RADIO TEST REPORT

Test Report No. : 31HE0196-HO-A

Applicant	:	**NEC CASIO Mobile Communications, Ltd.**
Type of Equipment	:	**Digital Portable Cellular Telephone**
Model No.	:	**KMP7N4Y1-1A**
FCC ID	:	**A98-PUL1905**
Test regulation	:	**FCC Part 15 Subpart C: 2010**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
6. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
7. This FCC ID: A98-PUL1905 is electrically identical to the previously certified FCC ID: A98-TBP4266.

Date of test: December 24, 2010 to March 31, 2011

Representative test engineer:

Akio Hayashi
Engineer of WiSE Japan,
UL Verification Service

Approved by :

Go Ishiwata
Assistant 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

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SECTION 1: Customer information

Company Name	:	NEC CASIO Mobile Communications, Ltd.
Address	:	1753 Shimonumabe, Nakahara-ku, Kawasaki, Kanagawa 211-8666 Japan
Telephone Number	:	+81-44-455-8045
Facsimile Number	:	+81-44-455-8025
Contact Person	:	Kazuhiro Kurihara

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

2.1 Identification of E.U.T.

Type of Equipment	:	Digital Portable Cellular Telephone
Model No.	:	KMP7N4Y1-1A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.8V
Receipt Date of Sample	:	December 23, 2010
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype
Modification of EUT	:	No Modification by the test lab

2.2 Product description

Model No: KMP7N4Y1-1A, (referred to as the EUT in this report), is the Digital Portable Cellular Telephone.

Radio Specification

Bluetooth (Ver.2.1 + EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	19.2MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Connector Type	Integrated antenna

WLAN (IEEE802.11b/g/n (SISO/HT20))

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Other Clock Frequency	19.2MHz
Type of Modulation	DSSS, OFDM
Antenna Connector Type	Integrated antenna

GSM

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Other Clock Frequency	19.2MHz
Type of Modulation	GMSK
Channel spacing	200kHz
Antenna Connector Type	Integrated antenna

W-CDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz [Down Link] Band V: 869 – 894MHz
Other Clock Frequency	19.2MHz
Type of Modulation	HPSK
Channel spacing	5MHz
Antenna Connector Type	Integrated antenna

GPS

Equipment Type	Receiver
Receiver Type	Direct Downconversion
Frequency of Operation	1575.42MHz
Other Clock Frequency	19.2MHz
Antenna Connector Type	Integrated antenna

RFID

Equipment Type	Transceiver
Frequency of Operation	13.56MHz
Type of Modulation	ASK
Antenna Connector Type	Integrated antenna

*This test report applies for WLAN.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2010, final revised on December 6, 2010 and effective January 5, 2011
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

*The revision on December 6, 2010 does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.4:2003 7. AC power line Conducted Emission measurements	**FCC:** Section 15.207	18.4dB, 0.15310MHz, N, QP IEEE802.11b, 2437MHz	Complied	-
6dB Bandwidth	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247(a)(2)	See data.	Complied	Conducted
Maximum Peak Output Power	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247(b)(3)		Complied	Conducted
Power Density	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247 (e)		Complied	Conducted
Spurious Emission Restricted Band Edges	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section15.247(d)	0.5dB 2483.5MHz, AV, Vert. IEEE802.11n, 2462MHz	Complied	Conducted/ Radiated
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.					

* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

FCC 15.31 (e)

This EUT provides stable voltage(DC2.9V, 2.2V, 1.8V and 1.35V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	**IC:** RSS-Gen 4.6.1	**IC:** RSS-Gen 4.6.1	N/A	N/A	Conducted

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 (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.3 dB	2.7 dB	3.4 dB
	30MHz-300MHz	4.7 dB	4.5 dB	4.7 dB
	300MHz-1GHz	4.5 dB	4.6 dB	4.6 dB
	1GHz-13GHz	3.9 dB	3.9 dB	4.0 dB
Radiated emission (Measurement distance: 1m)	13GHz-18GHz	4.8 dB	4.8 dB	4.8 dB
	18GHz-25GHz	4.2 dB	4.2 dB	4.2 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: (±) 0.8dB
Conducted emissions Measurement (below 1GHz) uncertainty for this test was: (±) 1.1dB
Conducted emissions Measurement (1G-3GHz) uncertainty for this test was: (±) 1.2dB
Conducted emissions Measurement (3G-18GHz) uncertainty for this test was: (±) 2.9dB
Conducted emissions Measurement (18G-26.5GHz) uncertainty for this test was: (±) 3.4dB
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 set up, Data of EMI, and Test instruments

Refer to APPENDIX.

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

4.1 Operating Mode(s)

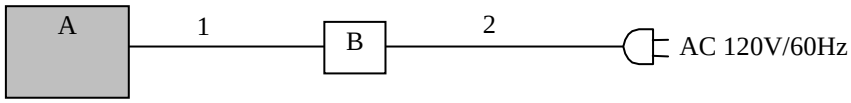
Mode	Remarks*
IEEE 802.11b (11b / WLAN 11b)	11Mbps, PN9
IEEE 802.11g (11g / WLAN 11g)	12Mbps, PN9
IEEE 802.11n MIMO 20MHz BW (11n-20 / WLAN 11n)	MCS 0 (Short GI, 1 Streams), PN9
*Transmitting duty was 100% on all tests. *The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	

*The details of Operating mode(s)

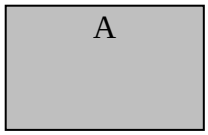
Test Item	Operating Mode	Tested frequency
Conducted Emission Spurious Emission	11b Tx 11g Tx 11n-20 Tx	2412MHz 2437MHz 2462MHz
6dB Bandwidth Maximum Peak Output Power Power Density 99% Occupied Bandwidth	11b Tx 11g Tx 11n-20 Tx	2412MHz 2437MHz 2462MHz

4.2 Configuration and peripherals

[Conducted emission]



[Other tests]



* Setup was taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Digital Portable Cellular Telephone	KMP7N4Y1-1A	004401200620017 *1) 004401200620033 *2) 004401200620355 *3) 004401200680128 *4)	NEC CASIO Mobile Communications, Ltd.	EUT
B	AC Adaptor	MAS-BH0008-A002	QLA	MITSUMI	-

*1) Used for Conducted Emission tests.
*2) Used for Antenna Terminal tests (except for Maximum Peak Output Power).
*3) Used for Radiated Emission tests.
*4) Used for Maximum Peak Output Power test.

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.6	Shielded	Shielded	-
2	AC Cable	0.6	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

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 aligned and 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 a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Shielded room.
The EUT was connected to a LISN (AMN).
An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector	**: QP and AV**
Measurement range	**: 0.15-30MHz**
Test data	**: APPENDIX**
Test result	**: Pass**

SECTION 6: Radiated Spurious Emission

Test Procedure
It was measured based on "2. Radiated emission test" of "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247 ".
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 Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Biconical	Logperiodic	Horn

In any 100kHz bandwidth outside the restricted 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.

20dBc was applied to the frequency over the limit of FCC 15.209 / Table 5 of RSS-Gen 7.2.5(IC) and outside the restricted band of FCC15.205 / Table 3 of RSS-Gen 7.2.2 (IC).

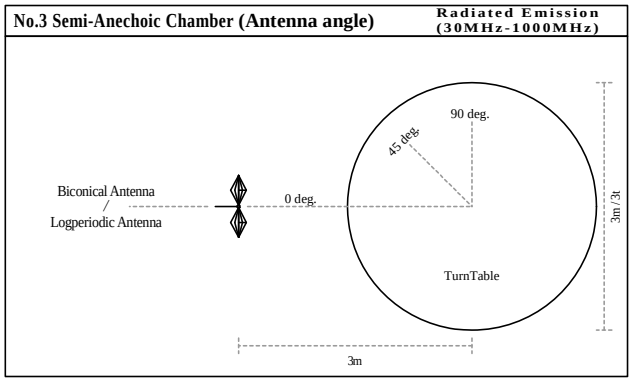
Frequency	Below 1GHz	Above 1GHz		20dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *1)	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 13GHz), 1m*2) (above 13GHz),		3m (below 13GHz), 1m*2) (above 13GHz)

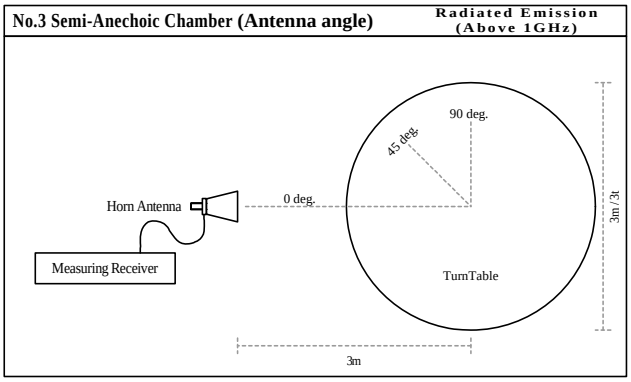
*1) Used for the band edge of the carrier and the harmonics that can be measured. The VBW is based on the inverse of the duty cycle (see Appendix).
*2) Distance Factor: 20 x log (3.0m/1.0m) = 9.5dB

- 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.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 30M-25GHz
Test data : APPENDIX
Test result : Pass





SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
6dB Bandwidth	25MHz	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Sample	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Peak Power Density	18MHz(11b, 11g) 21MHz(11n)	30kHz	100kHz	600sec(11b, 11g) 700sec(11n)	Peak	Max Hold	Spectrum Analyzer *1) *2)
Conducted Spurious Emission	Less or equal to 5GHz (Range: 30MHz-25GHz)	100kHz	300kHz	Auto	Peak	Max Hold	Spectrum Analyzer
*1) PSD Option 1 of "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247 ". *2) The test was not performed at RBW:3kHz however the measurement is to be performed with RBW:3kHz in the regulation, because, the measurement value with RBW:3kHz is less than the value of RBW:30kHz and the test data met the limit with RBW:30kHz.							

The test results and limit are rounded off to two decimals place, so some differences might be observed.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Photographs of test setup

APPENDIX 1: Data of EMI test

DATA OF CONDUCTED EMISSION TEST

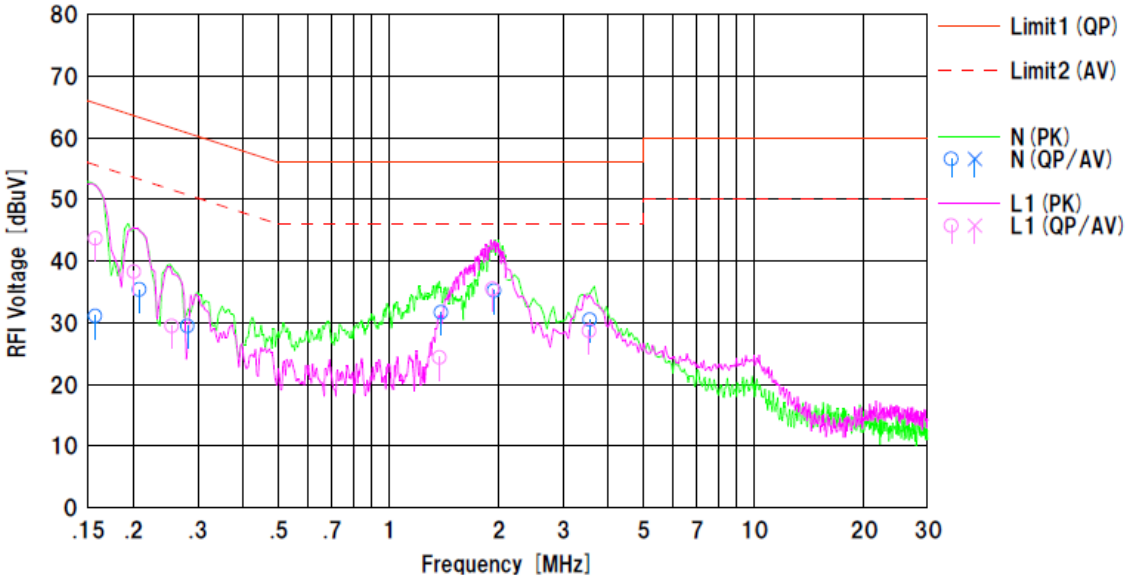
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11b Tx 2412MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15690	18.5	---	12.6	31.1	---	65.6	55.6	34.5	---	N	
2	0.20710	22.8	---	12.6	35.4	---	63.3	53.3	27.9	---	N	
3	0.28056	16.9	---	12.6	29.5	---	60.7	50.7	31.2	---	N	
4	1.39152	19.1	---	12.6	31.7	---	56.0	46.0	24.3	---	N	
5	1.94651	22.5	---	12.7	35.2	---	56.0	46.0	20.8	---	N	
6	3.55530	17.8	---	12.7	30.5	---	56.0	46.0	25.5	---	N	
7	0.15710	31.1	---	12.6	43.7	---	65.6	55.6	21.9	---	L1	
8	0.20049	25.7	---	12.6	38.3	---	63.5	53.5	25.2	---	L1	
9	0.25451	16.9	---	12.6	29.5	---	61.6	51.6	32.1	---	L1	
10	1.37769	11.8	---	12.6	24.4	---	56.0	46.0	31.6	---	L1	
11	1.92526	22.8	---	12.7	35.5	---	56.0	46.0	20.5	---	L1	
12	3.54488	16.0	---	12.7	28.7	---	56.0	46.0	27.3	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

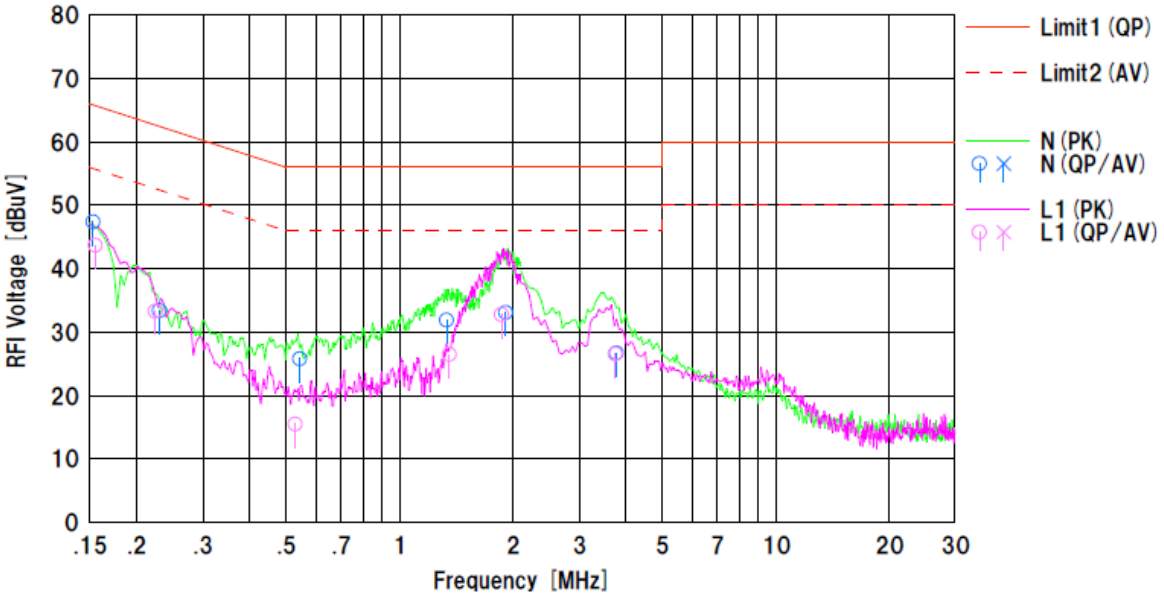
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11b Tx 2437MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



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	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15310	34.8	---	12.6	47.4	---	65.8	55.8	18.4	---	N	
2	0.22995	20.8	---	12.6	33.4	---	62.4	52.4	29.0	---	N	
3	0.54253	13.2	---	12.6	25.8	---	56.0	46.0	30.2	---	N	
4	1.33331	19.3	---	12.6	31.9	---	56.0	46.0	24.1	---	N	
5	1.91451	20.4	---	12.7	33.1	---	56.0	46.0	22.9	---	N	
6	3.77650	14.0	---	12.7	26.7	---	56.0	46.0	29.3	---	N	
7	0.15530	31.1	---	12.6	43.7	---	65.7	55.7	22.0	---	L1	
8	0.22401	20.7	---	12.6	33.3	---	62.6	52.6	29.3	---	L1	
9	0.52830	2.9	---	12.6	15.5	---	56.0	46.0	40.5	---	L1	
10	1.35715	13.9	---	12.6	26.5	---	56.0	46.0	29.5	---	L1	
11	1.86812	20.1	---	12.7	32.8	---	56.0	46.0	23.2	---	L1	
12	3.74784	13.9	---	12.7	26.6	---	56.0	46.0	29.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

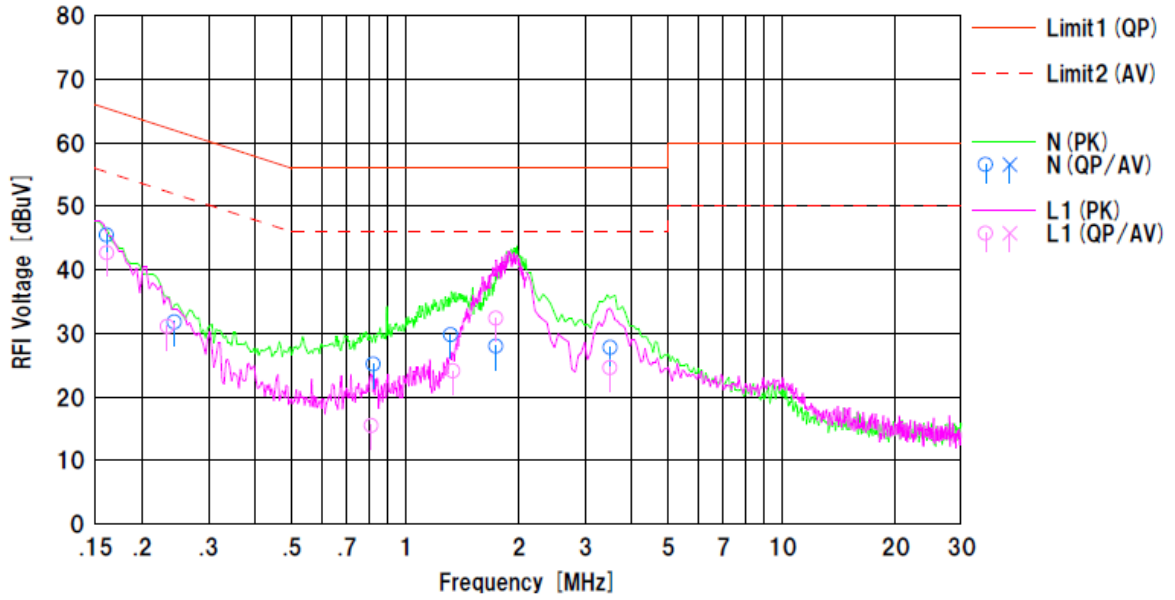
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11b Tx 2462MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



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		<QP>	<AV>		<QP>	<AV>	<QP>	<AV>	<QP>	<AV>		
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.16071	32.9	---	12.6	45.5	---	65.4	55.4	19.9	---	N	
2	0.24338	19.2	---	12.6	31.8	---	61.9	51.9	30.1	---	N	
3	0.82210	12.6	---	12.6	25.2	---	56.0	46.0	30.8	---	N	
4	1.32014	17.2	---	12.6	29.8	---	56.0	46.0	26.2	---	N	
5	1.74050	15.4	---	12.6	28.0	---	56.0	46.0	28.0	---	N	
6	3.50532	15.1	---	12.7	27.8	---	56.0	46.0	28.2	---	N	
7	0.16091	30.1	---	12.6	42.7	---	65.4	55.4	22.7	---	L1	
8	0.23316	18.5	---	12.6	31.1	---	62.3	52.3	31.2	---	L1	
9	0.81148	2.9	---	12.6	15.5	---	56.0	46.0	40.5	---	L1	
10	1.33798	11.5	---	12.6	24.1	---	56.0	46.0	31.9	---	L1	
11	1.74043	19.8	---	12.6	32.4	---	56.0	46.0	23.6	---	L1	
12	3.49910	11.9	---	12.7	24.6	---	56.0	46.0	31.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

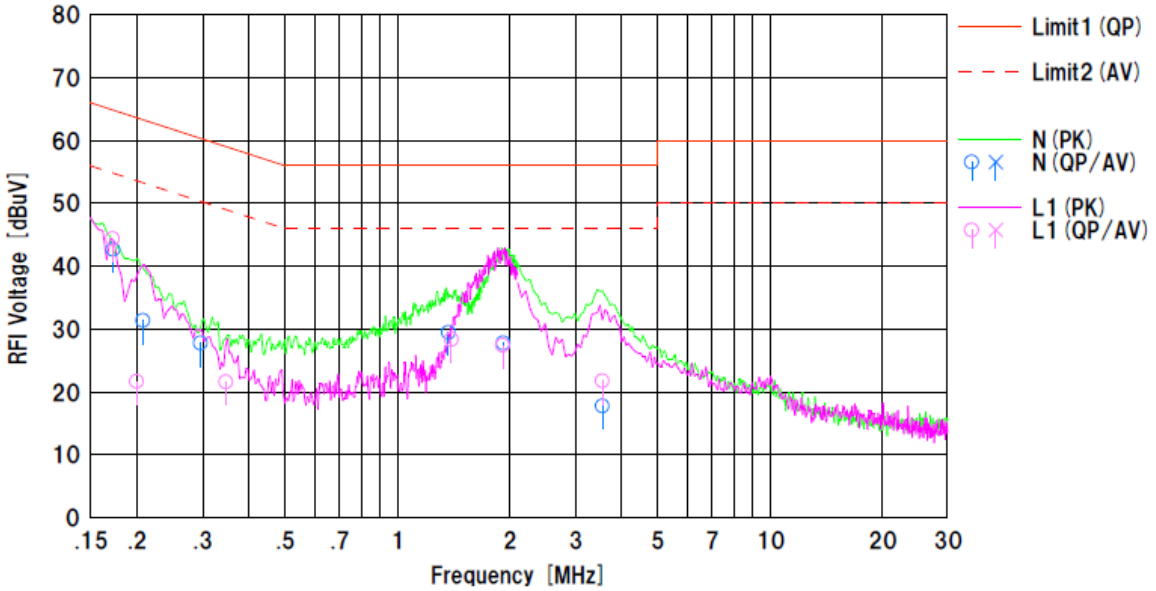
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11g Tx 2412MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



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	0.17233	30.1	---	12.6	42.7	---	64.8	54.8	22.1	---	N	
2	0.20710	18.8	---	12.6	31.4	---	63.3	53.3	31.9	---	N	
3	0.29566	15.2	---	12.6	27.8	---	60.3	50.3	32.5	---	N	
4	1.36967	16.9	---	12.6	29.5	---	56.0	46.0	26.5	---	N	
5	1.92148	15.1	---	12.7	27.8	---	56.0	46.0	28.2	---	N	
6	3.55230	5.1	---	12.7	17.8	---	56.0	46.0	38.2	---	N	
7	0.17173	31.8	---	12.6	44.4	---	64.8	54.8	20.4	---	L1	
8	0.19928	9.1	---	12.6	21.7	---	63.6	53.6	41.9	---	L1	
9	0.34616	9.0	---	12.6	21.6	---	59.0	49.0	37.4	---	L1	
10	1.39652	15.8	---	12.6	28.4	---	56.0	46.0	27.6	---	L1	
11	1.91827	14.7	---	12.7	27.4	---	56.0	46.0	28.6	---	L1	
12	3.55350	9.1	---	12.7	21.8	---	56.0	46.0	34.2	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

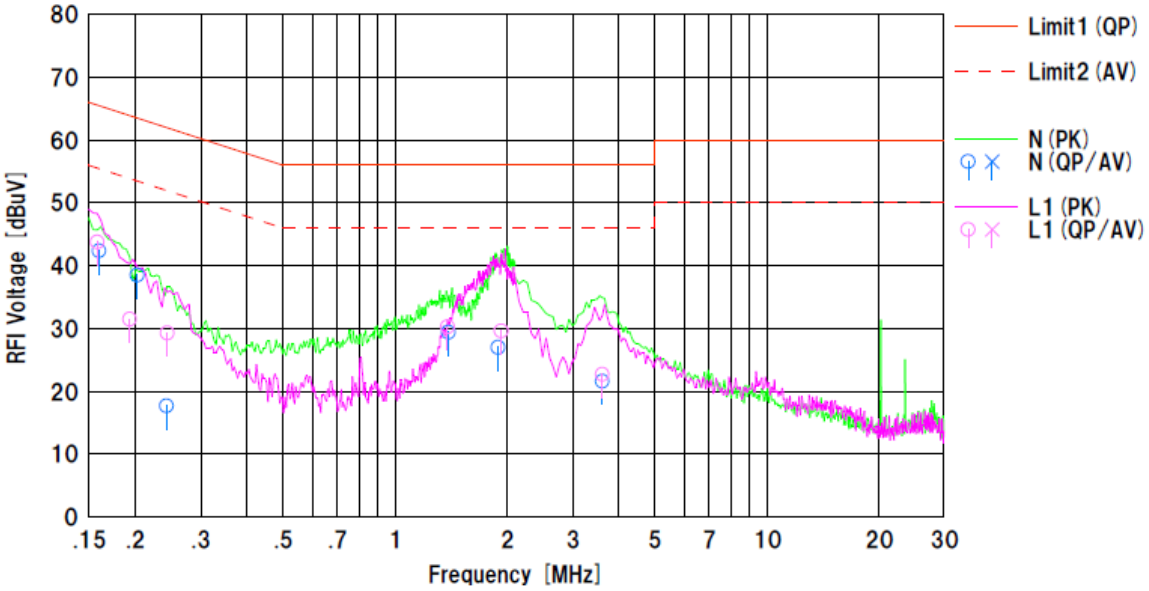
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11g Tx 2437MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15970	29.8	---	12.6	42.4	---	65.4	55.4	23.0	---	N	
2	0.20230	25.9	---	12.6	38.5	---	63.5	53.5	25.0	---	N	
3	0.24270	5.1	---	12.6	17.7	---	62.0	52.0	44.3	---	N	
4	1.39171	16.8	---	12.6	29.4	---	56.0	46.0	26.6	---	N	
5	1.89302	14.3	---	12.7	27.0	---	56.0	46.0	29.0	---	N	
6	3.61070	8.9	---	12.7	21.6	---	56.0	46.0	34.4	---	N	
7	0.15782	31.2	---	12.6	43.8	---	65.5	55.5	21.7	---	L1	
8	0.19299	18.9	---	12.6	31.5	---	63.9	53.9	32.4	---	L1	
9	0.24379	16.7	---	12.6	29.3	---	61.9	51.9	32.6	---	L1	
10	1.38487	17.7	---	12.6	30.3	---	56.0	46.0	25.7	---	L1	
11	1.93196	16.9	---	12.7	29.6	---	56.0	46.0	26.4	---	L1	
12	3.60962	10.0	---	12.7	22.7	---	56.0	46.0	33.3	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

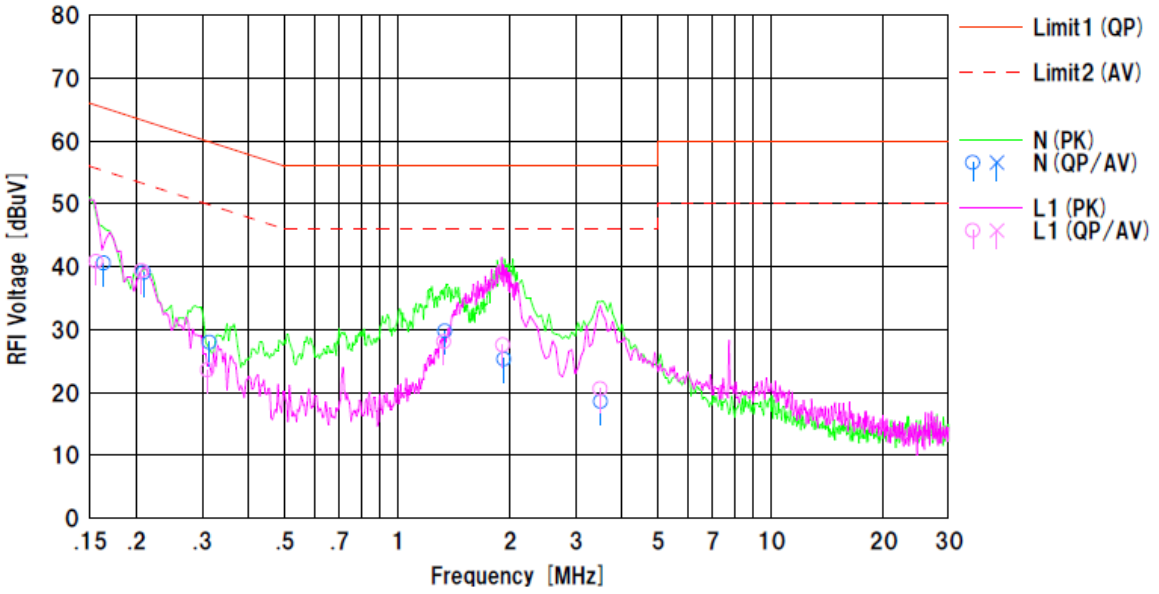
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11g Tx 2462MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.16312	28.0	---	12.6	40.6	---	65.3	55.3	24.7	---	N	
2	0.20910	26.5	---	12.6	39.1	---	63.2	53.2	24.1	---	N	
3	0.31355	15.4	---	12.6	28.0	---	59.8	49.8	31.8	---	N	
4	1.34050	17.2	---	12.6	29.8	---	56.0	46.0	26.2	---	N	
5	1.93013	12.6	---	12.7	25.3	---	56.0	46.0	30.7	---	N	
6	3.50251	5.9	---	12.7	18.6	---	56.0	46.0	37.4	---	N	
7	0.15570	28.3	---	12.6	40.9	---	65.6	55.6	24.7	---	L1	
8	0.20629	26.8	---	12.6	39.4	---	63.3	53.3	23.9	---	L1	
9	0.30934	11.0	---	12.6	23.6	---	59.9	49.9	36.3	---	L1	
10	1.33148	15.5	---	12.6	28.1	---	56.0	46.0	27.9	---	L1	
11	1.91470	14.9	---	12.7	27.6	---	56.0	46.0	28.4	---	L1	
12	3.49690	7.9	---	12.7	20.6	---	56.0	46.0	35.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

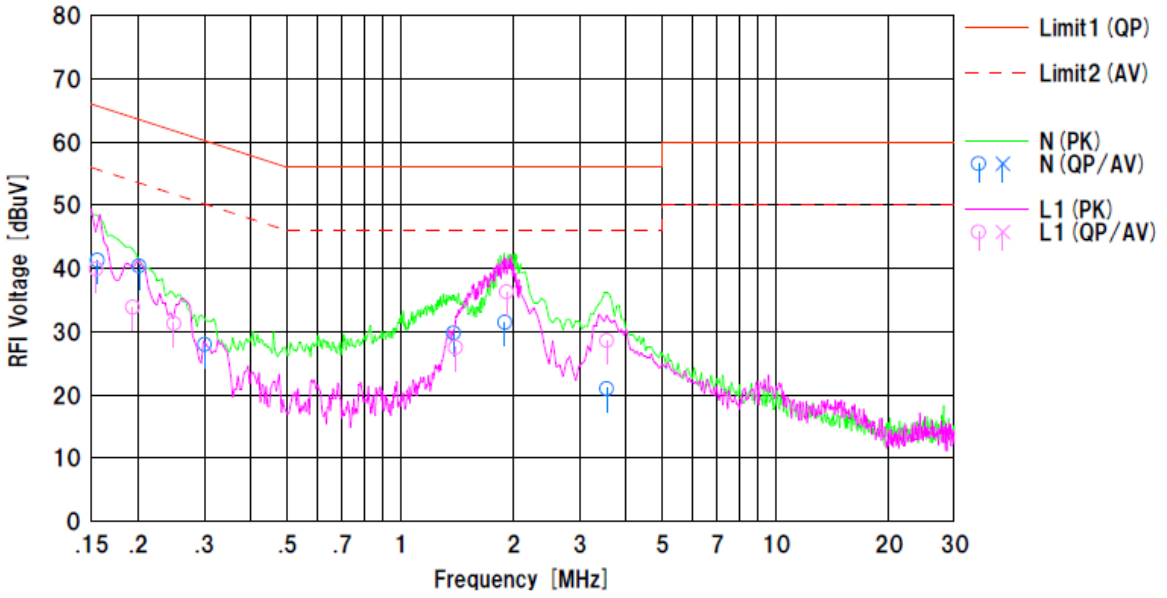
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11n Tx 2412MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15550	28.7	---	12.6	41.3	---	65.7	55.7	24.4	---	N	
2	0.20070	27.8	---	12.6	40.4	---	63.5	53.5	23.1	---	N	
3	0.30057	15.4	---	12.6	28.0	---	60.2	50.2	32.2	---	N	
4	1.38670	17.2	---	12.6	29.8	---	56.0	46.0	26.2	---	N	
5	1.89847	18.8	---	12.7	31.5	---	56.0	46.0	24.5	---	N	
6	3.54969	8.3	---	12.7	21.0	---	56.0	46.0	35.0	---	N	
7	0.15430	27.3	---	12.6	39.9	---	65.7	55.7	25.8	---	L1	
8	0.19308	21.3	---	12.6	33.9	---	63.9	53.9	30.0	---	L1	
9	0.24886	18.7	---	12.6	31.3	---	61.7	51.7	30.4	---	L1	
10	1.40373	14.9	---	12.6	27.5	---	56.0	46.0	28.5	---	L1	
11	1.92012	23.6	---	12.7	36.3	---	56.0	46.0	19.7	---	L1	
12	3.55450	15.9	---	12.7	28.6	---	56.0	46.0	27.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

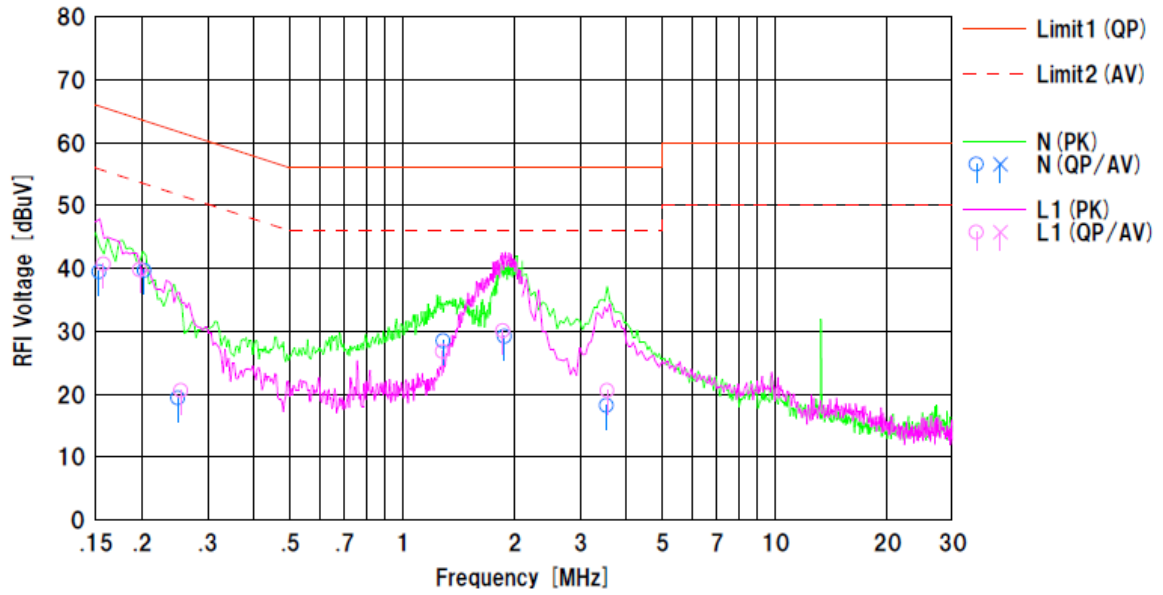
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11n Tx 2437MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



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	0.15310	26.9	---	12.6	39.5	---	65.8	55.8	26.3	---	N	
2	0.20251	27.1	---	12.6	39.7	---	63.5	53.5	23.8	---	N	
3	0.24910	6.8	---	12.6	19.4	---	61.7	51.7	42.3	---	N	
4	1.28635	15.9	---	12.6	28.5	---	56.0	46.0	27.5	---	N	
5	1.88051	16.5	---	12.7	29.2	---	56.0	46.0	26.8	---	N	
6	3.53626	5.5	---	12.7	18.2	---	56.0	46.0	37.8	---	N	
7	0.15731	28.1	---	12.6	40.7	---	65.6	55.6	24.9	---	L1	
8	0.19700	27.2	---	12.6	39.8	---	63.7	53.7	23.9	---	L1	
9	0.25391	8.0	---	12.6	20.6	---	61.6	51.6	41.0	---	L1	
10	1.28093	14.2	---	12.6	26.8	---	56.0	46.0	29.2	---	L1	
11	1.86227	17.4	---	12.7	30.1	---	56.0	46.0	25.9	---	L1	
12	3.54969	7.9	---	12.7	20.6	---	56.0	46.0	35.4	---	L1	

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

DATA OF CONDUCTED EMISSION TEST

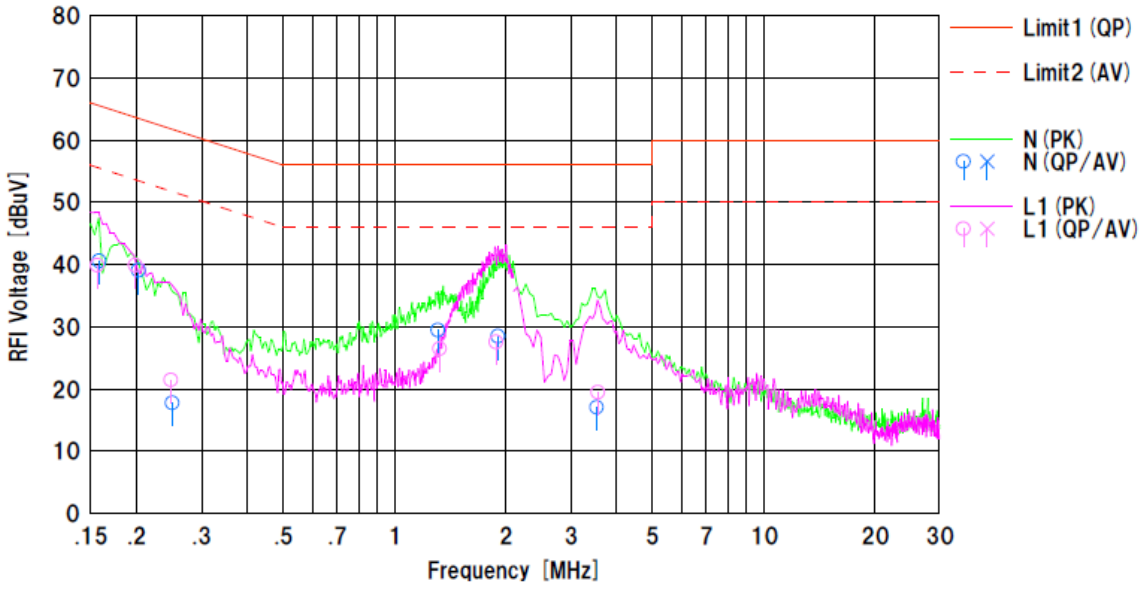
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2011/01/10

Mode : WLAN 11n Tx 2462MHz
Report No. : 31HE0196-HO
Power : AC120V/60Hz (AC adaptor)
Temp./Humi. : 20deg.C./27%

Remarks : UE + Battery + AC Adaptor

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15811	28.0	---	12.6	40.6	---	65.5	55.5	24.9	---	N	
2	0.20231	26.5	---	12.6	39.1	---	63.5	53.5	24.4	---	N	
3	0.24970	5.2	---	12.6	17.8	---	61.7	51.7	43.9	---	N	
4	1.31109	16.9	---	12.6	29.5	---	56.0	46.0	26.5	---	N	
5	1.90568	15.8	---	12.7	28.5	---	56.0	46.0	27.5	---	N	
6	3.53105	4.4	---	12.7	17.1	---	56.0	46.0	38.9	---	N	
7	0.15630	27.3	---	12.6	39.9	---	65.6	55.6	25.7	---	L1	
8	0.19830	27.3	---	12.6	39.9	---	63.6	53.6	23.7	---	L1	
9	0.24749	8.9	---	12.6	21.5	---	61.8	51.8	40.3	---	L1	
10	1.32532	13.9	---	12.6	26.5	---	56.0	46.0	29.5	---	L1	
11	1.88183	14.9	---	12.7	27.6	---	56.0	46.0	28.4	---	L1	
12	3.55691	6.8	---	12.7	19.5	---	56.0	46.0	36.5	---	L1	

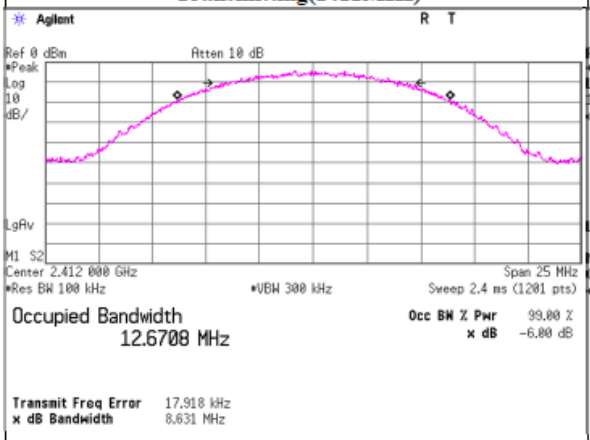
Calculation:Result [dBuV] =Reading [dBuV] +C.Fac (LISN+Cable+Att) [dB]

-6dB Bandwidth

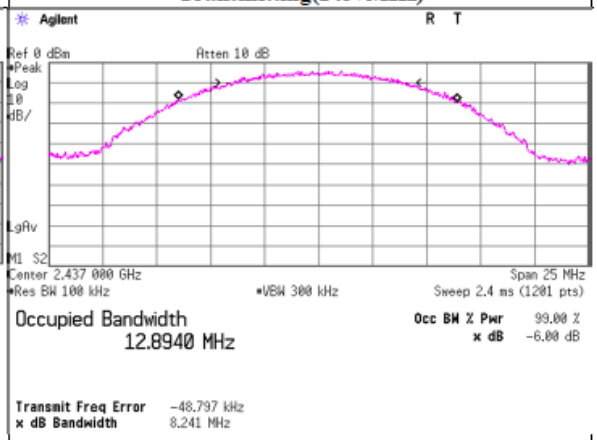
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	2011/1/6	
Temperature / Humidity	21deg.C. , 32%	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11b, 11Mbps, PN9,	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	8.631	> 0.500
2437.0000	8.241	> 0.500
2462.0000	8.202	> 0.500

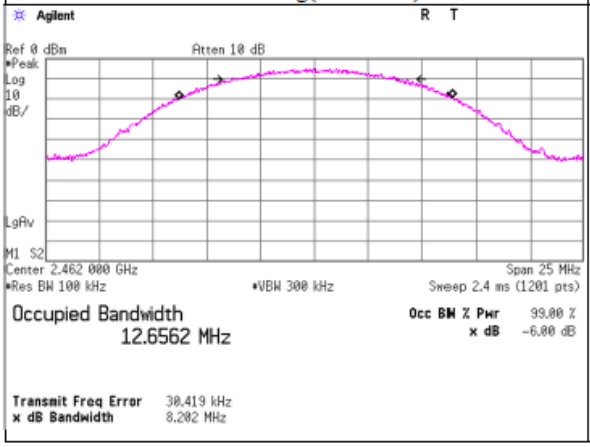
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)

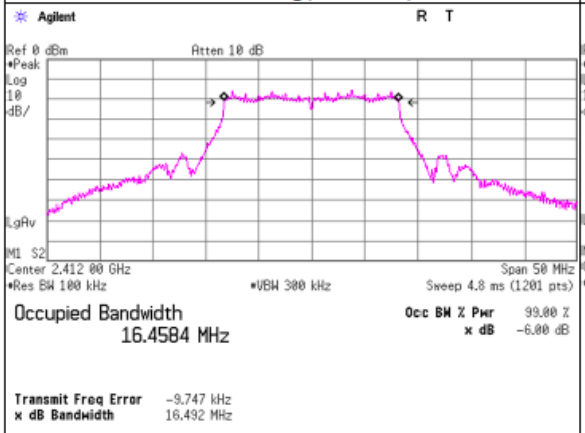


-6dB Bandwidth

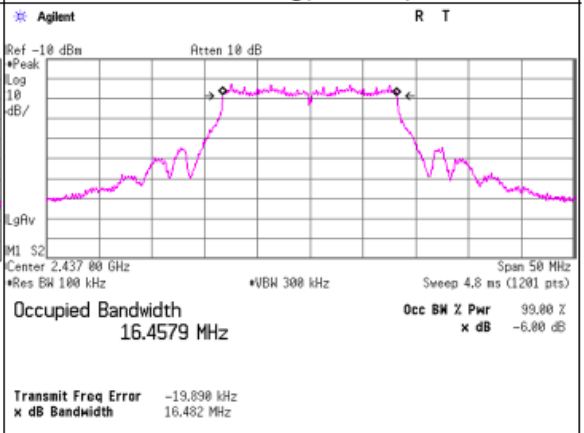
Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	2011/1/6	
Temperature / Humidity	21deg.C. , 32%	
Engineer	Akio Hayashi	
Mode	Tx, IEEE802.11g, 12Mbps, PN9,	

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	16.492	> 0.500
2437.0000	16.482	> 0.500
2462.0000	16.461	> 0.500

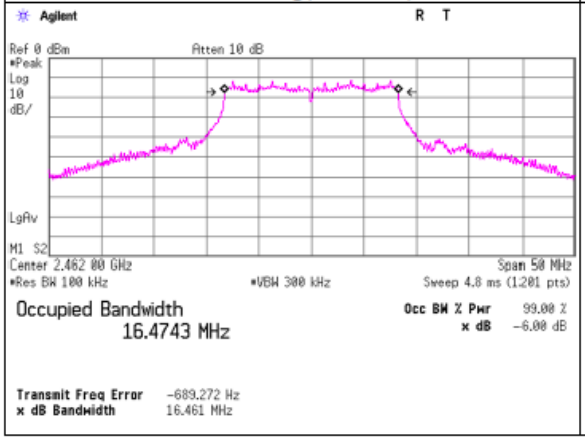
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)

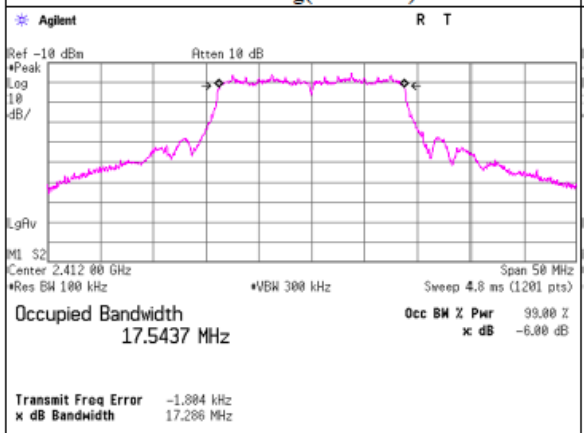


-6dB Bandwidth

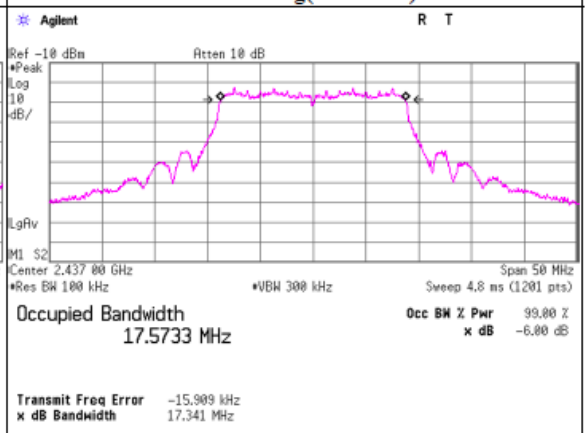
Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date	2011/1/6
Temperature / Humidity	21deg.C. , 32%
Engineer	Akio Hayashi
Mode	Tx, IEEE802.11n (20MHz)(400ns), MCS0, PN9,

Freq. [MHz]	-6dB Bandwidth [MHz]	Limit [MHz]
2412.0000	17.286	> 0.500
2437.0000	17.341	> 0.500
2462.0000	17.298	> 0.500

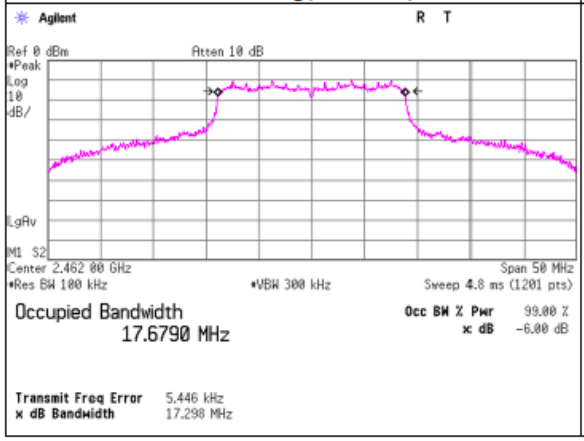
Transmitting(2412MHz)



Transmitting(2437MHz)



Transmitting(2462MHz)



Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shield Room
Date	2011/3/31	
Temperature / Humidity	25deg.C. , 26%	
Engineer	Makoto Hosaka	
Mode	Tx, IEEE802.11b, 11Mbps, PN9,	

Ch	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	4.70	0.78	10.07	15.55	35.89	30.00	1000	14.45
Mid	2437.0	4.67	0.77	10.07	15.51	35.56	30.00	1000	14.49
High	2462.0	4.58	0.80	10.07	15.45	35.08	30.00	1000	14.55

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

[Pre check]

Data Rate	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
1	2437.0	4.29	0.77	10.07	15.13	32.58	30.00	1000	14.87
2	2437.0	4.36	0.77	10.07	15.20	33.11	30.00	1000	14.80
5.5	2437.0	4.53	0.77	10.07	15.37	34.43	30.00	1000	14.63
11	**2437.0**	**4.67**	**0.77**	**10.07**	**15.51**	**35.56**	**30.00**	**1000**	**14.49**

Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shield Room
Date	2011/3/31	
Temperature / Humidity	25deg.C. , 26%	
Engineer	Makoto Hosaka	
Mode	Tx, IEEE802.11g, 12Mbps, PN9,	

Ch	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	6.38	0.78	10.07	17.23	52.84	30.00	1000	12.77
Mid	2437.0	6.50	0.77	10.07	17.34	54.20	30.00	1000	12.66
High	2462.0	6.22	0.80	10.07	17.09	51.17	30.00	1000	12.91

Sample Calculation:

Result = Reading + Cable Loss + Atten. Loss

* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

[Pre check]

Data Rate	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[Mbps]	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
6	2437.0	6.41	0.77	10.07	17.25	53.09	30.00	1000	12.75
9	2437.0	6.31	0.77	10.07	17.15	51.88	30.00	1000	12.85
12	**2437.0**	**6.50**	**0.77**	**10.07**	**17.34**	**54.20**	**30.00**	**1000**	**12.66**
18	2437.0	6.32	0.77	10.07	17.16	52.00	30.00	1000	12.84
24	2437.0	6.24	0.77	10.07	17.08	51.05	30.00	1000	12.92
36	2437.0	6.15	0.77	10.07	16.99	50.00	30.00	1000	13.01
48	2437.0	5.90	0.77	10.07	16.74	47.21	30.00	1000	13.26
54	2437.0	5.49	0.77	10.07	16.33	42.95	30.00	1000	13.67

Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab. No.5 Shield Room
Date	2011/3/31
Temperature / Humidity	25deg.C. , 26%
Engineer	Makoto Hosaka
Mode	Tx, IEEE802.11n (20MHz)(400ns), MCS0, PN9,

Ch	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
Low	2412.0	6.50	0.78	10.07	17.35	54.33	30.00	1000	12.65
Mid	2437.0	6.52	0.77	10.07	17.36	54.45	30.00	1000	12.64
High	2462.0	6.32	0.80	10.07	17.19	52.36	30.00	1000	12.81

Sample Calculation:
Result = Reading + Cable Loss + Atten. Loss
* In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

[Pre check] 800ns GI

Data mode	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
MCS	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
0	2437.0	6.47	0.77	10.07	17.31	53.83	30.00	1000	12.69
1	2437.0	6.34	0.77	10.07	17.18	52.24	30.00	1000	12.82
2	2437.0	6.28	0.77	10.07	17.12	51.52	30.00	1000	12.88
3	2437.0	6.24	0.77	10.07	17.08	51.05	30.00	1000	12.92
4	2437.0	6.09	0.77	10.07	16.93	49.32	30.00	1000	13.07
5	2437.0	5.93	0.77	10.07	16.77	47.53	30.00	1000	13.23
6	2437.0	5.59	0.77	10.07	16.43	43.95	30.00	1000	13.57
7	2437.0	4.34	0.77	10.07	15.18	32.96	30.00	1000	14.82

Peak Output Power (Conducted)

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shield Room
Date	2011/3/31	
Temperature / Humidity	25deg.C. , 26%	
Engineer	Makoto Hosaka	

[Pre check] 400ns GI

Data mode	Freq.	P/M (PK) Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
MCS	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
0	**2437.0**	**6.52**	**0.77**	**10.07**	**17.36**	**54.45**	**30.00**	**1000**	**12.64**
1	2437.0	6.42	0.77	10.07	17.26	53.21	30.00	1000	12.74
2	2437.0	6.39	0.77	10.07	17.23	52.84	30.00	1000	12.77
3	2437.0	6.33	0.77	10.07	17.17	52.12	30.00	1000	12.83
4	2437.0	6.17	0.77	10.07	17.01	50.23	30.00	1000	12.99
5	2437.0	5.98	0.77	10.07	16.82	48.08	30.00	1000	13.18
6	2437.0	5.78	0.77	10.07	16.62	45.92	30.00	1000	13.38
7	2437.0	4.47	0.77	10.07	15.31	33.96	30.00	1000	14.69

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2412 MHz IEEE802.11b, 11Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.7	16.9	8.1	32.0	15.7	46.0	30.3	150	356	
Hori.	960.00	QP	23.1	21.3	10.9	30.5	24.8	46.0	21.2	150	359	
Hori.	2390.00	PK	47.1	27.5	23.5	40.2	57.9	73.9	16.0	100	124	
Hori.	2400.00	PK	54.0	27.5	23.5	40.2	64.8	-	-	100	124	
Hori.	4824.00	PK	46.5	31.6	5.7	40.1	43.7	73.9	30.2	100	0	
Hori.	7236.00	PK	48.0	36.5	6.8	38.3	53.0	73.9	20.9	124	116	
Hori.	7236.00	PK	36.6	36.5	6.8	38.3	41.6	73.9	32.3	124	116	
Hori.	9648.00	PK	45.2	37.9	8.0	37.4	53.7	73.9	20.2	100	0	
Hori.	12060.00	PK	46.3	39.3	9.2	38.3	56.5	73.9	17.4	100	0	
Hori.	19296.00	PK	49.2	40.1	6.6	47.5	38.9	83.4	44.5	100	202	
Hori.	2390.00	AV	34.2	27.5	23.5	40.2	45.0	53.9	8.9	100	124	
Hori.	2400.00	AV	42.5	27.5	23.5	40.2	53.3	-	-	100	124	
Hori.	4824.00	AV	33.8	31.6	5.7	40.1	31.0	53.9	22.9	100	0	Not Detected
Hori.	7236.00	AV	35.9	36.5	6.8	38.3	40.9	53.9	13.0	124	116	
Hori.	9648.00	AV	32.0	37.9	8.0	37.4	40.5	53.9	13.4	100	0	Not Detected
Hori.	12060.00	AV	33.4	39.3	9.2	38.3	43.6	53.9	10.3	100	0	Not Detected
Hori.	19296.00	AV	39.3	40.1	6.6	47.5	29.0	63.4	34.4	100	202	
Vert.	240.00	QP	23.8	16.9	8.1	32.0	16.8	46.0	29.2	100	233	
Vert.	960.00	QP	23.1	21.3	10.9	30.5	24.8	46.0	21.2	100	0	
Vert.	2390.00	PK	45.9	27.5	23.5	40.2	56.7	73.9	17.2	100	0	
Vert.	2400.00	PK	53.6	27.5	23.5	40.2	64.4	-	-	100	0	
Vert.	4824.00	PK	46.2	31.6	5.7	40.1	43.4	73.9	30.5	100	0	
Vert.	7236.00	PK	46.6	36.5	6.8	38.3	51.6	73.9	22.3	100	0	
Vert.	7236.00	PK	36.1	36.5	6.8	38.3	41.1	73.9	32.8	100	0	
Vert.	9648.00	PK	45.1	37.9	8.0	37.4	53.6	73.9	20.3	100	0	
Vert.	12060.00	PK	46.0	39.3	9.2	38.3	56.2	73.9	17.7	100	0	
Vert.	19296.00	PK	52.4	40.1	6.6	47.5	42.1	83.4	41.3	100	160	
Vert.	2390.00	AV	34.2	27.5	23.5	40.2	45.0	53.9	8.9	100	0	
Vert.	2400.00	AV	42.0	27.5	23.5	40.2	52.8	-	-	100	0	
Vert.	4824.00	AV	33.8	31.6	5.7	40.1	31.0	53.9	22.9	100	0	Not Detected
Vert.	7236.00	AV	34.9	36.5	6.8	38.3	39.9	53.9	14.0	100	0	
Vert.	9648.00	AV	32.2	37.9	8.0	37.4	40.7	53.9	13.2	100	0	Not Detected
Vert.	12060.00	AV	33.3	39.3	9.2	38.3	43.5	53.9	10.4	100	0	Not Detected
Vert.	19296.00	AV	46.8	40.1	6.6	47.5	36.5	63.4	26.9	100	160	

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 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 [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	89.2	27.6	23.5	40.2	100.1	-	-	Carrier
Hori.	2400.000	PK	45.2	27.5	23.5	40.2	56.0	80.1	24.1	
Vert.	2412.000	PK	88.7	27.6	23.5	40.2	99.6	-	-	Carrier
Vert.	2400.000	PK	46.0	27.5	23.5	40.2	56.8	79.6	22.8	

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi	Hikaru Shirasawa	Akio Hayashi
	(1-18GHz)	(18-26GHz)	(30M-1GHz)
	Tx, 2437 MHz		
	IEEE802.11b, 11Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	23.1	16.9	8.1	32.0	16.1	46.0	29.9	205	143	
Hori.	960.00	QP	23.4	21.3	10.9	30.5	25.1	46.0	20.9	150	0	
Hori.	4874.00	PK	46.2	31.7	5.7	40.0	43.6	73.9	30.3	100	0	
Hori.	7311.00	PK	44.7	36.7	6.9	38.5	49.8	73.9	24.1	116	118	
Hori.	7311.00	PK	52.3	36.7	6.9	38.5	57.4	73.9	16.5	116	118	
Hori.	9748.00	PK	44.2	38.1	8.0	37.4	52.9	73.9	21.0	100	0	
Hori.	12185.00	PK	44.8	39.2	9.2	38.2	55.0	73.9	18.9	100	0	
Hori.	19496.00	PK	49.0	40.1	6.6	47.4	38.8	83.4	44.6	100	213	
Hori.	4874.00	AV	34.1	31.7	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Hori.	7311.00	AV	41.5	36.7	6.9	38.5	46.6	53.9	7.3	116	118	
Hori.	9748.00	AV	32.4	38.1	8.0	37.4	41.1	53.9	12.8	100	0	Not Detected
Hori.	12185.00	AV	33.2	39.2	9.2	38.2	43.4	53.9	10.5	100	0	Not Detected
Hori.	19496.00	AV	41.9	40.1	6.6	47.4	31.7	63.4	31.7	100	213	
Vert.	240.00	QP	23.8	16.9	8.1	32.0	16.8	46.0	29.2	100	359	
Vert.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	0	
Vert.	4874.00	PK	45.8	31.7	5.7	40.0	43.2	73.9	30.7	100	0	
Vert.	7311.00	PK	50.6	36.7	6.9	38.5	55.7	73.9	18.2	104	189	
Vert.	7311.00	PK	42.6	36.7	6.9	38.5	47.7	73.9	26.2	104	189	
Vert.	9748.00	PK	45.5	38.1	8.0	37.4	54.2	73.9	19.7	100	0	
Vert.	12185.00	PK	43.5	39.2	9.2	38.2	53.7	73.9	20.2	100	0	
Vert.	19496.00	PK	52.0	40.1	6.6	47.4	41.8	83.4	41.6	100	345	
Vert.	4874.00	AV	34.1	31.7	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Vert.	7311.00	AV	39.6	36.7	6.9	38.5	44.7	53.9	9.2	104	189	
Vert.	9748.00	AV	32.1	38.1	8.0	37.4	40.8	53.9	13.1	100	0	Not Detected
Vert.	12185.00	AV	32.7	39.2	9.2	38.2	42.9	53.9	11.0	100	0	Not Detected
Vert.	19496.00	AV	45.2	40.1	6.6	47.4	35.0	63.4	28.4	100	345	

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2462 MHz IEEE802.11b, 11Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	23.0	16.9	8.1	32.0	16.0	46.0	30.0	300	325	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	150	0	
Hori.	2483.50	PK	46.8	27.6	23.6	40.1	57.9	73.9	16.0	118	8	
Hori.	4924.00	PK	46.9	31.8	5.7	40.0	44.4	73.9	29.5	100	0	
Hori.	7386.00	PK	52.6	36.8	6.8	38.6	57.6	73.9	16.3	112	116	
Hori.	7386.00	PK	44.5	36.8	6.8	38.6	49.5	73.9	24.4	112	116	
Hori.	9848.00	PK	44.0	38.3	8.1	37.5	52.9	73.9	21.0	100	0	
Hori.	12310.00	PK	44.5	39.2	9.3	38.0	55.0	73.9	18.9	100	0	
Hori.	19696.00	PK	50.6	40.2	6.6	47.4	40.5	83.4	42.9	100	216	
Hori.	2483.50	AV	34.7	27.6	23.6	40.1	45.8	53.9	8.1	118	8	
Hori.	4924.00	AV	34.0	31.8	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Hori.	7386.00	AV	42.3	36.8	6.8	38.6	47.3	53.9	6.6	112	116	
Hori.	9848.00	AV	31.5	38.3	8.1	37.5	40.4	53.9	13.5	100	0	Not Detected
Hori.	12310.00	AV	32.4	39.2	9.3	38.0	42.9	53.9	11.0	100	0	Not Detected
Hori.	19696.00	AV	42.9	40.2	6.6	47.4	32.8	63.4	30.6	100	216	
Vert.	240.00	QP	16.9	16.9	8.1	32.0	17.0	46.0	29.0	100	232	
Vert.	960.00	QP	21.3	21.3	10.9	30.5	25.1	46.0	20.9	100	359	
Vert.	2483.50	PK	46.7	27.6	23.6	40.1	57.8	73.9	16.1	100	359	
Vert.	4924.00	PK	46.4	31.8	5.7	40.0	43.9	73.9	30.0	100	0	
Vert.	7386.00	PK	50.7	36.8	6.8	38.6	55.7	73.9	18.2	102	255	
Vert.	7386.00	PK	39.5	36.8	6.8	38.6	44.5	73.9	29.4	102	255	
Vert.	9848.00	PK	44.6	38.3	8.1	37.5	53.5	73.9	20.4	100	0	
Vert.	12310.00	PK	45.1	39.2	9.3	38.0	55.6	73.9	18.3	100	0	
Vert.	19696.00	PK	53.0	40.2	6.6	47.4	42.9	83.4	40.5	100	222	
Vert.	2483.50	AV	34.5	27.6	23.6	40.1	45.6	53.9	8.3	100	359	
Vert.	4924.00	AV	34.0	31.8	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Vert.	7386.00	AV	38.4	36.8	6.8	38.6	43.4	53.9	10.5	102	255	
Vert.	9848.00	AV	31.2	38.3	8.1	37.5	40.1	53.9	13.8	100	0	Not Detected
Vert.	12310.00	AV	32.5	39.2	9.3	38.0	43.0	53.9	10.9	100	0	Not Detected
Vert.	19696.00	AV	47.9	40.2	6.6	47.4	37.8	63.4	25.6	100	222	

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2412 MHz IEEE802.11g, 12Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	23.0	16.9	8.1	32.0	16.0	46.0	30.0	150	163	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	150	359	
Hori.	2390.00	PK	53.2	27.5	23.5	40.2	64.0	73.9	9.9	118	0	
Hori.	2400.00	PK	65.4	27.5	23.5	40.2	76.2	-	-	118	0	
Hori.	4824.00	PK	45.9	31.6	5.7	40.1	43.1	73.9	30.8	100	0	
Hori.	7236.00	PK	46.6	36.5	6.8	38.3	51.6	73.9	22.3	100	0	
Hori.	9648.00	PK	43.9	37.9	8.0	37.4	52.4	73.9	21.5	100	0	
Hori.	12060.00	PK	45.0	39.3	9.2	38.3	55.2	73.9	18.7	100	0	
Hori.	19296.00	PK	50.0	40.1	6.6	47.5	39.7	83.4	43.7	100	220	
Hori.	2390.00	AV	37.4	27.5	23.5	40.2	48.2	53.9	5.7	118	0	
Hori.	2400.00	AV	50.6	27.5	23.5	40.2	61.4	-	-	118	0	
Hori.	4824.00	AV	33.8	31.6	5.7	40.1	31.0	53.9	22.9	100	0	Not Detected
Hori.	7236.00	AV	34.8	36.5	6.8	38.3	39.8	53.9	14.1	100	0	Not Detected
Hori.	9648.00	AV	32.1	37.9	8.0	37.4	40.6	53.9	13.3	100	0	Not Detected
Hori.	12060.00	AV	33.3	39.3	9.2	38.3	43.5	53.9	10.4	100	0	Not Detected
Hori.	19296.00	AV	40.8	40.1	6.6	47.5	30.5	63.4	32.9	100	220	
Vert.	240.00	QP	24.1	16.9	8.1	32.0	17.1	46.0	28.9	100	58	
Vert.	960.00	QP	23.4	21.3	10.9	30.5	25.1	46.0	20.9	100	0	
Vert.	2390.00	PK	51.1	27.5	23.5	40.2	61.9	73.9	12.0	100	359	
Vert.	2400.00	PK	64.6	27.5	23.5	40.2	75.4	-	-	100	359	
Vert.	4824.00	PK	46.5	31.6	5.7	40.1	43.7	73.9	30.2	100	0	
Vert.	7236.00	PK	46.8	36.5	6.8	38.3	51.8	73.9	22.1	100	0	
Vert.	9648.00	PK	43.4	37.9	8.0	37.4	51.9	73.9	22.0	100	0	
Vert.	12060.00	PK	44.6	39.3	9.2	38.3	54.8	73.9	19.1	100	0	
Vert.	19296.00	PK	52.3	40.1	6.6	47.5	42.0	83.4	41.4	100	161	
Vert.	2390.00	AV	36.0	27.5	23.5	40.2	46.8	53.9	7.1	100	359	
Vert.	2400.00	AV	48.7	27.5	23.5	40.2	59.5	-	-	100	359	
Vert.	4824.00	AV	33.7	31.6	5.7	40.1	30.9	53.9	23.0	100	0	Not Detected
Vert.	7236.00	AV	34.8	36.5	6.8	38.3	39.8	53.9	14.1	100	0	Not Detected
Vert.	9648.00	AV	31.9	37.9	8.0	37.4	40.4	53.9	13.5	100	0	Not Detected
Vert.	12060.00	AV	33.3	39.3	9.2	38.3	43.5	53.9	10.4	100	0	Not Detected
Vert.	19296.00	AV	46.5	40.1	6.6	47.5	36.2	63.4	27.2	100	161	

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 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	84.3	27.6	23.5	40.2	95.2	-	-	Carrier
Hori.	2400.000	PK	52.1	27.5	23.5	40.2	62.9	75.2	12.3	
Vert.	2412.000	PK	80.8	27.6	23.5	40.2	91.7	-	-	Carrier
Vert.	2400.000	PK	51.7	27.5	23.5	40.2	62.5	71.7	9.2	

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2437 MHz IEEE802.11g, 12Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.8	16.9	8.1	32.0	15.8	46.0	30.2	200	269	
Hori.	960.00	QP	23.4	21.3	10.9	30.5	25.1	46.0	20.9	150	0	
Hori.	4874.00	PK	45.7	31.7	5.7	40.0	43.1	73.9	30.8	100	0	
Hori.	7311.00	PK	47.4	36.7	6.9	38.5	52.5	73.9	21.4	100	0	
Hori.	9748.00	PK	44.4	38.1	8.0	37.4	53.1	73.9	20.8	100	0	
Hori.	12185.00	PK	45.4	39.2	9.2	38.2	55.6	73.9	18.3	100	0	
Hori.	19496.00	PK	49.5	40.1	6.6	47.4	39.3	83.4	44.1	100	219	
Hori.	4874.00	AV	34.0	31.7	5.7	40.0	31.4	53.9	22.5	100	0	Not Detected
Hori.	7311.00	AV	35.3	36.7	6.9	38.5	40.4	53.9	13.5	100	0	Not Detected
Hori.	9748.00	AV	32.3	38.1	8.0	37.4	41.0	53.9	12.9	100	0	Not Detected
Hori.	12185.00	AV	33.2	39.2	9.2	38.2	43.4	53.9	10.5	100	0	Not Detected
Hori.	19496.00	AV	41.0	40.1	6.6	47.4	30.8	63.4	32.6	100	219	
Vert.	240.00	QP	24.0	16.9	8.1	32.0	17.0	46.0	29.0	100	0	
Vert.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	359	
Vert.	4874.00	PK	46.5	31.7	5.7	40.0	43.9	73.9	30.0	100	0	
Vert.	7311.00	PK	47.4	36.7	6.9	38.5	52.5	73.9	21.4	100	0	
Vert.	9748.00	PK	45.2	38.1	8.0	37.4	53.9	73.9	20.0	100	0	
Vert.	12185.00	PK	45.3	39.2	9.2	38.2	55.5	73.9	18.4	100	0	
Vert.	19496.00	PK	51.1	40.1	6.6	47.4	40.9	83.4	42.5	100	203	
Vert.	4874.00	AV	33.9	31.7	5.7	40.0	31.3	53.9	22.6	100	0	Not Detected
Vert.	7311.00	AV	34.1	36.7	6.9	38.5	39.2	53.9	14.7	100	0	Not Detected
Vert.	9748.00	AV	32.0	38.1	8.0	37.4	40.7	53.9	13.2	100	0	Not Detected
Vert.	12185.00	AV	33.3	39.2	9.2	38.2	43.5	53.9	10.4	100	0	Not Detected
Vert.	19496.00	AV	44.5	40.1	6.6	47.4	34.3	63.4	29.1	100	203	

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2462 MHz IEEE802.11g, 12Mbps, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.9	16.9	8.1	32.0	15.9	46.0	30.1	200	1	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	0	
Hori.	2483.50	PK	59.4	27.6	23.6	40.1	70.5	73.9	3.4	147	7	
Hori.	4924.00	PK	45.8	31.8	5.7	40.0	43.3	73.9	30.6	100	0	
Hori.	7386.00	PK	49.1	36.8	6.8	38.6	54.1	73.9	19.8	114	118	
Hori.	7386.00	PK	37.5	36.8	6.8	38.6	42.5	73.9	31.4	114	118	
Hori.	9848.00	PK	43.4	38.3	8.1	37.5	52.3	73.9	21.6	100	0	
Hori.	12310.00	PK	42.7	39.2	9.3	38.0	53.2	73.9	20.7	100	0	
Hori.	19696.00	PK	50.4	40.2	6.6	47.4	40.3	83.4	43.1	100	217	
Hori.	2483.50	AV	40.6	27.6	23.6	40.1	51.7	53.9	2.2	147	7	
Hori.	4924.00	AV	34.0	31.8	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Hori.	7386.00	AV	36.0	36.8	6.8	38.6	41.0	53.9	12.9	114	118	
Hori.	9848.00	AV	31.4	38.3	8.1	37.5	40.3	53.9	13.6	100	0	Not Detected
Hori.	12310.00	AV	32.4	39.2	9.3	38.0	42.9	53.9	11.0	100	0	Not Detected
Hori.	19696.00	AV	40.8	40.2	6.6	47.4	30.7	63.4	32.7	100	217	
Vert.	240.00	QP	23.9	16.9	8.1	32.0	16.9	46.0	29.1	100	259	
Vert.	960.00	QP	23.4	21.3	10.9	30.5	25.1	46.0	20.9	100	359	
Vert.	2483.50	PK	58.9	27.6	23.6	40.1	70.0	73.9	3.9	100	0	
Vert.	4924.00	PK	46.4	31.8	5.7	40.0	43.9	73.9	30.0	100	0	
Vert.	7386.00	PK	47.7	36.8	6.8	38.6	52.7	73.9	21.2	115	238	
Vert.	7386.00	PK	36.7	36.8	6.8	38.6	41.7	73.9	32.2	115	238	
Vert.	9848.00	PK	43.7	38.3	8.1	37.5	52.6	73.9	21.3	100	0	
Vert.	12310.00	PK	43.9	39.2	9.3	38.0	54.4	73.9	19.5	100	0	
Vert.	19696.00	PK	51.8	40.2	6.6	47.4	41.7	83.4	41.7	100	0	
Vert.	2483.50	AV	39.4	27.6	23.6	40.1	50.5	53.9	3.4	100	0	
Vert.	4924.00	AV	33.9	31.8	5.7	40.0	31.4	53.9	22.5	100	0	Not Detected
Vert.	7386.00	AV	34.9	36.8	6.8	38.6	39.9	53.9	14.0	115	238	
Vert.	9848.00	AV	31.1	38.3	8.1	37.5	40.0	53.9	13.9	100	0	Not Detected
Vert.	12310.00	AV	32.4	39.2	9.3	38.0	42.9	53.9	11.0	100	0	Not Detected
Vert.	19696.00	AV	46.0	40.2	6.6	47.4	35.9	63.4	27.5	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 10th harmonic was not seen so the result was its base noise level.

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2412 MHz		
	IEEE802.11n (20MHz)(400ns), MCS0, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.8	16.9	8.1	32.0	15.8	46.0	30.2	300	232	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	150	0	
Hori.	2390.00	PK	67.6	27.5	13.3	40.2	68.2	73.9	5.7	120	355	
Hori.	2400.00	PK	78.9	27.5	13.3	40.2	79.5	-	-	120	355	
Hori.	4824.00	PK	45.0	31.6	5.7	40.1	42.2	73.9	31.7	100	0	
Hori.	7236.00	PK	46.7	36.5	6.8	38.3	51.7	73.9	22.2	100	0	
Hori.	9648.00	PK	43.7	37.9	8.0	37.4	52.2	73.9	21.7	100	0	
Hori.	12060.00	PK	44.9	39.3	9.2	38.3	55.1	73.9	18.8	100	0	
Hori.	19296.00	PK	48.7	40.1	6.6	47.5	38.4	83.4	45.0	100	220	
Hori.	2390.00	AV	46.8	27.5	13.3	40.2	47.4	53.9	6.5	120	355	
Hori.	2400.00	AV	61.8	27.5	13.3	40.2	62.4	-	-	120	355	
Hori.	4824.00	AV	33.7	31.6	5.7	40.1	30.9	53.9	23.0	100	0	Not Detected
Hori.	7236.00	AV	34.7	36.5	6.8	38.3	39.7	53.9	14.2	100	0	Not Detected
Hori.	9648.00	AV	32.1	37.9	8.0	37.4	40.6	53.9	13.3	100	0	Not Detected
Hori.	12060.00	AV	33.2	39.3	9.2	38.3	43.4	53.9	10.5	100	0	Not Detected
Hori.	19296.00	AV	39.6	40.1	6.6	47.5	29.3	63.4	34.1	100	220	
Vert.	240.00	QP	23.8	16.9	8.1	32.0	16.8	46.0	29.2	100	244	
Vert.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	0	
Vert.	2390.00	PK	67.8	27.5	13.3	40.2	68.4	73.9	5.5	104	92	
Vert.	2400.00	PK	78.3	27.5	13.3	40.2	78.9	-	-	104	92	
Vert.	2400.00	PK	65.2	27.5	13.3	40.2	65.8	73.9	8.1	104	92	
Vert.	4824.00	PK	45.8	31.6	5.7	40.1	43.0	73.9	30.9	100	0	
Vert.	7236.00	PK	46.7	36.5	6.8	38.3	51.7	73.9	22.2	100	0	
Vert.	9648.00	PK	43.2	37.9	8.0	37.4	51.7	73.9	22.2	100	0	
Vert.	12060.00	PK	44.6	39.3	9.2	38.3	54.8	73.9	19.1	100	0	
Vert.	19296.00	PK	50.1	40.1	6.6	47.5	39.8	83.4	43.6	100	160	
Vert.	2390.00	AV	45.1	27.5	13.3	40.2	45.7	53.9	8.2	104	92	
Vert.	2400.00	AV	61.0	27.5	13.3	40.2	61.6	-	-	104	92	
Vert.	4824.00	AV	33.7	31.6	5.7	40.1	30.9	53.9	23.0	100	0	Not Detected
Vert.	7236.00	AV	34.7	36.5	6.8	38.3	39.7	53.9	14.2	100	0	Not Detected
Vert.	9648.00	AV	32.1	37.9	8.0	37.4	40.6	53.9	13.3	100	0	Not Detected
Vert.	12060.00	AV	33.3	39.3	9.2	38.3	43.5	53.9	10.4	100	0	Not Detected
Vert.	19296.00	AV	43.5	40.1	6.6	47.5	33.2	63.4	30.2	100	160	

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 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	95.0	27.6	13.3	40.2	95.7	-	-	Carrier
Hori.	2400.000	PK	64.7	27.5	13.3	40.2	65.3	75.7	10.4	
Vert.	2412.000	PK	93.4	27.6	13.3	40.2	94.1	-	-	Carrier
Vert.	2400.000	PK	65.2	27.5	13.3	40.2	65.8	74.1	8.3	

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2437 MHz		
	IEEE802.11n (20MHz)(400ns), MCS0, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.8	16.9	8.1	32.0	15.8	46.0	30.2	300	278	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	150	0	
Hori.	4874.00	PK	46.6	31.7	5.7	40.0	44.0	73.9	29.9	100	0	
Hori.	7311.00	PK	48.7	36.7	6.9	38.5	53.8	73.9	20.1	121	117	
Hori.	7311.00	PK	37.8	36.7	6.9	38.5	42.9	73.9	31.0	121	117	
Hori.	9748.00	PK	43.9	38.1	8.0	37.4	52.6	73.9	21.3	100	0	
Hori.	12185.00	PK	44.6	39.2	9.2	38.2	54.8	73.9	19.1	100	0	
Hori.	19496.00	PK	49.5	40.1	6.6	47.4	39.3	83.4	44.1	100	220	
Hori.	4874.00	AV	33.9	31.7	5.7	40.0	31.3	53.9	22.6	100	0	Not Detected
Hori.	7311.00	AV	35.3	36.7	6.9	38.5	40.4	53.9	13.5	121	117	
Hori.	9748.00	AV	32.0	38.1	8.0	37.4	40.7	53.9	13.2	100	0	Not Detected
Hori.	12185.00	AV	33.2	39.2	9.2	38.2	43.4	53.9	10.5	100	0	Not Detected
Hori.	19496.00	AV	41.0	40.1	6.6	47.4	30.8	63.4	32.6	100	220	
Vert.	240.00	QP	23.7	16.9	8.1	32.0	16.7	46.0	29.3	100	299	
Vert.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	0	
Vert.	4874.00	PK	46.1	31.7	5.7	40.0	43.5	73.9	30.4	100	0	
Vert.	7311.00	PK	46.4	36.7	6.9	38.5	51.5	73.9	22.4	100	252	
Vert.	7311.00	PK	35.9	36.7	6.9	38.5	41.0	73.9	32.9	100	252	
Vert.	9748.00	PK	44.2	38.1	8.0	37.4	52.9	73.9	21.0	100	0	
Vert.	12185.00	PK	45.1	39.2	9.2	38.2	55.3	73.9	18.6	100	0	
Vert.	19496.00	PK	50.1	40.1	6.6	47.4	39.9	83.4	43.5	100	157	
Vert.	4874.00	AV	33.9	31.7	5.7	40.0	31.3	53.9	22.6	100	0	Not Detected
Vert.	7311.00	AV	34.3	36.7	6.9	38.5	39.4	53.9	14.5	100	252	
Vert.	9748.00	AV	32.2	38.1	8.0	37.4	40.9	53.9	13.0	100	0	Not Detected
Vert.	12185.00	AV	33.1	39.2	9.2	38.2	43.3	53.9	10.6	100	0	Not Detected
Vert.	19496.00	AV	44.0	40.1	6.6	47.4	33.8	63.4	29.6	100	157	

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

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

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

Radiated Emission

Test place	UL Japan, Inc. Shonan EMC Lab.	No.3 Semi Anechoic Chamber	
Date	2011/1/31	2011/2/1	2011/2/1
Temperature / Humidity	26deg.C. , 31%	21deg.C. , 28%	24deg.C. , 31%
Engineer	Akio Hayashi (1-18GHz)	Hikaru Shirasawa (18-26GHz)	Akio Hayashi (30M-1GHz)
Mode	Tx, 2462 MHz		
	IEEE802.11n (20MHz)(400ns), MCS0, PN9,		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.00	QP	22.9	16.9	8.1	32.0	15.9	46.0	30.1	300	164	
Hori.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	28	
Hori.	2483.50	PK	72.5	27.6	13.3	40.1	73.3	73.9	0.6	117	351	
Hori.	4924.00	PK	44.9	31.8	5.7	40.0	42.4	73.9	31.5	100	0	
Hori.	7386.00	PK	49.2	36.8	6.8	38.6	54.2	73.9	19.7	117	119	
Hori.	7386.00	PK	37.4	36.8	6.8	38.6	42.4	73.9	31.5	117	119	
Hori.	9848.00	PK	43.4	38.3	8.1	37.5	52.3	73.9	21.6	100	0	
Hori.	12310.00	PK	43.7	39.2	9.3	38.0	54.2	73.9	19.7	100	0	
Hori.	19696.00	PK	49.1	40.2	6.6	47.4	39.0	83.4	44.4	100	295	
Hori.	2483.50	AV	52.6	27.6	13.3	40.1	53.4	53.9	0.5	117	351	
Hori.	4924.00	AV	34.0	31.8	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Hori.	7386.00	AV	36.0	36.8	6.8	38.6	41.0	53.9	12.9	117	119	
Hori.	9848.00	AV	31.1	38.3	8.1	37.5	40.0	53.9	13.9	100	0	Not Detected
Hori.	12310.00	AV	32.3	39.2	9.3	38.0	42.8	53.9	11.1	100	0	Not Detected
Hori.	19696.00	AV	42.0	40.2	6.6	47.4	31.9	63.4	31.2	100	295	
Vert.	240.00	QP	23.9	16.9	8.1	32.0	16.9	46.0	29.1	100	136	
Vert.	960.00	QP	23.5	21.3	10.9	30.5	25.2	46.0	20.8	100	1	
Vert.	2483.50	PK	71.5	27.6	13.3	40.1	72.3	73.9	1.6	100	86	
Vert.	4924.00	PK	45.5	31.8	5.7	40.0	43.0	73.9	30.9	100	0	
Vert.	7386.00	PK	47.0	36.8	6.8	38.6	52.0	73.9	21.9	100	258	
Vert.	7386.00	PK	36.4	36.8	6.8	38.6	41.4	73.9	32.5	100	258	
Vert.	9848.00	PK	44.4	38.3	8.1	37.5	53.3	73.9	20.6	100	0	
Vert.	12310.00	PK	43.6	39.2	9.3	38.0	54.1	73.9	19.8	100	0	
Vert.	19696.00	PK	51.8	40.2	6.6	47.4	41.7	83.4	41.7	100	160	
Vert.	2483.50	AV	51.9	27.6	13.3	40.1	52.7	53.9	1.2	100	86	
Vert.	4924.00	AV	34.0	31.8	5.7	40.0	31.5	53.9	22.4	100	0	Not Detected
Vert.	7386.00	AV	34.7	36.8	6.8	38.6	39.7	53.9	14.2	100	258	
Vert.	9848.00	AV	31.4	38.3	8.1	37.5	40.3	53.9	13.6	100	0	Not Detected
Vert.	12310.00	AV	32.3	39.2	9.3	38.0	42.8	53.9	11.1	100	0	Not Detected
Vert.	19696.00	AV	45.6	40.2	6.6	47.4	35.5	63.4	27.9	100	160	

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).

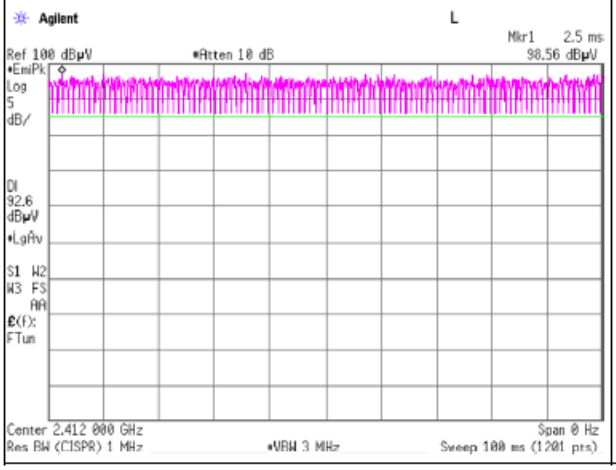
*The 10th harmonic was not seen so the result was its base noise level.

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

Spurious emission (Radiated)

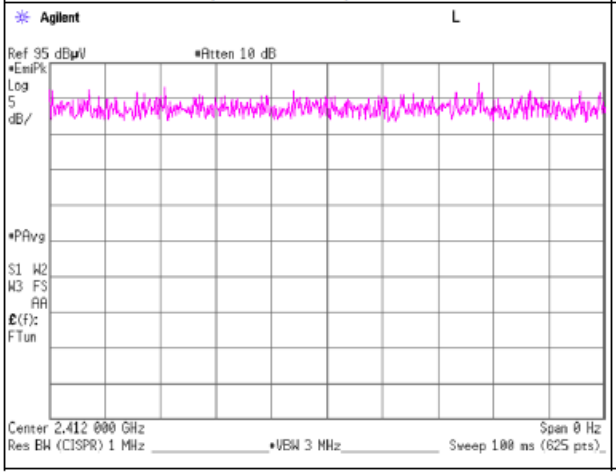
IEEE802.11b, 11Mbps, PN9

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



IEEE802.11g, 12Mbps, PN9

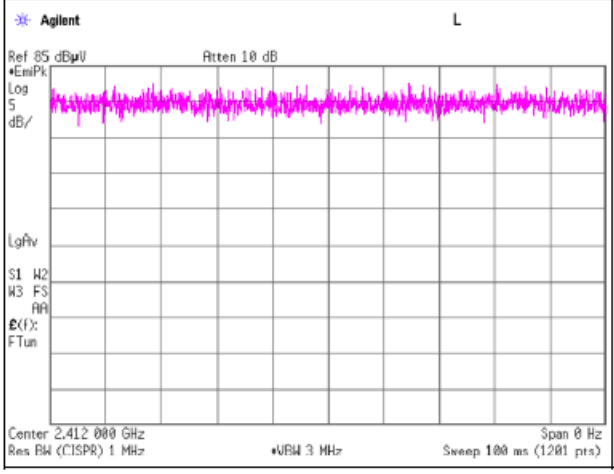
VBW (AV) Calculation	
VBW: 1/x = 10Hz x: (Tx on+Tx off) =100ms	



Spurious emission (Radiated)

IEEE802.11n (20MHz)(400ns), MCS0, PN9

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

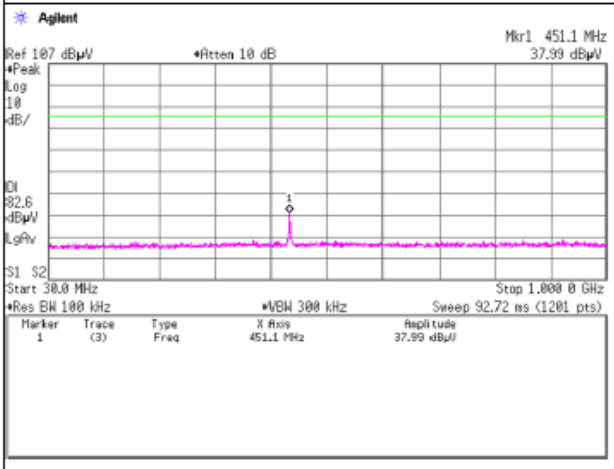


Spurious emission (Conducted)

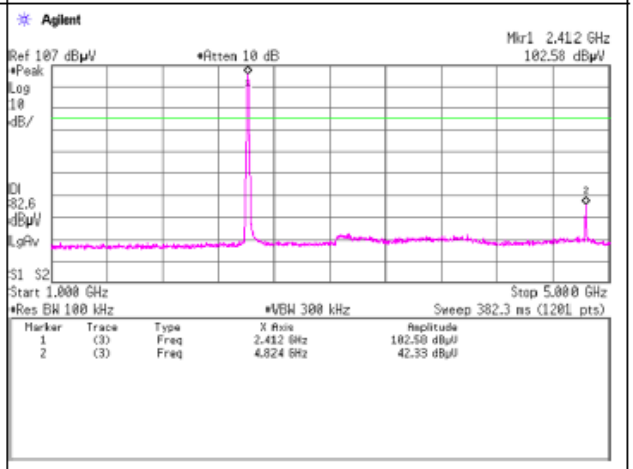
IEEE802.11b, 11Mbps, PN9

Tx 2412MHz

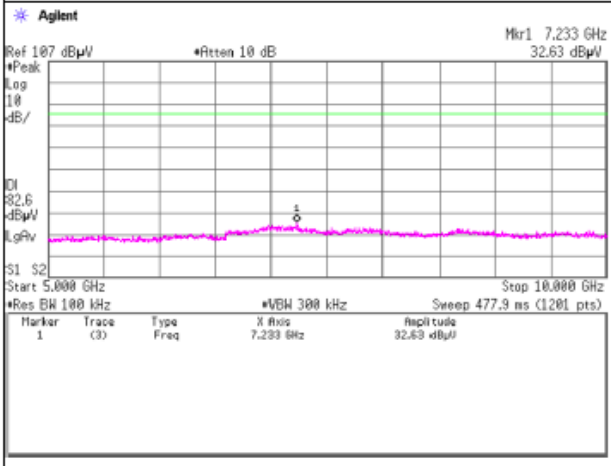
30MHz - 1GHz



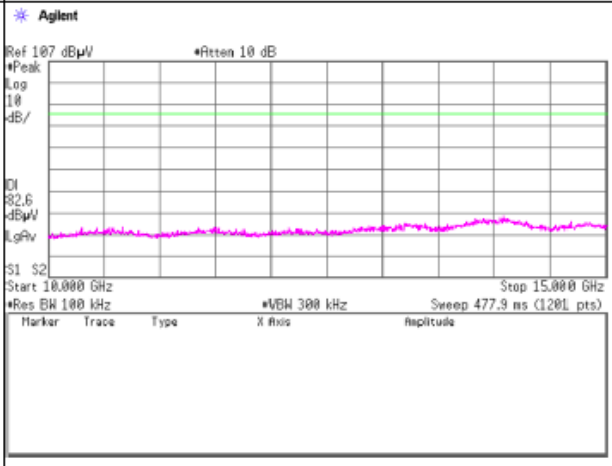
1GHz - 5GHz



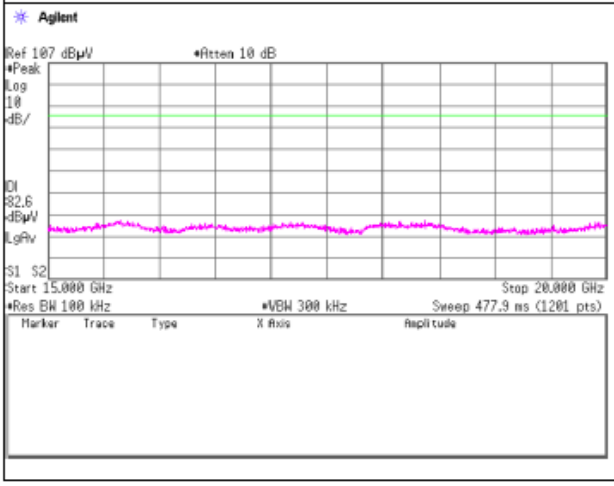
5GHz - 10GHz



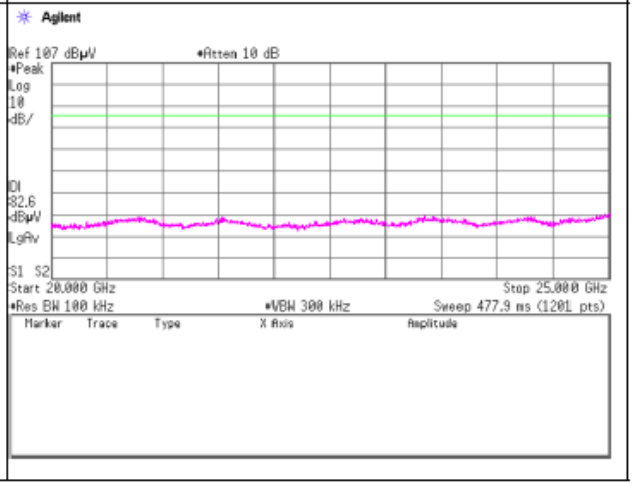
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

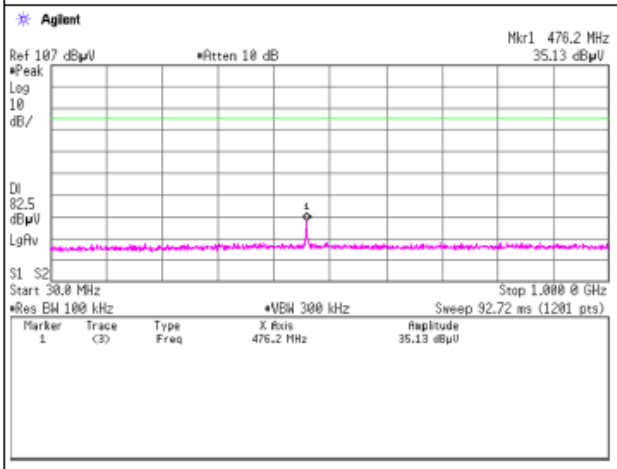


Spurious emission (Conducted)

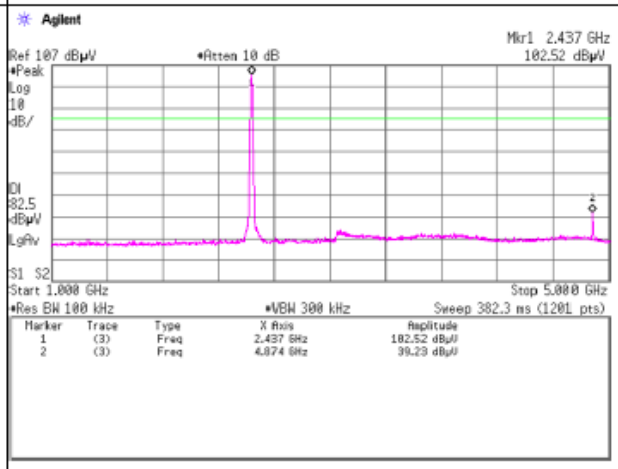
IEEE802.11b, 11Mbps, PN9

Tx 2437MHz

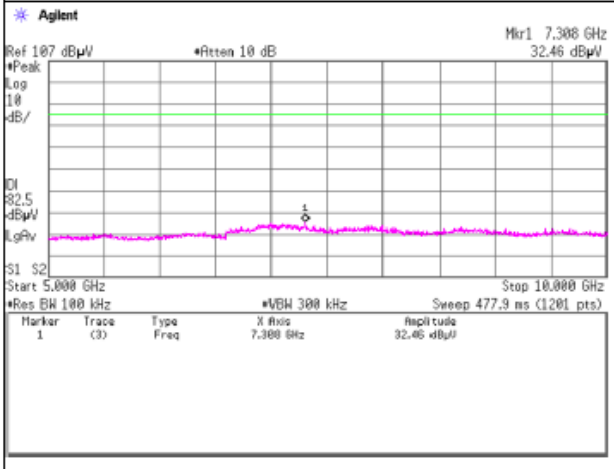
30MHz - 1GHz



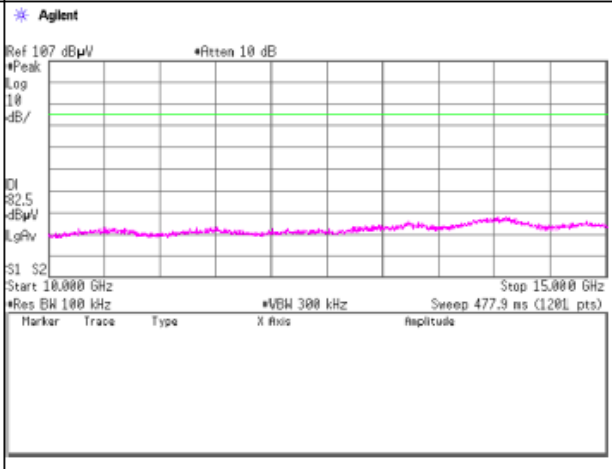
1GHz - 5GHz



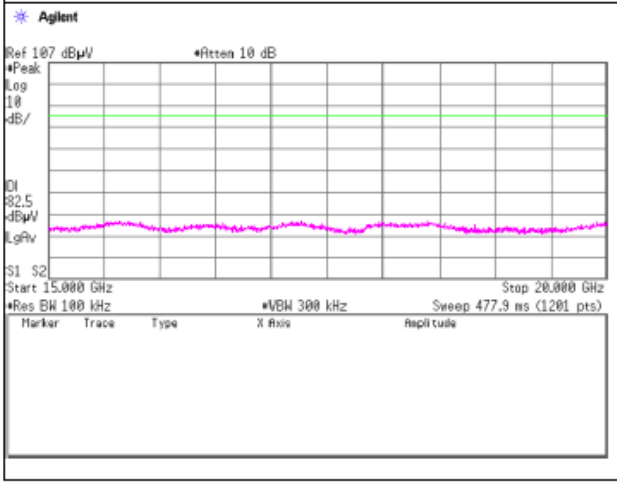
5GHz - 10GHz



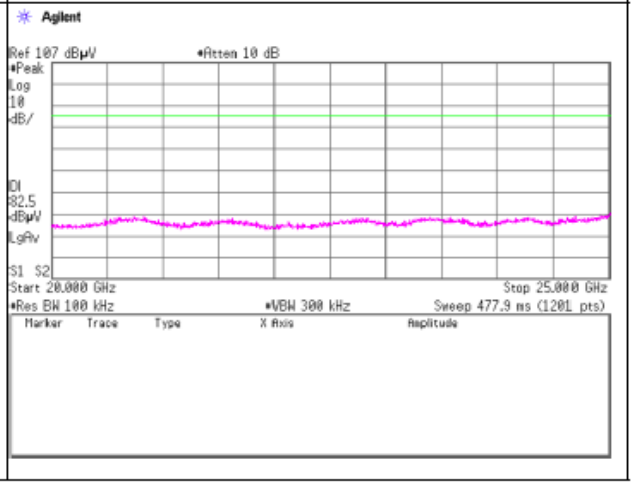
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

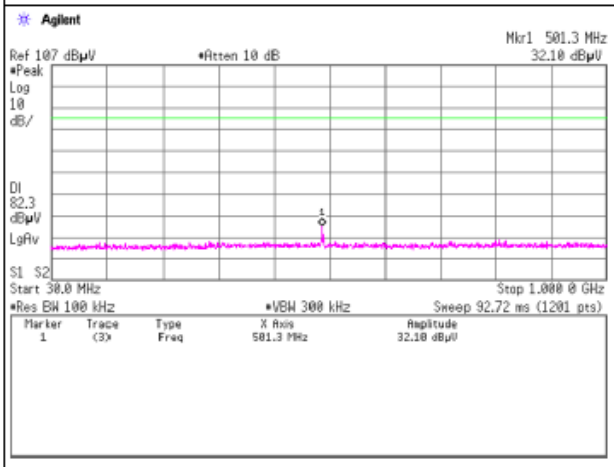


Spurious emission (Conducted)

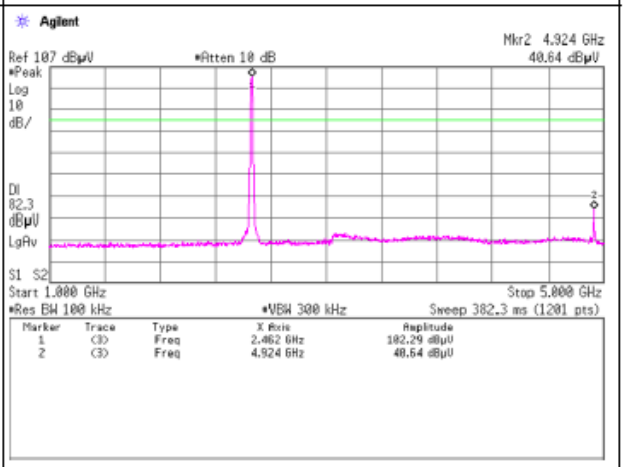
IEEE802.11b, 11Mbps, PN9

Tx 2462MHz

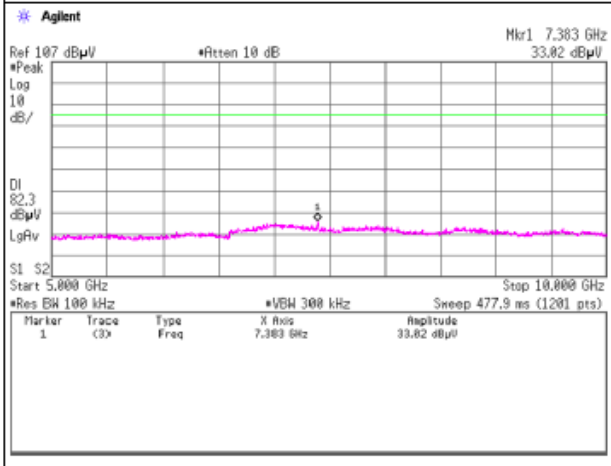
30MHz - 1GHz



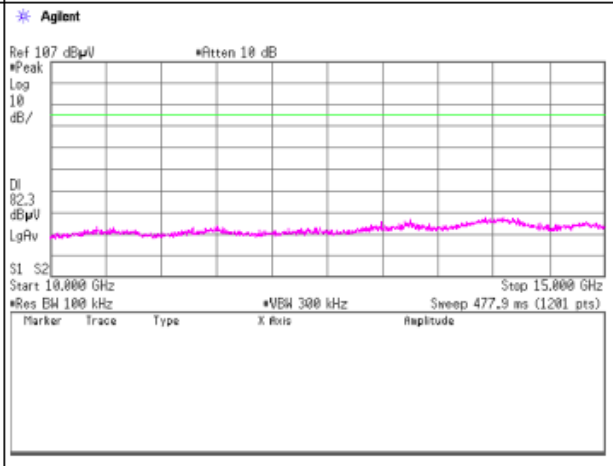
1GHz - 5GHz



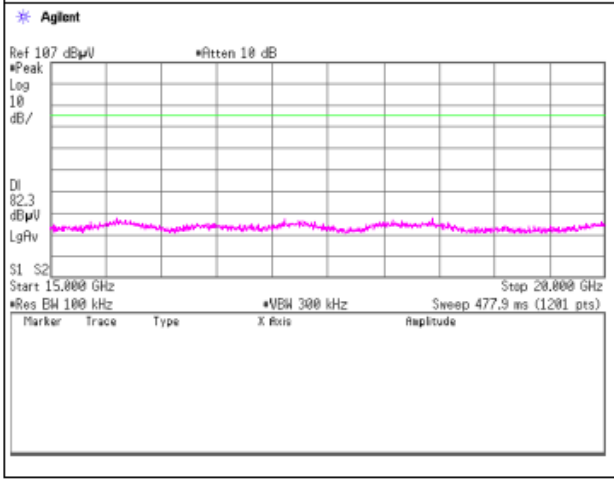
5GHz - 10GHz



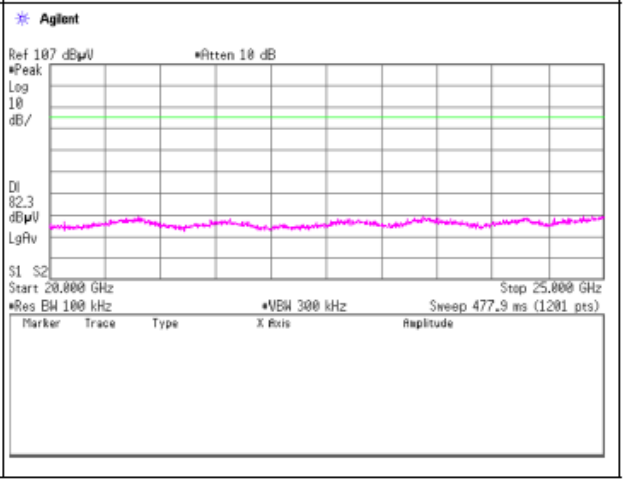
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

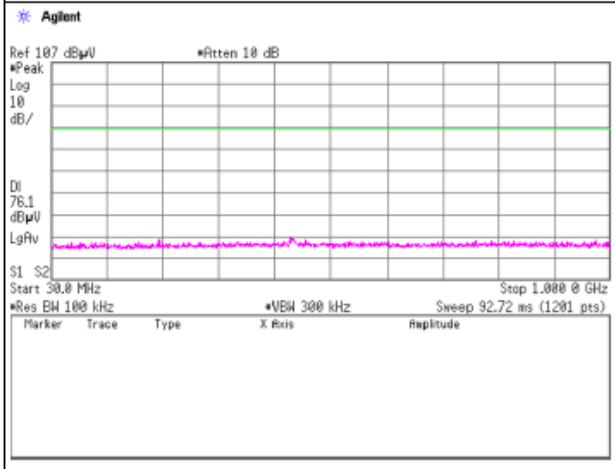


Spurious emission (Conducted)

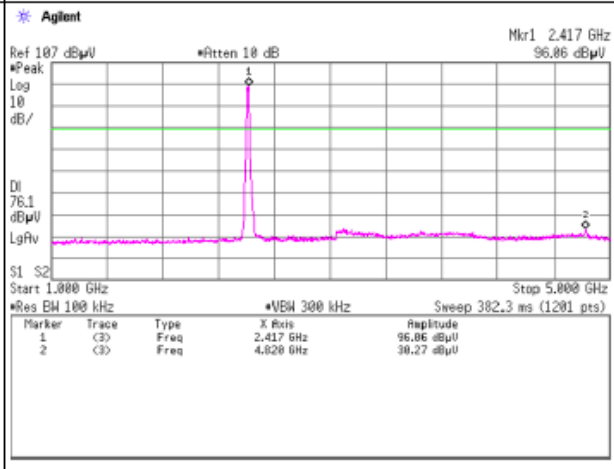
IEEE802.11g, 12Mbps, PN9

Tx 2412MHz

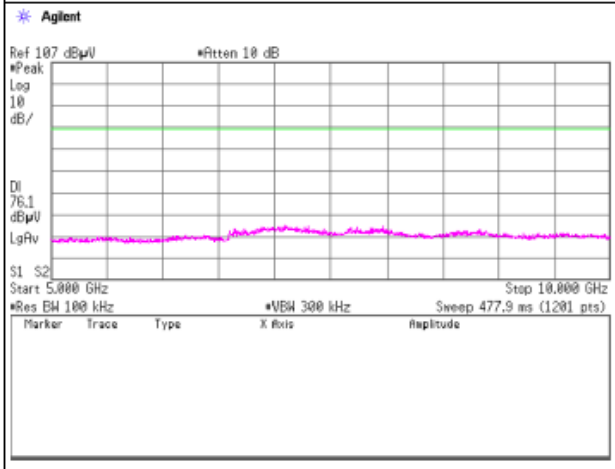
30MHz - 1GHz



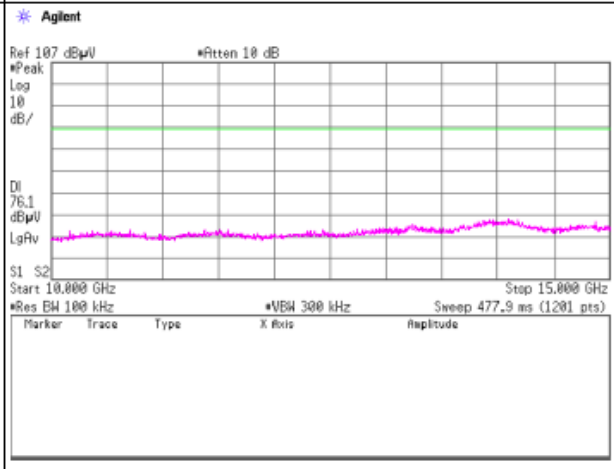
1GHz - 5GHz



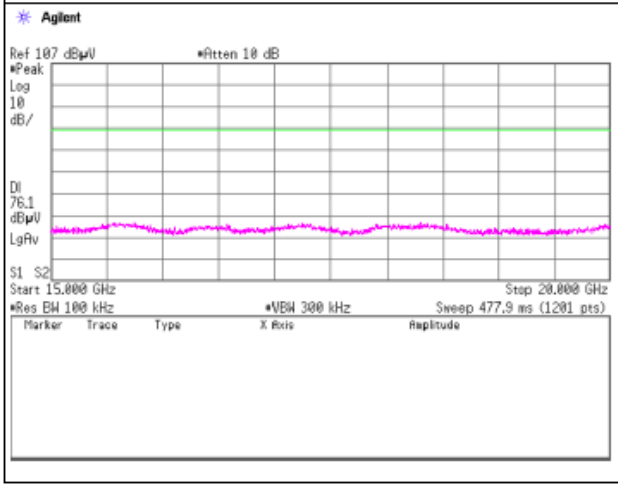
5GHz - 10GHz



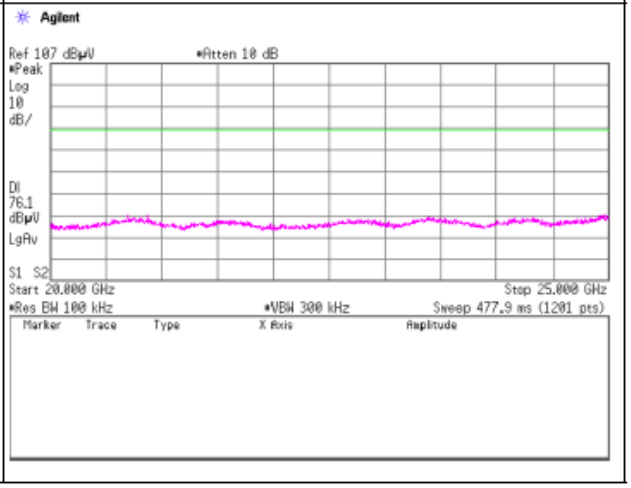
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

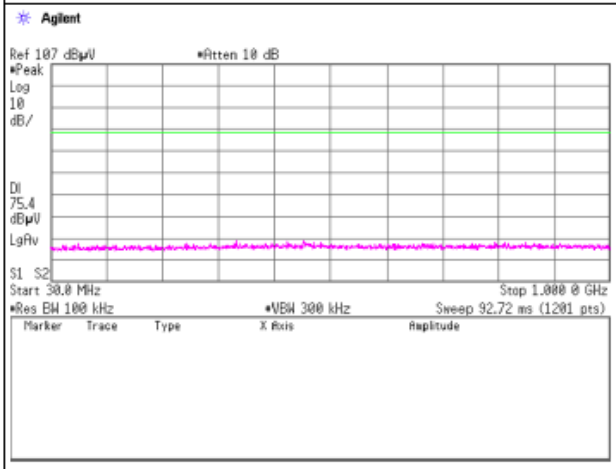


Spurious emission (Conducted)

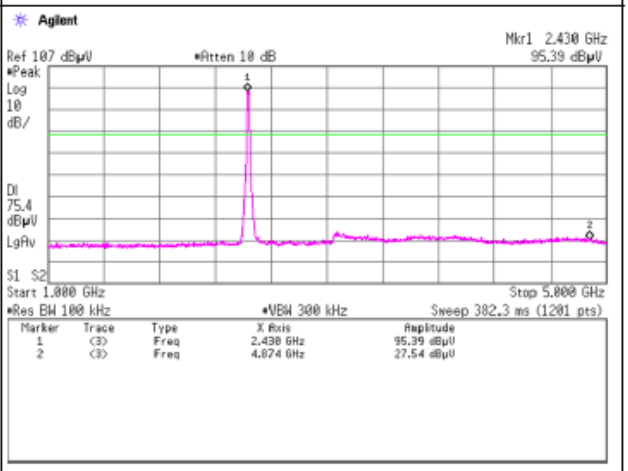
IEEE802.11g, 12Mbps, PN9

Tx 2437MHz

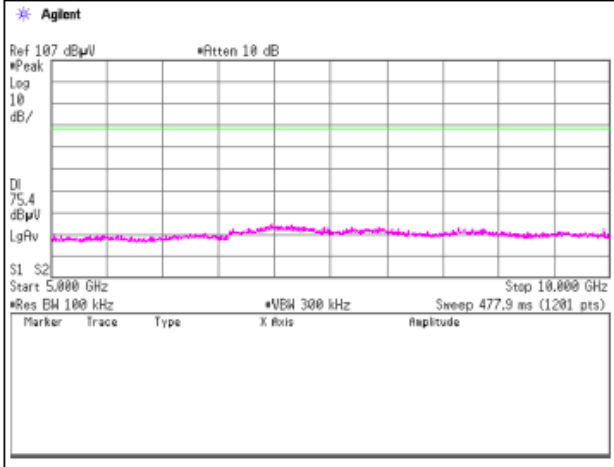
30MHz - 1GHz



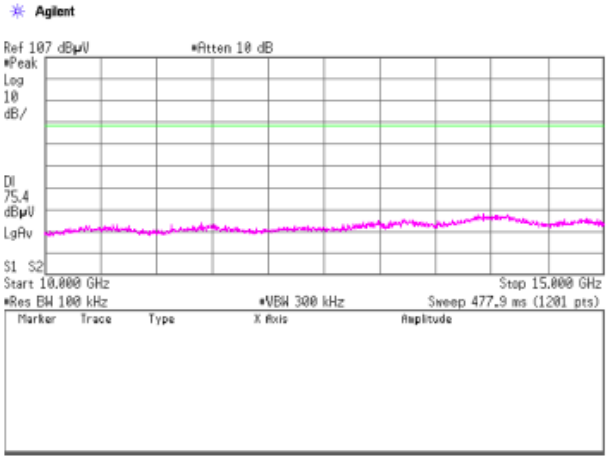
1GHz - 5GHz



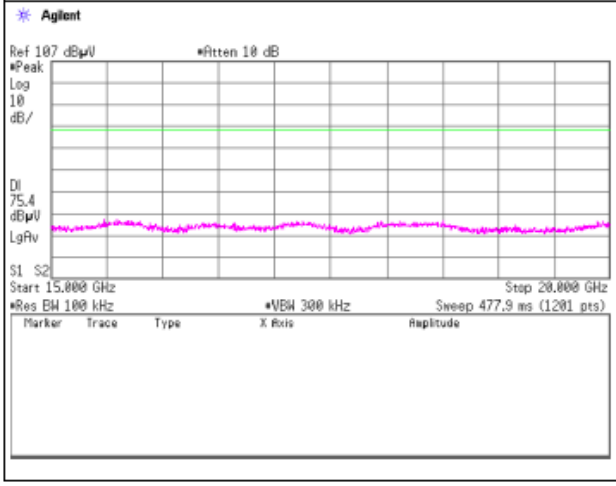
5GHz - 10GHz



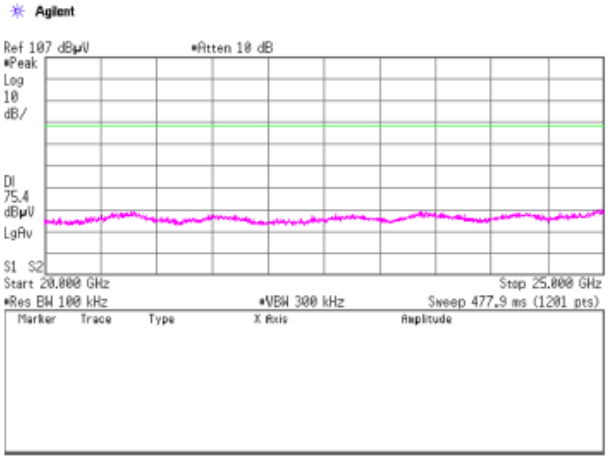
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

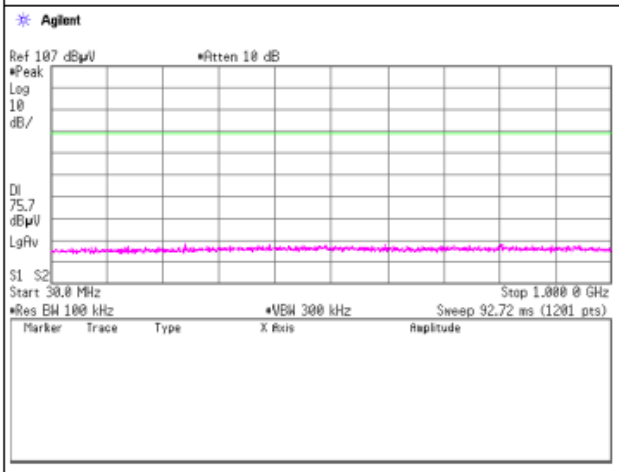


Spurious emission (Conducted)

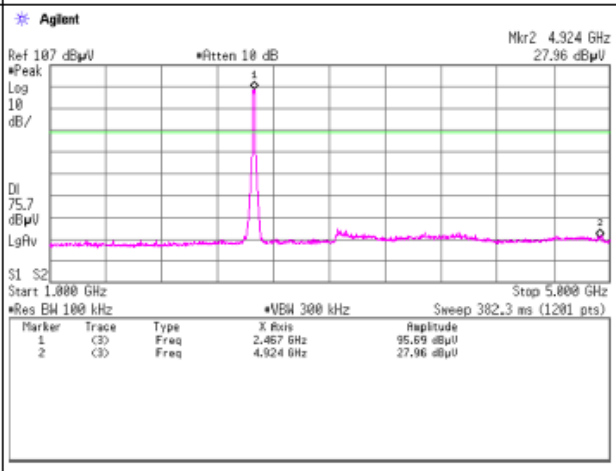
IEEE802.11g, 12Mbps, PN9

Tx 2462MHz

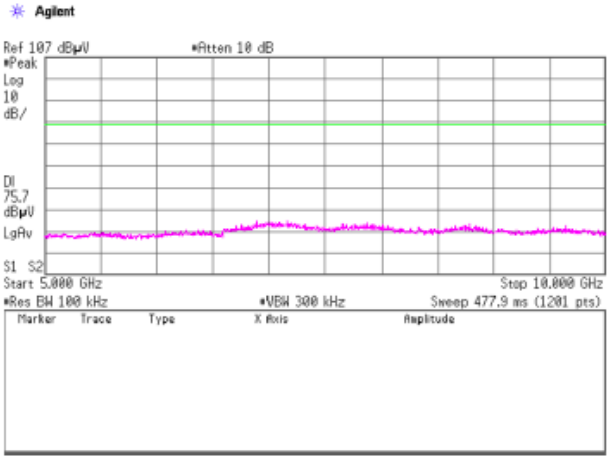
30MHz - 1GHz



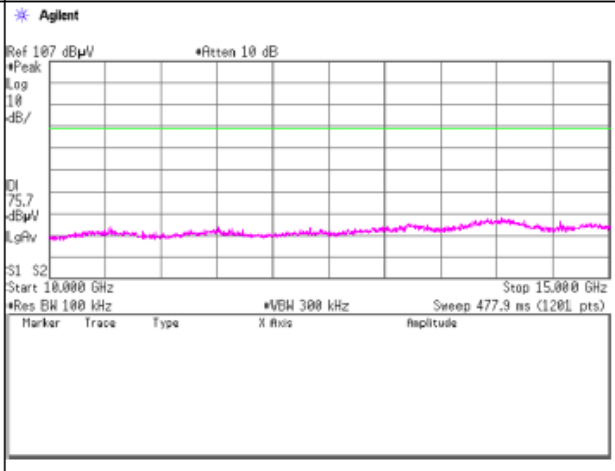
1GHz - 5GHz



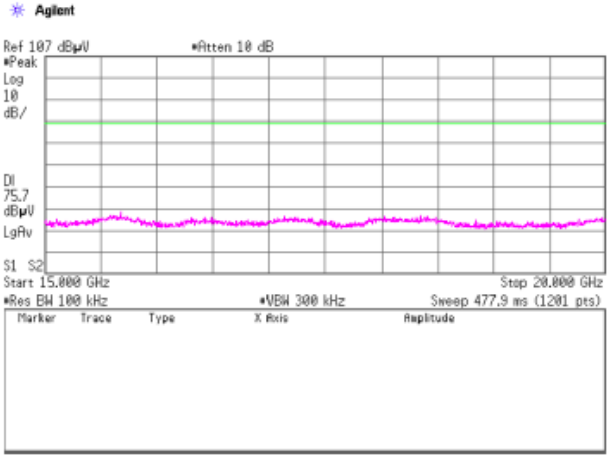
5GHz - 10GHz



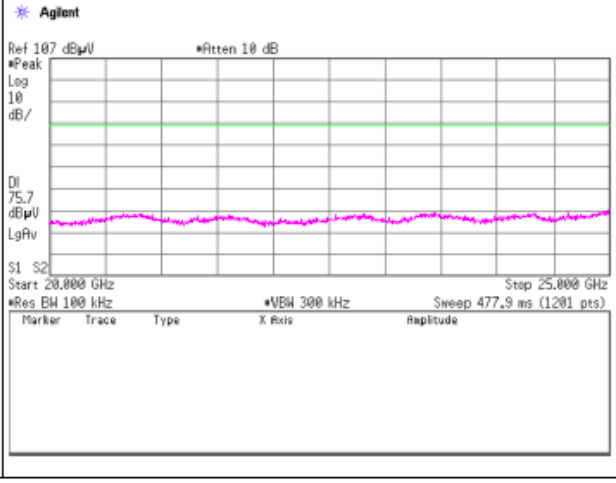
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

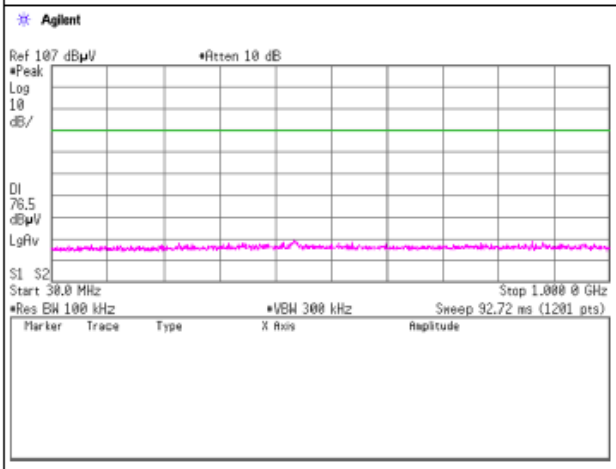


Spurious emission (Conducted)

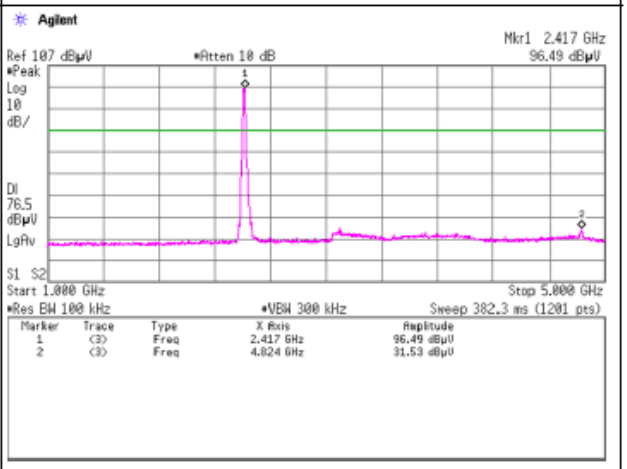
IEEE802.11n (20MHz)(400ns), MCS0, PN9

Tx 2412MHz

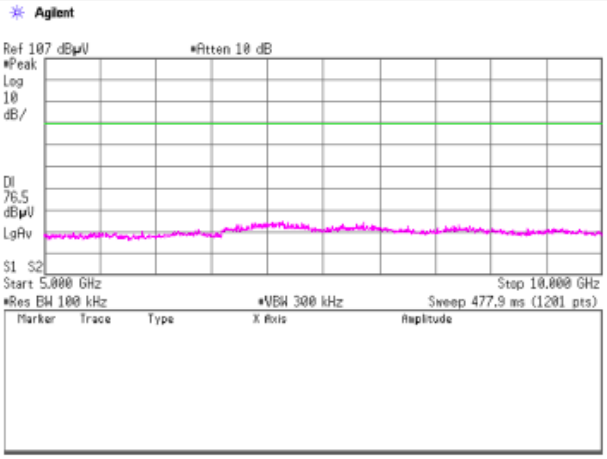
30MHz - 1GHz



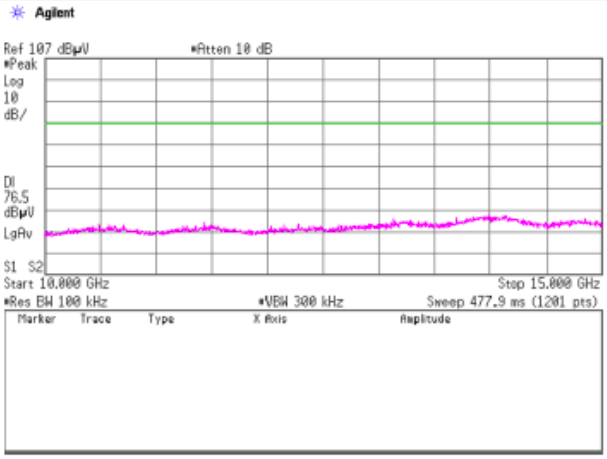
1GHz - 5GHz



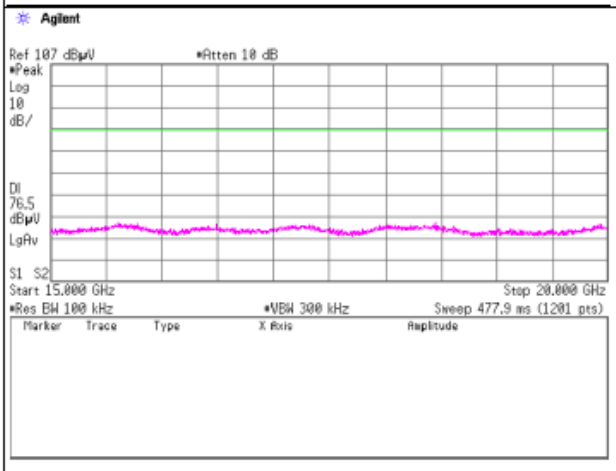
5GHz - 10GHz



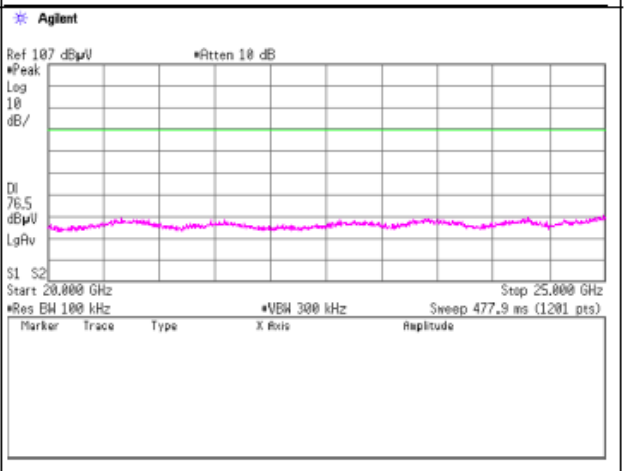
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

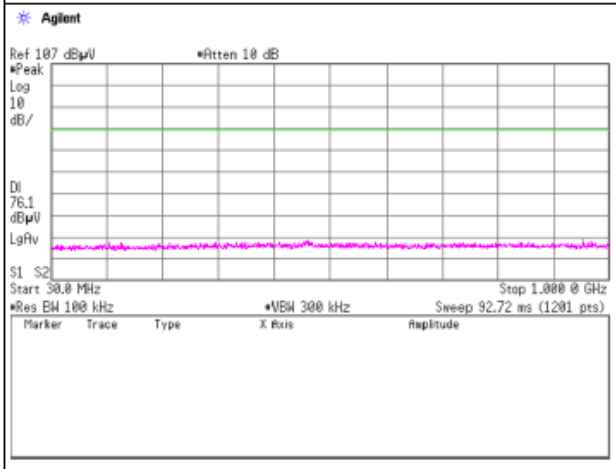


Spurious emission (Conducted)

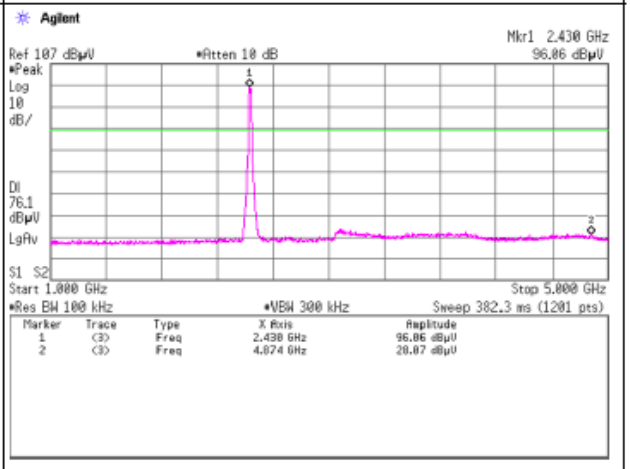
IEEE802.11n (20MHz)(400ns), MCS0, PN9

Tx 2437MHz

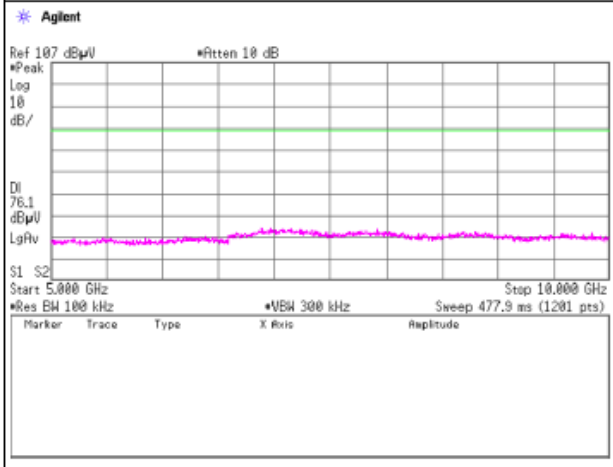
30MHz - 1GHz



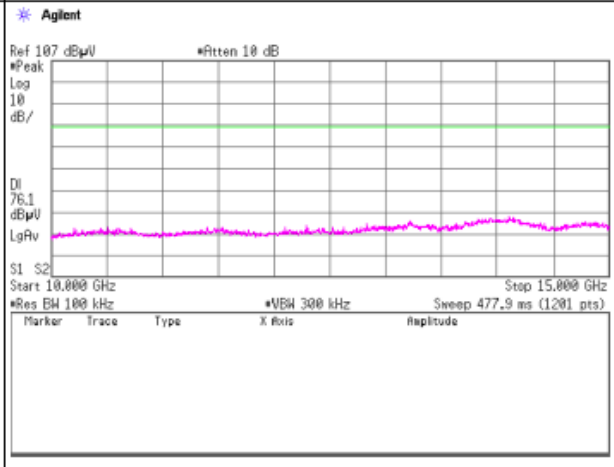
1GHz - 5GHz



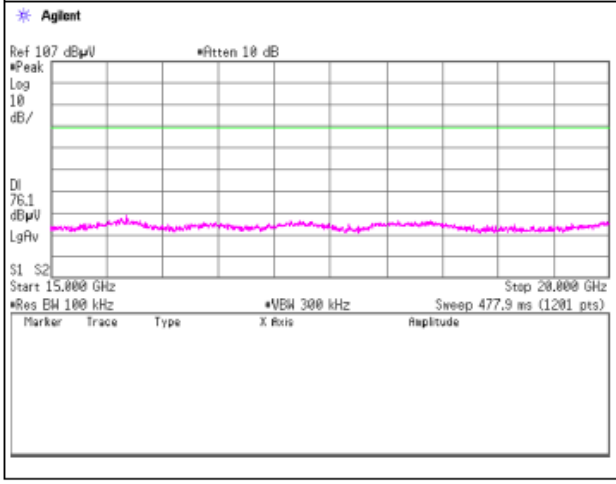
5GHz - 10GHz



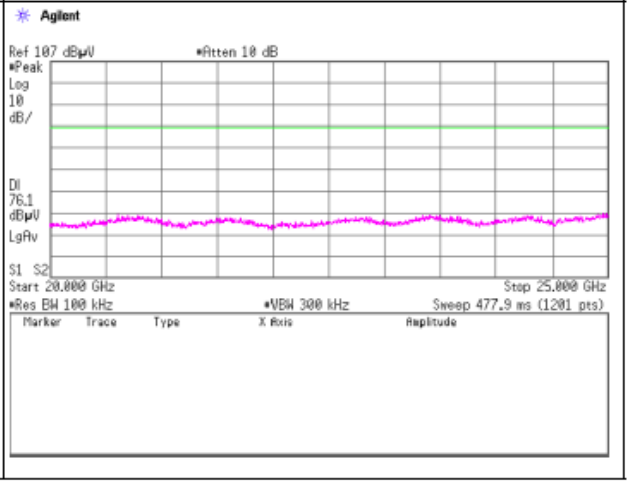
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

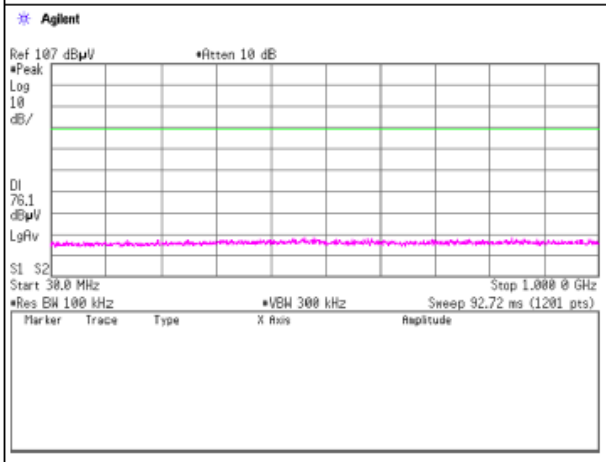


Spurious emission (Conducted)

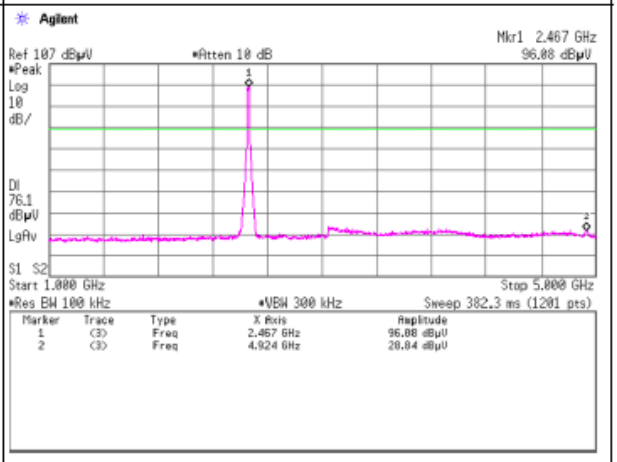
IEEE802.11n (20MHz)(400ns), MCS0, PN9

Tx 2462MHz

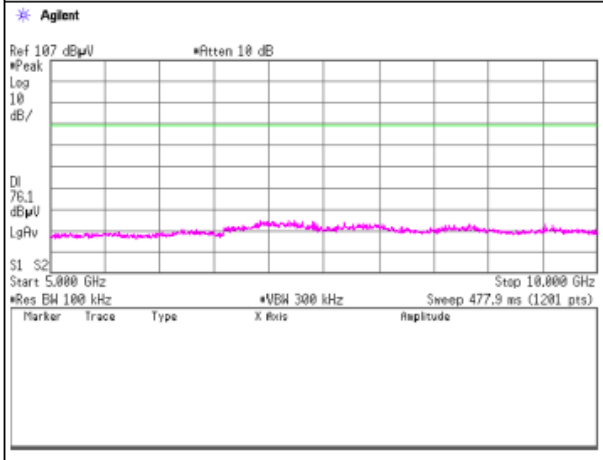
30MHz - 1GHz



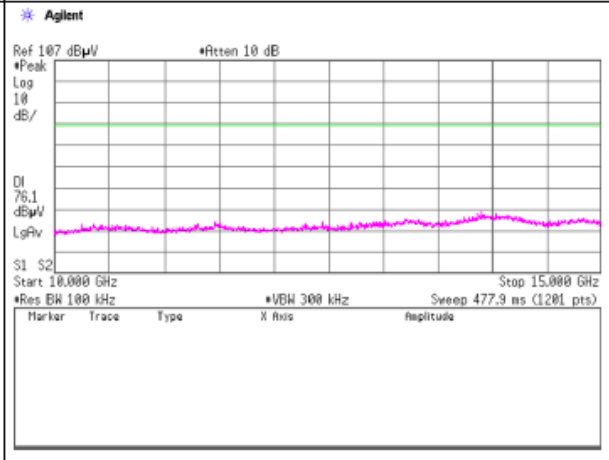
1GHz - 5GHz



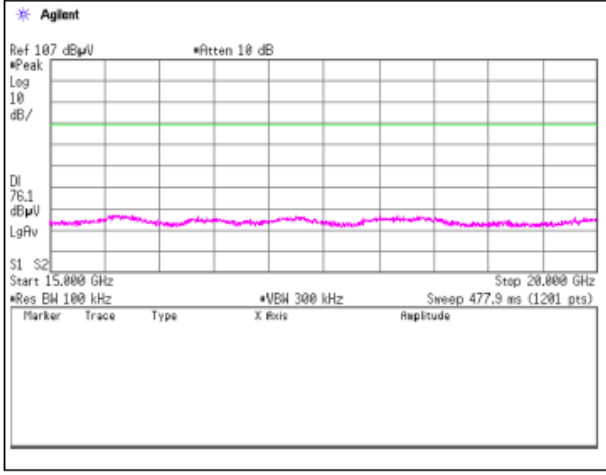
5GHz - 10GHz



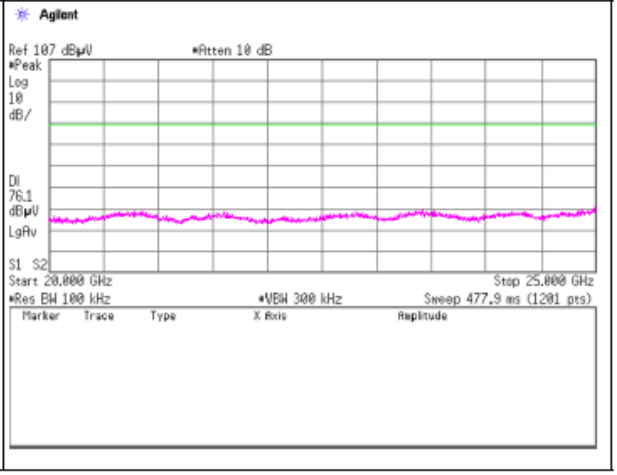
10GHz - 15GHz



15GHz - 20GHz



20GHz - 25GHz

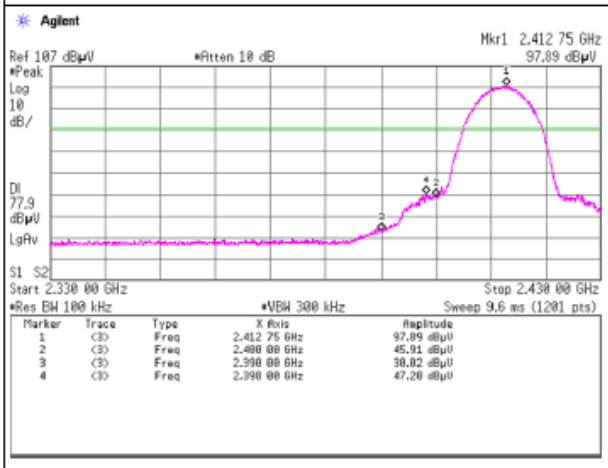


Spurious emission (Conducted)

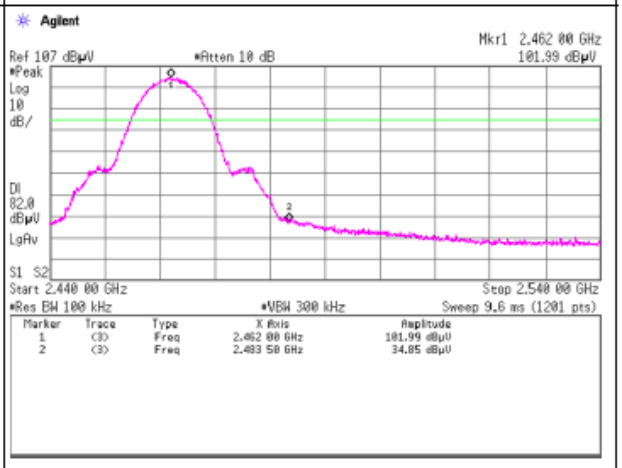
Band Edge compliance

IEEE802.11b, 11Mbps, PN9

Tx 2412MHz

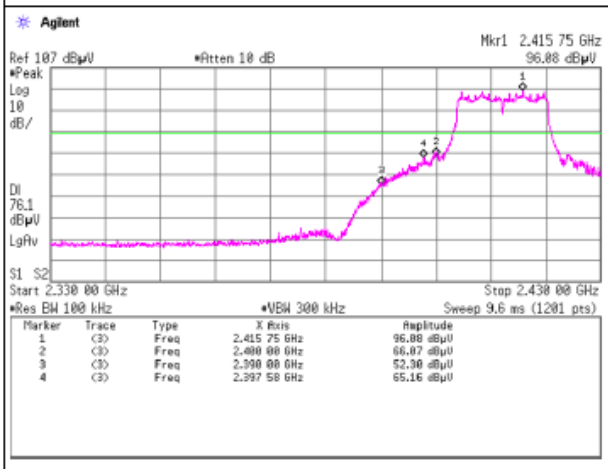


Tx 2462MHz

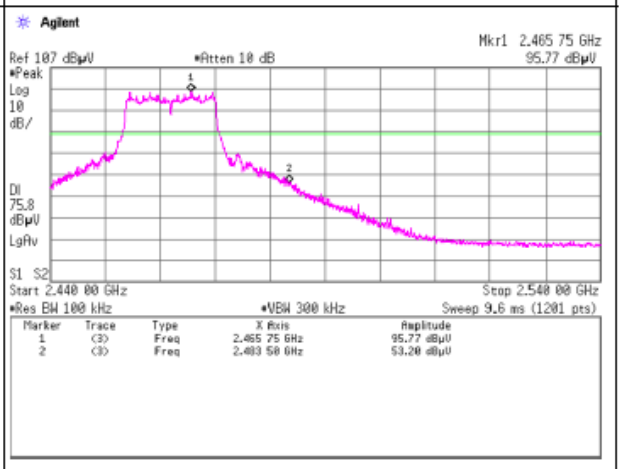


IEEE802.11g, 12Mbps, PN9

Tx 2412MHz



Tx 2462MHz

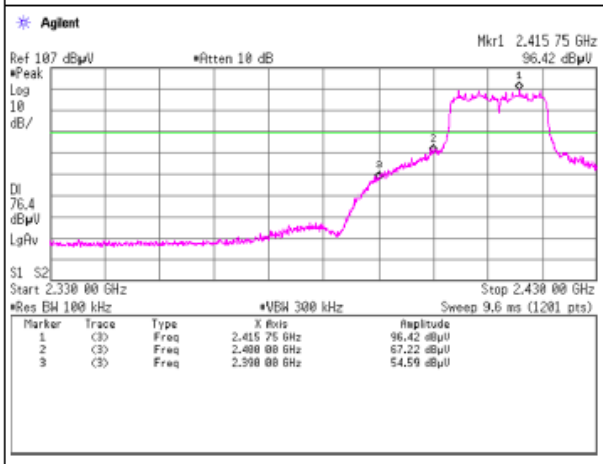


Spurious emission (Conducted)

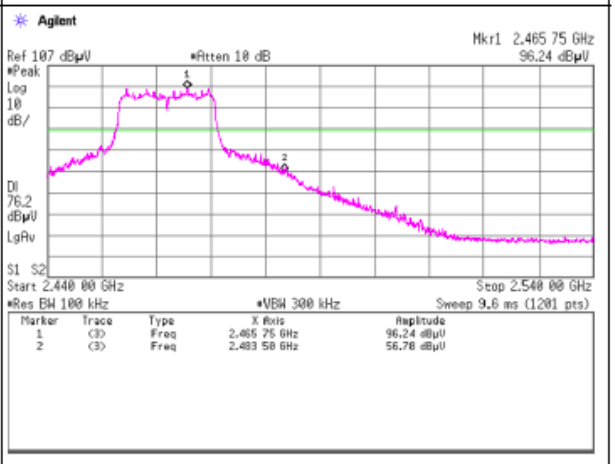
Band Edge compliance

IEEE802.11n (20MHz)(400ns), MCS0, PN9

Tx 2412MHz



Tx 2462MHz



Power Density

Test place	Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	Date	2011/1/6	
Temperature / Humidity	Temperature / Humidity	21deg.C. , 32%	
Engineer	Engineer	Akio Hayashi	
Mode	Tx		

[IEEE802.11b, 11Mbps, PN9]

Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	2410.97	-8.81	1.25	9.97	2.41	8.00	5.59
2437	2437.24	-12.53	1.25	9.97	-1.31	8.00	9.31
2462	2461.96	-9.09	1.25	9.97	2.13	8.00	5.87

[IEEE802.11g, 12Mbps, PN9]

Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	2419.49	-19.59	1.25	9.97	-8.37	8.00	16.37
2437	2429.49	-15.71	1.25	9.97	-4.49	8.00	12.49
2462	2458.85	-15.94	1.25	9.97	-4.72	8.00	12.72

[IEEE802.11n (20MHz)(400ns), MCS0, PN9]

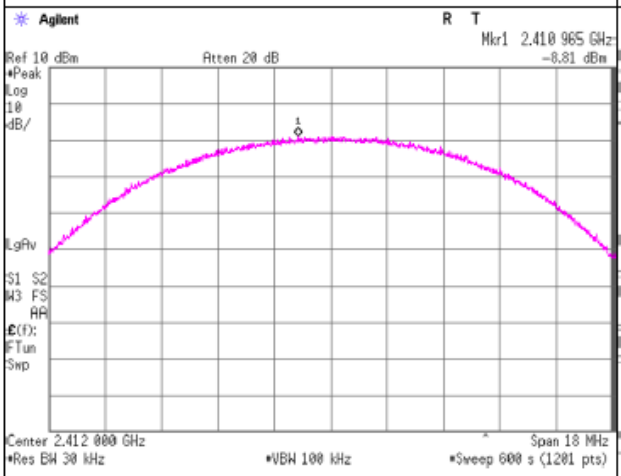
Ch. Freq. [MHz]	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	2419.21	-15.36	1.25	9.97	-4.14	8.00	12.14
2437	2444.35	-15.58	1.25	9.97	-4.36	8.00	12.36
2462	2465.05	-14.37	1.25	9.97	-3.15	8.00	11.15

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

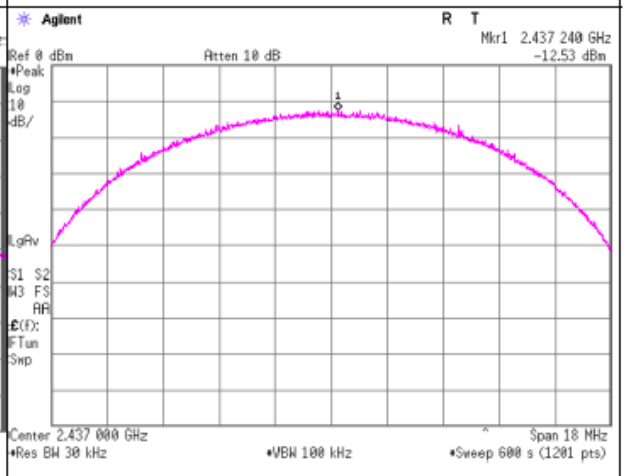
Power Density

IEEE802.11b, 11Mbps, PN9

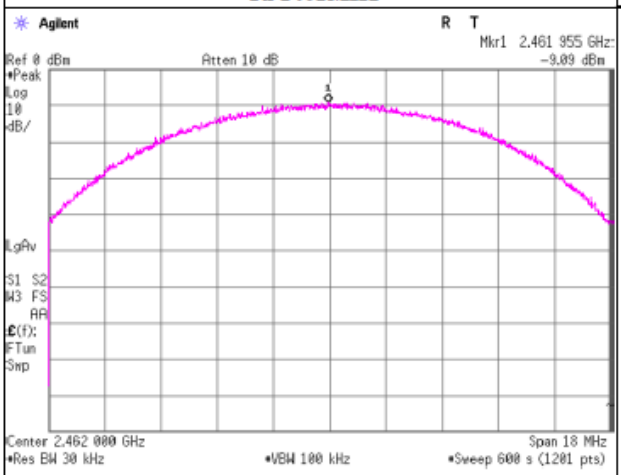
Tx 2412MHz

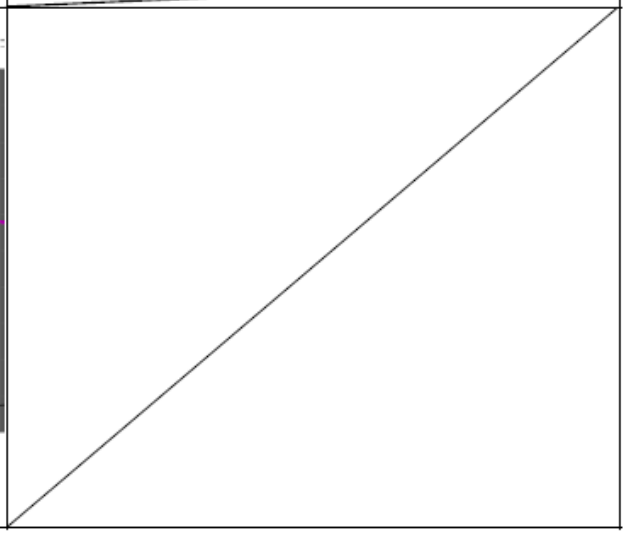


Tx 2437MHz



Tx 2462MHz

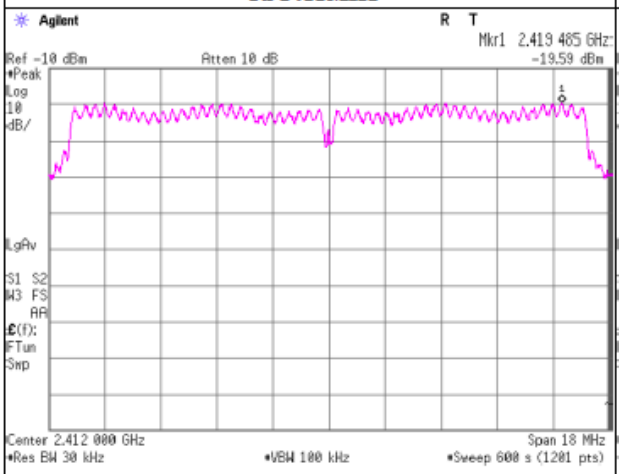




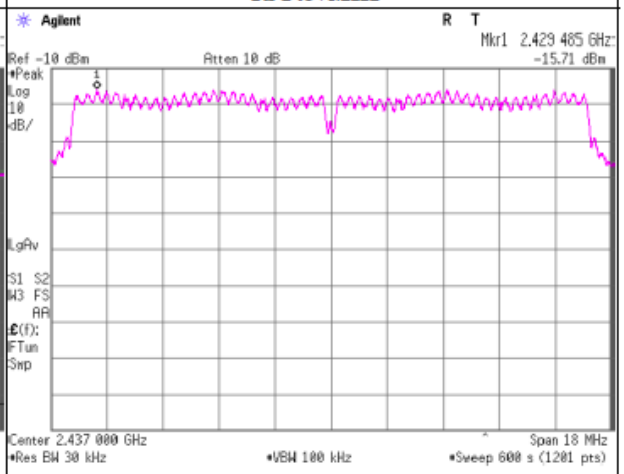
Power Density

IEEE802.11g, 12Mbps, PN9

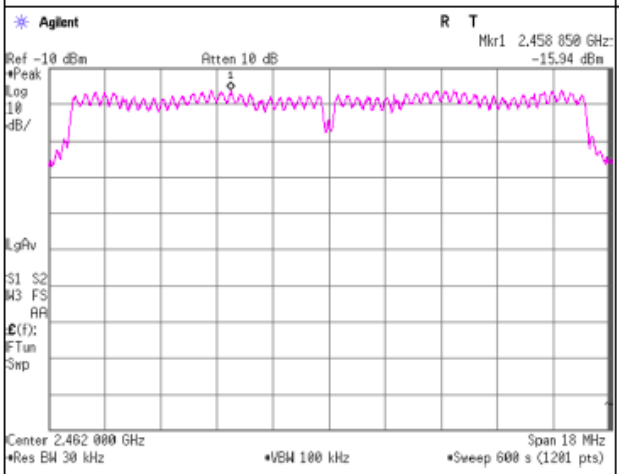
Tx 2412MHz



Tx 2437MHz



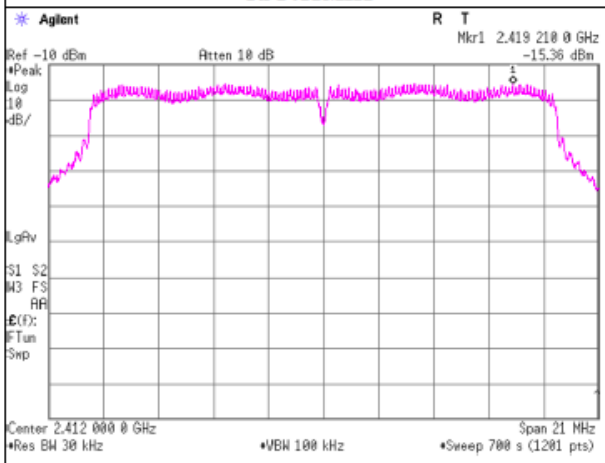
Tx 2462MHz



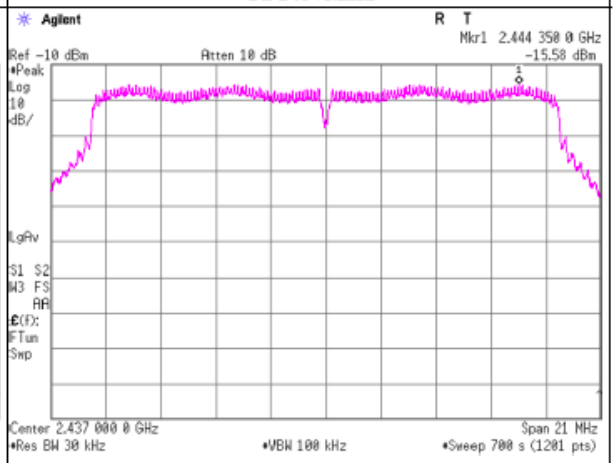
Power Density

IEEE802.11n (20MHz)(400ns), MCS0, PN9

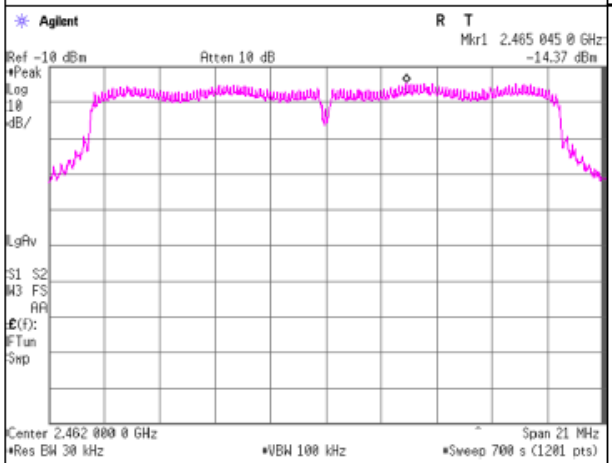
Tx 2412MHz

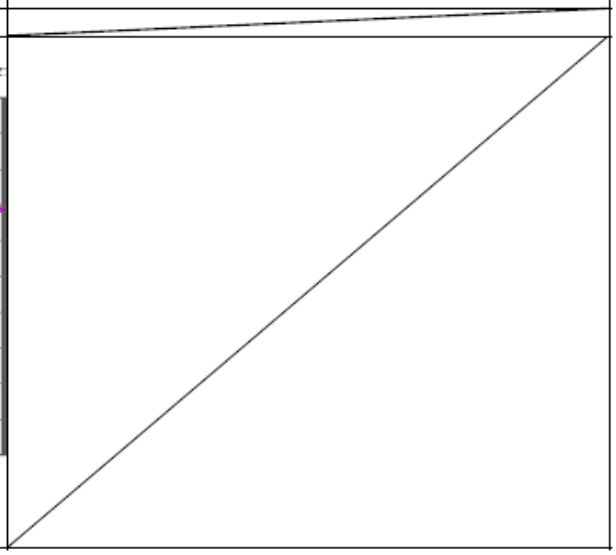


Tx 2437MHz



Tx 2462MHz

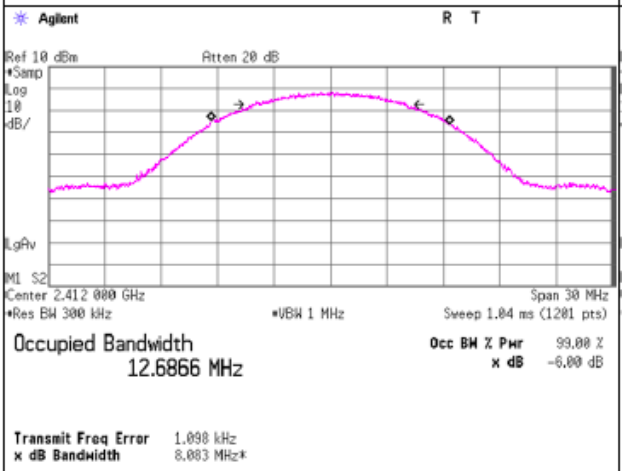




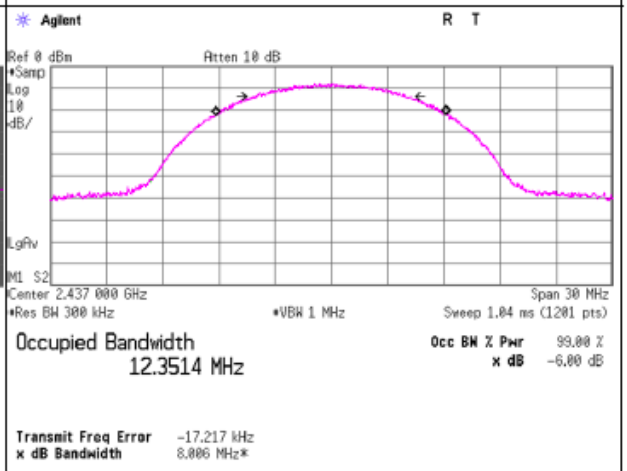
99% Occupied Bandwidth

IEEE802.11b, 11Mbps, PN9

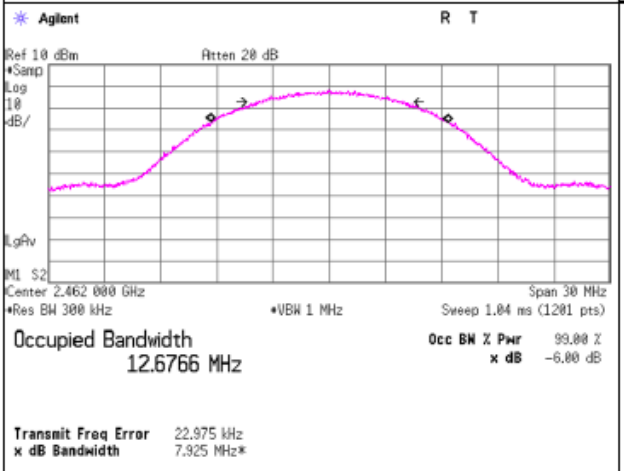
Tx 2412MHz



Tx 2437MHz



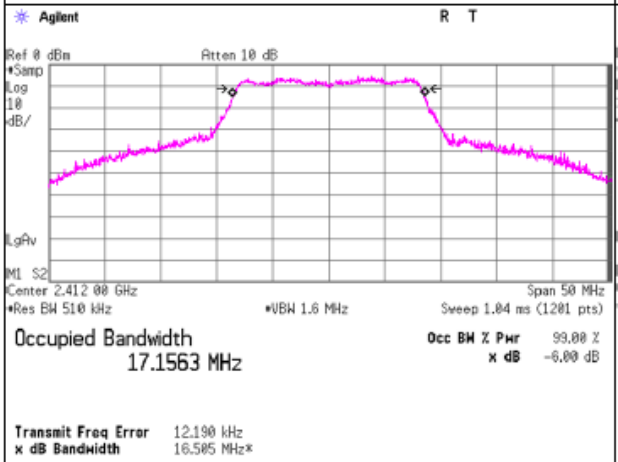
Tx 2462MHz



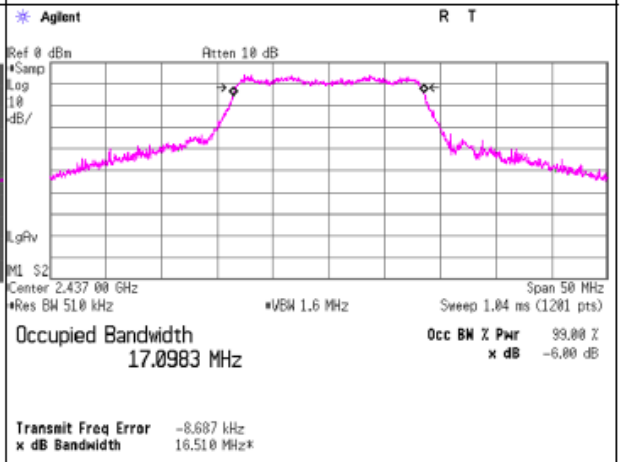
99% Occupied Bandwidth

IEEE802.11g, 12Mbps, PN9

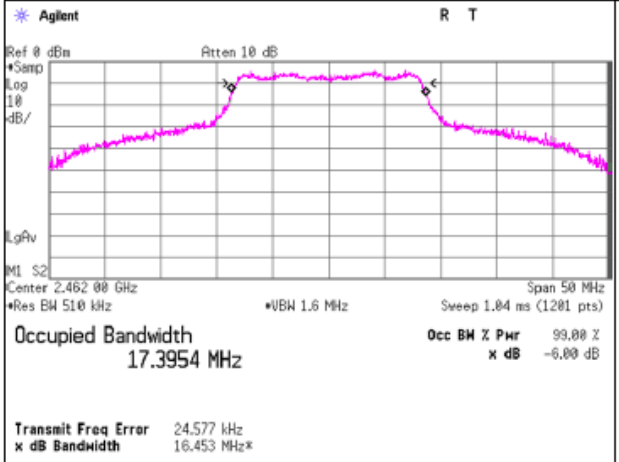
Tx 2412MHz



Tx 2437MHz



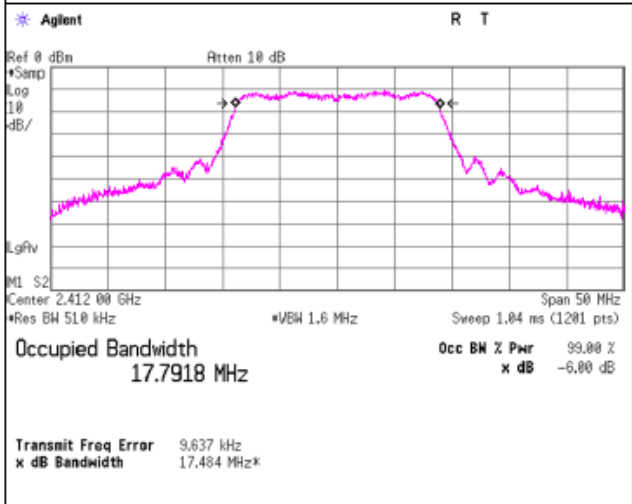
Tx 2462MHz



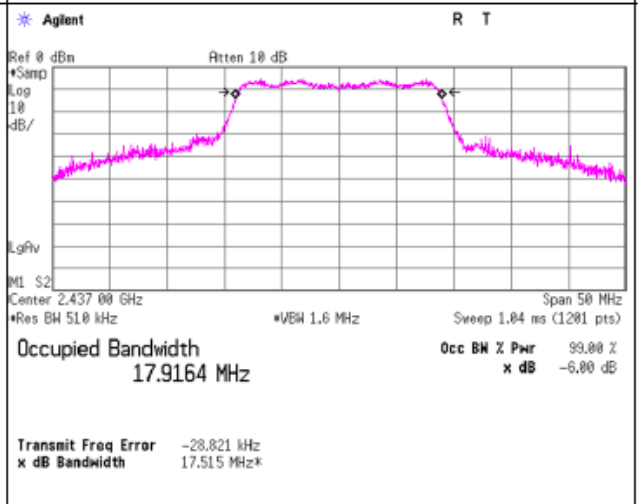
99% Occupied Bandwidth

IEEE802.11n (20MHz)(400ns), MCS0, PN9

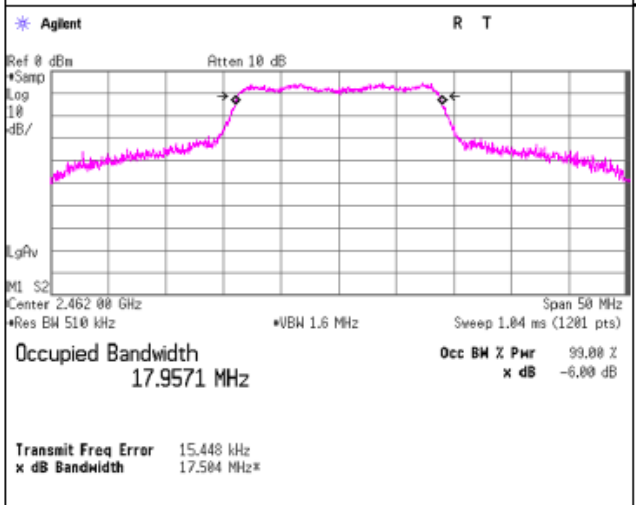
Tx 2412MHz

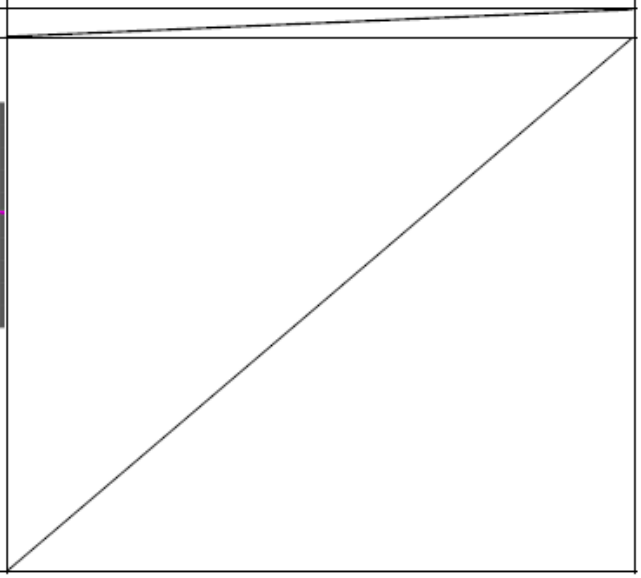


Tx 2437MHz



Tx 2462MHz





APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SCC-C9/C10/SRSE-03	Coaxial Cable& RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271 (RF Selector)	CE	2010/04/02 * 12
SLS-05	LISN	Rohde & Schwarz	ENV216	100516	CE	2010/02/19 * 12 *1)
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2010/02/06 * 12 *1)
SOS-06	Humidity Indicator	A&D	AD-5681	4062118	CE	2010/02/17 * 12 *1)
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2010/03/09 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2010/04/16 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2010/05/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2010/08/17 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2010/02/09 * 12 *1)
STR-03	Test Receiver	Rohde & Schwarz	ESI40	100054/040	RE/CE	2010/07/21 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE/CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV	-	RE/CE	
SAT20-01	Attenuator(above1GHz)	Agilent	8493C-020	74889	RE	2010/12/15 * 12
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
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2010/03/29 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2010/03/02 * 12
SCC-G17	Coaxial Cable	Suhner	SUCOFLEX 104A	46291/4A	RE	2010/03/02 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2010/02/06 * 12 *1)
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2010/02/06 * 12 *1)
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	2010/04/02 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2010/10/15 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2010/09/13 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2010/11/16 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	AT	2011/03/23 * 12
SCC-G14	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	AT	2011/03/23 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2011/03/02 * 12
SPM-06	Power Meter	Anritsu	ML2495A	0850009	AT	2010/04/01 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2010/04/01 * 12
SAT20-02	Attenuator	Agilent	8493C-020	74890	AT	2011/03/23 * 12

***1) This test equipment was used for the tests before the expiration date of the calibration.**
The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.
Test Item:

AT: Antenna Terminal Conducted
CE: Conducted emission
RE: Radiated emission