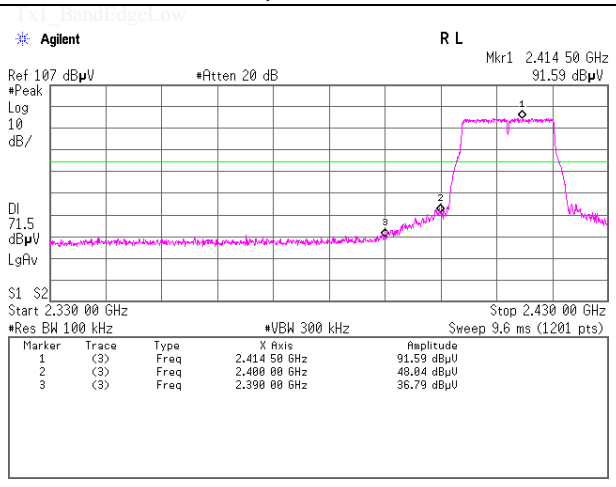
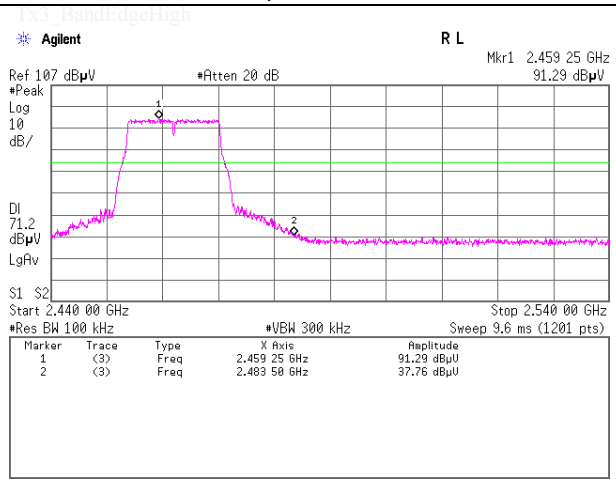
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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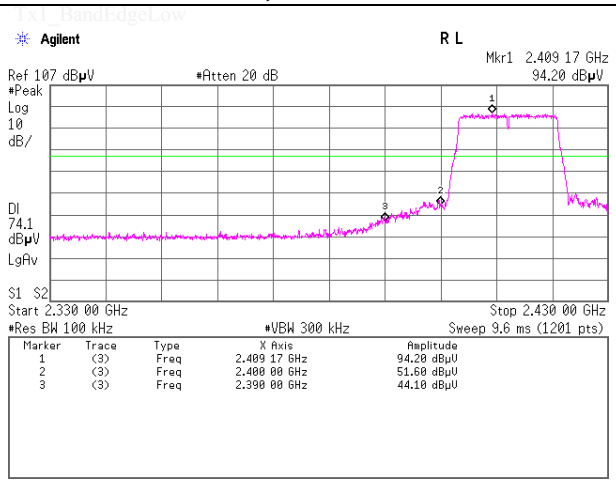
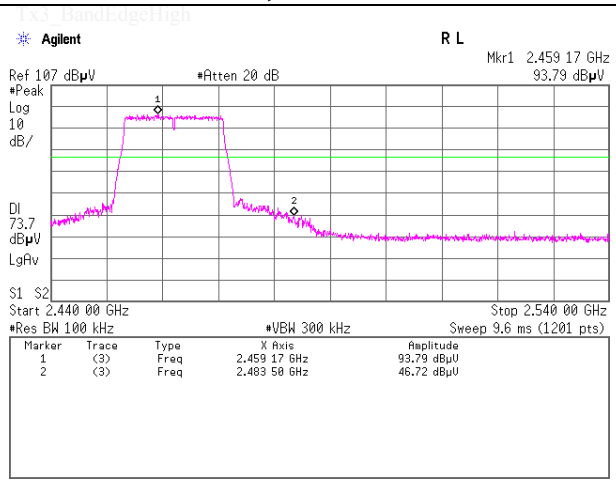
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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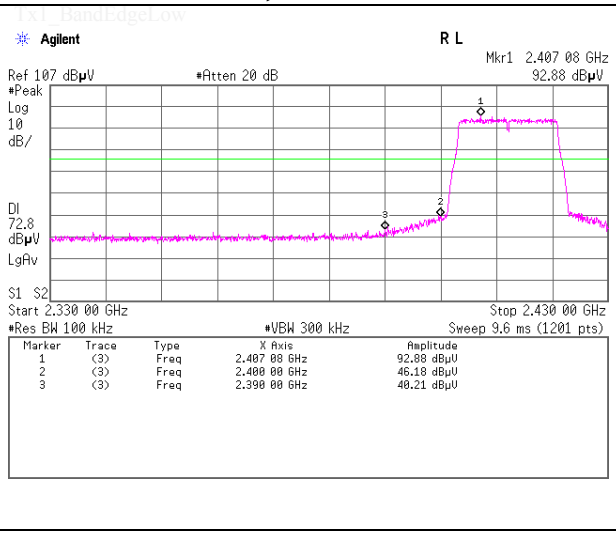
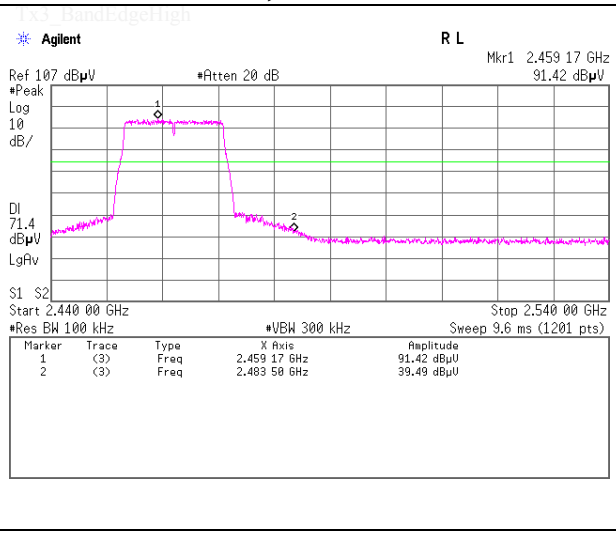
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm	
Tx, 2412MHz	**Tx, 2462MHz**
	

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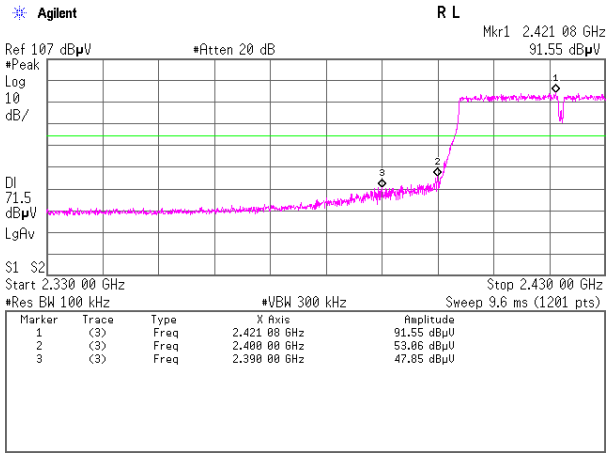
Spurious emission (Conducted)

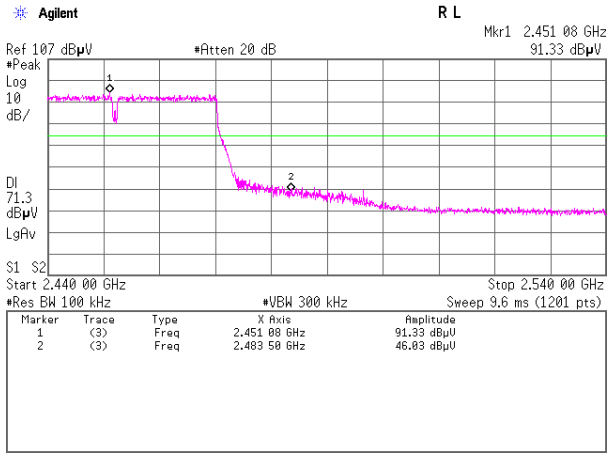
Band Edge compliance

Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm	
Tx, 2422MHz	**Tx, 2452MHz**

Tx1_BandEdgeLow



Tx3_BandEdgeHigh



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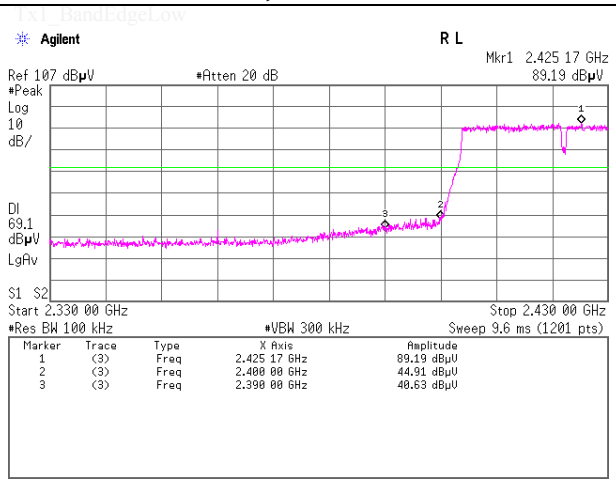
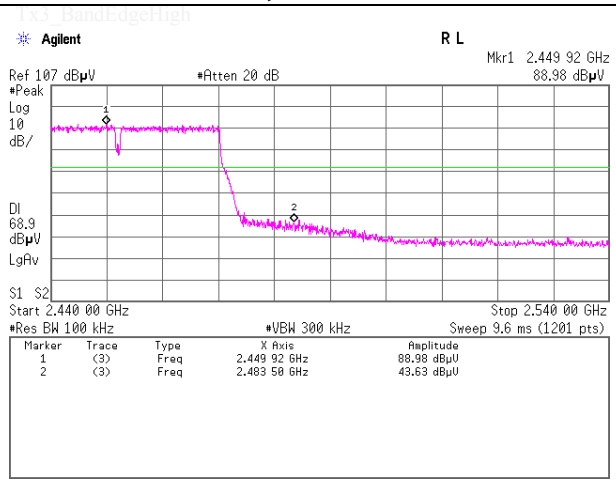
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm	
Tx, 2422MHz	**Tx, 2452MHz**
	

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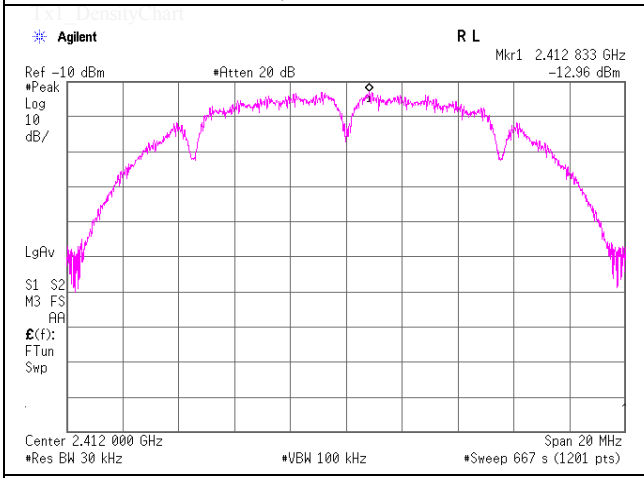
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm	

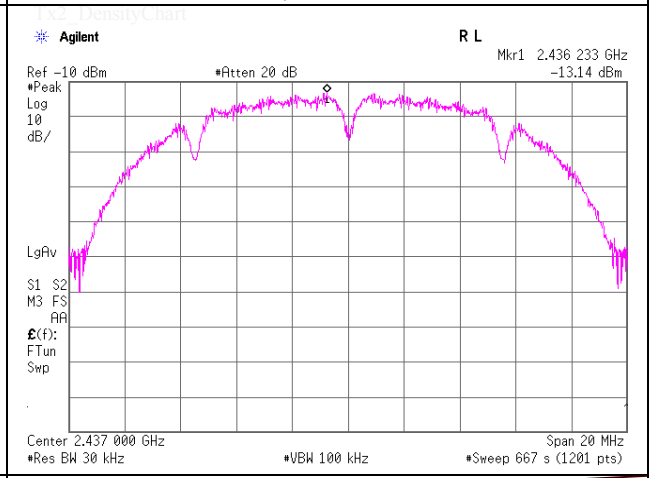
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.83	-12.96	1.00	9.97	-1.99	8.00	9.99
2437.0000	2436.23	-13.14	1.00	9.97	-2.17	8.00	10.17
2462.0000	2461.22	-13.15	1.00	9.97	-2.18	8.00	10.18

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

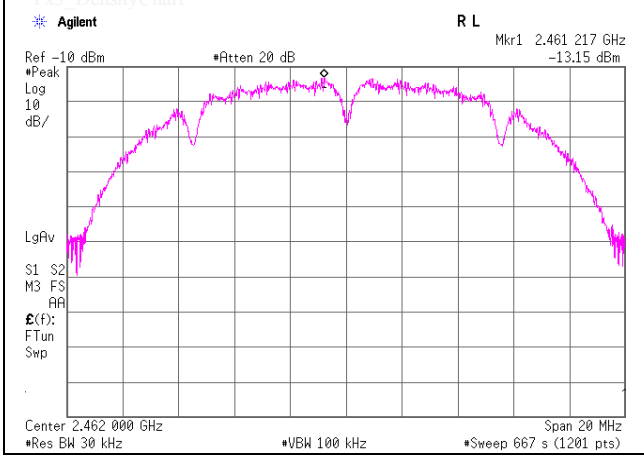
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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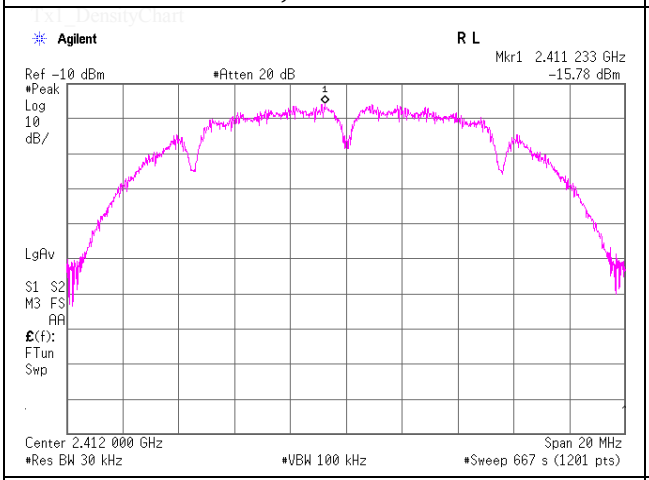
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm	

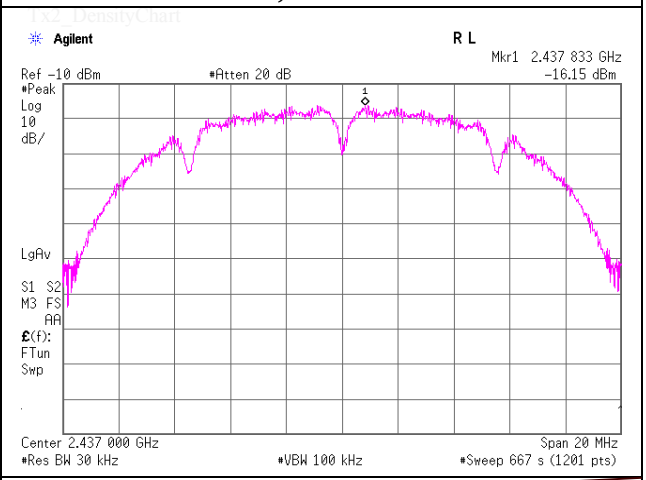
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2411.23	-15.78	1.00	9.97	-4.81	8.00	12.81
2437.0000	2437.83	-16.15	1.00	9.97	-5.18	8.00	13.18
2462.0000	2462.93	-16.37	1.00	9.97	-5.40	8.00	13.40

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

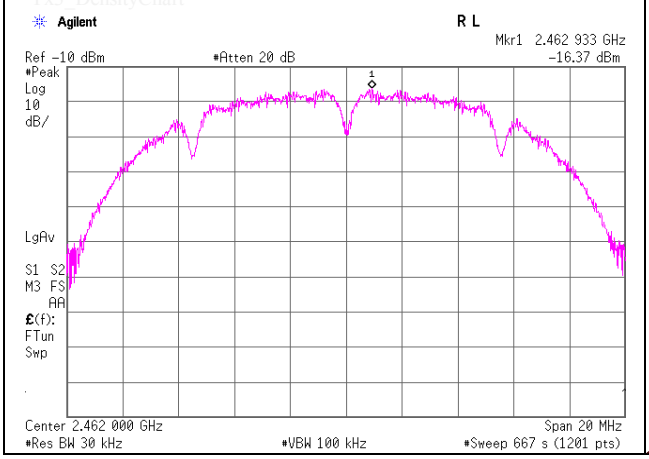
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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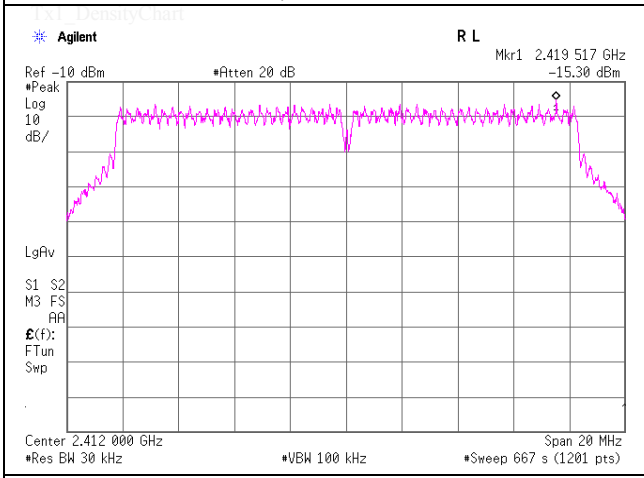
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm	

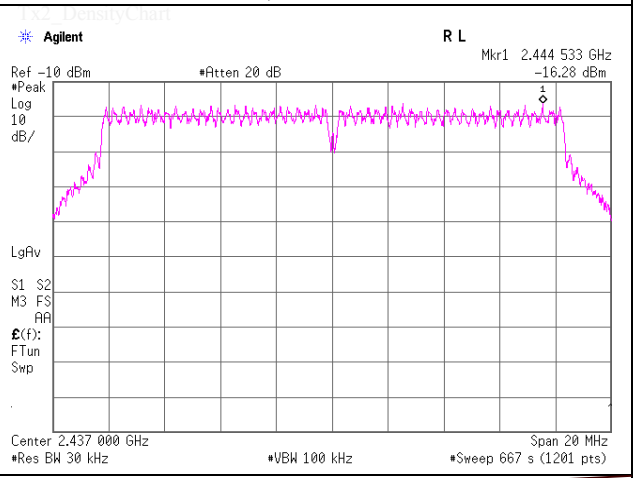
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2419.52	-15.30	1.00	9.97	-4.33	8.00	12.33
2437.0000	2444.53	-16.28	1.00	9.97	-5.31	8.00	13.31
2462.0000	2462.67	-16.66	1.00	9.97	-5.69	8.00	13.69

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

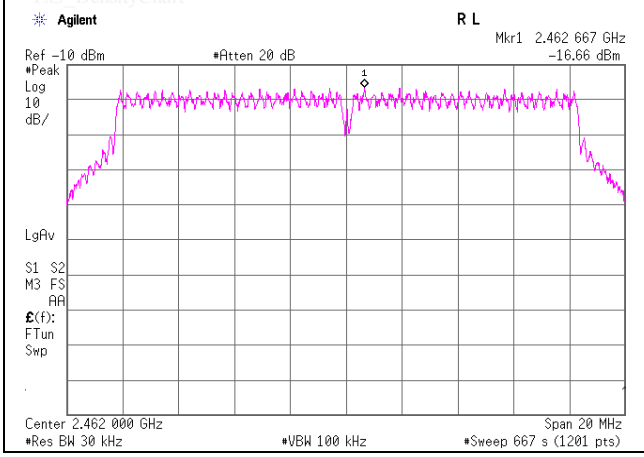
Tx, 2412MHz

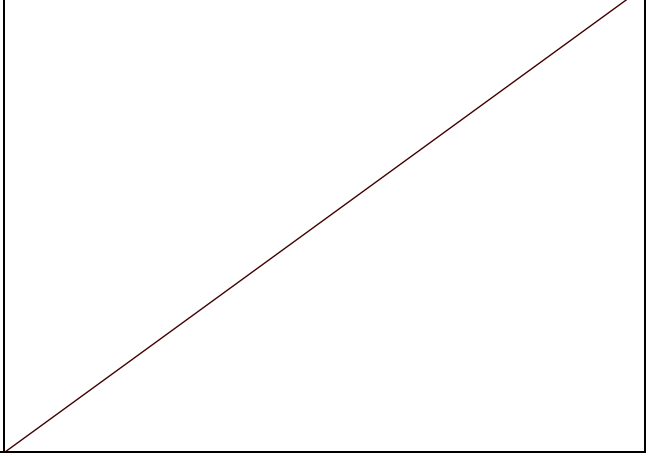


Tx, 2437MHz



Tx, 2462MHz





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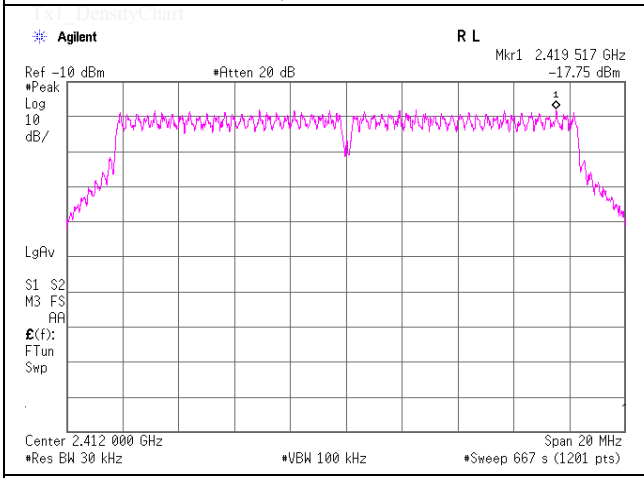
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm	

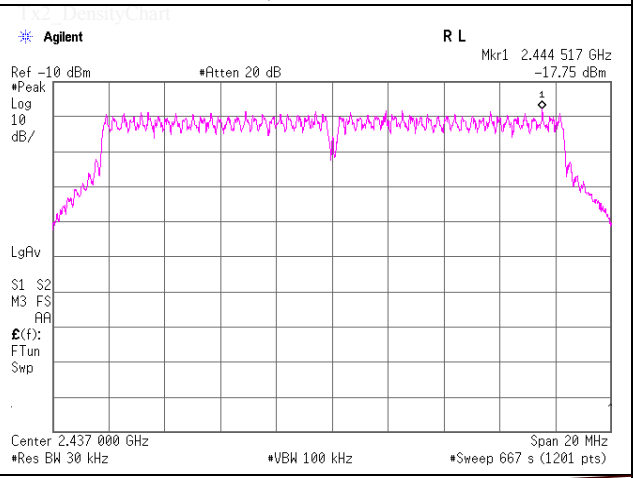
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2419.52	-17.75	1.00	9.97	-6.78	8.00	14.78
2437.0000	2444.52	-17.75	1.00	9.97	-6.78	8.00	14.78
2462.0000	2469.52	-18.19	1.00	9.97	-7.22	8.00	15.22

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

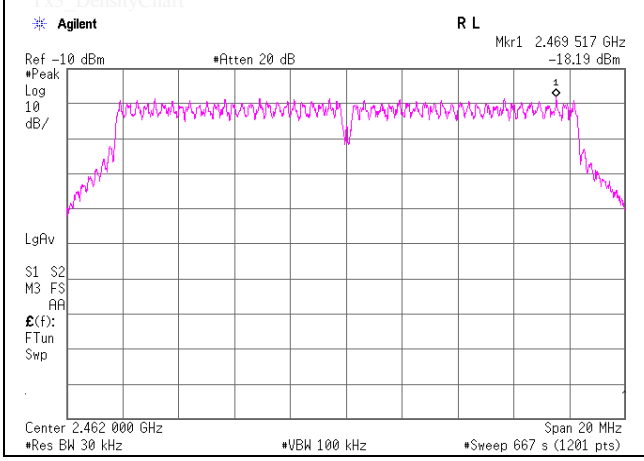
Tx, 2412MHz

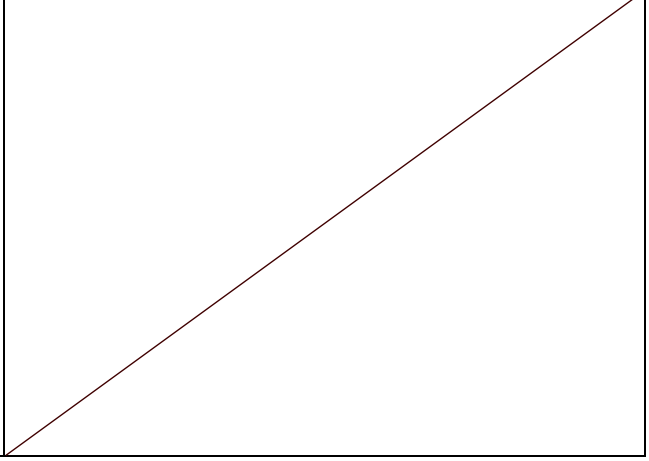


Tx, 2437MHz



Tx, 2462MHz





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Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

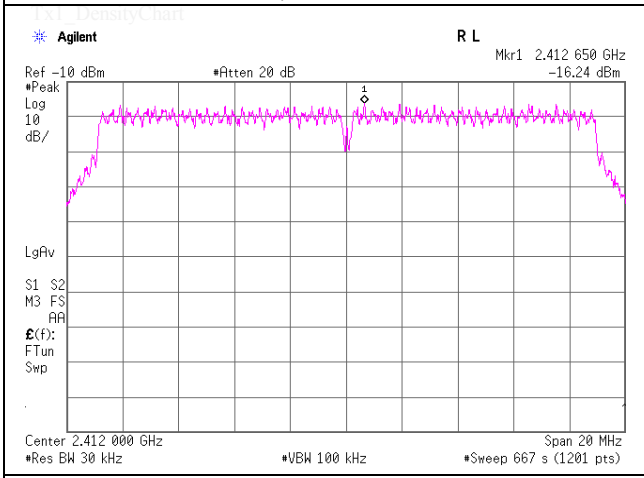
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm	

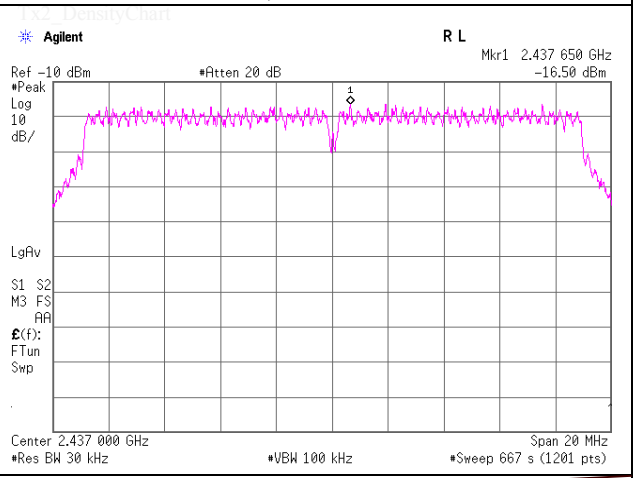
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.65	-16.24	1.00	9.97	-5.27	8.00	13.27
2437.0000	2437.65	-16.50	1.00	9.97	-5.53	8.00	13.53
2462.0000	2469.52	-16.41	1.00	9.97	-5.44	8.00	13.44

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

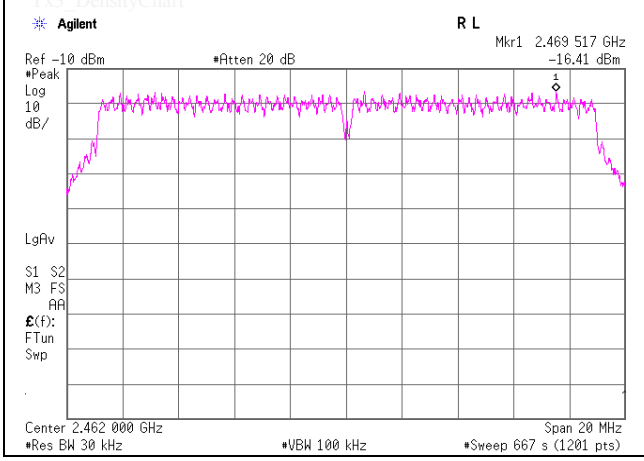
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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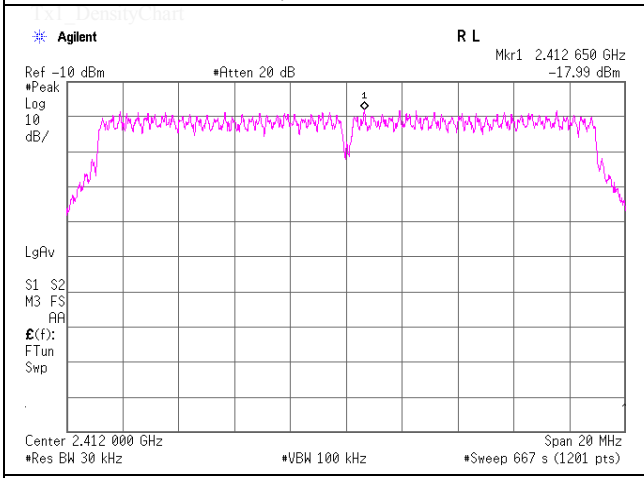
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm	

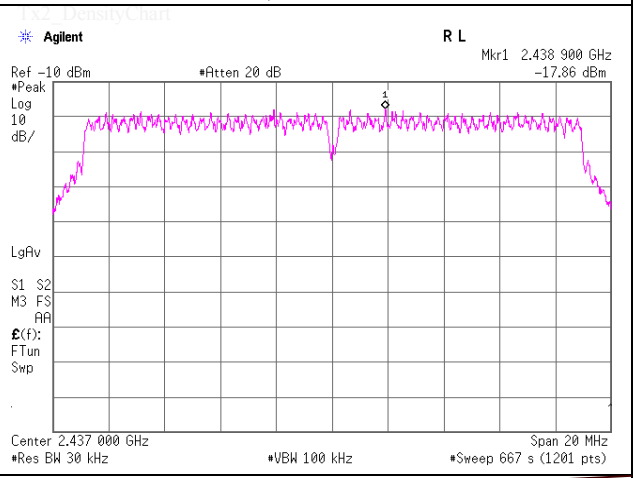
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.65	-17.99	1.00	9.97	-7.02	8.00	15.02
2437.0000	2438.90	-17.86	1.00	9.97	-6.89	8.00	14.89
2462.0000	2462.65	-18.30	1.00	9.97	-7.33	8.00	15.33

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

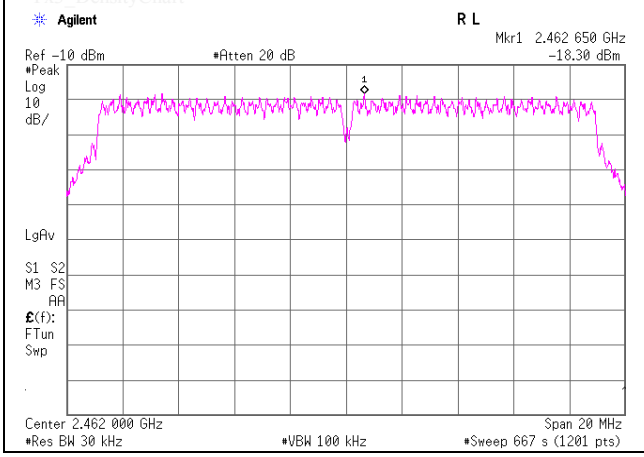
Tx, 2412MHz



Tx, 2437MHz



Tx, 2462MHz



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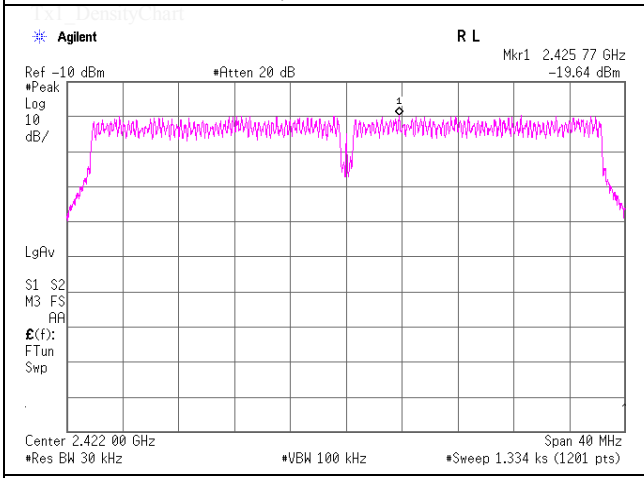
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 11dBm	

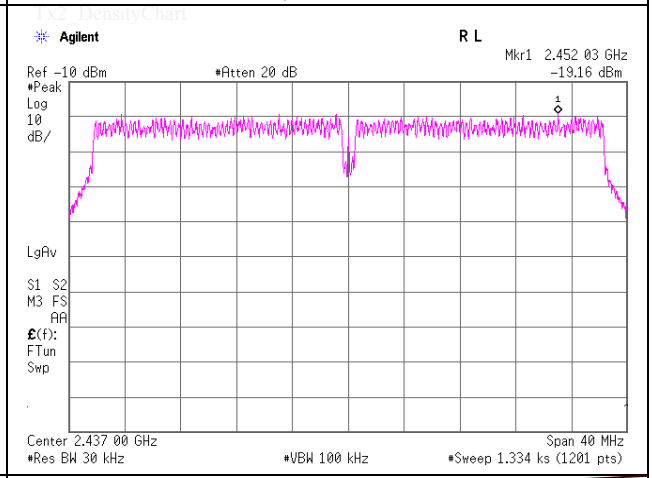
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2425.77	-19.64	1.00	9.97	-8.67	8.00	16.67
2437.0000	2452.03	-19.16	1.00	9.97	-8.19	8.00	16.19
2452.0000	2447.03	-19.61	1.00	9.97	-8.64	8.00	16.64

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

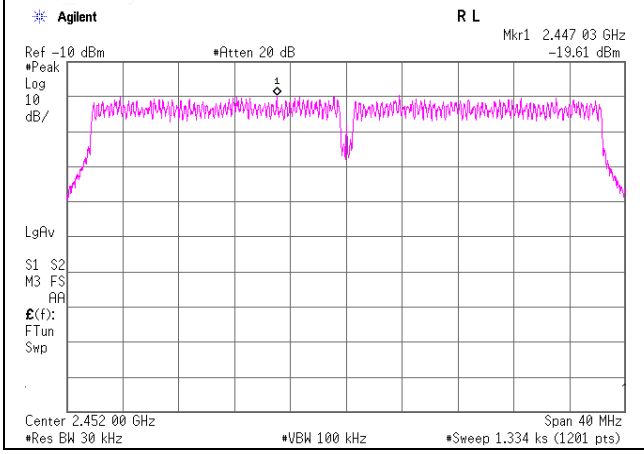
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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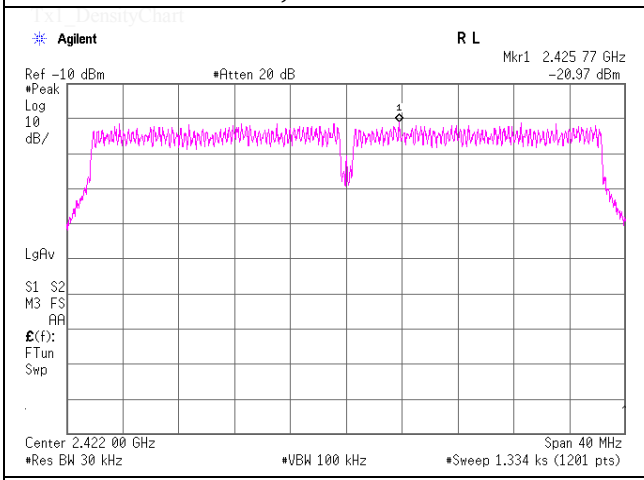
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	August 22, 2012	
Temperature / Humidity	25deg.C , 62%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm	

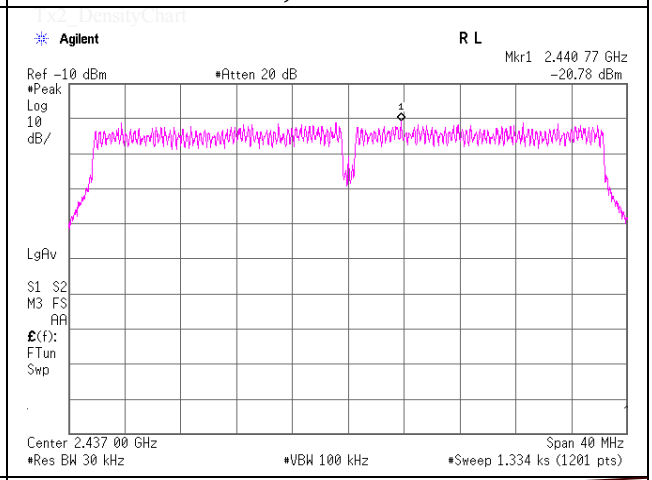
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2425.77	-20.97	1.00	9.97	-10.00	8.00	18.00
2437.0000	2440.77	-20.78	1.00	9.97	-9.81	8.00	17.81
2452.0000	2451.13	-21.80	1.00	9.97	-10.83	8.00	18.83

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

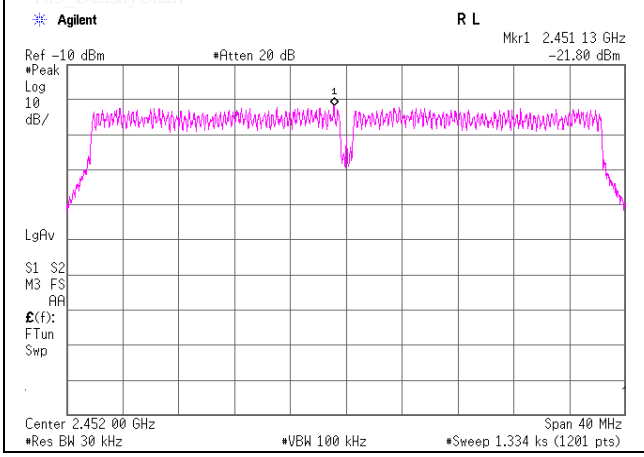
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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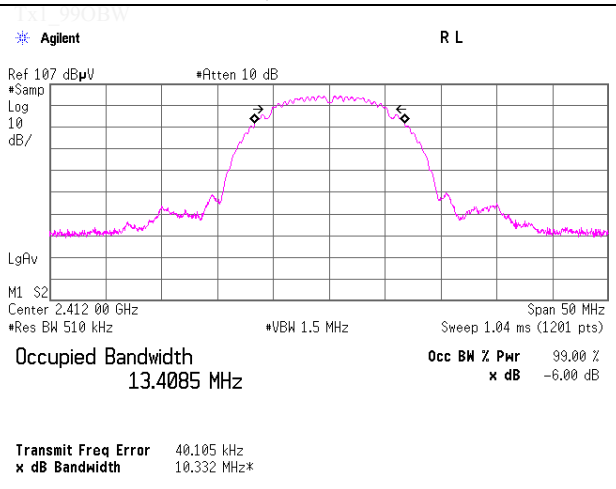
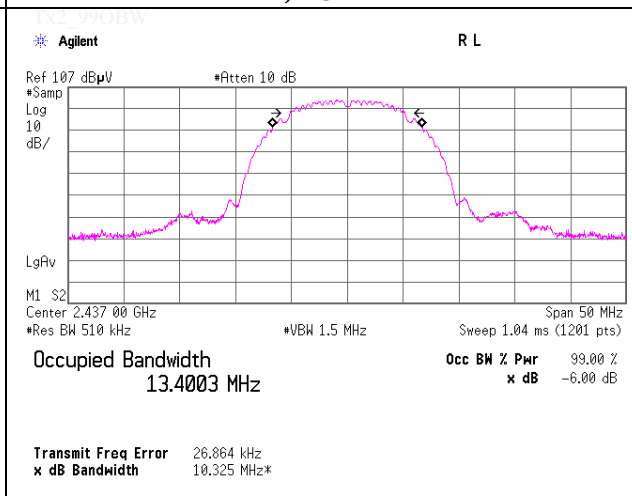
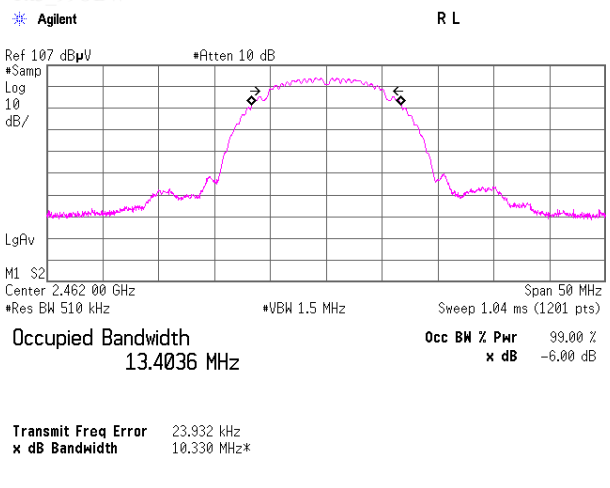
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 14dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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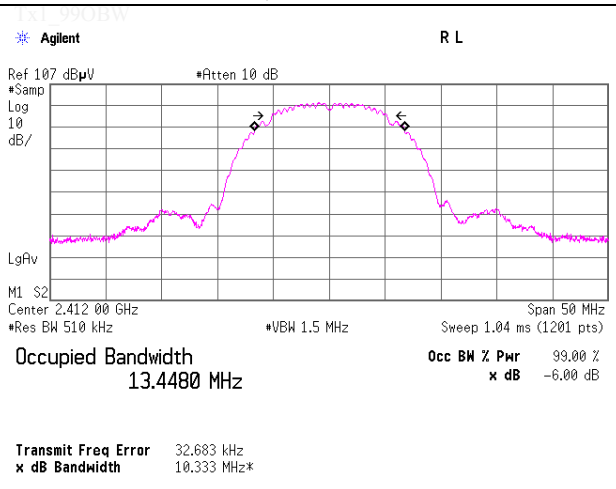
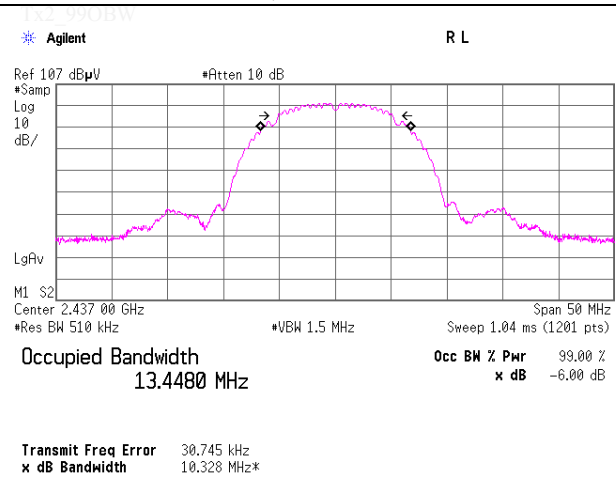
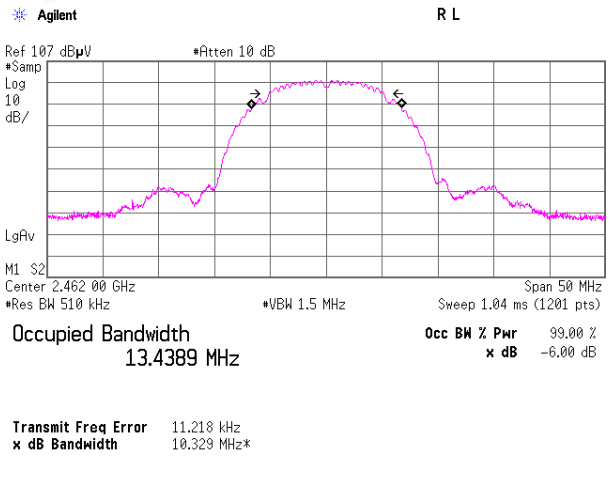
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst data mode 1Mbps, power setting 11dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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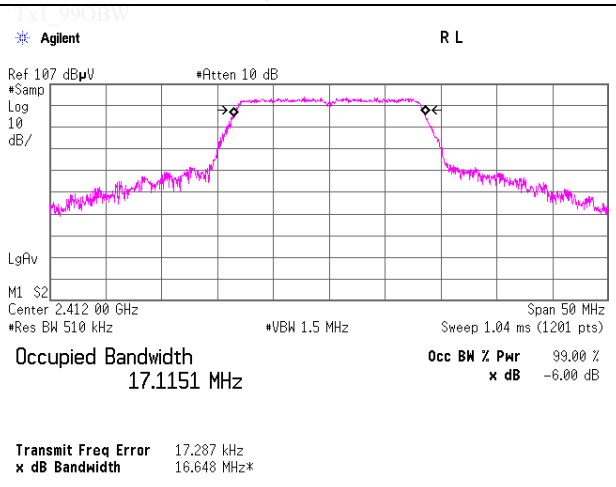
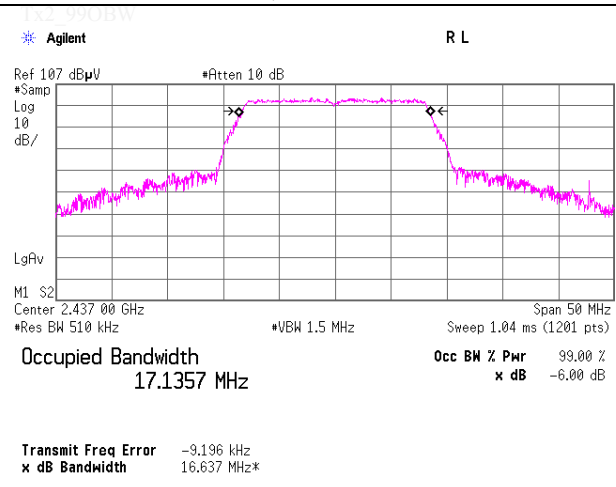
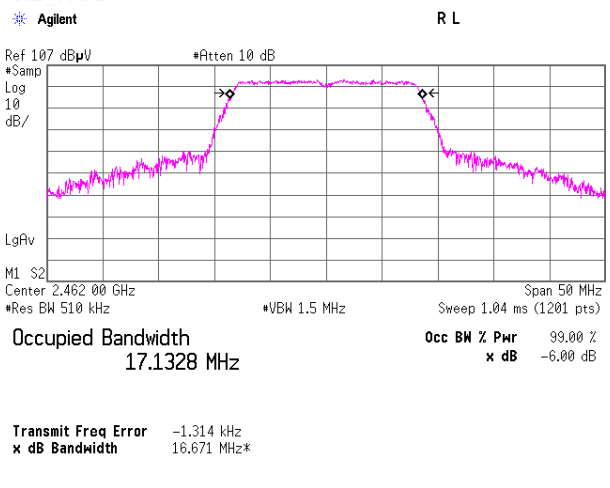
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 12dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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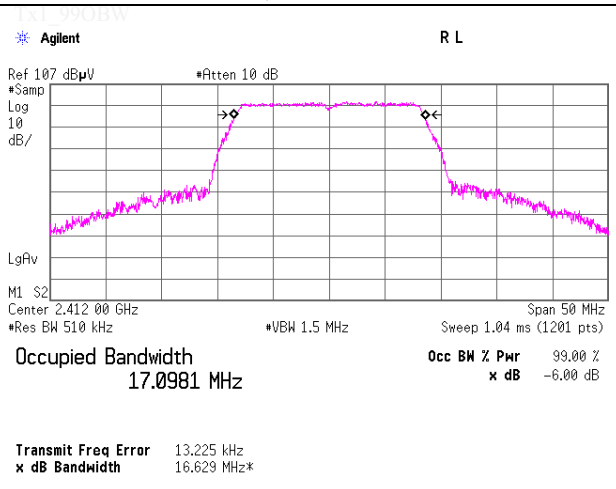
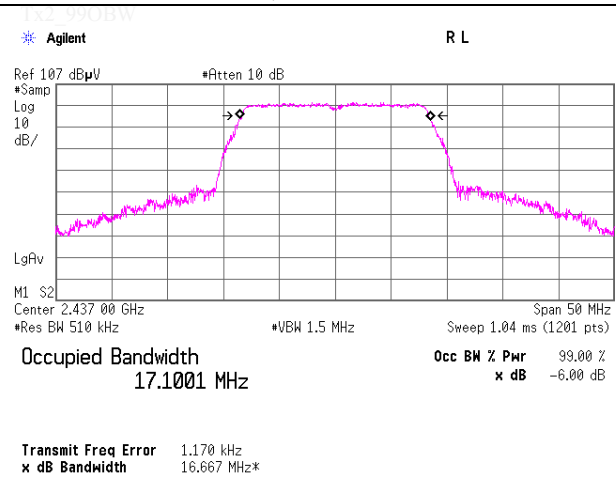
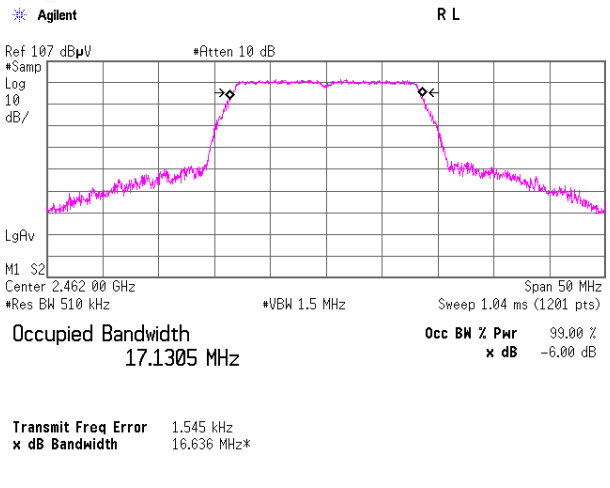
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst data mode 6Mbps, power setting 10dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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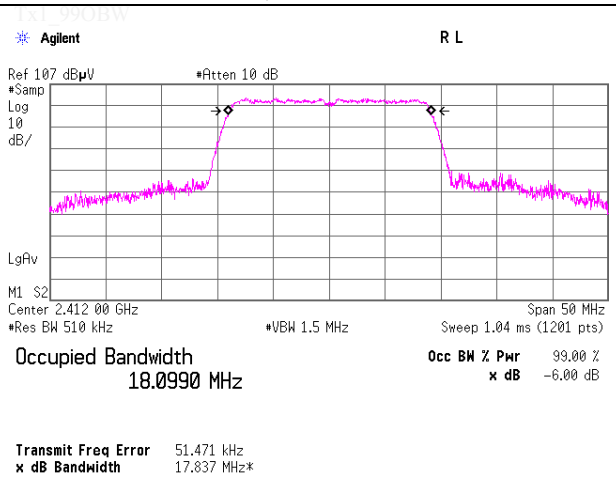
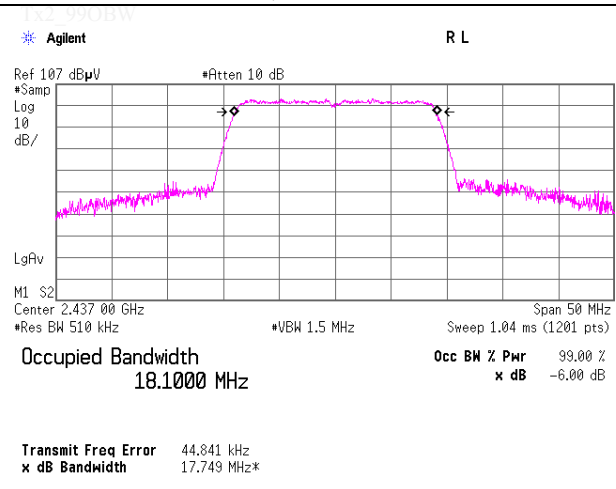
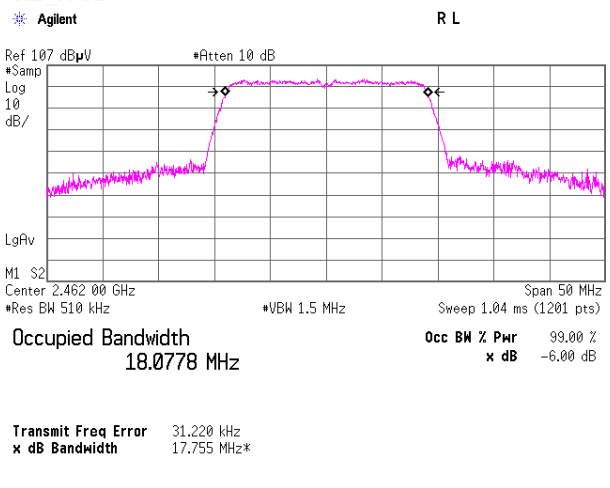
99% Occupied Bandwidth

Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 12dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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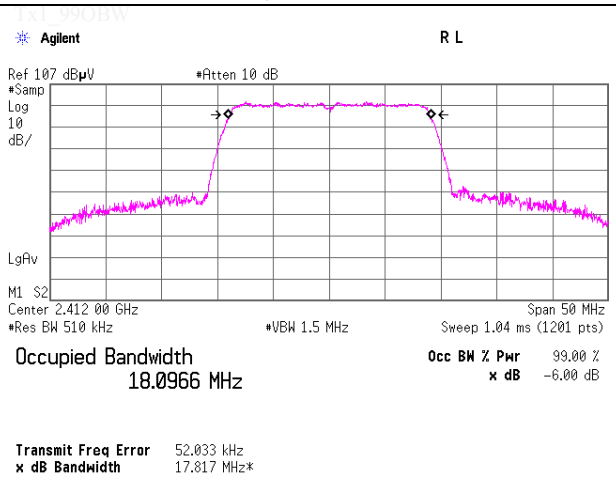
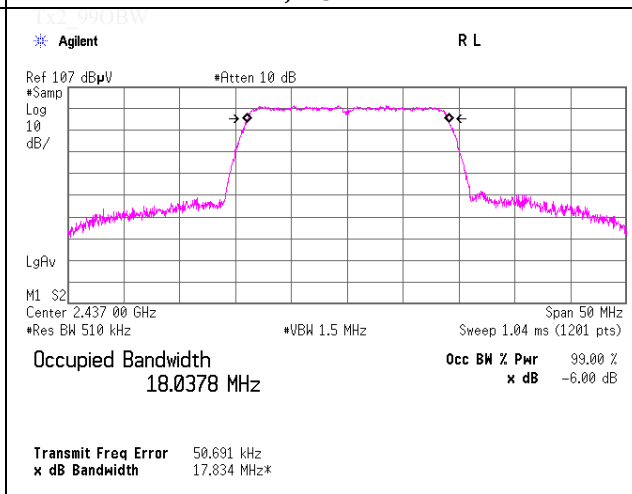
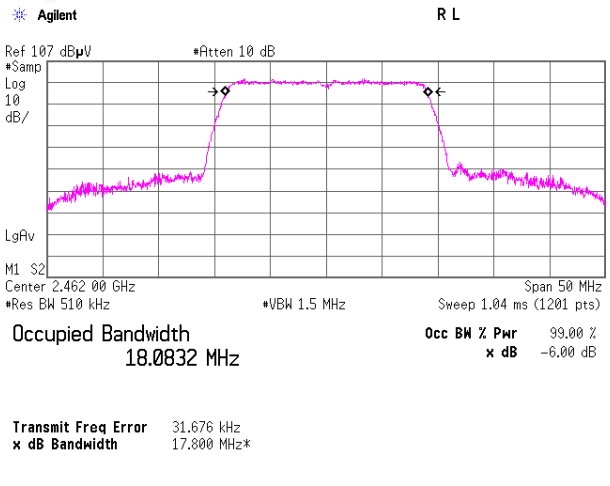
99% Occupied Bandwidth

Tx, IEEE802.11n-20HT, PN9, worst data mode 3(MCS), power setting 10dBm	
Tx, 2412MHz	**Tx, 2437MHz**
	
Tx, 2462MHz	
	

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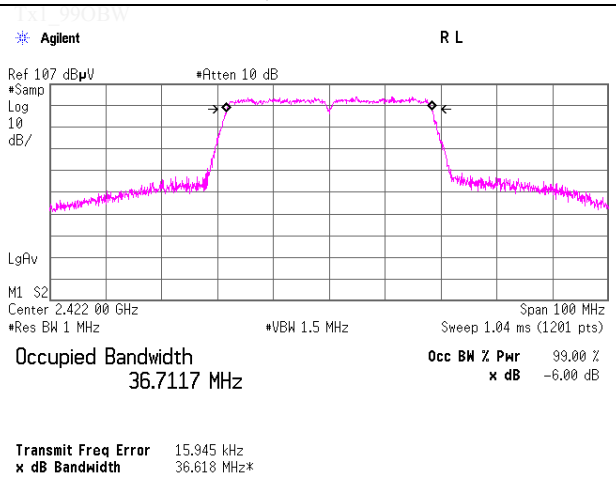
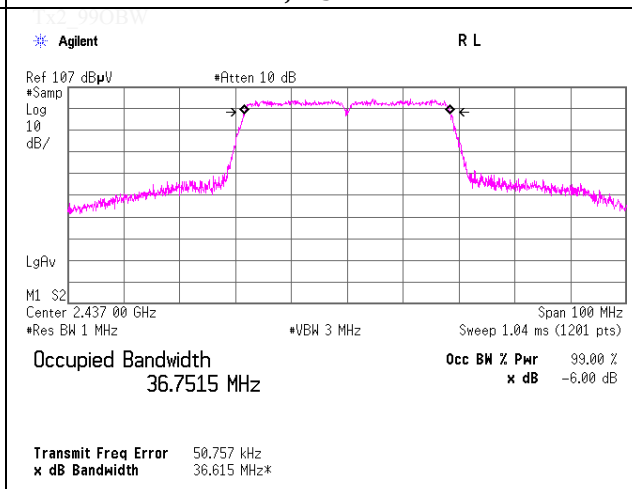
99% Occupied Bandwidth

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

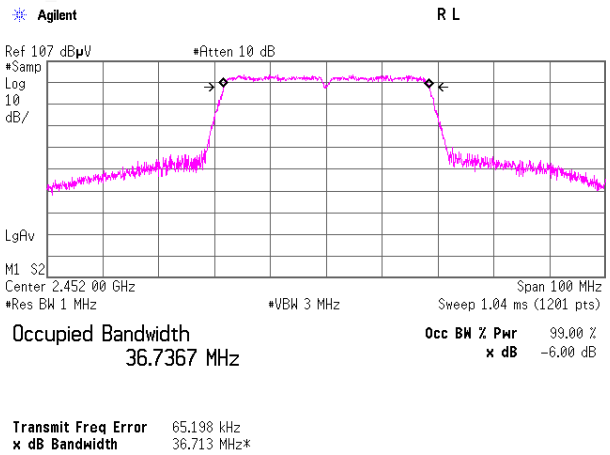
Tx, 2422MHz



Tx, 2437MHz



Tx, 2452MHz



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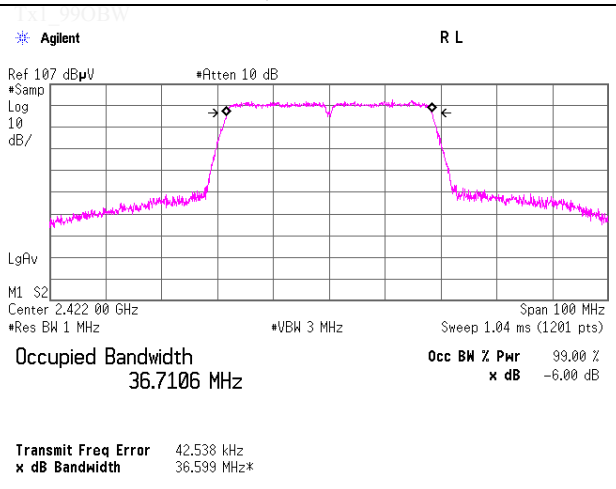
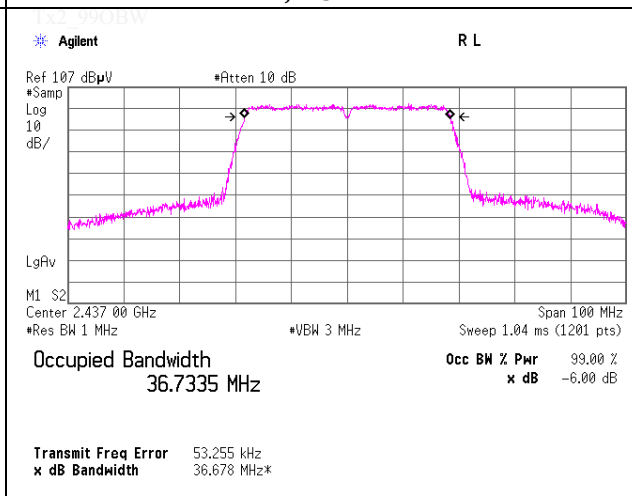
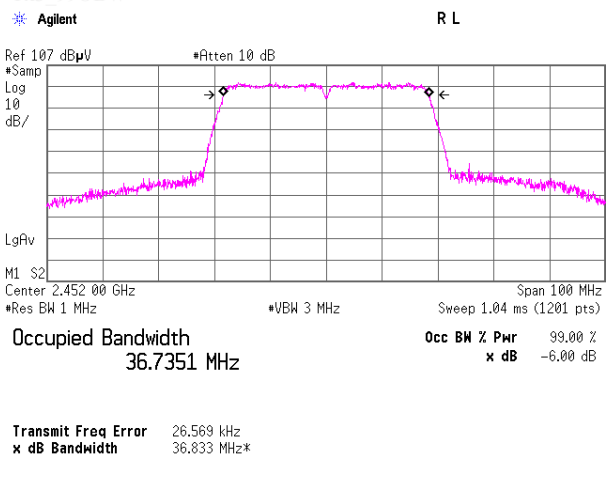
99% Occupied Bandwidth

Tx, IEEE802.11n-40HT, PN9, worst data mode 5(MCS), power setting 9dBm	
Tx, 2422MHz	**Tx, 2437MHz**
	
Tx, 2452MHz	
	

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APPENDIX
Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT/RE	2012/03/16 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2012/04/06 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2012/04/19 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2012/04/19 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2012/03/26 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	AT/RE	2012/02/16 * 12
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2011/09/25 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2012/03/12 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104A	46498/4A	RE	2012/04/10 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2012/05/22 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2012/08/17 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2012/02/06 * 12
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	RE	2012/04/11 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE/CE	-
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2011/12/27 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2011/12/27 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2012/07/18 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2012/04/10 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2012/05/22 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2012/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2012/02/06 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE/CE	-
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2012/03/30 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2012/03/12 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2012/03/12 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2012/02/10 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2012/02/10 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2011/10/23 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2012/04/10 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2011/10/23 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE/CE	2012/06/14 * 12
SCC-C9/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	CE	2012/04/10 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2012/02/23 * 12
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2012/03/26 * 12

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

All equipment is calibrated with valid calibrations . Each measurement data is traceable to the national or international standards .
Test Item :
CE: Conducted emission
RE: Radiated emission ,
AT: Antenna terminal conducted test