RADIO TEST REPORT

Test Report No. : 31GE0240-SH-01-A

Applicant	:	**Canon Inc.**
Type of Equipment	:	**Wireless Module**
Model No.	:	**WM217**
FCC ID	:	**AZD217**
Test regulation	:	**FCC Part15 Subpart C: 2011**
Test result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.

Date of test: September 8 to 30, 2011

Representative test engineer:

Shinichi Takano
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Go Ishiwata
Manager of WiSE Japan,
UL Verification Service

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

JAB Testing
RTL02610

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

SECTION 1: Customer information

Company Name	:	Canon Inc.
Brand Name	:	CANON
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 No.	:	WM217
Serial No.	:	Refer to 4.2 in this report.
Rating	:	DC3.3V
Receipt Date of Sample	:	September 7, 2011
Country of Mass-production	:	China
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No modification by the test lab.

2.2 Product description

Model: WM217 (referred to as the EUT in this report) is a Wireless Module.

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

Radio specification

Equipment type	:	Transceiver
Frequency of operation	:	2412-2462MHz (IEEE 802.11b, 11g, 11n-HT20) 2422-2452MHz (IEEE 802.11n-HT40)
Bandwidth & channel spacing	:	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
Antenna connector type	:	None
Antenna gain with cable loss	:	+0.9 dBi
ITU code	:	D1D, G1D
Operation temperature range	:	-20 to +55 deg.C.

FCC Part15.31 (e)
The Wireless Module is provided with stable power supply DC 3.3V from the host device, therefore, the equipment complies power supply regulation.

FCC Part15.203
The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart C: 2011, final revised on July 8, 2011 and effective August 8, 2011

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 EUT will be tested for compliance with FCC Part 15 Subpart B: 2011.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC 15.207	-	N/A	20.3dB Freq.: 0.50018MHz Detector: Quasi-Peak Phase: N Mode: Tx 2437MHz, IEEE 802.11g 20.3dB Freq.: 0.50017MHz, 1.66376MHz Detector: Quasi-Peak Phase: N Mode: Tx 2437MHz, IEEE 802.11n (HT20)	Complied
6dB bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (a)(2) & 15.209	Conducted	N/A	* See data	Complied
Maximum peak output power	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (b)(3) & 15.209	Conducted	N/A		Complied
Spurious emission & Restricted band edges	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.109, 15.247 (d) & 15.209	Conducted / Radiated	N/A	1.6dB Freq.: 2390.000MHz Detector: Average Polarization: Horizontal Mode: Tx 2422MHz, IEEE 802.11n (HT40)	Complied
Power density	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC 15.247 (e) & 15.209	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 C63.4:2003 13. Measurement of intentional radiators, RSS-Gen 4.6.1	RSS-Gen 4.6.1	Conducted	-	-
Note: UL Japan's EMI Work Procedures No.13-EM-W0420 and 13-EM-W0422.					

* Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Item	Frequency range	No.1 SAC[*1]/SR[*2] (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Conducted emission (AC Mains) AMN/LISN	150kHz-30MHz	3.6 dB	3.6 dB	3.6 dB
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.7 dB	3.6 dB
	30MHz-300MHz	4.9 dB	5.1 dB	5.0 dB
	300MHz-1GHz	5.0 dB	5.2 dB	5.0 dB
	1GHz-13GHz	4.8 dB	4.8 dB	4.9 dB
Radiated emission (Measurement distance: 1m)	13GHz-18GHz	5.6 dB	5.6 dB	5.6 dB
	18GHz-40GHz	4.8 dB	4.3 dB	4.4 dB

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

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

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

Antenna port conducted test
Power Measurement uncertainty above 1GHz for this test was: (±) 1.9dB
Spurious emission (Conducted) Measurement (below 1GHz) uncertainty for this test was: (±) 1.8dB
Spurious emission (Conducted) Measurement (1G-3GHz) uncertainty for this test was: (±) 2.3dB
Spurious emission (Conducted) Measurement (3G-18GHz) uncertainty for this test was: (±) 3.6dB
Spurious emission (Conducted) Measurement (18G-26.5GHz) uncertainty for this test was: (±) 4.0dB
Bandwidth Measurement uncertainty for this test was: (±) 5.4%

3.5 Test location

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

	FCC Registration No.	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐ No.1 Semi-anechoic chamber	697847	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 Semi-anechoic chamber	697847	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 Semi-anechoic chamber	697847	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 Full-anechoic chamber	-	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-

3.6 Test setup, Data of test & Test instruments
Refer to APPENDIX 1 to 3.

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

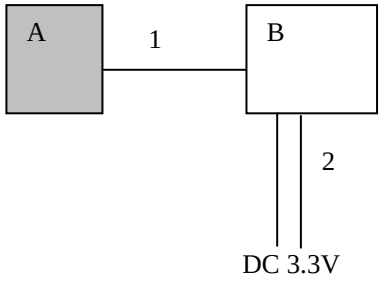
4.1 Operating mode

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

Test item	Mode	Tested frequency	Power setting *1)	Worst data rate *2)
All items	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	13dBm	11Mbps, PN9
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	11dBm	24Mbps, PN9
	Transmitting IEEE 802.11n-20	2412MHz, 2437MHz, 2462MHz	11dBm	MCS4, PN9
	Transmitting IEEE 802.11n-40	2422MHz, 2437MHz, 2452MHz	11dBm	MCS3, PN9
*1) Software: DutApiSDSD8787.exe, Ver.1.0.7.18 *2) The worst condition was determined based on the test result of Maximum Peak Output Power (Low Channel)				

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

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Module	WM217	*1)	CANON INC.	EUT
B	WLAN TEST JIG	WM217JIG	-	CANON INC.	-

*1) 8C5: Conducted / Radiated emission test, 8C1: Antenna port conducted test

List of cables used

No.	Name	Length (m)	Shield (Cable)	Shield (Connector)	Remarks
1	FLAT	0.035	Unshielded	Unshielded	-
2	DC	1.8	Unshielded	Unshielded	+3.3V, G

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 80cm above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and was flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from LISN and excess AC cable was bundled in center. I/O cables that were connected to the peripherals were bundled in center. They were folded back and for the forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.
Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50ohm connectors of the LISN were resistively terminated in 50ohm when not connected to the measuring equipment.
Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

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

5.4 Test procedure

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

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

5.5 Results

Summary of the test results : Pass
Refer to APPENDIX 1

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

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

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 7: Maximum peak output power

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

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 8: Spurious emission (Antenna port conducted)

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

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 9: Radiated emission

9.1 Operating environment

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

9.2 Test configuration

EUT was placed on a platform of nominal size, 1m by 1.5m, raised 80cm above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.
Photographs of the set up are shown in APPENDIX 3.

9.3 Test conditions

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

9.4 Test procedure

The Radiated Electric Field Strength intensity has been measured on a semi-anechoic chamber with a ground plane and at a distance of 3m (below 13GHz) / 1m (above 13GHz). Measurements were performed with quasi-peak, peak and average detector. The measuring antenna height was varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity. The measurements were performed for both vertical and horizontal antenna polarization.
The radiated emission measurements were made with the following detection of the test receiver and Spectrum Analyzer.

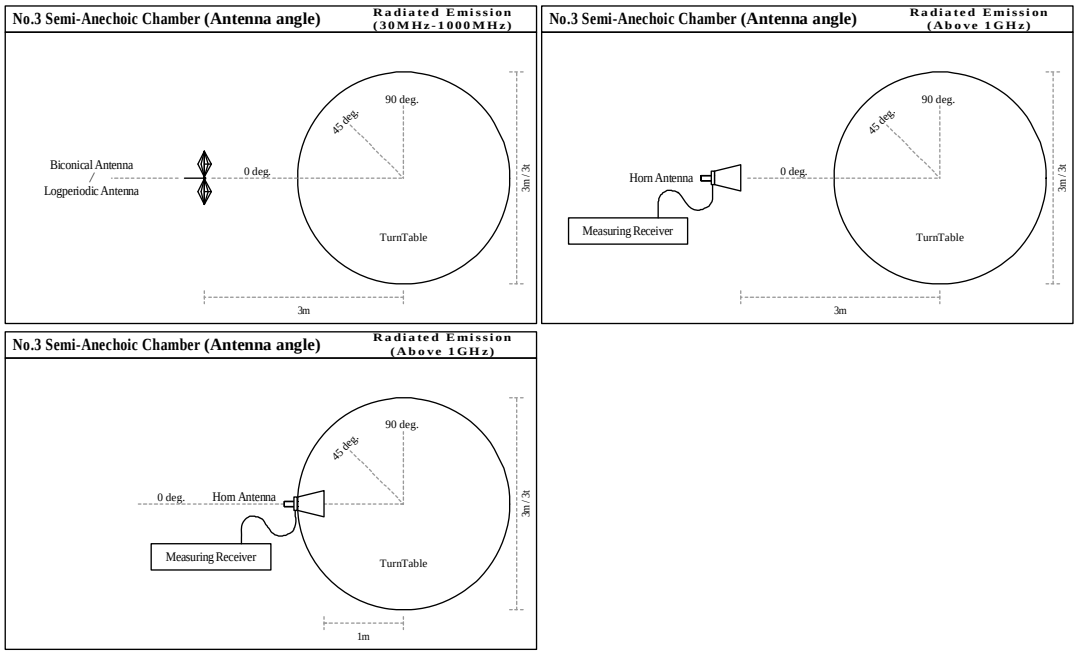
Frequency	:	30-1000MHz	1000-25000MHz	
Detection Type	:	Quasi-Peak	Peak	* Average
IF Bandwidth	:	120kHz	RBW: 1MHz/VBW: 3MHz	RBW: 1MHz/VBW: 10Hz

* 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.

Frequency	Worst position
Below 1GHz	Horizontal: Z, Vertical: Z
Above 1GHz	Horizontal: Z, Vertical: Z

Figure 1. Antenna angle



9.5 Band edge

Band edge level at 2400MHz is less than 20dB of peak point of the carrier. Refer to the data of Spurious missions (Antenna port conducted). Band edge level at 2390MHz and 2483.5MHz is below the limits of FCC 15.209. Refer to the data of Radiated emission.

9.6 Results

Summary of the test results : Pass *No noise was detected above the 6th order harmonics.
Refer to APPENDIX 1

SECTION 10: Peak Power density

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

Instrument used : Spectrum Analyzer *1)
RBW / VBW : 30kHz / 100kHz *2)

*1) PSD Option 1 of " Measurement of Digital Transmission Systems Operating under Section 15.247".
*2) The test was not performed at RBW: 3kHz that was stated in the Regulation. However, the measurement value with RBW: 3kHz is less than the value of RBW: 30kHz and the test data met the limit with RBW: 30kHz.

Summary of the test results: Pass
Refer to APPENDIX 1

Contents of APPENDIXES

APPENDIX 1: Test data

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

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Conducted emission
Radiated emission
Pre-check of the worst position

DATA OF CONDUCTED EMISSION TEST

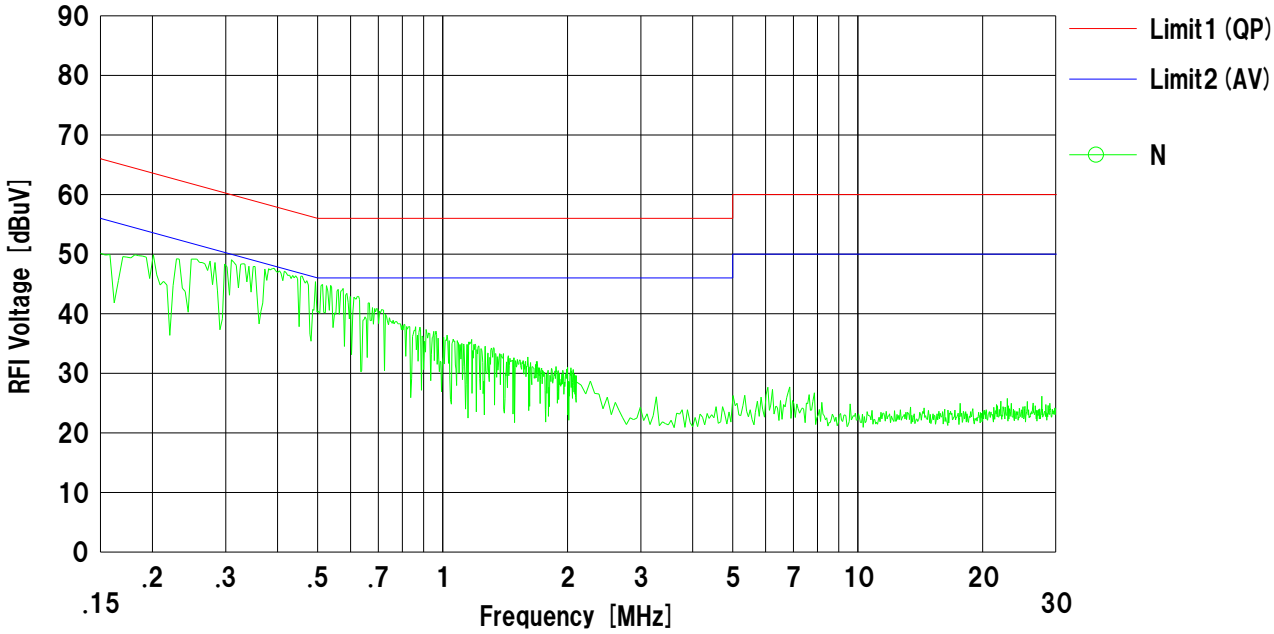
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

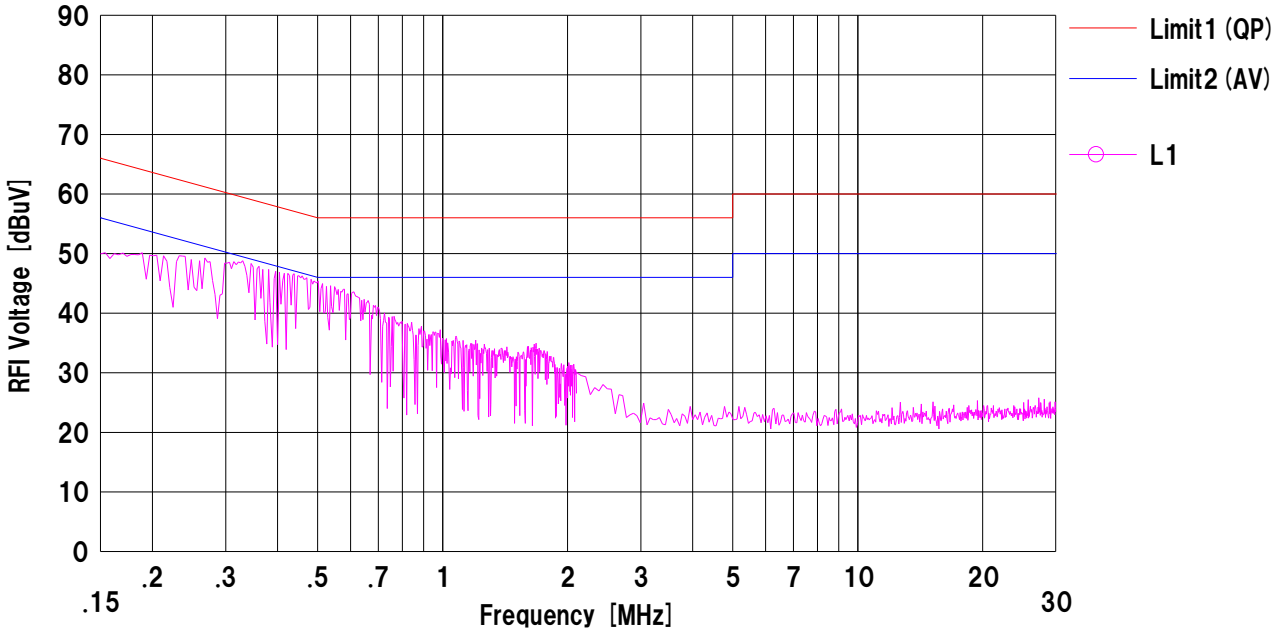
Company	: Canon Inc.	Mode	: Tx, 11b, 11Mbps, 2412MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

Company	: Canon Inc.	Mode	: Tx, 11b, 11Mbps, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

Limit1 : FCC 15C (15.207) QP
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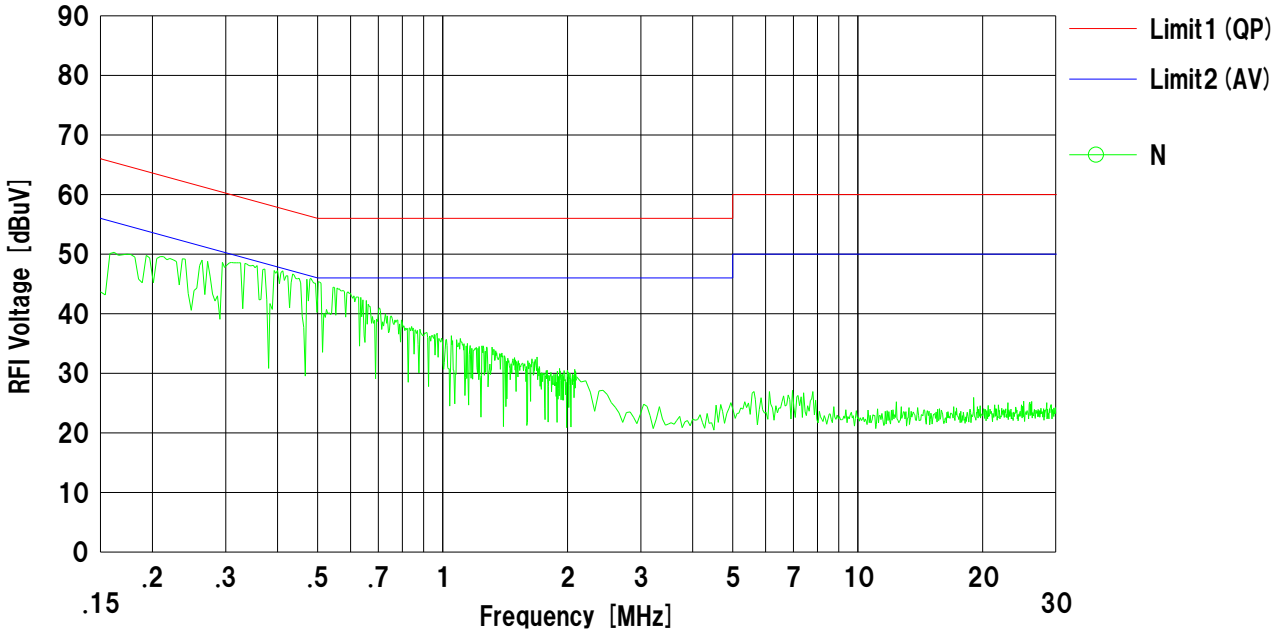
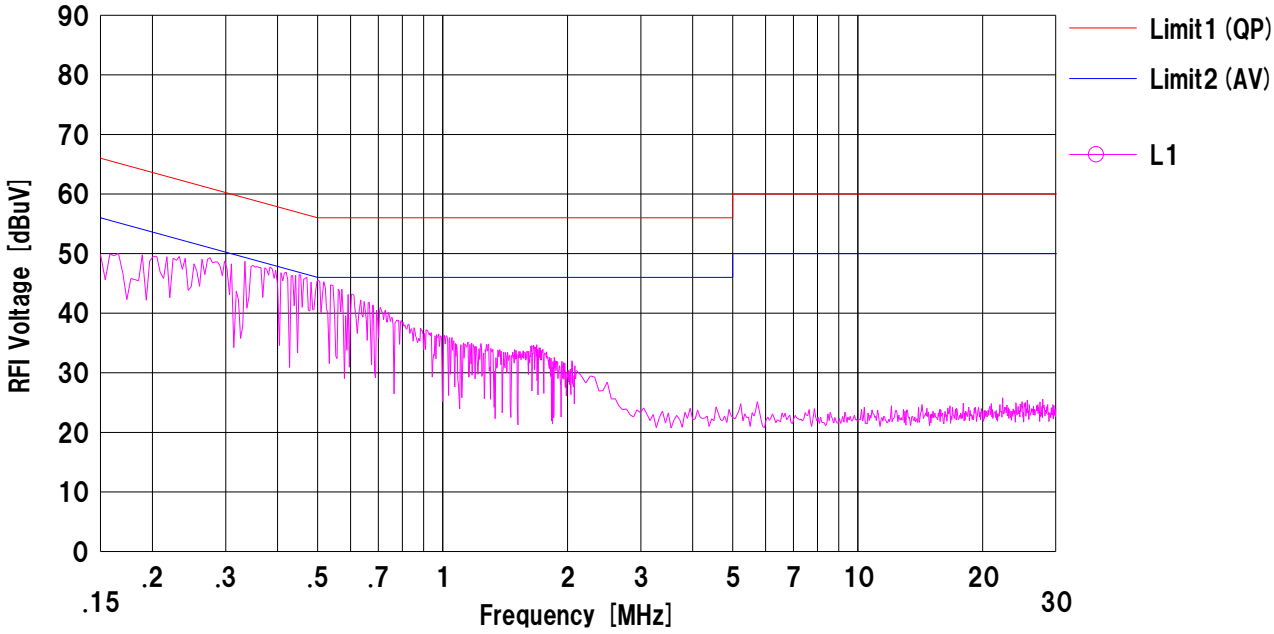
Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

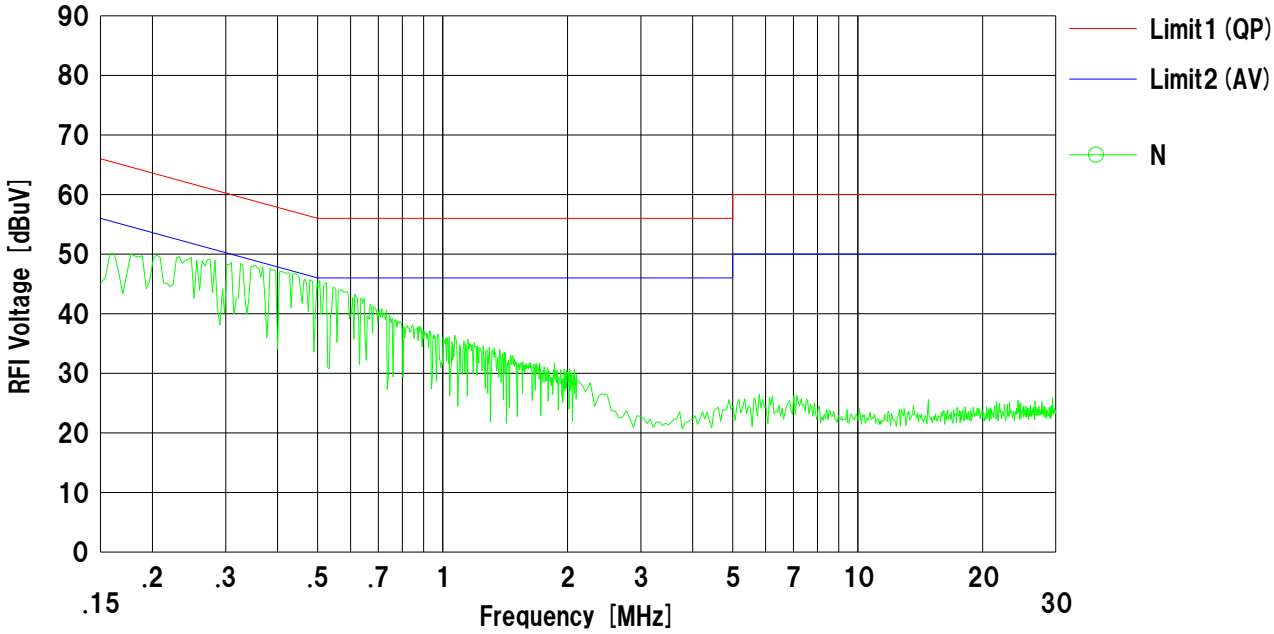
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

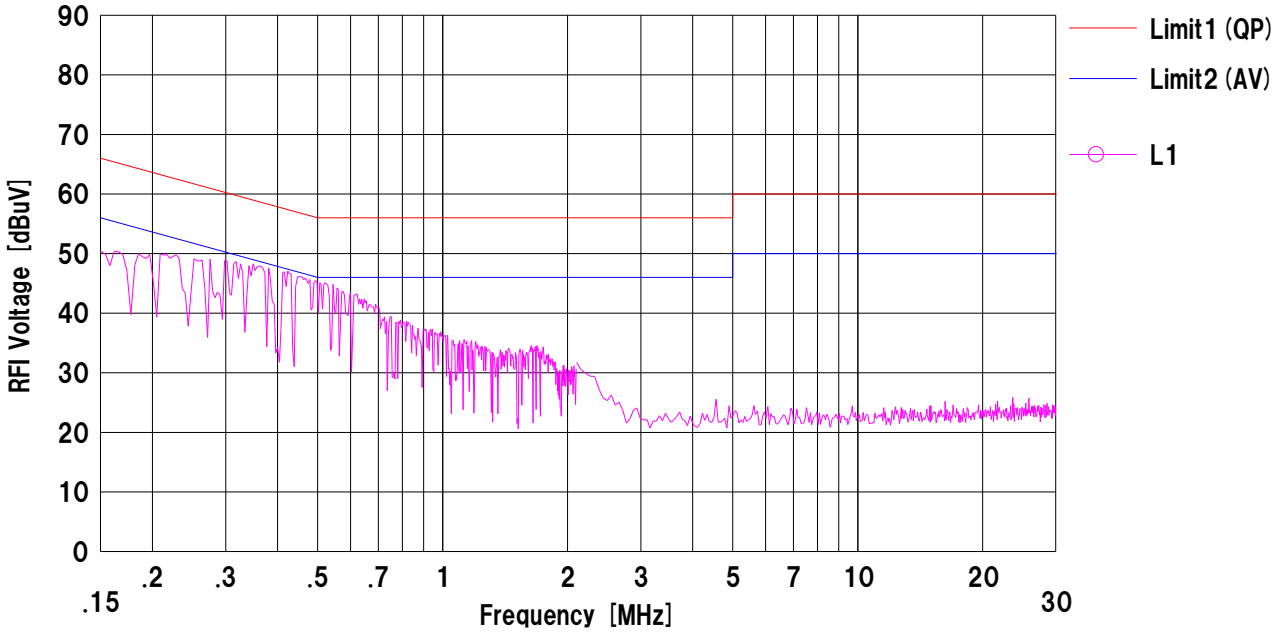
Company	: Canon Inc.	Mode	: Tx, 11b, 11Mbps, 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

Company	: Canon Inc.	Mode	: Tx, 11b, 11Mbps, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH
Remarks	:		

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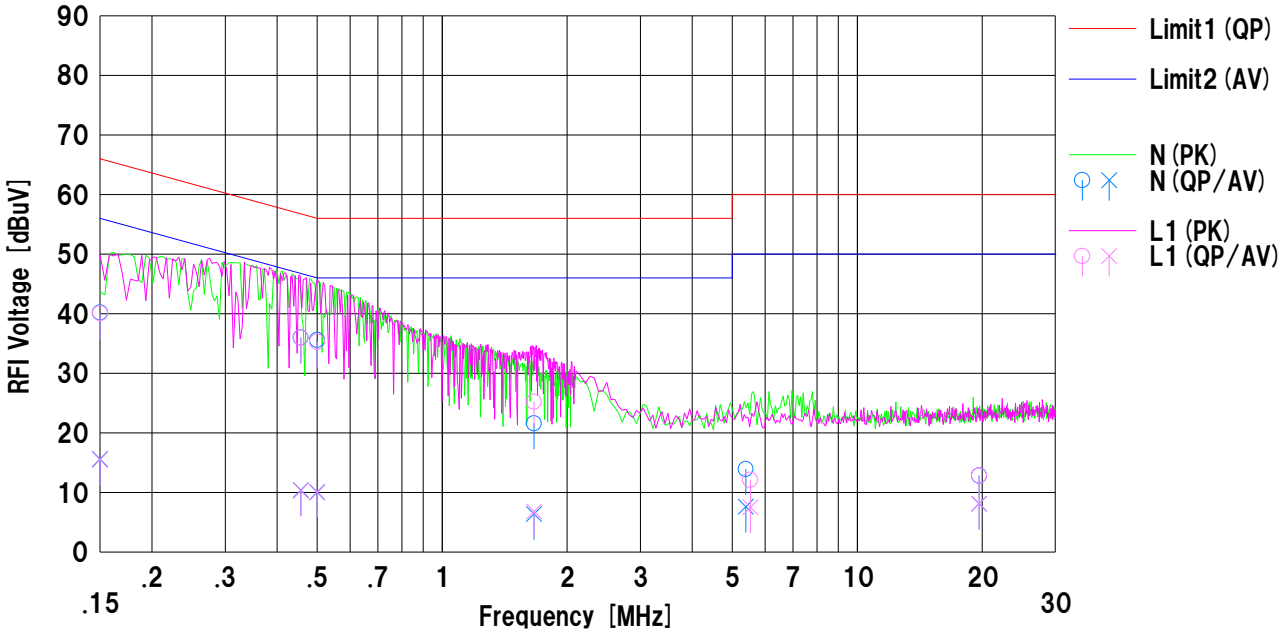

No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.6	3.0	12.6	40.2	15.6	66.0	56.0	25.8	40.4	N	
2	0.45602	23.4	-2.2	12.6	36.0	10.4	56.7	46.7	20.7	36.3	N	
3	0.50016	22.9	-2.7	12.7	35.6	10.0	56.0	46.0	20.4	36.0	N	
4	1.66371	8.9	-6.3	12.7	21.6	6.4	56.0	46.0	34.4	39.6	N	
5	5.38685	0.9	-5.4	13.0	13.9	7.6	60.0	50.0	46.1	42.4	N	
6	19.66080	-0.9	-5.6	13.7	12.8	8.1	60.0	50.0	47.2	41.9	N	
7	0.15000	27.5	2.9	12.6	40.1	15.5	66.0	56.0	25.9	40.5	L1	
8	0.45602	23.4	-2.3	12.6	36.0	10.3	56.7	46.7	20.7	36.4	L1	
9	0.50016	22.6	-2.6	12.7	35.3	10.1	56.0	46.0	20.7	35.9	L1	
10	1.66371	12.5	-5.9	12.7	25.2	6.8	56.0	46.0	30.8	39.2	L1	
11	5.52428	-0.9	-5.5	13.0	12.1	7.5	60.0	50.0	47.9	42.5	L1	
12	19.66080	-0.9	-5.6	13.7	12.8	8.1	60.0	50.0	47.2	41.9	L1	

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

DATA OF CONDUCTED EMISSION TEST

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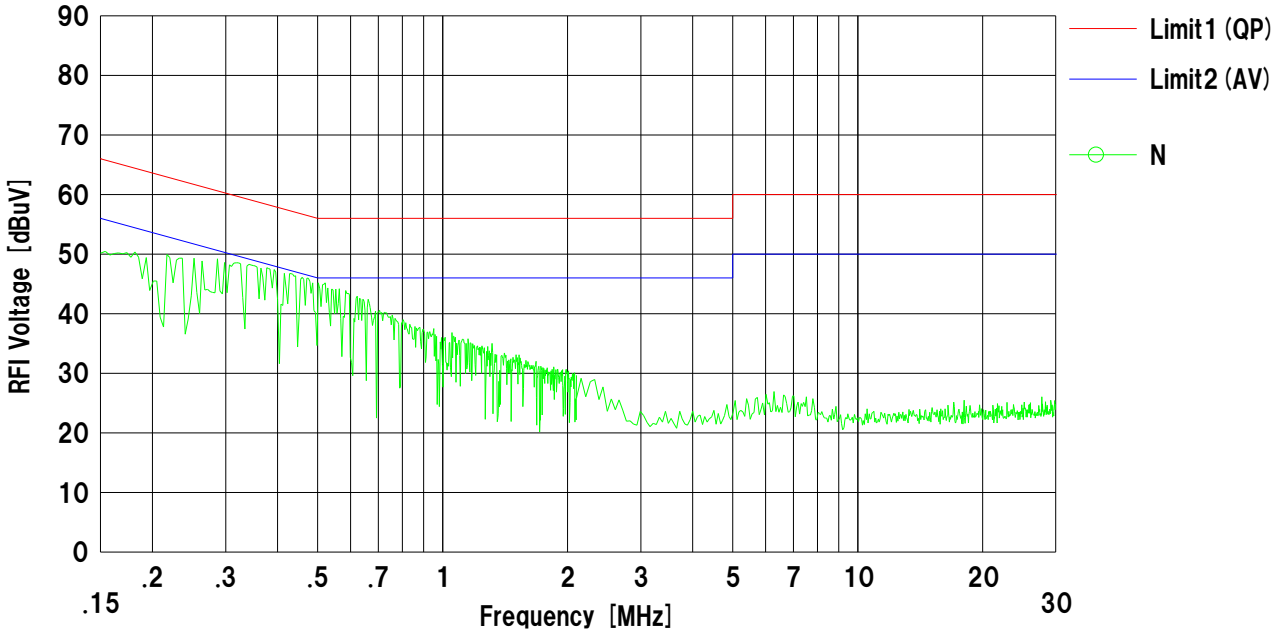
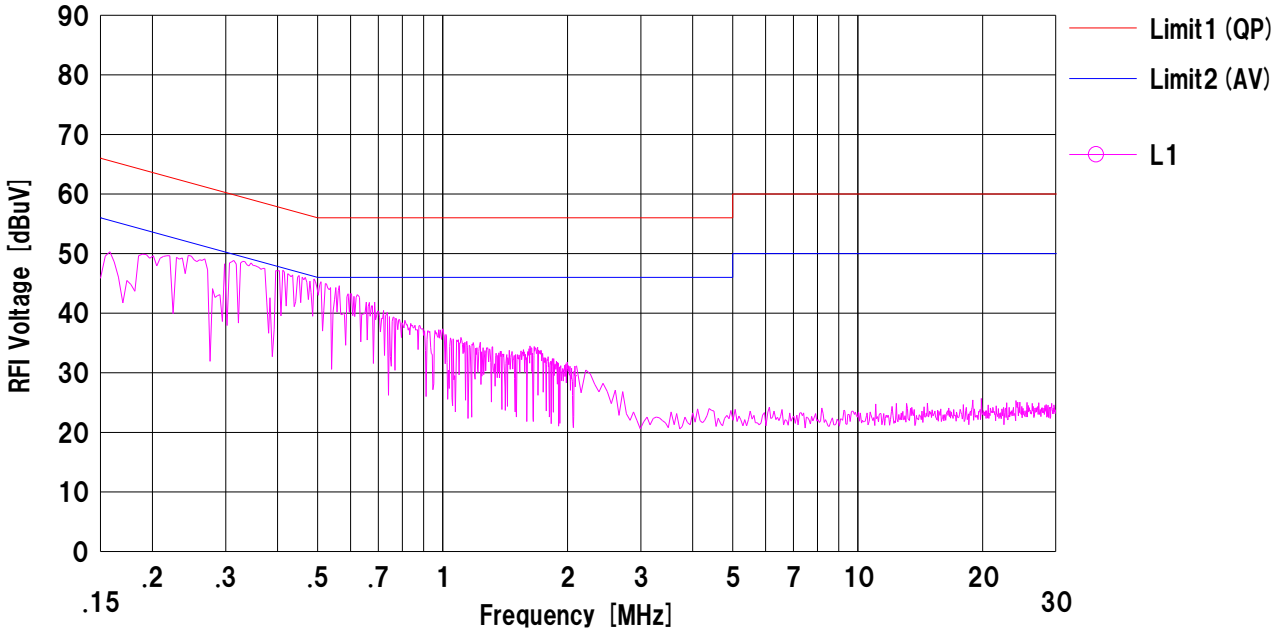
Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

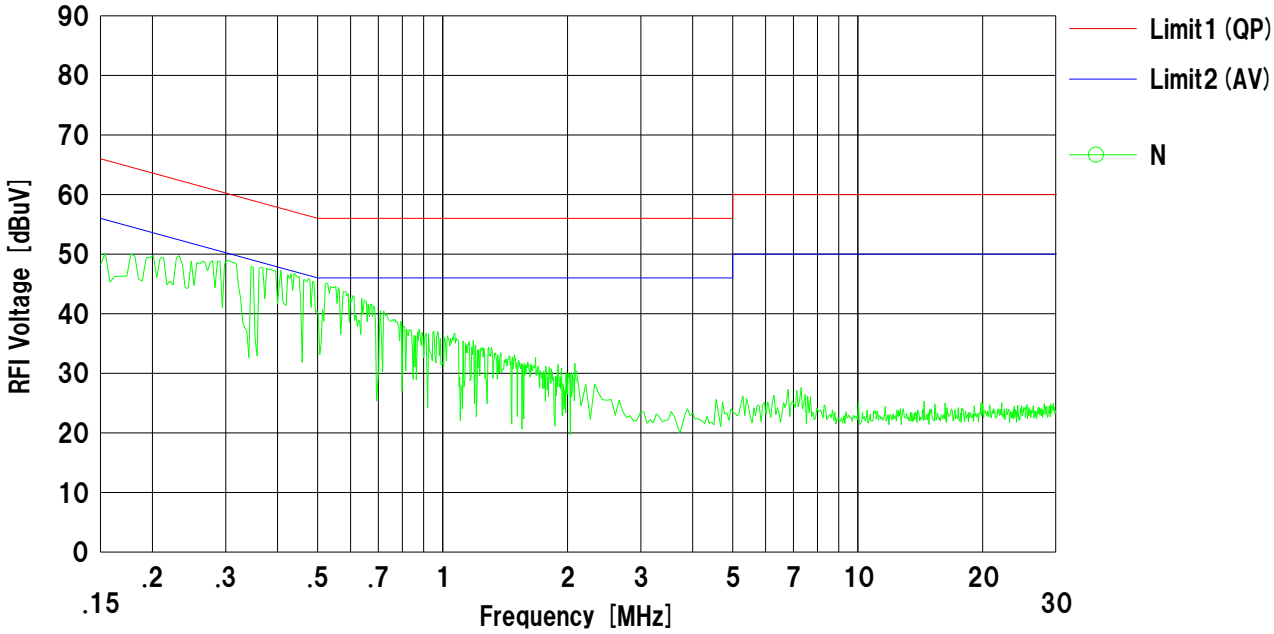
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

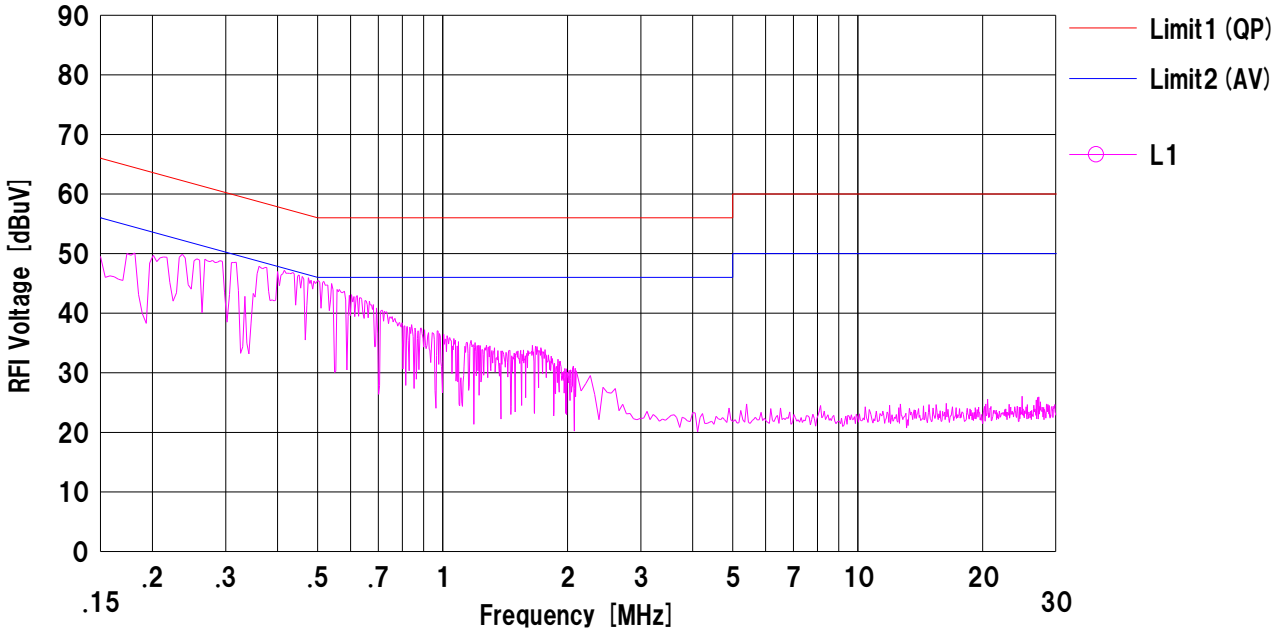
Company	: Canon Inc.	Mode	: Tx, 11g, 24Mbps, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

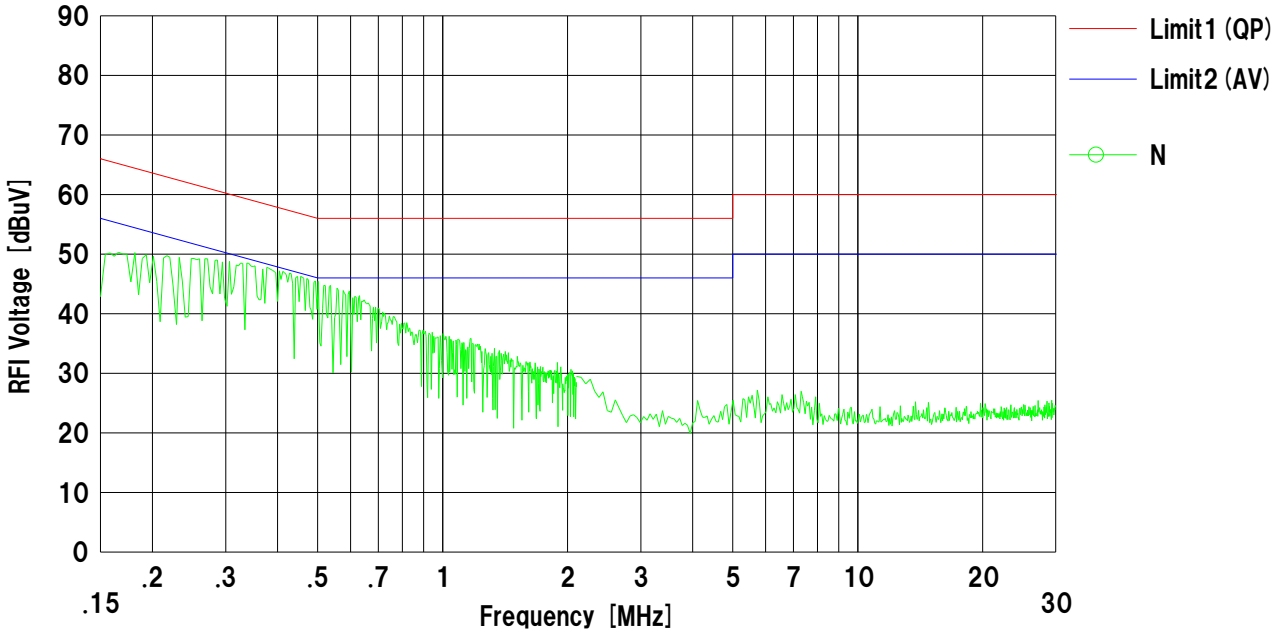
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

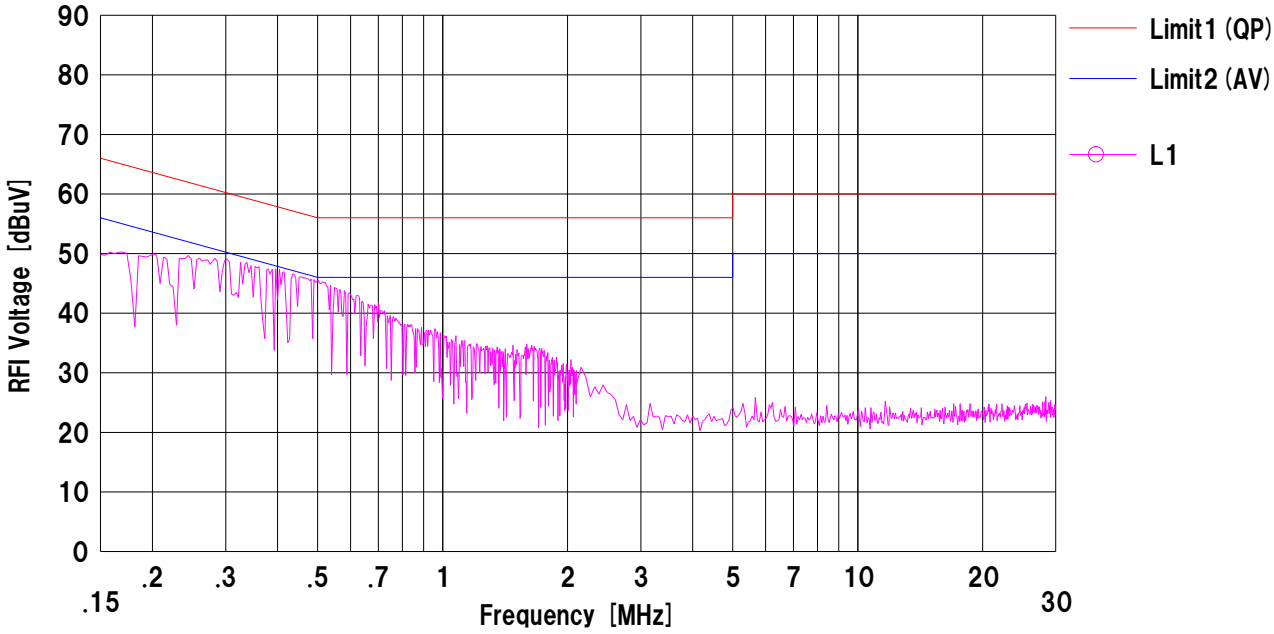
Company	: Canon Inc.	Mode	: Tx, 11g, 24Mbps, 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

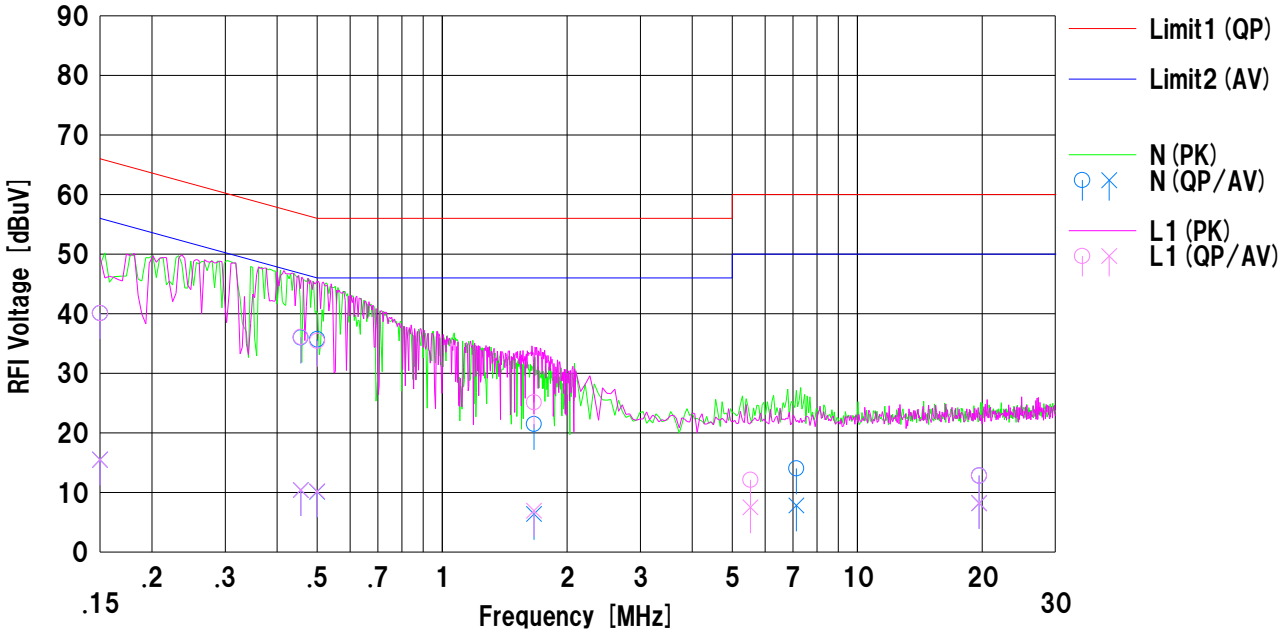
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

Company	: Canon Inc.	Mode	: Tx, 11g, 24Mbps, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH
Remarks	:		

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

Engineer : Kenichi Adachi



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.5	2.9	12.6	40.1	15.5	66.0	56.0	25.9	40.5	N	
2	0.45614	23.4	-2.2	12.6	36.0	10.4	56.7	46.7	20.7	36.3	N	
3	0.50018	23.0	-2.6	12.7	35.7	10.1	56.0	46.0	20.3	35.9	N	
4	1.66378	8.8	-6.3	12.7	21.5	6.4	56.0	46.0	34.5	39.6	N	
5	7.13828	0.8	-5.4	13.2	14.0	7.8	60.0	50.0	46.0	42.2	N	
6	19.66080	-0.9	-5.5	13.7	12.8	8.2	60.0	50.0	47.2	41.8	N	
7	0.15000	27.5	2.9	12.6	40.1	15.5	66.0	56.0	25.9	40.5	L1	
8	0.45614	23.5	-2.2	12.6	36.1	10.4	56.7	46.7	20.6	36.3	L1	
9	0.50018	22.7	-2.5	12.7	35.4	10.2	56.0	46.0	20.6	35.8	L1	
10	1.66378	12.4	-5.8	12.7	25.1	6.9	56.0	46.0	30.9	39.1	L1	
11	5.52839	-0.9	-5.5	13.0	12.1	7.5	60.0	50.0	47.9	42.5	L1	
12	19.66080	-0.9	-5.5	13.7	12.8	8.2	60.0	50.0	47.2	41.8	L1	

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

DATA OF CONDUCTED EMISSION TEST

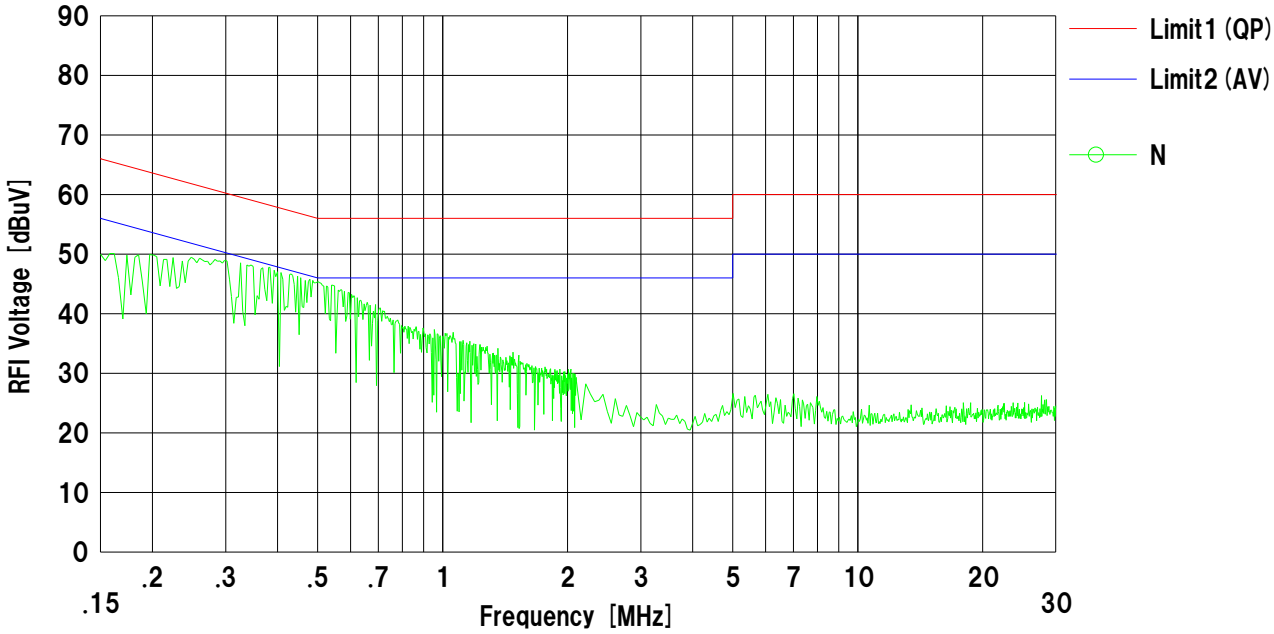
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

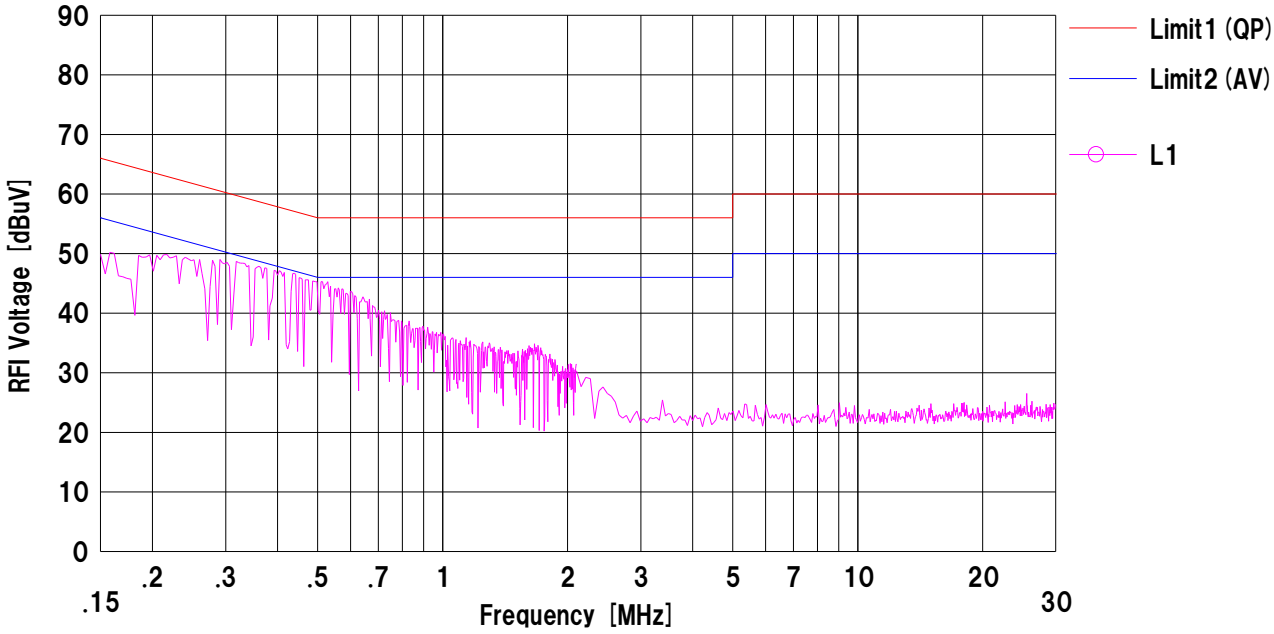
Company	: Canon Inc.	Mode	: Tx, 11n(HT20), MCS4, 2412MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

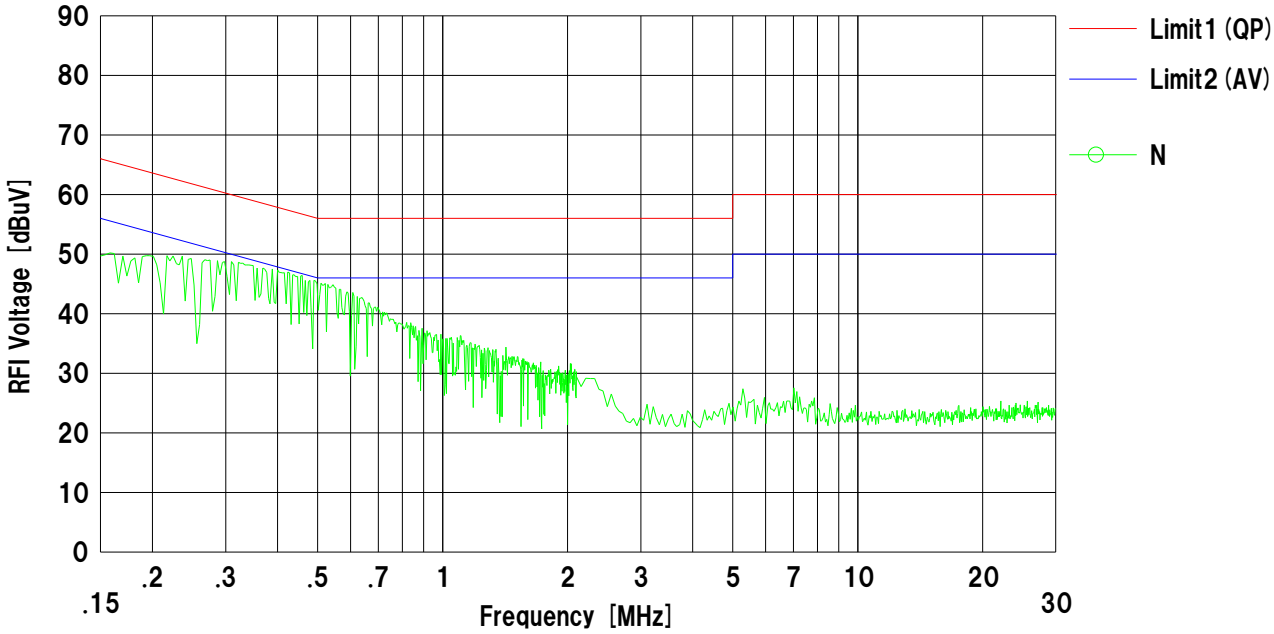
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

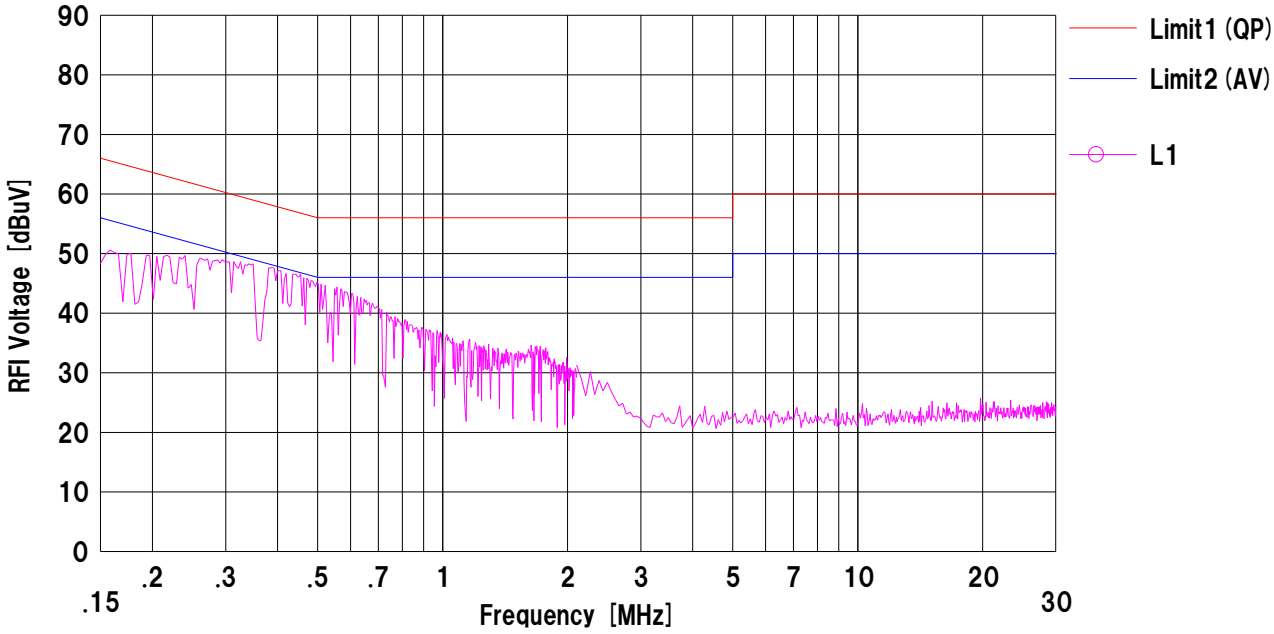
Company	: Canon Inc.	Mode	: Tx, 11n(HT20), MCS4, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

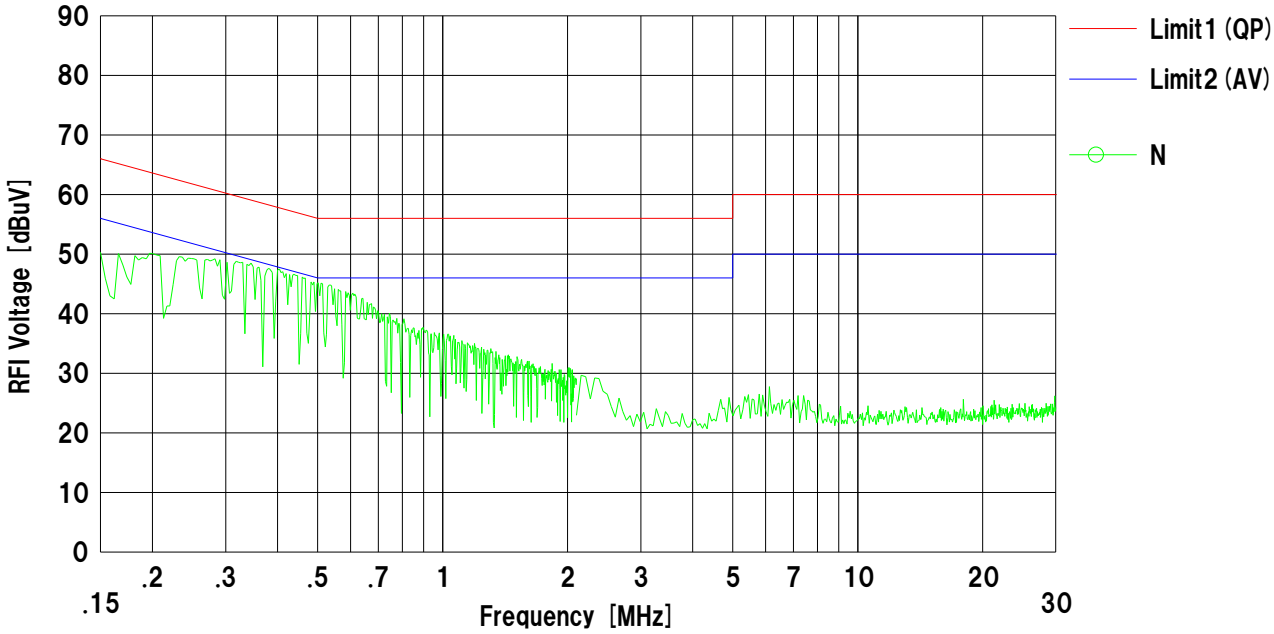
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

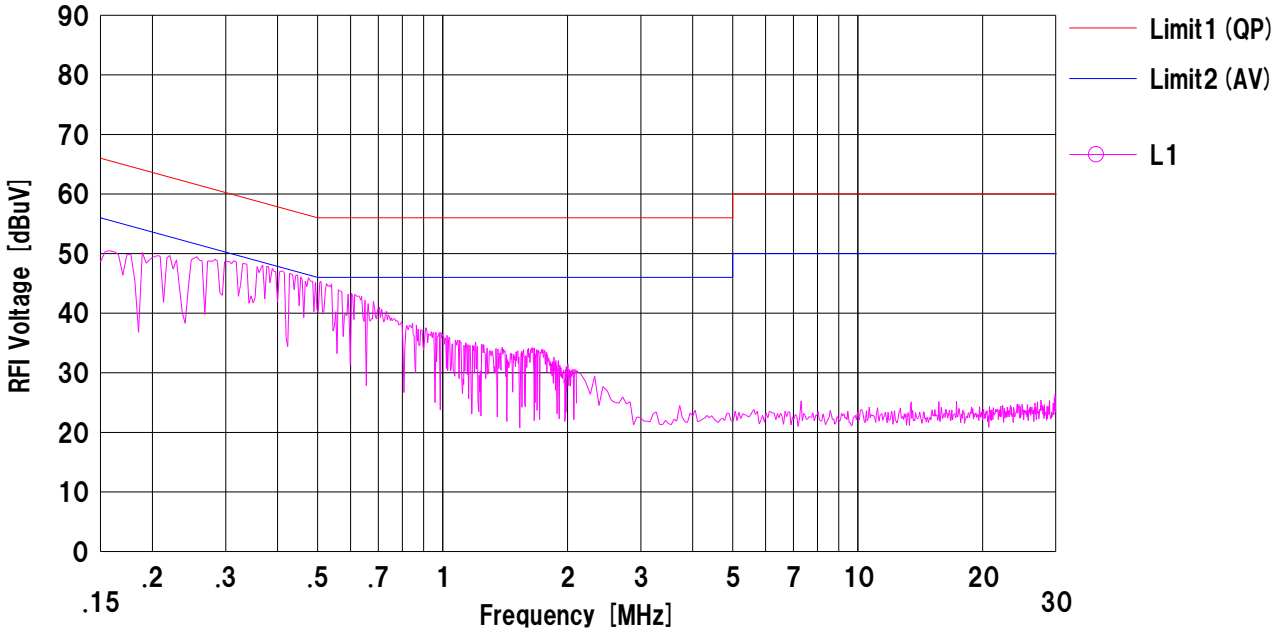
Company	: Canon Inc.	Mode	: Tx, 11n(HT20), MCS4, 2462MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

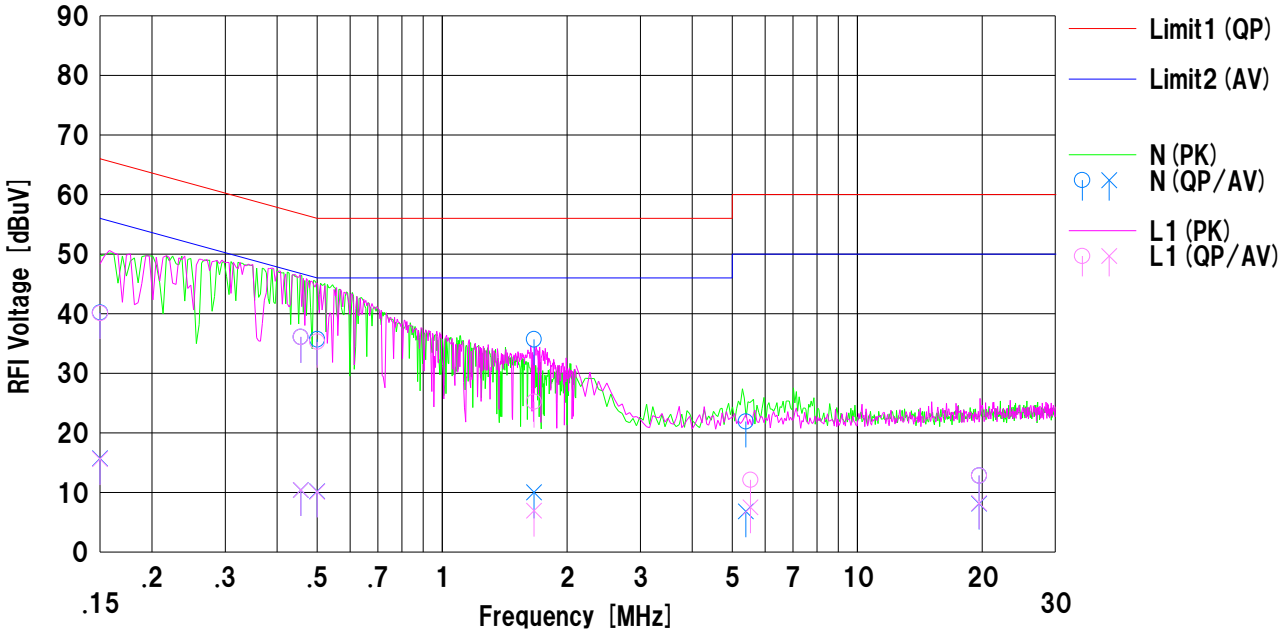
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

Company	: Canon Inc.	Mode	: Tx, 11n(HT20), MCS4, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH
Remarks	:		

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

Engineer : Kenichi Adachi



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.6	3.1	12.6	40.2	15.7	66.0	56.0	25.8	40.3	N	
2	0.45606	23.5	-2.2	12.6	36.1	10.4	56.7	46.7	20.6	36.3	N	
3	0.50017	23.0	-2.5	12.7	35.7	10.2	56.0	46.0	20.3	35.8	N	
4	1.66376	23.0	-2.7	12.7	35.7	10.0	56.0	46.0	20.3	36.0	N	
5	5.39456	8.9	-6.2	13.0	21.9	6.8	60.0	50.0	38.1	43.2	N	
6	19.66080	-0.9	-5.6	13.7	12.8	8.1	60.0	50.0	47.2	41.9	N	
7	0.15000	27.5	3.0	12.6	40.1	15.6	66.0	56.0	25.9	40.4	L1	
8	0.45606	23.5	-2.2	12.6	36.1	10.4	56.7	46.7	20.6	36.3	L1	
9	0.50017	22.6	-2.6	12.7	35.3	10.1	56.0	46.0	20.7	35.9	L1	
10	1.66376	12.5	-5.8	12.7	25.2	6.9	56.0	46.0	30.8	39.1	L1	
11	5.52789	-0.9	-5.5	13.0	12.1	7.5	60.0	50.0	47.9	42.5	L1	
12	19.66080	-0.9	-5.5	13.7	12.8	8.2	60.0	50.0	47.2	41.8	L1	

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

DATA OF CONDUCTED EMISSION TEST

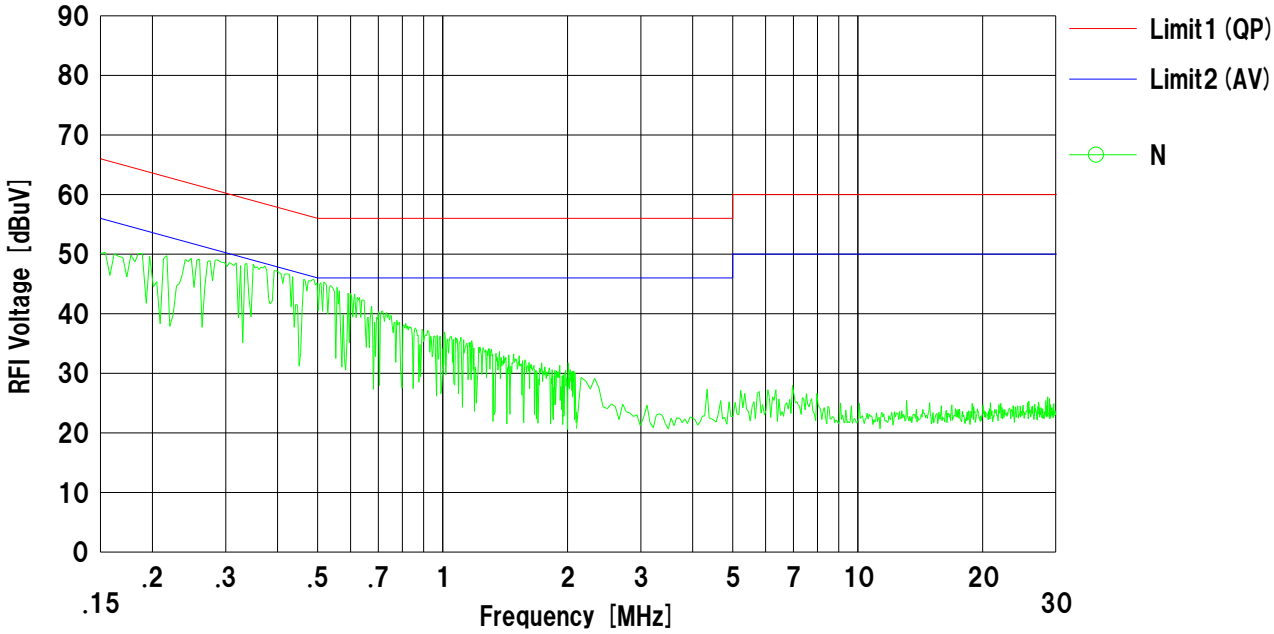
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

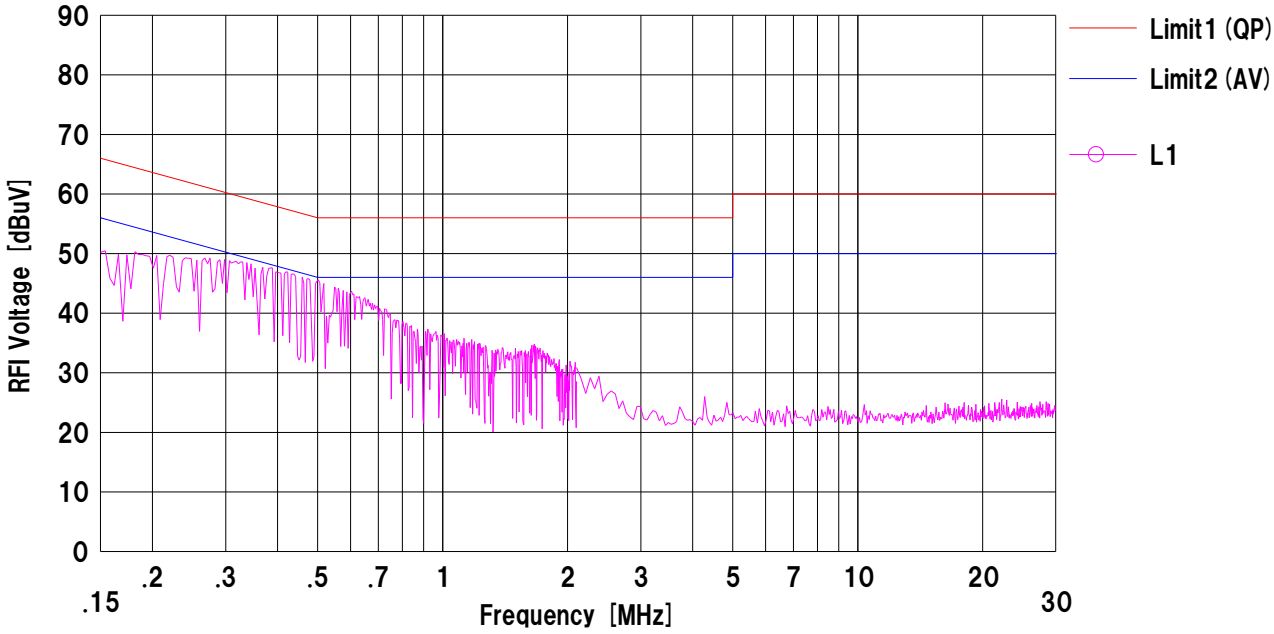
Company	: Canon Inc.	Mode	: Tx, 11n(HT40), MCS3, 2422MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

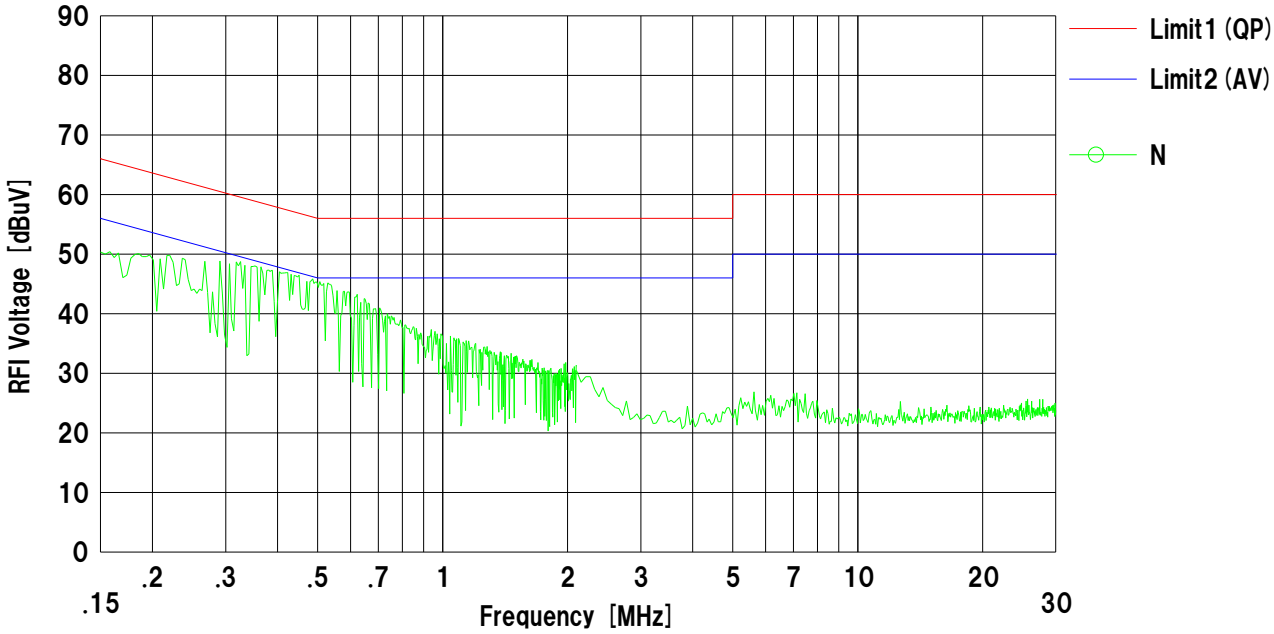
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

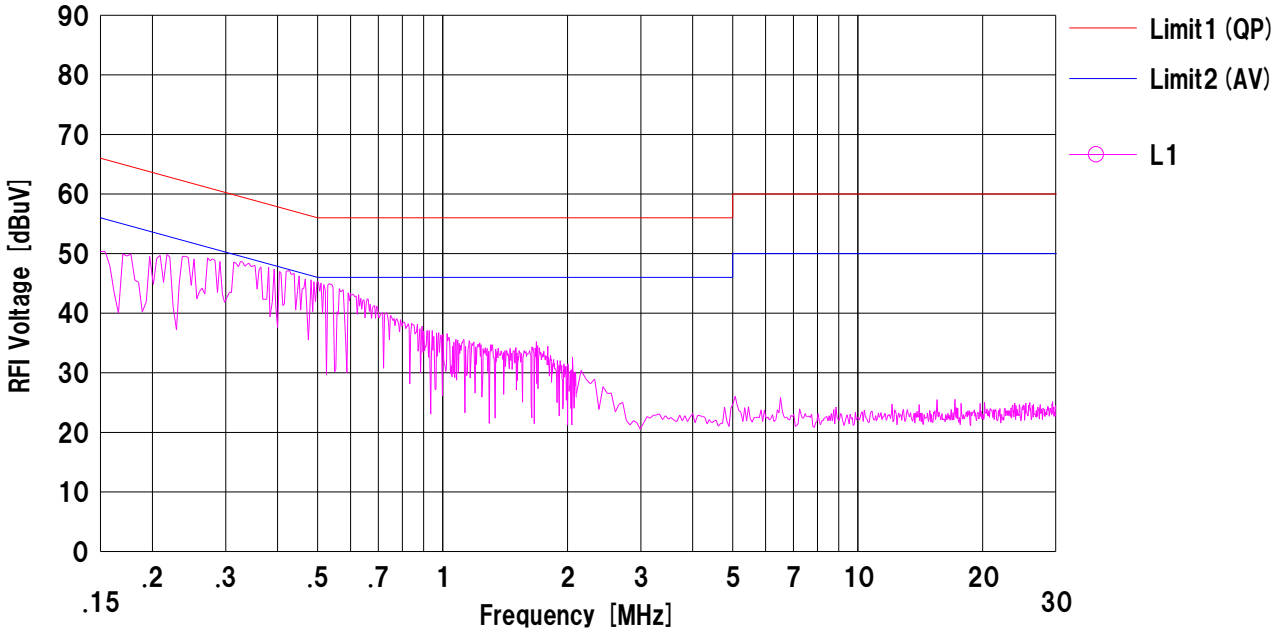
Company	: Canon Inc.	Mode	: Tx, 11n(HT40), MCS3, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

DATA OF CONDUCTED EMISSION TEST

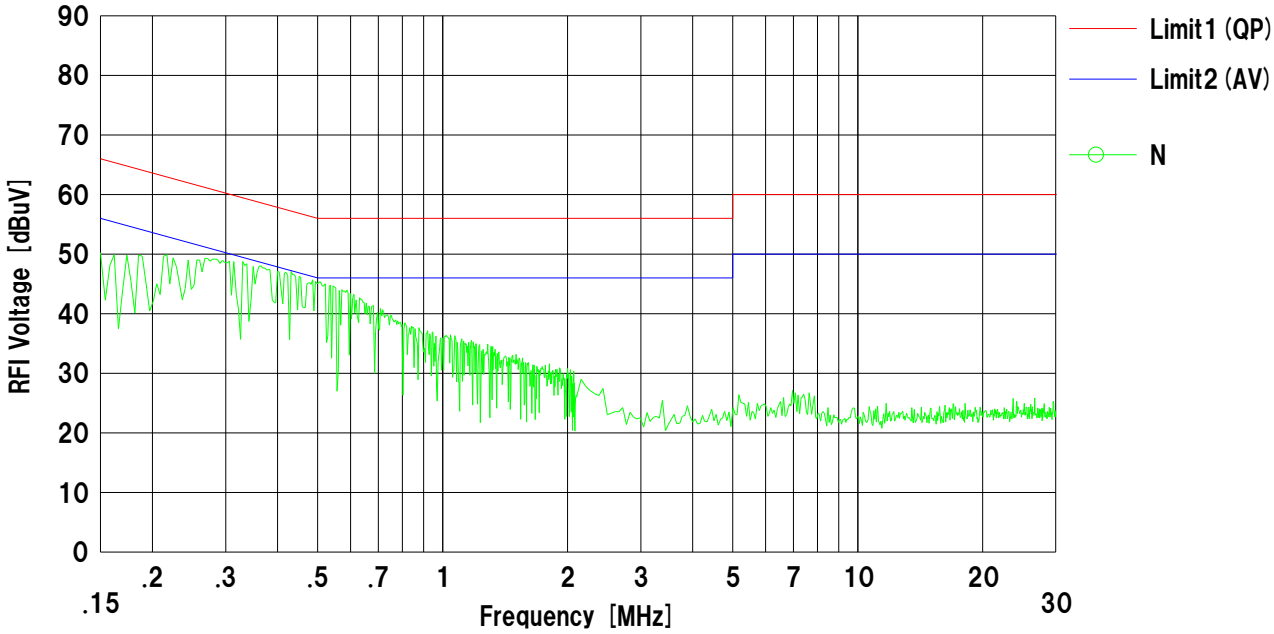
UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

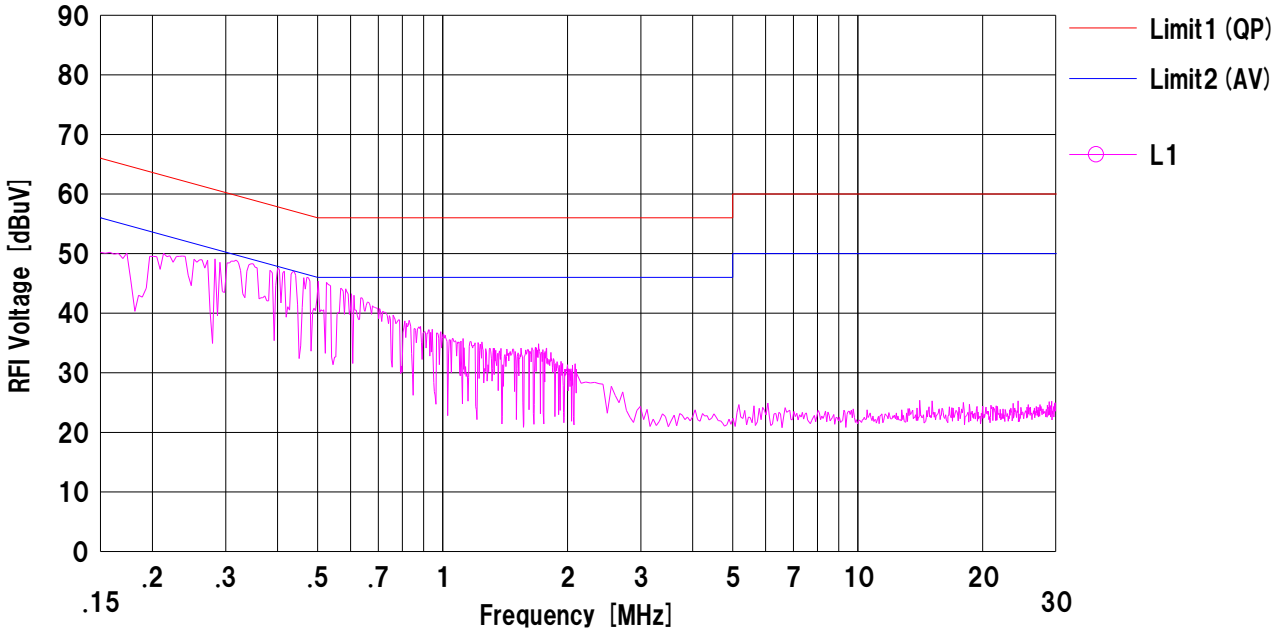
Company	: Canon Inc.	Mode	: Tx, 11n(HT40), MCS3, 2452MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH

Remarks :

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

Engineer : Kenichi Adachi





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

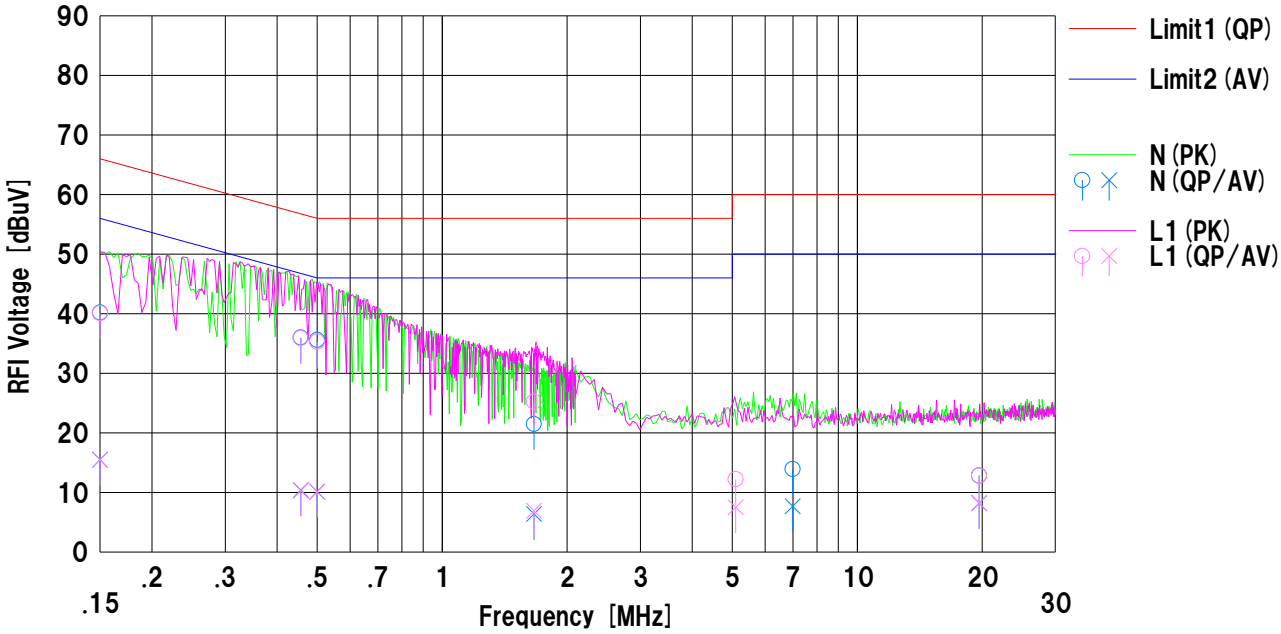
DATA OF CONDUCTED EMISSION TEST

UL Japan,Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
Date : 2011/09/30

Company	: Canon Inc.	Mode	: Tx, 11n(HT40), MCS3, 2437MHz
Kind of EUT	: Wireless Module	Report No.	: 31GE0240-SH-01-A
Model No.	: WM217	Power	: DC3.3V
Serial No.	: 8C5	Temp./Humi.	: 26deg.C. / 52%RH
Remarks	:		

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

Engineer : Kenichi Adachi



No.	Freq.	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	27.6	2.9	12.6	40.2	15.5	66.0	56.0	25.8	40.5	N	
2	0.45621	23.4	-2.2	12.6	36.0	10.4	56.7	46.7	20.7	36.3	N	
3	0.50015	22.9	-2.6	12.7	35.6	10.1	56.0	46.0	20.4	35.9	N	
4	1.66373	8.8	-6.3	12.7	21.5	6.4	56.0	46.0	34.5	39.6	N	
5	6.98957	0.8	-5.4	13.1	13.9	7.7	60.0	50.0	46.1	42.3	N	
6	19.66080	-0.9	-5.5	13.7	12.8	8.2	60.0	50.0	47.2	41.8	N	
7	0.15000	27.5	2.9	12.6	40.1	15.5	66.0	56.0	25.9	40.5	L1	
8	0.45621	23.3	-2.3	12.6	35.9	10.3	56.7	46.7	20.8	36.4	L1	
9	0.50015	22.6	-2.6	12.7	35.3	10.1	56.0	46.0	20.7	35.9	L1	
10	1.66373	12.5	-5.8	12.7	25.2	6.9	56.0	46.0	30.8	39.1	L1	
11	5.09864	-0.8	-5.5	13.0	12.2	7.5	60.0	50.0	47.8	42.5	L1	
12	19.66080	-0.9	-5.5	13.7	12.8	8.2	60.0	50.0	47.2	41.8	L1	

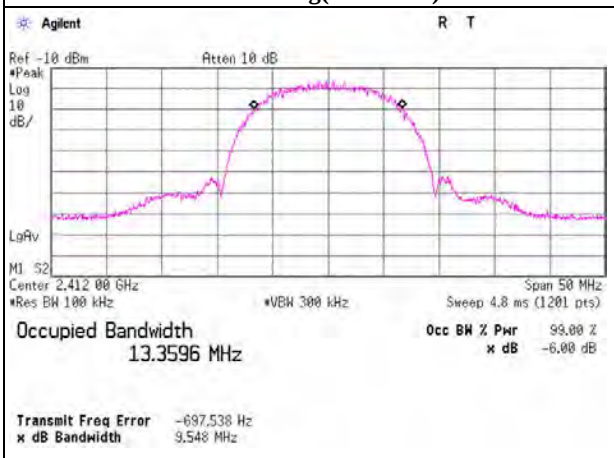
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+Att) [dB]
SLS-05

-6dB Bandwidth

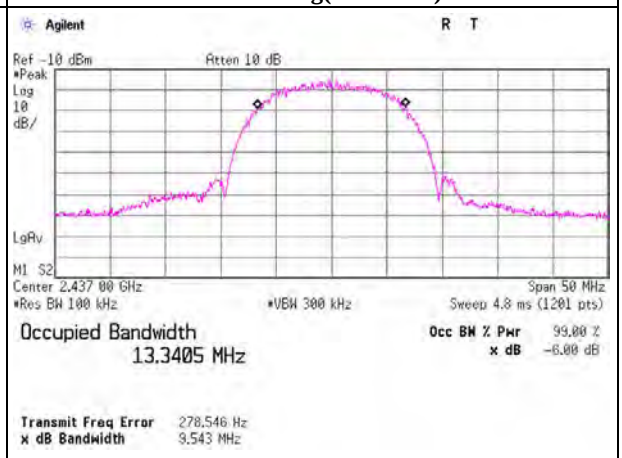
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	9.548	> 0.500
2437.0000	9.543	> 0.500
2462.0000	9.527	> 0.500

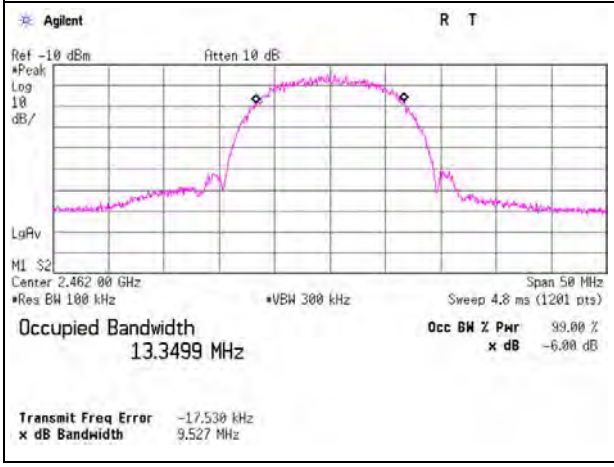
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



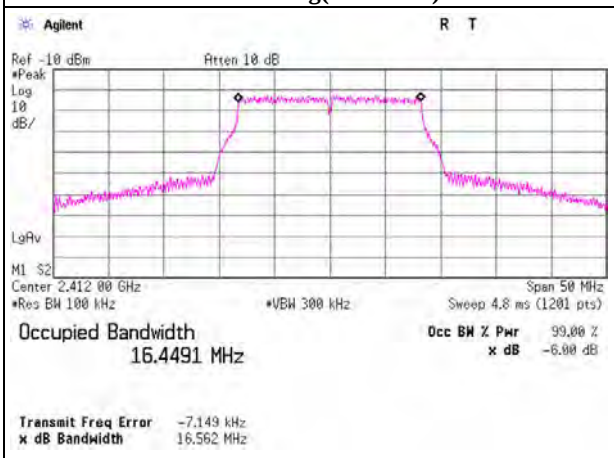
UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

-6dB Bandwidth

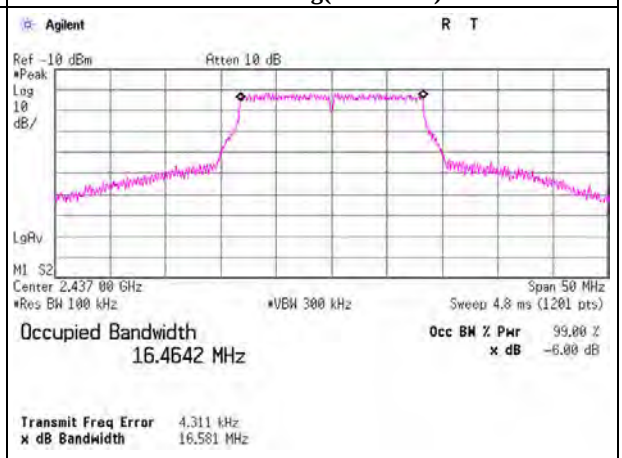
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.562	> 0.500
2437.0000	16.581	> 0.500
2462.0000	16.572	> 0.500

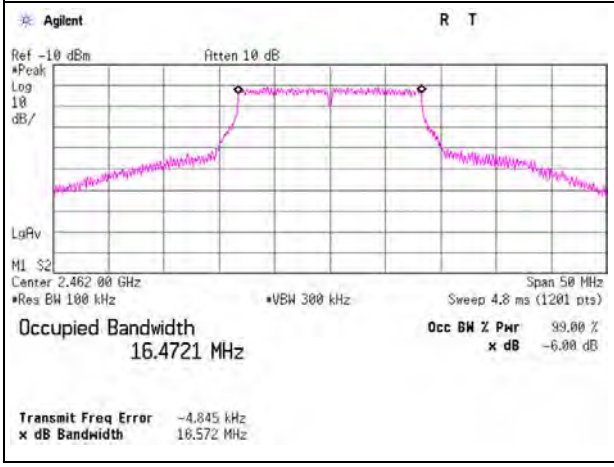
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



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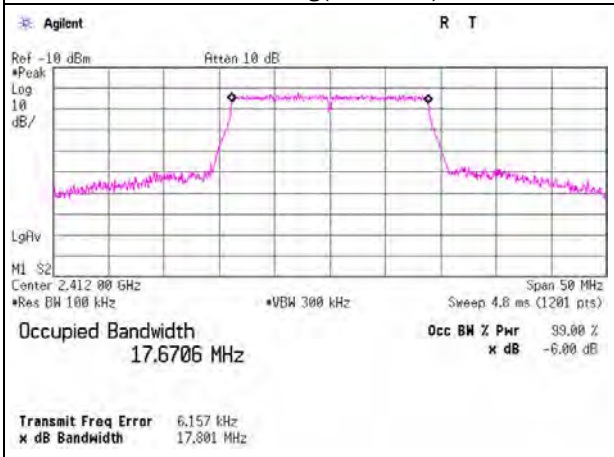
-6dB Bandwidth

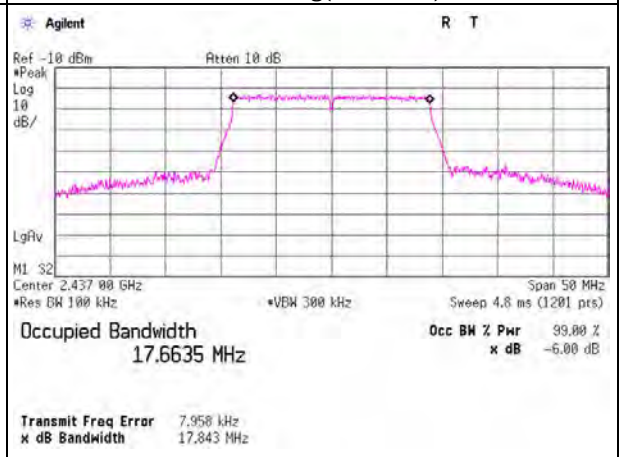
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.801	> 0.500
2437.0000	17.843	> 0.500
2462.0000	17.834	> 0.500

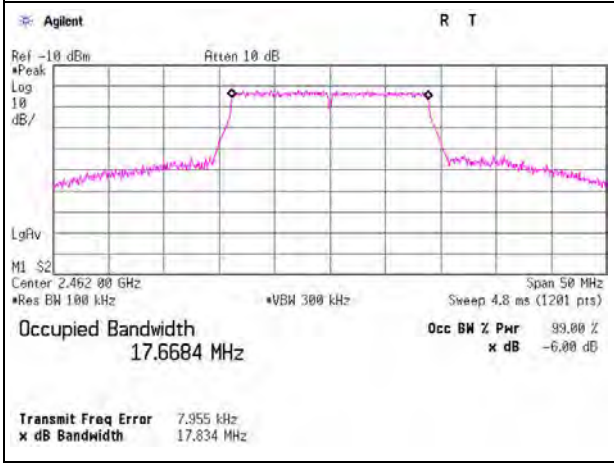
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



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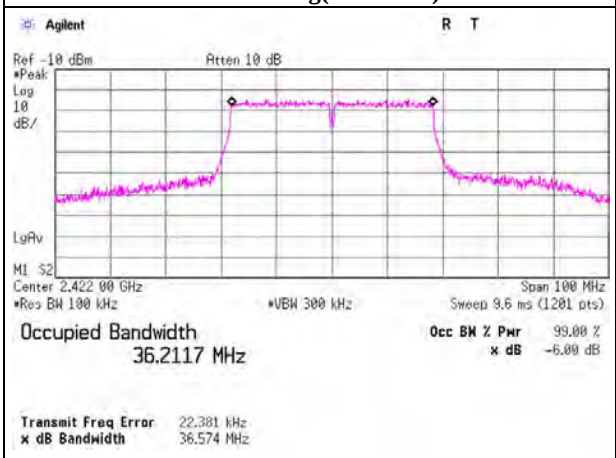
-6dB Bandwidth

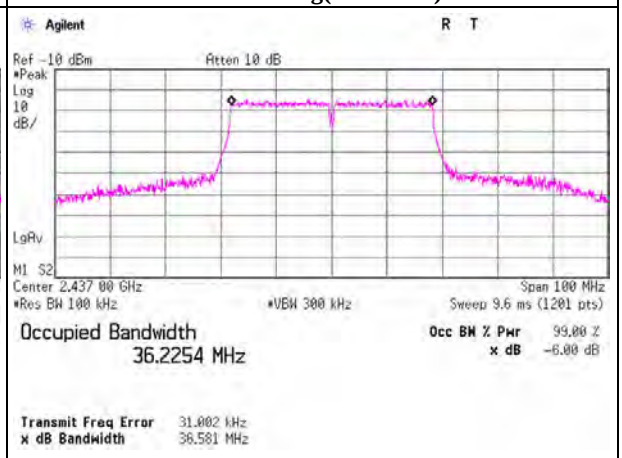
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2422.0000	36.574	> 0.500
2437.0000	36.581	> 0.500
2452.0000	36.580	> 0.500

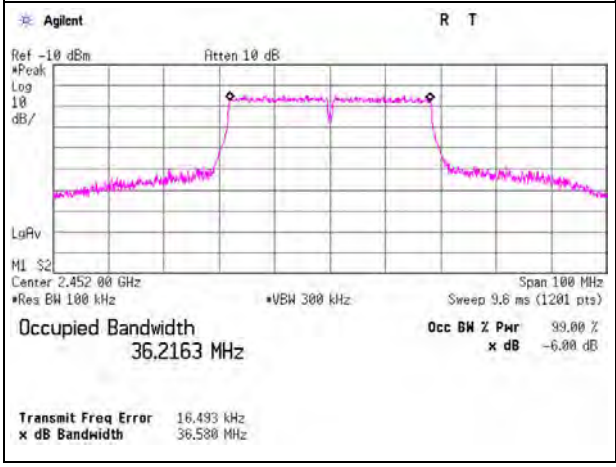
Transmitting(2422MHz)



Transmitting(2437MHz)



Transmitting(2452MHz)



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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	September 22, 2011		
Temperature / Humidity	27deg.C , 59%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11b, PN9,	worst data mode :	11 Mbps

* P//M: Power Meter with Power Sensor

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-5.13	1.76	20.01	16.64	46.11	30.00	1000	13.36
Mid	2437.0	-4.89	1.76	20.01	16.88	48.74	30.00	1000	13.12
High	2462.0	-4.73	1.77	20.01	17.05	50.69	30.00	1000	12.95

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

[Pre check]

* P//M: Power Meter with Power Sensor

	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	-5.21	1.76	20.01	16.56	45.27	30.00	1000	13.44
	2	2412.0	-5.15	1.76	20.01	16.62	45.90	30.00	1000	13.38
	5.5	2412.0	-5.72	1.76	20.01	16.05	40.26	30.00	1000	13.95
	11	2412.0	-5.13	1.76	20.01	**16.64**	46.11	30.00	1000	**13.36**

Reference data for SAR testing

* P//M: Power Meter with Power Sensor, AV: Average

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	-	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	1	2412.0	-7.75	1.76	20.01	14.02	25.22
	2	2412.0	-7.74	1.76	20.01	14.03	25.28
	5.5	2412.0	-7.79	1.76	20.01	13.98	24.99
	11	2412.0	-7.72	1.76	20.01	14.05	25.40

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	September 22, 2011		
Temperature / Humidity	27deg.C , 59%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11g, PN9,	worst data mode :	24 Mbps

* P//M: Power Meter with Power Sensor

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.16	1.76	20.01	21.61	144.82	30.00	1000	8.39
Mid	2437.0	-0.33	1.76	20.01	21.44	139.28	30.00	1000	8.56
High	2462.0	-0.21	1.77	20.01	21.57	143.52	30.00	1000	8.43

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

[Pre check]

* P//M: Power Meter with Power Sensor

	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	-0.22	1.76	20.01	21.55	142.83	30.00	1000	8.45
	9	2412.0	-0.74	1.76	20.01	21.03	126.71	30.00	1000	8.97
	12	2412.0	-0.41	1.76	20.01	21.36	136.72	30.00	1000	8.64
	18	2412.0	-0.86	1.76	20.01	20.91	123.26	30.00	1000	9.09
	24	2412.0	-0.16	1.76	20.01	**21.61**	144.82	30.00	1000	**8.39**
	36	2412.0	-0.21	1.76	20.01	21.56	143.16	30.00	1000	8.44
	48	2412.0	-0.52	1.76	20.01	21.25	133.30	30.00	1000	8.75
	54	2412.0	-0.33	1.76	20.01	21.44	139.26	30.00	1000	8.56

Reference data for SAR testing

* P//M: Power Meter with Power Sensor, AV: Average

	Data rate	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	-	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	6	2412.0	-9.14	1.76	20.01	12.63	18.32
	9	2412.0	-9.21	1.76	20.01	12.56	18.02
	12	2412.0	-9.32	1.76	20.01	12.45	17.57
	18	2412.0	-9.22	1.76	20.01	12.55	17.98
	24	2412.0	-9.12	1.76	20.01	12.65	18.40
	36	2412.0	-9.29	1.76	20.01	12.48	17.69
	48	2412.0	-9.22	1.76	20.01	12.55	17.98
	54	2412.0	-9.41	1.76	20.01	12.36	17.21

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	September 22, 2011		
Temperature / Humidity	27deg.C , 59%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n (HT20), PN9,	worst data mode :	4 (MCS)

* P//M: Power Meter with Power Sensor

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	-0.81	1.76	20.01	20.96	124.69	30.00	1000	9.04
Mid	2437.0	-1.04	1.76	20.01	20.73	118.27	30.00	1000	9.27
High	2462.0	-1.16	1.77	20.01	20.62	115.33	30.00	1000	9.38

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

[Pre check]

* P//M: Power Meter with Power Sensor

	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	-0.99	1.76	20.01	20.78	119.63	30.00	1000	9.22
	1	2412.0	-0.83	1.76	20.01	20.94	124.11	30.00	1000	9.06
	2	2412.0	-0.96	1.76	20.01	20.81	120.47	30.00	1000	9.19
	3	2412.0	-0.83	1.76	20.01	20.94	124.13	30.00	1000	9.06
	4	2412.0	-0.81	1.76	20.01	**20.96**	124.70	30.00	1000	**9.04**
	5	2412.0	-0.92	1.76	20.01	20.85	121.58	30.00	1000	9.15
	6	2412.0	-0.85	1.76	20.01	20.92	123.56	30.00	1000	9.08
	7	2412.0	-0.88	1.76	20.01	20.89	122.71	30.00	1000	9.11

Reference data for SAR testing

* P//M: Power Meter with Power Sensor, AV: Average

	Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
	(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
	0	2412.0	-9.39	1.76	20.01	12.38	17.29
	1	2412.0	-9.24	1.76	20.01	12.53	17.90
	2	2412.0	-9.37	1.76	20.01	12.40	17.37
	3	2412.0	-9.26	1.76	20.01	12.51	17.82
	4	2412.0	-9.22	1.76	20.01	12.55	17.98
	5	2412.0	-9.29	1.76	20.01	12.48	17.69
	6	2412.0	-9.25	1.76	20.01	12.52	17.86
	7	2412.0	-9.34	1.76	20.01	12.43	17.49

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Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room	
Date	September 22, 2011		
Temperature / Humidity	27deg.C , 59%RH		
Engineer	Shinichi Takano		
Mode	Tx, IEEE802.11n (HT40), PN9,	worst data mode :	3 (MCS)

* P//M: Power Meter with Power Sensor

Ch	Freq.	P/M (Peak) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2422.0	-0.41	1.76	20.01	21.36	136.72	30.00	1000	8.64
Mid	2437.0	-0.53	1.76	20.01	21.24	133.01	30.00	1000	8.76
High	2452.0	-0.59	1.77	20.01	21.19	131.49	30.00	1000	8.81

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

[Pre check]

* P//M: Power Meter with Power Sensor

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	-0.93	1.76	20.01	20.84	121.30	30.00	1000	9.16
1	2422.0	-0.98	1.76	20.01	20.79	119.91	30.00	1000	9.21
2	2422.0	-0.83	1.76	20.01	20.94	124.12	30.00	1000	9.06
3	2422.0	-0.41	1.76	20.01	**21.36**	136.72	30.00	1000	**8.64**
4	2422.0	-0.63	1.76	20.01	21.14	129.97	30.00	1000	8.86
5	2422.0	-0.45	1.76	20.01	21.32	135.47	30.00	1000	8.68
6	2422.0	-0.73	1.76	20.01	21.04	127.01	30.00	1000	8.96
7	2422.0	-0.88	1.76	20.01	20.89	122.70	30.00	1000	9.11

Reference data for SAR testing

* P//M: Power Meter with Power Sensor, AV: Average

Mode	Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Result	
(MCS)	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]
0	2422.0	-9.54	1.76	20.01	12.23	16.70
1	2422.0	-9.52	1.76	20.01	12.25	16.78
2	2422.0	-9.47	1.76	20.01	12.30	16.98
3	2422.0	-9.41	1.76	20.01	12.36	17.21
4	2422.0	-9.53	1.76	20.01	12.24	16.74
5	2422.0	-9.43	1.76	20.01	12.34	17.13
6	2422.0	-9.51	1.76	20.01	12.26	16.82
7	2422.0	-9.49	1.76	20.01	12.28	16.90

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chambe
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps		

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	45.4	27.2	13.7	37.8	48.5	73.9	25.4	123	0	
Hori.	4824.000	PK	47.1	31.1	6.0	41.0	43.2	73.9	30.7	100	0	
Hori.	7236.000	PK	47.5	36.6	7.4	41.3	50.2	73.9	23.7	100	0	
Hori.	9648.000	PK	45.1	38.2	8.7	38.8	53.2	73.9	20.7	100	0	
Hori.	12060.000	PK	45.7	39.3	10.2	39.2	56.0	73.9	17.9	100	0	
Hori.	2390.000	AV	33.9	27.2	13.7	37.8	37.0	53.9	16.9	123	0	
Hori.	4824.000	AV	36.6	31.1	6.0	41.0	32.7	53.9	21.2	100	0	
Hori.	7236.000	AV	36.7	36.6	7.4	41.3	39.4	53.9	14.5	100	0	
Hori.	9648.000	AV	33.8	38.2	8.7	38.8	41.9	53.9	12.0	100	0	
Hori.	12060.000	AV	35.2	39.3	10.2	39.2	45.5	53.9	8.4	100	0	
Vert.	2390.000	PK	44.8	27.2	13.7	37.8	47.9	73.9	26.0	103	280	
Vert.	4824.000	PK	46.6	31.1	6.0	41.0	42.7	73.9	31.2	100	0	
Vert.	7236.000	PK	48.5	36.6	7.4	41.3	51.2	73.9	22.7	106	253	
Vert.	9648.000	PK	45.3	38.2	8.7	38.8	53.4	73.9	20.5	100	47	
Vert.	12060.000	PK	46.9	39.3	10.2	39.2	57.2	73.9	16.7	100	355	
Vert.	2390.000	AV	33.5	27.2	13.7	37.8	36.6	53.9	17.3	103	280	
Vert.	4824.000	AV	35.9	31.1	6.0	41.0	32.0	53.9	21.9	100	0	
Vert.	7236.000	AV	37.5	36.6	7.4	41.3	40.2	53.9	13.7	106	253	
Vert.	9648.000	AV	34.9	38.2	8.7	38.8	43.0	53.9	10.9	100	47	
Vert.	12060.000	AV	37.1	39.3	10.2	39.2	47.4	53.9	**6.5**	100	355	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	89.8	27.3	13.7	37.8	93.0	-	-	Carrier
Hori.	2398.530	PK	42.9	27.3	13.7	37.8	46.1	73.0	26.9	
Hori.	2400.000	PK	42.3	27.3	13.7	37.8	45.5	73.0	27.5	
Vert.	2412.000	PK	88.1	27.3	13.7	37.8	91.3	-	-	Carrier
Vert.	2398.530	PK	41.7	27.3	13.7	37.8	44.9	71.3	26.4	
Vert.	2400.000	PK	41.3	27.3	13.7	37.8	44.5	71.3	26.8	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps		

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	46.9	31.2	6.0	41.0	43.1	73.9	30.8	100	0	
Hori.	7311.000	PK	48.2	36.7	7.4	41.4	50.9	73.9	23.0	103	58	
Hori.	9748.000	PK	43.3	38.5	8.7	38.8	51.7	73.9	22.2	100	0	
Hori.	12185.000	PK	44.8	39.3	10.3	39.2	55.2	73.9	18.7	100	0	
Hori.	4874.000	AV	36.6	31.2	6.0	41.0	32.8	53.9	21.1	100	0	
Hori.	7311.000	AV	38.5	36.7	7.4	41.4	41.2	53.9	12.7	103	58	
Hori.	9748.000	AV	33.7	38.5	8.7	38.8	42.1	53.9	11.8	100	0	
Hori.	12185.000	AV	34.6	39.3	10.3	39.2	45.0	53.9	8.9	100	0	
Vert.	4874.000	PK	46.6	31.2	6.0	41.0	42.8	73.9	31.1	100	0	
Vert.	7311.000	PK	47.5	36.7	7.4	41.4	50.2	73.9	23.7	100	0	
Vert.	9748.000	PK	43.3	38.5	8.7	38.8	51.7	73.9	22.2	100	0	
Vert.	12185.000	PK	45.8	39.3	10.3	39.2	56.2	73.9	17.7	100	359	
Vert.	4874.000	AV	36.1	31.2	6.0	41.0	32.3	53.9	21.6	100	0	
Vert.	7311.000	AV	37.0	36.7	7.4	41.4	39.7	53.9	14.2	100	0	
Vert.	9748.000	AV	33.4	38.5	8.7	38.8	41.8	53.9	12.1	100	0	
Vert.	12185.000	AV	36.7	39.3	10.3	39.2	47.1	53.9	**6.8**	100	359	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	September 29, 2011	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	26deg.C , 48%RH	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Kenichi Adachi	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11b, PN9, worst data mode 11Mbps			

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.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Hori.	76.800	QP	23.8	6.3	7.0	32.1	5.0	40.0	35.0	100	0	noise floor level
Hori.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Hori.	2483.500	PK	44.4	27.5	13.6	37.6	47.9	73.9	26.0	119	348	
Hori.	4924.000	PK	46.5	31.3	6.0	40.9	42.9	73.9	31.0	100	0	
Hori.	7386.000	PK	50.5	36.9	7.3	41.4	53.3	73.9	20.6	100	81	
Hori.	9848.000	PK	43.8	38.7	8.8	38.8	52.5	73.9	21.4	100	357	
Hori.	12310.000	PK	45.5	39.4	10.3	39.2	56.0	73.9	17.9	107	55	
Hori.	2483.500	AV	33.0	27.5	13.6	37.6	36.5	53.9	17.4	119	348	
Hori.	4924.000	AV	36.7	31.3	6.0	40.9	33.1	53.9	20.8	100	0	
Hori.	7386.000	AV	40.8	36.9	7.3	41.4	43.6	53.9	10.3	100	81	
Hori.	9848.000	AV	34.9	38.7	8.8	38.8	43.6	53.9	10.3	100	357	
Hori.	12310.000	AV	35.5	39.4	10.3	39.2	46.0	53.9	7.9	107	55	
Vert.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Vert.	76.800	QP	23.8	6.3	7.0	32.1	5.0	40.0	35.0	100	0	noise floor level
Vert.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Vert.	2483.500	PK	44.2	27.5	13.6	37.6	47.7	73.9	26.2	100	272	
Vert.	4924.000	PK	46.5	31.3	6.0	40.9	42.9	73.9	31.0	104	358	
Vert.	7386.000	PK	49.6	36.9	7.3	41.4	52.4	73.9	21.5	141	230	
Vert.	9848.000	PK	44.9	38.7	8.8	38.8	53.6	73.9	20.3	103	0	
Vert.	12310.000	PK	47.5	39.4	10.3	39.2	58.0	73.9	15.9	109	359	
Vert.	2483.500	AV	32.8	27.5	13.6	37.6	36.3	53.9	17.6	100	272	
Vert.	4924.000	AV	37.2	31.3	6.0	40.9	33.6	53.9	20.3	104	358	
Vert.	7386.000	AV	39.9	36.9	7.3	41.4	42.7	53.9	11.2	141	230	
Vert.	9848.000	AV	35.2	38.7	8.8	38.8	43.9	53.9	10.0	103	0	
Vert.	12310.000	AV	38.7	39.4	10.3	39.2	49.2	53.9	**4.7**	109	359	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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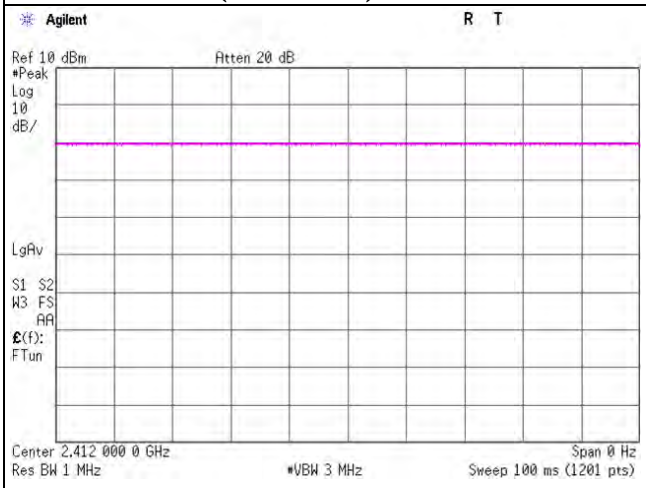
Spurious emission (Radiated), VBW (AV) Calculation chart

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

VBW (AV) Calculation	
VBW: 1/x = 10Hz **x: (Tx on+Tx off) =100ms**	
	

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 24Mbps		

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	55.5	27.2	13.7	37.8	58.6	73.9	15.3	122	358	
Hori.	4824.000	PK	47.2	31.1	6.0	41.0	43.3	73.9	30.6	100	350	
Hori.	7236.000	PK	46.5	36.6	7.4	41.3	49.2	73.9	24.7	100	0	
Hori.	9648.000	PK	44.1	38.2	8.7	38.8	52.2	73.9	21.7	100	0	
Hori.	12060.000	PK	45.6	39.3	10.2	39.2	55.9	73.9	18.0	100	0	
Hori.	2390.000	AV	41.4	27.2	13.7	37.8	44.5	53.9	9.4	122	358	
Hori.	4824.000	AV	37.3	31.1	6.0	41.0	33.4	53.9	20.5	100	350	
Hori.	7236.000	AV	36.8	36.6	7.4	41.3	39.5	53.9	14.4	100	0	
Hori.	9648.000	AV	33.8	38.2	8.7	38.8	41.9	53.9	12.0	100	0	
Hori.	12060.000	AV	35.2	39.3	10.2	39.2	45.5	53.9	8.4	100	0	
Vert.	2390.000	PK	53.7	27.2	13.7	37.8	56.8	73.9	17.1	105	280	
Vert.	4824.000	PK	46.3	31.1	6.0	41.0	42.4	73.9	31.5	100	0	
Vert.	7236.000	PK	46.6	36.6	7.4	41.3	49.3	73.9	24.6	100	0	
Vert.	9648.000	PK	44.3	38.2	8.7	38.8	52.4	73.9	21.5	100	0	
Vert.	12060.000	PK	48.1	39.3	10.2	39.2	58.4	73.9	15.5	100	0	
Vert.	2390.000	AV	40.3	27.2	13.7	37.8	43.4	53.9	10.5	105	280	
Vert.	4824.000	AV	35.9	31.1	6.0	41.0	32.0	53.9	21.9	100	0	
Vert.	7236.000	AV	36.8	36.6	7.4	41.3	39.5	53.9	14.4	100	0	
Vert.	9648.000	AV	34.0	38.2	8.7	38.8	42.1	53.9	11.8	100	0	
Vert.	12060.000	AV	37.0	39.3	10.2	39.2	47.3	53.9	**6.6**	100	0	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.8	27.3	13.7	37.8	87.0	-	-	Carrier
Hori.	2400.000	PK	55.2	27.3	13.7	37.8	58.4	67.0	8.6	
Vert.	2412.000	PK	82.5	27.3	13.7	37.8	85.7	-	-	Carrier
Vert.	2400.000	PK	54.4	27.3	13.7	37.8	57.6	65.7	8.1	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11g, PN9, worst data mode 24Mbps		

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	47.4	31.2	6.0	41.0	43.6	73.9	30.3	100	358	
Hori.	7311.000	PK	48.9	36.7	7.4	41.4	51.6	73.9	22.3	102	81	
Hori.	9748.000	PK	44.0	38.5	8.7	38.8	52.4	73.9	21.5	100	0	
Hori.	12185.000	PK	43.9	39.3	10.3	39.2	54.3	73.9	19.6	100	0	
Hori.	4874.000	AV	34.7	31.2	6.0	41.0	30.9	53.9	23.0	100	358	
Hori.	7311.000	AV	36.2	36.7	7.4	41.4	38.9	53.9	15.0	102	81	
Hori.	9748.000	AV	31.3	38.5	8.7	38.8	39.7	53.9	14.2	100	0	
Hori.	12185.000	AV	32.2	39.3	10.3	39.2	42.6	53.9	11.3	100	0	
Vert.	4874.000	PK	45.9	31.2	6.0	41.0	42.1	73.9	31.8	100	0	
Vert.	7311.000	PK	46.7	36.7	7.4	41.4	49.4	73.9	24.5	100	0	
Vert.	9748.000	PK	42.6	38.5	8.7	38.8	51.0	73.9	22.9	100	0	
Vert.	12185.000	PK	45.8	39.3	10.3	39.2	56.2	73.9	17.7	100	1	
Vert.	4874.000	AV	33.6	31.2	6.0	41.0	29.8	53.9	24.1	100	0	
Vert.	7311.000	AV	34.7	36.7	7.4	41.4	37.4	53.9	16.5	100	0	
Vert.	9748.000	AV	31.1	38.5	8.7	38.8	39.5	53.9	14.4	100	0	
Vert.	12185.000	AV	33.4	39.3	10.3	39.2	43.8	53.9	**10.1**	100	1	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	September 29, 2011	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	26deg.C , 48%RH	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Kenichi Adachi	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11g, PN9, worst data mode 24Mbps			

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.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Hori.	76.800	QP	23.7	6.3	7.0	32.1	4.9	40.0	35.1	100	0	noise floor level
Hori.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Hori.	2483.500	PK	57.4	27.5	13.6	37.6	60.9	73.9	13.0	120	331	
Hori.	4924.000	PK	45.7	31.3	6.0	40.9	42.1	73.9	31.8	100	0	
Hori.	7386.000	PK	48.2	36.9	7.3	41.4	51.0	73.9	22.9	102	82	
Hori.	9848.000	PK	43.7	38.7	8.8	38.8	52.4	73.9	21.5	100	0	
Hori.	12310.000	PK	45.4	39.4	10.3	39.2	55.9	73.9	18.0	100	0	
Hori.	2483.500	AV	41.9	27.5	13.6	37.6	45.4	53.9	8.5	120	331	
Hori.	4924.000	AV	36.4	31.3	6.0	40.9	32.8	53.9	21.1	100	0	
Hori.	7386.000	AV	38.2	36.9	7.3	41.4	41.0	53.9	12.9	102	82	
Hori.	9848.000	AV	33.9	38.7	8.8	38.8	42.6	53.9	11.3	100	0	
Hori.	12310.000	AV	34.4	39.4	10.3	39.2	44.9	53.9	9.0	100	0	
Vert.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Vert.	76.800	QP	23.7	6.3	7.0	32.1	4.9	40.0	35.1	100	0	noise floor level
Vert.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Vert.	2483.500	PK	55.7	27.5	13.6	37.6	59.2	73.9	14.7	100	36	
Vert.	4924.000	PK	45.8	31.3	6.0	40.9	42.2	73.9	31.7	100	0	
Vert.	7386.000	PK	46.9	36.9	7.3	41.4	49.7	73.9	24.2	100	0	
Vert.	9848.000	PK	44.3	38.7	8.8	38.8	53.0	73.9	20.9	100	0	
Vert.	12310.000	PK	45.8	39.4	10.3	39.2	56.3	73.9	17.6	103	0	
Vert.	2483.500	AV	41.0	27.5	13.6	37.6	44.5	53.9	9.4	100	36	
Vert.	4924.000	AV	36.3	31.3	6.0	40.9	32.7	53.9	21.2	100	0	
Vert.	7386.000	AV	37.1	36.9	7.3	41.4	39.9	53.9	14.0	100	0	
Vert.	9848.000	AV	33.8	38.7	8.8	38.8	42.5	53.9	11.4	100	0	
Vert.	12310.000	AV	35.2	39.4	10.3	39.2	45.7	53.9	**8.2**	103	0	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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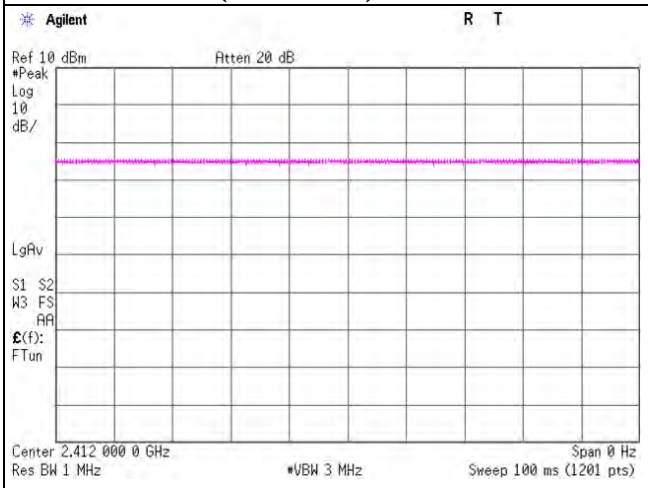
Spurious emission (Radiated), VBW (AV) Calculation chart

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

VBW (AV) Calculation	
VBW: 1/x = 10Hz **x: (Tx on+Tx off) =100ms**	
	

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2412 MHz		
	Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	62.5	27.2	13.7	37.8	65.6	73.9	8.3	122	0	
Hori.	4824.000	PK	47.1	31.1	6.0	41.0	43.2	73.9	30.7	100	1	
Hori.	7236.000	PK	47.4	36.6	7.4	41.3	50.1	73.9	23.8	100	0	
Hori.	9648.000	PK	44.0	38.2	8.7	38.8	52.1	73.9	21.8	100	0	
Hori.	12060.000	PK	44.9	39.3	10.2	39.2	55.2	73.9	18.7	100	0	
Hori.	2390.000	AV	43.6	27.2	13.7	37.8	46.7	53.9	**7.2**	122	0	
Hori.	4824.000	AV	36.5	31.1	6.0	41.0	32.6	53.9	21.3	100	1	
Hori.	7236.000	AV	36.7	36.6	7.4	41.3	39.4	53.9	14.5	100	0	
Hori.	9648.000	AV	33.7	38.2	8.7	38.8	41.8	53.9	12.1	100	0	
Hori.	12060.000	AV	35.2	39.3	10.2	39.2	45.5	53.9	8.4	100	0	
Vert.	2390.000	PK	60.7	27.2	13.7	37.8	63.8	73.9	10.1	103	275	
Vert.	4824.000	PK	46.8	31.1	6.0	41.0	42.9	73.9	31.0	100	0	
Vert.	7236.000	PK	46.6	36.6	7.4	41.3	49.3	73.9	24.6	100	0	
Vert.	9648.000	PK	43.7	38.2	8.7	38.8	51.8	73.9	22.1	100	0	
Vert.	12060.000	PK	46.4	39.3	10.2	39.2	56.7	73.9	17.2	100	357	
Vert.	2390.000	AV	42.1	27.2	13.7	37.8	45.2	53.9	8.7	103	275	
Vert.	4824.000	AV	35.9	31.1	6.0	41.0	32.0	53.9	21.9	100	0	
Vert.	7236.000	AV	36.8	36.6	7.4	41.3	39.5	53.9	14.4	100	0	
Vert.	9648.000	AV	33.7	38.2	8.7	38.8	41.8	53.9	12.1	100	0	
Vert.	12060.000	AV	35.5	39.3	10.2	39.2	45.8	53.9	8.1	100	357	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	82.7	27.3	13.7	37.8	85.9	-	-	Carrier
Hori.	2400.000	PK	55.4	27.3	13.7	37.8	58.6	65.9	7.3	
Vert.	2412.000	PK	81.0	27.3	13.7	37.8	84.2	-	-	Carrier
Vert.	2400.000	PK	54.4	27.3	13.7	37.8	57.6	64.2	6.6	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	4874.000	PK	46.6	31.2	6.0	41.0	42.8	73.9	31.1	100	1	
Hori.	7311.000	PK	48.3	36.7	7.4	41.4	51.0	73.9	22.9	100	274	
Hori.	9748.000	PK	44.0	38.5	8.7	38.8	52.4	73.9	21.5	100	0	
Hori.	12185.000	PK	45.3	39.3	10.3	39.2	55.7	73.9	18.2	100	0	
Hori.	4874.000	AV	36.9	31.2	6.0	41.0	33.1	53.9	20.8	100	1	
Hori.	7311.000	AV	37.9	36.7	7.4	41.4	40.6	53.9	13.3	100	274	
Hori.	9748.000	AV	33.5	38.5	8.7	38.8	41.9	53.9	12.0	100	0	
Hori.	12185.000	AV	34.6	39.3	10.3	39.2	45.0	53.9	8.9	100	0	
Vert.	4874.000	PK	45.6	31.2	6.0	41.0	41.8	73.9	32.1	100	0	
Vert.	7311.000	PK	47.3	36.7	7.4	41.4	50.0	73.9	23.9	100	0	
Vert.	9748.000	PK	44.0	38.5	8.7	38.8	52.4	73.9	21.5	100	0	
Vert.	12185.000	PK	46.6	39.3	10.3	39.2	57.0	73.9	16.9	100	358	
Vert.	4874.000	AV	36.0	31.2	6.0	41.0	32.2	53.9	21.7	100	0	
Vert.	7311.000	AV	37.1	36.7	7.4	41.4	39.8	53.9	14.1	100	0	
Vert.	9748.000	AV	33.5	38.5	8.7	38.8	41.9	53.9	12.0	100	0	
Vert.	12185.000	AV	35.8	39.3	10.3	39.2	46.2	53.9	**7.7**	100	358	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	September 29, 2011	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	26deg.C , 48%RH	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Kenichi Adachi	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2462 MHz			
	Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)			

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.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Hori.	76.800	QP	23.7	6.3	7.0	32.1	4.9	40.0	35.1	100	0	noise floor level
Hori.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Hori.	2483.500	PK	60.1	27.5	13.6	37.6	63.6	73.9	10.3	117	355	
Hori.	4924.000	PK	47.2	31.3	6.0	40.9	43.6	73.9	30.3	100	0	
Hori.	7386.000	PK	47.4	36.9	7.3	41.4	50.2	73.9	23.7	100	0	
Hori.	9848.000	PK	43.8	38.7	8.8	38.8	52.5	73.9	21.4	100	0	
Hori.	12310.000	PK	44.1	39.4	10.3	39.2	54.6	73.9	19.3	100	0	
Hori.	2483.500	AV	42.2	27.5	13.6	37.6	45.7	53.9	8.2	117	355	
Hori.	4924.000	AV	36.3	31.3	6.0	40.9	32.7	53.9	21.2	100	0	
Hori.	7386.000	AV	37.1	36.9	7.3	41.4	39.9	53.9	14.0	100	0	
Hori.	9848.000	AV	33.8	38.7	8.8	38.8	42.5	53.9	11.4	100	0	
Hori.	12310.000	AV	34.0	39.4	10.3	39.2	44.5	53.9	9.4	100	0	
Vert.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Vert.	76.800	QP	23.7	6.3	7.0	32.1	4.9	40.0	35.1	100	0	noise floor level
Vert.	820.666	QP	23.0	20.3	10.5	31.5	22.3	46.0	23.7	100	0	noise floor level
Vert.	2483.500	PK	55.9	27.5	13.6	37.6	59.4	73.9	14.5	100	271	
Vert.	4924.000	PK	46.4	31.3	6.0	40.9	42.8	73.9	31.1	100	0	
Vert.	7386.000	PK	47.2	36.9	7.3	41.4	50.0	73.9	23.9	100	0	
Vert.	9848.000	PK	43.2	38.7	8.8	38.8	51.9	73.9	22.0	100	0	
Vert.	12310.000	PK	46.3	39.4	10.3	39.2	56.8	73.9	17.1	103	359	
Vert.	2483.500	AV	40.3	27.5	13.6	37.6	43.8	53.9	10.1	100	271	
Vert.	4924.000	AV	36.3	31.3	6.0	40.9	32.7	53.9	21.2	100	0	
Vert.	7386.000	AV	37.1	36.9	7.3	41.4	39.9	53.9	14.0	100	0	
Vert.	9848.000	AV	33.8	38.7	8.8	38.8	42.5	53.9	11.4	100	0	
Vert.	12310.000	AV	35.3	39.4	10.3	39.2	45.8	53.9	**8.1**	103	359	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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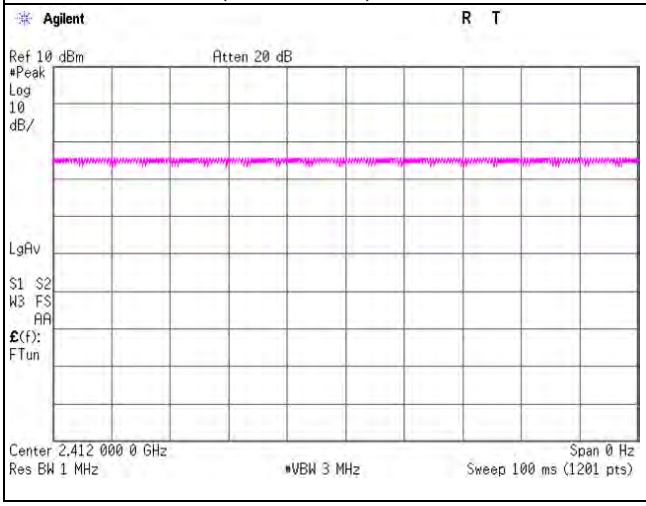
Spurious emission (Radiated), VBW (AV) Calculation chart

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

VBW (AV) Calculation	
VBW: 1/x = 10Hz **x: (Tx on+Tx off) =100ms**	
	

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber	
Date	September 29, 2011	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	26deg.C , 48%RH	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Kenichi Adachi	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2422 MHz			
	Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)			

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.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Hori.	76.800	QP	23.8	6.3	7.0	32.1	5.0	40.0	35.0	100	0	noise floor level
Hori.	807.333	QP	23.0	20.2	10.4	31.6	22.0	46.0	24.0	100	0	noise floor level
Hori.	2390.000	PK	61.2	27.2	13.7	37.8	64.3	73.9	9.6	124	359	
Hori.	4844.000	PK	46.3	31.1	6.0	41.0	42.4	73.9	31.5	100	0	
Hori.	7266.000	PK	46.8	36.6	7.4	41.3	49.5	73.9	24.4	100	0	
Hori.	9688.000	PK	43.8	38.3	8.7	38.8	52.0	73.9	21.9	100	0	
Hori.	12110.000	PK	44.6	39.3	10.2	39.2	54.9	73.9	19.0	100	0	
Hori.	2390.000	AV	49.2	27.2	13.7	37.8	52.3	53.9	**1.6**	124	359	
Hori.	4844.000	AV	36.5	31.1	6.0	41.0	32.6	53.9	21.3	100	0	
Hori.	7266.000	AV	36.6	36.6	7.4	41.3	39.3	53.9	14.6	100	0	
Hori.	9688.000	AV	33.5	38.3	8.7	38.8	41.7	53.9	12.2	100	0	
Hori.	12110.000	AV	35.0	39.3	10.2	39.2	45.3	53.9	8.6	100	0	
Vert.	38.400	QP	22.8	15.2	6.6	32.1	12.5	40.0	27.5	100	0	noise floor level
Vert.	76.800	QP	23.8	6.3	7.0	32.1	5.0	40.0	35.0	100	0	noise floor level
Vert.	807.333	QP	23.0	20.2	10.4	31.6	22.0	46.0	24.0	100	0	noise floor level
Vert.	2390.000	PK	59.3	27.2	13.7	37.8	62.4	73.9	11.5	104	4	
Vert.	4844.000	PK	47.1	31.1	6.0	41.0	43.2	73.9	30.7	100	0	
Vert.	7266.000	PK	46.3	36.6	7.4	41.3	49.0	73.9	24.9	100	0	
Vert.	9688.000	PK	44.2	38.3	8.7	38.8	52.4	73.9	21.5	100	0	
Vert.	12110.000	PK	45.4	39.3	10.2	39.2	55.7	73.9	18.2	100	358	
Vert.	2390.000	AV	47.9	27.2	13.7	37.8	51.0	53.9	2.9	104	4	
Vert.	4844.000	AV	36.0	31.1	6.0	41.0	32.1	53.9	21.8	100	0	
Vert.	7266.000	AV	36.7	36.6	7.4	41.3	39.4	53.9	14.5	100	0	
Vert.	9688.000	AV	33.5	38.3	8.7	38.8	41.7	53.9	12.2	100	0	
Vert.	12110.000	AV	35.4	39.3	10.2	39.2	45.7	53.9	8.2	100	358	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	80.3	27.3	13.6	37.7	83.5	-	-	Carrier
Hori.	2399.360	PK	54.9	27.3	13.7	37.8	58.1	63.5	5.4	
Vert.	2422.000	PK	79.1	27.3	13.6	37.7	82.3	-	-	Carrier
Vert.	2399.360	PK	53.3	27.3	13.7	37.8	56.5	62.3	5.8	

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

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2437 MHz		
	Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)		

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	46.5	31.2	6.0	41.0	42.7	73.9	31.2	100	0	
Hori.	7311.000	PK	47.1	36.7	7.4	41.4	49.8	73.9	24.1	100	0	
Hori.	9748.000	PK	43.1	38.5	8.7	38.8	51.5	73.9	22.4	100	0	
Hori.	12185.000	PK	45.1	39.3	10.3	39.2	55.5	73.9	18.4	100	0	
Hori.	4874.000	AV	36.6	31.2	6.0	41.0	32.8	53.9	21.1	100	0	
Hori.	7311.000	AV	37.0	36.7	7.4	41.4	39.7	53.9	14.2	100	0	
Hori.	9748.000	AV	33.4	38.5	8.7	38.8	41.8	53.9	12.1	100	0	
Hori.	12185.000	AV	34.6	39.3	10.3	39.2	45.0	53.9	8.9	100	0	
Vert.	4874.000	PK	45.7	31.2	6.0	41.0	41.9	73.9	32.0	100	0	
Vert.	7311.000	PK	47.3	36.7	7.4	41.4	50.0	73.9	23.9	100	0	
Vert.	9748.000	PK	43.3	38.5	8.7	38.8	51.7	73.9	22.2	100	0	
Vert.	12185.000	PK	44.9	39.3	10.3	39.2	55.3	73.9	18.6	100	358	
Vert.	4874.000	AV	36.0	31.2	6.0	41.0	32.2	53.9	21.7	100	0	
Vert.	7311.000	AV	37.1	36.7	7.4	41.4	39.8	53.9	14.1	100	0	
Vert.	9748.000	AV	33.4	38.5	8.7	38.8	41.8	53.9	12.1	100	0	
Vert.	12185.000	AV	35.1	39.3	10.3	39.2	45.5	53.9	**8.4**	100	358	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	September 8, 2011	September 14, 2011	September 16, 2011
Temperature / Humidity	27deg.C , 59%RH	27deg.C , 56%RH	24deg.C , 66%RH
Engineer	Akio Hayashi	Tatsuya Arai	Tatsuya Arai
Mode	Tx, 2452 MHz		
	Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)		

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	60.7	27.5	13.6	37.6	64.2	73.9	9.7	118	1	
Hori.	4904.000	PK	47.2	31.3	6.0	40.9	43.6	73.9	30.3	100	0	
Hori.	7356.000	PK	47.2	36.8	7.3	41.4	49.9	73.9	24.0	100	0	
Hori.	9808.000	PK	43.7	38.6	8.8	38.8	52.3	73.9	21.6	100	0	
Hori.	12260.000	PK	44.8	39.3	10.3	39.2	55.2	73.9	18.7	100	0	
Hori.	2483.500	AV	46.3	27.5	13.6	37.6	49.8	53.9	**4.1**	118	1	
Hori.	4904.000	AV	36.3	31.3	6.0	40.9	32.7	53.9	21.2	100	0	
Hori.	7356.000	AV	37.3	36.8	7.3	41.4	40.0	53.9	13.9	100	0	
Hori.	9808.000	AV	34.0	38.6	8.8	38.8	42.6	53.9	11.3	100	0	
Hori.	12260.000	AV	35.4	39.3	10.3	39.2	45.8	53.9	8.1	100	0	
Vert.	2483.500	PK	57.3	27.5	13.6	37.6	60.8	73.9	13.1	127	286	
Vert.	4904.000	PK	46.5	31.3	6.0	40.9	42.9	73.9	31.0	100	0	
Vert.	7356.000	PK	48.3	36.8	7.3	41.4	51.0	73.9	22.9	100	0	
Vert.	9808.000	PK	43.9	38.6	8.8	38.8	52.5	73.9	21.4	100	0	
Vert.	12260.000	PK	45.3	39.3	10.3	39.2	55.7	73.9	18.2	103	359	
Vert.	2483.500	AV	42.8	27.5	13.6	37.6	46.3	53.9	7.6	127	286	
Vert.	4904.000	AV	36.3	31.3	6.0	40.9	32.7	53.9	21.2	100	0	
Vert.	7356.000	AV	37.3	36.8	7.3	41.4	40.0	53.9	13.9	100	0	
Vert.	9808.000	AV	34.1	38.6	8.8	38.8	42.7	53.9	11.2	100	0	
Vert.	12260.000	AV	35.5	39.3	10.3	39.2	45.9	53.9	8.0	103	359	

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

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

*The 6th to 10th harmonic was not seen so the result was its base noise level.

Distance factor: 13GHz-40GHz 20log(3.0m/1.0m)= 9.5dB

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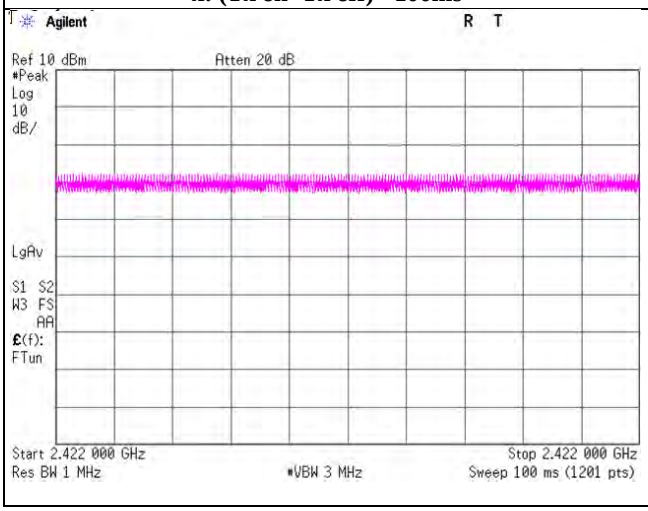
Spurious emission (Radiated), VBW (AV) Calculation chart

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

VBW (AV) Calculation	
VBW: 1/x = 10Hz **x: (Tx on+Tx off) =100ms**	
	

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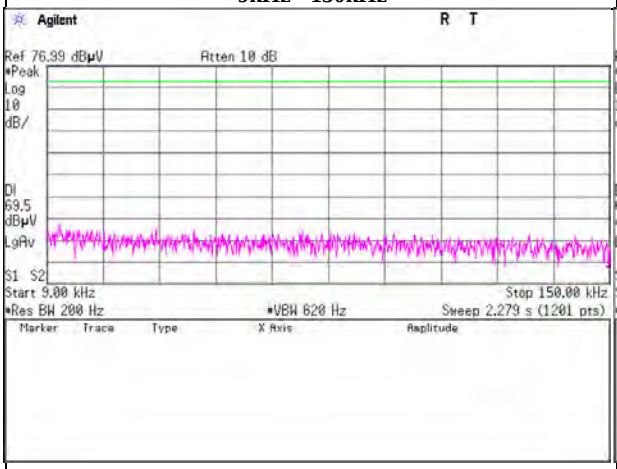
Spurious emission (Conducted)

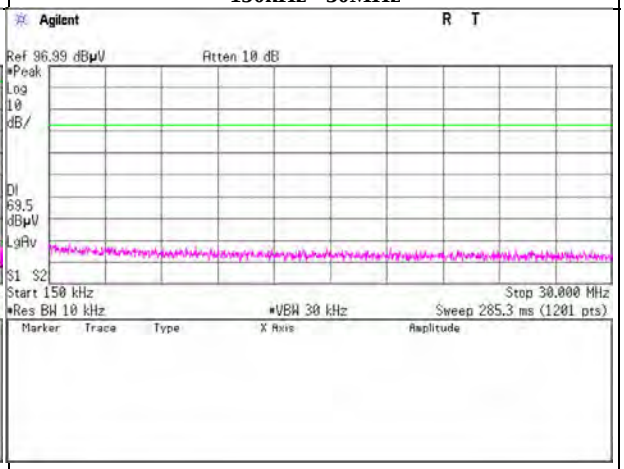
Tx, IEEE802.11b, PN9, worst data mode 11Mbps

Tx 2412MHz (1/2)

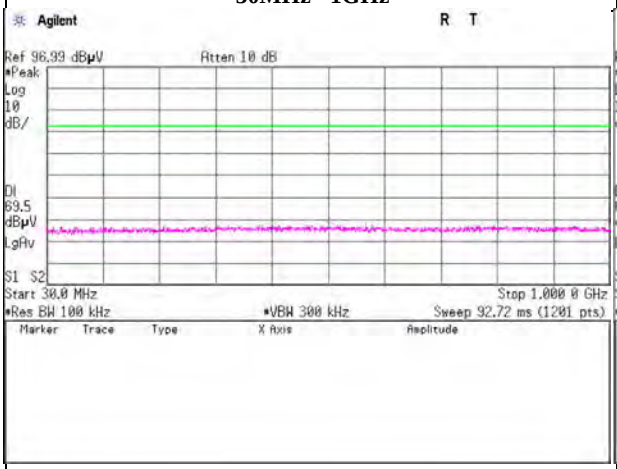
9kHz - 150kHz



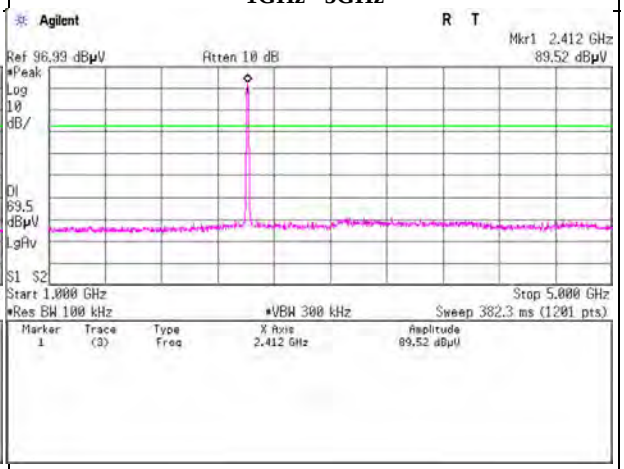
150kHz - 30MHz



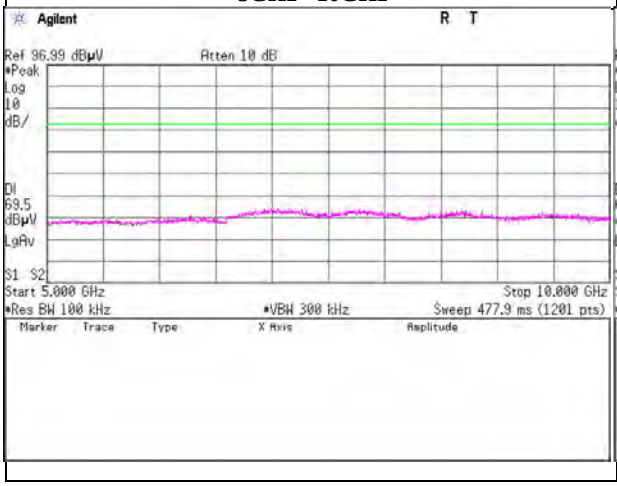
30MHz - 1GHz



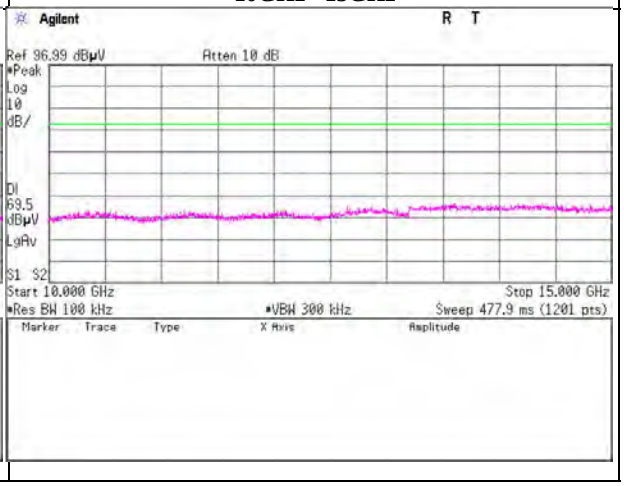
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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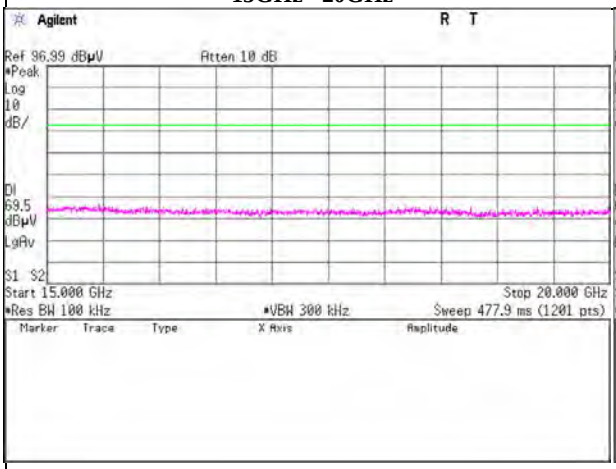
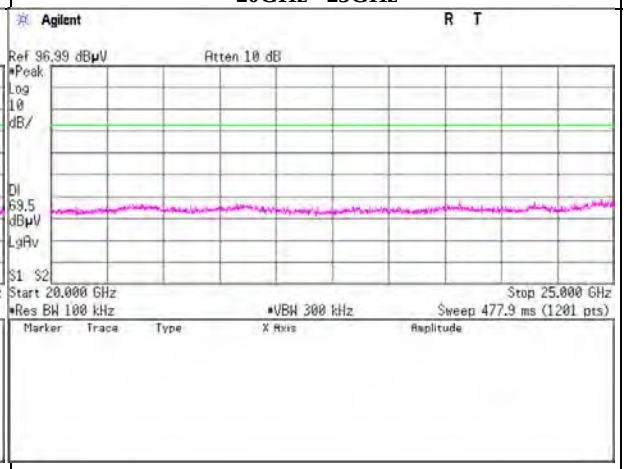
Spurious emission (Conducted)

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

Tx 2412MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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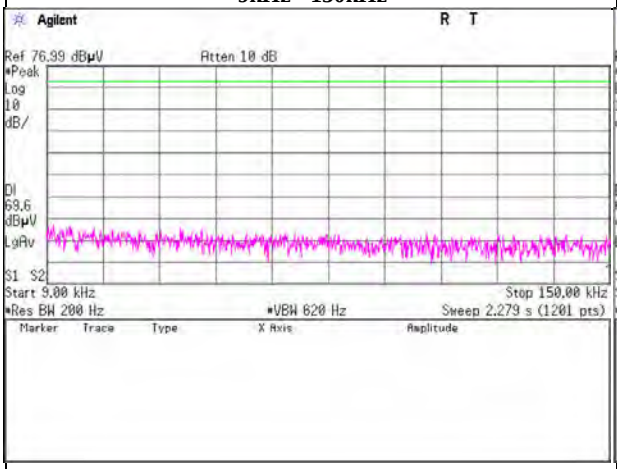
Spurious emission (Conducted)

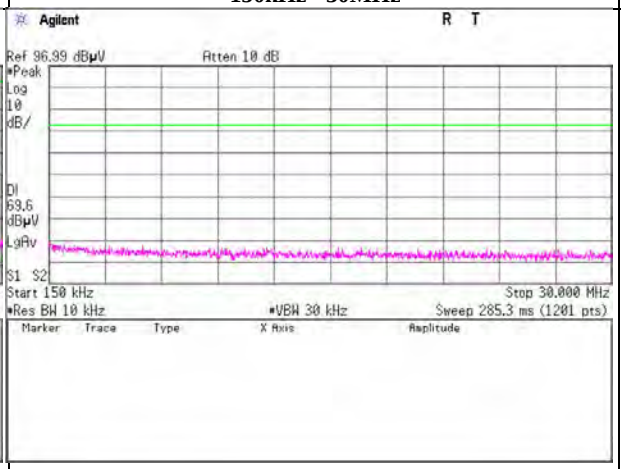
Tx, IEEE802.11b, PN9, worst data mode 11Mbps

Tx 2437MHz (1/2)

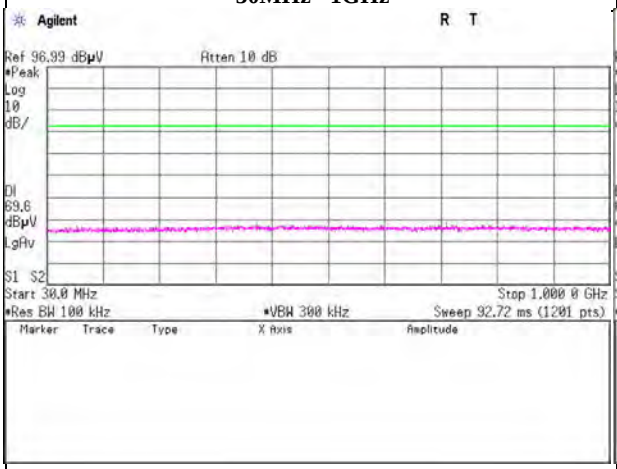
9kHz - 150kHz



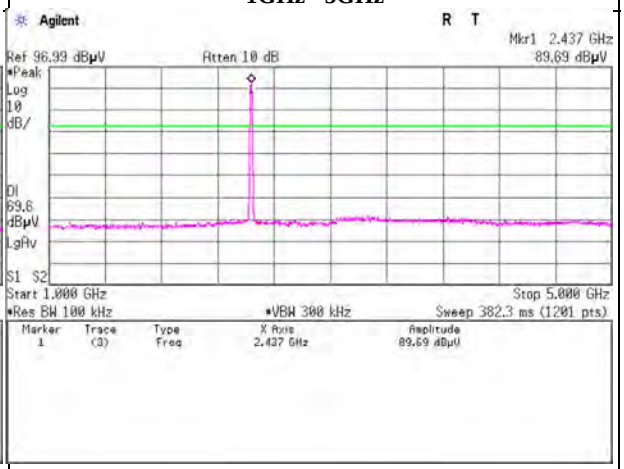
150kHz - 30MHz



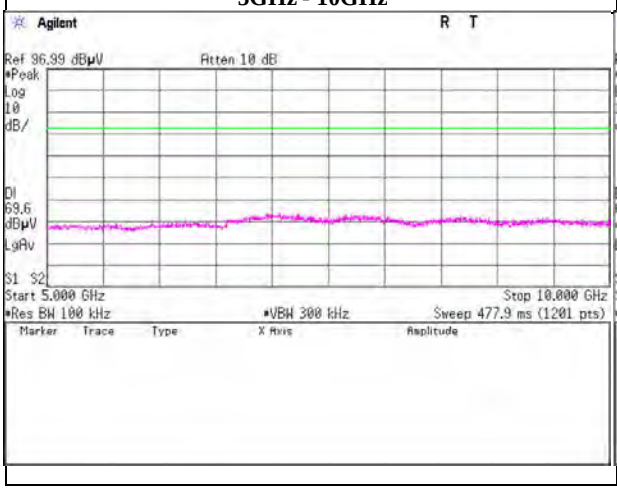
30MHz - 1GHz



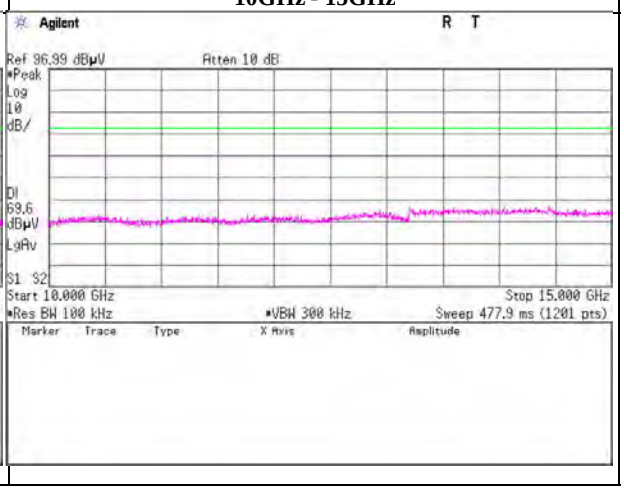
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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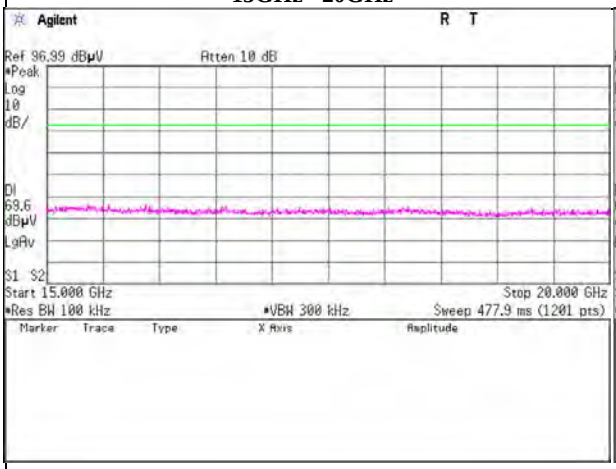
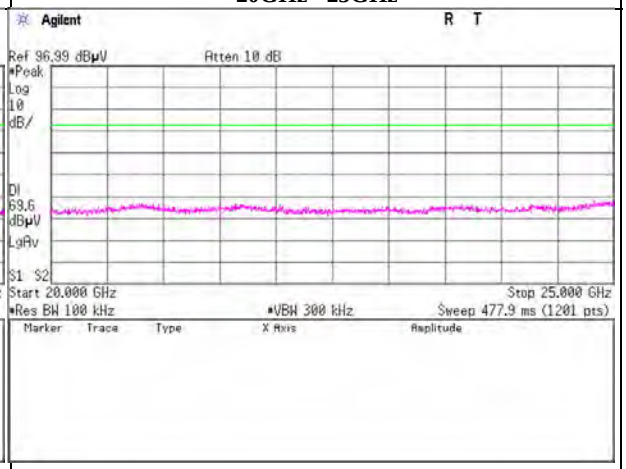
Spurious emission (Conducted)

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

Tx 2437MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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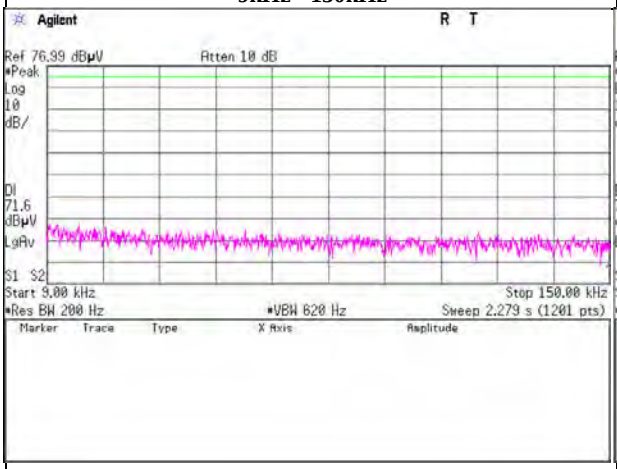
Spurious emission (Conducted)

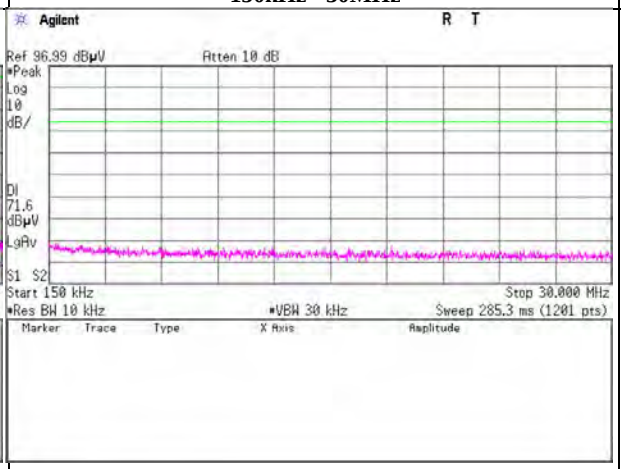
Tx, IEEE802.11b, PN9, worst data mode 11Mbps

Tx 2462MHz (1/2)

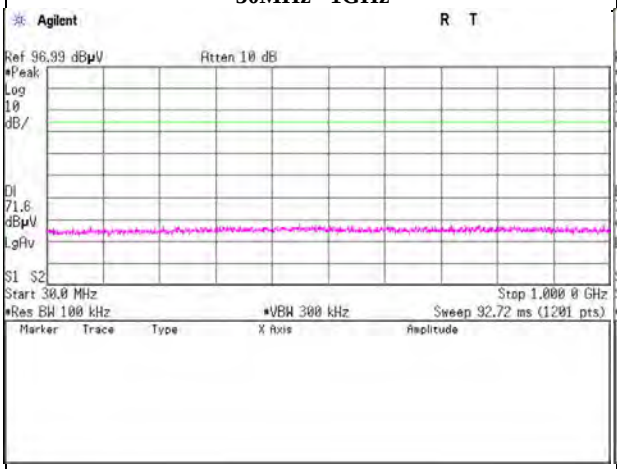
9kHz - 150kHz



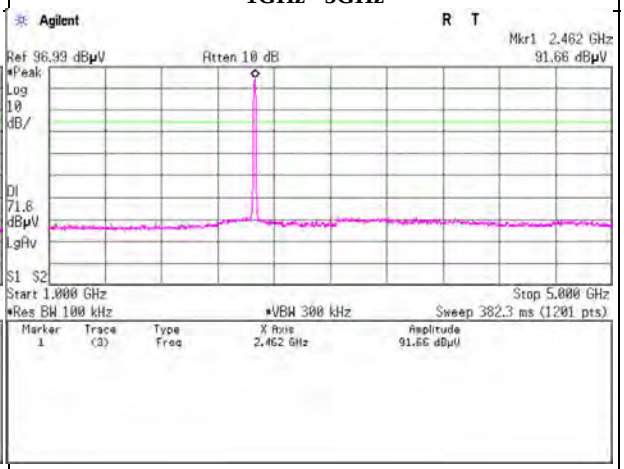
150kHz - 30MHz



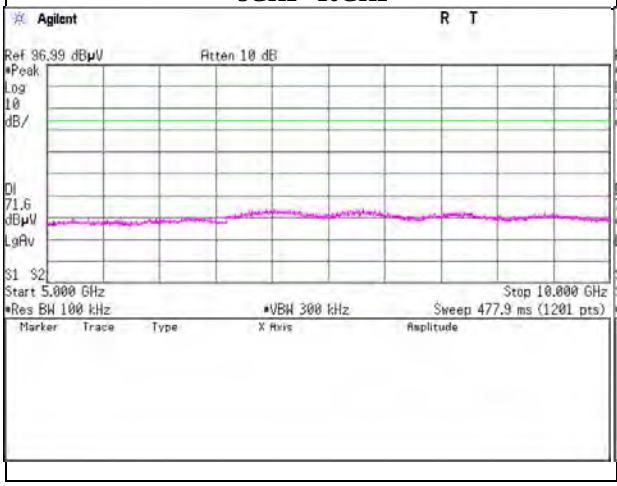
30MHz - 1GHz



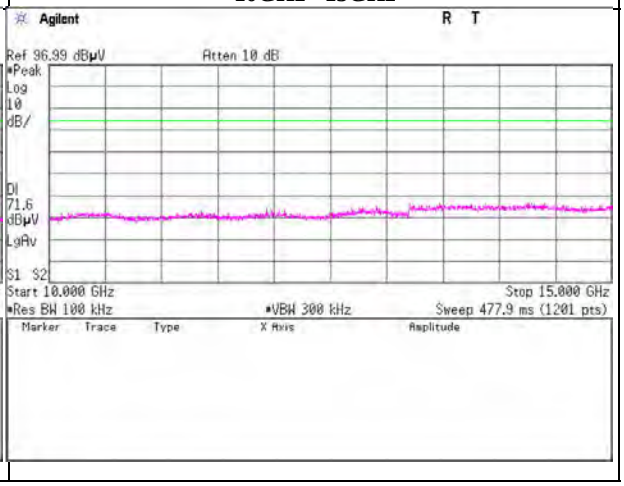
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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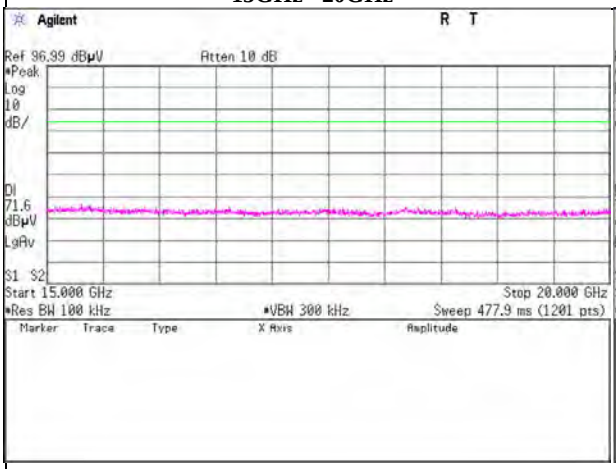
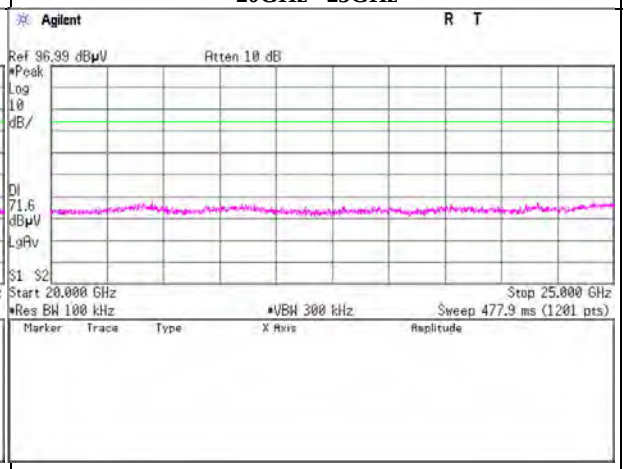
Spurious emission (Conducted)

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

Tx 2462MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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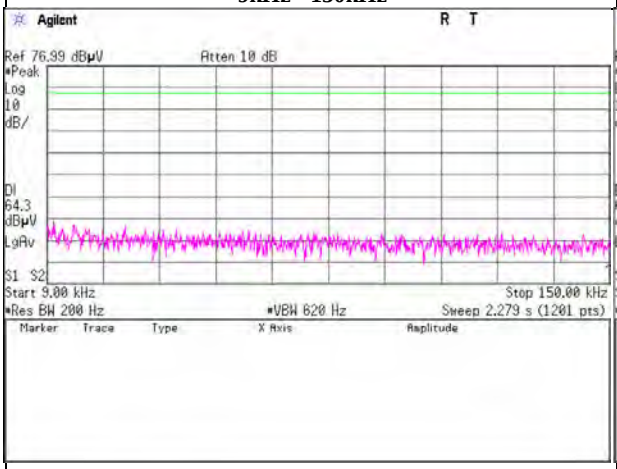
Spurious emission (Conducted)

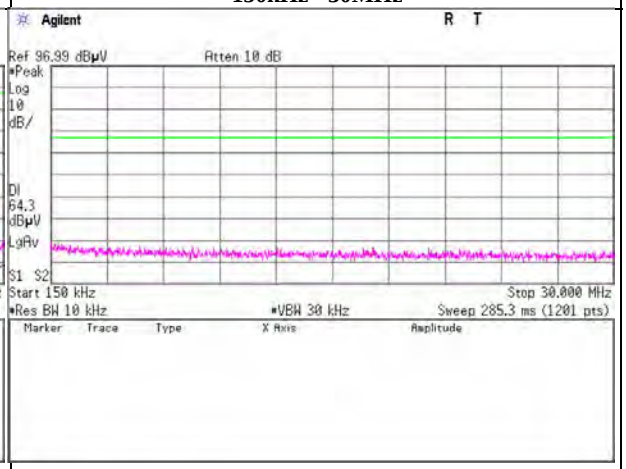
Tx, IEEE802.11g, PN9, worst data mode 24Mbps

Tx 2412MHz (1/2)

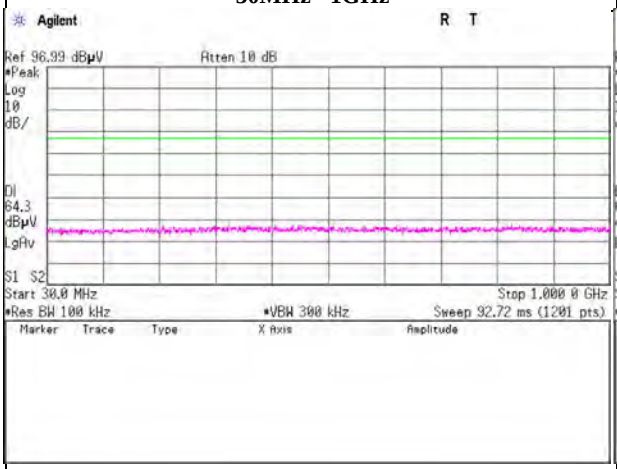
9kHz - 150kHz



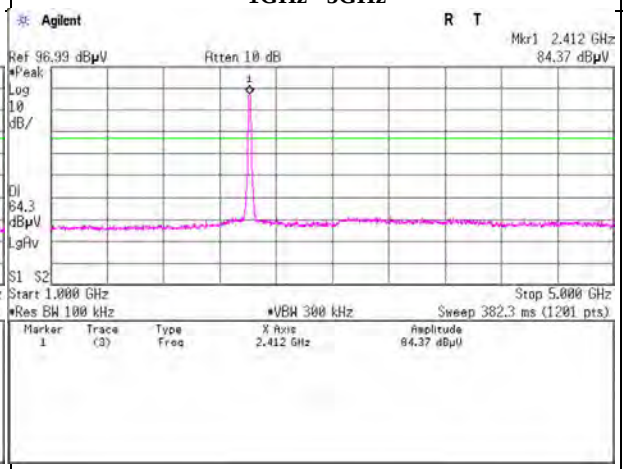
150kHz - 30MHz



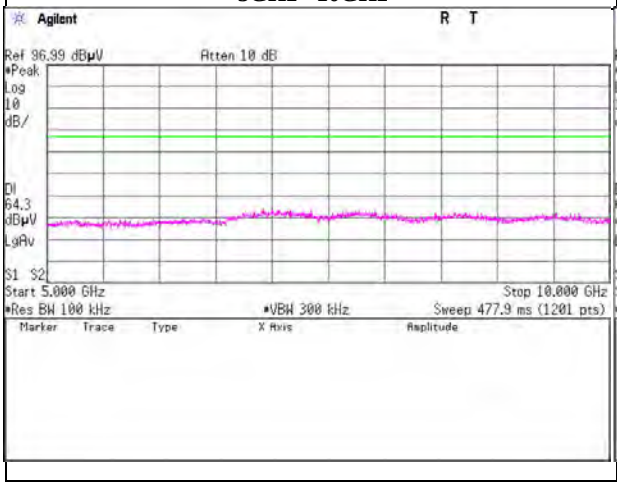
30MHz - 1GHz



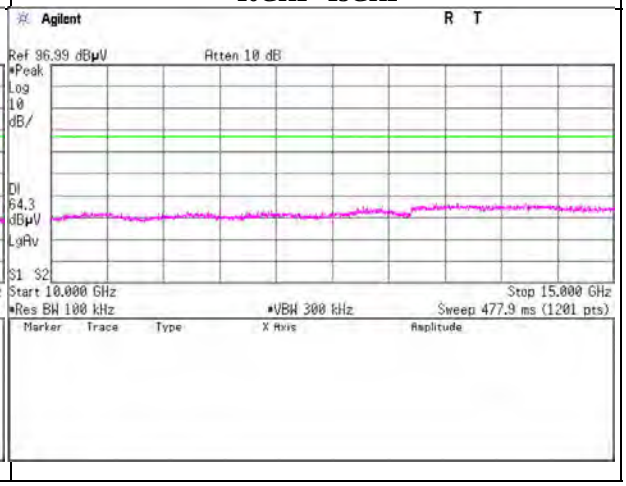
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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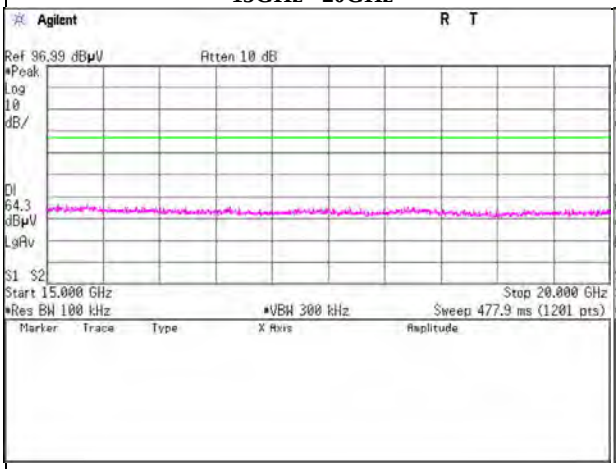
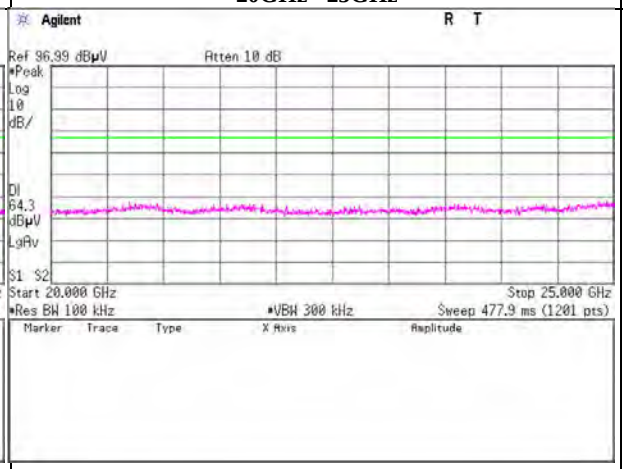
Spurious emission (Conducted)

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

Tx 2412MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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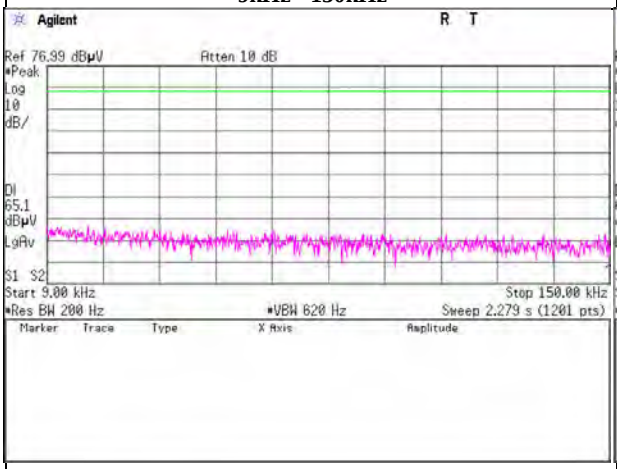
Spurious emission (Conducted)

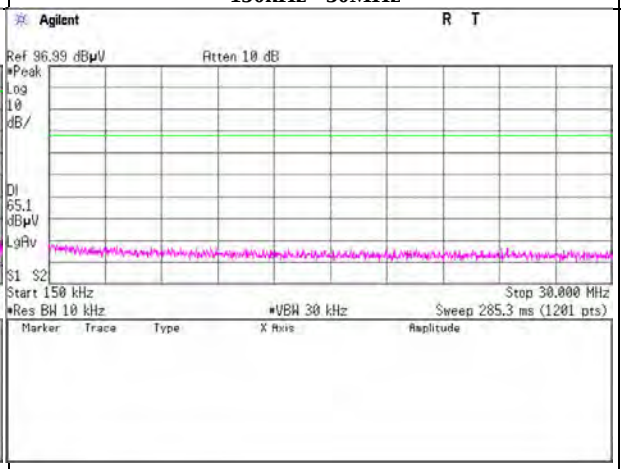
Tx, IEEE802.11g, PN9, worst data mode 24Mbps

Tx 2437MHz (1/2)

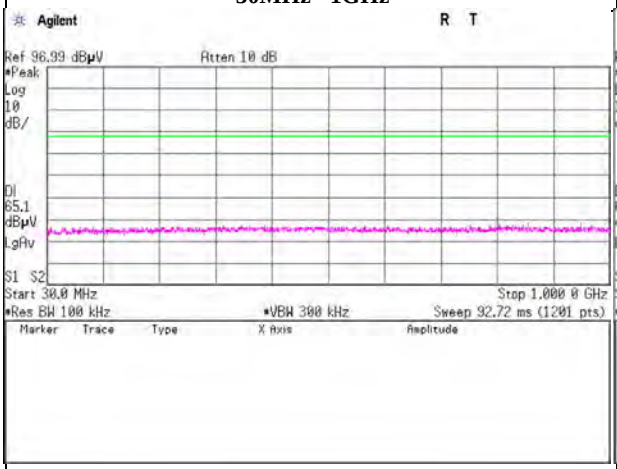
9kHz - 150kHz



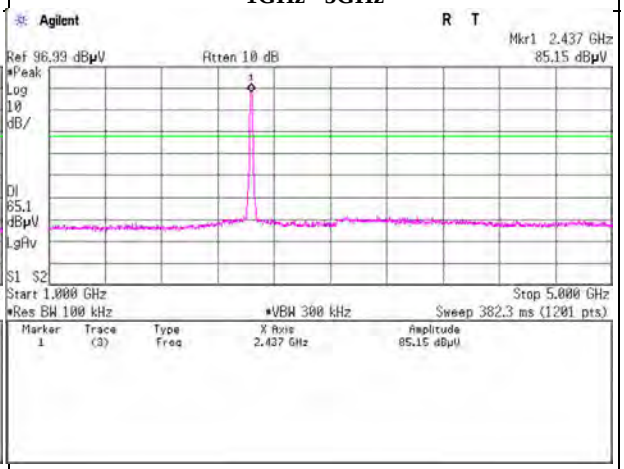
150kHz - 30MHz



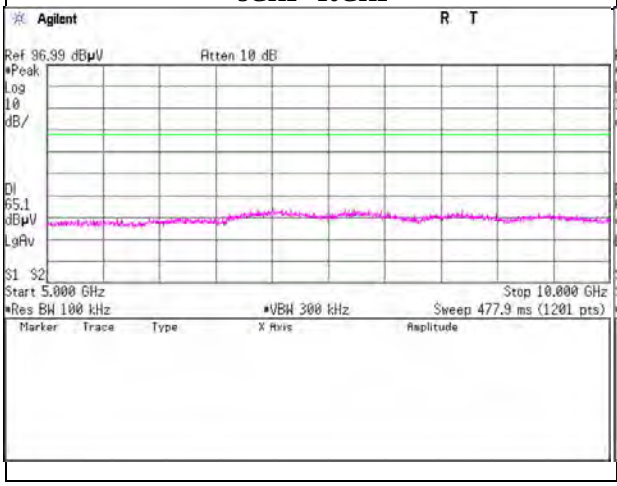
30MHz - 1GHz



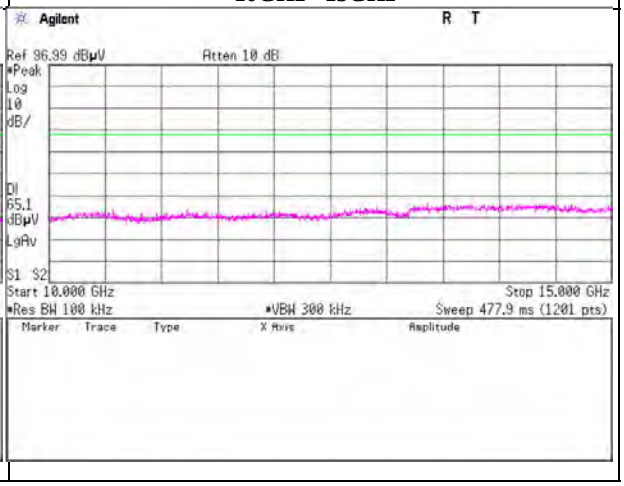
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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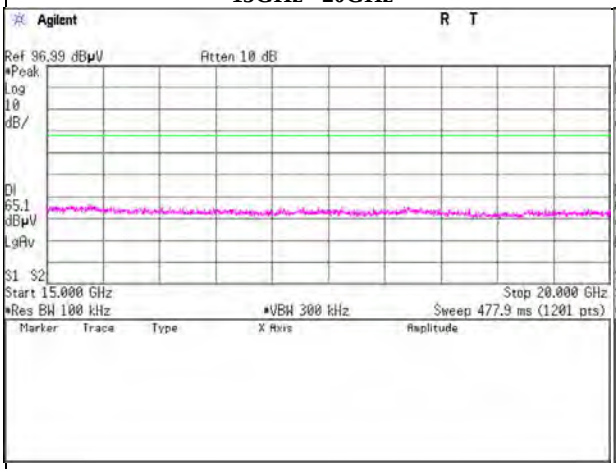
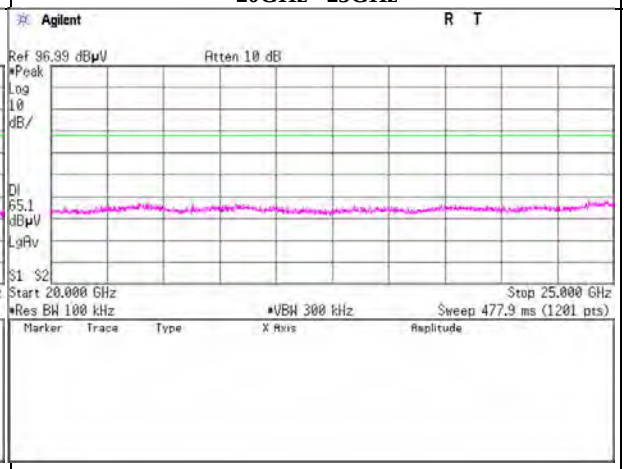
Spurious emission (Conducted)

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

Tx 2437MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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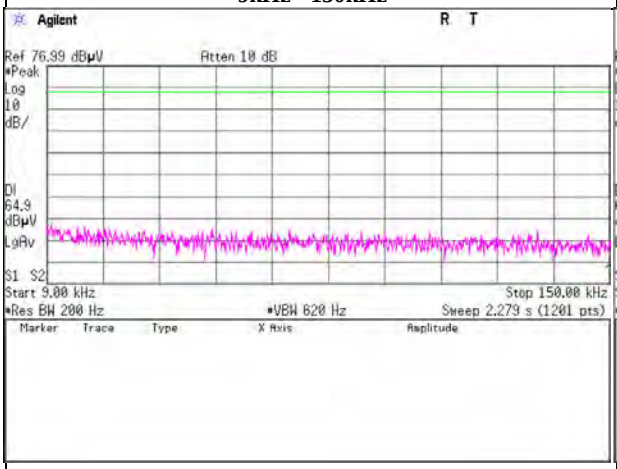
Spurious emission (Conducted)

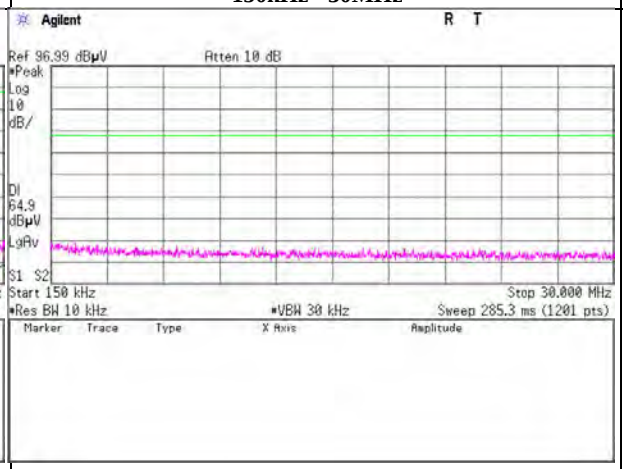
Tx, IEEE802.11g, PN9, worst data mode 24Mbps

Tx 2462MHz (1/2)

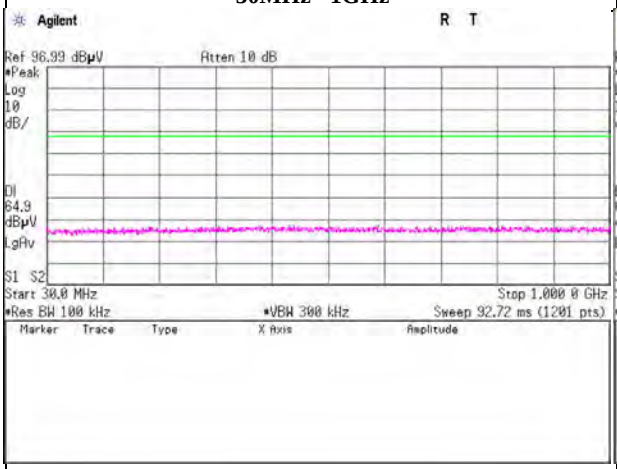
9kHz - 150kHz



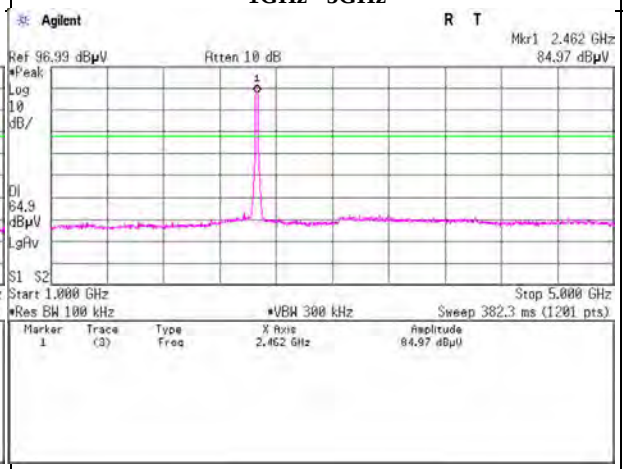
150kHz - 30MHz



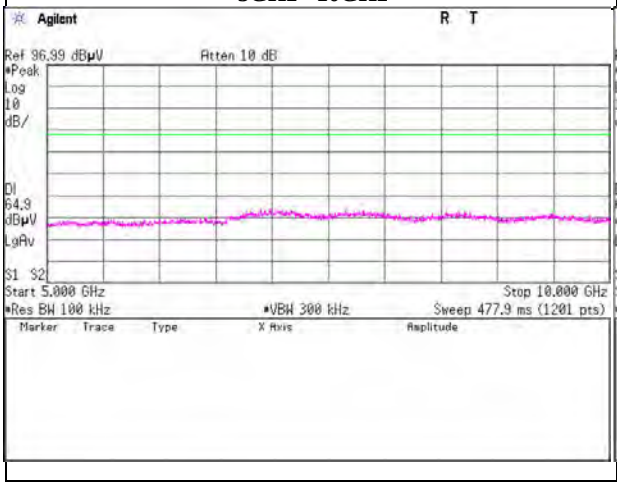
30MHz - 1GHz



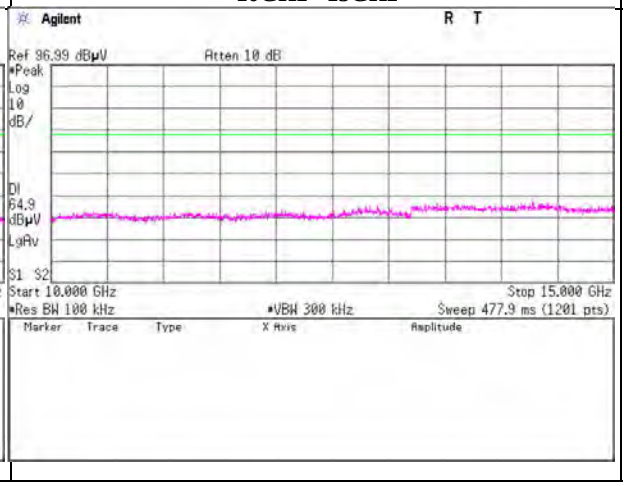
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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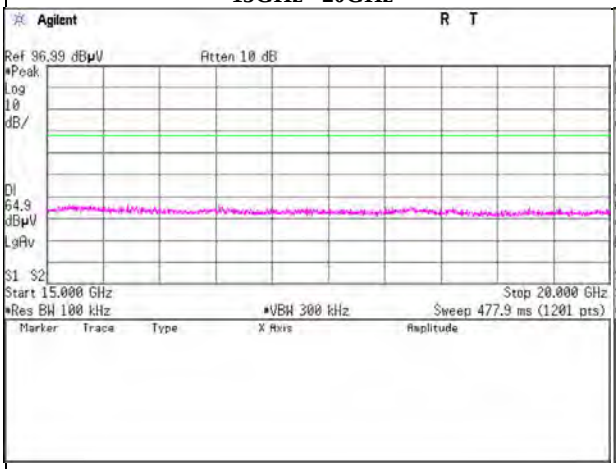
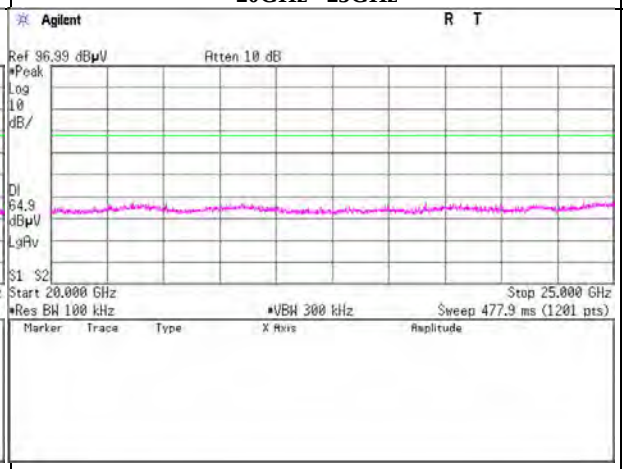
Spurious emission (Conducted)

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

Tx 2462MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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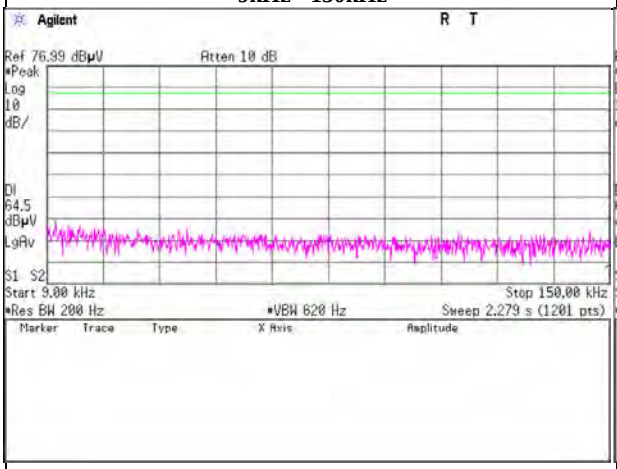
Spurious emission (Conducted)

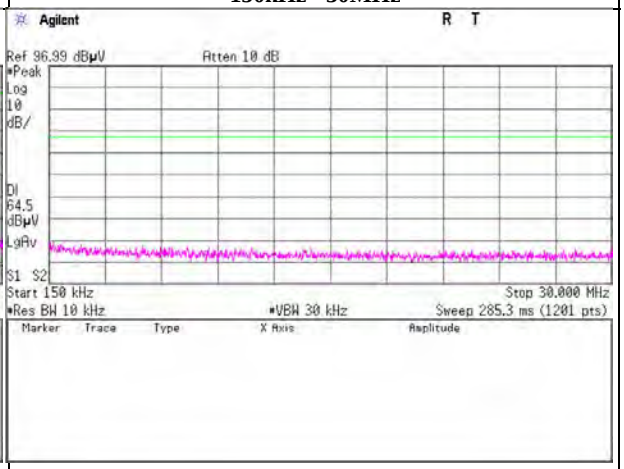
Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2412MHz (1/2)

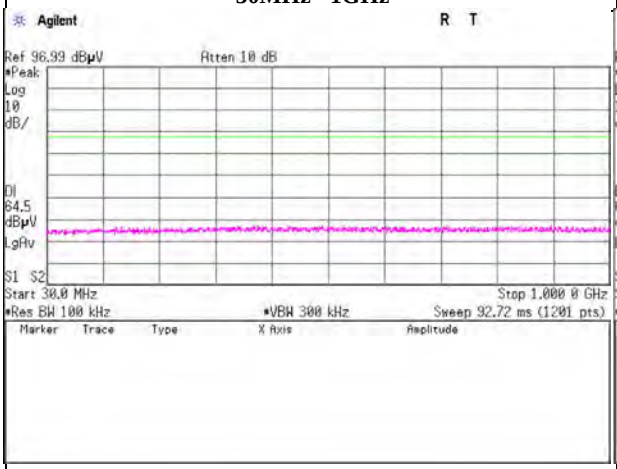
9kHz - 150kHz



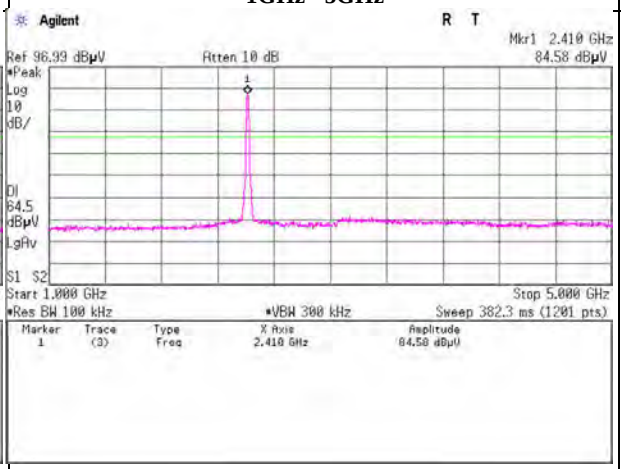
150kHz - 30MHz



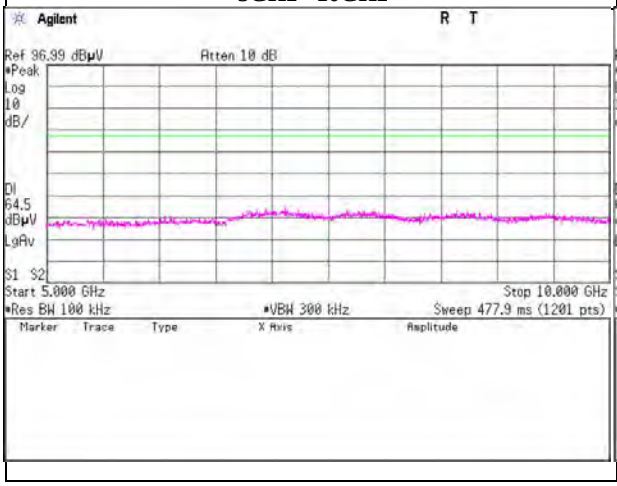
30MHz - 1GHz



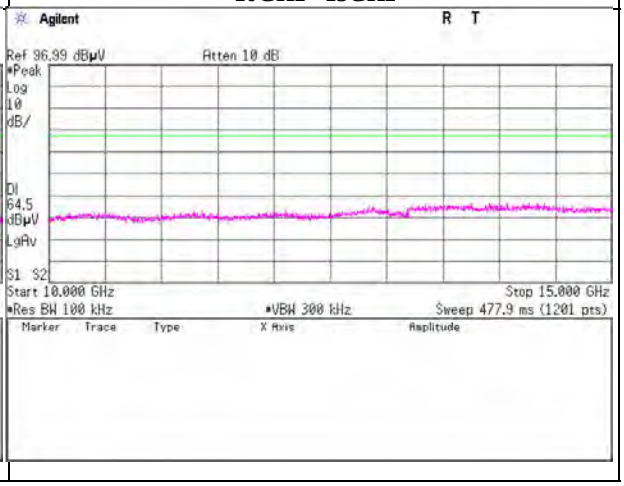
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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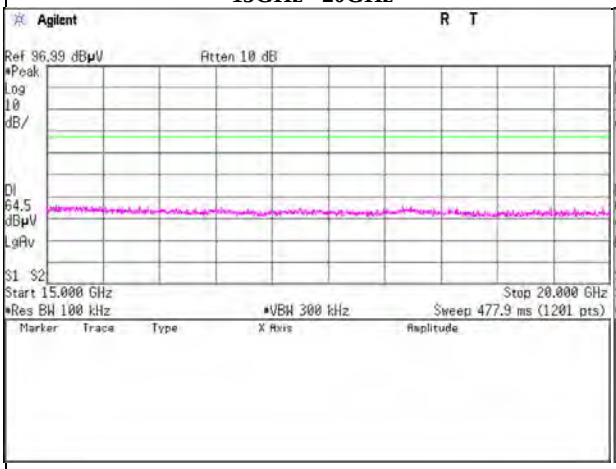
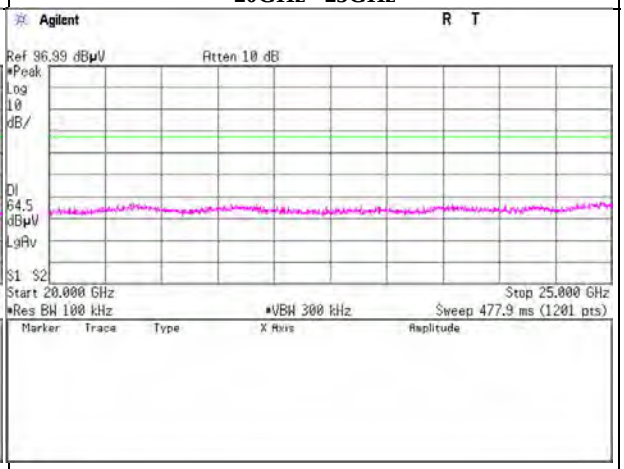
Spurious emission (Conducted)

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2412MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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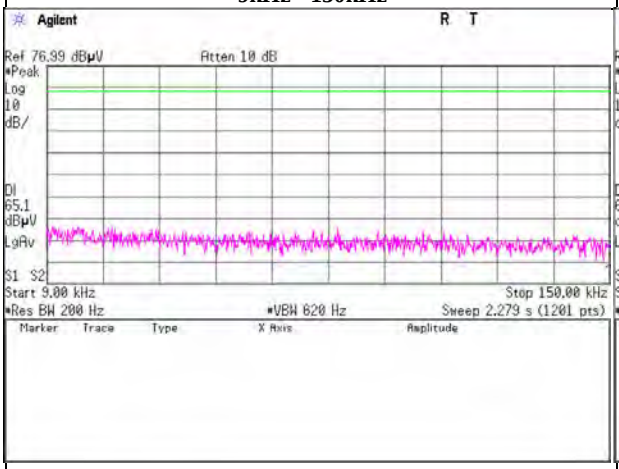
Spurious emission (Conducted)

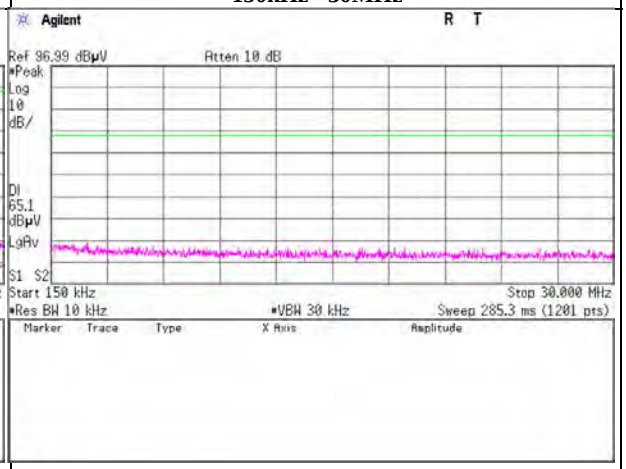
Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2437MHz (1/2)

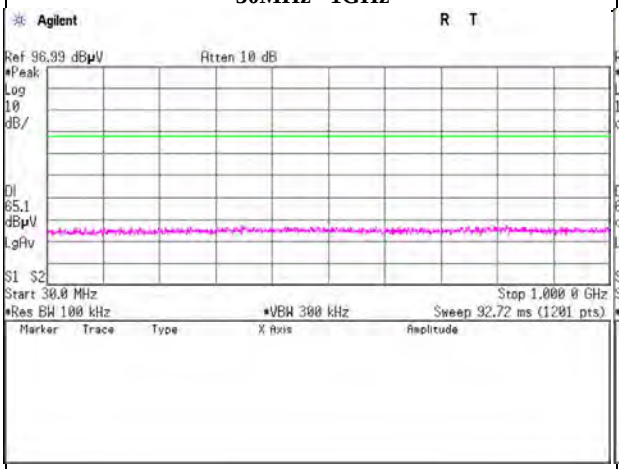
9kHz - 150kHz



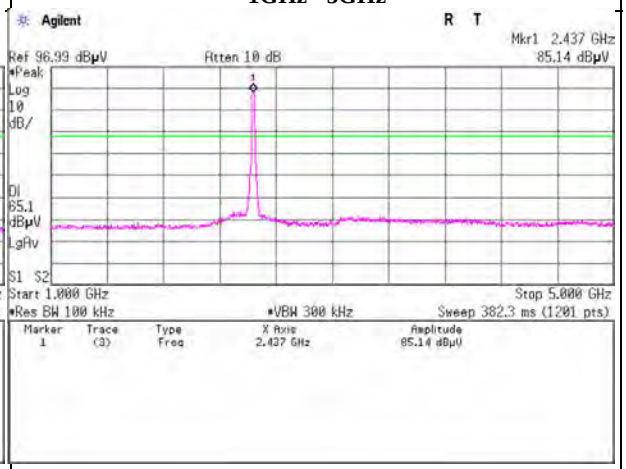
150kHz - 30MHz



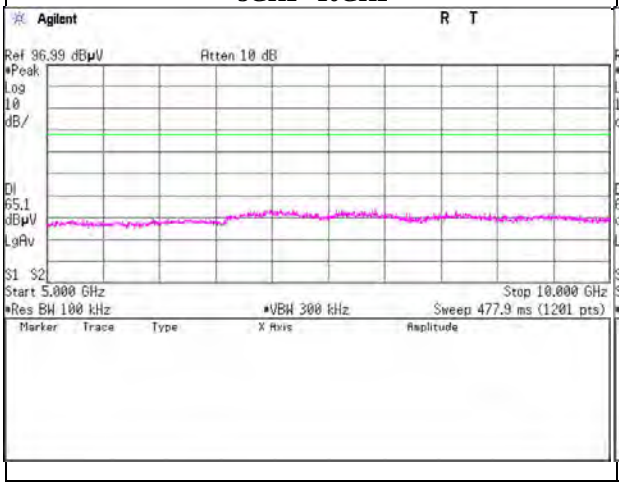
30MHz - 1GHz



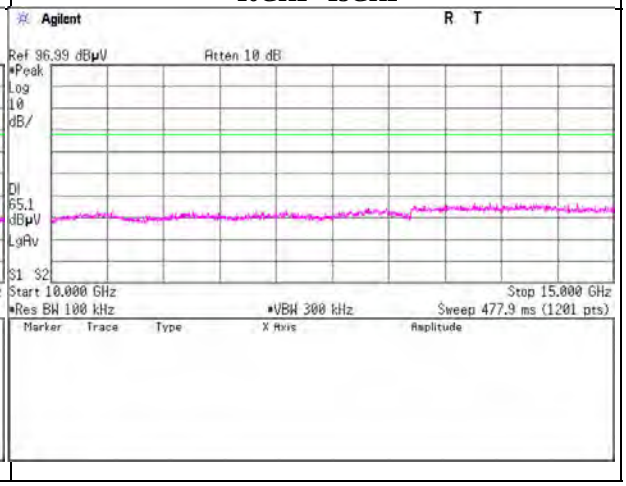
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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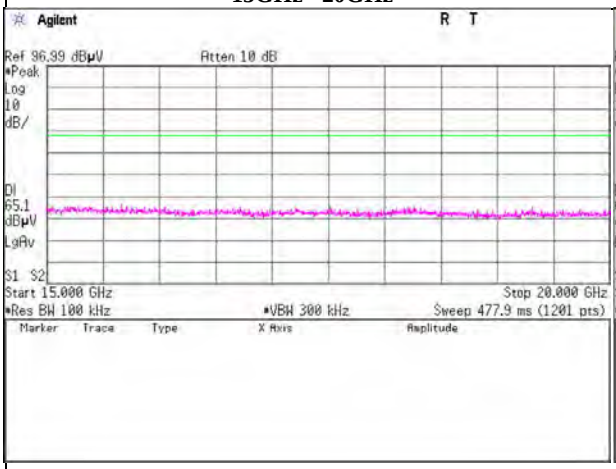
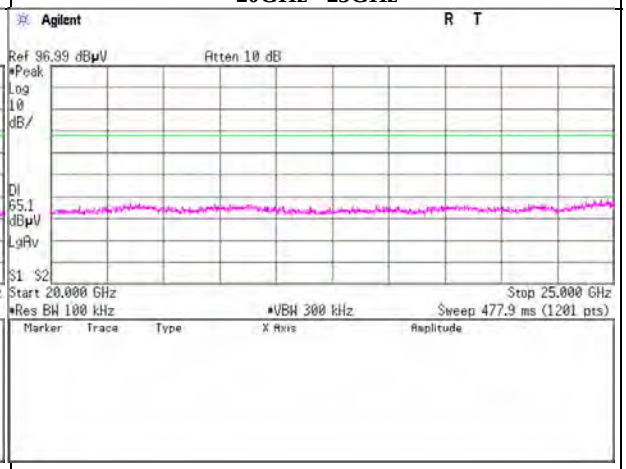
Spurious emission (Conducted)

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2437MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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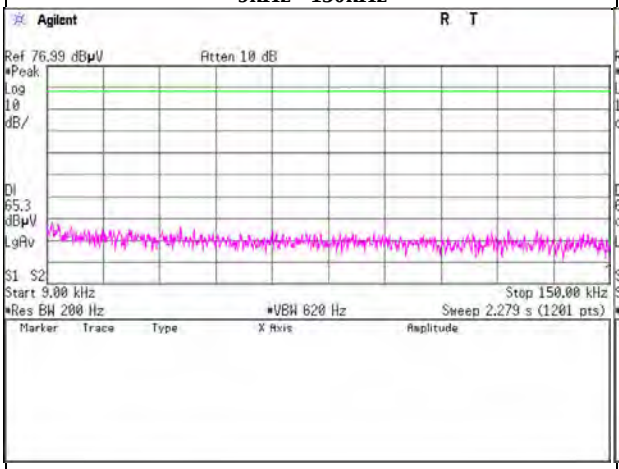
Spurious emission (Conducted)

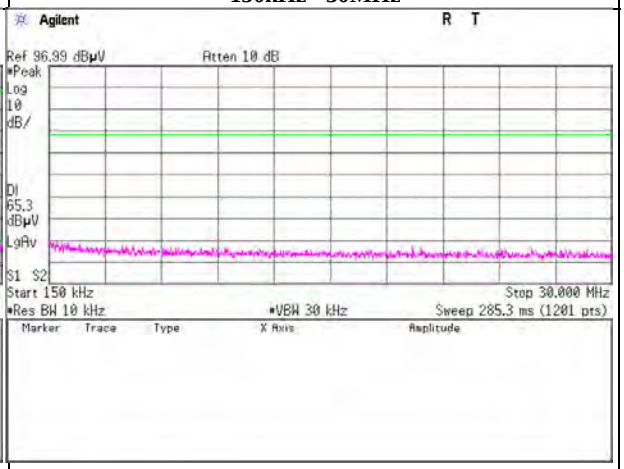
Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2462MHz (1/2)

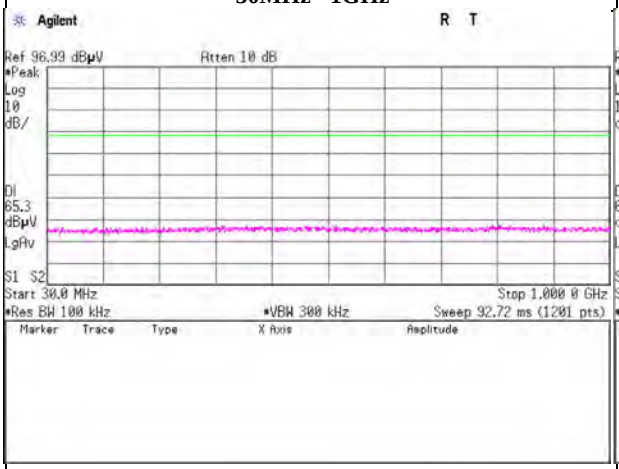
9kHz - 150kHz



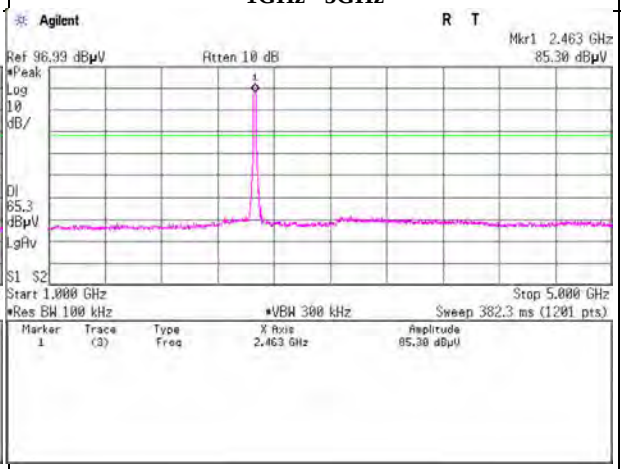
150kHz - 30MHz



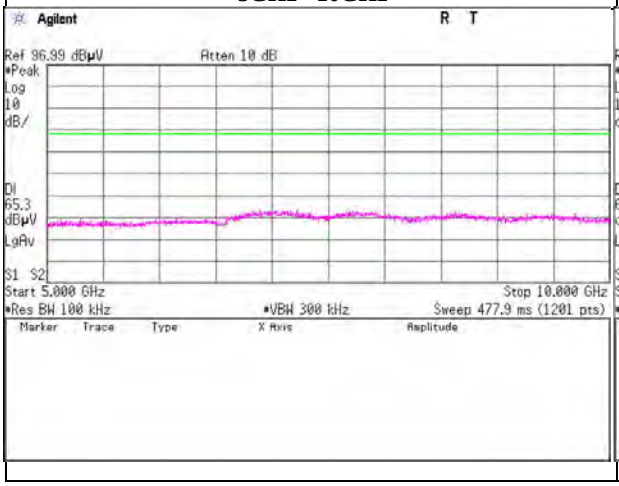
30MHz - 1GHz



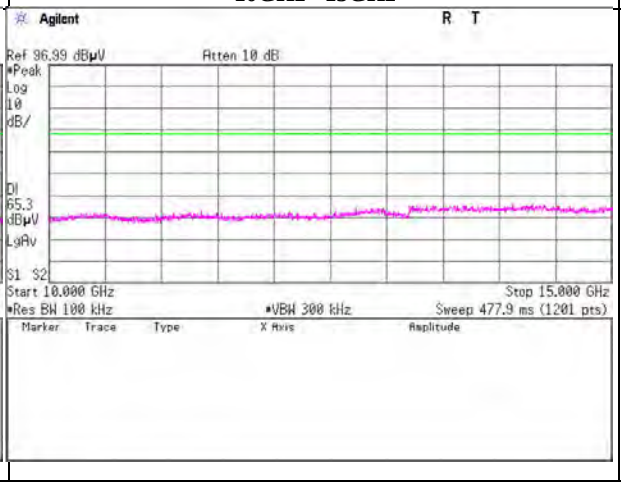
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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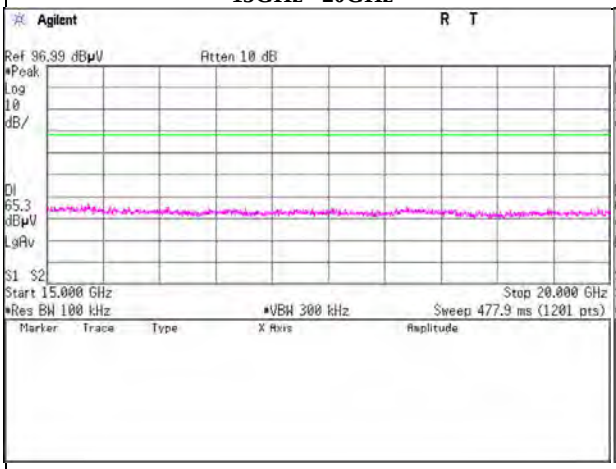
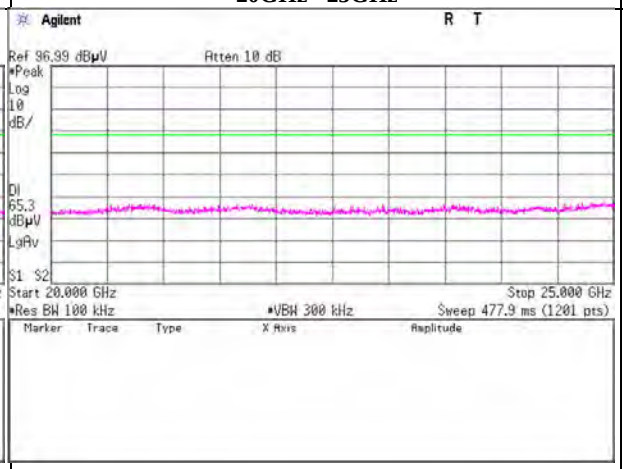
Spurious emission (Conducted)

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)

Tx 2462MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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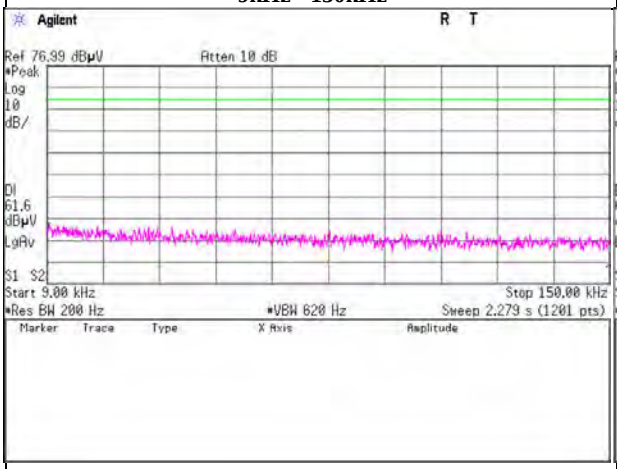
Spurious emission (Conducted)

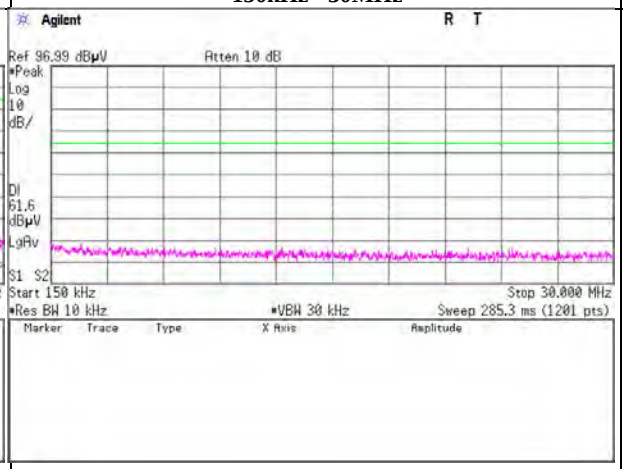
Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)

Tx 2422MHz (1/2)

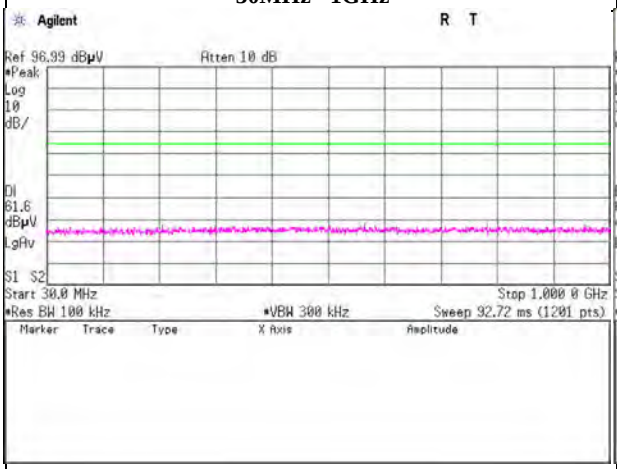
9kHz - 150kHz



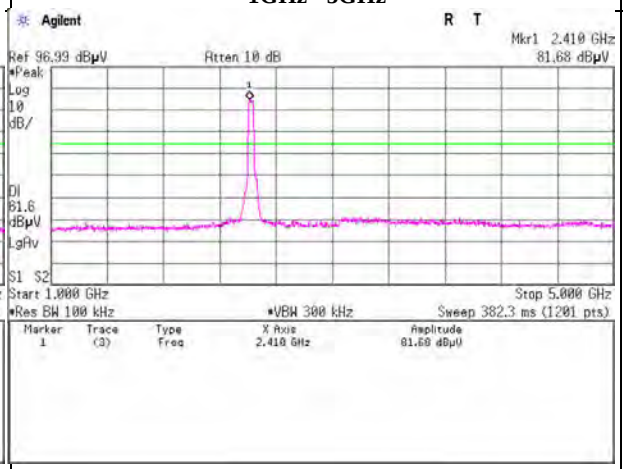
150kHz - 30MHz



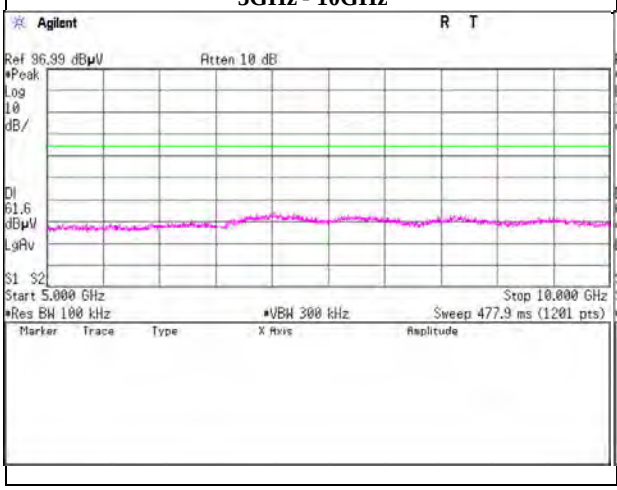
30MHz - 1GHz



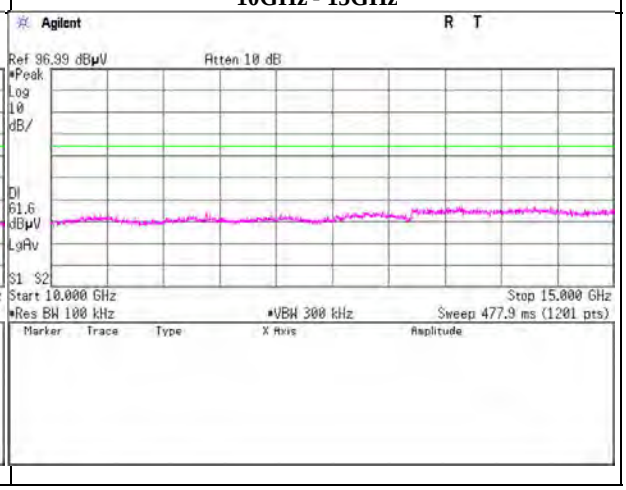
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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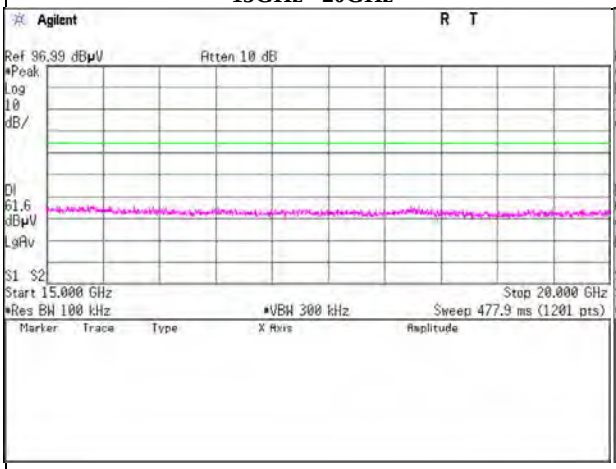
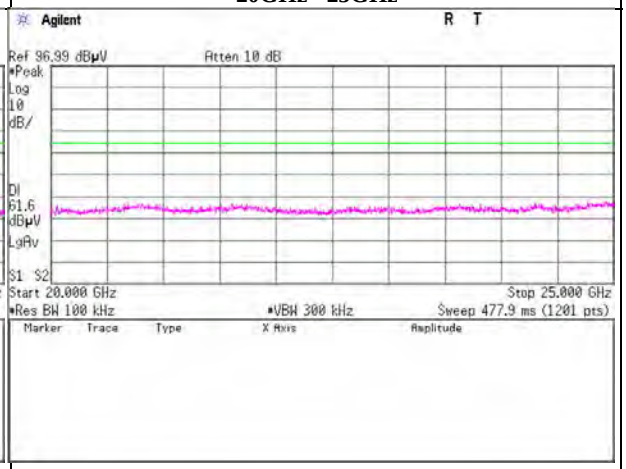
Spurious emission (Conducted)

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

Tx 2422MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx1_SpuriousG6	Tx1_SpuriousG7
Tx1_SpuriousG8	

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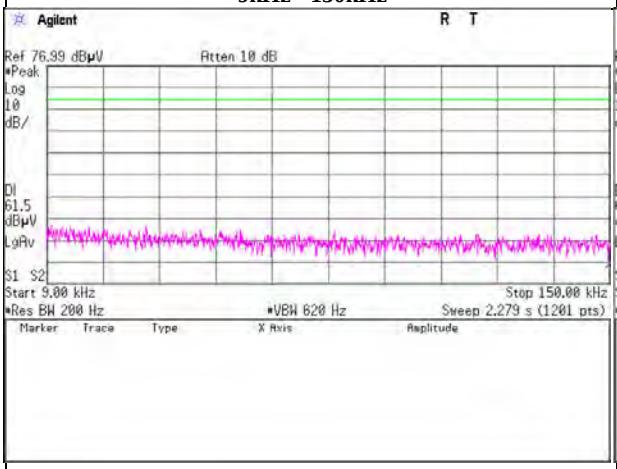
Spurious emission (Conducted)

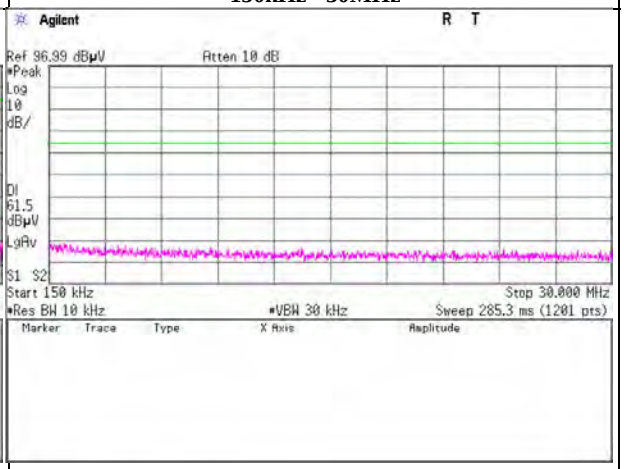
Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)

Tx 2437MHz (1/2)

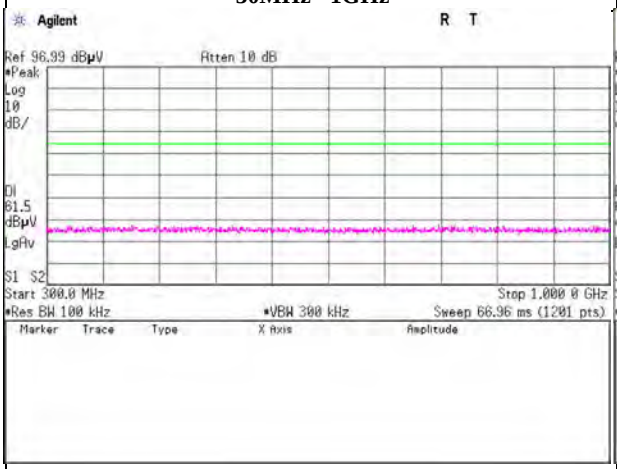
9kHz - 150kHz



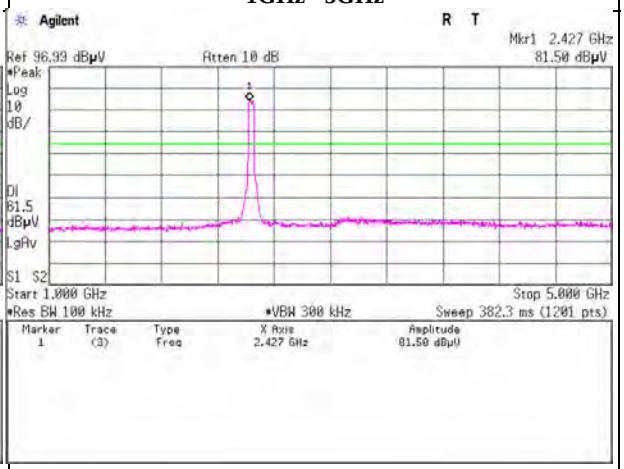
150kHz - 30MHz



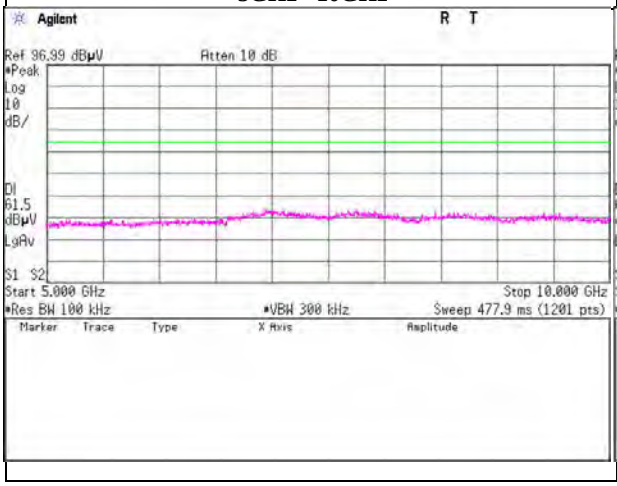
30MHz - 1GHz



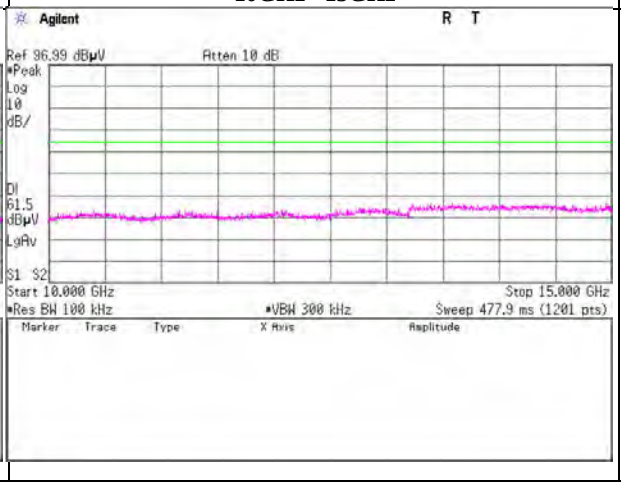
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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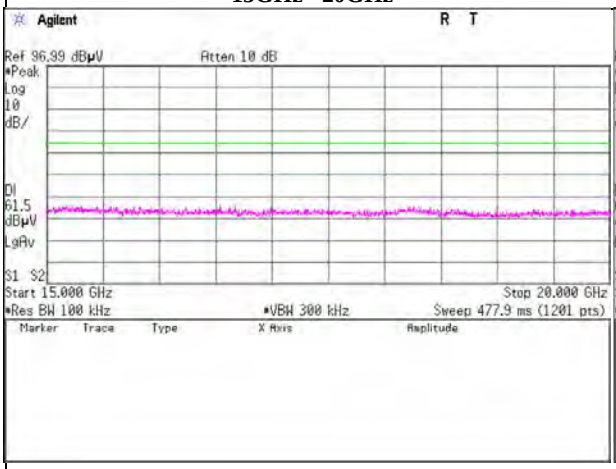
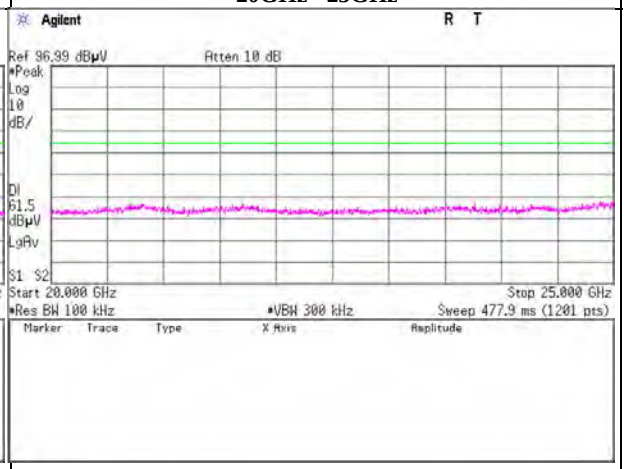
Spurious emission (Conducted)

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

Tx 2437MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx2_SpuriousG6	Tx2_SpuriousG7
Tx2_SpuriousG8	

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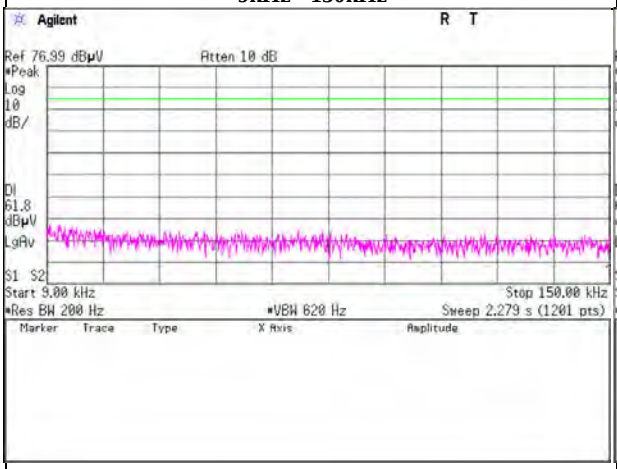
Spurious emission (Conducted)

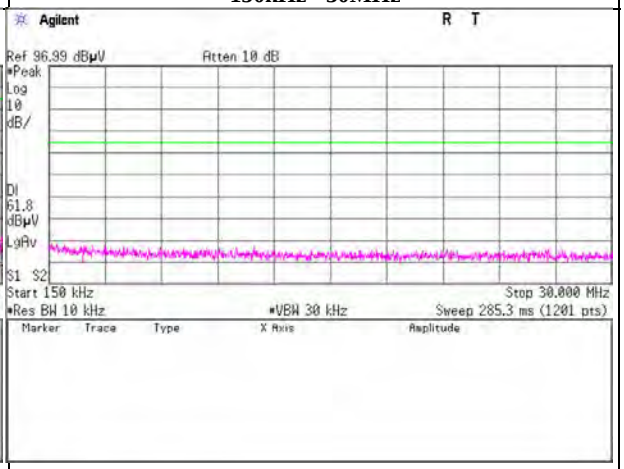
Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)

Tx 2452MHz (1/2)

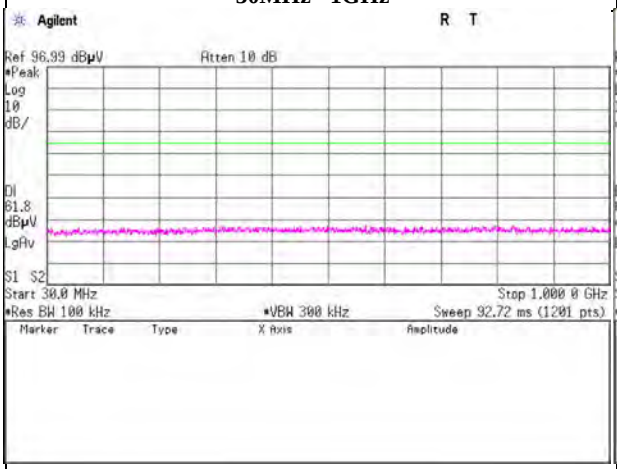
9kHz - 150kHz



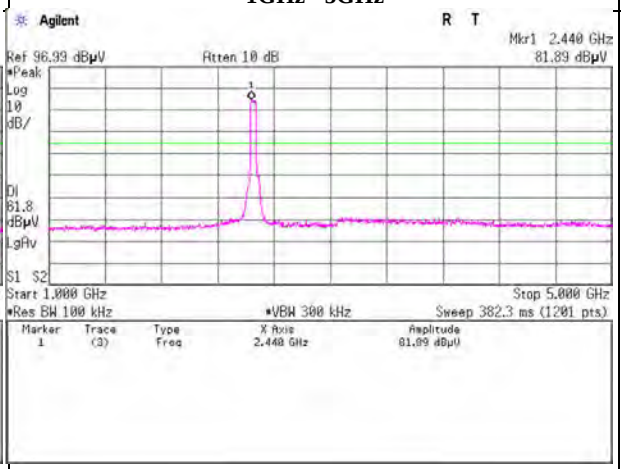
150kHz - 30MHz



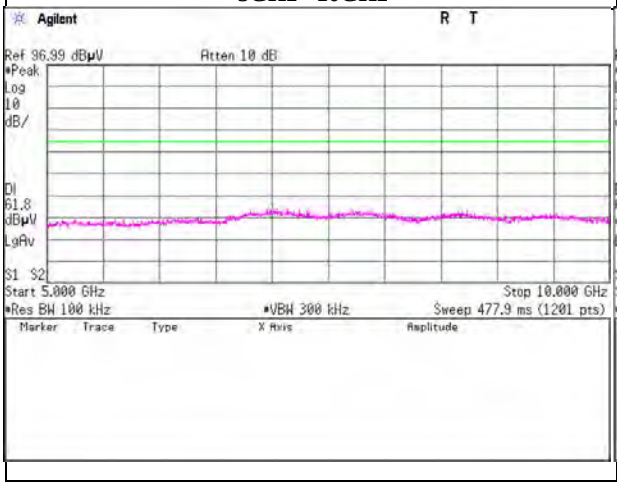
30MHz - 1GHz



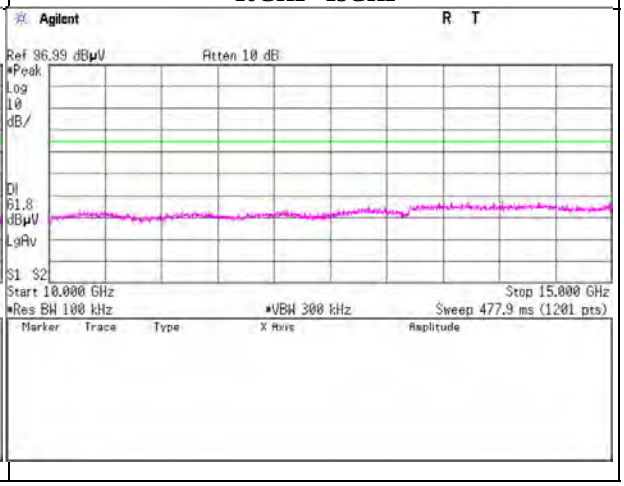
1GHz - 5GHz



5GHz - 10GHz



10GHz - 15GHz



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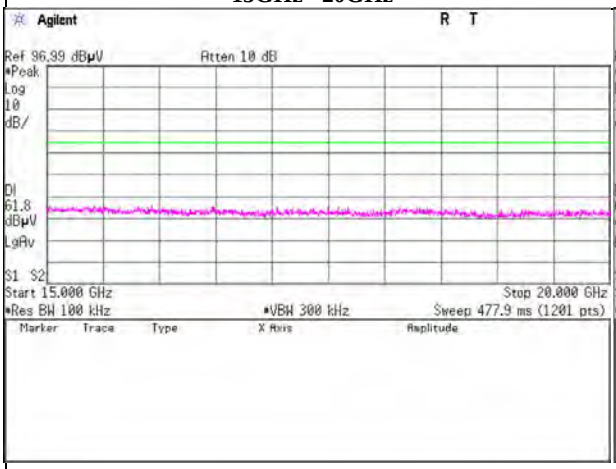
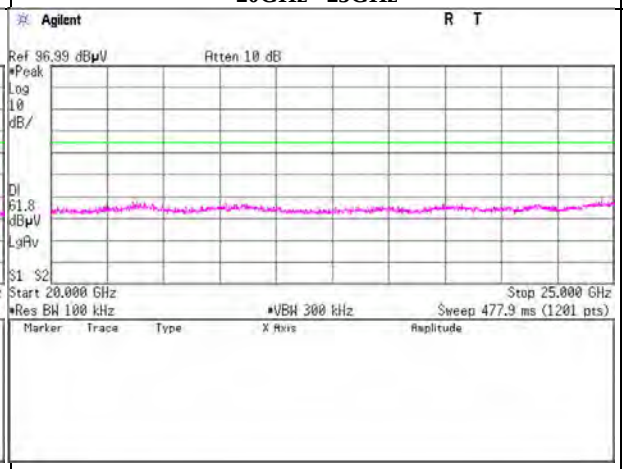
Spurious emission (Conducted)

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

Tx 2452MHz (2/2)	
15GHz - 20GHz	**20GHz - 25GHz**
	
Tx3_SpuriousG6	Tx3_SpuriousG7
Tx3_SpuriousG8	

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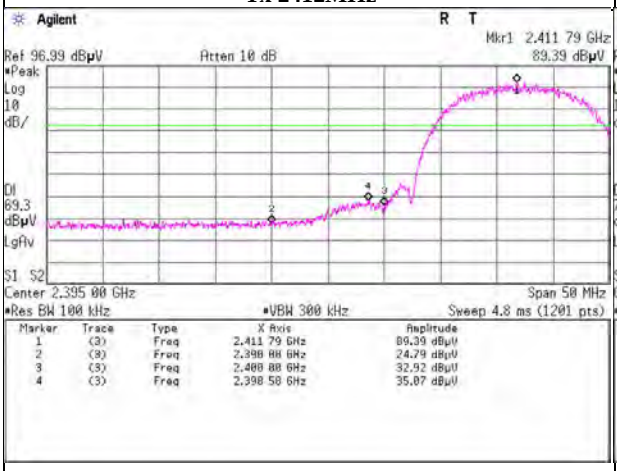
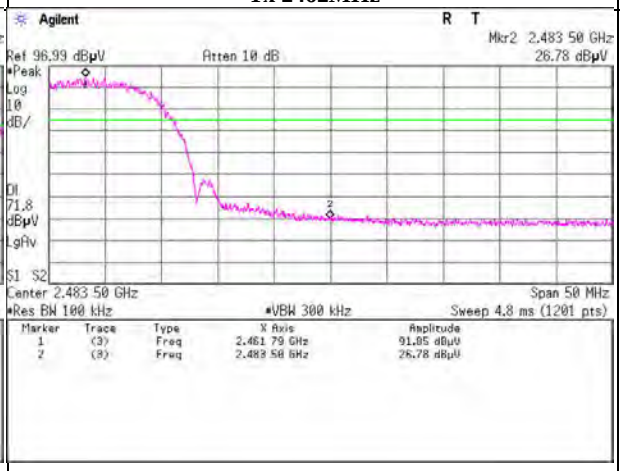
Spurious emission (Conducted)

Band Edge compliance

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

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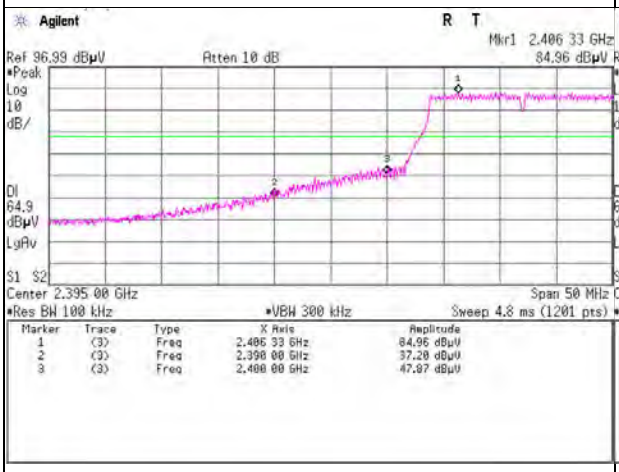
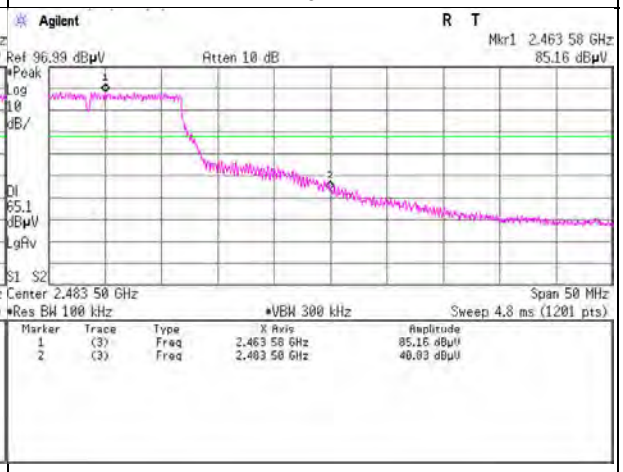
Spurious emission (Conducted)

Band Edge compliance

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

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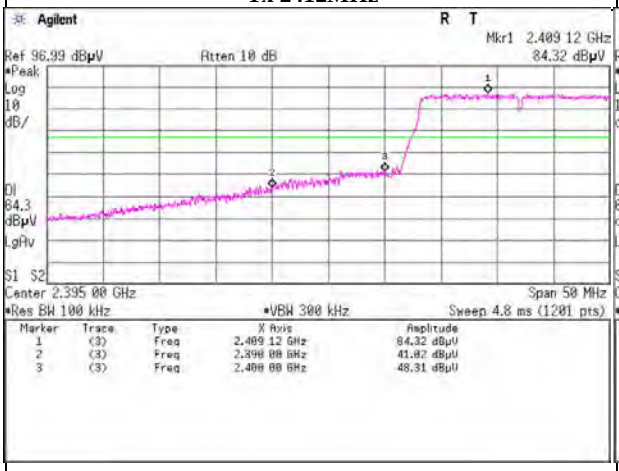
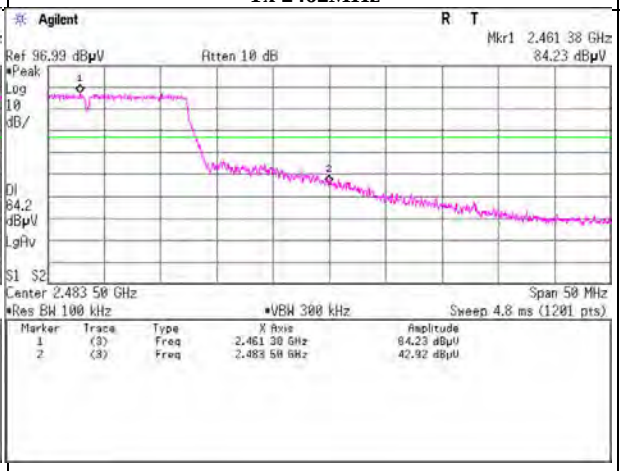
Spurious emission (Conducted)

Band Edge compliance

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)	
Tx 2412MHz	**Tx 2462MHz**
	

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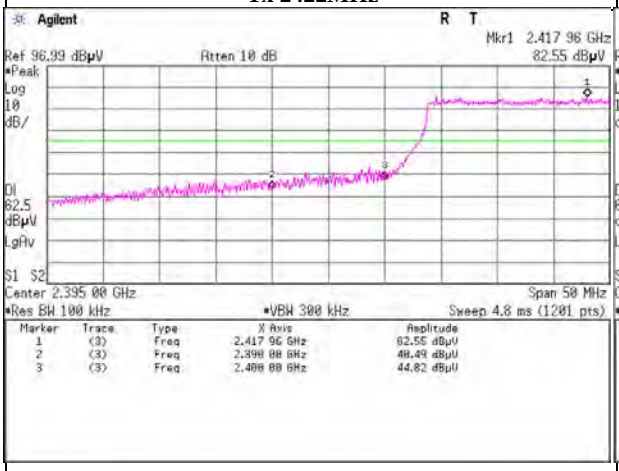
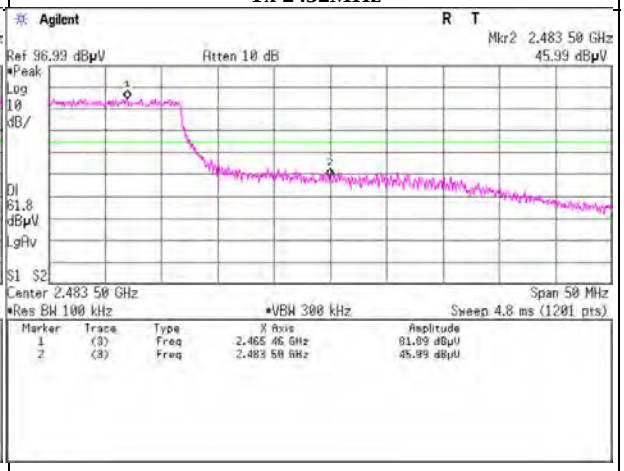
Spurious emission (Conducted)

Band Edge compliance

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

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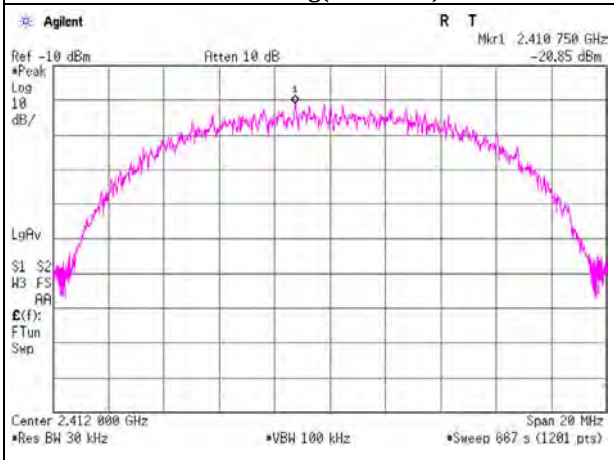
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11b, PN9, worst data mode 11Mbps	

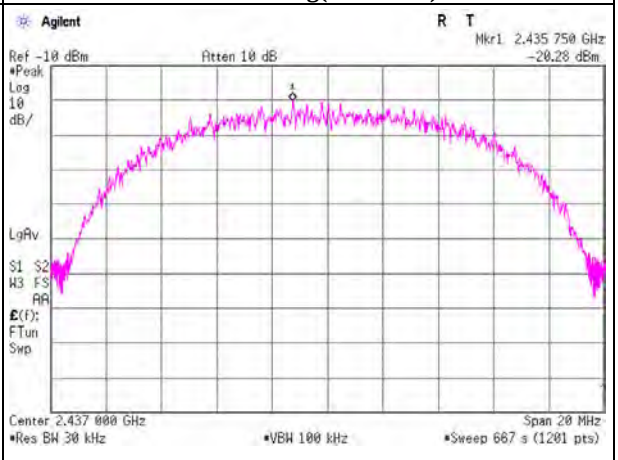
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2410.75	-20.85	1.76	20.01	0.92	8.00	7.08
2437.0000	2435.75	-20.28	1.76	20.01	1.49	8.00	6.51
2462.0000	2460.77	-19.81	1.77	20.01	1.97	8.00	6.03

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

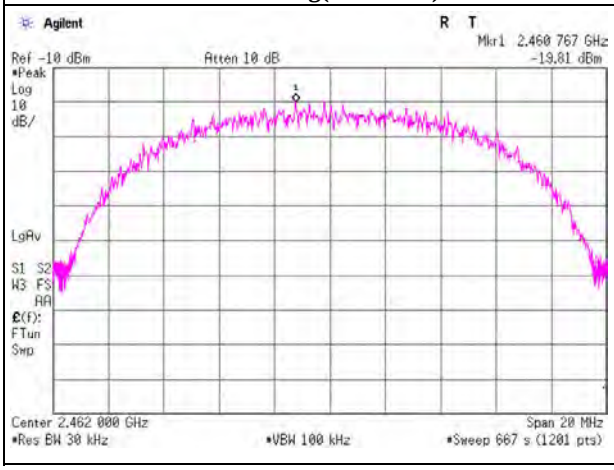
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



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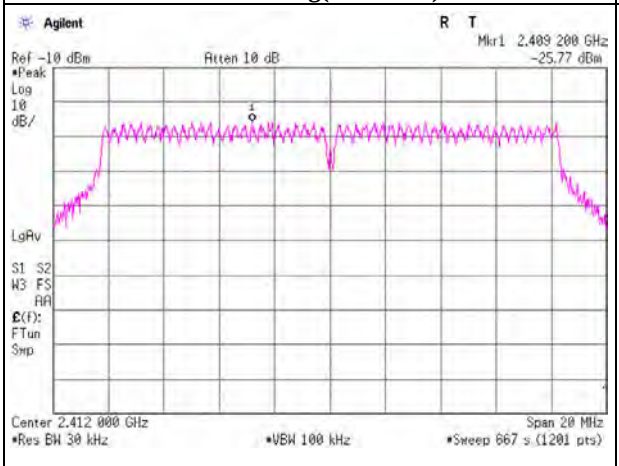
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11g, PN9, worst data mode 24Mbps	

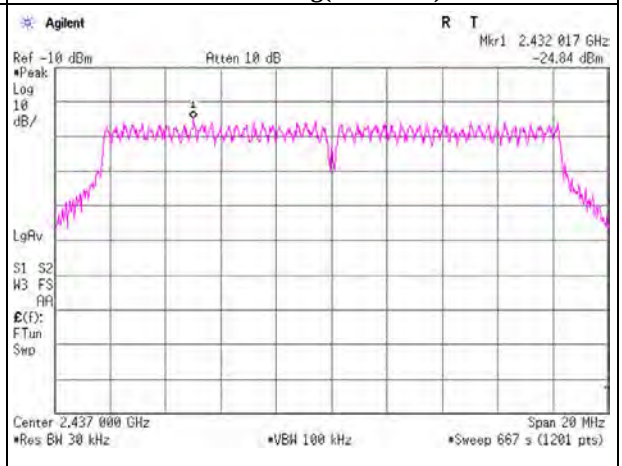
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2409.20	-25.77	1.76	20.01	-4.00	8.00	12.00
2437.0000	2432.02	-24.84	1.76	20.01	-3.07	8.00	11.07
2462.0000	2464.52	-25.14	1.77	20.01	-3.36	8.00	11.36

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

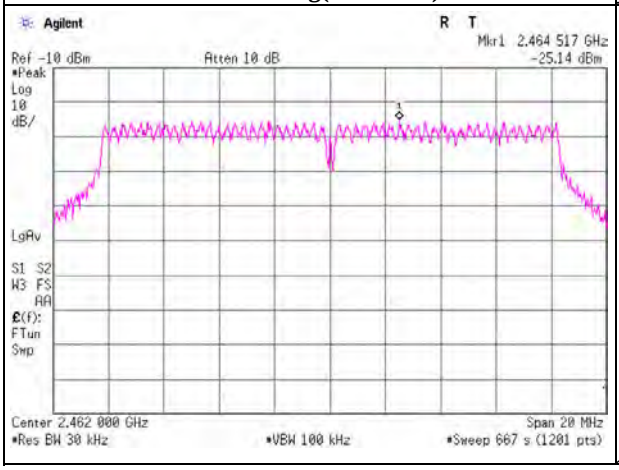
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



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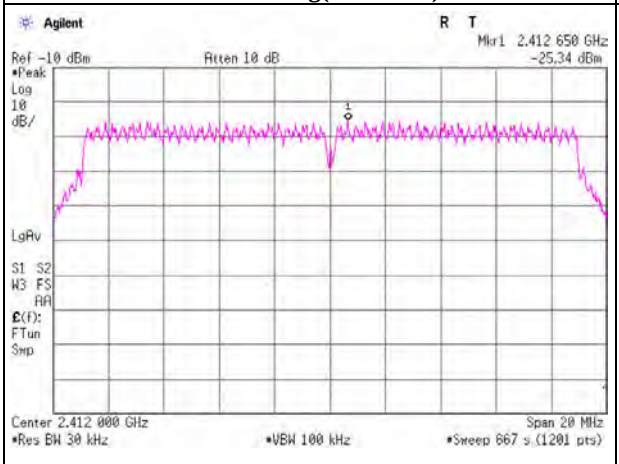
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)	

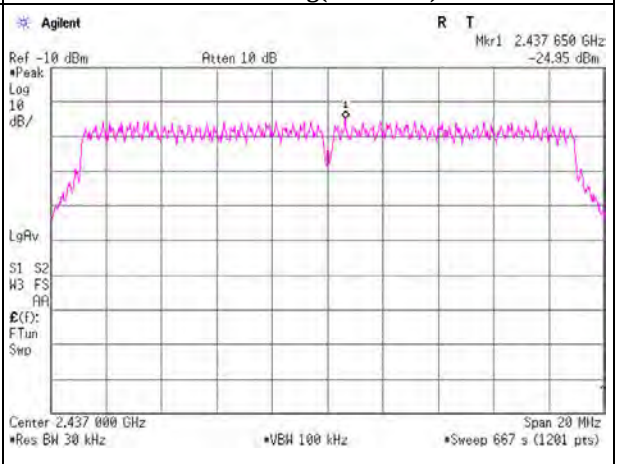
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.0000	2412.65	-25.34	1.76	20.01	-3.57	8.00	11.57
2437.0000	2437.65	-24.95	1.76	20.01	-3.18	8.00	11.18
2462.0000	2462.65	-24.96	1.77	20.01	-3.18	8.00	11.18

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

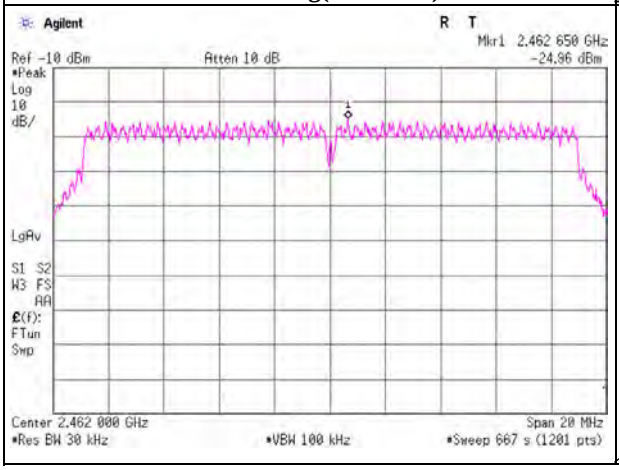
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



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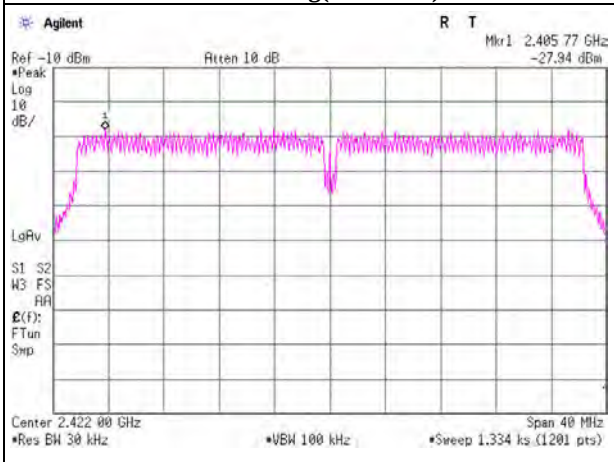
Power Density

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	September 8, 2011	
Temperature / Humidity	26deg.C , 53%RH	
Engineer	Shinichi Takano	
Mode	Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)	

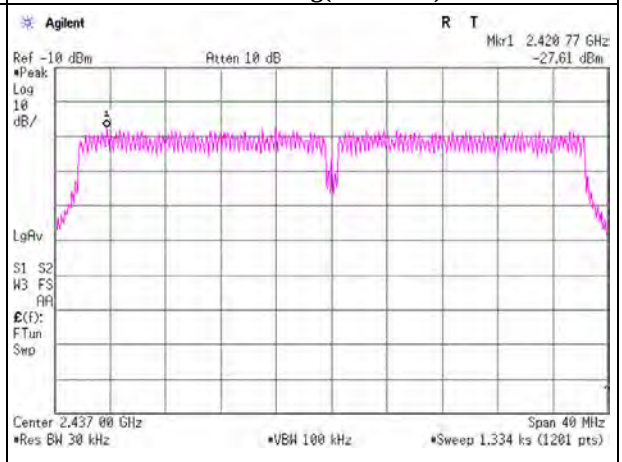
Ch. Freq. [MHz]	Freq. Reading [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422.0000	2405.77	-27.94	1.76	20.01	-6.17	8.00	14.17
2437.0000	2420.77	-27.61	1.76	20.01	-5.84	8.00	13.84
2452.0000	2447.97	-27.88	1.77	20.01	-6.10	8.00	14.10

Sample Calculation:
Result = Reading + Cable Loss (supplied by customer) + Atten. Loss

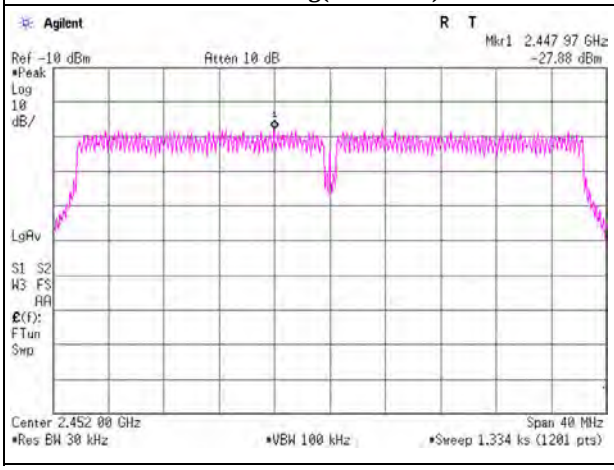
Transmitting(2422MHz)



Transmitting(2437MHz)



Transmitting(2452MHz)



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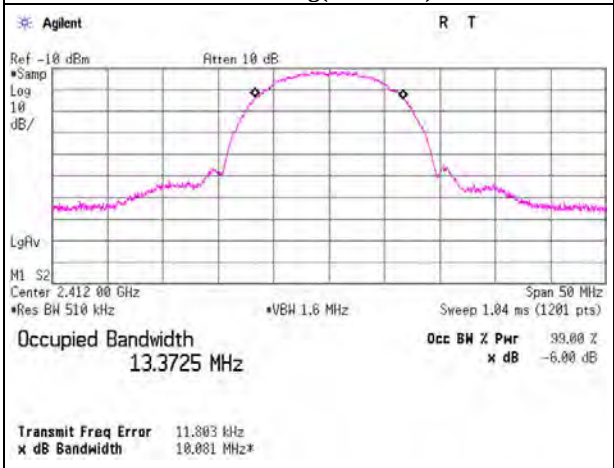
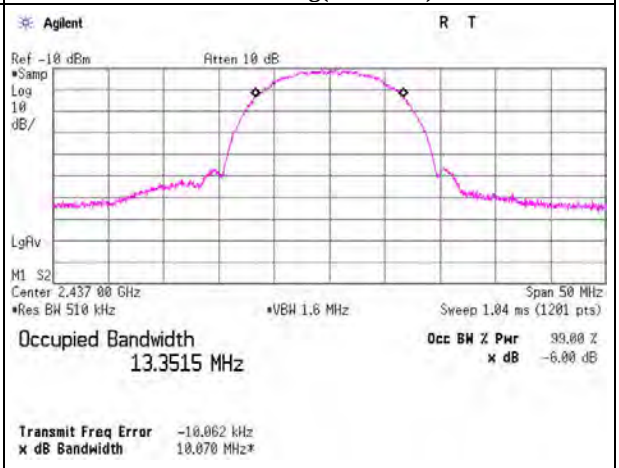
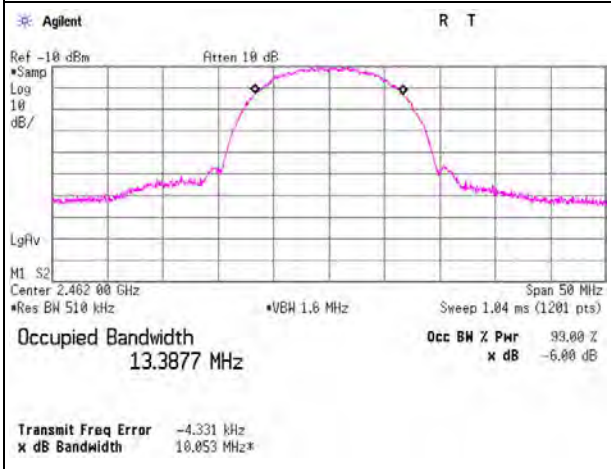
99% Occupied Bandwidth

Tx, IEEE802.11b, PN9, worst data mode 11Mbps	
Transmitting(2412MHz)	**Transmitting(2437MHz)**
	
Transmitting(2462MHz)	
	

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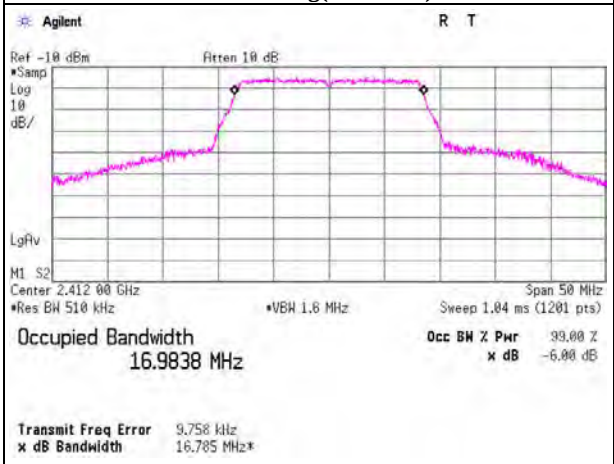
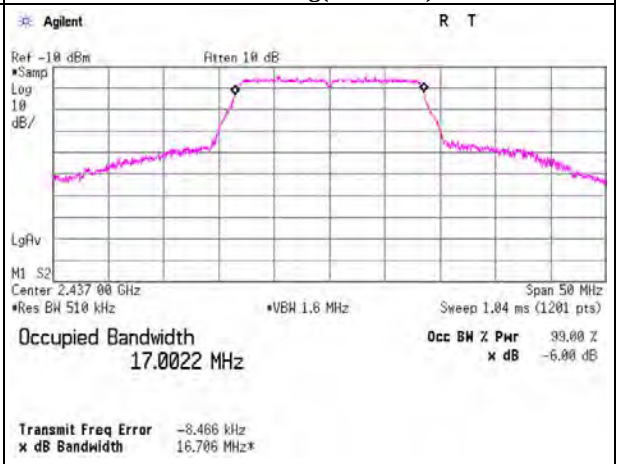
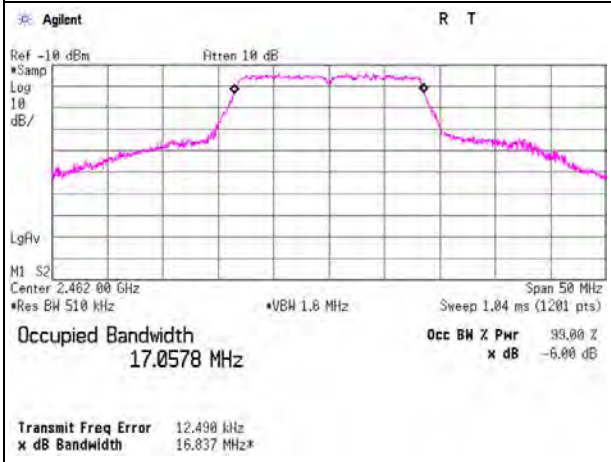
99% Occupied Bandwidth

Tx, IEEE802.11g, PN9, worst data mode 24Mbps	
Transmitting(2412MHz)	Transmitting(2437MHz)
	
Transmitting(2462MHz)	
	

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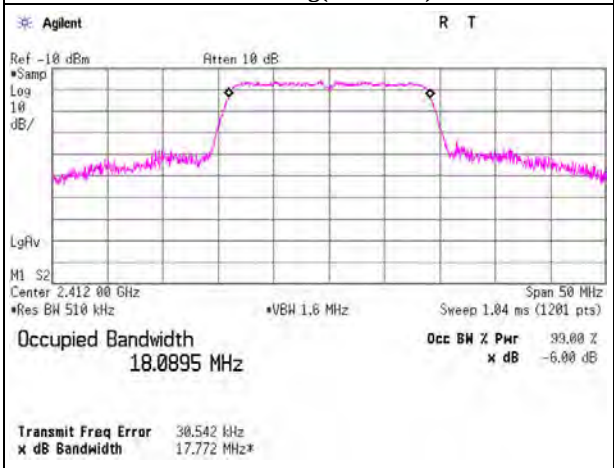
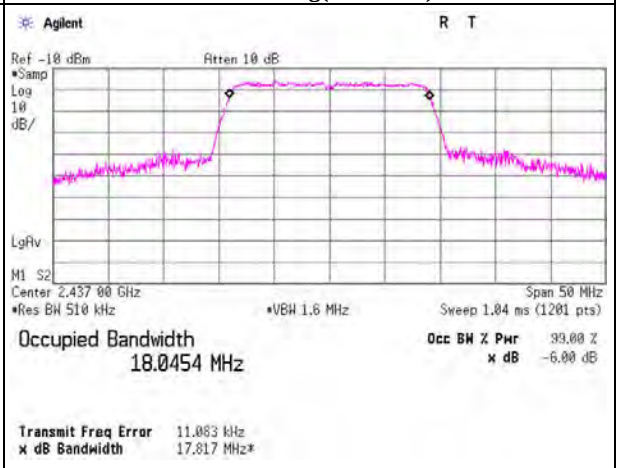
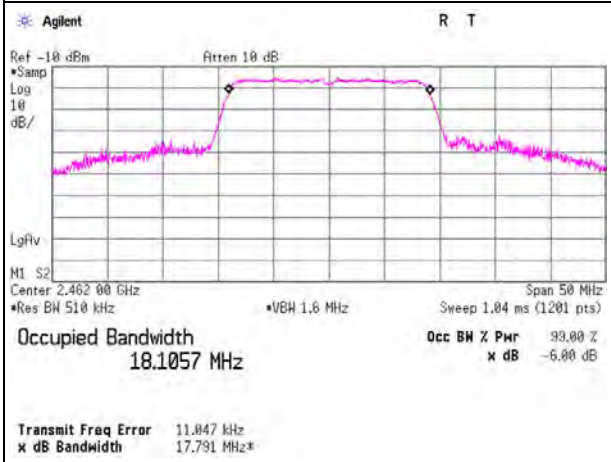
99% Occupied Bandwidth

Tx, IEEE802.11n (HT20), PN9, worst data mode 4(MCS)	
Transmitting(2412MHz)	**Transmitting(2437MHz)**
	
Transmitting(2462MHz)	
	

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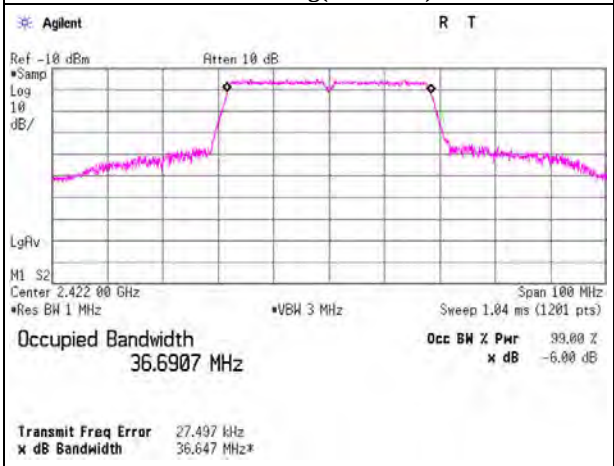
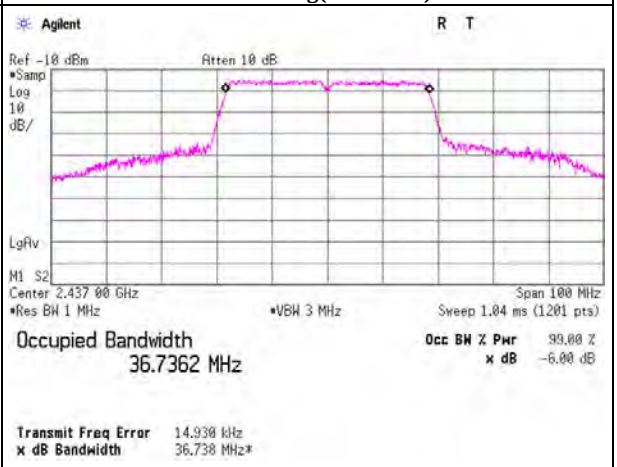
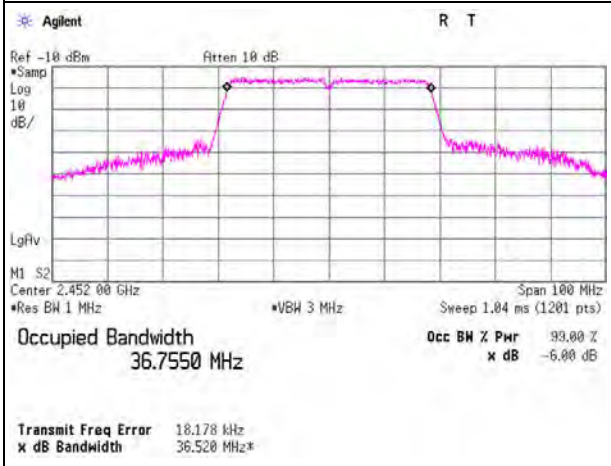
99% Occupied Bandwidth

Tx, IEEE802.11n (HT40), PN9, worst data mode 3(MCS)	
Transmitting(2422MHz)	Transmitting(2437MHz)
	
Transmitting(2452MHz)	
	

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APPENDIX 2
Test Instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2011/03/02 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT, RE	2011/03/07 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2011/04/12 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2011/04/12 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2011/03/23 * 12
SAT20-02	Attenuator	Agilent	8493C-020	74890	AT	2011/03/23 * 12
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2011/03/23 * 12
SCC-G02	Coaxial Cable	Suhner	SUCOFLEX 104A	46498/4A	RE	2011/04/28 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2011/05/27 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2011/08/28 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2011/02/23 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2010/12/15 * 12
SAT10-04	Attenuator(above1GHz)	Agilent	8493C-010	74863	RE	2010/12/15 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2011/04/28 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2011/05/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2011/08/28 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2011/02/23 * 12
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2011/02/02 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2011/03/15 * 12
SCC-G18	Coaxial Cable	Suhner	SUCOFLEX 104A	46292/4A	RE	2011/03/16 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2011/03/16 * 12

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

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

APPENDIX 2
Test Instruments

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2011/02/17 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2011/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2010/10/15 * 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	2011/04/28 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2010/10/15 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE, CE	2011/02/23 * 12
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE, CE	2011/07/28 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE, CE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2011/09/23 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE, CE	-
SCC-C6/C7/C8/C10/SRSE-03	Coaxial Cable&RF Selector	Suhner/Fujikura/Suhner/Suhner/TOYO	141PE/12DSFA/141PE/141PE/NS4906	-/0901-271(RF Selector)	CE	2011/04/28 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2011/02/23 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2011/02/17 * 12

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

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