RADIO TEST REPORT

Test Report No. : 32CE0047-HO-02-A-R1

Applicant	:	**Panasonic Corporation of North America**
Type of Equipment	:	**Network Camera**
Model No.	:	**WV-SW174W**
FCC ID	:	**ACJ96NWV-SW174W**
Test regulation	:	**FCC Part 15 Subpart C: 2012**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this 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 NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 32CE0047-HO-02-A. 32CE0047-HO-02-A is replaced with this report.

Date of test: November 18, 2011 to January 9, 2012

Representative test engineer:
S. Matsuyama
Satofumi Matsuyama
Engineer of WiSE Japan,
UL Verification Service

Approved by:
Masanori Nishiyama
Leader of WiSE Japan,
UL Verification Service

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

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SECTION 1: Customer information

Company Name	:	Panasonic System Networks Co., Ltd.
Address	:	4-1-62, Minoshima, Hakata-ku, Fukuoka-city, Fukuoka, 812-8531 JAPAN
Telephone Number	:	+81-92-477-1335
Facsimile Number	:	+81-92-477-1751
Contact Person	:	Hironori Kuribayashi

* Panasonic System Networks Co., Ltd. is on behalf of the applicant : Panasonic Corporation of North America.

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

2.1 Identification of E.U.T.

Type of Equipment	:	Network Camera
Model No.	:	WV-SW174W
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC12.0V AC Adaptor:100-120V, 0.24A MAX, 50/60Hz
Receipt Date of Sample	:	November 16, 2011
Country of Mass-production	:	China
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

This device is a 11bgn wireless network camera with 2.4GHz DSSS and OFDM modulation.
It functions as a wireless network camera by establishing wireless link with a wireless router.
It functions as a wireless camera by wireless link during start-up.
It has one port for wired communication and it functions as a wired network camera.
Nominal voltage: DC12.0V is supplied with the body by AC adaptor.
Two diversity antennas are equipped with the device.

General Specification

Clock frequency(ies) in the system	:	132MHz

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2412-2462MHz
Modulation	:	11b: DSSS, 11g/n: OFDM
Power Supply (radio part input)	:	DC 3.3V
Antenna type	:	Ant 1: folded monopole antenna (pattern antenna) Ant 2: dipole antenna (pattern antenna)
Antenna Gain	:	Ant 1: 2.0dBi Ant 2: 2.1dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2012, final revised on February 1, 2012
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 February 1, 2012 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 powerline Conducted Emission measurements	**FCC:** Section 15.207	**QP** 21.0dB, 0.21264MHz, N **AV** 13.2dB, 7.16570MHz, L	Complied	-
	IC: RSS-Gen 7.2.4	**IC:** RSS-Gen 7.2.4			
6dB Bandwidth	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247(a)(2)	See data.	Complied	Conducted
	IC: RSS-Gen 4.6.2	**IC:** RSS-210 A8.2(a)			
Maximum Peak Output Power	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247(b)(3)		Complied	Conducted
	IC: RSS-Gen 4.8	**IC:** RSS-210 A8.4(4)			
Power Density	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section 15.247 (e)		Complied	Conducted
	IC: -	**IC:** RSS-210 A8.2(b)			
Spurious Emission Restricted Band Edges	**FCC:** "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247"	**FCC:** Section15.247(d)	2.1dB 2483.500MHz, AV, Hori.	Complied	Conducted/ Radiated
	IC: RSS-Gen 4.9	**IC:** RSS-210 A8.5 RSS-Gen 7.2.3			
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(DC3.3V) 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	-	Conducted

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

3.4 Uncertainty

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

Test room (semi-anechoic chamber)	Conducted emission (±dB)
	150kHz-30MHz
No.1	3.5dB
No.2	3.6dB
No.3	3.6dB
No.4	3.6dB

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(±dB)				(1m*)(±dB)		(0.5m*)(±dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.2dB	5.0dB	5.1dB	5.6dB	5.9dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	5.7dB	5.8dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	5.7dB	5.8dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	5.7dB	5.8dB	5.1dB	4.2dB

*3m/1m/0.5m = Measurement distance

Power meter (±dB)	
Below 1GHz	Above 1GHz
1.0dB	1.0dB

Antenna terminal conducted emission and Power density (±dB)			Antenna terminal conducted emission (±dB)		Channel power (±dB)
Below 1GHz	1GHz-3GHz	3GHz-18GHz	18GHz-26.5GHz	26.5GHz-40GHz	
1.0dB	1.1dB	2.7dB	3.2dB	3.3dB	1.5dB

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

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

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8116 Facsimile : +81 596 24 8124

	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Data of EMI, Test instruments, and Test set up

Refer to APPENDIX.

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

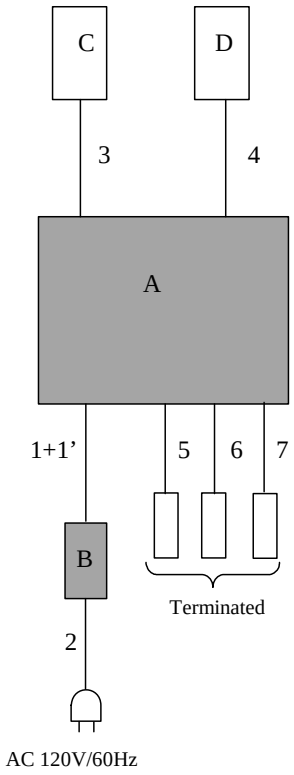
4.1 Operating Mode(s)

Mode	Remarks*
IEEE 802.11b (11b)	ANT1: 2Mbps, PN9 ANT2: 1Mbps, PN9
IEEE 802.11g (11g)	ANT1 and ANT 2: 54Mbps, PN9
IEEE 802.11n SISO 20MHz BW (11n-20)	ANT1: MCS3 (Long GI, 3 Streams), PN9 ANT2: MCS0 (Long GI, 3 Streams), PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	

*Details of Operating mode(s)

Test Item	Operating Mode	Tested Antenna	Tested frequency
Conducted Emission	11b Tx 11g Tx 11n-20 Tx	ANT1 ANT2	2412MHz 2437MHz 2462MHz
6dB Bandwidth Power Density 99% Occupied Bandwidth	11b Tx 11g Tx 11n-20	ANT2 *1)	2412MHz 2437MHz 2462MHz
Maximum Peak Output Power	11b Tx 11g Tx	ANT1 ANT2	2412MHz 2437MHz 2462MHz
Spurious Emission (Radiated)	11b Tx 11g Tx 11n-20 Tx	ANT1 ANT2	2412MHz 2437MHz 2462MHz
Spurious Emission (Conducted)	11b Tx 11g Tx 11n-20 Tx	ANT2 *1)	2412MHz 2437MHz 2462MHz
*1) ANT 2 was used for the test as a representative, because it had the highest power at antenna terminal test.			

4.2 Configuration and peripherals



* Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support Equipment

No.	Description	Model Name	Serial number	Manufacture	Remark
A	Network Camera	WV-SW174W	002	Panasonic System Networks Co., Ltd.	EUT
B	AC Adaptor	PQLV202	091128A	Panasonic System Networks Co., Ltd.	EUT
C	Speaker	RP-SP28	-	-	-
D	Microphone	ECM-Z60	-	-	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable of AC Adapter	3.0	Unshielded	Unshielded	-
1'	DC Extension Cable	7.0	Unshielded	Unshielded	*1)
2	AC Cable	1.7	Unshielded	Unshielded	-
3	Speaker Cable	1.2	Unshielded	Unshielded	-
4	MIC Cable	1.0	Unshielded	Unshielded	-
5	Signal Cable	2.0	Unshielded	Unshielded	-
6	Signal Cable	2.0	Unshielded	Unshielded	-
7	Signal Cable	2.0	Unshielded	Unshielded	-

*1) Model No. of this cable is PHJA1029 and it is EUT.

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. 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.

For the tests on EUT with other peripherals (as a whole system)
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. All unused 50ohm connectors of the LISN(AMN) were resistivity terminated in 50ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber. 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 urethane platform of nominal size, 1.5m by 1.0m, raised 0.8m above the conducting ground plane.
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	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	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 10GHz), 1m*2) (above 10GHz),		3m (below 10GHz), 1m*2) (above 10GHz),

*1) The test was performed with VBW 10Hz since the EUT had no intervals during which the transmitter was off (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-26.5GHz
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	20MHz	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	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak	-	Power Meter (Sensor: 50MHz BW)
Peak Power Density	20MHz	30kHz	100kHz	667sec	Peak	Max Hold	Spectrum Analyzer *1) *2)
Conducted Spurious Emission *3)	9kHz to 150kHz	200Hz	620Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1kHz	27kHz				
	30MHz to 25GHz (Less or equal to 5GHz)	100kHz	300kHz				

*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.
*3) 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=9.1kHz)

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: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

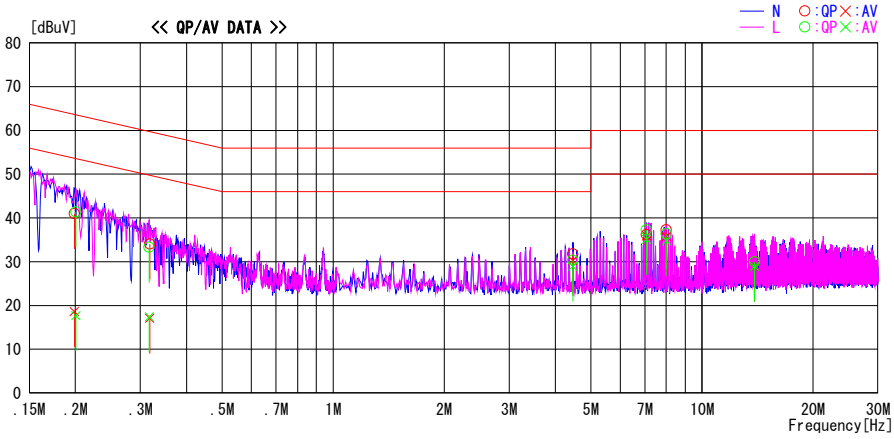
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11b ANT1 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



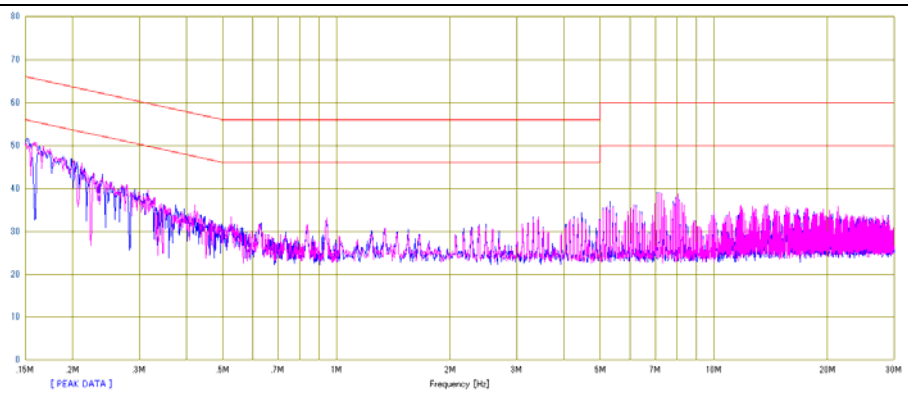
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.19872	27.8	5.4	13.2	41.0	18.6	63.7	53.7	22.7	35.1	N	
0.31791	20.7	3.8	13.3	34.0	17.1	59.8	49.8	25.8	32.7	N	
4.46286	18.2	16.7	13.6	31.8	30.3	56.0	46.0	24.2	15.7	N	
7.07500	22.3	22.0	13.9	36.2	35.9	60.0	50.0	23.8	14.1	N	
8.00013	23.4	21.9	13.9	37.3	35.8	60.0	50.0	22.7	14.2	N	
13.89986	15.6	14.5	14.4	30.0	28.9	60.0	50.0	30.0	21.1	N	
0.20046	28.2	4.5	13.2	41.4	17.7	63.6	53.6	22.2	35.9	L	
0.31704	20.0	4.1	13.3	33.3	17.4	59.8	49.8	26.5	32.4	L	
4.46286	16.7	15.4	13.6	30.3	29.0	56.0	46.0	25.7	17.0	L	
7.07500	23.4	21.2	13.9	37.3	35.1	60.0	50.0	22.7	14.9	L	
8.00013	22.5	20.9	13.9	36.4	34.8	60.0	50.0	23.6	15.2	L	
13.89986	15.6	14.5	14.4	30.0	28.9	60.0	50.0	30.0	21.1	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

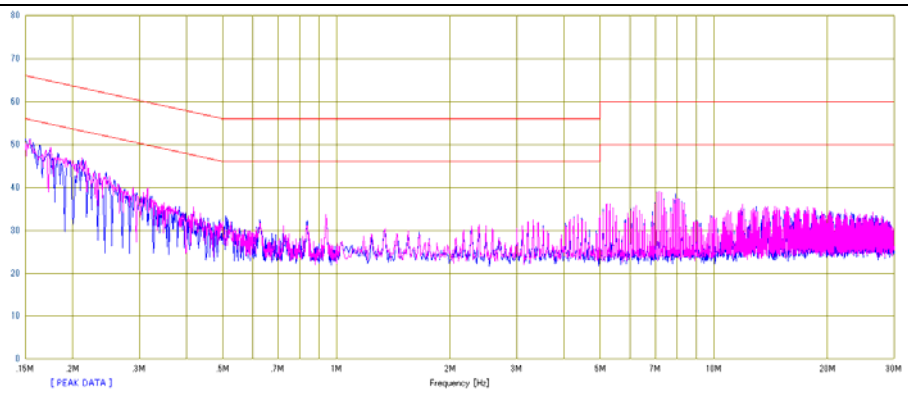
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11b Tx ANT1

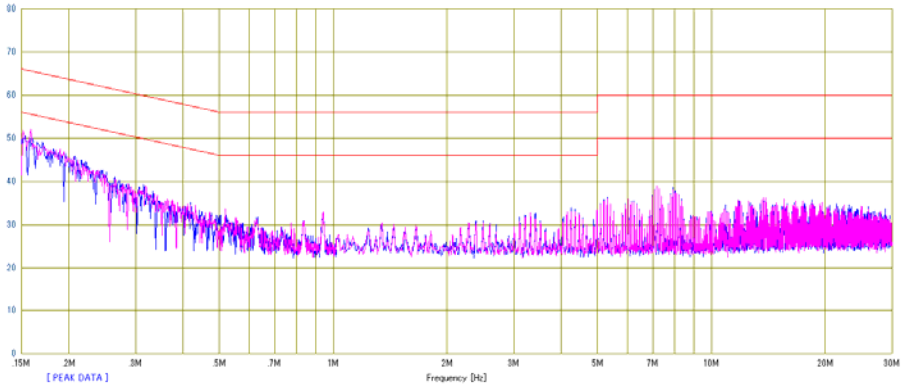
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

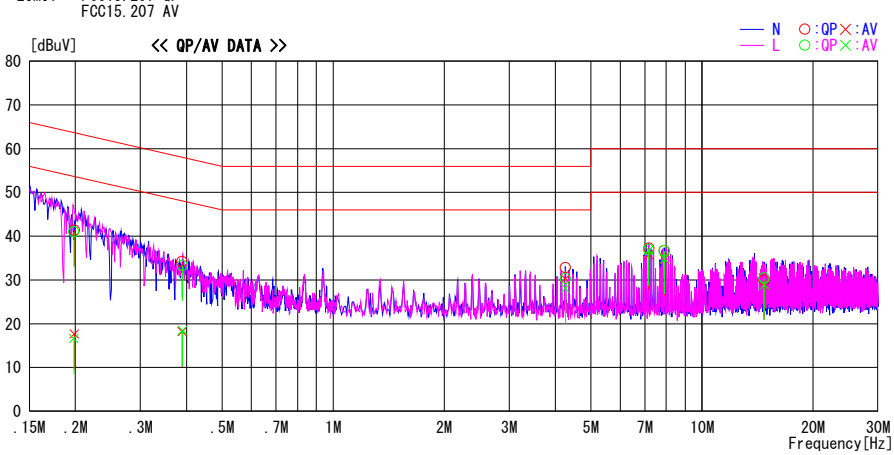
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11b ANT2 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



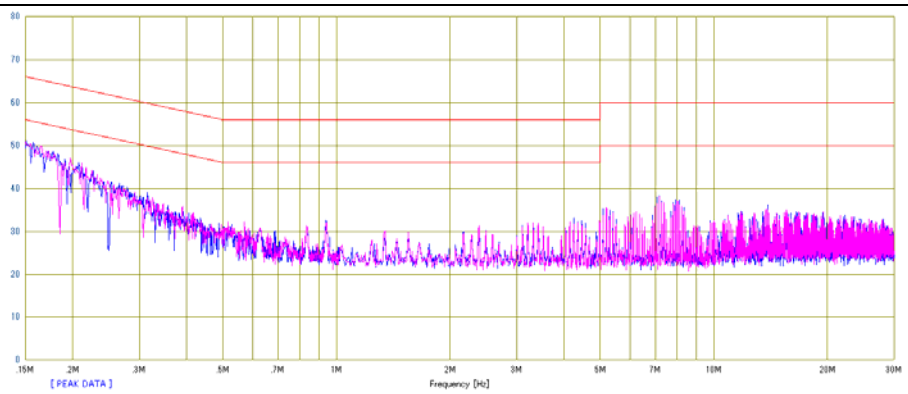
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.19872	28.2	4.5	13.2	41.4	17.7	63.7	53.7	22.3	36.0	N	
0.38925	20.9	4.9	13.3	34.2	18.2	58.1	48.1	23.9	29.9	N	
4.26332	19.2	16.7	13.6	32.8	30.3	56.0	46.0	23.2	15.7	N	
7.17477	23.4	21.9	13.9	37.3	35.8	60.0	50.0	22.7	14.2	N	
7.90943	22.8	20.8	13.9	36.7	34.7	60.0	50.0	23.3	15.3	N	
14.72191	15.6	14.5	14.4	30.0	28.9	60.0	50.0	30.0	21.1	N	
0.19785	27.8	3.4	13.2	41.0	16.6	63.7	53.7	22.7	37.1	L	
0.39012	20.0	5.2	13.3	33.3	18.5	58.1	48.1	24.8	29.6	L	
4.26332	16.7	14.5	13.6	30.3	28.1	56.0	46.0	25.7	17.9	L	
7.16570	23.1	22.9	13.9	37.0	36.8	60.0	50.0	23.0	13.2	L	
7.90943	22.8	20.9	13.9	36.7	34.8	60.0	50.0	23.3	15.2	L	
14.74196	16.1	14.5	14.4	30.5	28.9	60.0	50.0	29.5	21.1	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

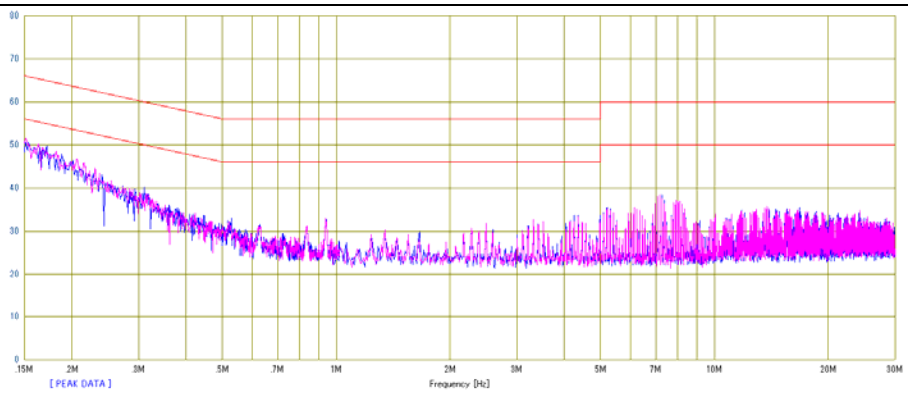
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11b Tx ANT2

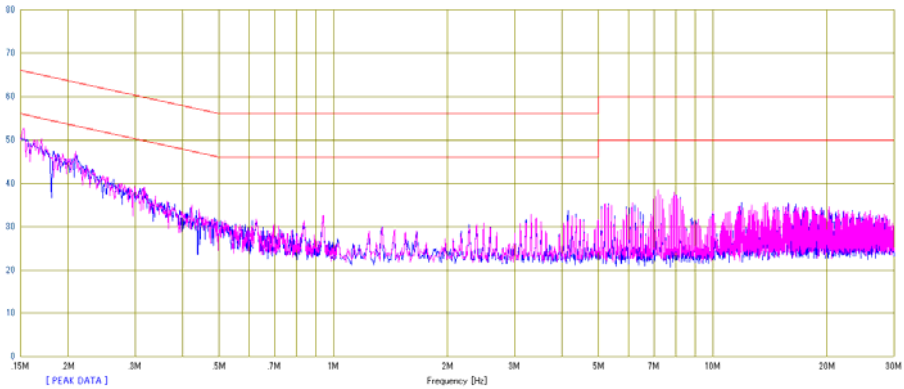
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

UL Japan, Inc.
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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

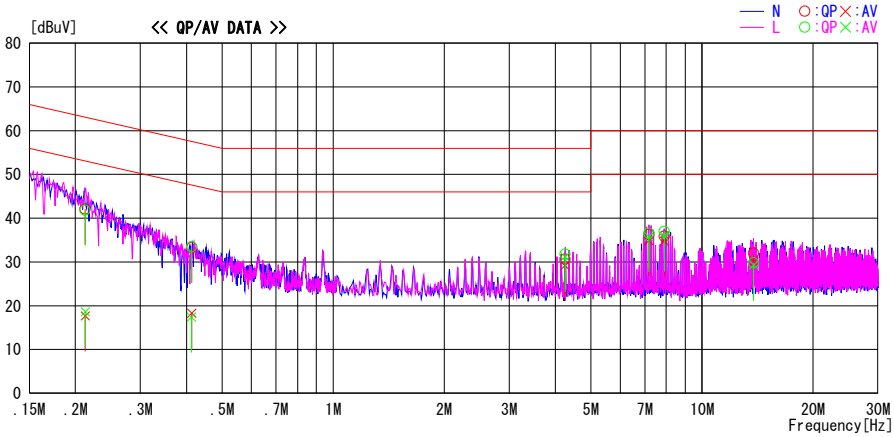
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11g ANT1 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



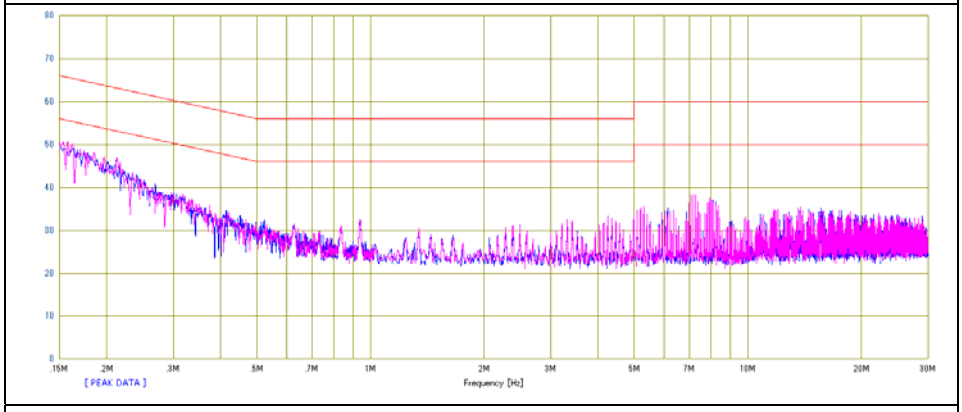
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.21264	28.9	4.5	13.2	42.1	17.7	63.1	53.1	21.0	35.4	N	
0.41361	20.0	5.0	13.3	33.3	18.3	57.6	47.6	24.3	29.3	N	
4.25425	17.0	15.6	13.6	30.6	29.2	56.0	46.0	25.4	16.8	N	
7.17477	22.4	21.0	13.9	36.3	34.9	60.0	50.0	23.7	15.1	N	
7.90943	22.0	20.9	13.9	35.9	34.8	60.0	50.0	24.1	15.2	N	
13.79961	17.6	15.6	14.4	32.0	30.0	60.0	50.0	28.0	20.0	N	
0.21264	28.6	5.4	13.2	41.8	18.6	63.1	53.1	21.3	34.5	L	
0.41274	20.2	4.1	13.3	33.5	17.4	57.6	47.6	24.1	30.2	L	
4.25425	18.2	17.6	13.6	31.8	31.2	56.0	46.0	24.2	14.8	L	
7.17477	22.6	21.9	13.9	36.5	35.8	60.0	50.0	23.5	14.2	L	
7.90943	23.1	22.0	13.9	37.0	35.9	60.0	50.0	23.0	14.1	L	
13.79961	15.4	14.9	14.4	29.8	29.3	60.0	50.0	30.2	20.7	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

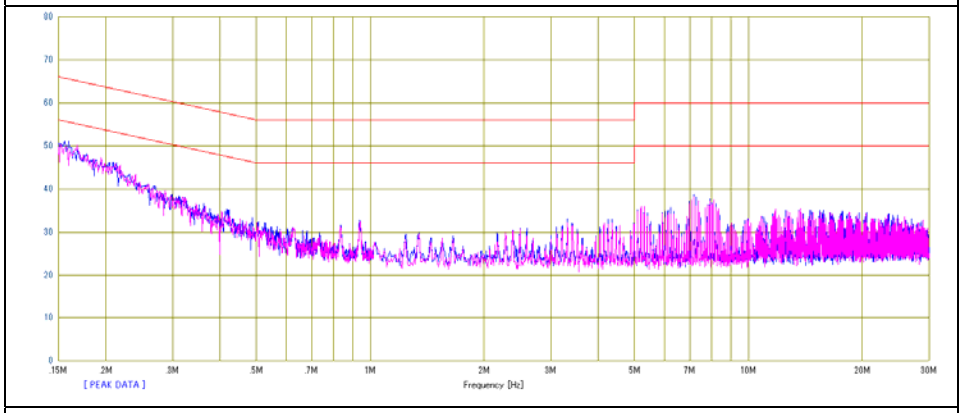
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11g Tx ANT1

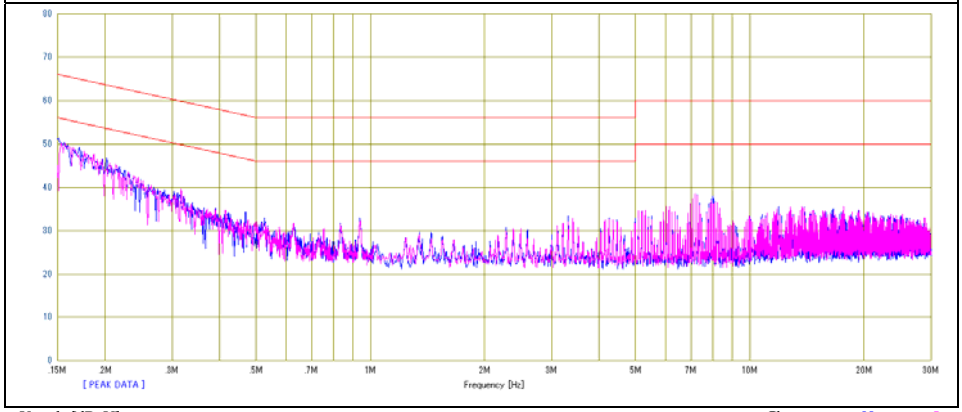
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

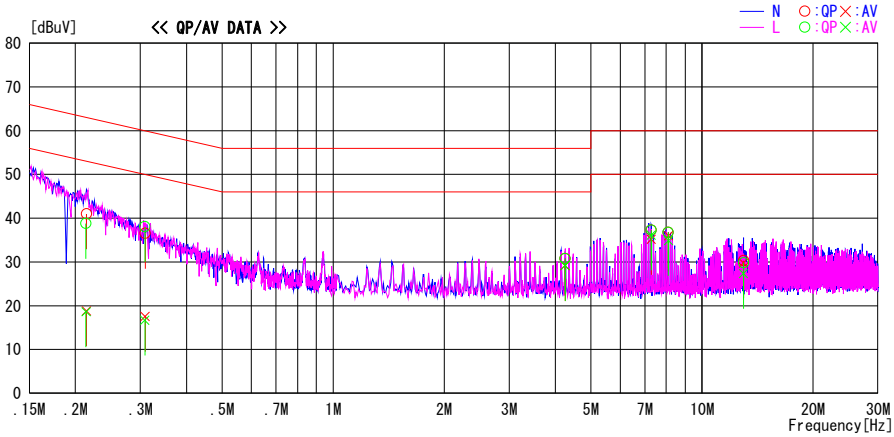
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11g ANT2 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.21438	27.8	5.6	13.2	41.0	18.8	63.0	53.0	22.0	34.2	N	
0.30921	23.2	4.3	13.3	36.5	17.6	60.0	50.0	23.5	32.4	N	
4.25425	17.2	15.6	13.6	30.8	29.2	56.0	46.0	25.2	16.8	N	
7.28361	23.4	21.3	13.9	37.3	35.2	60.0	50.0	22.7	14.8	N	
8.10898	22.9	22.1	13.9	36.8	36.0	60.0	50.0	23.2	14.0	N	
12.95751	16.1	15.6	14.2	30.3	29.8	60.0	50.0	29.7	20.2	N	
0.21351	25.6	5.4	13.2	38.8	18.6	63.1	53.1	24.3	34.5	L	
0.30834	24.8	3.4	13.3	38.1	16.7	60.0	50.0	21.9	33.3	L	
4.25425	17.2	15.6	13.6	30.8	29.2	56.0	46.0	25.2	16.8	L	
7.28361	23.4	22.3	13.9	37.3	36.2	60.0	50.0	22.7	13.8	L	
8.10898	22.9	21.0	13.9	36.8	34.9	60.0	50.0	23.2	15.1	L	
12.95751	15.6	13.2	14.2	29.8	27.4	60.0	50.0	30.2	22.6	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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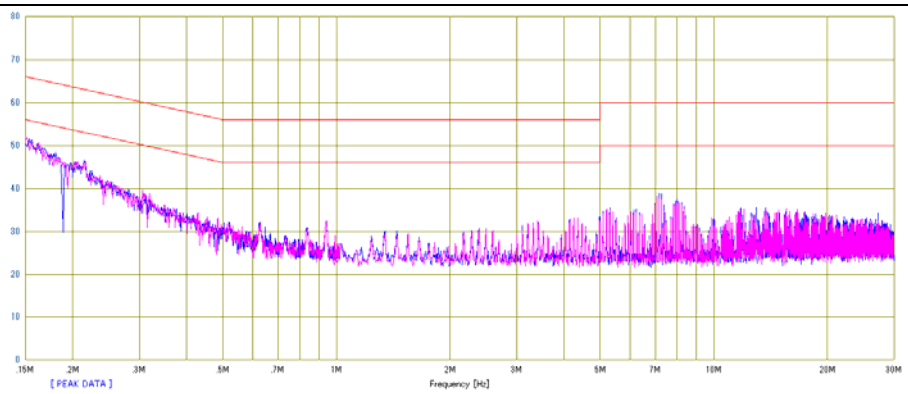
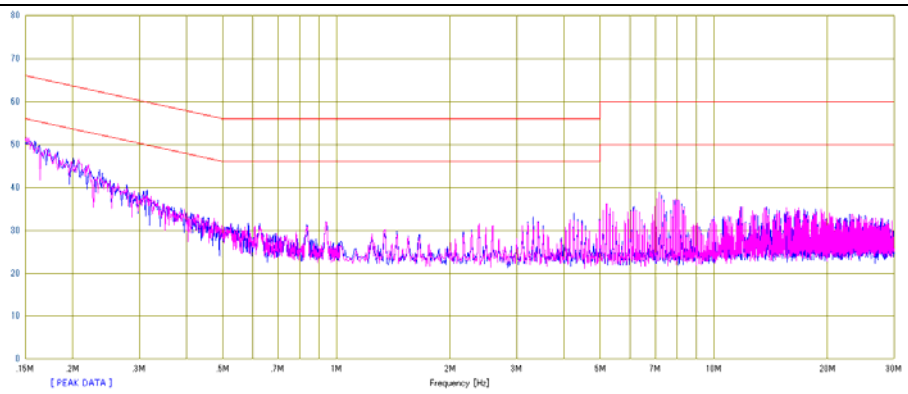
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11g Tx ANT2

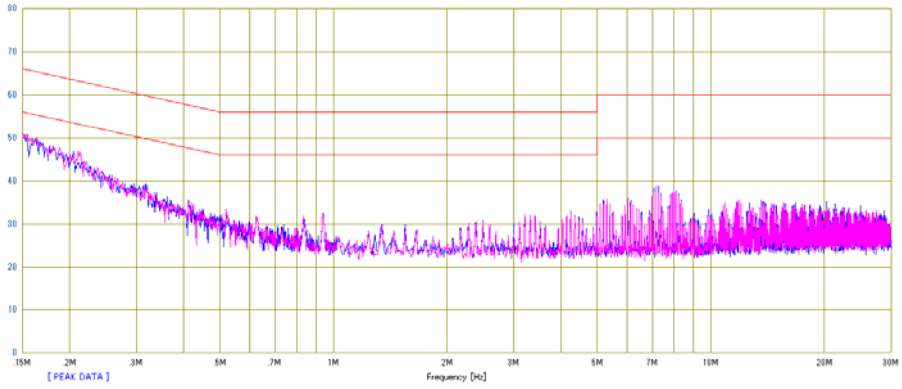
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

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Conducted Emission

DATA OF CONDUCTED EMISSION TEST

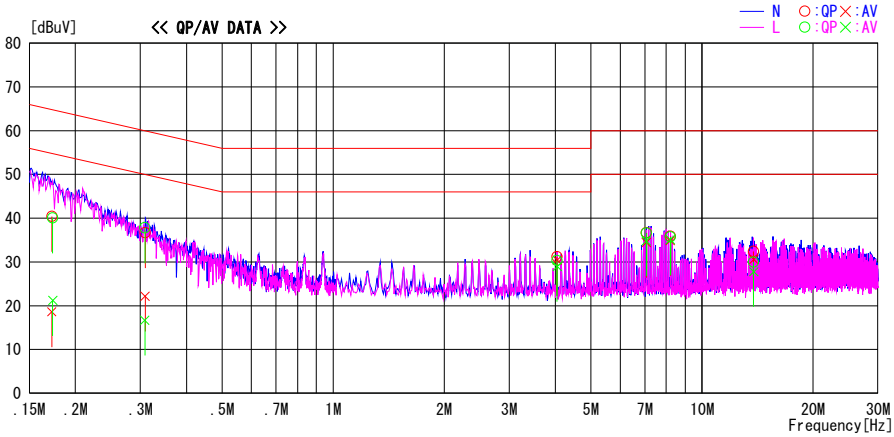
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n ANT1 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



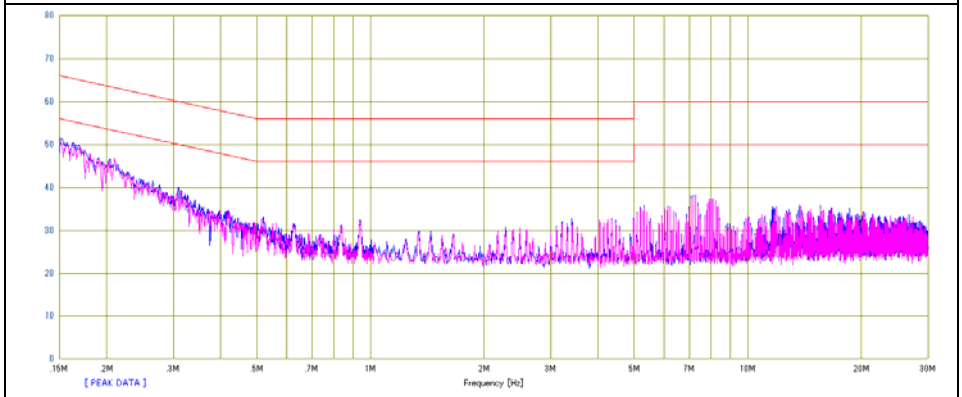
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.17262	27.2	5.4	13.2	40.4	18.6	64.8	54.8	24.4	36.2	N	
0.30921	23.4	8.9	13.3	36.7	22.2	60.0	50.0	23.3	27.8	N	
4.04565	17.6	16.8	13.6	31.2	30.4	56.0	46.0	24.8	15.6	N	
7.06593	22.8	20.6	13.9	36.7	34.5	60.0	50.0	23.3	15.5	N	
8.20875	22.0	21.0	13.9	35.9	34.9	60.0	50.0	24.1	15.1	N	
13.79961	18.0	16.2	14.4	32.4	30.6	60.0	50.0	27.6	19.4	N	
0.17349	26.9	8.0	13.2	40.1	21.2	64.8	54.8	24.7	33.6	L	
0.30834	24.5	3.4	13.3	37.8	16.7	60.0	50.0	22.2	33.3	L	
4.04565	16.7	15.4	13.6	30.3	29.0	56.0	46.0	25.7	17.0	L	
7.06593	22.7	20.9	13.9	36.6	34.8	60.0	50.0	23.4	15.2	L	
8.20875	21.8	21.2	13.9	35.7	35.1	60.0	50.0	24.3	14.9	L	
13.79961	15.6	13.4	14.4	30.0	27.8	60.0	50.0	30.0	22.2	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

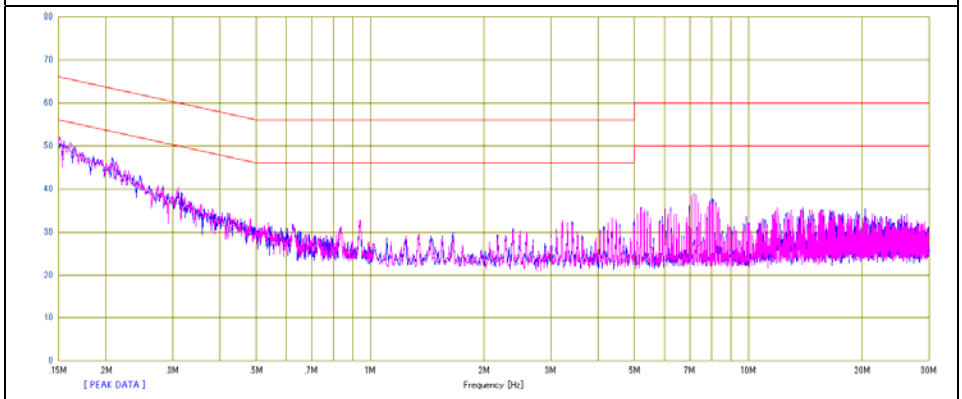
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11n Tx ANT1

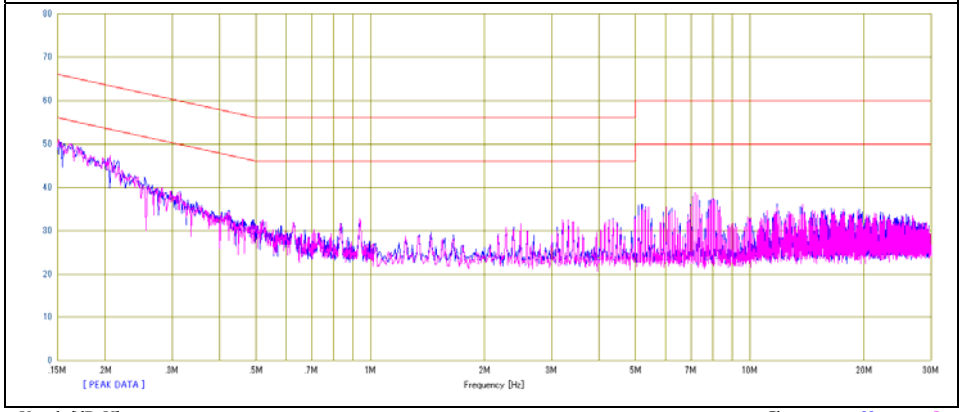
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

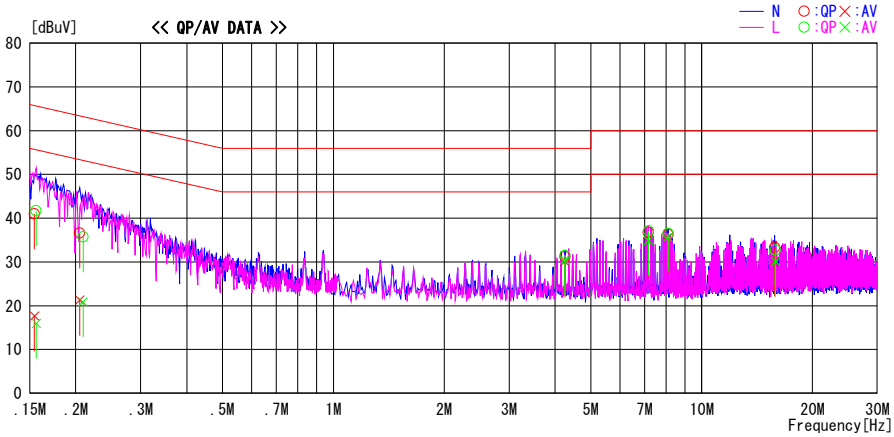
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/01/09

Report No. : 32CE0047-HO-02

Temp./Humi. : 22deg. C / 43% RH
Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 11n ANT2 2412MHz

LIMIT : FCC15.207 QP
FCC15.207 AV



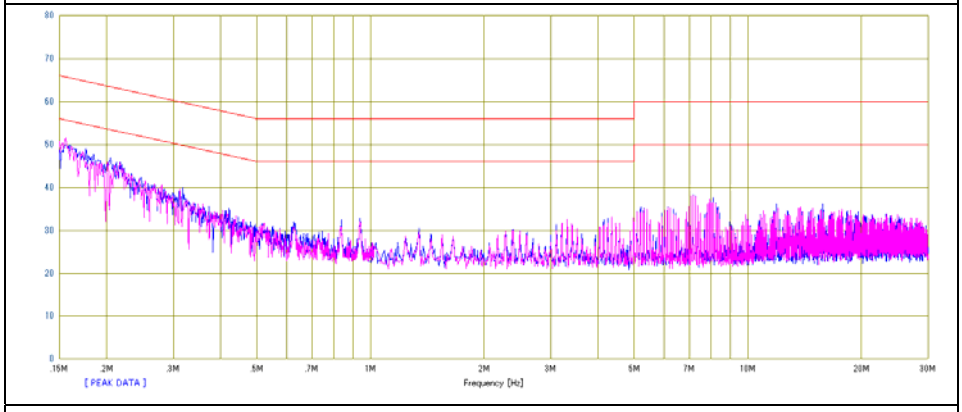
Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase	Comment
	QP	AV	Factor	QP	AV	QP	AV	QP	AV		
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
0.15435	27.8	4.5	13.2	41.0	17.7	65.8	55.8	24.8	38.1	N	
0.20481	23.4	8.1	13.2	36.6	21.3	63.4	53.4	26.8	32.1	N	
4.25425	17.6	16.5	13.6	31.2	30.1	56.0	46.0	24.8	15.9	N	
7.16570	22.9	20.8	13.9	36.8	34.7	60.0	50.0	23.2	15.3	N	
8.10898	22.4	21.7	13.9	36.3	35.6	60.0	50.0	23.7	14.4	N	
15.76451	18.9	15.8	14.4	33.3	30.2	60.0	50.0	26.7	19.8	N	
0.15609	28.5	2.8	13.2	41.7	16.0	65.7	55.7	24.0	39.7	L	
0.20916	22.5	7.7	13.2	35.7	20.9	63.2	53.2	27.5	32.3	L	
4.25425	17.9	16.9	13.6	31.5	30.5	56.0	46.0	24.5	15.5	L	
7.17477	23.2	21.0	13.9	37.1	34.9	60.0	50.0	22.9	15.1	L	
8.10898	22.6	21.8	13.9	36.5	35.7	60.0	50.0	23.5	14.3	L	
15.86476	18.2	15.6	14.5	32.7	30.1	60.0	50.0	27.3	19.9	L	

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

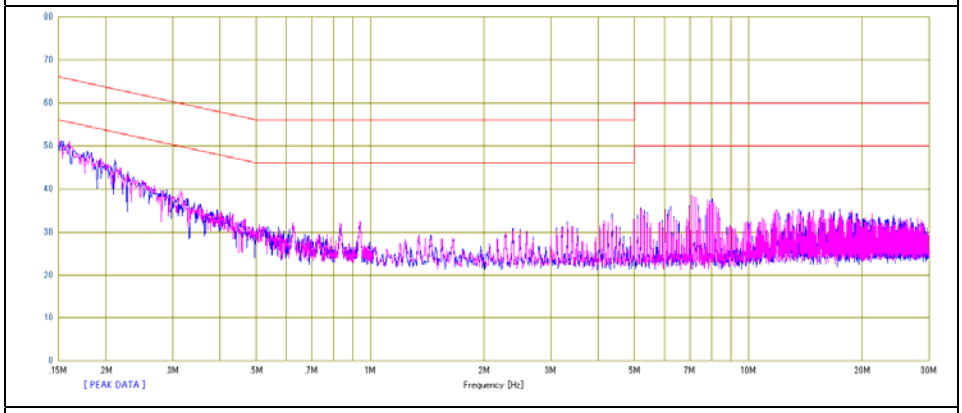
Conducted Emission

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/09/2012
Temperature/ Humidity	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa
Mode	11n Tx ANT2

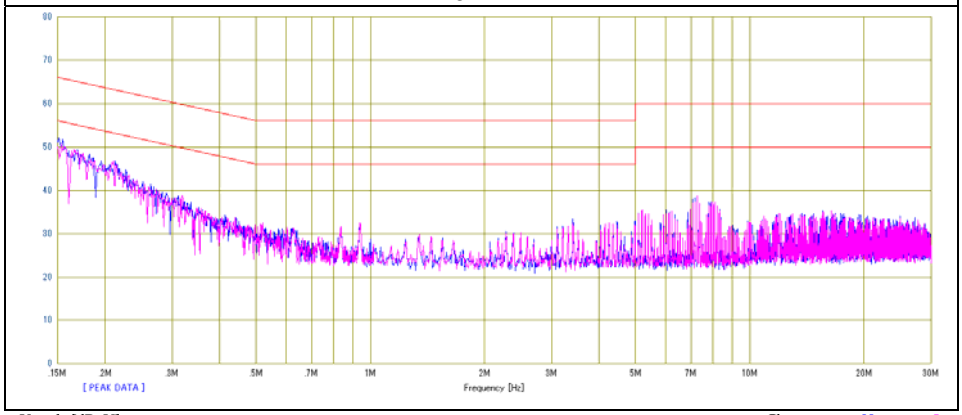
2412MHz



2437MHz



2462MHz



Y scale [dBuV] Chart — N — L

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6dB Bandwidth

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32CE0047-HO-02
Date	11/18/2011
Temperature/ Humidity	21 deg. C / 49% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx, 11g Tx, 11n-20 Tx, ANT2

11b

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	12.097	>500
2437	12.108	>500
2462	12.562	>500

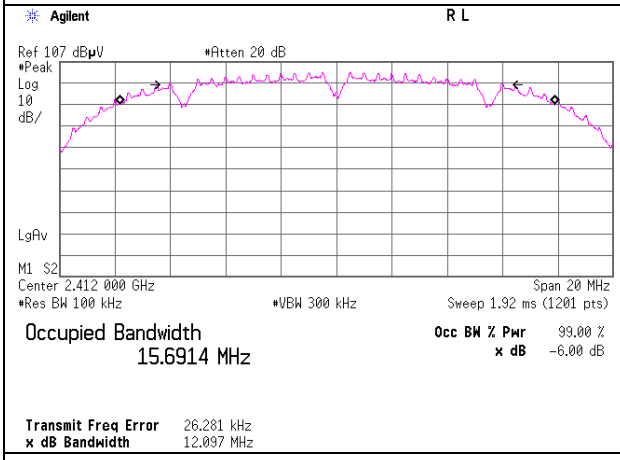
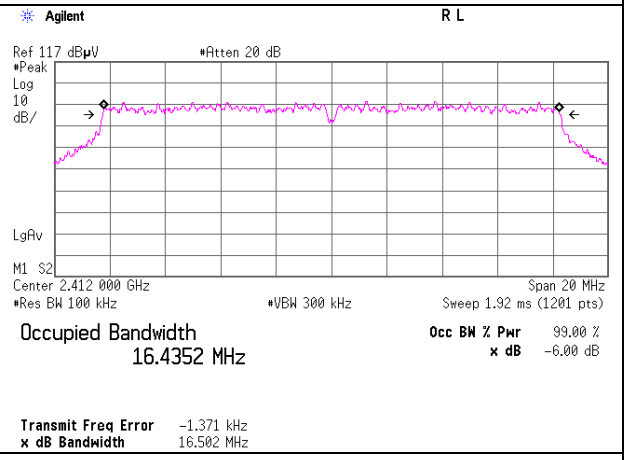
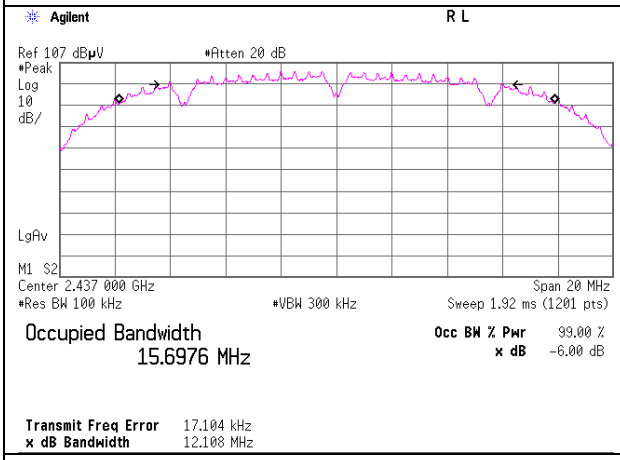
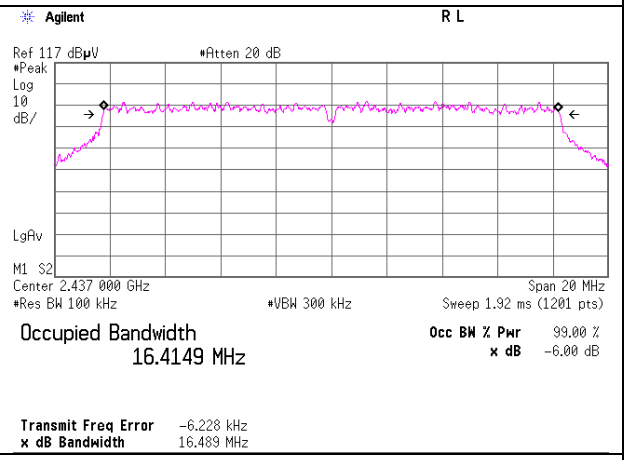
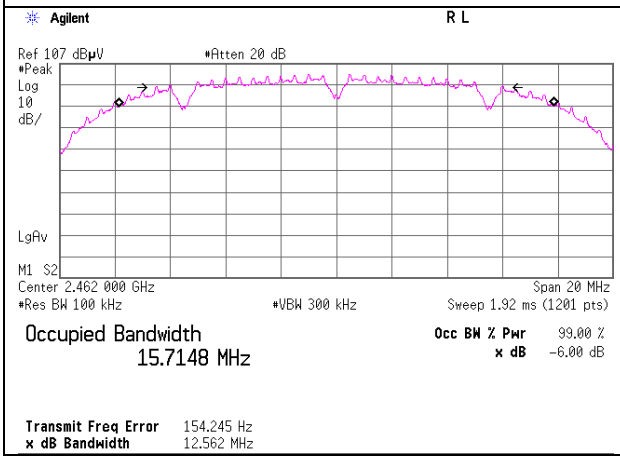
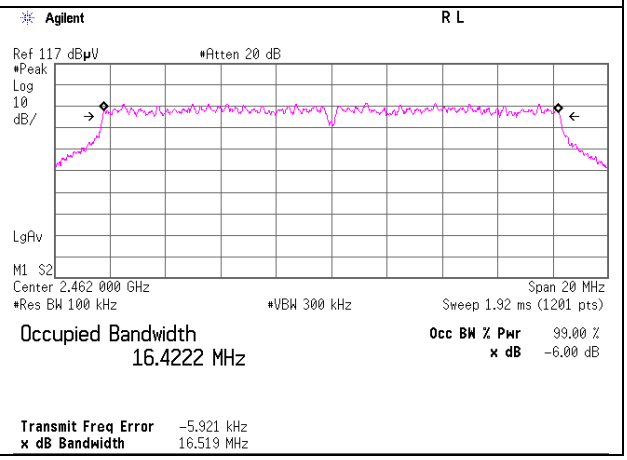
11g

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.502	>500
2437	16.489	>500
2462	16.519	>500

11n-20

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.586	>500
2437	17.574	>500
2462	17.577	>500

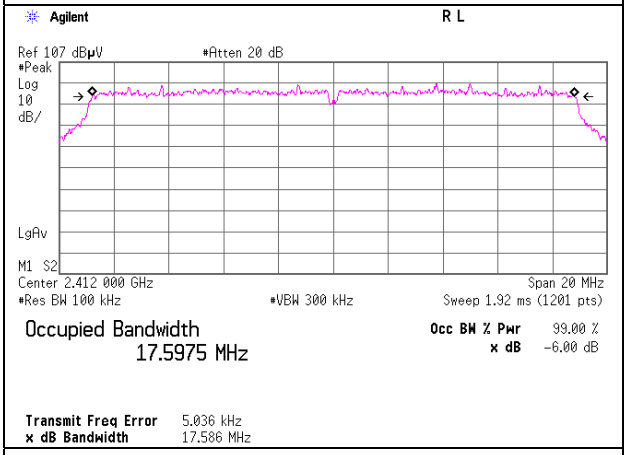
6dB Bandwidth

11b	11g
2412MHz	**2412MHz**
	
2437MHz	**2437MHz**
	
2462MHz	**2462MHz**
	

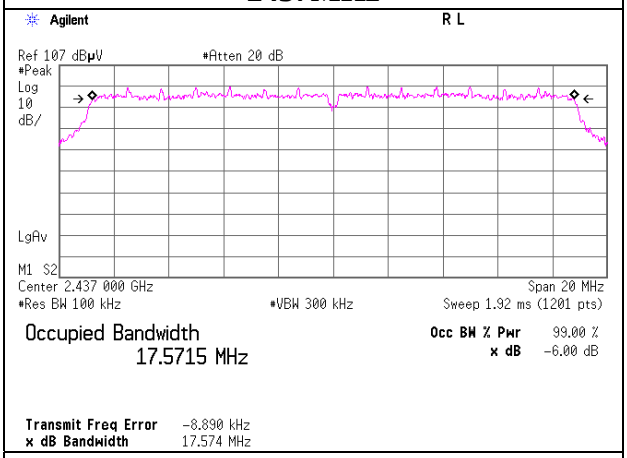
6dB Bandwidth

11n-20

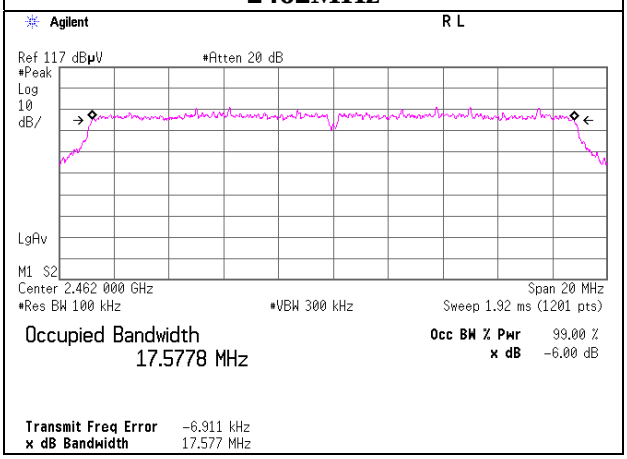
2412MHz



2437MHz



2462MHz



Maximum Peak Output Power

Test place	Head Office EMC Lab. No.1 Measurement Room
Report No.	32CE0047-HO-02
Date	11/17/2011
Temperature/ Humidity	23 deg. C / 42% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx

Antenna 1, 2Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	5.73	1.58	9.96	17.27	53.33	30.00	1000	12.73
2437	6.12	1.59	9.96	17.67	58.48	30.00	1000	12.33
2462	6.45	1.60	9.96	18.01	63.24	30.00	1000	11.99

Antenna 2, 1Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	7.10	1.58	9.96	18.64	73.11	30.00	1000	11.36
2437	7.99	1.59	9.96	19.54	89.95	30.00	1000	10.46
2462	7.90	1.60	9.96	19.46	88.31	30.00	1000	10.54

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

Antenna 1, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	5.63	
2	6.12	*
5.5	5.72	
11	6.04	

Antenna 2, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	7.99	*
2	7.49	
5.5	7.43	
11	7.71	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.1 Measurement Room
Report No.	32CE0047-HO-02
Date	11/17/2011
Temperature/ Humidity	23 deg. C / 42% RH
Engineer	Satofumi Matsuyama
Mode	11g Tx

Antenna 1, 54Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	10.53	1.58	9.96	22.07	161.06	30.00	1000	7.93
2437	10.54	1.59	9.96	22.09	161.81	30.00	1000	7.91
2462	10.51	1.60	9.96	22.07	161.06	30.00	1000	7.93

Antenna 2, 54Mbps

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.68	1.58	9.96	23.22	209.89	30.00	1000	6.78
2437	11.87	1.59	9.96	23.42	219.79	30.00	1000	6.58
2462	11.79	1.60	9.96	23.35	216.27	30.00	1000	6.65

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

Antenna 1, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	10.25	
9	10.37	
12	10.20	
18	10.52	
24	10.37	
36	10.30	
48	10.22	
54	10.54	*

Antenna 2, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	11.60	
9	11.43	
12	11.58	
18	11.81	
24	11.67	
36	11.73	
48	11.54	
54	11.87	*

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

Maximum Peak Output Power

Test place	Head Office EMC Lab. No.1 Measurement Room
Report No.	32CE0047-HO-02
Date	11/17/2011
Temperature/ Humidity	23 deg. C / 42% RH
Engineer	Satofumi Matsuyama
Mode	11n-20 Tx

Antenna 1, MCS3

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	10.30	1.58	9.96	21.84	152.76	30.00	1000	8.16
2437	10.74	1.59	9.96	22.29	169.43	30.00	1000	7.71
2462	10.19	1.60	9.96	21.75	149.62	30.00	1000	8.25

Antenna 2, MCS0

Freq.	Reading	Cable Loss	Atten.	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.21	1.58	9.96	22.75	188.36	30.00	1000	7.25
2437	11.80	1.59	9.96	23.35	216.27	30.00	1000	6.65
2462	11.56	1.60	9.96	23.12	205.12	30.00	1000	6.88

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

Antenna 1, 2437MHz

GI	Rate	Reading [dBm]	Remark
Long GI	MCS0	10.47	
	MCS1	10.63	
	MCS2	10.42	
	MCS3	10.74	*
	MCS4	10.45	
	MCS5	10.46	
	MCS6	10.63	
	MCS7	10.26	
Short GI	MCS0	10.53	
	MCS1	10.44	
	MCS2	10.25	
	MCS3	10.57	
	MCS4	10.55	
	MCS5	10.21	
	MCS6	10.43	
	MCS7	10.14	

Antenna 2, 2437MHz

GI	Rate	Reading [dBm]	Remark
Long GI	MCS0	11.80	*
	MCS1	11.72	
	MCS2	11.54	
	MCS3	11.75	
	MCS4	11.52	
	MCS5	11.49	
	MCS6	11.27	
	MCS7	11.55	
Short GI	MCS0	11.76	
	MCS1	11.52	
	MCS2	11.43	
	MCS3	11.75	
	MCS4	11.63	
	MCS5	11.41	
	MCS6	11.60	
	MCS7	11.48	

*: Worst Rate
All comparizon were carried out on same frequency and measurement factors.

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2412MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.321	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.319	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.310	QP	36.2	15.0	10.1	32.0	29.3	46.0	16.7	
Hori	359.031	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.032	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	2390.000	PK	59.8	27.4	2.2	38.2	51.2	73.9	22.7	
Hori	2397.000	PK	77.5	27.4	2.2	38.2	68.9	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	69.7	27.4	2.2	38.2	61.1	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	51.5	31.4	3.8	38.1	48.6	73.9	25.3	
Hori	7236.000	PK	46.2	35.5	4.5	38.3	47.9	73.9	26.0	
Hori	9648.000	PK	49.9	38.4	5.3	39.0	54.6	73.9	19.3	
Hori	24120.000	PK	47.3	38.6	7.8	38.2	55.5	73.9	18.4	
Hori	2390.000	AV	50.5	27.4	2.2	38.2	41.9	53.9	12.0	
Hori	2397.000	AV	75.0	27.4	2.2	38.2	66.4	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	64.8	27.4	2.2	38.2	56.2	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	47.8	31.4	3.8	38.1	44.9	53.9	9.0	
Hori	7236.000	AV	34.4	35.5	4.5	38.3	36.1	53.9	17.8	
Hori	9648.000	AV	41.7	38.4	5.3	39.0	46.4	53.9	7.5	
Hori	24120.000	AV	36.7	38.6	7.8	38.2	44.9	53.9	9.0	
Vert	115.890	QP	34.9	12.4	8.3	32.1	23.5	43.5	20.0	
Vert	240.321	QP	38.5	17.3	9.5	32.0	33.3	46.0	12.7	
Vert	280.321	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.321	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.032	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.033	QP	32.1	17.7	10.7	32.0	28.5	46.0	17.5	
Vert	2390.000	PK	58.0	27.4	2.2	38.2	49.4	73.9	24.6	
Vert	2397.000	PK	71.4	27.4	2.2	38.2	62.8	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	64.7	27.4	2.2	38.2	56.1	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	56.6	31.4	3.8	38.1	53.7	73.9	20.2	
Vert	7236.000	PK	46.0	35.5	4.5	38.3	47.7	73.9	26.2	
Vert	9648.000	PK	49.3	38.4	5.3	39.0	54.0	73.9	19.9	
Vert	24120.000	PK	47.0	38.6	7.8	38.2	55.2	73.9	18.7	
Vert	2390.000	AV	44.4	27.4	2.2	38.2	35.8	53.9	18.1	
Vert	2397.000	AV	67.2	27.4	2.2	38.2	58.6	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	56.6	27.4	2.2	38.2	48.0	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	50.0	31.4	3.8	38.1	47.1	53.9	6.8	
Vert	7236.000	AV	34.1	35.5	4.5	38.3	35.8	53.9	18.1	
Vert	9648.000	AV	41.1	38.4	5.3	39.0	45.8	53.9	8.1	
Vert	24120.000	AV	37.2	38.6	7.8	38.2	45.4	53.9	8.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/07/2012
Temperature/ Humidity	20 deg. C / 37% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11b Tx 2412MHz ANT1

20dBc Data Sheet

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	109.0	27.4	2.2	38.2	100.4	-	-	Carrier
Hori	2397.000	PK	71.4	27.4	2.2	38.2	62.8	80.4	17.6	
Hori	2400.000	PK	62.4	27.4	2.2	38.2	53.8	80.4	26.6	
Vert	2412.000	PK	108.4	27.4	2.2	38.2	99.8	-	-	Carrier
Vert	2397.000	PK	72.5	27.4	2.2	38.2	63.9	79.8	15.9	
Vert	2400.000	PK	60.6	27.4	2.2	38.2	52.0	79.8	27.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2412MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.932	QP	28.5	13.0	8.4	32.1	17.8	43.5	25.7	
Hori	240.032	QP	35.1	17.3	9.5	32.0	29.9	46.0	16.1	
Hori	280.933	QP	34.1	19.0	9.8	32.0	30.9	46.0	15.1	
Hori	319.321	QP	36.2	15.0	10.1	32.0	29.3	46.0	16.7	
Hori	359.231	QP	38.2	16.4	10.4	32.0	33.0	46.0	13.0	
Hori	400.032	QP	34.4	17.7	10.7	32.0	30.8	46.0	15.2	
Hori	2390.000	PK	57.7	27.4	2.2	38.2	49.1	73.9	24.8	
Hori	2397.000	PK	75.6	27.4	2.2	38.2	67.0	-	-	See 20dBc Data Sheet
Hori	2400.000	PK	67.6	27.4	2.2	38.2	59.0	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	57.2	31.4	3.8	38.1	54.3	73.9	19.6	
Hori	7236.000	PK	46.6	35.5	4.5	38.3	48.3	73.9	25.6	
Hori	9648.000	PK	50.9	38.4	5.3	39.0	55.6	73.9	18.4	
Hori	24120.000	PK	47.2	38.6	7.8	38.2	55.4	73.9	18.5	
Hori	2390.000	AV	47.1	27.4	2.2	38.2	38.5	53.9	15.4	
Hori	2397.000	AV	72.5	27.4	2.2	38.2	63.9	-	-	See 20dBc Data Sheet
Hori	2400.000	AV	62.5	27.4	2.2	38.2	53.9	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	54.6	31.4	3.8	38.1	51.7	53.9	2.2	
Hori	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.3	
Hori	9648.000	AV	43.2	38.4	5.3	39.0	47.9	53.9	6.0	
Hori	24120.000	AV	36.7	38.6	7.8	38.2	44.9	53.9	9.0	
Vert	116.512	QP	34.9	12.5	8.3	32.1	23.6	43.5	19.9	
Vert	240.310	QP	38.2	17.3	9.5	32.0	33.0	46.0	13.0	
Vert	280.392	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.310	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.392	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.019	QP	32.1	17.7	10.7	32.0	28.5	46.0	17.5	
Vert	2390.000	PK	57.3	27.4	2.2	38.2	48.7	73.9	25.2	
Vert	2397.000	PK	73.7	27.4	2.2	38.2	65.1	-	-	See 20dBc Data Sheet
Vert	2400.000	PK	66.1	27.4	2.2	38.2	57.5	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	57.1	31.4	3.8	38.1	54.2	73.9	19.7	
Vert	7236.000	PK	47.1	35.5	4.5	38.3	48.8	73.9	25.1	
Vert	9648.000	PK	50.6	38.4	5.3	39.0	55.3	73.9	18.6	
Vert	24120.000	PK	47.1	38.6	7.8	38.2	55.3	73.9	18.6	
Vert	2390.000	AV	45.1	27.4	2.2	38.2	36.5	53.9	17.4	
Vert	2397.000	AV	70.1	27.4	2.2	38.2	61.5	-	-	See 20dBc Data Sheet
Vert	2400.000	AV	59.8	27.4	2.2	38.2	51.2	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	53.9	31.4	3.8	38.1	51.0	53.9	2.9	
Vert	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.2	
Vert	9648.000	AV	40.6	38.4	5.3	39.0	45.3	53.9	8.6	
Vert	24120.000	AV	35.6	38.6	7.8	38.2	43.8	53.9	10.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/07/2012
Temperature/ Humidity	20 deg. C / 37% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11b Tx 2412MHz ANT2

20dBc Data Sheet

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	110.5	27.4	2.2	38.2	101.9	-	-	Carrier
Hori	2400.000	PK	61.4	27.4	2.2	38.2	52.8	81.9	29.1	
Hori	2397.000	PK	72.3	27.4	2.2	38.2	63.7	81.9	18.2	
Vert	2412.000	PK	108.4	27.4	2.2	38.2	99.8	-	-	Carrier
Vert	2397.000	PK	66.3	27.4	2.2	38.2	57.7	79.8	22.1	
Vert	2400.000	PK	56.5	27.4	2.2	38.2	47.9	79.8	31.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2437MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.300	QP	28.8	13.0	8.4	32.1	18.1	43.5	25.4	
Hori	240.031	QP	35.6	17.3	9.5	32.0	30.4	46.0	15.6	
Hori	280.939	QP	34.1	19.0	9.8	32.0	30.9	46.0	15.1	
Hori	319.093	QP	36.2	15.0	10.1	32.0	29.3	46.0	16.7	
Hori	359.920	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.900	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	4874.000	PK	56.3	31.5	3.8	38.1	53.5	73.9	20.5	
Hori	7311.000	PK	46.5	35.6	4.6	38.3	48.4	73.9	25.5	
Hori	9748.000	PK	50.6	38.5	5.3	39.1	55.3	73.9	18.6	
Hori	24370.000	PK	47.3	38.8	7.8	38.2	55.7	73.9	18.2	
Hori	4874.000	AV	49.8	31.5	3.8	38.1	47.0	53.9	6.9	
Hori	7311.000	AV	33.8	35.6	4.6	38.3	35.7	53.9	18.2	
Hori	9748.000	AV	41.6	38.5	5.3	39.1	46.3	53.9	7.6	
Hori	24370.000	AV	35.6	38.8	7.8	38.2	44.0	53.9	9.9	
Vert	115.610	QP	35.6	12.4	8.3	32.1	24.2	43.5	19.3	
Vert	240.031	QP	38.7	17.3	9.5	32.0	33.5	46.0	12.5	
Vert	280.310	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.033	QP	34.8	15.0	10.1	32.0	27.9	46.0	18.1	
Vert	359.003	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.000	QP	31.8	17.7	10.7	32.0	28.2	46.0	17.8	
Vert	4874.000	PK	57.1	31.5	3.8	38.1	54.3	73.9	19.6	
Vert	7311.000	PK	46.9	35.6	4.6	38.3	48.8	73.9	25.1	
Vert	9748.000	PK	50.4	38.5	5.3	39.1	55.1	73.9	18.8	
Vert	24370.000	PK	46.9	38.8	7.8	38.2	55.3	73.9	18.6	
Vert	4874.000	AV	51.3	31.5	3.8	38.1	48.5	53.9	5.4	
Vert	7311.000	AV	33.8	35.6	4.6	38.3	35.7	53.9	18.2	
Vert	9748.000	AV	41.4	38.5	5.3	39.1	46.1	53.9	7.8	
Vert	24370.000	AV	35.9	38.8	7.8	38.2	44.3	53.9	9.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2437MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.321	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.032	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.329	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.319	QP	35.9	15.0	10.1	32.0	29.0	46.0	17.0	
Hori	359.931	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.030	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	4874.000	PK	58.2	31.5	3.8	38.1	55.4	73.9	18.5	
Hori	7311.000	PK	46.0	35.6	4.6	38.3	47.9	73.9	26.0	
Hori	9748.000	PK	49.7	38.5	5.3	39.1	54.4	73.9	19.5	
Hori	24370.000	PK	46.5	38.8	7.8	38.2	54.9	73.9	19.0	
Hori	4874.000	AV	54.3	31.5	3.8	38.1	51.5	53.9	2.4	
Hori	7311.000	AV	33.7	35.6	4.6	38.3	35.6	53.9	18.3	
Hori	9748.000	AV	37.3	38.5	5.3	39.1	42.0	53.9	11.9	
Hori	24370.000	AV	35.4	38.8	7.8	38.2	43.8	53.9	10.1	
Vert	116.231	QP	35.4	12.4	8.3	32.1	24.0	43.5	19.5	
Vert	240.392	QP	38.6	17.3	9.5	32.0	33.4	46.0	12.6	
Vert	280.391	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.302	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.302	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.391	QP	31.9	17.7	10.7	32.0	28.3	46.0	17.7	
Vert	4874.000	PK	57.0	31.5	3.8	38.1	54.2	73.9	19.7	
Vert	7311.000	PK	46.0	35.6	4.6	38.3	47.9	73.9	26.0	
Vert	9748.000	PK	50.1	38.5	5.3	39.1	54.8	73.9	19.2	
Vert	24370.000	PK	47.1	38.8	7.8	38.2	55.5	73.9	18.4	
Vert	4874.000	AV	54.3	31.5	3.8	38.1	51.5	53.9	2.4	
Vert	7311.000	AV	33.6	35.6	4.6	38.3	35.5	53.9	18.4	
Vert	9748.000	AV	40.7	38.5	5.3	39.1	45.4	53.9	8.5	
Vert	24370.000	AV	35.8	38.8	7.8	38.2	44.2	53.9	9.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2462MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.031	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.032	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.039	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.000	QP	36.1	15.0	10.1	32.0	29.2	46.0	16.8	
Hori	359.391	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.421	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	2483.500	PK	58.3	27.6	2.3	38.2	50.0	73.9	23.9	
Hori	2488.000	PK	54.7	27.6	2.3	38.2	46.4	73.9	27.6	
Hori	4924.000	PK	55.5	31.6	3.9	38.1	52.9	73.9	21.0	
Hori	7386.000	PK	46.1	35.7	4.6	38.4	48.0	73.9	25.9	
Hori	9848.000	PK	49.8	38.6	5.4	39.1	54.7	73.9	19.2	
Hori	24620.000	PK	47.0	38.9	7.9	38.3	55.5	73.9	18.4	
Hori	2483.500	AV	50.6	27.6	2.3	38.2	42.3	53.9	11.7	
Hori	2488.000	AV	44.3	27.6	2.3	38.2	36.0	53.9	17.9	
Hori	4924.000	AV	49.6	31.6	3.9	38.1	47.0	53.9	7.0	
Hori	7386.000	AV	34.4	35.7	4.6	38.4	36.3	53.9	17.6	
Hori	9848.000	AV	41.3	38.6	5.4	39.1	46.2	53.9	7.7	
Hori	24620.000	AV	36.1	38.9	7.9	38.3	44.6	53.9	9.3	
Vert	115.731	QP	34.9	12.4	8.3	32.1	23.5	43.5	20.0	
Vert	240.392	QP	38.2	17.3	9.5	32.0	33.0	46.0	13.0	
Vert	280.031	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.032	QP	34.8	15.0	10.1	32.0	27.9	46.0	18.1	
Vert	359.030	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.312	QP	32.1	17.7	10.7	32.0	28.5	46.0	17.5	
Vert	2483.500	PK	56.2	27.6	2.3	38.2	47.9	73.9	26.0	
Vert	2488.000	PK	56.1	27.6	2.3	38.2	47.8	73.9	26.1	
Vert	4924.000	PK	56.9	31.6	3.9	38.1	54.3	73.9	19.6	
Vert	7386.000	PK	46.3	35.7	4.6	38.4	48.2	73.9	25.7	
Vert	9848.000	PK	49.6	38.6	5.4	39.1	54.5	73.9	19.4	
Vert	24620.000	PK	47.2	38.9	7.9	38.3	55.7	73.9	18.2	
Vert	2483.500	AV	42.1	27.6	2.3	38.2	33.8	53.9	20.1	
Vert	2488.000	AV	39.6	27.6	2.3	38.2	31.3	53.9	22.6	
Vert	4924.000	AV	50.4	31.6	3.9	38.1	47.8	53.9	6.1	
Vert	7386.000	AV	34.5	35.7	4.6	38.4	36.4	53.9	17.5	
Vert	9848.000	AV	40.3	38.6	5.4	39.1	45.2	53.9	8.7	
Vert	24620.000	AV	35.9	38.9	7.9	38.3	44.4	53.9	9.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11b Tx 2462MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.392	QP	29.3	13.0	8.4	32.1	18.6	43.5	24.9	
Hori	240.032	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.039	QP	34.2	18.9	9.8	32.0	30.9	46.0	15.1	
Hori	319.031	QP	36.4	15.0	10.1	32.0	29.5	46.0	16.5	
Hori	359.031	QP	38.5	16.4	10.4	32.0	33.3	46.0	12.7	
Hori	400.321	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	2483.500	PK	61.7	27.6	2.3	38.2	53.4	73.9	20.5	
Hori	2488.000	PK	56.1	27.6	2.3	38.2	47.8	73.9	26.1	
Hori	4924.000	PK	56.5	31.6	3.9	38.1	53.9	73.9	20.0	
Hori	7386.000	PK	47.2	35.7	4.6	38.4	49.1	73.9	24.8	
Hori	9848.000	PK	49.8	38.6	5.4	39.1	54.7	73.9	19.2	
Hori	24620.000	PK	47.1	38.9	7.9	38.3	55.6	73.9	18.3	
Hori	2483.500	AV	52.3	27.6	2.3	38.2	44.0	53.9	9.9	
Hori	2488.000	AV	44.4	27.6	2.3	38.2	36.1	53.9	17.8	
Hori	4924.000	AV	54.0	31.6	3.9	38.1	51.4	53.9	2.5	
Hori	7386.000	AV	34.2	35.7	4.6	38.4	36.1	53.9	17.8	
Hori	9848.000	AV	40.3	38.6	5.4	39.1	45.2	53.9	8.7	
Hori	24620.000	AV	36.5	38.9	7.9	38.3	45.0	53.9	8.9	
Vert	116.321	QP	35.6	12.5	8.3	32.1	24.3	43.5	19.2	
Vert	240.031	QP	38.9	17.3	9.5	32.0	33.7	46.0	12.3	
Vert	280.391	QP	34.8	18.9	9.8	32.0	31.5	46.0	14.5	
Vert	319.301	QP	35.1	15.0	10.1	32.0	28.2	46.0	17.8	
Vert	359.030	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.312	QP	31.7	17.7	10.7	32.0	28.1	46.0	17.9	
Vert	2483.500	PK	57.2	27.6	2.3	38.2	48.9	73.9	25.1	
Vert	2488.000	PK	55.2	27.6	2.3	38.2	46.9	73.9	27.0	
Vert	4924.000	PK	57.8	31.6	3.9	38.1	55.2	73.9	18.7	
Vert	7386.000	PK	46.3	35.7	4.6	38.4	48.2	73.9	25.7	
Vert	9848.000	PK	49.5	38.6	5.4	39.1	54.4	73.9	19.5	
Vert	24620.000	PK	47.3	38.9	7.9	38.3	55.8	73.9	18.1	
Vert	2483.500	AV	48.5	27.6	2.3	38.2	40.2	53.9	13.7	
Vert	2488.000	AV	44.0	27.6	2.3	38.2	35.7	53.9	18.2	
Vert	4924.000	AV	53.7	31.6	3.9	38.1	51.1	53.9	2.8	
Vert	7386.000	AV	34.3	35.7	4.6	38.4	36.2	53.9	17.7	
Vert	9848.000	AV	39.6	38.6	5.4	39.1	44.5	53.9	9.4	
Vert	24620.000	AV	36.1	38.9	7.9	38.3	44.6	53.9	9.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2412MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.032	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.032	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.301	QP	36.5	15.0	10.1	32.0	29.6	46.0	16.4	
Hori	359.312	QP	38.7	16.4	10.4	32.0	33.5	46.0	12.5	
Hori	400.003	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	2390.000	PK	70.8	27.4	2.2	38.2	62.2	73.9	11.7	
Hori	2400.000	PK	84.3	27.4	2.2	38.2	75.7	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	50.9	31.4	3.8	38.1	48.0	73.9	25.9	
Hori	7236.000	PK	45.7	35.5	4.5	38.3	47.4	73.9	26.5	
Hori	9648.000	PK	48.6	38.4	5.3	39.0	53.3	73.9	20.6	
Hori	24120.000	PK	46.7	38.6	7.8	38.2	54.9	73.9	19.0	
Hori	2390.000	AV	57.4	27.4	2.2	38.2	48.8	53.9	5.1	
Hori	2400.000	AV	75.3	27.4	2.2	38.2	66.7	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	40.2	31.4	3.8	38.1	37.3	53.9	16.6	
Hori	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.2	
Hori	9648.000	AV	38.7	38.4	5.3	39.0	43.4	53.9	10.5	
Hori	24120.000	AV	36.5	38.6	7.8	38.2	44.7	53.9	9.2	
Vert	115.931	QP	35.4	12.4	8.3	32.1	24.0	43.5	19.5	
Vert	240.302	QP	38.7	17.3	9.5	32.0	33.5	46.0	12.5	
Vert	280.030	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.328	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.321	QP	36.2	16.4	10.4	32.0	31.0	46.0	15.0	
Vert	400.132	QP	31.9	17.7	10.7	32.0	28.3	46.0	17.7	
Vert	2390.000	PK	67.0	27.4	2.2	38.2	58.4	73.9	15.5	
Vert	2400.000	PK	81.2	27.4	2.2	38.2	72.6	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	50.4	31.4	3.8	38.1	47.5	73.9	26.4	
Vert	7236.000	PK	46.1	35.5	4.5	38.3	47.8	73.9	26.1	
Vert	9648.000	PK	48.3	38.4	5.3	39.0	53.0	73.9	20.9	
Vert	24120.000	PK	47.6	38.6	7.8	38.2	55.8	73.9	18.1	
Vert	2390.000	AV	53.7	27.4	2.2	38.2	45.1	53.9	8.8	
Vert	2400.000	AV	72.0	27.4	2.2	38.2	63.4	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	39.9	31.4	3.8	38.1	37.0	53.9	16.9	
Vert	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.3	
Vert	9648.000	AV	37.7	38.4	5.3	39.0	42.4	53.9	11.5	
Vert	24120.000	AV	36.1	38.6	7.8	38.2	44.3	53.9	9.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/07/2012
Temperature/ Humidity	20 deg. C / 37% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11g Tx 2412MHz ANT1

20dBc Data Sheet

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	106.4	27.4	2.2	38.2	97.8	-	-	Carrier
Hori	2400.000	PK	73.8	27.4	2.2	38.2	65.2	77.8	12.6	
Vert	2412.000	PK	104.2	27.4	2.2	38.2	95.6	-	-	Carrier
Vert	2400.000	PK	71.9	27.4	2.2	38.2	63.3	75.6	12.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2412MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	29.2	13.0	8.4	32.1	18.5	43.5	25.0	
Hori	240.032	QP	35.6	17.3	9.5	32.0	30.4	46.0	15.6	
Hori	280.321	QP	34.5	18.9	9.8	32.0	31.2	46.0	14.8	
Hori	319.321	QP	35.8	15.0	10.1	32.0	28.9	46.0	17.1	
Hori	359.032	QP	38.4	16.4	10.4	32.0	33.2	46.0	12.8	
Hori	400.030	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	2390.000	PK	68.5	27.4	2.2	38.2	59.8	73.9	14.1	
Hori	2400.000	PK	82.2	27.4	2.2	38.2	73.6	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	51.6	31.4	3.8	38.1	48.7	73.9	25.3	
Hori	7236.000	PK	47.5	35.5	4.5	38.3	49.2	73.9	24.7	
Hori	9648.000	PK	49.2	38.4	5.3	39.0	53.9	73.9	20.0	
Hori	24120.000	PK	47.2	38.6	7.8	38.2	55.4	73.9	18.5	
Hori	2390.000	AV	53.3	27.4	2.2	38.2	44.7	53.9	9.2	
Hori	2400.000	AV	72.2	27.4	2.2	38.2	63.6	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	43.0	31.4	3.8	38.1	40.1	53.9	13.8	
Hori	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.2	
Hori	9648.000	AV	39.1	38.4	5.3	39.0	43.8	53.9	10.1	
Hori	24120.000	AV	36.7	38.6	7.8	38.2	44.9	53.9	9.0	
Vert	116.410	QP	34.5	12.5	8.3	32.1	23.2	43.5	20.3	
Vert	240.145	QP	39.1	17.3	9.5	32.0	33.9	46.0	12.1	
Vert	280.032	QP	35.1	18.9	9.8	32.0	31.8	46.0	14.2	
Vert	319.033	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.302	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.321	QP	31.7	17.7	10.7	32.0	28.1	46.0	17.9	
Vert	2390.000	PK	72.7	27.4	2.2	38.2	64.1	73.9	9.8	
Vert	2400.000	PK	85.5	27.4	2.2	38.2	76.9	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	52.1	31.4	3.8	38.1	49.2	73.9	24.7	
Vert	7236.000	PK	46.2	35.5	4.5	38.3	47.9	73.9	26.0	
Vert	9648.000	PK	48.5	38.4	5.3	39.0	53.2	73.9	20.7	
Vert	24120.000	PK	47.8	38.6	7.8	38.2	56.0	73.9	17.9	
Vert	2390.000	AV	57.3	27.4	2.2	38.2	48.7	53.9	5.2	
Vert	2400.000	AV	75.3	27.4	2.2	38.2	66.7	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	40.5	31.4	3.8	38.1	37.6	53.9	16.3	
Vert	7236.000	AV	34.0	35.5	4.5	38.3	35.7	53.9	18.2	
Vert	9648.000	AV	38.7	38.4	5.3	39.0	43.4	53.9	10.5	
Vert	24120.000	AV	36.5	38.6	7.8	38.2	44.7	53.9	9.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/07/2012
Temperature/ Humidity	20 deg. C / 37% RH
Engineer	Takumi Shimada
	(1-10GHz)
Mode	11g Tx 2412MHz ANT2

20dBc Data Sheet

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	105.6	27.4	2.2	38.2	97.0	-	-	Carrier
Hori	2400.000	PK	71.4	27.4	2.2	38.2	62.8	77.0	14.2	
Vert	2412.000	PK	107.1	27.4	2.2	38.2	98.5	-	-	Carrier
Vert	2400.000	PK	74.3	27.4	2.2	38.2	65.7	78.5	12.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2437MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.302	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.031	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.039	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.320	QP	36.2	15.0	10.1	32.0	29.3	46.0	16.7	
Hori	359.321	QP	39.0	16.4	10.4	32.0	33.8	46.0	12.2	
Hori	400.030	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	4874.000	PK	51.4	31.5	3.8	38.1	48.6	73.9	25.3	
Hori	7311.000	PK	46.3	35.6	4.6	38.3	48.2	73.9	25.7	
Hori	9748.000	PK	50.0	38.5	5.3	39.1	54.7	73.9	19.2	
Hori	24370.000	PK	47.0	38.8	7.8	38.2	55.4	73.9	18.5	
Hori	4874.000	AV	40.3	31.5	3.8	38.1	37.5	53.9	16.4	
Hori	7311.000	AV	33.6	35.6	4.6	38.3	35.5	53.9	18.4	
Hori	9748.000	AV	38.8	38.5	5.3	39.1	43.5	53.9	10.4	
Hori	24370.000	AV	35.2	38.8	7.8	38.2	43.6	53.9	10.3	
Vert	116.231	QP	35.4	12.4	8.3	32.1	24.0	43.5	19.5	
Vert	240.321	QP	38.4	17.3	9.5	32.0	33.2	46.0	12.8	
Vert	280.031	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.032	QP	34.8	15.0	10.1	32.0	27.9	46.0	18.1	
Vert	359.030	QP	36.3	16.4	10.4	32.0	31.1	46.0	14.9	
Vert	400.232	QP	31.8	17.7	10.7	32.0	28.2	46.0	17.8	
Vert	4874.000	PK	53.0	31.5	3.8	38.1	50.2	73.9	23.7	
Vert	7311.000	PK	46.1	35.6	4.6	38.3	48.0	73.9	25.9	
Vert	9748.000	PK	48.6	38.5	5.3	39.1	53.3	73.9	20.6	
Vert	24370.000	PK	46.9	38.8	7.8	38.2	55.3	73.9	18.6	
Vert	4874.000	AV	41.5	31.5	3.8	38.1	38.7	53.9	15.2	
Vert	7311.000	AV	33.7	35.6	4.6	38.3	35.6	53.9	18.3	
Vert	9748.000	AV	37.5	38.5	5.3	39.1	42.2	53.9	11.7	
Vert	24370.000	AV	36.0	38.8	7.8	38.2	44.4	53.9	9.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2437MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.030	QP	28.0	13.0	8.4	32.1	17.3	43.5	26.2	
Hori	240.030	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.392	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.030	QP	36.5	15.0	10.1	32.0	29.6	46.0	16.4	
Hori	359.000	QP	38.2	16.4	10.4	32.0	33.0	46.0	13.0	
Hori	400.321	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	4874.000	PK	52.3	31.5	3.8	38.1	49.5	73.9	24.4	
Hori	7311.000	PK	45.8	35.6	4.6	38.3	47.7	73.9	26.2	
Hori	9748.000	PK	49.6	38.5	5.3	39.1	54.3	73.9	19.6	
Hori	24370.000	PK	46.9	38.8	7.8	38.2	55.3	73.9	18.6	
Hori	4874.000	AV	41.5	31.5	3.8	38.1	38.7	53.9	15.2	
Hori	7311.000	AV	33.7	35.6	4.6	38.3	35.6	53.9	18.4	
Hori	9748.000	AV	39.2	38.5	5.3	39.1	43.9	53.9	10.0	
Hori	24370.000	AV	35.6	38.8	7.8	38.2	44.0	53.9	9.9	
Vert	116.214	QP	35.4	12.4	8.3	32.1	24.0	43.5	19.5	
Vert	240.032	QP	37.9	17.3	9.5	32.0	32.7	46.0	13.3	
Vert	280.030	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.030	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.032	QP	36.5	16.4	10.4	32.0	31.3	46.0	14.7	
Vert	400.310	QP	31.9	17.7	10.7	32.0	28.3	46.0	17.7	
Vert	4874.000	PK	53.9	31.5	3.8	38.1	51.1	73.9	22.8	
Vert	7311.000	PK	45.9	35.6	4.6	38.3	47.8	73.9	26.1	
Vert	9748.000	PK	49.3	38.5	5.3	39.1	54.0	73.9	19.9	
Vert	24370.000	PK	47.1	38.8	7.8	38.2	55.5	73.9	18.4	
Vert	4874.000	AV	43.4	31.5	3.8	38.1	40.6	53.9	13.3	
Vert	7311.000	AV	33.7	35.6	4.6	38.3	35.6	53.9	18.3	
Vert	9748.000	AV	39.4	38.5	5.3	39.1	44.1	53.9	9.8	
Vert	24370.000	AV	35.7	38.8	7.8	38.2	44.1	53.9	9.8	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2462MHz ANT1		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.329	QP	29.1	13.0	8.4	32.1	18.4	43.5	25.1	
Hori	240.232	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.031	QP	34.2	18.9	9.8	32.0	30.9	46.0	15.1	
Hori	319.032	QP	36.1	15.0	10.1	32.0	29.2	46.0	16.8	
Hori	359.030	QP	38.7	16.4	10.4	32.0	33.5	46.0	12.5	
Hori	400.302	QP	33.9	17.7	10.7	32.0	30.3	46.0	15.7	
Hori	2483.500	PK	74.1	27.6	2.3	38.2	65.8	73.9	8.1	
Hori	4924.000	PK	52.9	31.6	3.9	38.1	50.3	73.9	23.7	
Hori	7386.000	PK	47.7	35.7	4.6	38.4	49.6	73.9	24.3	
Hori	9848.000	PK	48.8	38.6	5.4	39.1	53.7	73.9	20.2	
Hori	24620.000	PK	47.2	38.9	7.9	38.3	55.7	73.9	18.2	
Hori	2483.500	AV	60.1	27.6	2.3	38.2	51.8	53.9	2.1	
Hori	4924.000	AV	42.6	31.6	3.9	38.1	40.0	53.9	13.9	
Hori	7386.000	AV	34.2	35.7	4.6	38.4	36.1	53.9	17.8	
Hori	9848.000	AV	38.3	38.6	5.4	39.1	43.2	53.9	10.7	
Hori	24620.000	AV	36.7	38.9	7.9	38.3	45.2	53.9	8.7	
Vert	116.213	QP	34.9	12.4	8.3	32.1	23.5	43.5	20.0	
Vert	240.032	QP	38.6	17.3	9.5	32.0	33.4	46.0	12.6	
Vert	280.321	QP	34.8	18.9	9.8	32.0	31.5	46.0	14.5	
Vert	319.039	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.031	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.312	QP	31.5	17.7	10.7	32.0	27.9	46.0	18.1	
Vert	2483.500	PK	65.3	27.6	2.3	38.2	57.0	73.9	16.9	
Vert	4924.000	PK	52.5	31.6	3.9	38.1	49.9	73.9	24.0	
Vert	7386.000	PK	46.3	35.7	4.6	38.4	48.2	73.9	25.7	
Vert	9848.000	PK	49.8	38.6	5.4	39.1	54.7	73.9	19.2	
Vert	24620.000	PK	47.1	38.9	7.9	38.3	55.6	73.9	18.3	
Vert	2483.500	AV	51.2	27.6	2.3	38.2	42.9	53.9	11.0	
Vert	4924.000	AV	43.1	31.6	3.9	38.1	40.5	53.9	13.4	
Vert	7386.000	AV	34.3	35.7	4.6	38.4	36.2	53.9	17.7	
Vert	9848.000	AV	38.4	38.6	5.4	39.1	43.3	53.9	10.6	
Vert	24620.000	AV	36.5	38.9	7.9	38.3	45.0	53.9	8.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber		
Report No.	32CE0047-HO-02		
Date	01/07/2012	01/08/2012	01/09/2012
Temperature/ Humidity	20 deg. C / 37% RH	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Takumi Shimada (1-10GHz)	Tomotaka Sasagawa (Above 10GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11g Tx 2462MHz ANT2		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.302	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.030	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.031	QP	34.5	18.9	9.8	32.0	31.2	46.0	14.8	
Hori	319.321	QP	35.6	15.0	10.1	32.0	28.7	46.0	17.3	
Hori	359.032	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.231	QP	34.3	17.7	10.7	32.0	30.7	46.0	15.3	
Hori	2483.500	PK	68.9	27.6	2.3	38.2	60.6	73.9	13.3	
Hori	4924.000	PK	52.0	31.6	3.9	38.1	49.4	73.9	24.5	
Hori	7386.000	PK	46.2	35.7	4.6	38.4	48.1	73.9	25.8	
Hori	9848.000	PK	50.0	38.6	5.4	39.1	54.9	73.9	19.0	
Hori	24620.000	PK	46.9	38.9	7.9	38.3	55.4	73.9	18.5	
Hori	2483.500	AV	55.6	27.6	2.3	38.2	47.3	53.9	6.6	
Hori	4924.000	AV	41.9	31.6	3.9	38.1	39.3	53.9	14.6	
Hori	7386.000	AV	34.2	35.7	4.6	38.4	36.1	53.9	17.8	
Hori	9848.000	AV	38.8	38.6	5.4	39.1	43.7	53.9	10.2	
Hori	24620.000	AV	36.8	38.9	7.9	38.3	45.3	53.9	8.6	
Vert	116.513	QP	34.9	12.5	8.3	32.1	23.6	43.5	19.9	
Vert	240.302	QP	39.2	17.3	9.5	32.0	34.0	46.0	12.0	
Vert	280.301	QP	33.0	18.9	9.8	32.0	29.7	46.0	16.3	
Vert	319.032	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.032	QP	35.9	16.4	10.4	32.0	30.7	46.0	15.3	
Vert	400.321	QP	31.7	17.7	10.7	32.0	28.1	46.0	17.9	
Vert	2483.500	PK	70.0	27.6	2.3	38.2	61.7	73.9	12.2	
Vert	4924.000	PK	54.2	31.6	3.9	38.1	51.6	73.9	22.4	
Vert	7386.000	PK	45.8	35.7	4.6	38.4	47.7	73.9	26.2	
Vert	9848.000	PK	49.1	38.6	5.4	39.1	54.0	73.9	19.9	
Vert	24620.000	PK	46.7	38.9	7.9	38.3	55.2	73.9	18.7	
Vert	2483.500	AV	56.9	27.6	2.3	38.2	48.6	53.9	5.4	
Vert	4924.000	AV	45.1	31.6	3.9	38.1	42.5	53.9	11.4	
Vert	7386.000	AV	34.3	35.7	4.6	38.4	36.2	53.9	17.7	
Vert	9848.000	AV	38.4	38.6	5.4	39.1	43.3	53.9	10.6	
Vert	24620.000	AV	36.9	38.9	7.9	38.3	45.4	53.9	8.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber	
Report No.	32CE0047-HO-02	
Date	01/08/2012	01/09/2012
Temperature/ Humidity	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11n Tx 2412MHz ANT1	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.321	QP	29.2	13.0	8.4	32.1	18.5	43.5	25.0	
Hori	240.302	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.032	QP	34.5	18.9	9.8	32.0	31.2	46.0	14.8	
Hori	319.031	QP	36.1	15.0	10.1	32.0	29.2	46.0	16.8	
Hori	359.030	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.301	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	2390.000	PK	65.1	27.4	2.2	38.2	56.5	73.9	17.4	
Hori	2400.000	PK	76.9	27.4	2.2	38.2	68.3	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	51.3	31.4	3.2	38.1	47.8	73.9	26.1	
Hori	7236.000	PK	45.6	35.5	4.0	38.3	46.8	73.9	27.1	
Hori	9648.000	PK	44.9	38.4	4.6	39.0	48.9	73.9	25.0	
Hori	24120.000	PK	47.3	38.6	7.8	38.2	55.5	73.9	18.4	
Hori	2390.000	AV	50.2	27.4	2.2	38.2	41.6	53.9	12.3	
Hori	2400.000	AV	66.6	27.4	2.2	38.2	58.0	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	40.9	31.4	3.2	38.1	37.4	53.9	16.5	
Hori	7236.000	AV	40.1	35.5	4.0	38.3	41.3	53.9	12.6	
Hori	9648.000	AV	39.8	38.4	4.6	39.0	43.8	53.9	10.1	
Hori	24120.000	AV	35.6	38.6	7.8	38.2	43.8	53.9	10.1	
Vert	116.432	QP	34.9	12.5	8.3	32.1	23.6	43.5	19.9	
Vert	240.321	QP	38.9	17.3	9.5	32.0	33.7	46.0	12.3	
Vert	280.031	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.832	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.032	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.312	QP	31.4	17.7	10.7	32.0	27.8	46.0	18.2	
Vert	2390.000	PK	72.5	27.4	2.2	38.2	63.9	73.9	10.0	
Vert	2400.000	PK	84.7	27.4	2.2	38.2	76.1	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	52.1	31.4	3.2	38.1	48.6	73.9	25.3	
Vert	7236.000	PK	49.2	35.5	4.0	38.3	50.4	73.9	23.5	
Vert	9648.000	PK	50.1	38.4	4.6	39.0	54.1	73.9	19.8	
Vert	24120.000	PK	47.6	38.6	7.8	38.2	55.8	73.9	18.1	
Vert	2390.000	AV	57.4	27.4	2.2	38.2	48.8	53.9	5.1	
Vert	2400.000	AV	73.9	27.4	2.2	38.2	65.3	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	41.3	31.4	3.2	38.1	37.8	53.9	16.1	
Vert	7236.000	AV	41.0	35.5	4.0	38.3	42.2	53.9	11.7	
Vert	9648.000	AV	40.2	38.4	4.6	39.0	44.2	53.9	9.7	
Vert	24120.000	AV	35.4	38.6	7.8	38.2	43.6	53.9	10.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/08/2012
Temperature/ Humidity	21 deg. C / 41% RH
Engineer	Tomotaka Sasagawa
	(Above 1GHz)
Mode	11n Tx 2412MHz ANT1

20dBc Data Sheet

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	100.8	27.4	2.2	38.2	92.2	-	-	Carrier
Hori	2400.000	PK	66.6	27.4	2.2	38.2	58.0	72.2	14.2	
Vert	2412.000	PK	103.9	27.4	2.2	38.2	95.3	-	-	Carrier
Vert	2400.000	PK	72.9	27.4	2.2	38.2	64.3	75.3	11.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/08/2012
Temperature/ Humidity	21 deg. C / 41% RH
Engineer	Tomotaka Sasagawa
	(Above 1GHz)
Mode	11n Tx 2412MHz ANT2

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.320	QP	28.7	13.0	8.4	32.1	18.0	43.5	25.5	
Hori	240.032	QP	35.6	17.3	9.5	32.0	30.4	46.0	15.6	
Hori	280.030	QP	34.3	18.9	9.8	32.0	31.0	46.0	15.0	
Hori	319.300	QP	36.1	15.0	10.1	32.0	29.2	46.0	16.8	
Hori	359.032	QP	39.2	16.4	10.4	32.0	34.0	46.0	12.0	
Hori	400.032	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	2390.000	PK	66.8	27.4	2.2	38.2	58.2	73.9	15.7	
Hori	2400.000	PK	79.9	27.4	2.2	38.2	71.3	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	51.2	31.4	3.2	38.1	47.7	73.9	26.2	
Hori	7236.000	PK	48.9	35.5	4.0	38.3	50.1	73.9	23.8	
Hori	9648.000	PK	45.6	38.4	4.6	39.0	49.6	73.9	24.3	
Hori	24120.000	PK	47.1	38.6	7.8	38.2	55.3	73.9	18.6	
Hori	2390.000	AV	52.0	27.4	2.2	38.2	43.4	53.9	10.5	
Hori	2400.000	AV	69.2	27.4	2.2	38.2	60.6	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	43.4	31.4	3.2	38.1	39.9	53.9	14.0	
Hori	7236.000	AV	40.2	35.5	4.0	38.3	41.4	53.9	12.5	
Hori	9648.000	AV	40.5	38.4	4.6	39.0	44.5	53.9	9.4	
Hori	24120.000	AV	36.0	38.6	7.8	38.2	44.2	53.9	9.7	
Vert	116.210	QP	34.1	12.4	8.3	32.1	22.7	43.5	20.8	
Vert	240.320	QP	38.4	17.3	9.5	32.0	33.2	46.0	12.8	
Vert	280.030	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.032	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.032	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.320	QP	32.1	17.7	10.7	32.0	28.5	46.0	17.5	
Vert	2390.000	PK	72.2	27.4	2.2	38.2	63.6	73.9	10.3	
Vert	2400.000	PK	84.6	27.4	2.2	38.2	76.0	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	54.3	31.4	3.2	38.1	50.8	73.9	23.1	
Vert	7236.000	PK	49.2	35.5	4.0	38.3	50.4	73.9	23.5	
Vert	9648.000	PK	48.1	38.4	4.6	39.0	52.1	73.9	21.8	
Vert	24120.000	PK	47.2	38.6	7.8	38.2	55.4	73.9	18.5	
Vert	2390.000	AV	56.8	27.4	2.2	38.2	48.2	53.9	5.7	
Vert	2400.000	AV	73.6	27.4	2.2	38.2	65.0	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	45.6	31.4	3.2	38.1	42.1	53.9	11.8	
Vert	7236.000	AV	40.1	35.5	4.0	38.3	41.3	53.9	12.6	
Vert	9648.000	AV	39.8	38.4	4.6	39.0	43.8	53.9	10.1	
Vert	24120.000	AV	35.8	38.6	7.8	38.2	44.0	53.9	9.9	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

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Radiated Spurious Emission
(20dBc Data Sheet)

Test place	Head Office EMC Lab. No.2 Semi Anechoic Chamber
Report No.	32CE0047-HO-02
Date	01/08/2012
Temperature/ Humidity	21 deg. C / 41% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)
Mode	11n Tx 2412MHz ANT2

20dBc Data Sheet

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	100.8	27.4	2.2	38.2	92.2	-	-	Carrier
Hori	2400.000	PK	68.6	27.4	2.2	38.2	60.0	72.2	12.2	
Vert	2412.000	PK	104.8	27.4	2.2	38.2	96.2	-	-	Carrier
Vert	2400.000	PK	72.8	27.4	2.2	38.2	64.2	76.2	12.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amprifier)

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber	
Report No.	32CE0047-HO-02	
Date	01/08/2012	01/09/2012
Temperature/ Humidity	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11n Tx 2437MHz ANT1	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.031	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.039	QP	34.1	18.9	9.8	32.0	30.8	46.0	15.2	
Hori	319.300	QP	36.5	15.0	10.1	32.0	29.6	46.0	16.4	
Hori	359.032	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.321	QP	33.7	17.7	10.7	32.0	30.1	46.0	15.9	
Hori	4874.000	PK	54.5	31.5	3.2	38.1	51.1	73.9	22.8	
Hori	7311.000	PK	47.8	35.6	4.1	38.3	49.2	73.9	24.7	
Hori	9748.000	PK	46.7	38.5	4.6	39.1	50.7	73.9	23.2	
Hori	24370.000	PK	47.2	38.8	7.8	38.2	55.6	73.9	18.3	
Hori	4874.000	AV	43.2	31.5	3.2	38.1	39.8	53.9	14.1	
Hori	7311.000	AV	40.4	35.6	4.1	38.3	41.8	53.9	12.1	
Hori	9748.000	AV	40.2	38.5	4.6	39.1	44.2	53.9	9.7	
Hori	24370.000	AV	35.4	38.8	7.8	38.2	43.8	53.9	10.1	
Vert	115.651	QP	35.6	12.4	8.3	32.1	24.2	43.5	19.3	
Vert	240.032	QP	38.9	17.3	9.5	32.0	33.7	46.0	12.3	
Vert	280.302	QP	34.9	18.9	9.8	32.0	31.6	46.0	14.4	
Vert	319.032	QP	34.6	15.0	10.1	32.0	27.7	46.0	18.3	
Vert	359.302	QP	36.4	16.4	10.4	32.0	31.2	46.0	14.8	
Vert	400.200	QP	31.5	17.7	10.7	32.0	27.9	46.0	18.1	
Vert	4874.000	PK	55.1	31.5	3.2	38.1	51.7	73.9	22.2	
Vert	7311.000	PK	49.9	35.6	4.1	38.3	51.3	73.9	22.6	
Vert	9748.000	PK	48.1	38.5	4.6	39.1	52.1	73.9	21.8	
Vert	24370.000	PK	46.5	38.8	7.8	38.2	54.9	73.9	19.0	
Vert	4874.000	AV	46.1	31.5	3.2	38.1	42.7	53.9	11.2	
Vert	7311.000	AV	40.4	35.6	4.1	38.3	41.8	53.9	12.1	
Vert	9748.000	AV	40.5	38.5	4.6	39.1	44.5	53.9	9.4	
Vert	24370.000	AV	35.1	38.8	7.8	38.2	43.5	53.9	10.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber	
Report No.	32CE0047-HO-02	
Date	01/08/2012	01/09/2012
Temperature/ Humidity	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11n Tx 2437MHz ANT2	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	28.2	13.0	8.4	32.1	17.5	43.5	26.0	
Hori	240.032	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.930	QP	34.1	19.0	9.8	32.0	30.9	46.0	15.1	
Hori	319.302	QP	35.6	15.0	10.1	32.0	28.7	46.0	17.3	
Hori	359.032	QP	39.1	16.4	10.4	32.0	33.9	46.0	12.1	
Hori	400.030	QP	34.2	17.7	10.7	32.0	30.6	46.0	15.4	
Hori	4874.000	PK	55.2	31.5	3.2	38.1	51.8	73.9	22.1	
Hori	7311.000	PK	49.2	35.6	4.1	38.3	50.6	73.9	23.3	
Hori	9748.000	PK	47.0	38.5	4.6	39.1	51.0	73.9	22.9	
Hori	24370.000	PK	46.7	38.8	7.8	38.2	55.1	73.9	18.8	
Hori	4874.000	AV	42.8	31.5	3.2	38.1	39.4	53.9	14.5	
Hori	7311.000	AV	40.2	35.6	4.1	38.3	41.6	53.9	12.3	
Hori	9748.000	AV	40.0	38.5	4.6	39.1	44.0	53.9	9.9	
Hori	24370.000	AV	35.6	38.8	7.8	38.2	44.0	53.9	9.9	
Vert	115.982	QP	35.4	12.4	8.3	32.1	24.0	43.5	19.5	
Vert	240.302	QP	38.6	17.3	9.5	32.0	33.4	46.0	12.6	
Vert	280.093	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.392	QP	35.1	15.0	10.1	32.0	28.2	46.0	17.8	
Vert	359.032	QP	36.2	16.4	10.4	32.0	31.0	46.0	15.0	
Vert	400.030	QP	31.9	17.7	10.7	32.0	28.3	46.0	17.7	
Vert	4874.000	PK	54.8	31.5	3.2	38.1	51.4	73.9	22.5	
Vert	7311.000	PK	51.0	35.6	4.1	38.3	52.4	73.9	21.5	
Vert	9748.000	PK	46.5	38.5	4.6	39.1	50.5	73.9	23.4	
Vert	24370.000	PK	47.0	38.8	7.8	38.2	55.4	73.9	18.5	
Vert	4874.000	AV	43.1	31.5	3.2	38.1	39.7	53.9	14.2	
Vert	7311.000	AV	39.8	35.6	4.1	38.3	41.2	53.9	12.7	
Vert	9748.000	AV	39.9	38.5	4.6	39.1	43.9	53.9	10.0	
Vert	24370.000	AV	35.4	38.8	7.8	38.2	43.8	53.9	10.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber	
Report No.	32CE0047-HO-02	
Date	01/08/2012	01/09/2012
Temperature/ Humidity	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11n Tx 2462MHz ANT1	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.032	QP	28.9	13.0	8.4	32.1	18.2	43.5	25.3	
Hori	240.030	QP	35.4	17.3	9.5	32.0	30.2	46.0	15.8	
Hori	280.993	QP	34.1	19.0	9.8	32.0	30.9	46.0	15.1	
Hori	319.030	QP	35.6	15.0	10.1	32.0	28.7	46.0	17.3	
Hori	359.320	QP	38.4	16.4	10.4	32.0	33.2	46.0	12.8	
Hori	400.320	QP	34.1	17.7	10.7	32.0	30.5	46.0	15.5	
Hori	2483.500	PK	64.4	27.6	2.3	38.2	56.1	73.9	17.8	
Hori	4924.000	PK	53.9	31.6	3.3	38.1	50.7	73.9	23.2	
Hori	7386.000	PK	49.2	35.7	4.1	38.4	50.6	73.9	23.3	
Hori	9848.000	PK	46.2	38.6	4.7	39.1	50.4	73.9	23.5	
Hori	24620.000	PK	47.2	38.9	7.9	38.3	55.7	73.9	18.2	
Hori	2483.500	AV	50.4	27.6	2.3	38.2	42.1	53.9	11.8	
Hori	4924.000	AV	42.1	31.6	3.3	38.1	38.9	53.9	15.0	
Hori	7386.000	AV	41.3	35.7	4.1	38.4	42.7	53.9	11.2	
Hori	9848.000	AV	40.0	38.6	4.7	39.1	44.2	53.9	9.7	
Hori	24620.000	AV	36.9	38.9	7.9	38.3	45.4	53.9	8.5	
Vert	116.410	QP	35.4	12.5	8.3	32.1	24.1	43.5	19.4	
Vert	240.302	QP	39.1	17.3	9.5	32.0	33.9	46.0	12.1	
Vert	280.002	QP	34.6	18.9	9.8	32.0	31.3	46.0	14.7	
Vert	319.033	QP	35.2	15.0	10.1	32.0	28.3	46.0	17.7	
Vert	359.032	QP	36.2	16.4	10.4	32.0	31.0	46.0	15.0	
Vert	400.323	QP	32.1	17.7	10.7	32.0	28.5	46.0	17.5	
Vert	2483.500	PK	66.4	27.6	2.3	38.2	58.1	73.9	15.8	
Vert	4924.000	PK	54.1	31.6	3.3	38.1	50.9	73.9	23.0	
Vert	7386.000	PK	48.8	35.7	4.1	38.4	50.2	73.9	23.7	
Vert	9848.000	PK	45.6	38.6	4.7	39.1	49.8	73.9	24.1	
Vert	24620.000	PK	46.9	38.9	7.9	38.3	55.4	73.9	18.5	
Vert	2483.500	AV	52.5	27.6	2.3	38.2	44.2	53.9	9.8	
Vert	4924.000	AV	41.0	31.6	3.3	38.1	37.8	53.9	16.1	
Vert	7386.000	AV	41.2	35.7	4.1	38.4	42.6	53.9	11.3	
Vert	9848.000	AV	40.1	38.6	4.7	39.1	44.3	53.9	9.6	
Vert	24620.000	AV	37.1	38.9	7.9	38.3	45.6	53.9	8.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

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

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

Radiated Spurious Emission

Test place	Head Office EMC Lab. No.2 and No.3 Semi Anechoic Chamber	
Report No.	32CE0047-HO-02	
Date	01/08/2012	01/09/2012
Temperature/ Humidity	21 deg. C / 41% RH	22 deg. C / 38% RH
Engineer	Tomotaka Sasagawa (Above 1GHz)	Tomotaka Sasagawa (Below 1GHz)
Mode	11n Tx 2462MHz ANT2	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	120.021	QP	28.1	13.0	8.4	32.1	17.4	43.5	26.1	
Hori	240.149	QP	35.1	17.3	9.5	32.0	29.9	46.0	16.1	
Hori	280.199	QP	33.9	18.9	9.8	32.0	30.6	46.0	15.4	
Hori	319.833	QP	36.0	15.0	10.1	32.0	29.1	46.0	16.9	
Hori	359.500	QP	38.9	16.4	10.4	32.0	33.7	46.0	12.3	
Hori	400.333	QP	33.8	17.7	10.7	32.0	30.2	46.0	15.8	
Hori	2483.500	PK	62.8	27.6	2.3	38.2	54.5	73.9	19.4	
Hori	4924.000	PK	52.5	31.6	3.9	38.1	49.9	73.9	24.0	
Hori	7386.000	PK	50.3	35.7	4.6	38.4	52.2	73.9	21.7	
Hori	9848.000	PK	40.2	38.6	5.4	39.1	45.1	73.9	28.8	
Hori	9848.000	PK	50.6	38.6	5.4	39.1	55.5	73.9	18.4	
Hori	24620.000	PK	47.3	38.9	7.9	38.3	55.8	73.9	18.1	
Hori	2483.500	AV	47.1	27.6	2.3	38.2	38.8	53.9	15.1	
Hori	4924.000	AV	41.2	31.6	3.9	38.1	38.6	53.9	15.3	
Hori	7386.000	AV	40.5	35.7	4.6	38.4	42.4	53.9	11.5	
Hori	24620.000	AV	37.2	38.9	7.9	38.3	45.7	53.9	8.2	
Vert	115.950	QP	35.3	12.4	8.3	32.1	23.9	43.5	19.6	
Vert	240.149	QP	38.5	17.3	9.5	32.0	33.3	46.0	12.7	
Vert	280.199	QP	34.5	18.9	9.8	32.0	31.2	46.0	14.8	
Vert	319.833	QP	34.5	15.0	10.1	32.0	27.6	46.0	18.4	
Vert	359.500	QP	36.1	16.4	10.4	32.0	30.9	46.0	15.1	
Vert	400.333	QP	31.2	17.7	10.7	32.0	27.6	46.0	18.4	
Vert	2483.500	PK	69.6	27.6	2.3	38.2	61.3	73.9	12.6	
Vert	4924.000	PK	54.4	31.6	3.9	38.1	51.8	73.9	22.1	
Vert	7386.000	PK	50.3	35.7	4.6	38.4	52.2	73.9	21.7	
Vert	9848.000	PK	51.5	38.6	5.4	39.1	56.4	73.9	17.5	
Vert	24620.000	PK	47.1	38.9	7.9	38.3	55.6	73.9	18.3	
Vert	2483.500	AV	55.3	27.6	2.3	38.2	47.0	53.9	6.9	
Vert	4924.000	AV	42.3	31.6	3.9	38.1	39.7	53.9	14.2	
Vert	7386.000	AV	40.9	35.7	4.6	38.4	42.8	53.9	11.1	
Vert	9848.000	AV	41.1	38.6	5.4	39.1	46.0	53.9	7.9	
Vert	24620.000	AV	37.3	38.9	7.9	38.3	45.8	53.9	8.1	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter-Distance factor(above 10GHz)) - Gain(Amplifier)

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

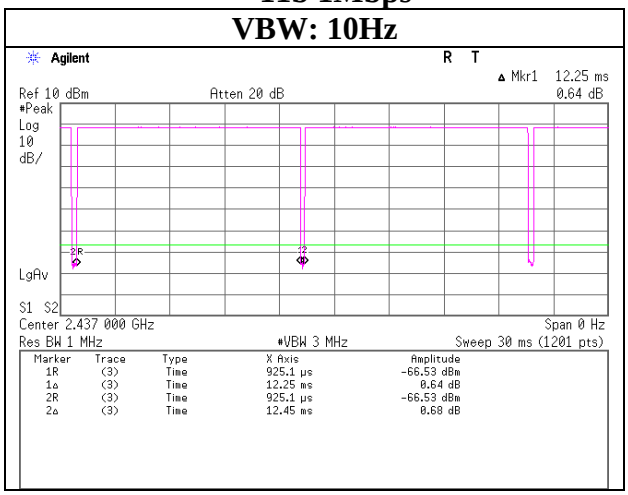
*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB

VBW (AV) Calculation

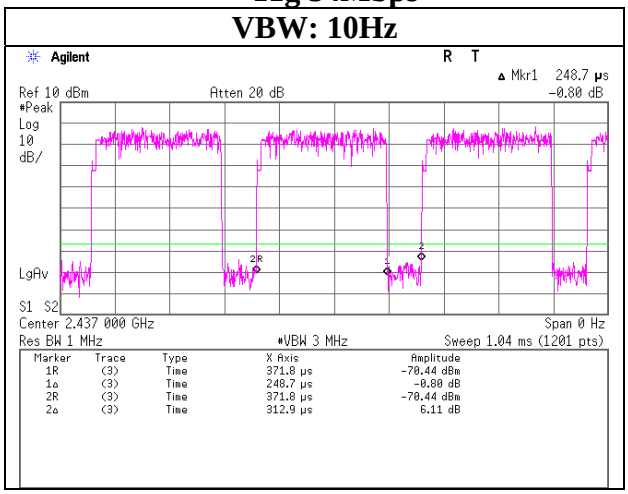
11b 1Mbps

VBW: 10Hz



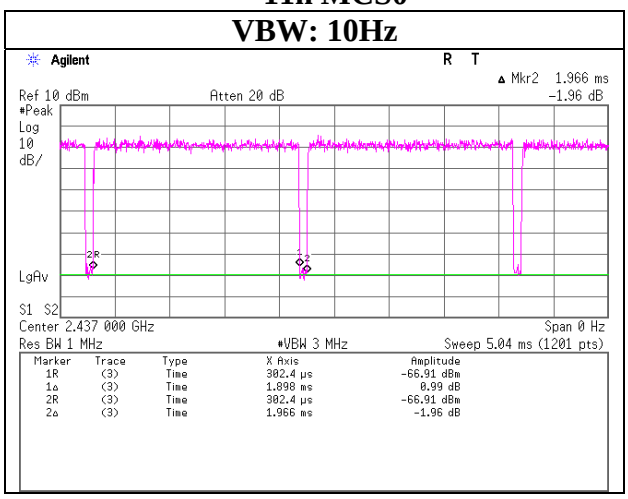
11g 54Mbps

VBW: 10Hz



11n MCS0

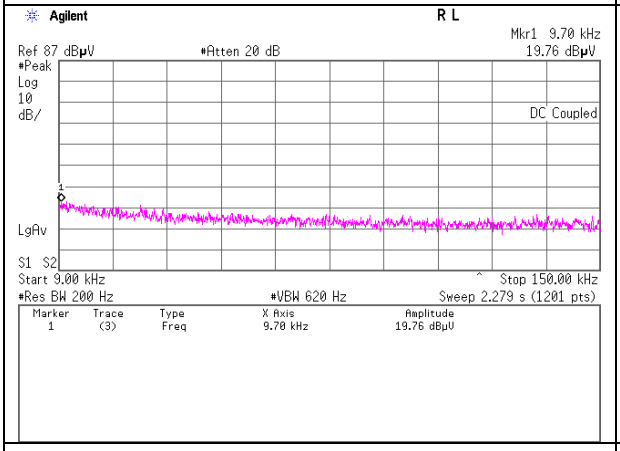
VBW: 10Hz



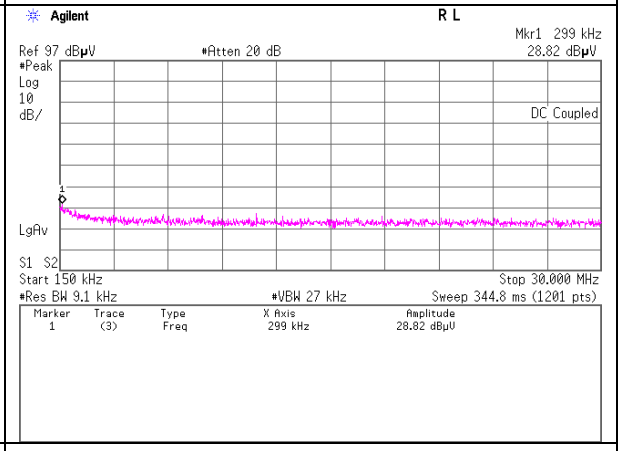
Conducted Spurious Emission

11b Tx 2412MHz

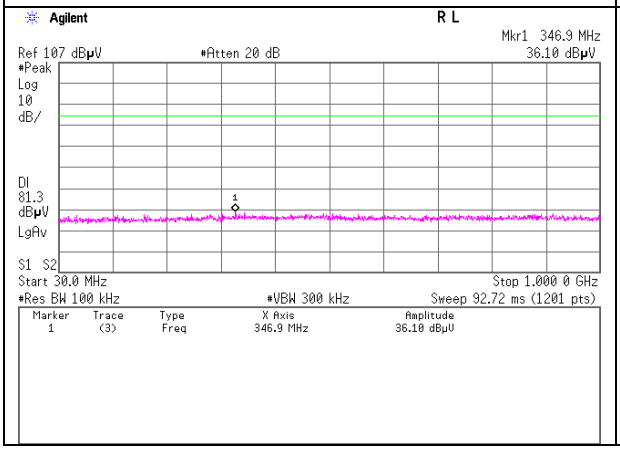
9kHz-150kHz



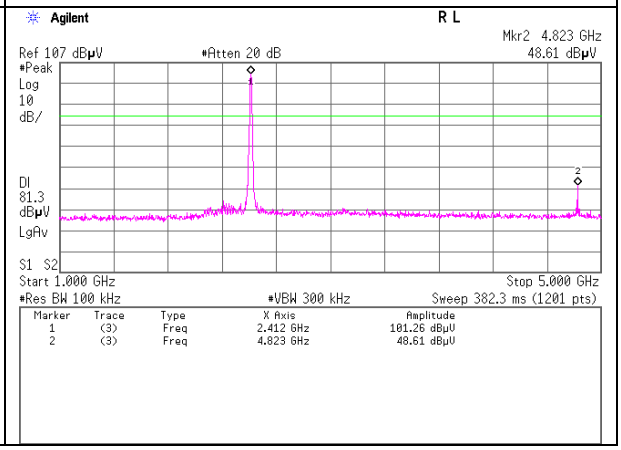
150kHz-30MHz



30MHz-1GHz



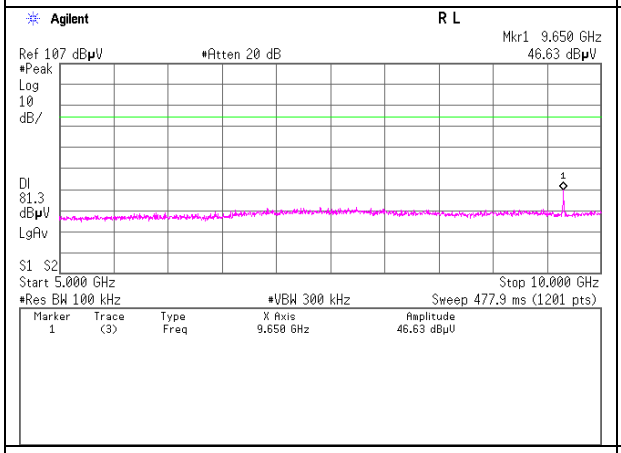
1GHz-5GHz



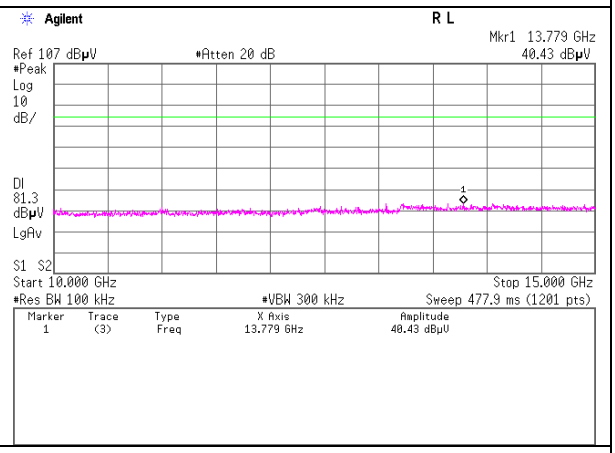
Conducted Spurious Emission

11b Tx 2412MHz

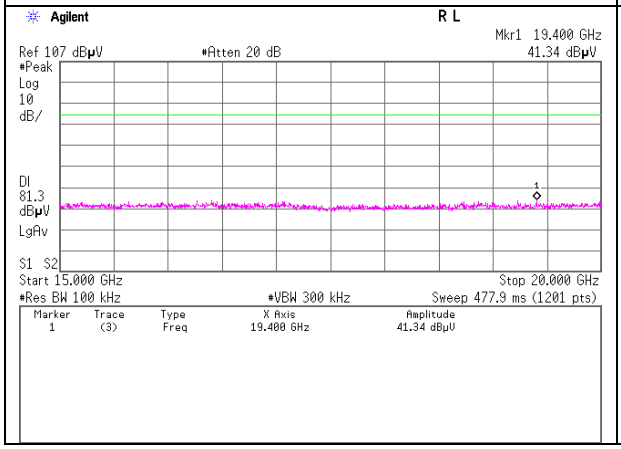
5GHz-10GHz



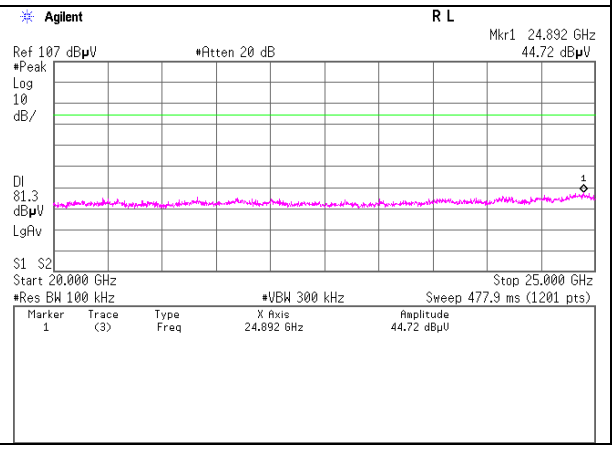
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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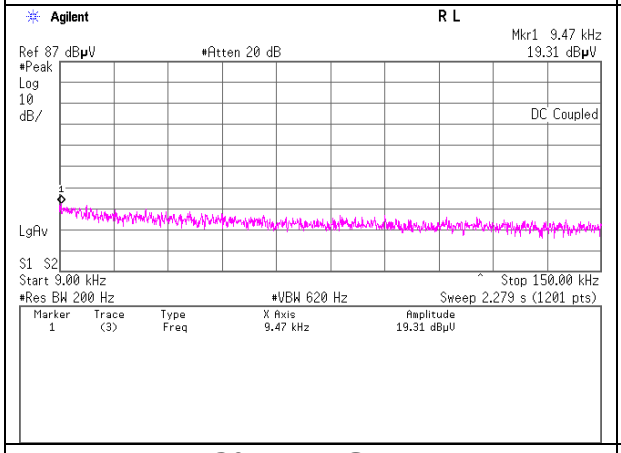
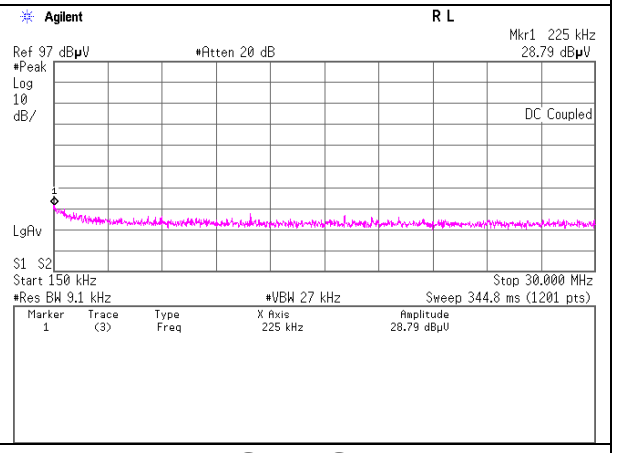
Conducted Spurious Emission

11b Tx 2437MHz

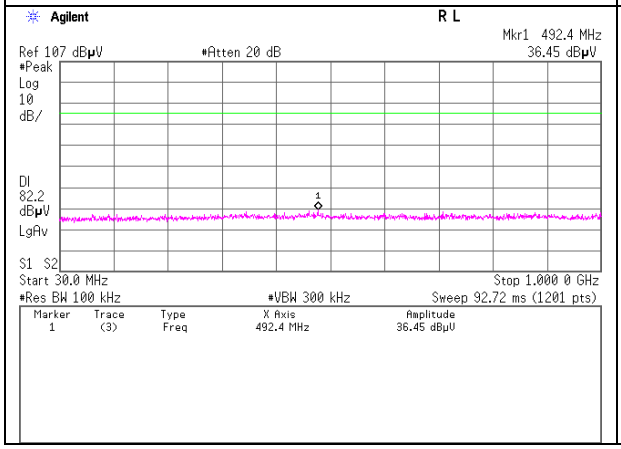
9kHz-150kHz



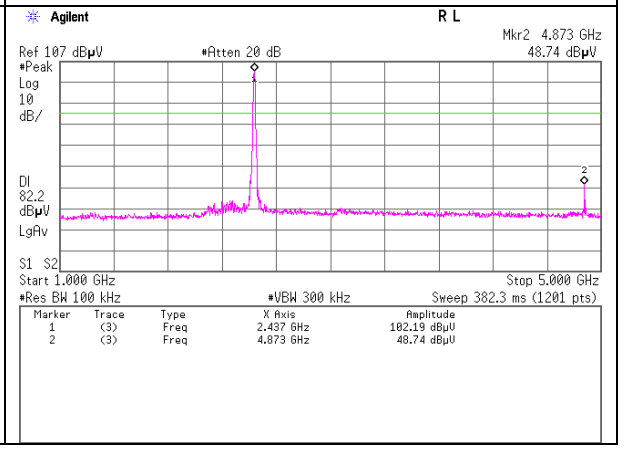
150kHz-30MHz



30MHz-1GHz



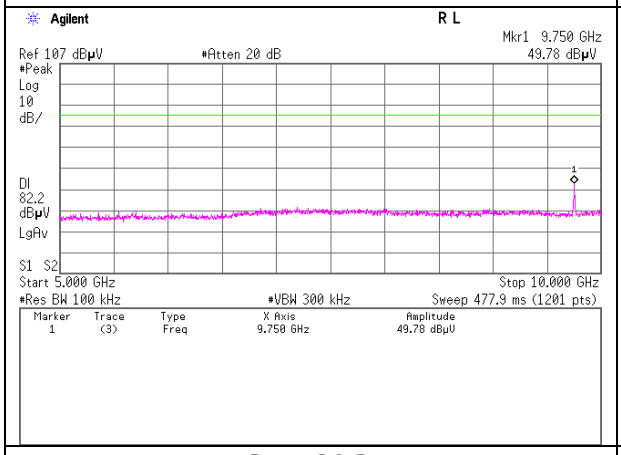
1GHz-5GHz



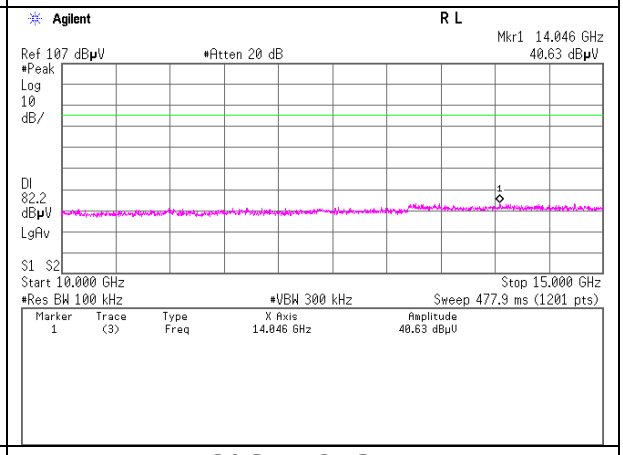
Conducted Spurious Emission

11b Tx 2437MHz

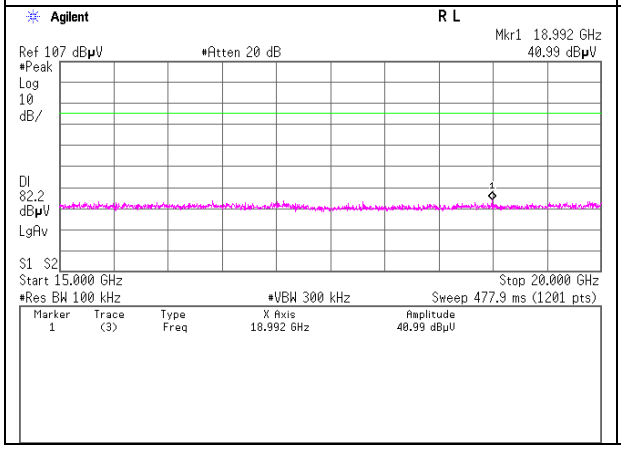
5GHz-10GHz



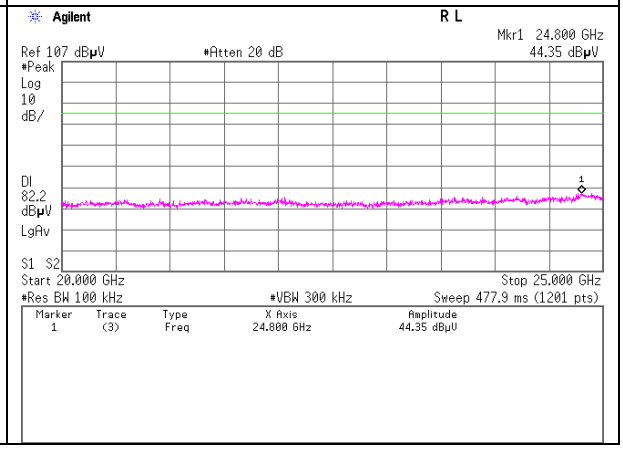
10GHz-15GHz



15GHz-20GHz



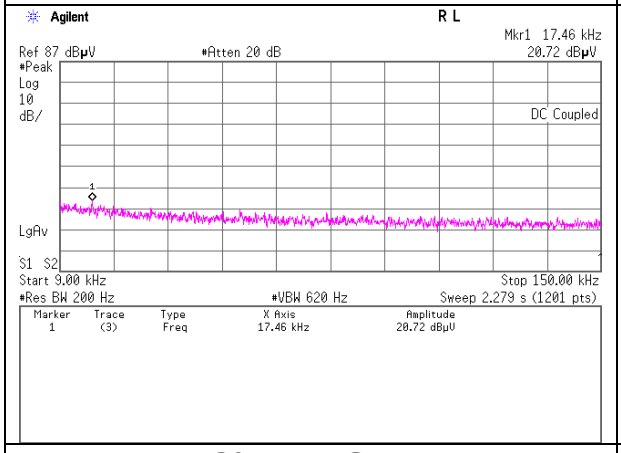
20GHz-25GHz



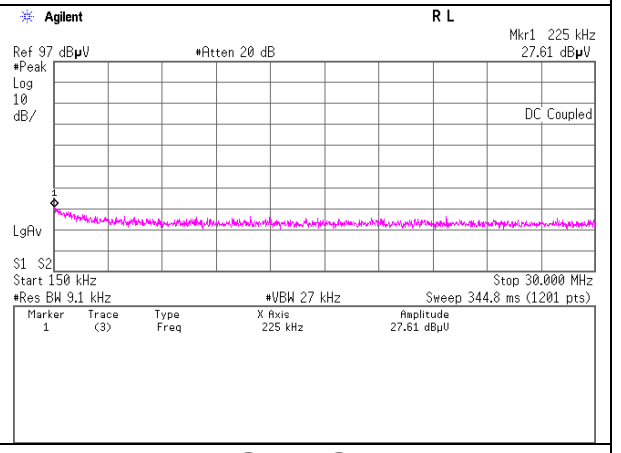
Conducted Spurious Emission

11b Tx 2462MHz

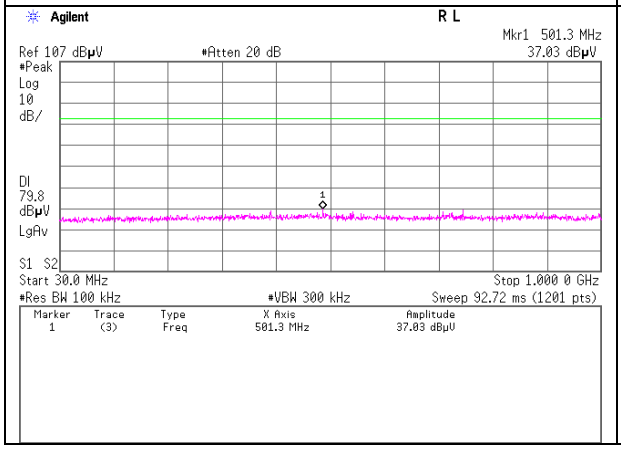
9kHz-150kHz



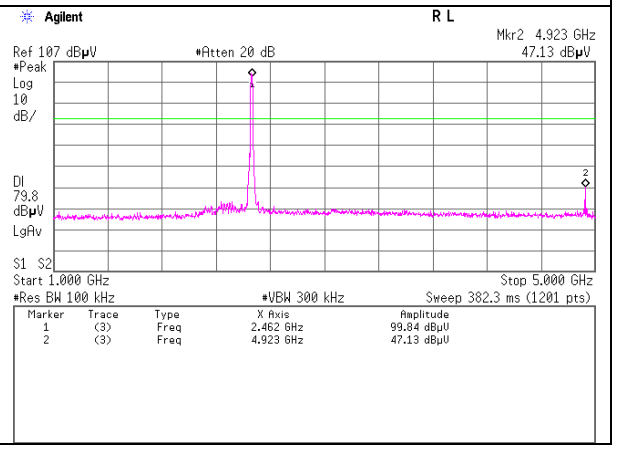
150kHz-30MHz



30MHz-1GHz



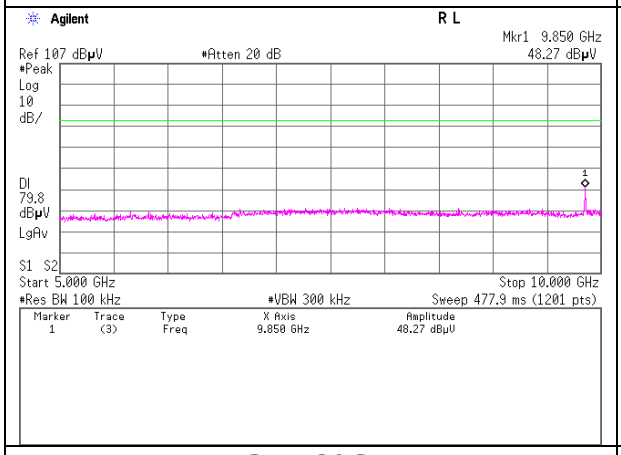
1GHz-5GHz



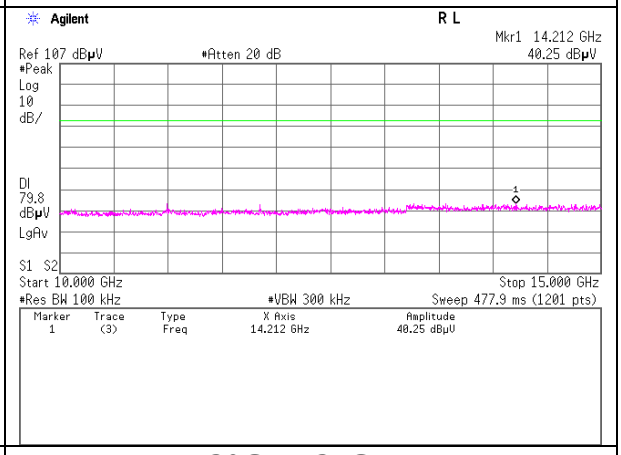
Conducted Spurious Emission

11b Tx 2462MHz

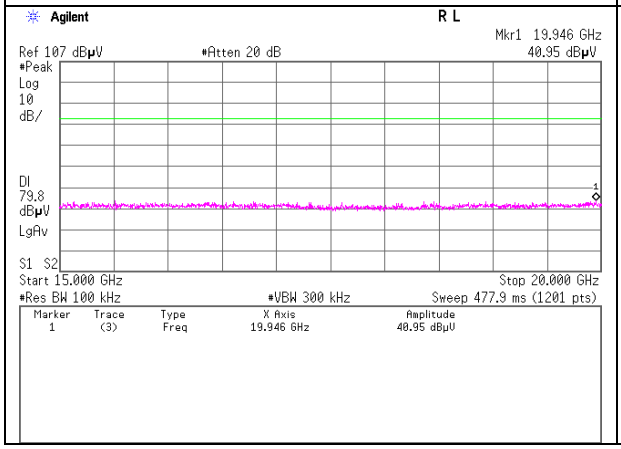
5GHz-10GHz



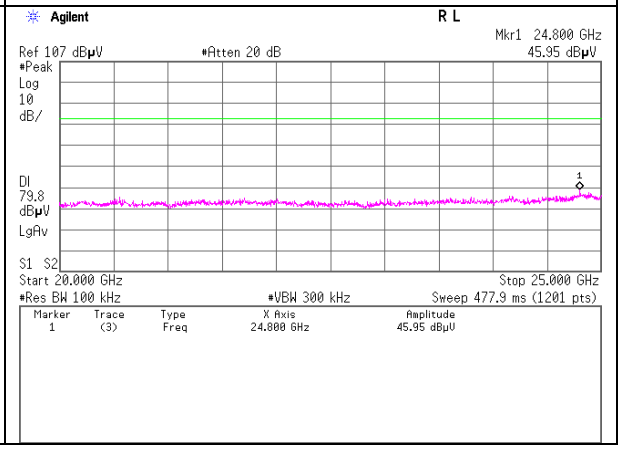
10GHz-15GHz



15GHz-20GHz



20GHz-25GHz



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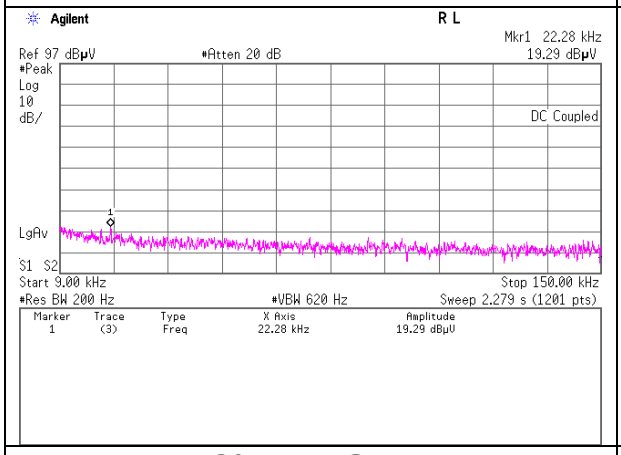
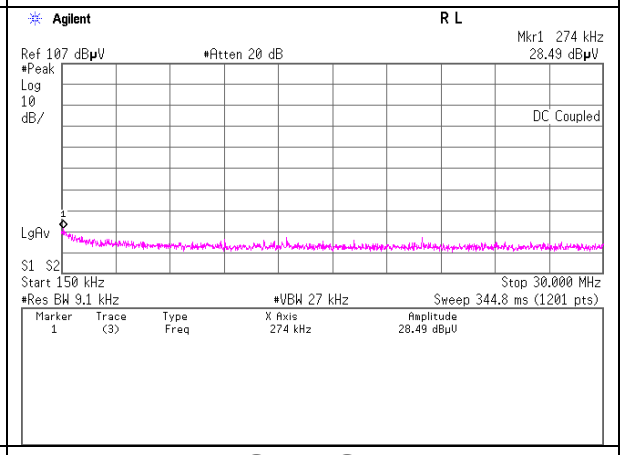
Conducted Spurious Emission

11g Tx 2412MHz

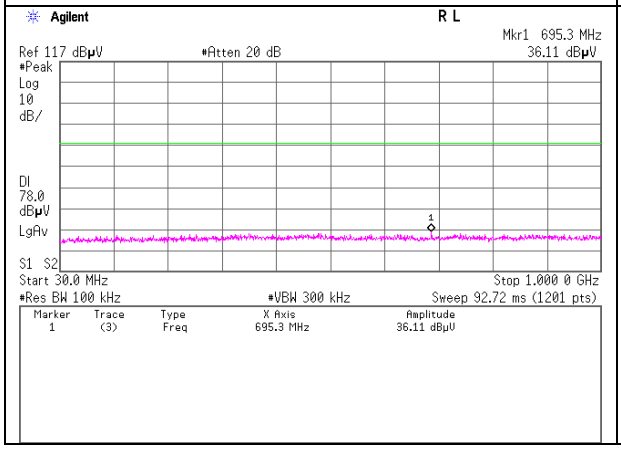
9kHz-150kHz



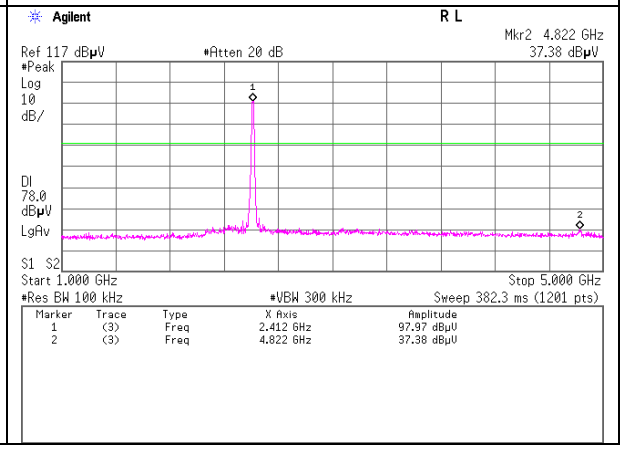
150kHz-30MHz



30MHz-1GHz



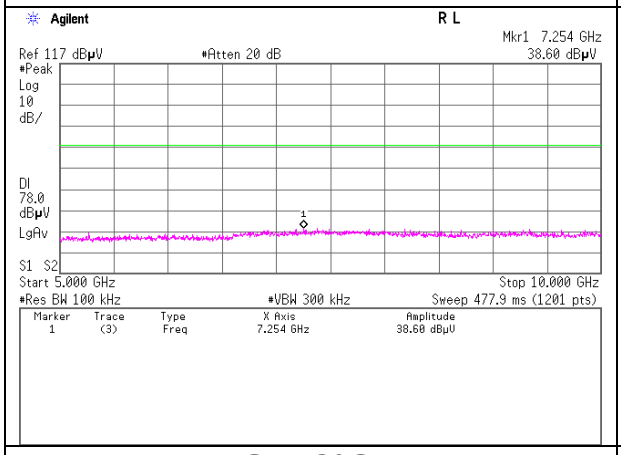
1GHz-5GHz



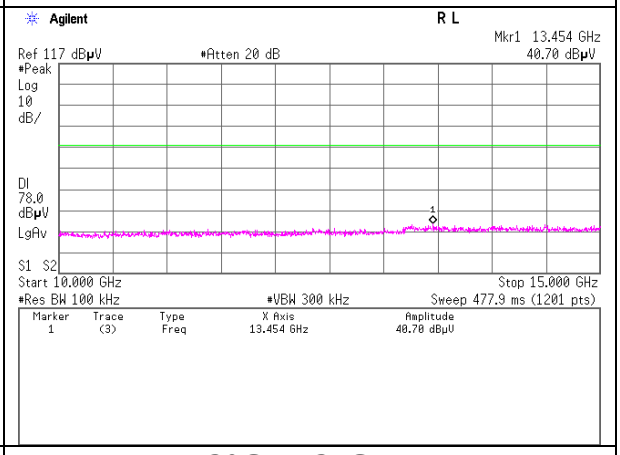
Conducted Spurious Emission

11g Tx 2412MHz

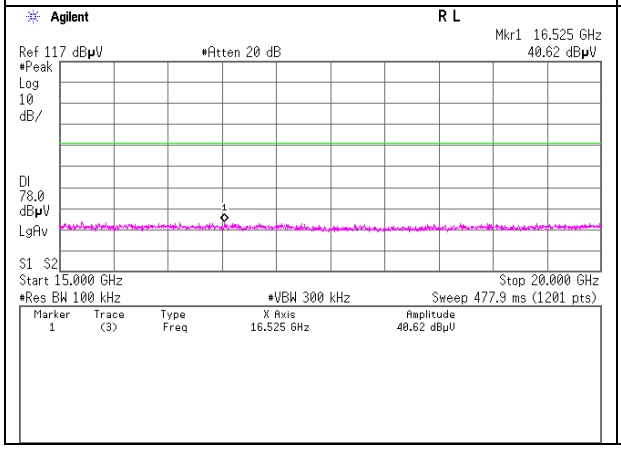
5GHz-10GHz



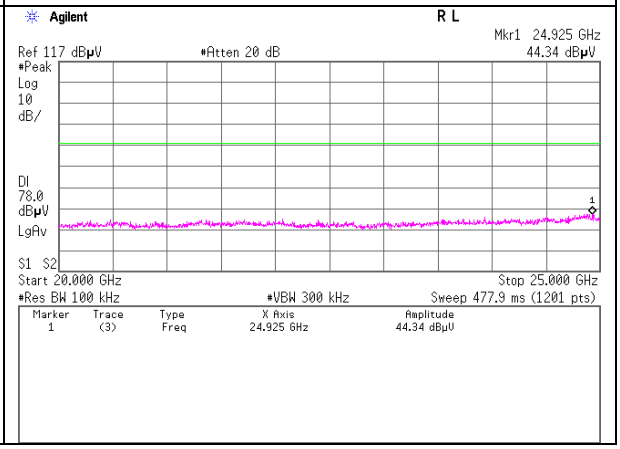
10GHz-15GHz



15GHz-20GHz



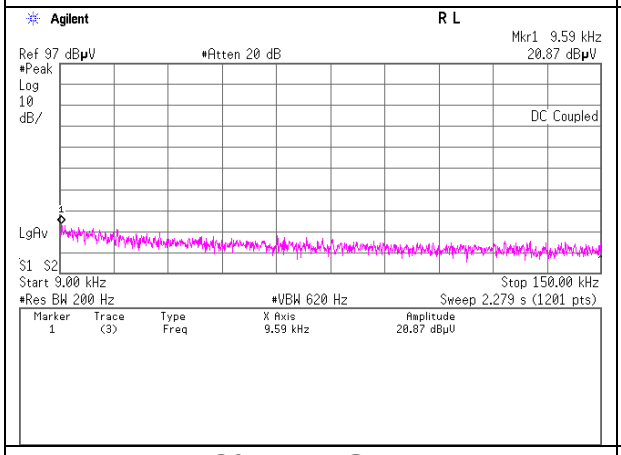
20GHz-25GHz



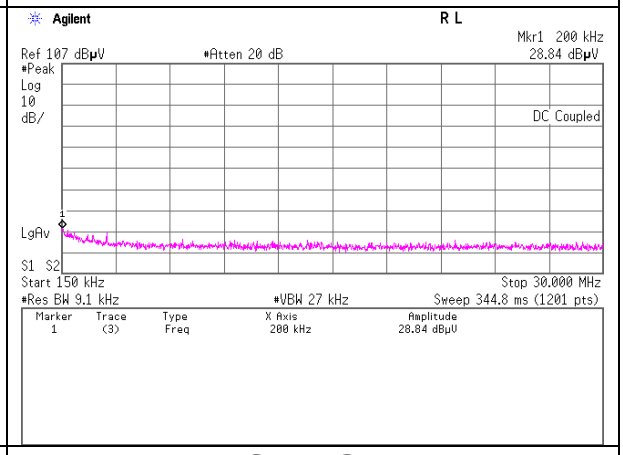
Conducted Spurious Emission

11g Tx 2437MHz

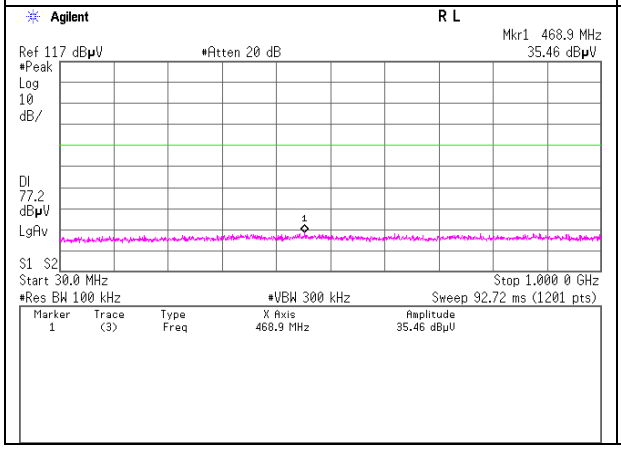
9kHz-150kHz



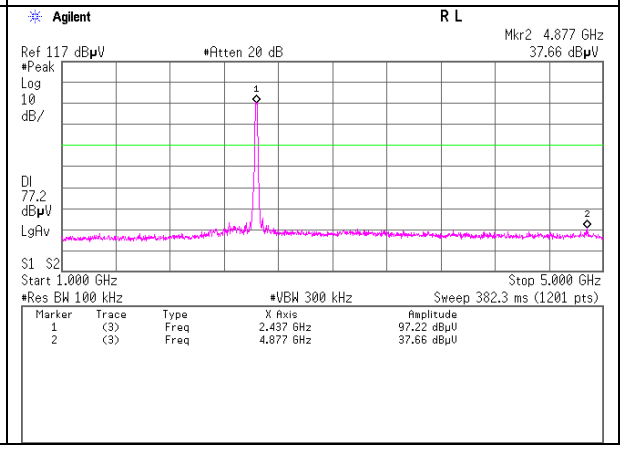
150kHz-30MHz



30MHz-1GHz



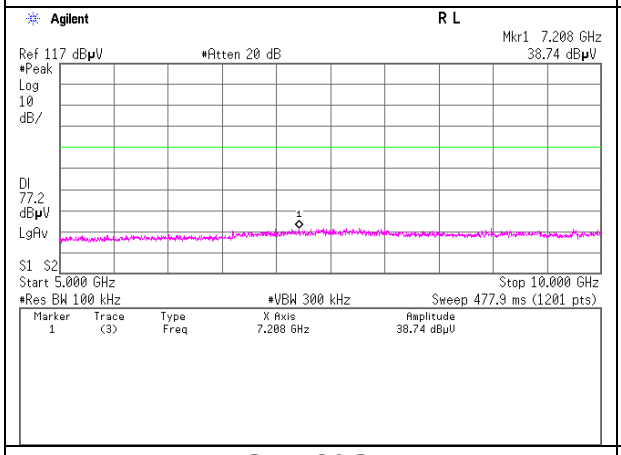
1GHz-5GHz



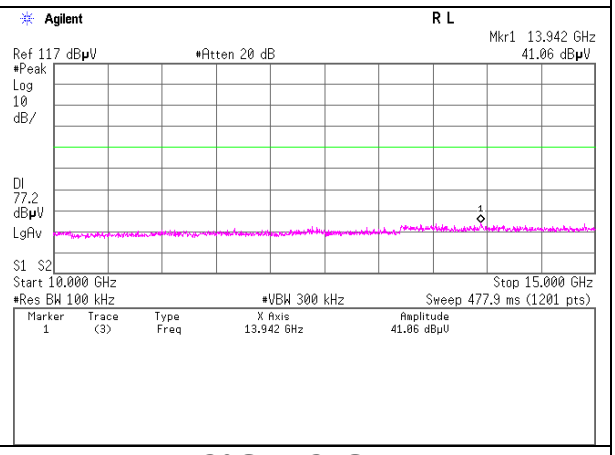
Conducted Spurious Emission

11g Tx 2437MHz

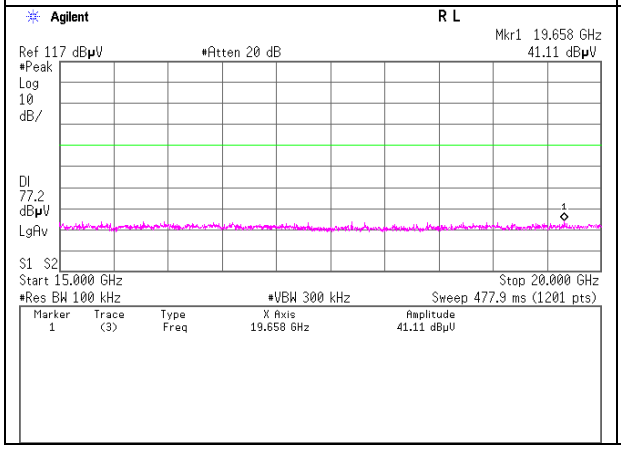
5GHz-10GHz



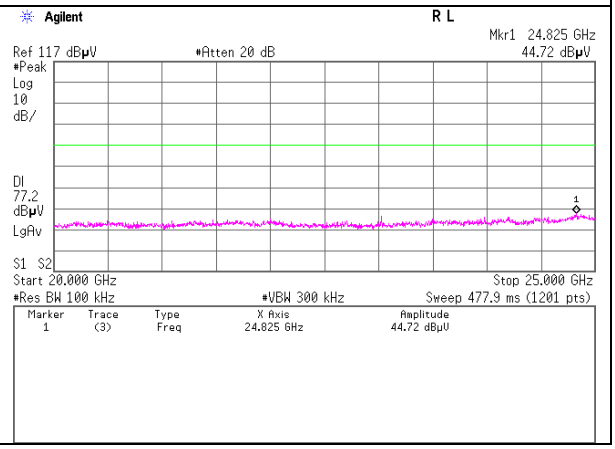
10GHz-15GHz



15GHz-20GHz



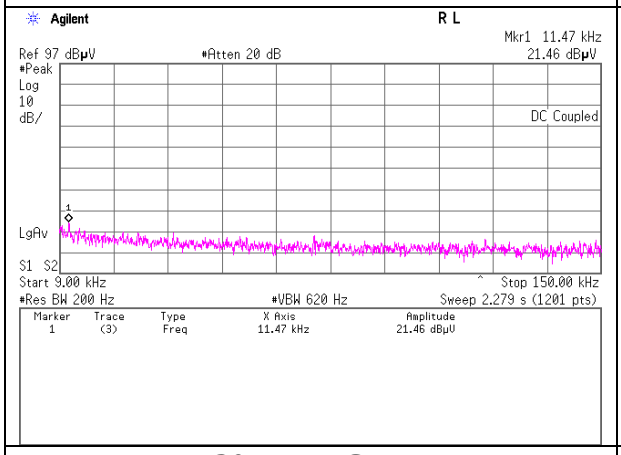
20GHz-25GHz



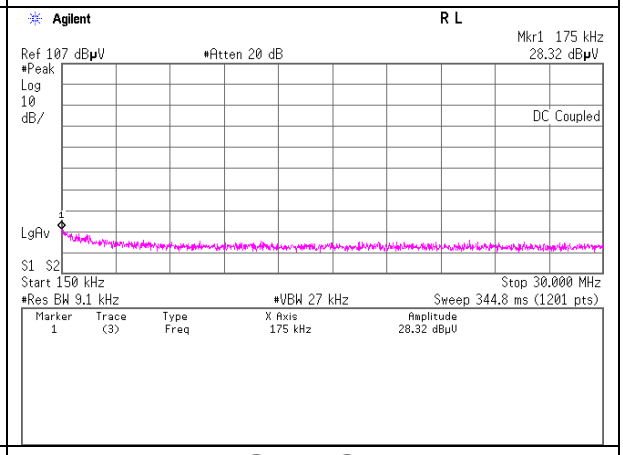
Conducted Spurious Emission

11g Tx 2462MHz

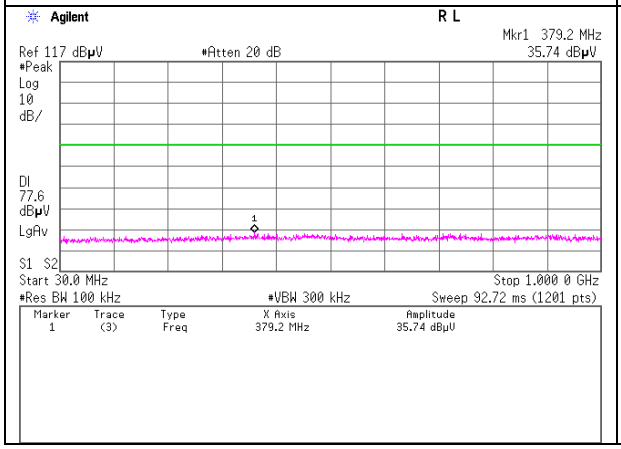
9kHz-150kHz



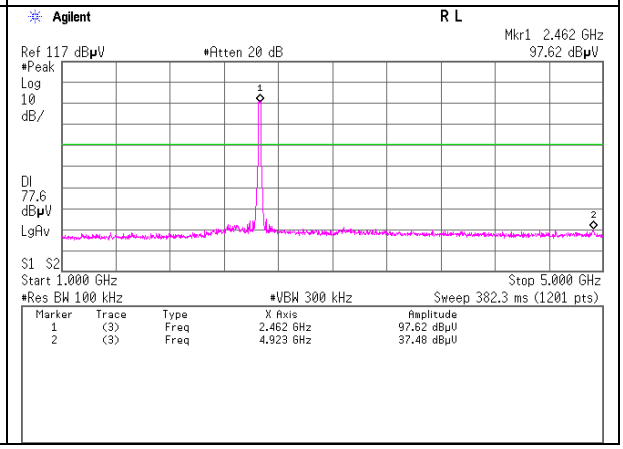
150kHz-30MHz



30MHz-1GHz



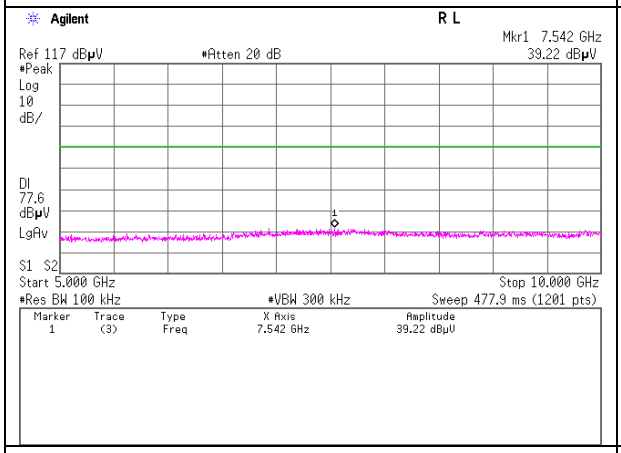
1GHz-5GHz



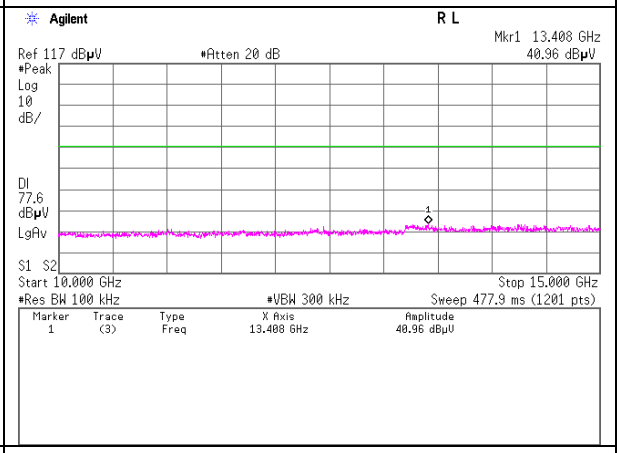
Conducted Spurious Emission

11g Tx 2462MHz

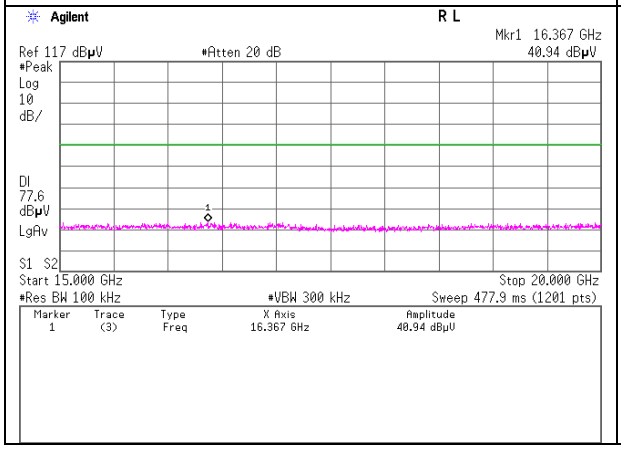
5GHz-10GHz



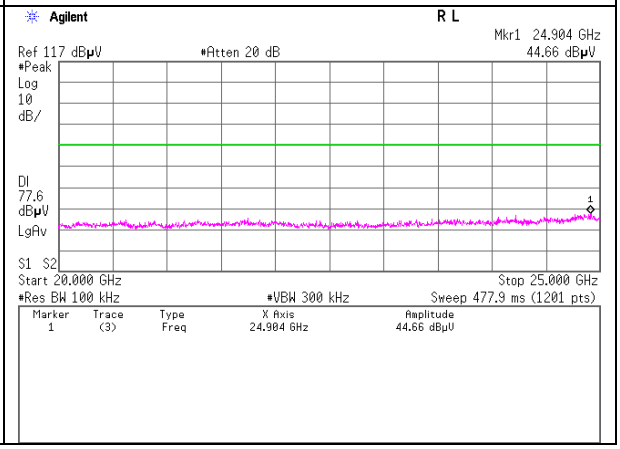
10GHz-15GHz



15GHz-20GHz



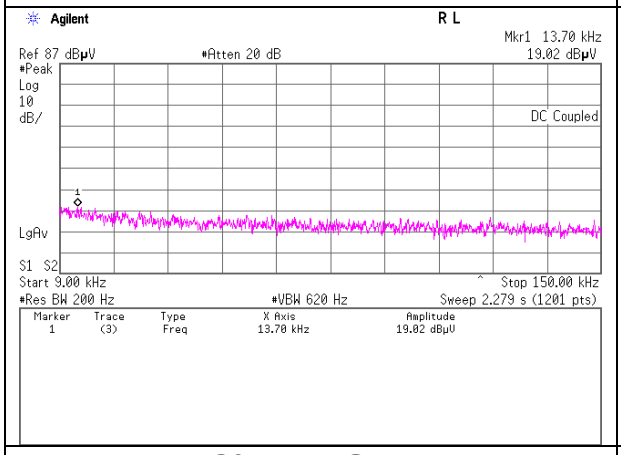
20GHz-25GHz



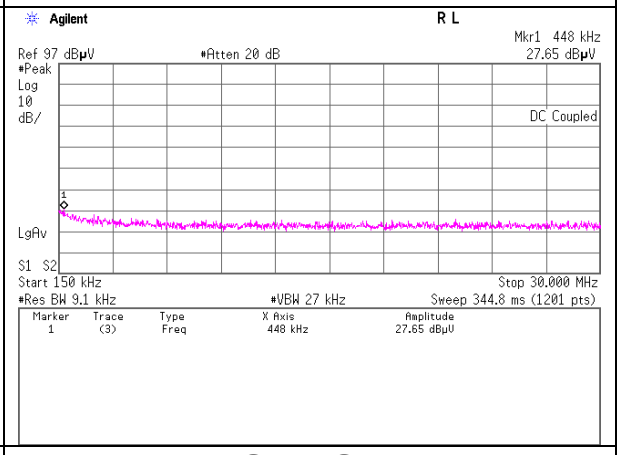
Conducted Spurious Emission

11n-20 Tx 2412MHz

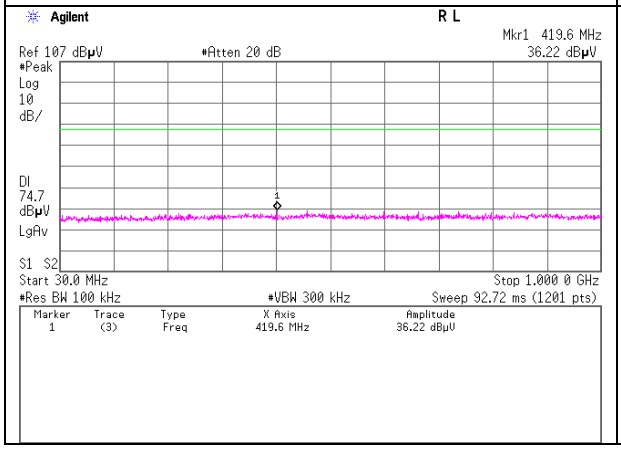
9kHz-150kHz



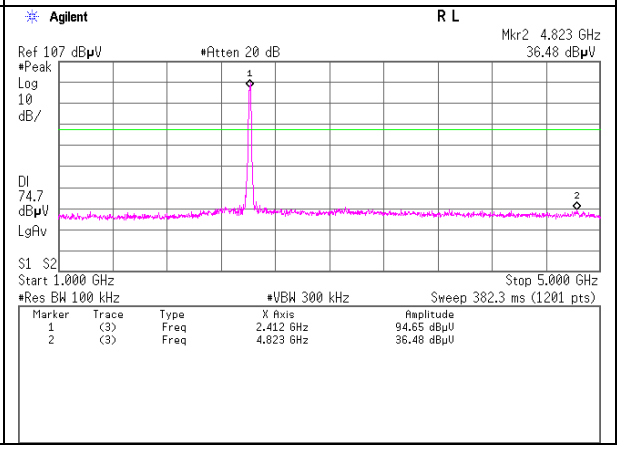
150kHz-30MHz



30MHz-1GHz



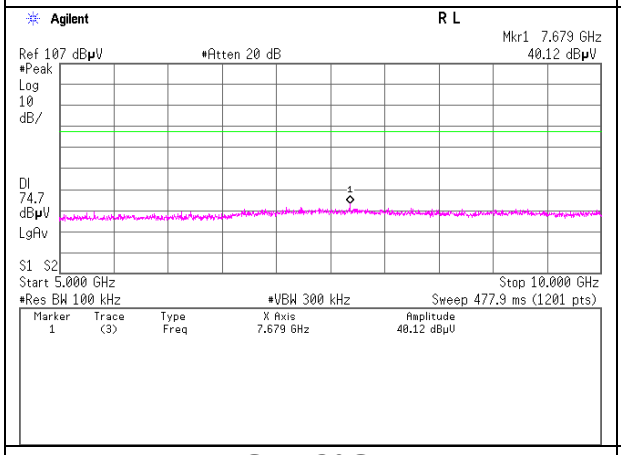
1GHz-5GHz



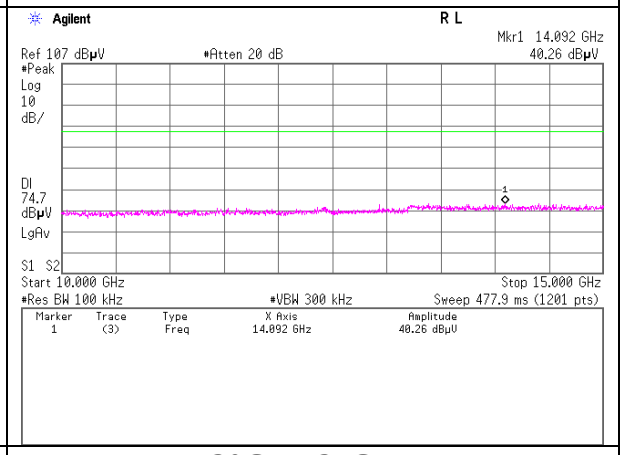
Conducted Spurious Emission

11n-20 Tx 2412MHz

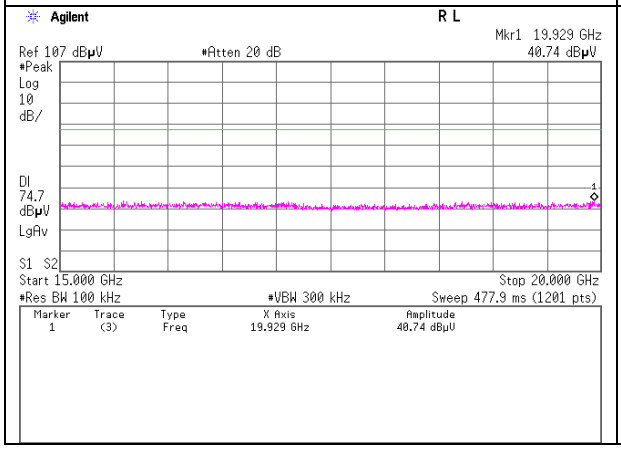
5GHz-10GHz



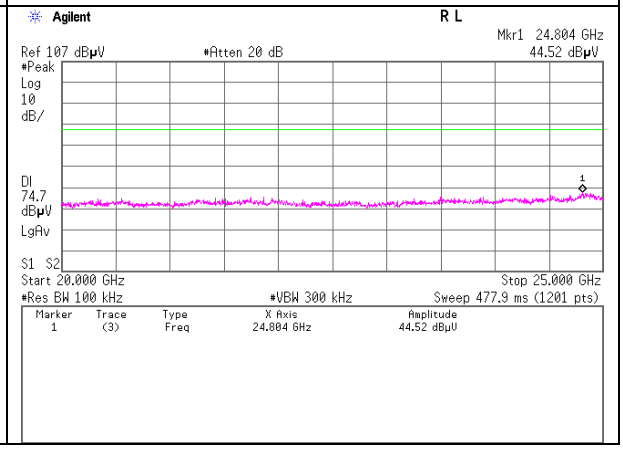
10GHz-15GHz



15GHz-20GHz



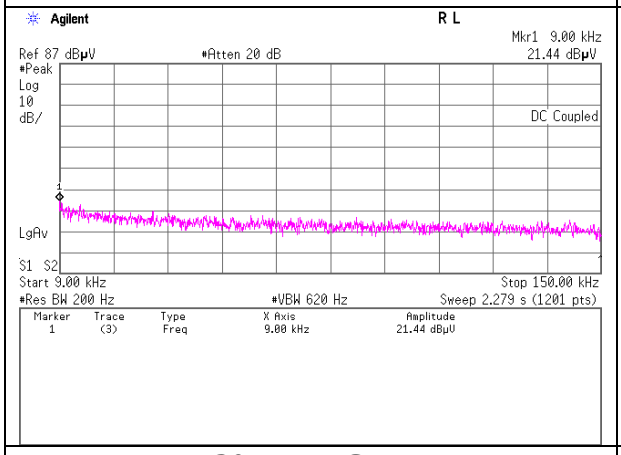
20GHz-25GHz



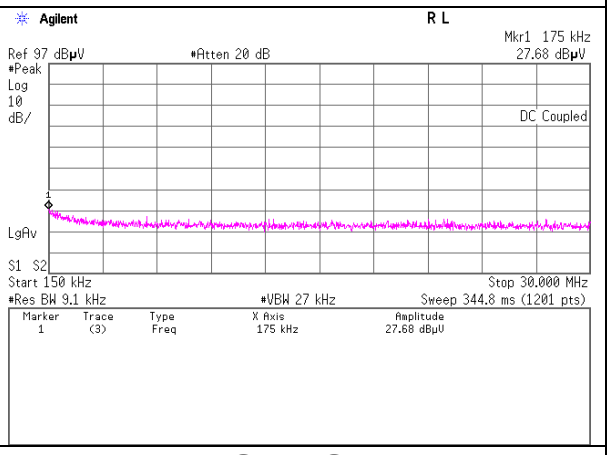
Conducted Spurious Emission

11n-20 Tx 2437MHz

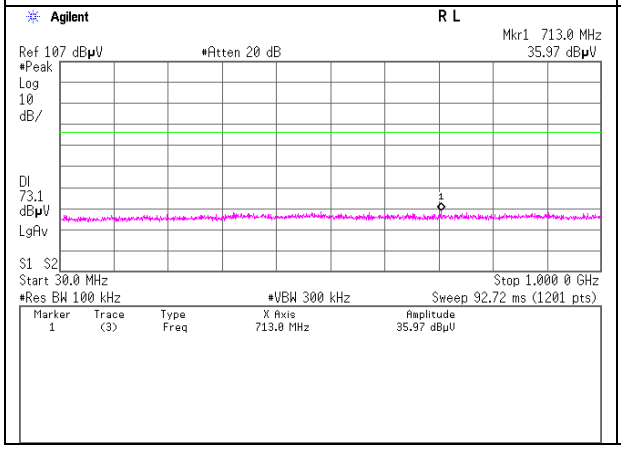
9kHz-150kHz



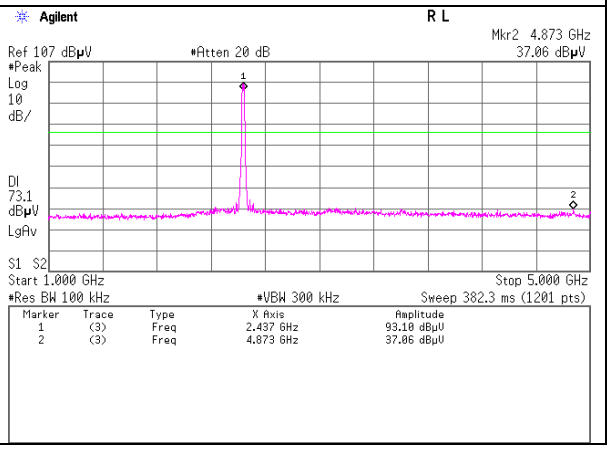
150kHz-30MHz



30MHz-1GHz



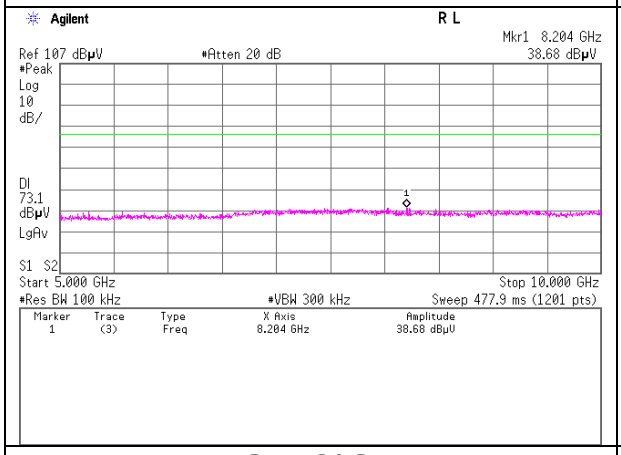
1GHz-5GHz



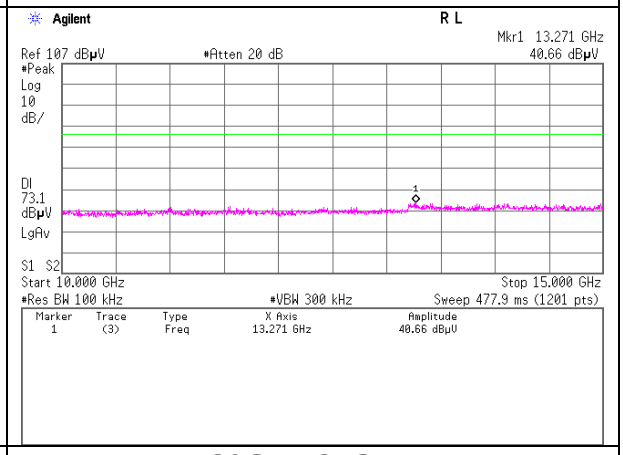
Conducted Spurious Emission

11n-20 Tx 2437MHz

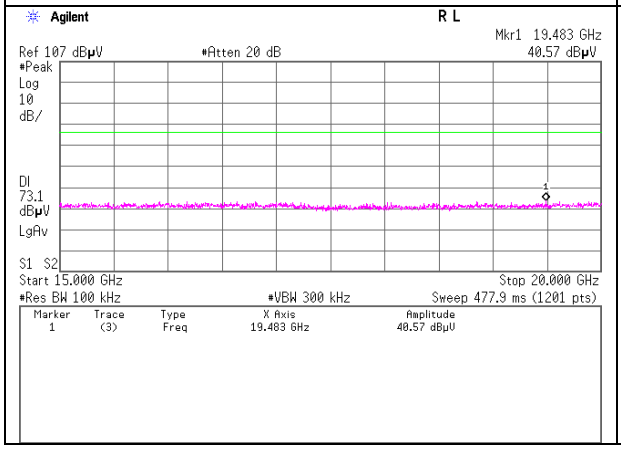
5GHz-10GHz



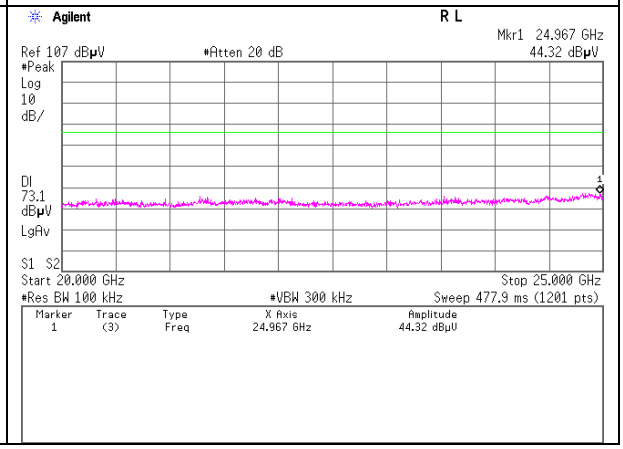
10GHz-15GHz



15GHz-20GHz



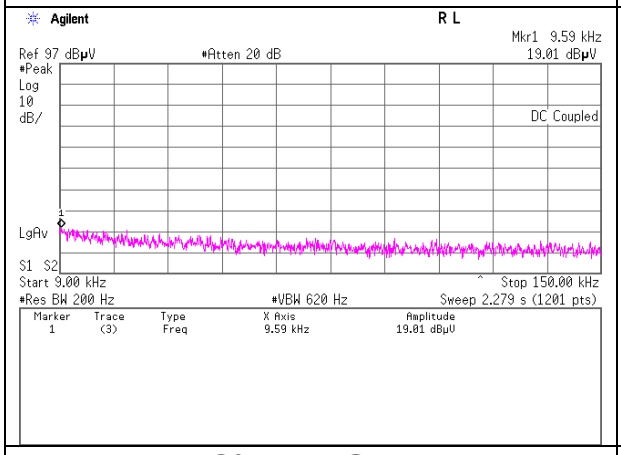
20GHz-25GHz



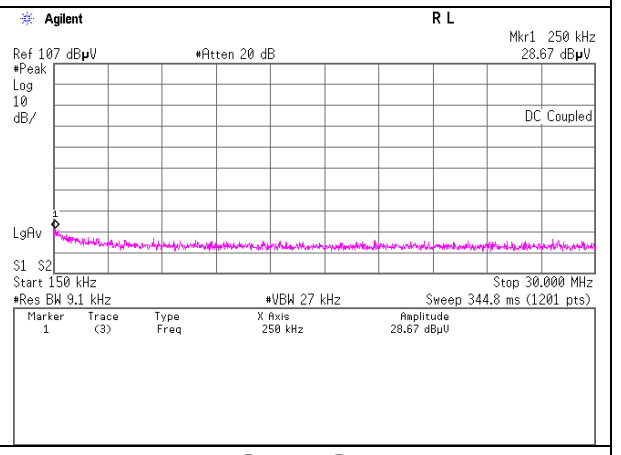
Conducted Spurious Emission

11n-20 Tx 2462MHz

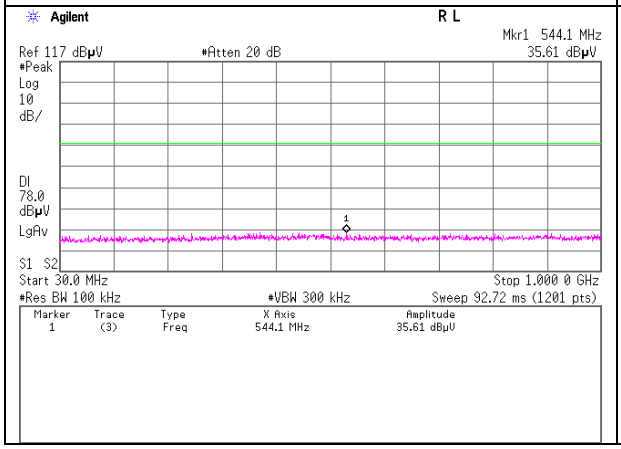
9kHz-150kHz



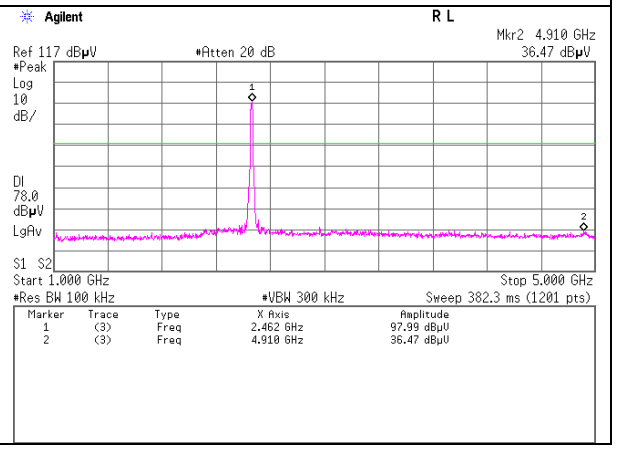
150kHz-30MHz



30MHz-1GHz



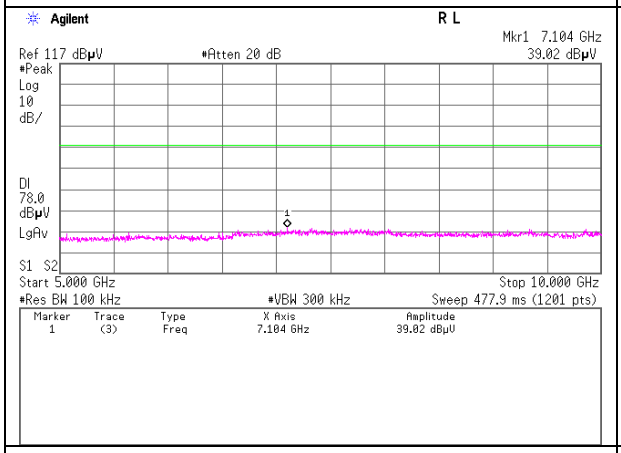
1GHz-5GHz



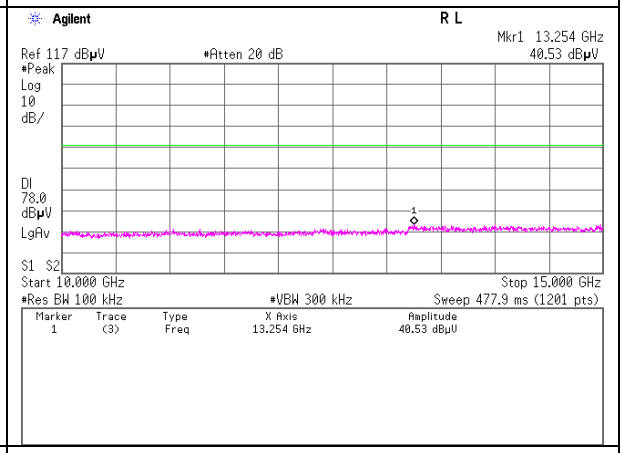
Conducted Spurious Emission

11n-20 Tx 2462MHz

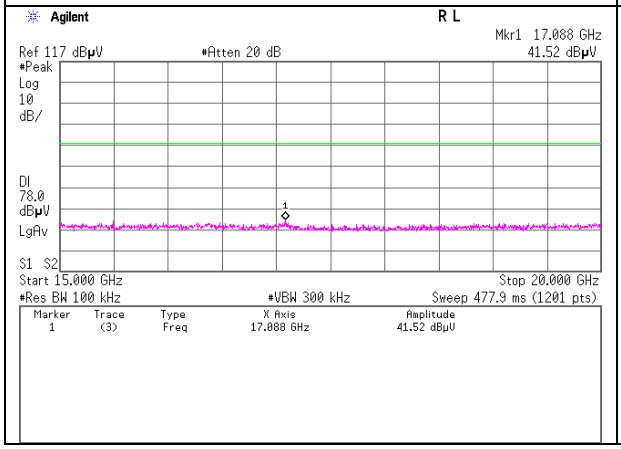
5GHz-10GHz



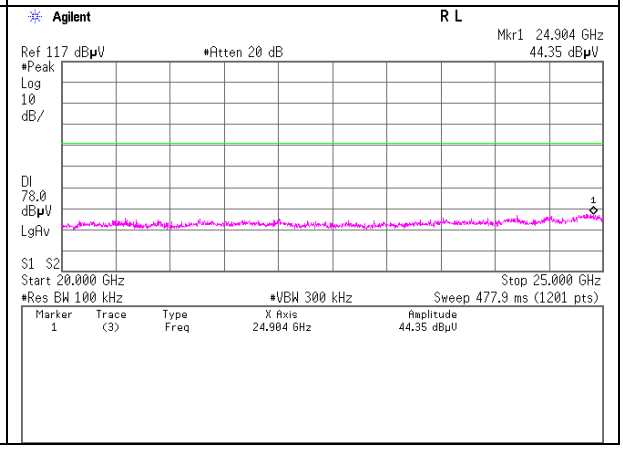
10GHz-15GHz



15GHz-20GHz



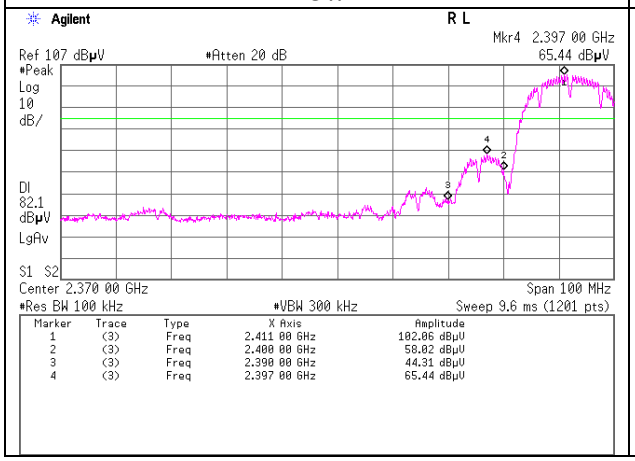
20GHz-25GHz



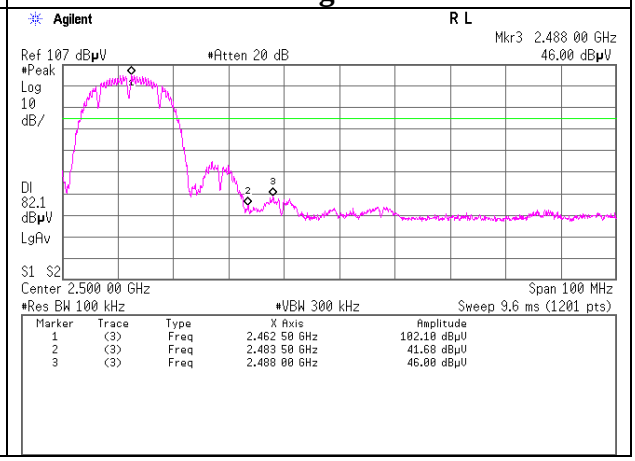
Conducted Emission Band Edge compliance

11b Tx

Low

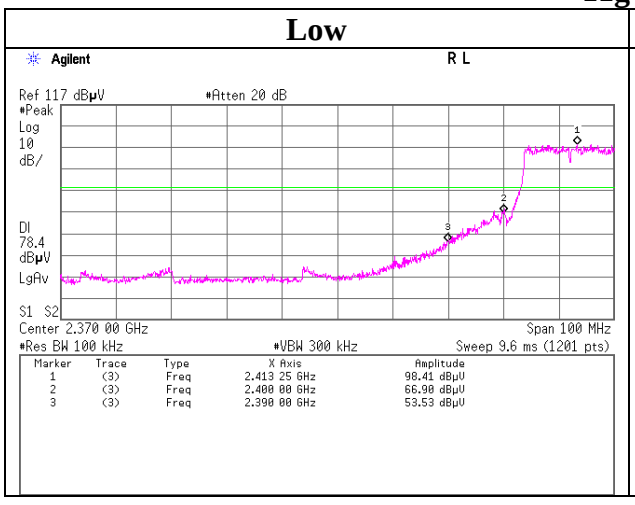


High

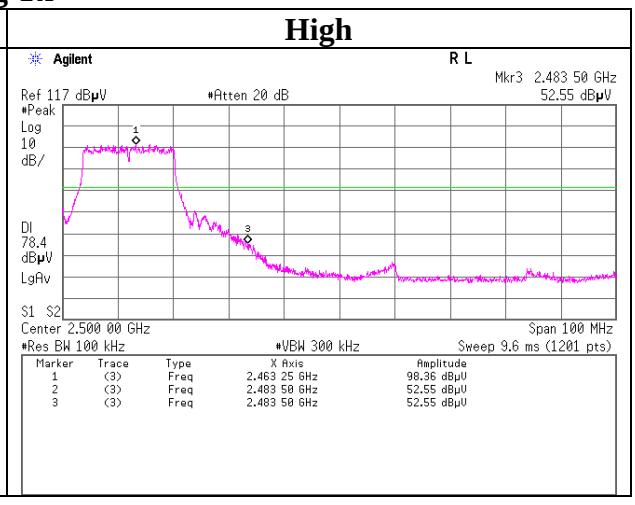


11g Tx

Low

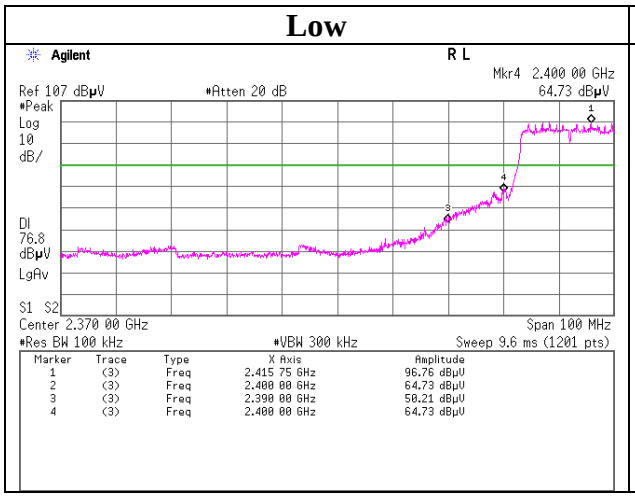


High

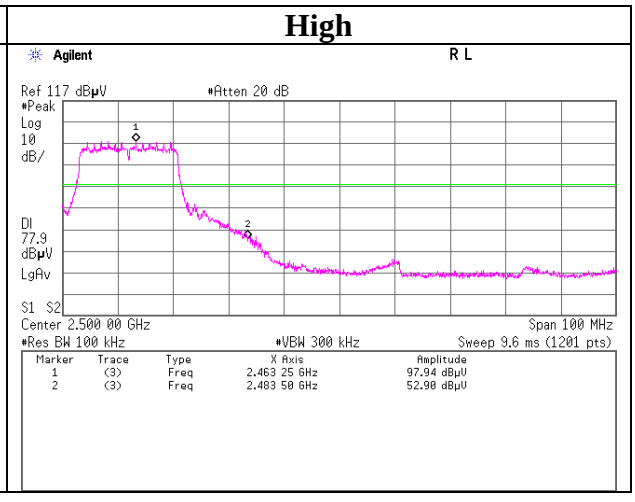


11n-20 Tx

Low



High



Power Density

Test place	Head Office EMC Lab. No.6 Measurement Room
Report No.	32CE0047-HO-02
Date	11/18/2011
Temperature/ Humidity	21 deg. C / 49% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx, 11g Tx, 11n-20 Tx

11b Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-6.99	1.58	9.96	4.55	8.00	3.45
2437.00	-5.79	1.59	9.96	5.76	8.00	2.24
2462.00	-7.10	1.60	9.96	4.46	8.00	3.54

11g Antenna 2

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-12.40	1.58	9.96	-0.86	8.00	8.86
2437.00	-12.09	1.59	9.96	-0.54	8.00	8.54
2462.00	-12.50	1.60	9.96	-0.94	8.00	8.94

11n-20 Antenna 2

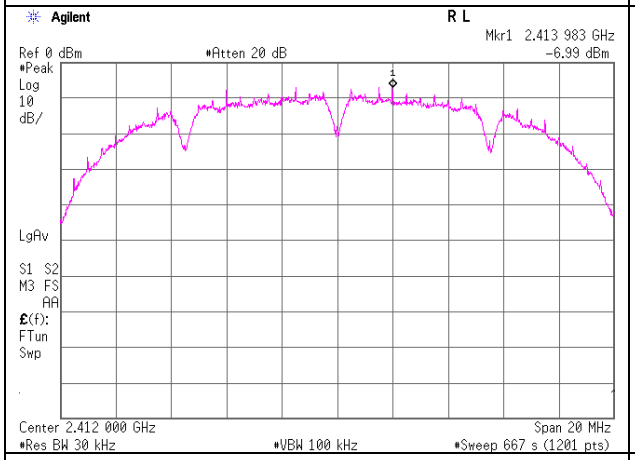
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-14.19	1.58	9.96	-2.65	8.00	10.65
2437.00	-14.25	1.59	9.96	-2.70	8.00	10.70
2462.00	-12.89	1.60	9.96	-1.33	8.00	9.33

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

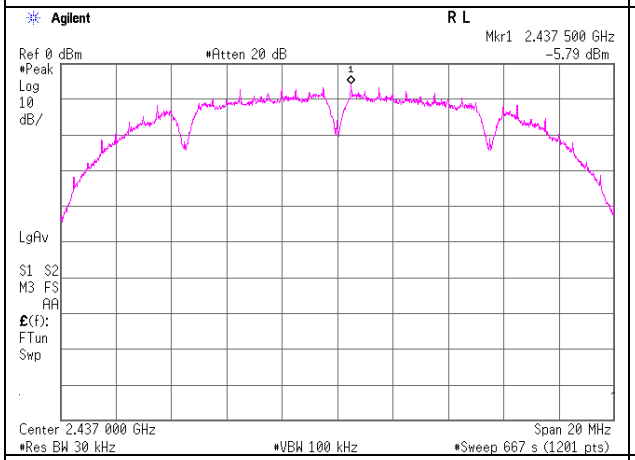
Power Density

11b

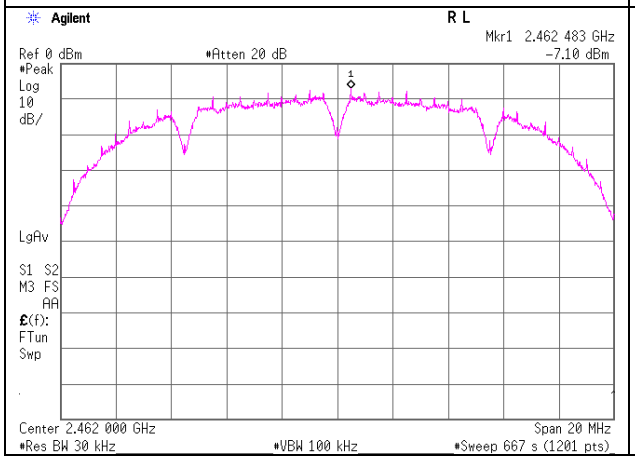
2412MHz



2437MHz

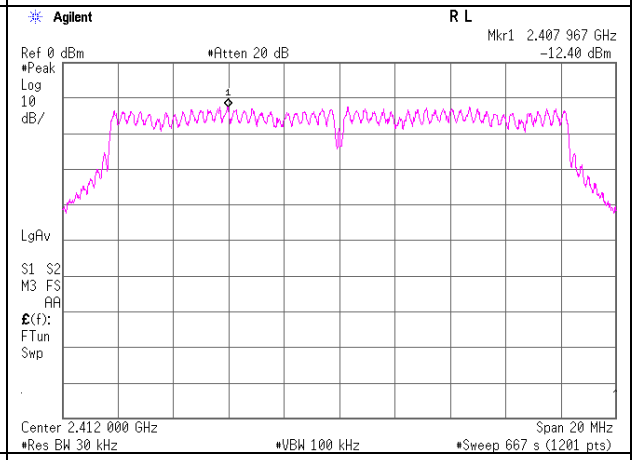


2462MHz

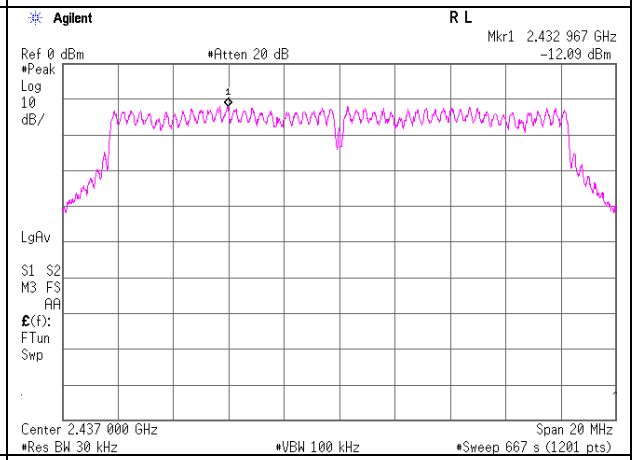


11g

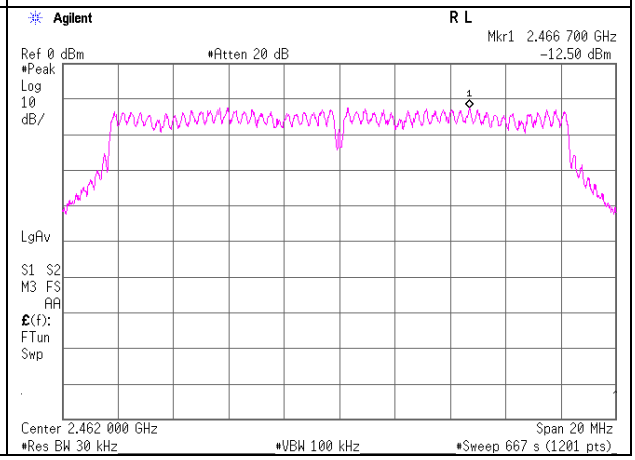
2412MHz



2437MHz



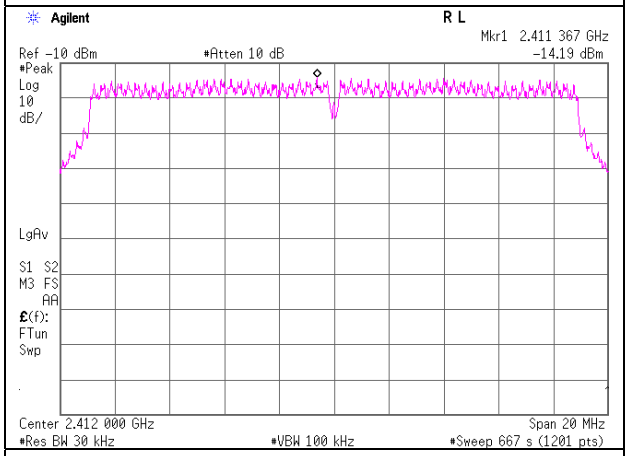
2462MHz



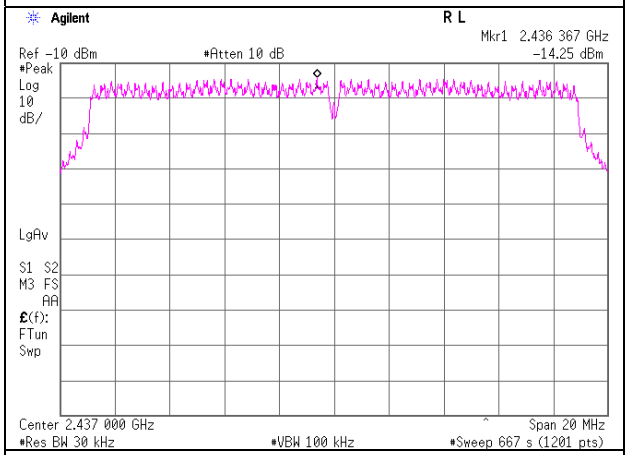
Power Density

11n-20

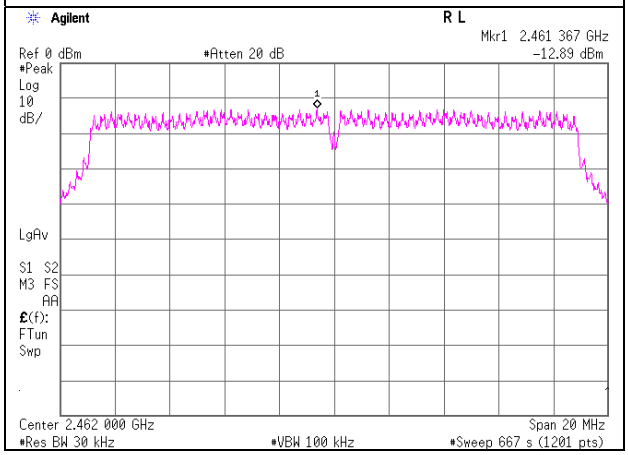
2412MHz



2437MHz



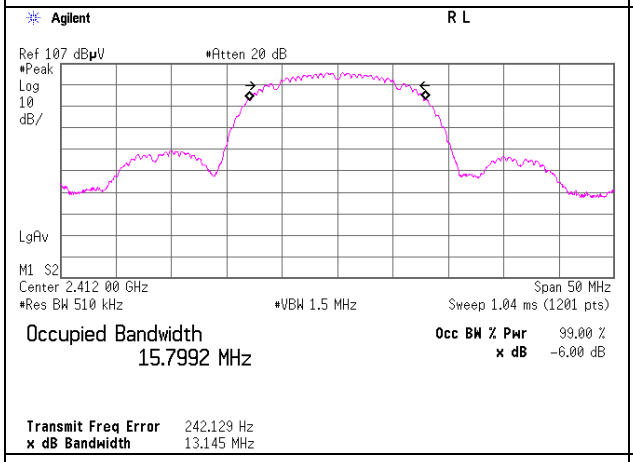
2462MHz



99%Occupied Bandwidth

11b

2412MHz



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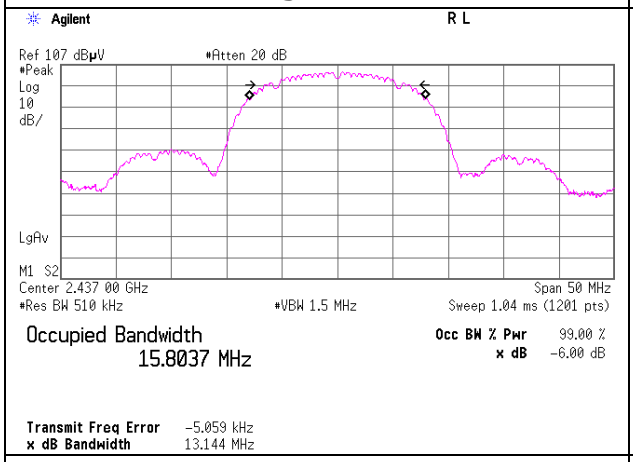

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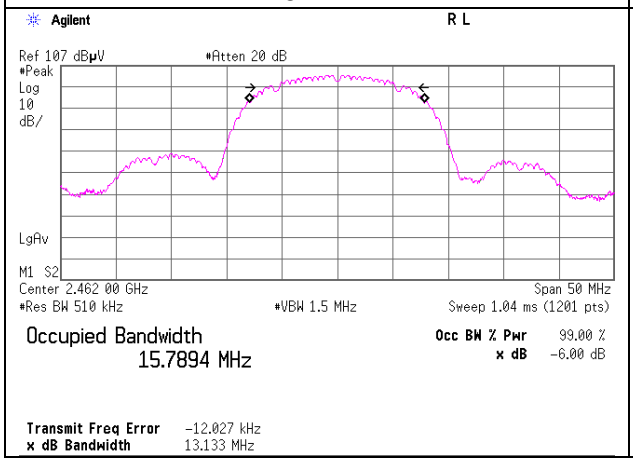
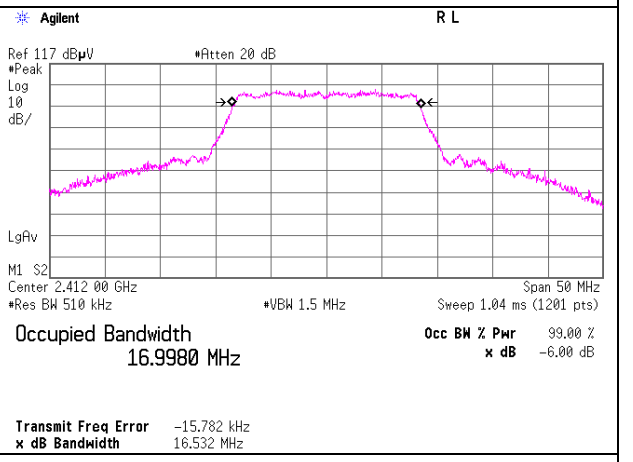


11g

2412MHz



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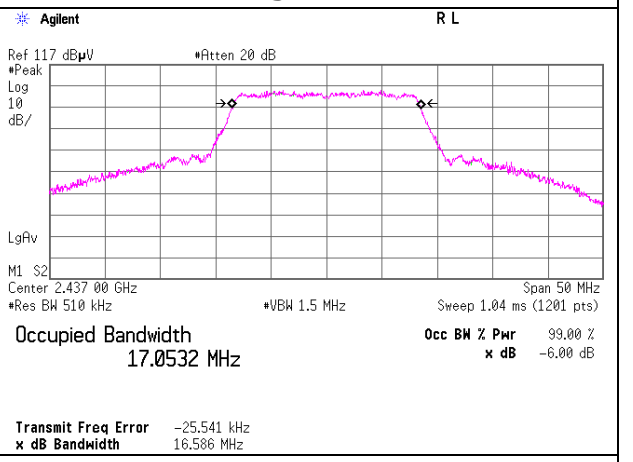

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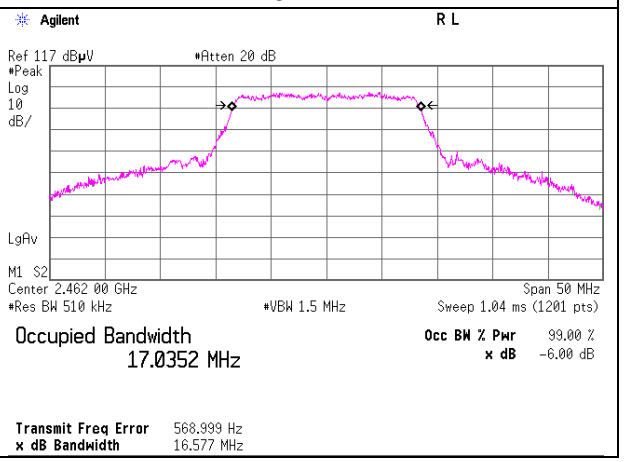
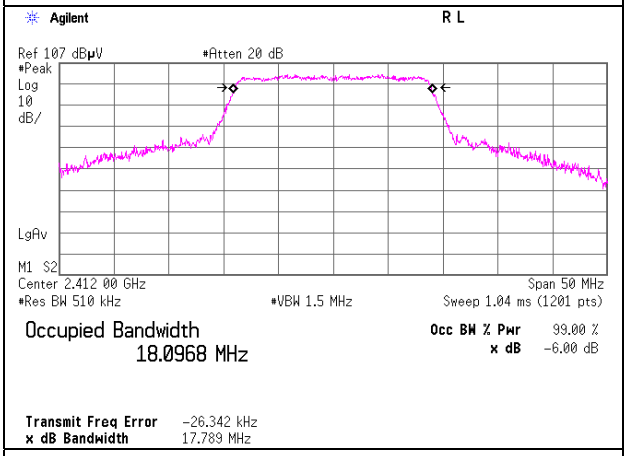


99% Occupied Bandwidth

11n-20

2412MHz



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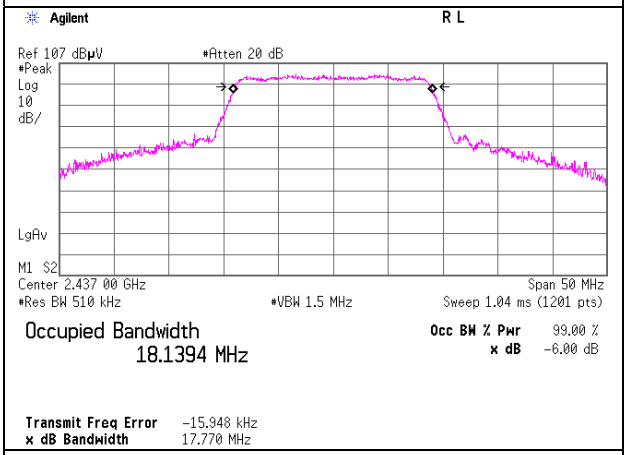

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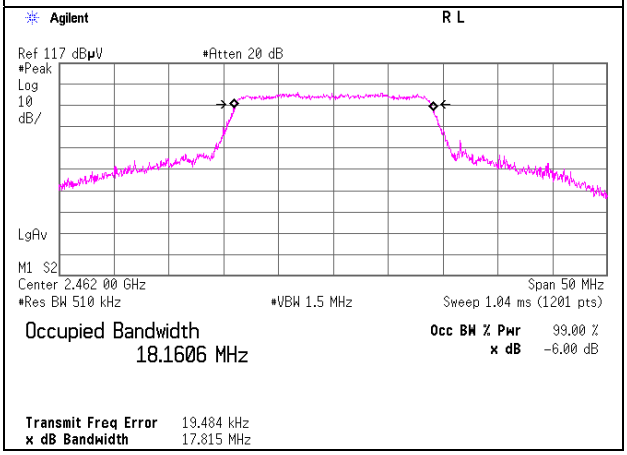

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2011/06/21 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2011/02/23 * 12
MJM-14	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2011/06/30 * 12
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2011/01/16 * 12
AF-06	Pre Amplifier	Agilent	HP8449B	3008A01672	RE	2011/12/06 * 12
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2011/09/06 * 12
MHF-06	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	RE	2011/05/16 * 12
MHA-17	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170307	RE	2011/06/17 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE/CE	2011/02/22 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	-	RE/CE	2011/02/23 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE/CE	
MSA-05	Spectrum Analyzer	Advantest	R3273	160400285	RE/CE	2011/11/23 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE/CE	2011/08/11 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2011/10/15 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2011/10/15 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2011/07/15 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2011/11/02 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2011/03/04 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2011/02/20 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2011/02/22 * 12
MTA-31	Terminator	TME	CT-01	-	CE	2012/01/11 * 12
MCC-112	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W(10m)/SFM141(3m)/sucoform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher)	-/00640	CE	2011/07/15 * 12
MAT-66	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2011/02/22 * 12

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data 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: CE: Conducted Emission
RE: Radiated Emission
AT: Antenna Terminal Conducted test