



RADIO TEST REPORT

Test Report No. : 32CE0047-HO-06-A

Applicant : Panasonic Corporation of North America
Type of Equipment : Network Camera
Model No. : BL-VP104W
FCC ID : ACJ96NBL-VP104W
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.

Date of test: February 15 to 25, 2012

Representative test engineer:

S. Matsuyama

Satofumi Matsuyama
Engineer of WiSE Japan,
UL Verification Service

Approved by:

M. Nishiyama

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.
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<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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13-EM-F0429

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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. : BL-VP104W
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC6.5V
AC Adaptor:100-120V, 0.1A, 60Hz
Receipt Date of Sample : February 15, 2012
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 the 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: DC6.5V 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: dipole antenna (pattern antenna)
Ant 2: dipole antenna (pattern antenna)
Antenna Gain : Ant 1: 2.1dBi
Ant 2: 2.1dBi

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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

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 ----- IC: RSS-Gen 7.2.4	FCC: Section 15.207 ----- IC: RSS-Gen 7.2.4	QP 13.9dB, 0.34950MHz, N AV 12.2dB, 0.34950MHz, N	Complied	-
6dB Bandwidth	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" ----- IC: RSS-Gen 4.6.2	FCC: Section 15.247(a)(2) ----- IC: RSS-210 A8.2(a)	See data.	Complied	Conducted
Maximum Peak Output Power	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" ----- IC: RSS-Gen 4.8	FCC: Section 15.247(b)(3) ----- IC: RSS-210 A8.4(4)		Complied	Conducted
Power Density	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" ----- IC: -	FCC: Section 15.247 (e) ----- IC: RSS-210 A8.2(b)		Complied	Conducted
Spurious Emission Restricted Band Edges	FCC: "Guidance on Measurement of Digital Transmission Systems Operating under Section15.247" ----- IC: RSS-Gen 4.9	FCC: Section15.247(d) ----- IC: RSS-210 A8.5 RSS-Gen 7.2.3	6.6dB 9748.000MHz, AV, Vert.	Complied	Conducted/ Radiated

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

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

FCC 15.31 (e)

This EUT provides stable voltage (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	4.7dB	5.7dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	4.8dB	5.6dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	4.8dB	5.6dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	4.8dB	5.6dB	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(3m)

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

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3.5 Test Location

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	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: 1Mbps, PN9 ANT2: 11Mbps, PN9
IEEE 802.11g (11g)	ANT1: 6Mbps, PN9 ANT2: 6Mbps, PN9
IEEE 802.11n SISO 20MHz BW (11n-20)	ANT1: MCS0 (Long GI, 0 Streams), PN9 ANT2: MCS0 (Long GI, 0 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	ANT1 *1)	2412MHz 2437MHz 2462MHz
Maximum Peak Output Power	11b Tx 11g Tx 11n-20 Tx	ANT1 ANT2	2412MHz 2437MHz 2462MHz
Spurious Emission (Radiated)	11b Tx 11g Tx 11n-20 Tx	ANT2 *2)	2412MHz 2437MHz 2462MHz
Spurious Emission (Conducted)	11b Tx 11g Tx 11n-20 Tx	ANT1 *1)	2412MHz 2437MHz 2462MHz
*1) The test was performed with Antenna port 1 since Antenna port 1 had worst condition at antenna terminal test. *2) The test was performed with Antenna 2 since Antenna 2 had worst condition at Radiated emission test.			

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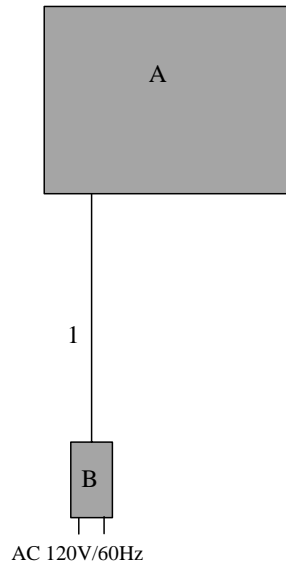
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4.2 Configuration and peripherals



* 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	BL-VP104W	002 *1) 003 *2)	Panasonic System Networks Co., Ltd.	EUT
B	AC Adaptor	PQLV219	11352RBY	Panasonic System Networks Co., Ltd.	EUT

*1) Used for Conducted emission and Radiated emission tests

*2) Used for Antenna Terminal Conducted tests

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.8	Unshielded	Unshielded	-

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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

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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, 1.0m by 1.5m, 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	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Biconical	Logperiodic	Horn

In any 100kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

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

Frequency	Below 1GHz	Above 1GHz		20dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120kHz(T/R)	RBW: 1MHz VBW: 3MHz	RBW: 1MHz VBW: 10Hz *1)	RBW: 100kHz VBW: 300kHz (S/A)
Test Distance	3m	3m (below 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: $20 \times \log(3.0\text{m}/1.0\text{m}) = 9.5\text{dB}$

- 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

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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	18MHz, 20MHz	30kHz	100kHz	600sec, 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

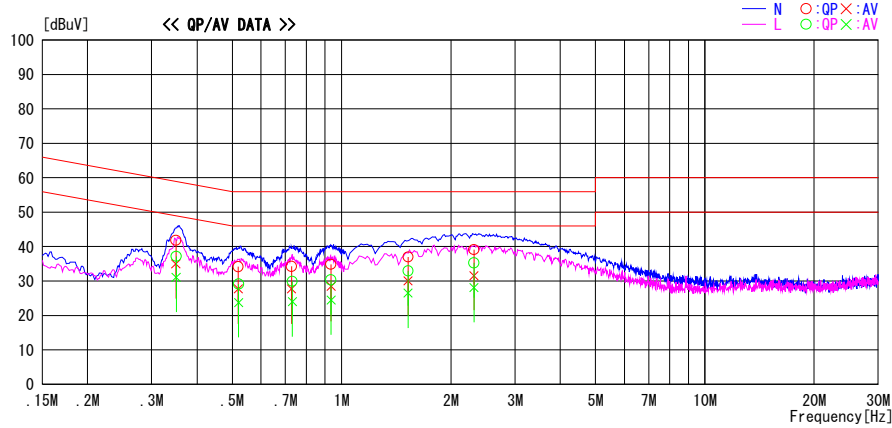
UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/02/18

Report No. : 32CE0047-HO-06

Temp./Humi. : 24deg. C / 31% RH
Engineer : Takayuki Shimada

Mode / Remarks : Tx 11b 2412MHz 11Mbps Ant2

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.34990	28.4	21.6	13.4	41.8	35.0	59.0	49.0	17.2	14.0	N	
0.51985	20.8	14.3	13.4	34.2	27.7	56.0	46.0	21.8	18.3	N	
0.72740	20.9	14.3	13.4	34.3	27.7	56.0	46.0	21.7	18.3	N	
0.93481	21.5	15.0	13.4	34.9	28.4	56.0	46.0	21.1	17.6	N	
1.52443	23.4	16.5	13.6	37.0	30.1	56.0	46.0	19.0	15.9	N	
2.31205	25.4	17.9	13.7	39.1	31.6	56.0	46.0	16.9	14.4	N	
0.35058	23.8	17.7	13.4	37.2	31.1	58.9	48.9	21.7	17.8	L	
0.52065	15.7	10.3	13.4	29.1	23.7	56.0	46.0	26.9	22.3	L	
0.73140	16.5	10.6	13.4	29.9	24.0	56.0	46.0	26.1	22.0	L	
0.93503	16.9	11.1	13.4	30.3	24.5	56.0	46.0	25.7	21.5	L	
1.52467	19.3	12.9	13.6	32.9	26.5	56.0	46.0	23.1	19.5	L	
2.31205	21.6	14.4	13.7	35.3	28.1	56.0	46.0	20.7	17.9	L	

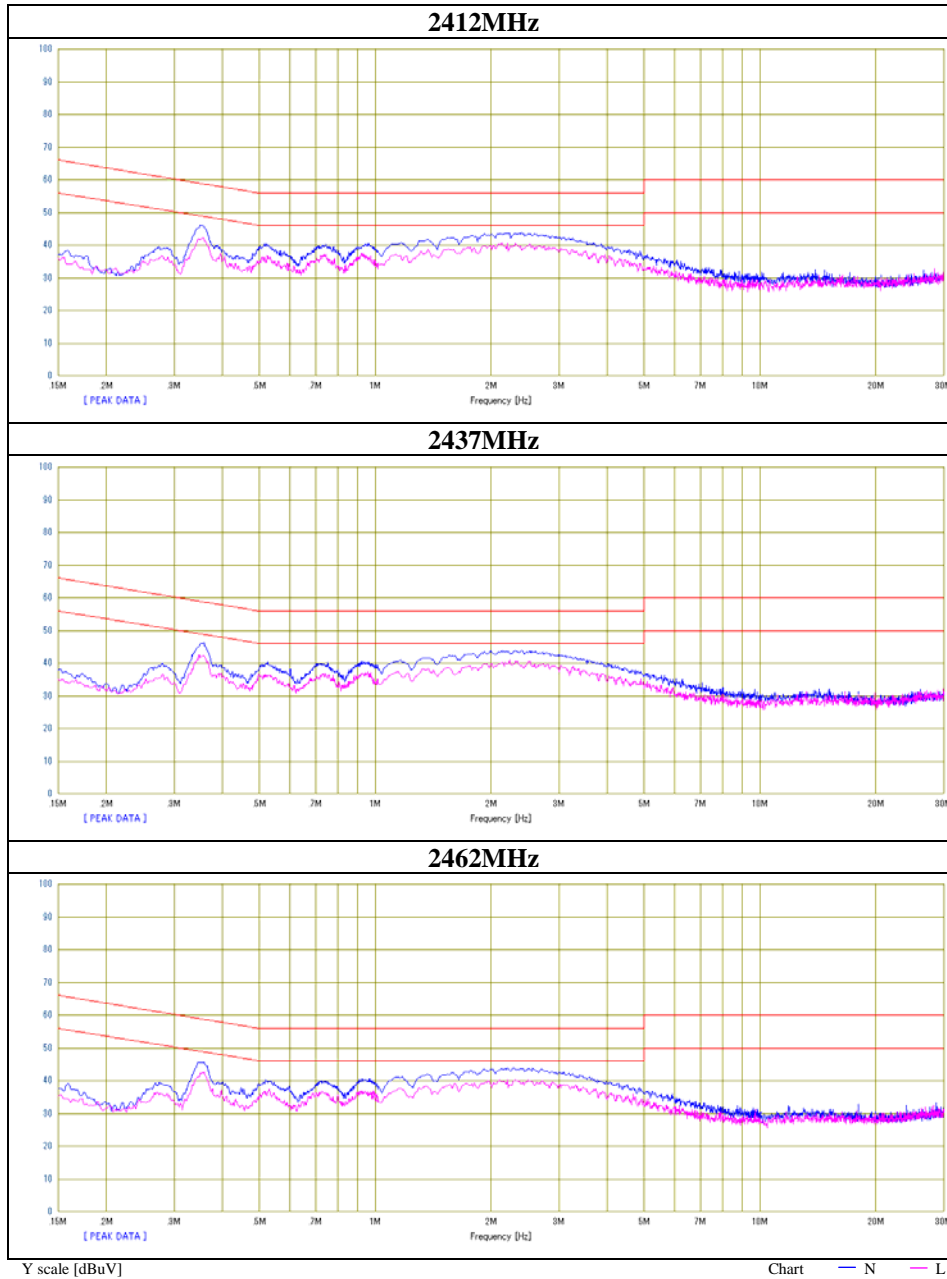
CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C. F (LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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

Conducted Emission

ANT1

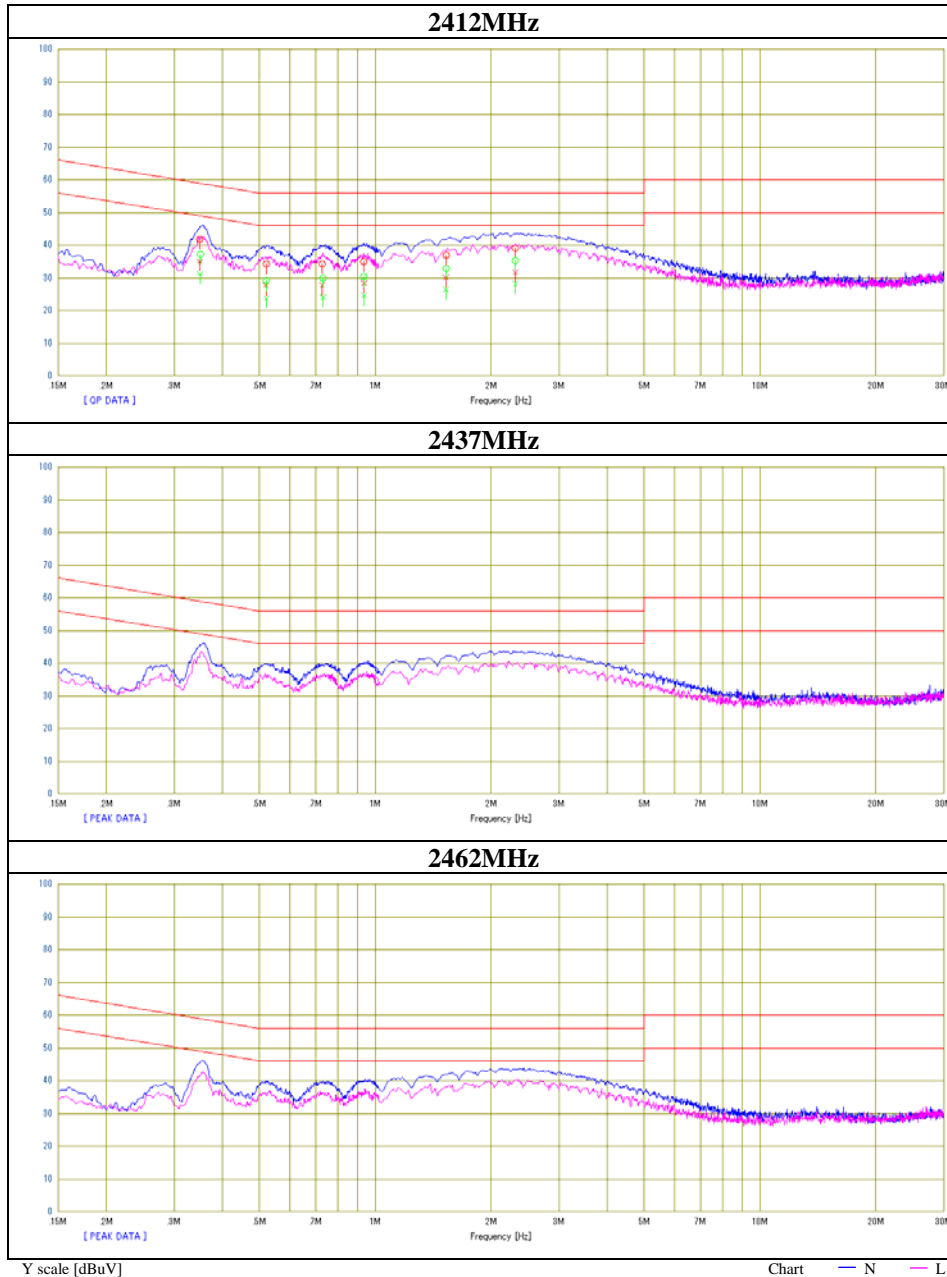
Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11b Tx



Conducted Emission

ANT2

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11b Tx



Conducted Emission

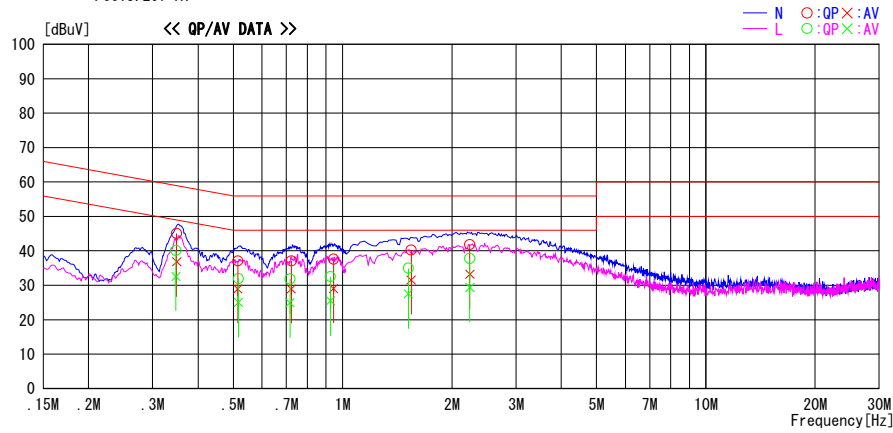
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/02/18

Report No. : 32CE0047-HO-06
Temp./Humi. : 24deg. C / 31% RH
Engineer : Takayuki Shimada

Mode / Remarks : Tx 11g 2412MHz 6Mbps Ant2

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.34950	31.7	23.4	13.4	45.1	36.8	59.0	49.0	13.9	12.2	N	
0.51452	23.7	15.6	13.4	37.1	29.0	56.0	46.0	18.9	17.0	N	
0.72295	23.7	15.6	13.4	37.1	29.0	56.0	46.0	18.9	17.0	N	
0.94402	24.2	15.7	13.4	37.6	29.1	56.0	46.0	18.4	16.9	N	
1.54392	26.6	18.0	13.6	40.2	31.6	56.0	46.0	15.8	14.4	N	
2.23957	28.1	19.5	13.7	41.8	33.2	56.0	46.0	14.2	12.8	N	
0.34770	26.7	19.2	13.4	40.1	32.6	59.0	49.0	18.9	16.4	L	
0.51703	18.5	11.6	13.4	31.9	25.0	56.0	46.0	24.1	21.0	L	
0.71622	18.4	11.5	13.4	31.8	24.9	56.0	46.0	24.2	21.1	L	
0.92605	19.1	12.1	13.4	32.5	25.5	56.0	46.0	23.5	20.5	L	
1.51710	21.4	13.9	13.6	35.0	27.5	56.0	46.0	21.0	18.5	L	
2.23957	24.1	15.7	13.7	37.8	29.4	56.0	46.0	18.2	16.6	L	

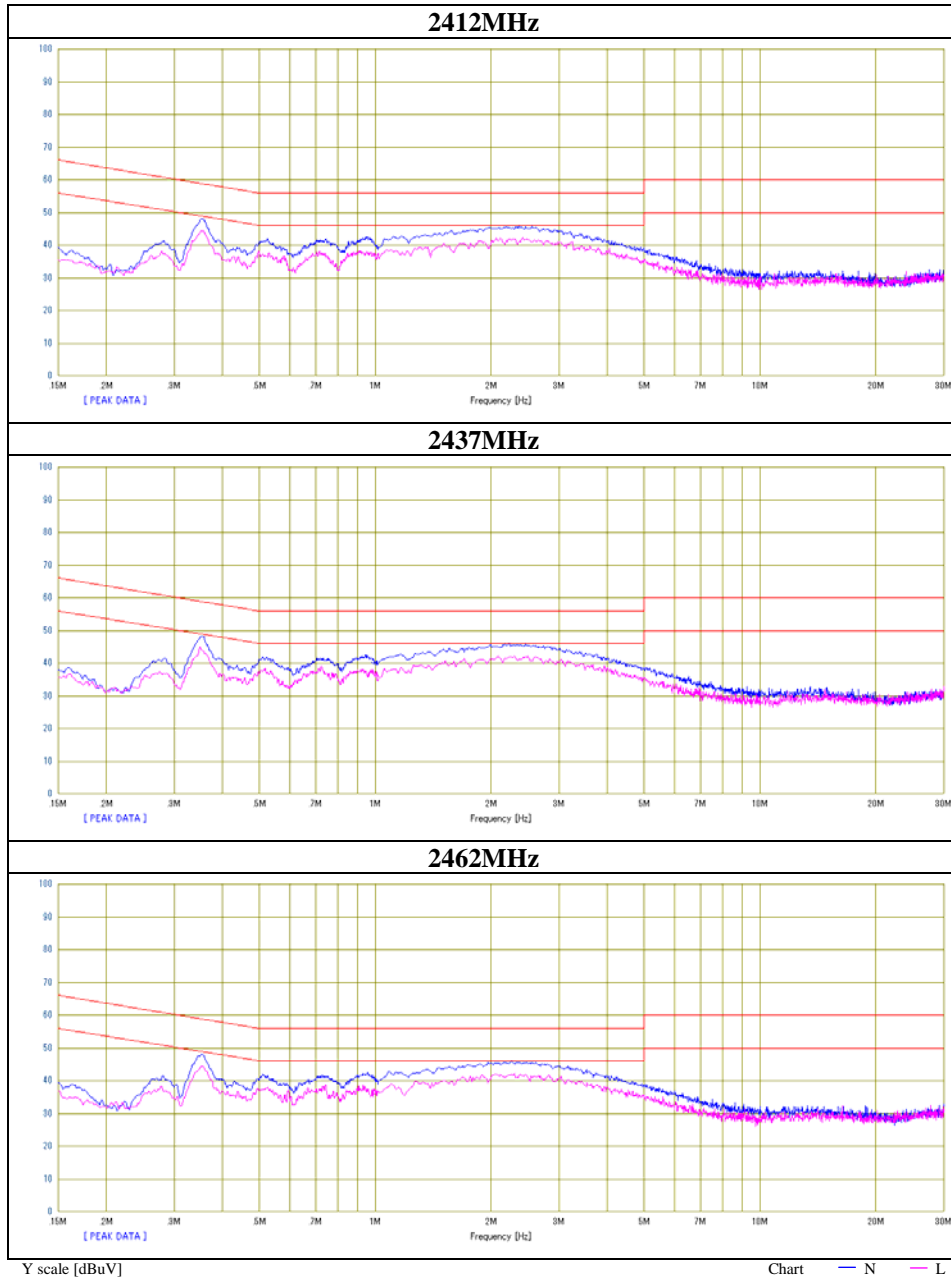
CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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

Conducted Emission

ANT1

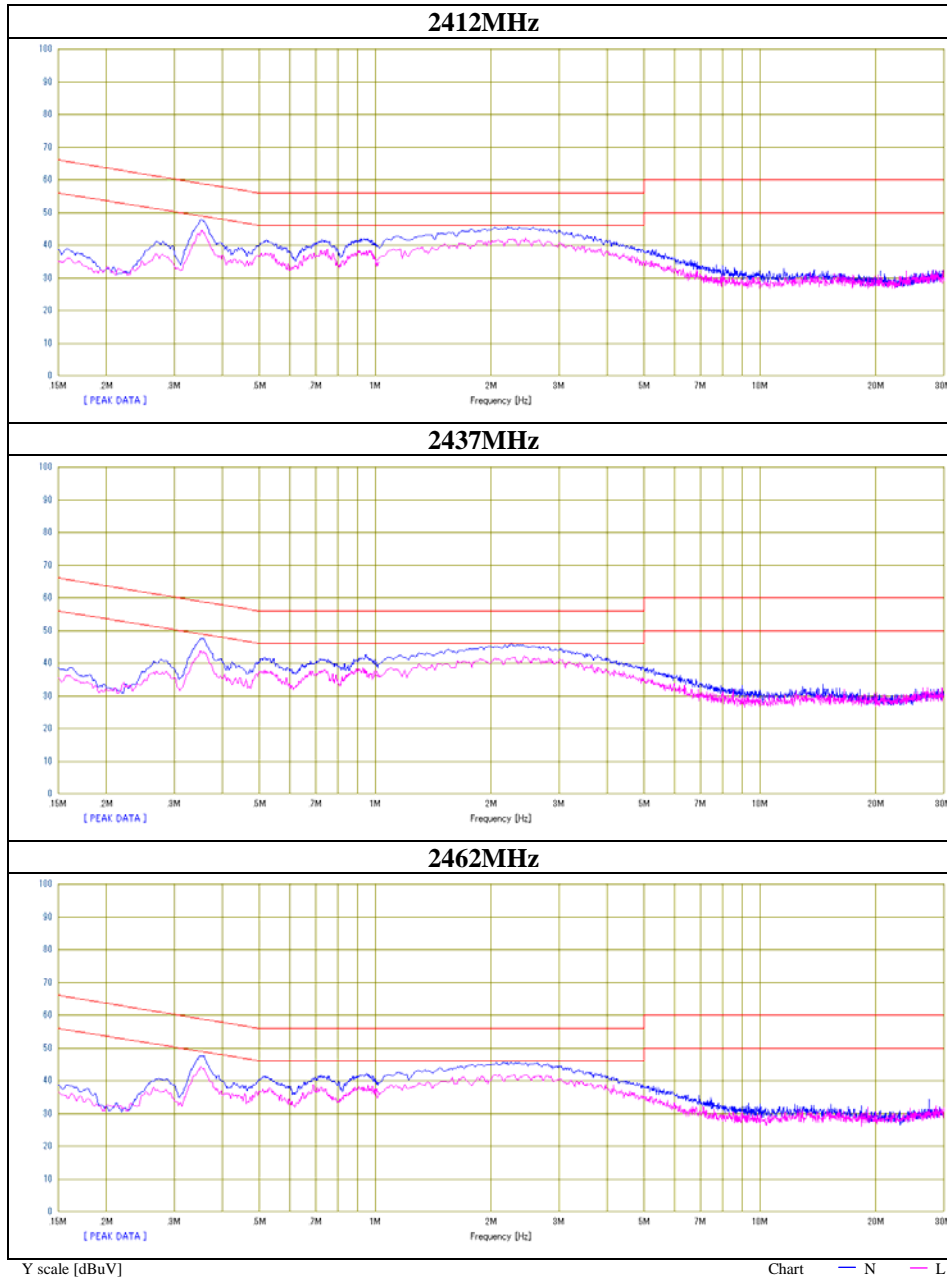
Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11g Tx



Conducted Emission

ANT2

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11g Tx



Conducted Emission

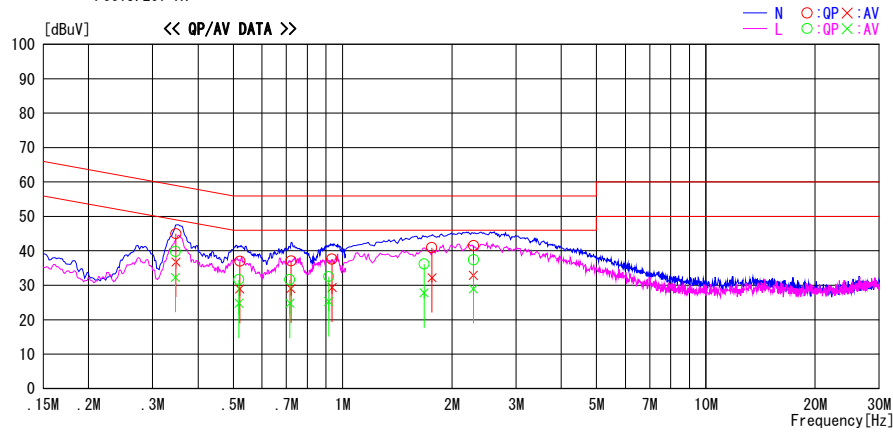
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2012/02/18

Report No. : 32CE0047-HO-06
Temp./Humi. : 24deg. C / 31% RH
Engineer : Takayuki Shimada

Mode / Remarks : Tx 11n20 2412MHz MCS0(LongG1) Ant2

LIMIT : FCC15.207 QP
FCC15.207 AV



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.34772	31.6	23.3	13.4	45.0	36.7	59.0	49.0	14.0	12.3	N	
0.52140	23.6	15.6	13.4	37.0	29.0	56.0	46.0	19.0	17.0	N	
0.72123	23.7	15.7	13.4	37.1	29.1	56.0	46.0	18.9	16.9	N	
0.93425	24.2	16.0	13.4	37.6	29.4	56.0	46.0	18.4	16.6	N	
1.76123	27.3	18.6	13.6	40.9	32.2	56.0	46.0	15.1	13.8	N	
2.29122	27.8	19.2	13.7	41.5	32.9	56.0	46.0	14.5	13.1	N	
0.34672	26.4	18.9	13.4	39.8	32.3	59.0	49.0	19.2	16.7	L	
0.51883	18.2	11.4	13.4	31.6	24.8	56.0	46.0	24.4	21.2	L	
0.71597	18.2	11.4	13.4	31.6	24.8	56.0	46.0	24.4	21.2	L	
0.91508	19.1	11.9	13.4	32.5	25.3	56.0	46.0	23.5	20.7	L	
1.67534	22.6	14.2	13.6	36.2	27.8	56.0	46.0	19.8	18.2	L	
2.29127	23.7	15.3	13.7	37.4	29.0	56.0	46.0	18.6	17.0	L	

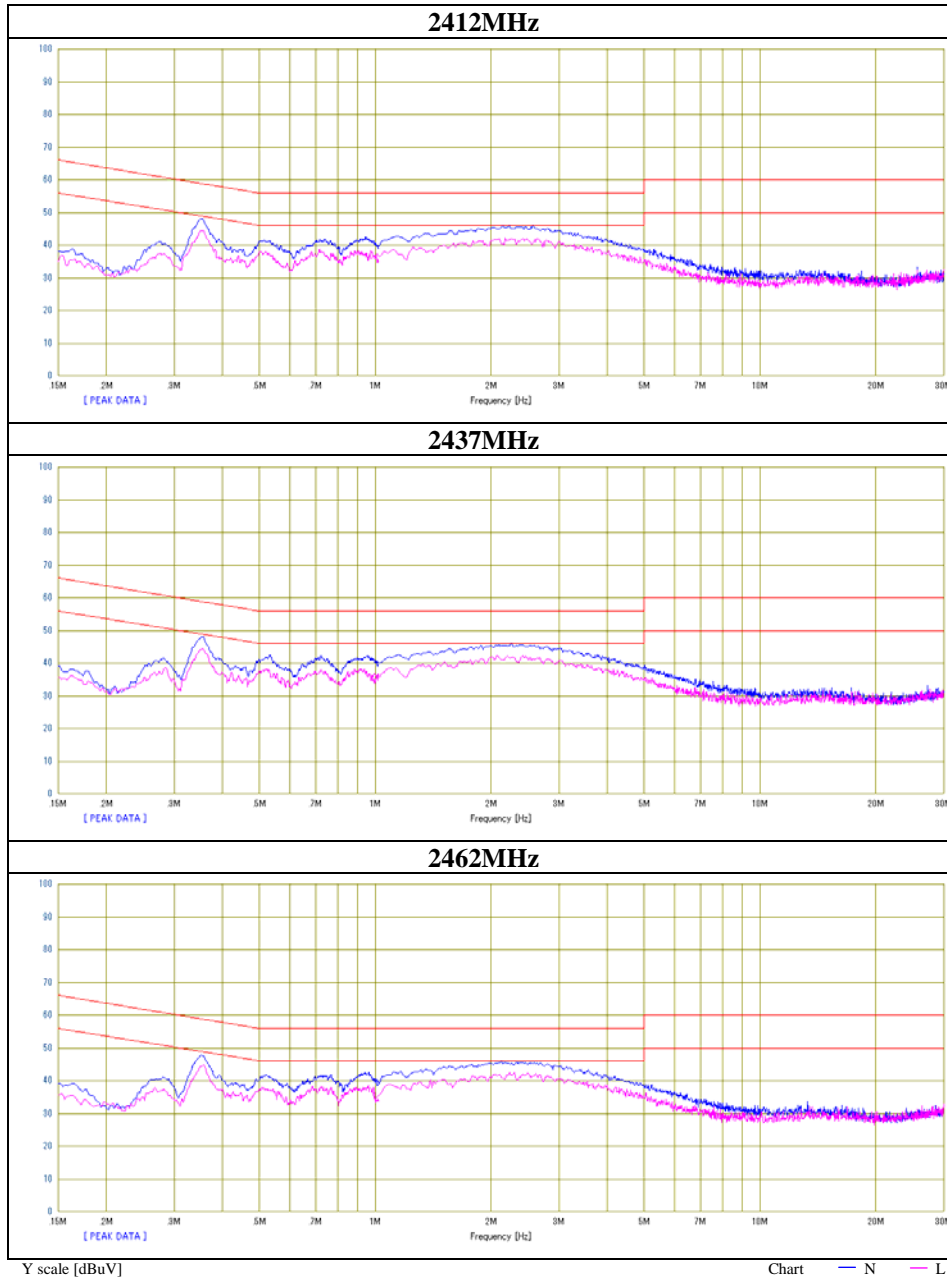
CHART: WITH FACTOR, Peak hold data. CALCULATION: RESULT=READING+C.F (LISN LOSS+ATT LOSS +CABLE LOSS)
Except for the above table : adequate margin data below the limits.

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

Conducted Emission

ANT1

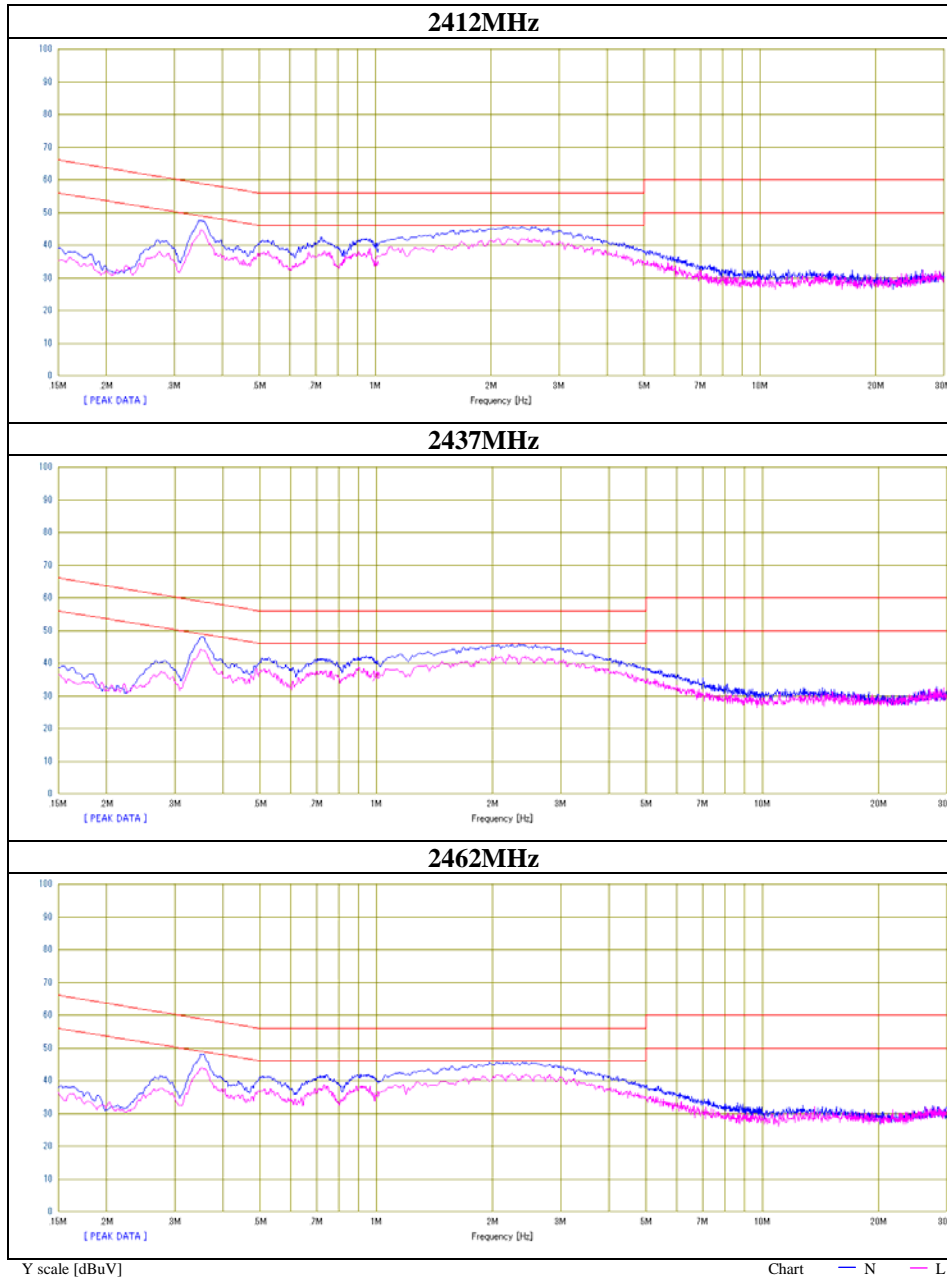
Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11n-20 Tx



Conducted Emission

ANT2

Test place	Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No.	32CE0047-HO-06
Date	02/18/2012
Temperature/ Humidity	24 deg. C / 31% RH
Engineer	Takayuki Shimada
Mode	11n-20 Tx



6dB Bandwidth

ANT1

Test place Head Office EMC Lab. No.6 Shielded Room
Report No. 32CE0047-HO-06
Date 02/25/2012
Temperature/ Humidity 22deg. C / 33% RH
Engineer Tomohisa Nakagawa
Mode Tx

11b

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	12.072	>500
2437	12.055	>500
2462	12.554	>500

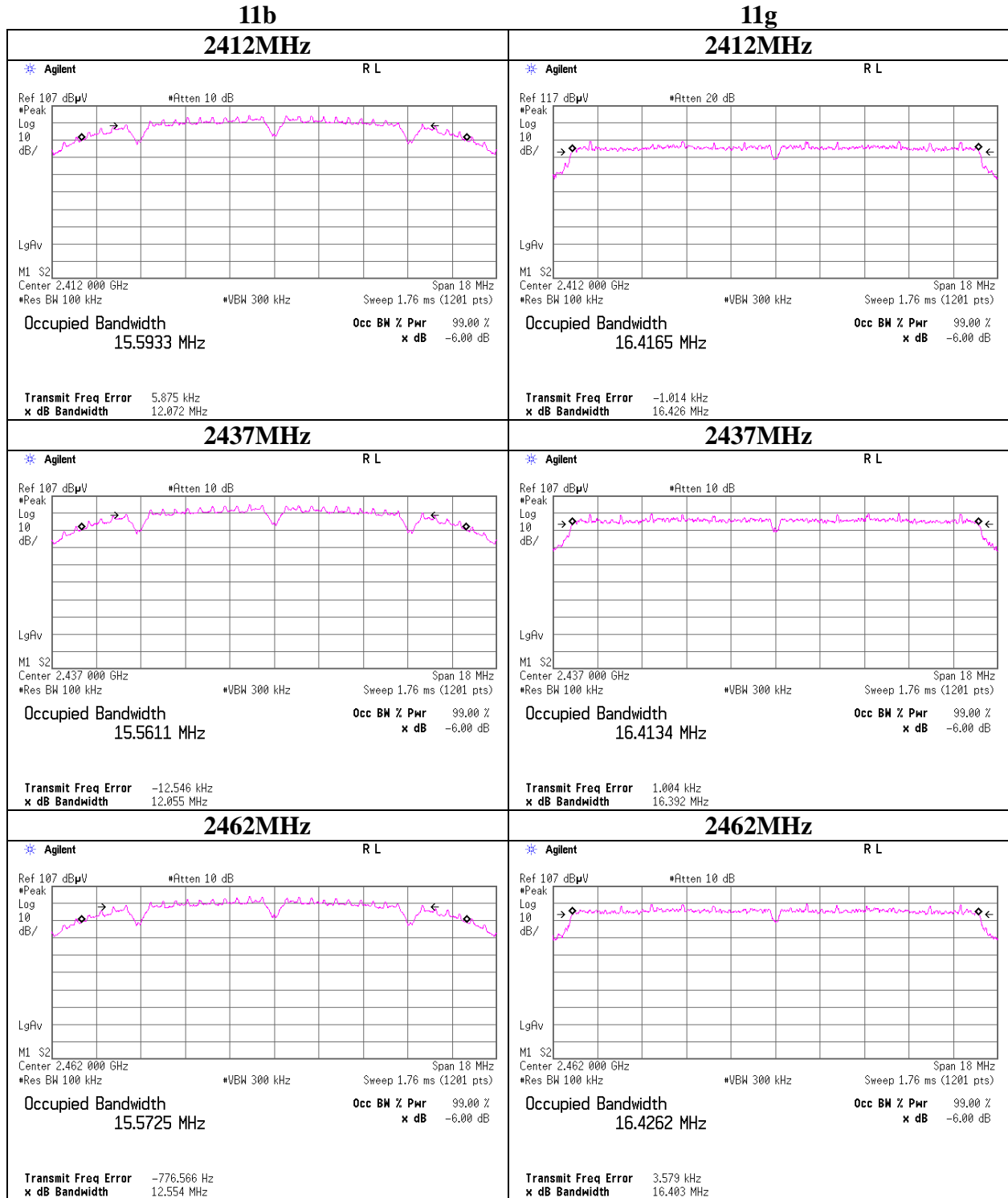
11g

Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	16.426	>500
2437	16.392	>500
2462	16.403	>500

11n-20

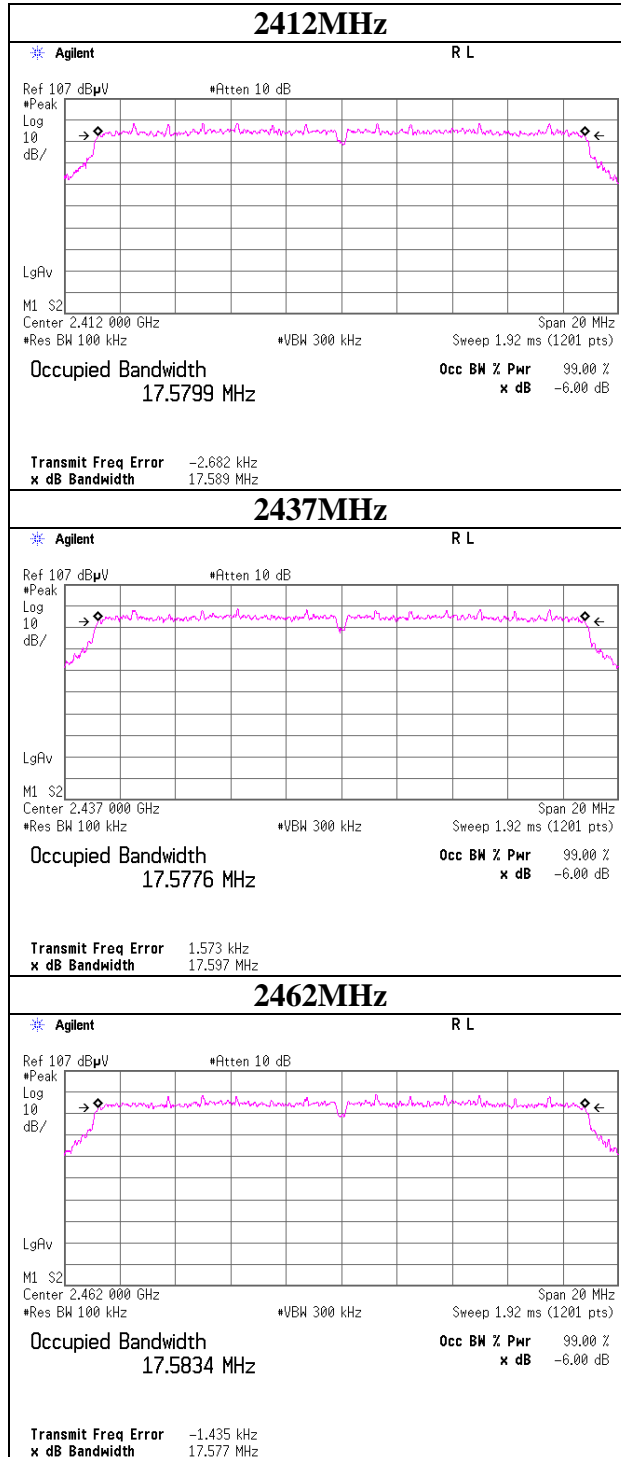
Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
2412	17.589	>500
2437	17.597	>500
2462	17.577	>500

6dB Bandwidth
ANT1



6dB Bandwidth

**ANT1
11n-20**



Maximum Peak Output Power

ANT1, ANT2

Test place	Head Office EMC Lab. No.1 Measurement Room
Report No.	32CE0047-HO-06
Date	02/15/2012
Temperature/ Humidity	20deg. C / 30% RH
Engineer	Satofumi Matsuyama
Mode	11b Tx

Antenna 1, 1Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	7.65	0.20	9.96	17.81	60.39	30.00	1000	12.19
2437	8.32	0.20	9.96	18.48	70.47	30.00	1000	11.52
2462	7.94	0.20	9.96	18.10	64.57	30.00	1000	11.90

Antenna 2, 11Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	7.50	0.20	9.96	17.66	58.34	30.00	1000	12.34
2437	7.86	0.20	9.96	18.02	63.39	30.00	1000	11.98
2462	7.71	0.20	9.96	17.87	61.24	30.00	1000	12.13

Sample Calculation:

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

Antenna 1, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
1	8.32	*
2	8.26	
5.5	8.20	
11	8.06	

Antenna 2, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
1	7.55	
2	7.67	
5.5	7.61	
11	7.86	*

*: Worst Rate

All comparizon were carried out on same frequency and measurement factors.

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

Maximum Peak Output Power

ANT1, ANT2

Test place	Head Office EMC Lab. No.1 Measurement Room
Report No.	32CE0047-HO-06
Date	02/15/2012
Temperature/ Humidity	20deg. C / 30% RH
Engineer	Satofumi Matsuyama
Mode	11g Tx

Antenna 1, 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	11.94	0.20	9.96	22.10	162.18	30.00	1000	7.90
2437	12.57	0.20	9.96	22.73	187.50	30.00	1000	7.27
2462	12.05	0.20	9.96	22.21	166.34	30.00	1000	7.79

Antenna 2, 6Mbps

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	11.57	0.20	9.96	21.73	148.94	30.00	1000	8.27
2437	11.99	0.20	9.96	22.15	164.06	30.00	1000	7.85
2462	11.52	0.20	9.96	21.68	147.23	30.00	1000	8.32

Sample Calculation:

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

Antenna 1, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	12.57	*
9	12.33	
12	12.34	
18	12.47	
24	12.40	
36	12.43	
48	12.25	
54	12.53	

Antenna 2, 2437MHz

Rate [Mbps]	Reading [dBm]	Remark
6	11.99	*
9	11.75	
12	11.94	
18	11.83	
24	11.90	
36	11.95	
48	11.91	
54	11.89	

*: Worst Rate

All comparizon were carried out on same frequency and measurement factors.

Maximum Peak Output Power

ANT1, ANT2

Test place : Head Office EMC Lab. No.1 Measurement Room
Report No. : 32CE0047-HO-06
Date : 02/15/2012
Temperature/ Humidity : 20deg. C / 30% RH
Engineer : Satofumi Matsuyama
Mode : 11n-20 Tx

Antenna 1, MCS0, Long GI

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	11.56	0.20	9.96	21.72	148.59	30.00	1000	8.28
2437	12.11	0.20	9.96	22.27	168.66	30.00	1000	7.73
2462	11.79	0.20	9.96	21.95	156.68	30.00	1000	8.05

Antenna 2, MCS0, Long GI

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2412	11.47	0.20	9.96	21.63	145.55	30.00	1000	8.37
2437	12.05	0.20	9.96	22.21	166.34	30.00	1000	7.79
2462	11.32	0.20	9.96	21.48	140.60	30.00	1000	8.52

Sample Calculation:

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

Antenna 1, 2437MHz

GI	MCS	Reading [dBm]	Remark
	Number		
Long	0	12.11	*
	1	12.00	
	2	11.84	
	3	12.05	
	4	12.10	
	5	11.82	
	6	12.03	
Short	0	12.10	
	1	11.92	
	2	11.84	
	3	12.03	
	4	12.06	
	5	11.78	
	6	12.02	
7	11.84		

Antenna 2, 2437MHz

GI	MCS	Reading [dBm]	Remark
	Number		
Long	0	12.05	*
	1	11.58	
	2	11.39	
	3	11.41	
	4	11.38	
	5	11.27	
	6	11.61	
Short	0	11.48	
	1	11.23	
	2	11.35	
	3	11.66	
	4	11.11	
	5	11.32	
	6	11.26	
7	11.22		

*: Worst Rate

All comparizon were carried out on same frequency and measurement factors.

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/16/2012 02/17/2012 02/18/2012
Temperature/ Humidity 23 deg. C / 32% RH 21 deg. C / 28% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Satofumi Matsuyama Takayuki Shimada
(1-10GHz) (Below 1GHz) 10-26.5GHz
Mode 11b Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	72.002	QP	25.6	6.6	7.6	32.2	7.6	40.0	32.4	
Hori	250.001	QP	32.2	17.2	9.3	32.1	26.6	46.0	19.4	
Hori	320.001	QP	44.5	16.4	9.9	32.1	38.7	46.0	7.3	
Hori	375.006	QP	32.3	17.3	10.2	32.1	27.7	46.0	18.3	
Hori	719.998	QP	30.8	22.3	12.2	32.2	33.1	46.0	12.9	
Hori	875.005	QP	28.1	24.0	12.9	31.4	33.6	46.0	12.4	
Hori	2390.000	PK	51.6	28.1	2.5	32.2	50.0	73.9	23.9	
Hori	2396.267	PK	68.3	28.1	2.5	32.2	-	73.9	-	- See 20dBc Data Sheet
Hori	2400.000	PK	65.2	28.1	2.5	32.2	-	73.9	-	- See 20dBc Data Sheet
Hori	4824.000	PK	45.5	31.2	5.3	31.4	50.6	73.9	23.3	
Hori	7236.000	PK	41.6	35.6	6.1	32.4	50.9	73.9	23.0	
Hori	9648.000	PK	44.2	38.3	7.2	33.2	56.5	73.9	17.4	
Hori	2390.000	AV	39.7	28.1	2.5	32.2	38.1	53.9	15.8	
Hori	2396.267	AV	58.6	28.1	2.5	32.2	-	53.9	-	- See 20dBc Data Sheet
Hori	2400.000	AV	55.7	28.1	2.5	32.2	-	53.9	-	- See 20dBc Data Sheet
Hori	4824.000	AV	32.9	31.2	5.3	31.4	38.0	53.9	15.9	
Hori	7236.000	AV	30.5	35.6	6.1	32.4	39.8	53.9	14.1	
Hori	9648.000	AV	31.4	38.3	7.2	33.2	43.7	53.9	10.2	
Vert	71.999	QP	39.0	6.6	7.6	32.2	21.0	40.0	19.0	
Vert	159.996	QP	24.6	15.4	8.6	32.1	16.5	43.5	27.0	
Vert	250.002	QP	28.6	17.2	9.3	32.1	23.0	46.0	23.0	
Vert	320.001	QP	35.6	16.4	9.9	32.1	29.8	46.0	16.2	
Vert	374.995	QP	28.8	17.3	10.2	32.1	24.2	46.0	21.8	
Vert	720.002	QP	26.2	22.3	12.2	32.2	28.5	46.0	17.5	
Vert	875.004	QP	24.6	24.0	12.9	31.4	30.1	46.0	15.9	
Vert	2390.000	PK	52.4	28.1	2.5	32.2	50.8	73.9	23.1	
Vert	2396.267	PK	66.9	28.1	2.5	32.2	-	73.9	-	- See 20dBc Data Sheet
Vert	2400.000	PK	51.6	28.1	2.5	32.2	-	73.9	-	- See 20dBc Data Sheet
Vert	4824.000	PK	42.6	31.2	5.3	31.4	47.7	73.9	26.2	
Vert	7236.000	PK	41.2	35.6	6.1	32.4	50.5	73.9	23.4	
Vert	9648.000	PK	43.8	38.3	7.2	33.2	56.1	73.9	17.8	
Vert	2390.000	AV	38.7	28.1	2.5	32.2	37.1	53.9	16.8	
Vert	2396.267	AV	57.5	28.1	2.5	32.2	-	53.9	-	- See 20dBc Data Sheet
Vert	2400.000	AV	54.8	28.1	2.5	32.2	-	53.9	-	- See 20dBc Data Sheet
Vert	4824.000	AV	31.7	31.2	5.3	31.4	36.8	53.9	17.1	
Vert	7236.000	AV	30.5	35.6	6.1	32.4	39.8	53.9	14.1	
Vert	9648.000	AV	33.3	38.3	7.2	33.2	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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/16/2012
Temperature/ Humidity 23 deg. C / 32% RH
Engineer Satofumi Matsuyama
Mode 11b Tx 2412MHz

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	104.9	28.2	2.5	32.2	103.4	-	-	Carrier
Hori	2400.000	PK	57.6	28.1	2.5	32.2	56.0	83.4	27.4	
Hori	2396.267	PK	59.8	28.1	2.5	32.2	58.2	83.4	25.2	
Vert	2412.000	PK	103.6	28.2	2.5	32.2	102.1	-	-	Carrier
Vert	2400.000	PK	57.3	28.1	2.5	32.2	55.7	82.1	26.4	
Vert	2396.267	PK	58.8	28.1	2.5	32.2	57.2	82.1	24.9	

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

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa Takayuki Shimada
(1-10GHz) Below 1GHz 10-26.5GHz
Mode 11b Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	72.000	QP	32.7	6.6	7.8	32.1	15.0	40.0	25.0	
Hori	250.002	QP	30.7	17.4	9.6	32.0	25.7	46.0	20.3	
Hori	320.000	QP	44.7	15.1	10.1	32.0	37.9	46.0	8.1	
Hori	360.000	QP	34.2	16.4	10.4	32.0	29.0	46.0	17.0	
Hori	720.000	QP	29.0	20.9	12.6	31.8	30.7	46.0	15.3	
Hori	875.008	QP	29.4	22.3	13.4	31.1	34.0	46.0	12.0	
Hori	4874.000	PK	45.5	31.4	5.3	31.4	50.8	73.9	23.1	
Hori	7311.000	PK	42.5	35.7	6.2	32.5	51.9	73.9	22.0	
Hori	9748.000	PK	43.2	38.4	7.5	33.2	55.9	73.9	18.0	
Hori	24370.000	PK	46.6	38.8	-1.7	31.4	52.3	73.9	21.6	
Hori	4874.000	AV	32.6	31.4	5.3	31.4	37.9	53.9	16.0	
Hori	7311.000	AV	30.3	35.7	6.2	32.5	39.7	53.9	14.2	
Hori	9748.000	AV	32.0	38.4	7.5	33.2	44.7	53.9	9.2	
Hori	24370.000	AV	34.2	38.8	-1.7	31.4	39.9	53.9	14.0	
Vert	72.000	QP	38.0	6.6	7.8	32.1	20.3	40.0	19.7	
Vert	250.002	QP	29.3	17.4	9.6	32.0	24.3	46.0	21.7	
Vert	320.000	QP	36.1	15.1	10.1	32.0	29.3	46.0	16.7	
Vert	360.000	QP	31.2	16.4	10.4	32.0	26.0	46.0	20.0	
Vert	720.000	QP	23.9	20.9	12.6	31.8	25.6	46.0	20.4	
Vert	875.008	QP	25.9	22.3	13.4	31.1	30.5	46.0	15.5	
Vert	4874.000	PK	43.8	31.4	5.3	31.4	49.1	73.9	24.8	
Vert	7311.000	PK	41.5	35.7	6.2	32.5	50.9	73.9	23.0	
Vert	9748.000	PK	44.4	38.4	7.5	33.2	57.1	73.9	16.8	
Vert	24370.000	PK	46.5	38.8	-1.7	31.4	52.2	73.9	21.7	
Vert	4874.000	AV	32.0	31.4	5.3	31.4	37.3	53.9	16.6	
Vert	7311.000	AV	30.3	35.7	6.2	32.5	39.7	53.9	14.2	
Vert	9748.000	AV	33.7	38.4	7.5	33.2	46.4	53.9	7.5	
Vert	24370.000	AV	34.2	38.8	-1.7	31.4	39.9	53.9	14.0	

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa Takayuki Shimada
(1-10GHz) Below 1GHz 10-26.5GHz
Mode 11b Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	71.999	QP	23.9	6.6	7.8	32.1	6.2	40.0	33.8	
Hori	250.001	QP	29.0	17.4	9.6	32.0	24.0	46.0	22.0	
Hori	320.000	QP	38.7	15.1	10.1	32.0	31.9	46.0	14.1	
Hori	360.000	QP	36.2	16.4	10.4	32.0	31.0	46.0	15.0	
Hori	720.000	QP	24.2	20.9	12.6	31.8	25.9	46.0	20.1	
Hori	875.008	QP	29.4	22.3	13.4	31.1	34.0	46.0	12.0	
Hori	2483.500	PK	50.8	28.5	2.6	32.2	49.7	73.9	24.2	
Hori	2507.350	PK	51.2	28.6	2.6	32.2	50.2	73.9	23.7	
Hori	4924.000	PK	44.4	31.5	5.3	31.4	49.8	73.9	24.1	
Hori	7386.000	PK	43.1	35.8	6.2	32.5	52.6	73.9	21.3	
Hori	9848.000	PK	43.0	38.5	7.6	33.3	55.8	73.9	18.1	
Hori	24620.000	PK	47.8	38.9	-1.7	31.3	53.7	73.9	20.2	
Hori	2483.500	AV	37.7	28.5	2.6	32.2	36.6	53.9	17.3	
Hori	2507.350	AV	40.6	28.6	2.6	32.2	39.6	53.9	14.3	
Hori	4924.000	AV	32.4	31.5	5.3	31.4	37.8	53.9	16.1	
Hori	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Hori	9848.000	AV	31.8	38.5	7.6	33.3	44.6	53.9	9.3	
Hori	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	
Vert	71.999	QP	38.4	6.6	7.8	32.1	20.7	40.0	19.3	
Vert	250.001	QP	29.4	17.4	9.6	32.0	24.4	46.0	21.6	
Vert	320.000	QP	32.3	15.1	10.1	32.0	25.5	46.0	20.5	
Vert	360.000	QP	28.8	16.4	10.4	32.0	23.6	46.0	22.4	
Vert	720.000	QP	25.4	20.9	12.6	31.8	27.1	46.0	18.9	
Vert	875.008	QP	25.5	22.3	13.4	31.1	30.1	46.0	15.9	
Vert	2483.500	PK	47.6	28.5	2.6	32.2	46.5	73.9	27.4	
Vert	2507.350	PK	47.8	28.6	2.6	32.2	46.8	73.9	27.1	
Vert	4924.000	PK	43.0	31.5	5.3	31.4	48.4	73.9	25.5	
Vert	7386.000	PK	42.2	35.8	6.2	32.5	51.7	73.9	22.2	
Vert	9848.000	PK	44.1	38.5	7.6	33.3	56.9	73.9	17.0	
Vert	24620.000	PK	47.8	38.9	-1.7	31.3	53.7	73.9	20.2	
Vert	2483.500	AV	35.4	28.5	2.6	32.2	34.3	53.9	19.6	
Vert	2507.350	AV	36.7	28.6	2.6	32.2	35.7	53.9	18.2	
Vert	4924.000	AV	32.4	31.5	5.3	31.4	37.8	53.9	16.1	
Vert	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Vert	9848.000	AV	34.2	38.5	7.6	33.3	47.0	53.9	6.9	
Vert	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	

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

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission

ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012
Temperature/ Humidity 21 deg. C / 28% RH
Engineer Satofumi Matsuyama
 (1-10GHz)
Mode 11g Tx 2412MHz

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	98.1	28.2	2.5	32.2	96.6	-	-	Carrier
Hori	2400.000	PK	68.0	28.1	2.5	32.2	66.4	76.6	10.2	
Vert	2412.000	PK	96.0	28.2	2.5	32.2	94.5	-	-	Carrier
Vert	2400.000	PK	65.9	28.1	2.5	32.2	64.3	74.5	10.2	

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

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa Takayuki Shimada
(1-10GHz) Below 1GHz 10-26.5GHz
Mode 11g Tx 2437MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	71.999	QP	23.7	6.6	7.8	32.1	6.0	40.0	34.0	
Hori	250.001	QP	28.4	17.4	9.6	32.0	23.4	46.0	22.6	
Hori	320.001	QP	39.7	15.1	10.1	32.0	32.9	46.0	13.1	
Hori	360.000	QP	34.0	16.4	10.4	32.0	28.8	46.0	17.2	
Hori	720.000	QP	25.4	20.9	12.6	31.8	27.1	46.0	18.9	
Hori	875.008	QP	29.1	22.3	13.4	31.1	33.7	46.0	12.3	
Hori	4874.000	PK	45.1	31.4	5.3	31.4	50.4	73.9	23.5	
Hori	7311.000	PK	42.7	35.7	6.2	32.5	52.1	73.9	21.8	
Hori	9748.000	PK	43.0	38.4	7.5	33.2	55.7	73.9	18.2	
Hori	24370.000	PK	46.6	38.8	-1.7	31.4	52.3	73.9	21.6	
Hori	4874.000	AV	32.2	31.4	5.3	31.4	37.5	53.9	16.4	
Hori	7311.000	AV	30.3	35.7	6.2	32.5	39.7	53.9	14.2	
Hori	9748.000	AV	32.0	38.4	7.5	33.2	44.7	53.9	9.2	
Hori	24370.000	AV	34.2	38.8	-1.7	31.4	39.9	53.9	14.0	
Vert	71.999	QP	34.8	6.6	7.8	32.1	17.1	40.0	22.9	
Vert	250.001	QP	29.8	17.4	9.6	32.0	24.8	46.0	21.2	
Vert	320.001	QP	29.8	15.1	10.1	32.0	23.0	46.0	23.0	
Vert	360.000	QP	31.2	16.4	10.4	32.0	26.0	46.0	20.0	
Vert	720.000	QP	24.4	20.9	12.6	31.8	26.1	46.0	19.9	
Vert	875.008	QP	25.8	22.3	13.4	31.1	30.4	46.0	15.6	
Vert	4874.000	PK	43.5	31.4	5.3	31.4	48.8	73.9	25.1	
Vert	7311.000	PK	41.6	35.7	6.2	32.5	51.0	73.9	22.9	
Vert	9748.000	PK	43.8	38.4	7.5	33.2	56.5	73.9	17.4	
Vert	24370.000	PK	46.3	38.8	-1.7	31.4	52.0	73.9	21.9	
Vert	4874.000	AV	32.0	31.4	5.3	31.4	37.3	53.9	16.6	
Vert	7311.000	AV	30.3	35.7	6.2	32.5	39.7	53.9	14.2	
Vert	9748.000	AV	33.9	38.4	7.5	33.2	46.6	53.9	7.3	
Vert	24370.000	AV	34.2	38.8	-1.7	31.4	39.9	53.9	14.0	

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Tomohisa Nakagawa Takayuki Shimada
(1-10GHz) Below 1GHz 10-26.5GHz
Mode 11g Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	71.999	QP	25.5	6.6	7.8	32.1	7.8	40.0	32.2	
Hori	250.001	QP	27.2	17.4	9.6	32.0	22.2	46.0	23.8	
Hori	320.001	QP	38.8	15.1	10.1	32.0	32.0	46.0	14.0	
Hori	360.000	QP	39.2	16.4	10.4	32.0	34.0	46.0	12.0	
Hori	720.000	QP	25.3	20.9	12.6	31.8	27.0	46.0	19.0	
Hori	875.008	QP	28.8	22.3	13.4	31.1	33.4	46.0	12.6	
Hori	2483.500	PK	62.9	28.5	2.6	32.2	61.8	73.9	12.1	
Hori	4924.000	PK	42.3	31.5	5.3	31.4	47.7	73.9	26.2	
Hori	7386.000	PK	42.2	35.8	6.2	32.5	51.7	73.9	22.2	
Hori	9848.000	PK	42.8	38.5	7.6	33.3	55.6	73.9	18.3	
Hori	24620.000	PK	47.9	38.9	-1.7	31.3	53.8	73.9	20.1	
Hori	2483.500	AV	45.8	28.5	2.6	32.2	44.7	53.9	9.2	
Hori	4924.000	AV	30.8	31.5	5.3	31.4	36.2	53.9	17.7	
Hori	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Hori	9848.000	AV	31.4	38.5	7.6	33.3	44.2	53.9	9.7	
Hori	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	
Vert	71.999	QP	39.0	6.6	7.8	32.1	21.3	40.0	18.7	
Vert	250.001	QP	29.3	17.4	9.6	32.0	24.3	46.0	21.7	
Vert	320.001	QP	30.8	15.1	10.1	32.0	24.0	46.0	22.0	
Vert	360.000	QP	31.0	16.4	10.4	32.0	25.8	46.0	20.2	
Vert	720.000	QP	24.9	20.9	12.6	31.8	26.6	46.0	19.4	
Vert	875.008	QP	25.0	22.3	13.4	31.1	29.6	46.0	16.4	
Vert	2483.500	PK	59.3	28.5	2.6	32.2	58.2	73.9	15.7	
Vert	4924.000	PK	43.5	31.5	5.3	31.4	48.9	73.9	25.0	
Vert	7386.000	PK	42.4	35.8	6.2	32.5	51.9	73.9	22.0	
Vert	9848.000	PK	44.7	38.5	7.6	33.3	57.5	73.9	16.4	
Vert	24620.000	PK	48.0	38.9	-1.7	31.3	53.9	73.9	20.0	
Vert	2483.500	AV	42.7	28.5	2.6	32.2	41.6	53.9	12.3	
Vert	4924.000	AV	32.6	31.5	5.3	31.4	38.0	53.9	15.9	
Vert	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Vert	9848.000	AV	33.7	38.5	7.6	33.3	46.5	53.9	7.4	
Vert	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	

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
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Takayuki Shimada
(1-10GHz) (Below 1GHz, 10-26.5GHz)
Mode 11n-20 Tx 2412MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	71.999	QP	28.2	6.6	7.8	32.1	10.5	40.0	29.5	
Hori	250.001	QP	32.3	17.4	9.6	32.0	27.3	46.0	18.7	
Hori	320.001	QP	38.6	15.1	10.1	32.0	31.8	46.0	14.2	
Hori	375.000	QP	32.2	16.9	10.5	32.0	27.6	46.0	18.4	
Hori	720.000	QP	29.1	20.9	12.6	31.8	30.8	46.0	15.2	
Hori	875.008	QP	30.4	22.3	13.4	31.1	35.0	46.0	11.0	
Hori	2390.000	PK	64.1	28.1	2.5	32.2	62.5	73.9	11.4	
Hori	2400.000	PK	76.4	28.1	2.5	32.2	74.8	-	-	See 20dBc Data Sheet
Hori	4824.000	PK	42.3	31.2	5.3	31.4	47.4	73.9	26.5	
Hori	7236.000	PK	46.9	35.6	6.1	32.4	56.2	73.9	17.7	
Hori	9648.000	PK	43.5	38.3	7.2	33.2	55.8	73.9	18.1	
Hori	24120.000	PK	47.0	38.6	-1.7	31.6	52.3	73.9	21.6	
Hori	2390.000	AV	48.3	28.1	2.5	32.2	46.7	53.9	7.2	
Hori	2400.000	AV	67.4	28.1	2.5	32.2	65.8	-	-	See 20dBc Data Sheet
Hori	4824.000	AV	31.0	31.2	5.3	31.4	36.1	53.9	17.8	
Hori	7236.000	AV	30.8	35.6	6.1	32.4	40.1	53.9	13.8	
Hori	9648.000	AV	31.8	38.3	7.2	33.2	44.1	53.9	9.8	
Hori	24120.000	AV	34.8	38.6	-1.7	31.6	40.1	53.9	13.8	
Vert	71.999	QP	39.3	6.6	7.8	32.1	21.6	40.0	18.4	
Vert	250.001	QP	28.8	17.4	9.6	32.0	23.8	46.0	22.2	
Vert	320.001	QP	37.0	15.1	10.1	32.0	30.2	46.0	15.8	
Vert	375.000	QP	28.7	16.9	10.5	32.0	24.1	46.0	21.9	
Vert	720.000	QP	26.6	20.9	12.6	31.8	28.3	46.0	17.7	
Vert	875.008	QP	27.0	22.3	13.4	31.1	31.6	46.0	14.4	
Vert	2390.000	PK	62.7	28.1	2.5	32.2	61.1	73.9	12.8	
Vert	2400.000	PK	74.4	28.1	2.5	32.2	72.8	-	-	See 20dBc Data Sheet
Vert	4824.000	PK	42.8	31.2	5.3	31.4	47.9	73.9	26.0	
Vert	7236.000	PK	47.7	35.6	6.1	32.4	57.0	73.9	16.9	
Vert	9648.000	PK	47.0	38.3	7.2	33.2	59.3	73.9	14.6	
Vert	24120.000	PK	47.1	38.6	-1.7	31.6	52.4	73.9	21.5	
Vert	2390.000	AV	47.1	28.1	2.5	32.2	45.5	53.9	8.4	
Vert	2400.000	AV	65.5	28.1	2.5	32.2	63.9	-	-	See 20dBc Data Sheet
Vert	4824.000	AV	31.1	31.2	5.3	31.4	36.2	53.9	17.7	
Vert	7236.000	AV	30.8	35.6	6.1	32.4	40.1	53.9	13.8	
Vert	9648.000	AV	31.2	38.3	7.2	33.2	43.5	53.9	10.4	
Vert	24120.000	AV	34.8	38.6	-1.7	31.6	40.1	53.9	13.8	

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

26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012
Temperature/ Humidity 21 deg. C / 28% RH
Engineer Satofumi Matsuyama
 (1-10GHz)
Mode 11n-20 Tx 2412MHz

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	97.2	28.2	2.5	32.2	95.7	-	-	Carrier
Hori	2400.000	PK	66.6	28.1	2.5	32.2	65.0	75.7	10.7	
Vert	2412.000	PK	95.2	28.2	2.5	32.2	93.7	-	-	Carrier
Vert	2400.000	PK	64.7	28.1	2.5	32.2	63.1	73.7	10.6	

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

Radiated Spurious Emission
ANT2

Test place Head Office EMC Lab. No.4 Semi Anechoic Chamber
Report No. 32CE0047-HO-06
Date 02/17/2012 02/18/2012
Temperature/ Humidity 21 deg. C / 28% RH 24 deg. C / 31% RH
Engineer Satofumi Matsuyama Takayuki Shimada
(1-10GHz) (Below 1GHz, 10-26.5GHz)
Mode 11n-20 Tx 2462MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	71.999	QP	28.3	6.6	7.8	32.1	10.6	40.0	29.4	
Hori	250.001	QP	33.0	17.4	9.6	32.0	28.0	46.0	18.0	
Hori	320.001	QP	38.3	15.1	10.1	32.0	31.5	46.0	14.5	
Hori	375.000	QP	32.4	16.9	10.5	32.0	27.8	46.0	18.2	
Hori	720.000	QP	29.0	20.9	12.6	31.8	30.7	46.0	15.3	
Hori	875.008	QP	30.3	22.3	13.4	31.1	34.9	46.0	11.1	
Hori	2483.500	PK	59.3	28.5	2.6	32.2	58.2	73.9	15.7	
Hori	4924.000	PK	45.0	31.5	5.3	31.4	50.4	73.9	23.5	
Hori	7386.000	PK	47.2	35.8	6.2	32.5	56.7	73.9	17.2	
Hori	9848.000	PK	47.2	38.5	7.6	33.3	60.0	73.9	13.9	
Hori	24620.000	PK	48.2	38.9	-1.7	31.3	54.1	73.9	19.8	
Hori	2483.500	AV	44.2	28.5	2.6	32.2	43.1	53.9	10.8	
Hori	4924.000	AV	29.1	31.5	5.3	31.4	34.5	53.9	19.4	
Hori	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Hori	9848.000	AV	31.2	38.5	7.6	33.3	44.0	53.9	9.9	
Hori	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	
Vert	71.999	QP	39.1	6.6	7.8	32.1	21.4	40.0	18.6	
Vert	250.001	QP	28.8	17.4	9.6	32.0	23.8	46.0	22.2	
Vert	320.001	QP	36.3	15.1	10.1	32.0	29.5	46.0	16.5	
Vert	375.000	QP	31.1	16.9	10.5	32.0	26.5	46.0	19.5	
Vert	720.000	QP	27.1	20.9	12.6	31.8	28.8	46.0	17.2	
Vert	875.008	QP	27.3	22.3	13.4	31.1	31.9	46.0	14.1	
Vert	2483.500	PK	58.0	28.5	2.6	32.2	56.9	73.9	17.0	
Vert	4924.000	PK	46.5	31.5	5.3	31.4	51.9	73.9	22.0	
Vert	7386.000	PK	47.3	35.8	6.2	32.5	56.8	73.9	17.1	
Vert	9848.000	PK	48.3	38.5	7.6	33.3	61.1	73.9	12.8	
Vert	24620.000	PK	47.9	38.9	-1.7	31.3	53.8	73.9	20.1	
Vert	2483.500	AV	43.1	28.5	2.6	32.2	42.0	53.9	11.9	
Vert	4924.000	AV	30.4	31.5	5.3	31.4	35.8	53.9	18.1	
Vert	7386.000	AV	30.9	35.8	6.2	32.5	40.4	53.9	13.5	
Vert	9848.000	AV	33.8	38.5	7.6	33.3	46.6	53.9	7.3	
Vert	24620.000	AV	35.2	38.9	-1.7	31.3	41.1	53.9	12.8	

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).

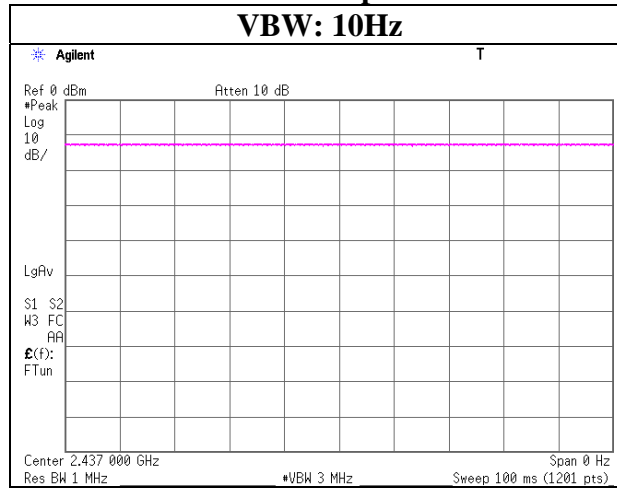
*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 10GHz-26.5GHz 20log(3.0m/1.0m)= 9.5dB
26.5GHz-40GHz 20log(3.0m/0.5m)=15.6dB

VBW (AV) Calculation

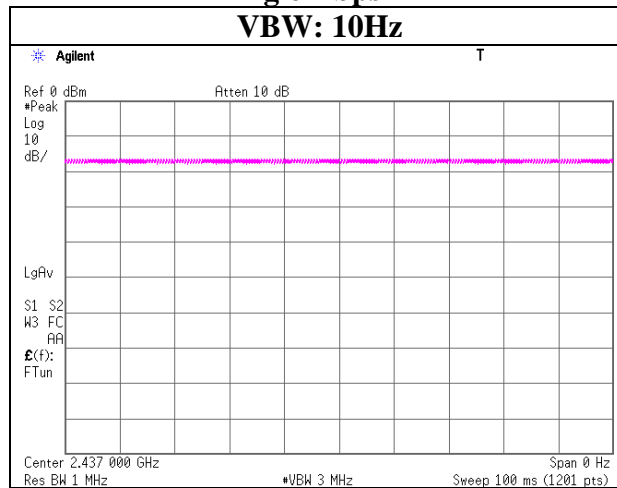
11b 11Mbps

VBW: 10Hz



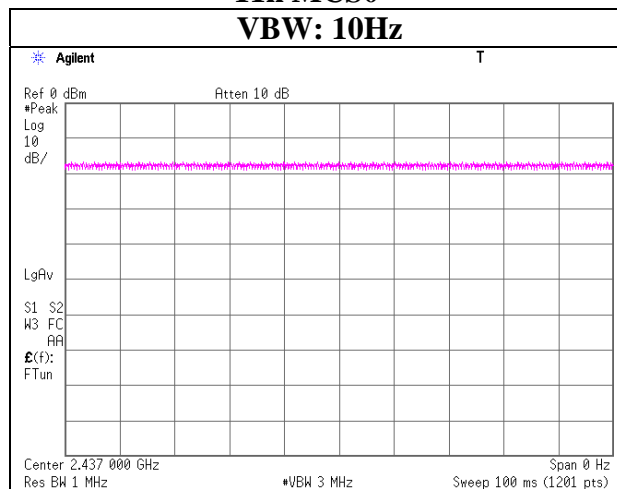
11g 6Mbps

VBW: 10Hz



11n MCS0

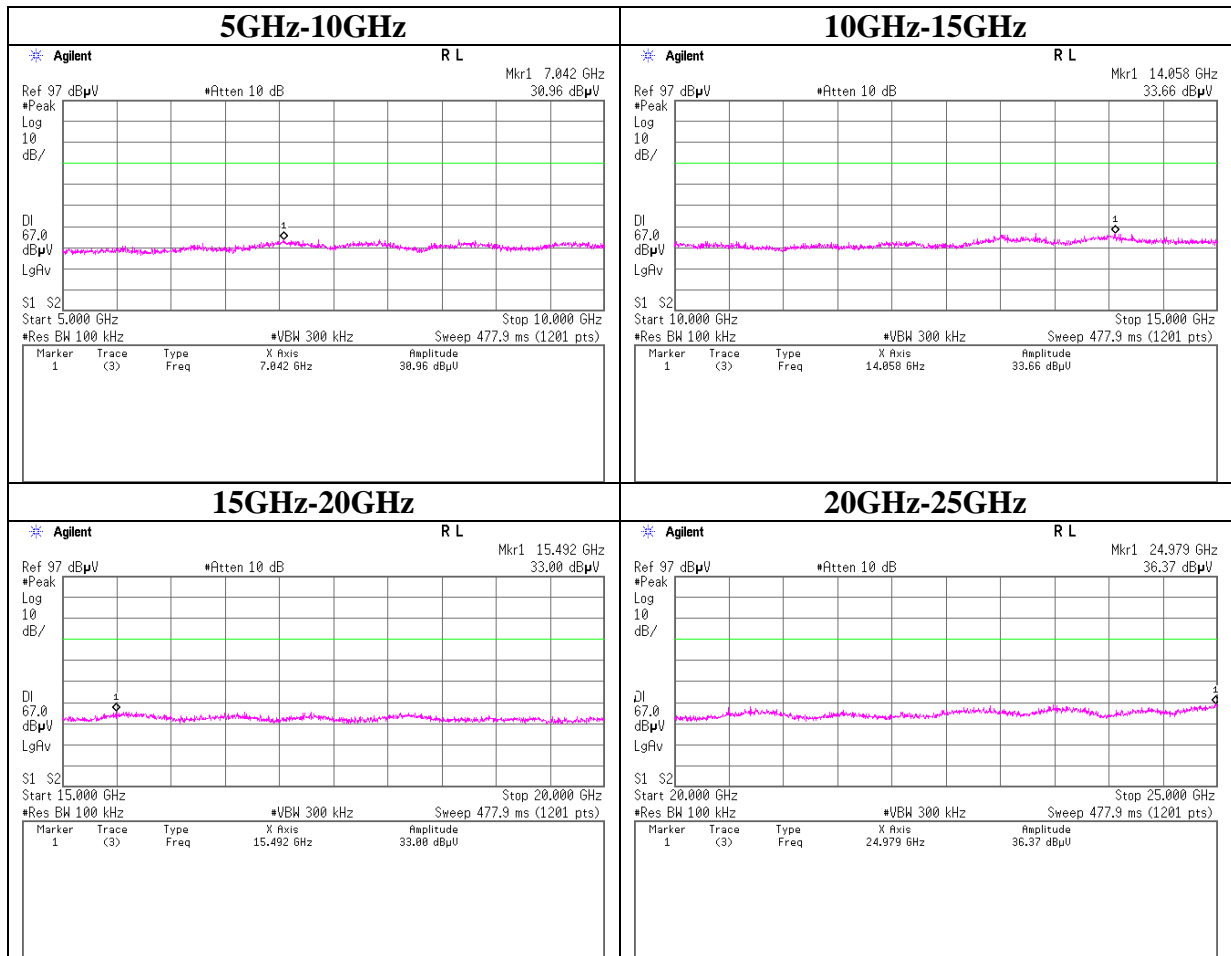
VBW: 10Hz



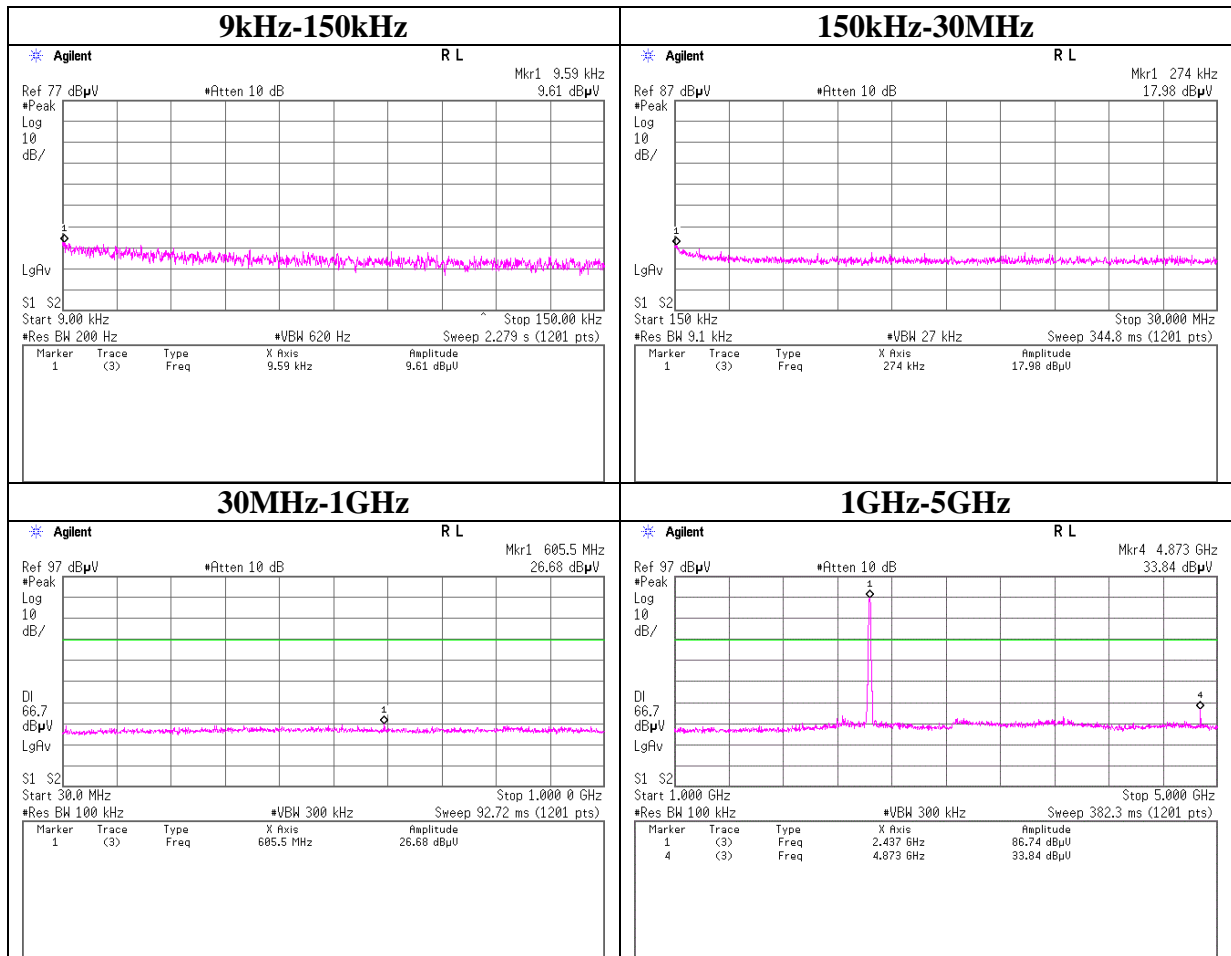
Conducted Spurious Emission
ANT1
11b Tx 2412MHz



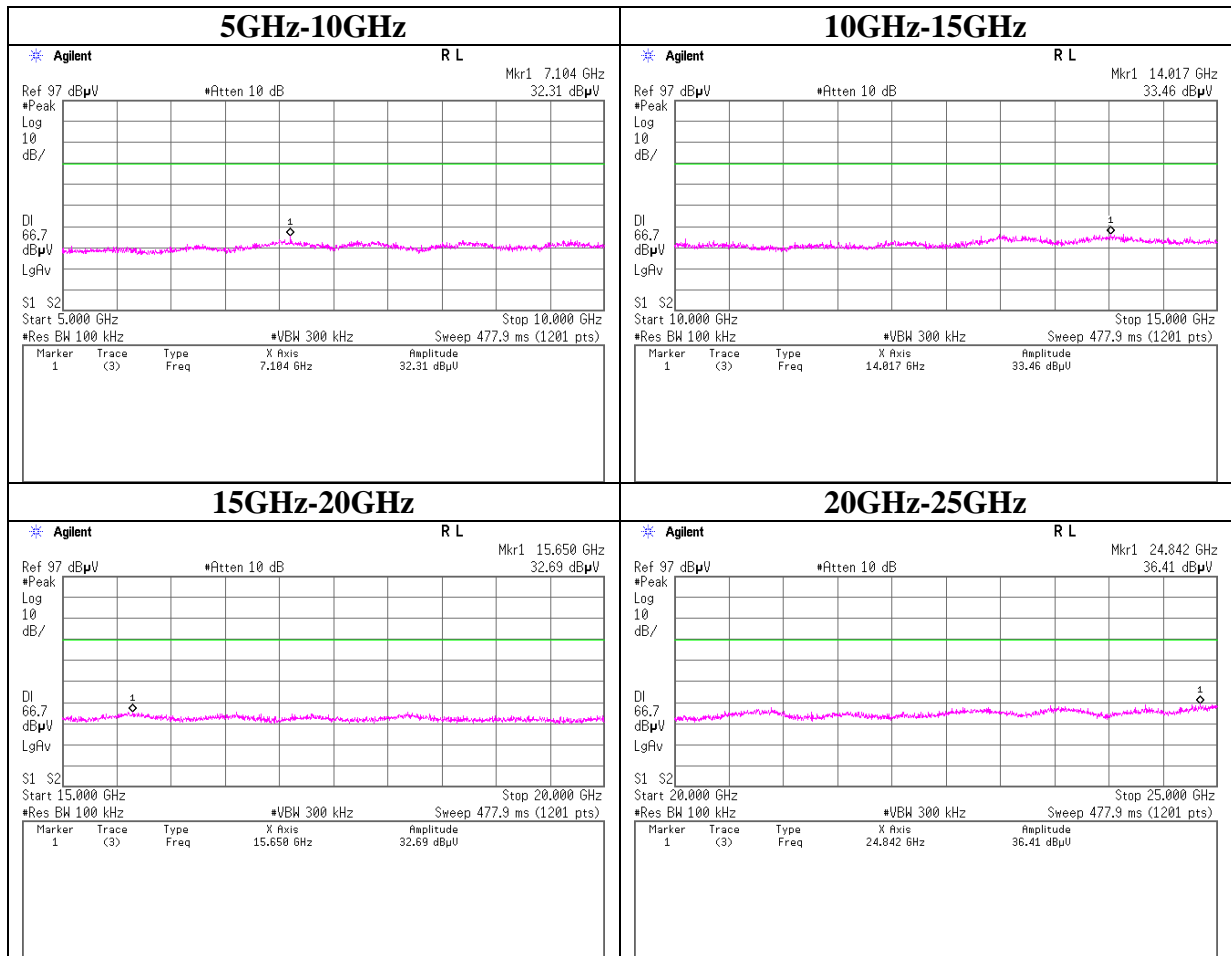
Conducted Spurious Emission
ANT1
11b Tx 2412MHz



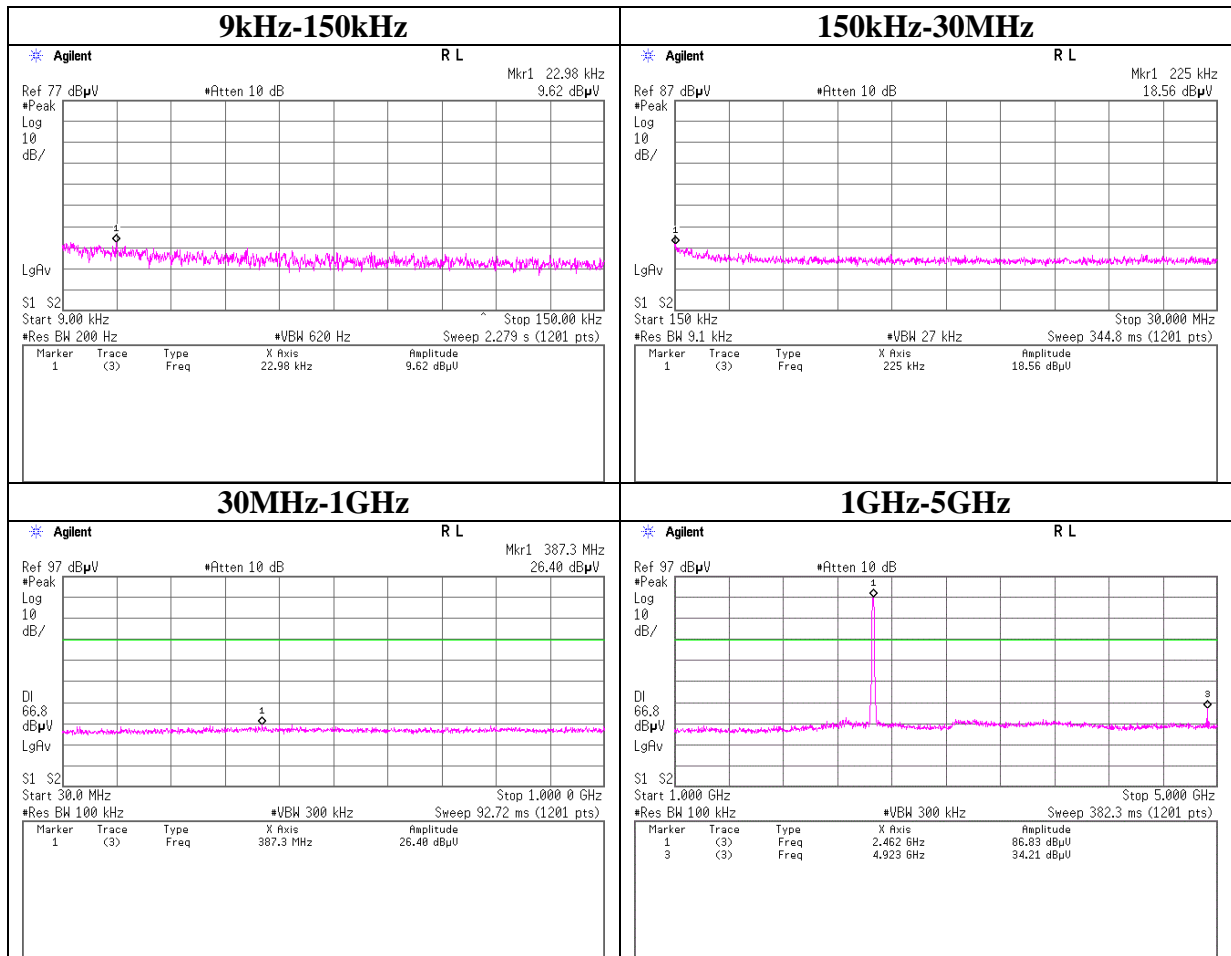
Conducted Spurious Emission
ANT1
11bTx 2437MHz



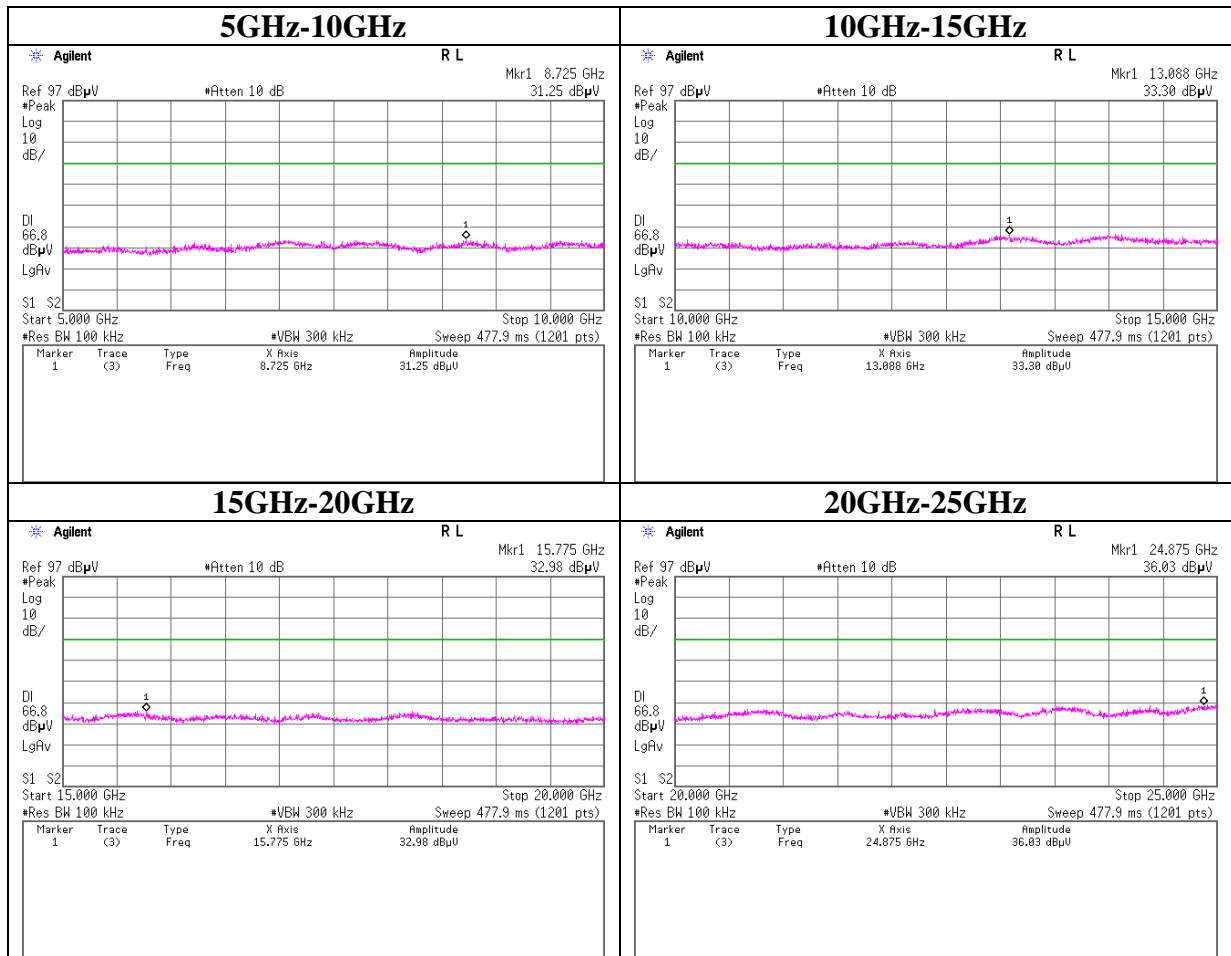
Conducted Spurious Emission
ANT1
11b Tx 2437MHz



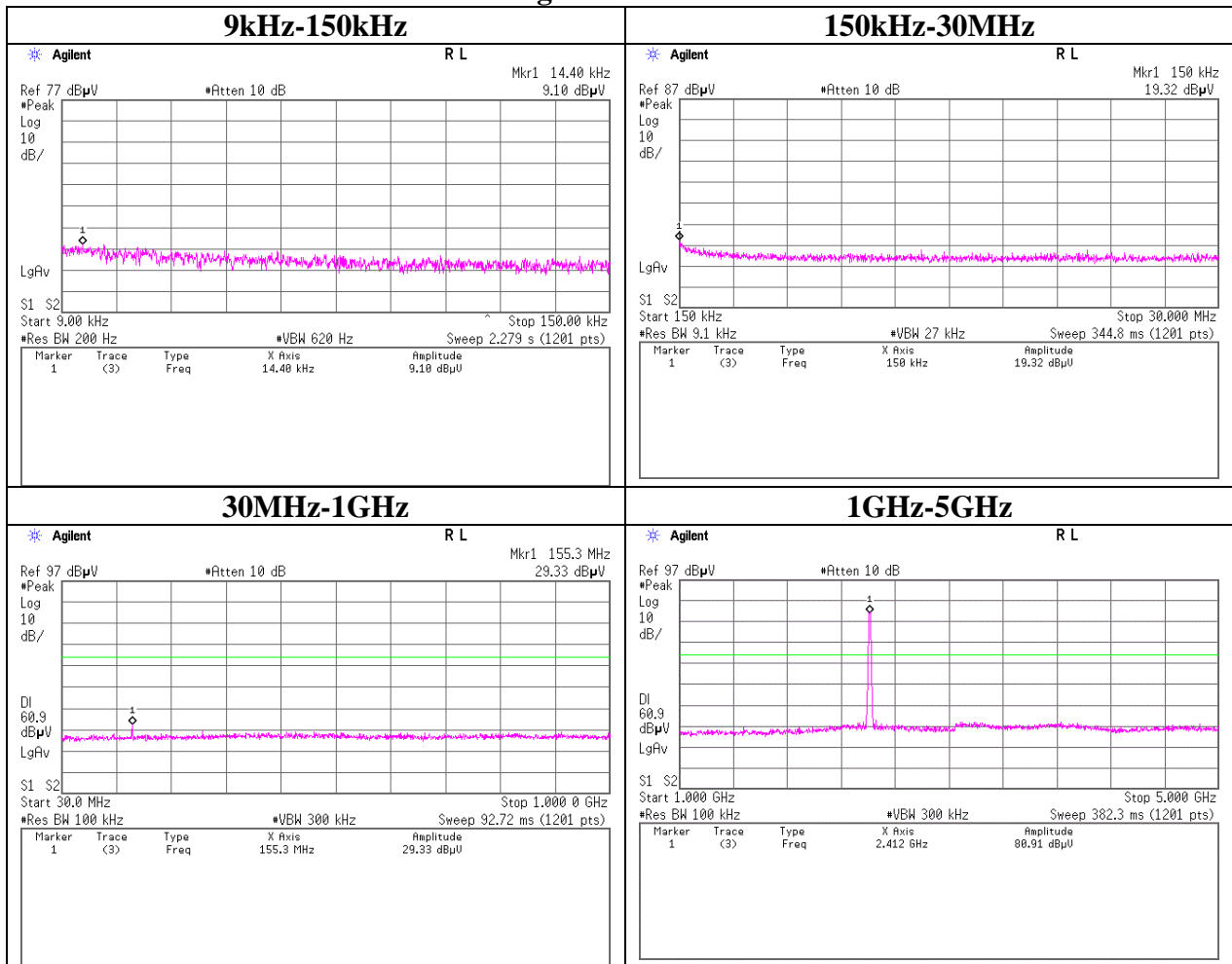
Conducted Spurious Emission
ANT1
11b Tx 2462MHz



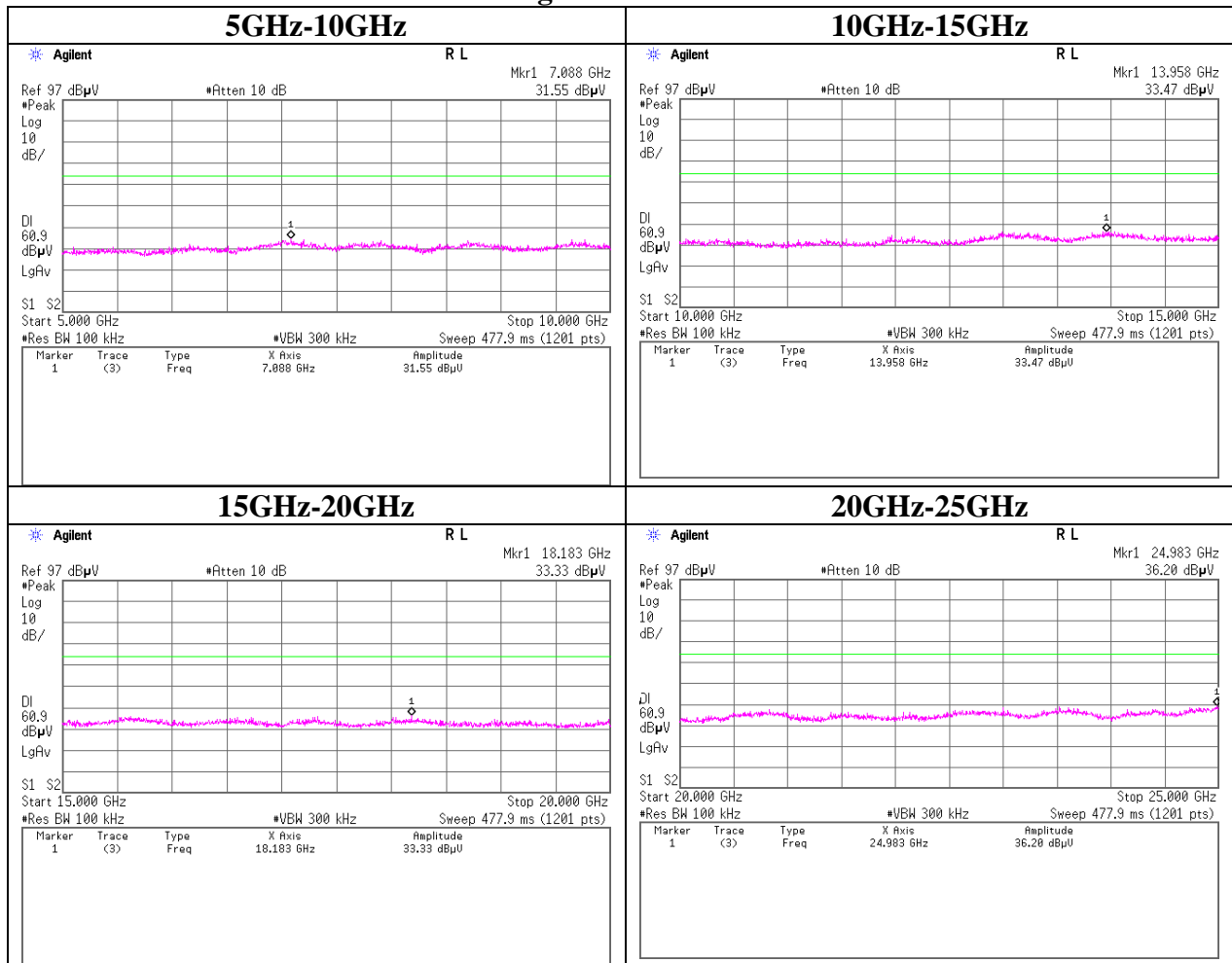
Conducted Spurious Emission
ANT1
11b Tx 2462MHz



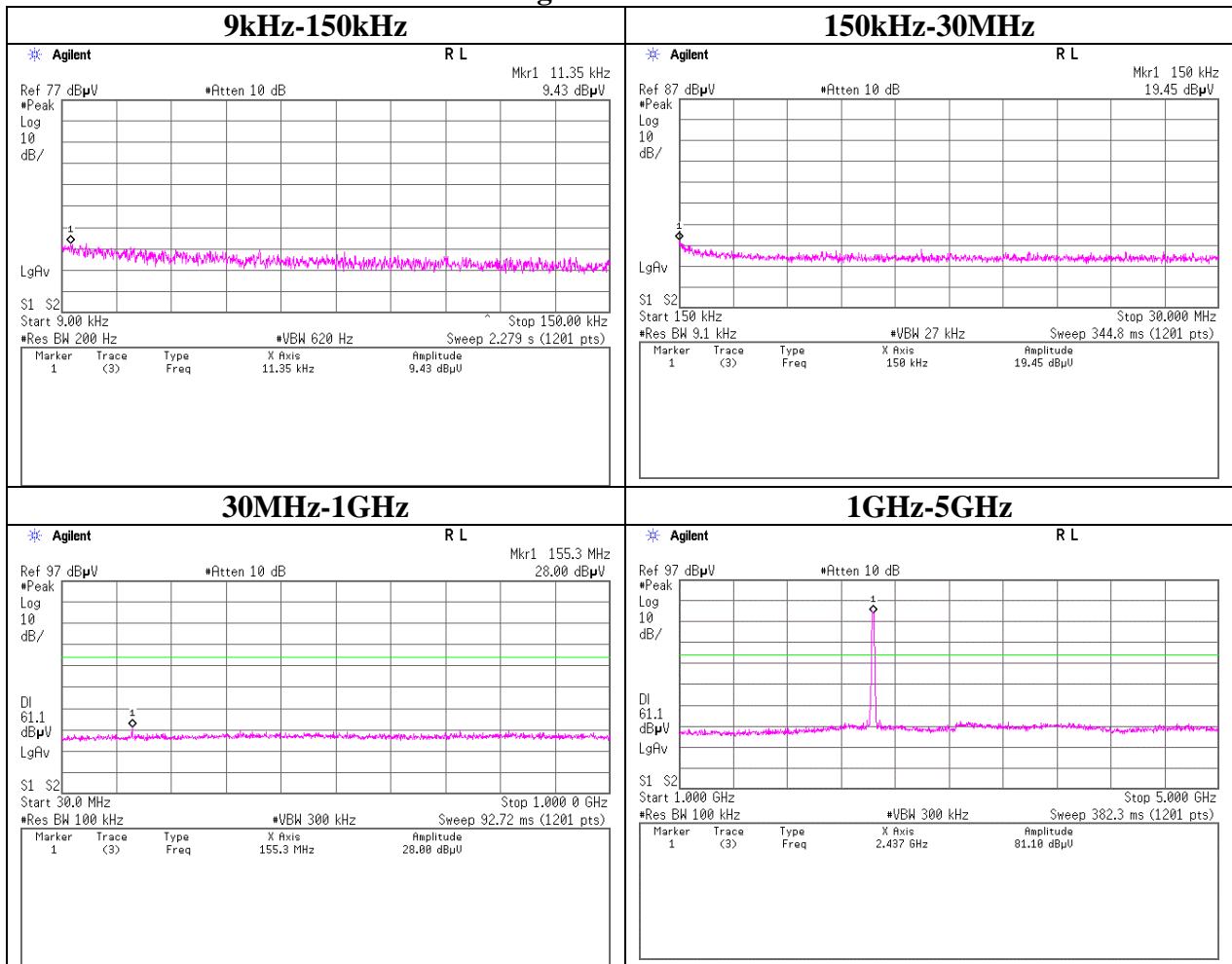
Conducted Spurious Emission
ANT1
11g Tx 2412MHz



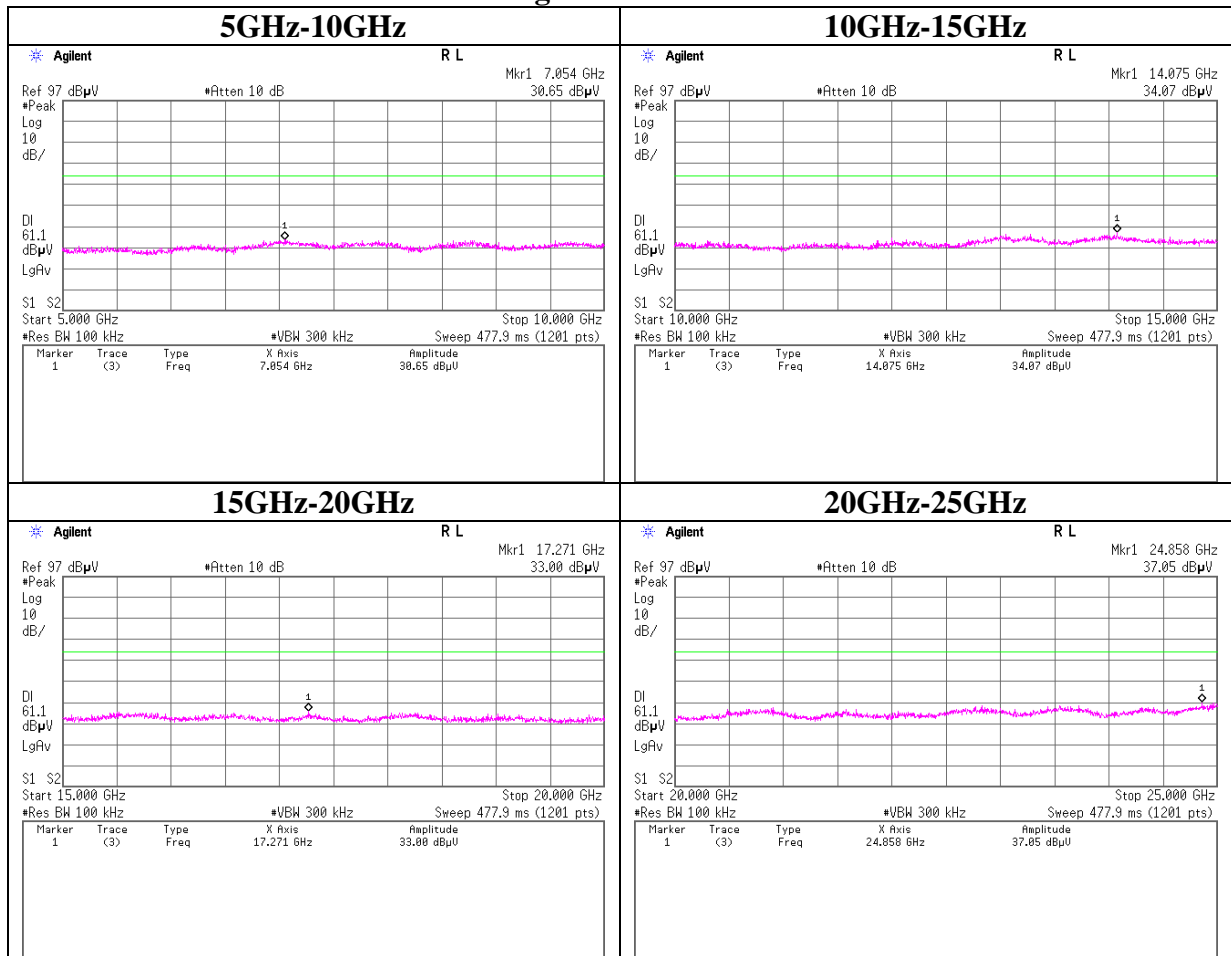
Conducted Spurious Emission
ANT1
11g Tx 2412MHz



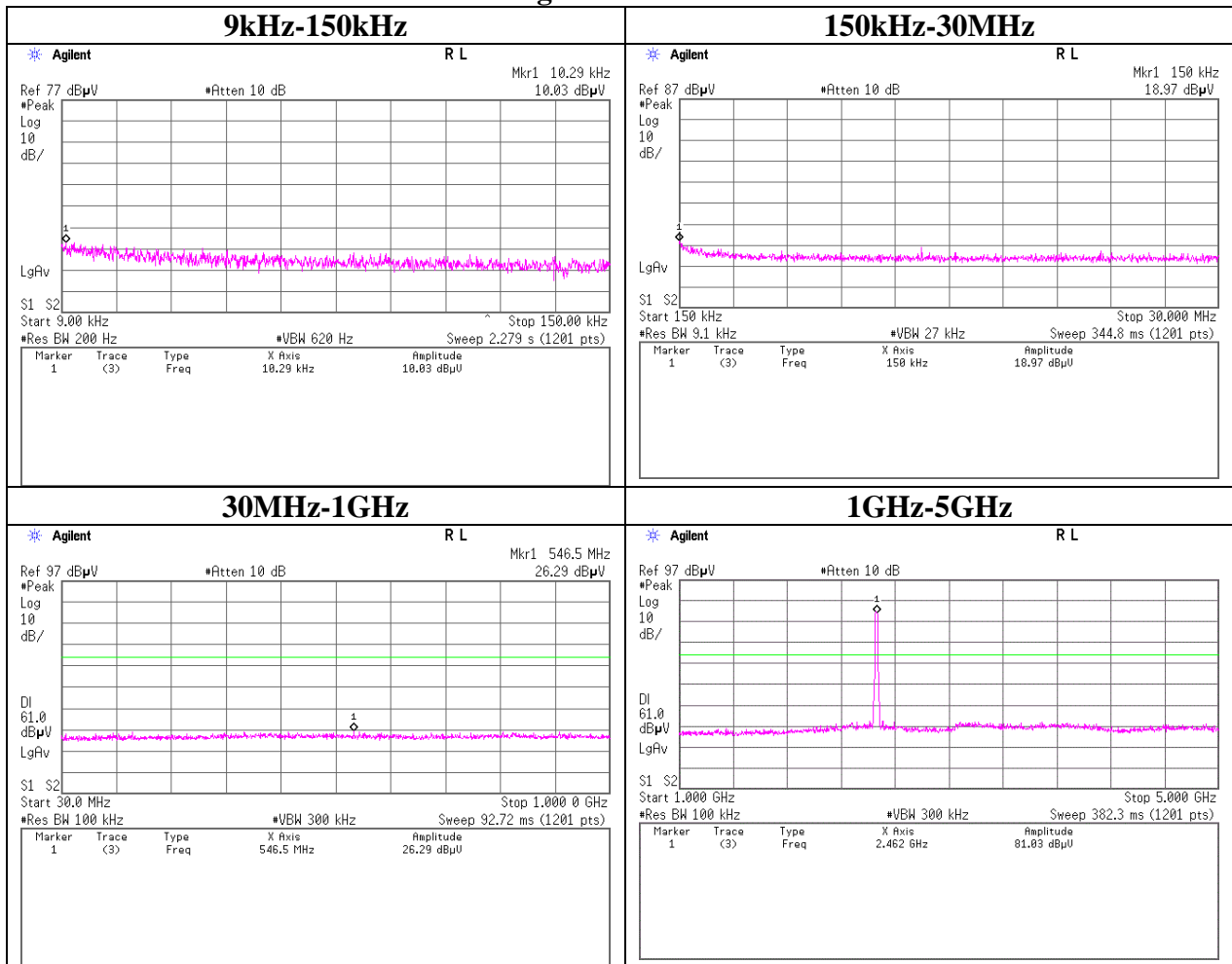
Conducted Spurious Emission
ANT1
11g Tx 2437MHz



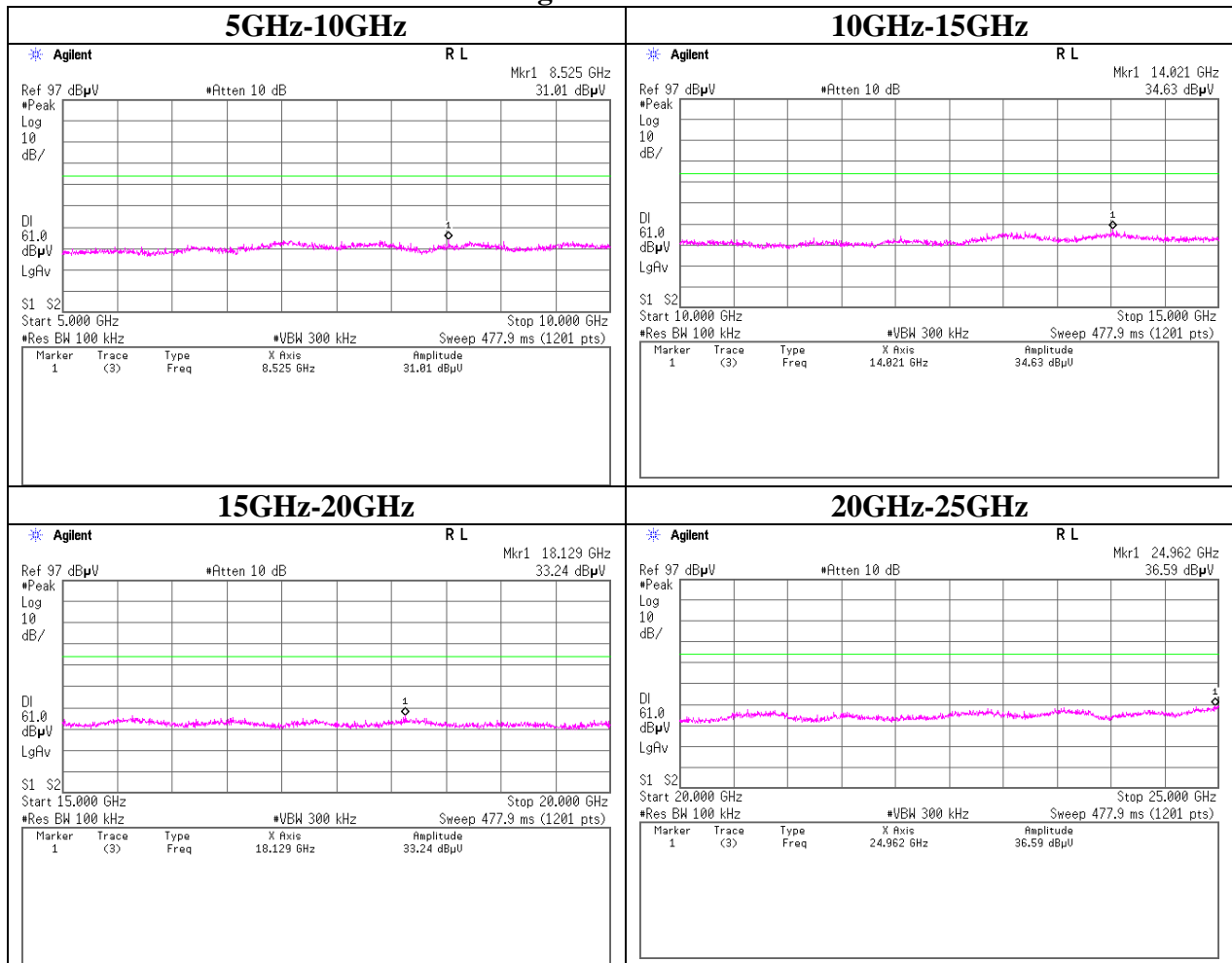
Conducted Spurious Emission
ANT1
11g Tx 2437MHz



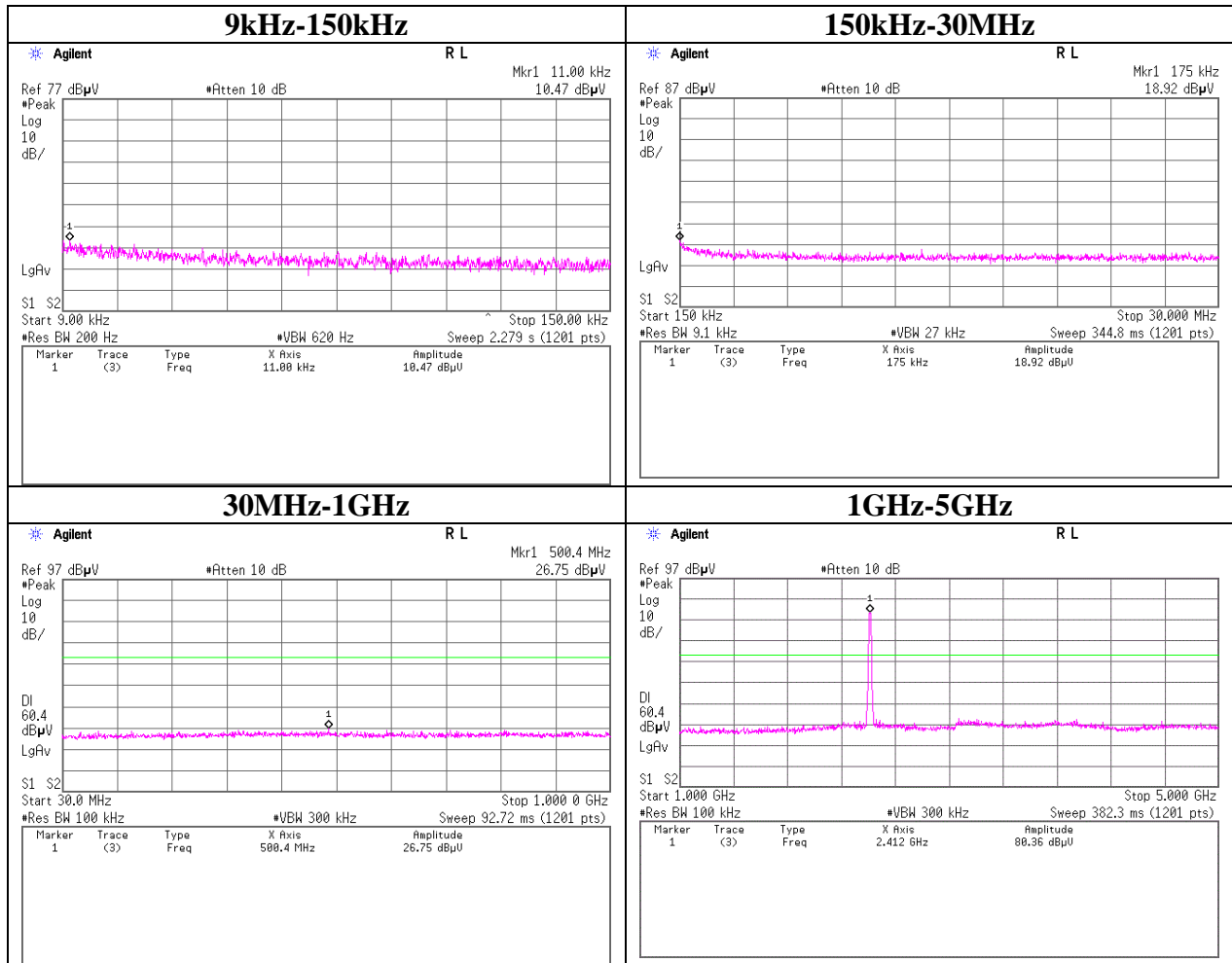
Conducted Spurious Emission
ANT1
11g Tx 2462MHz



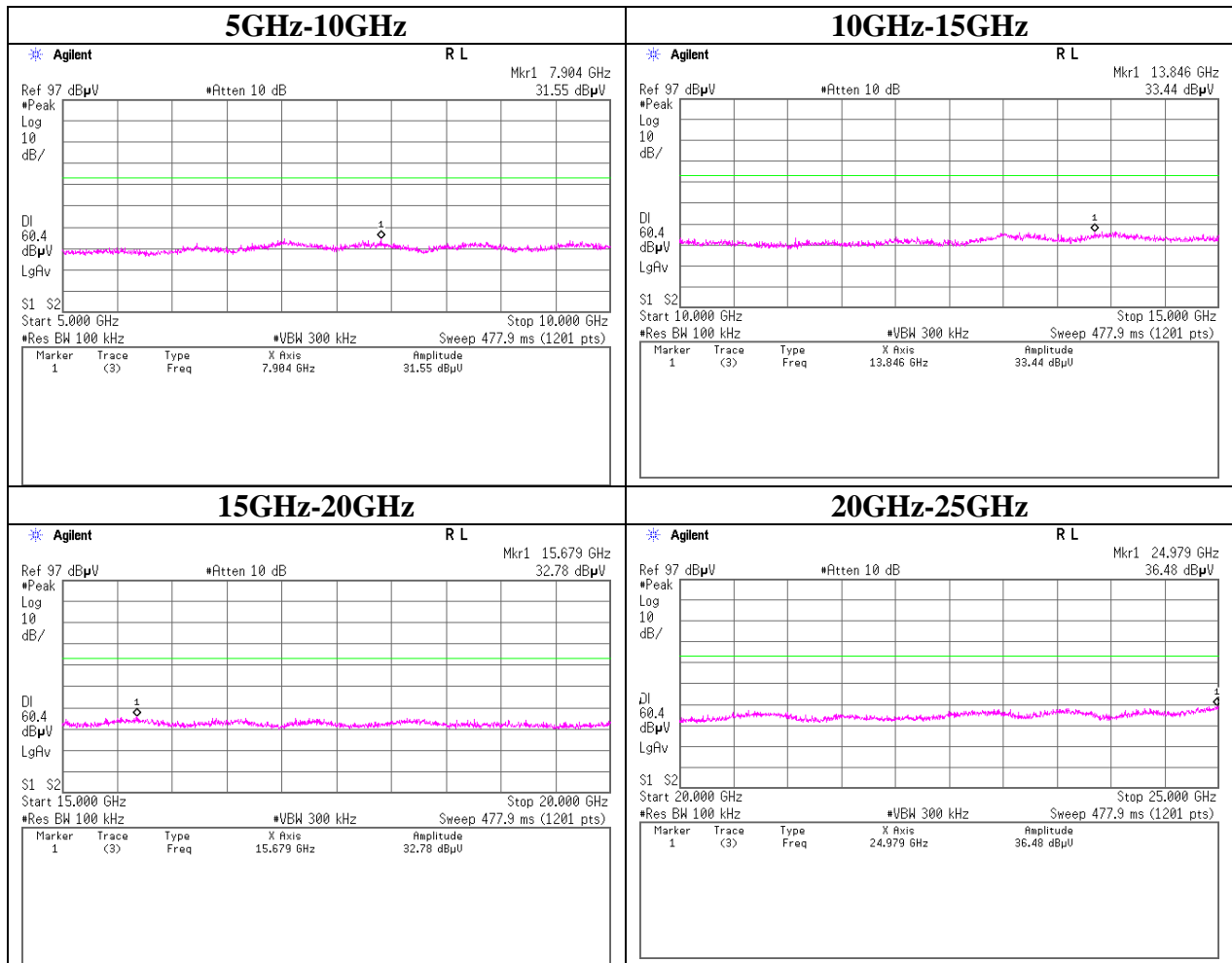
Conducted Spurious Emission
ANT1
11g Tx 2462MHz



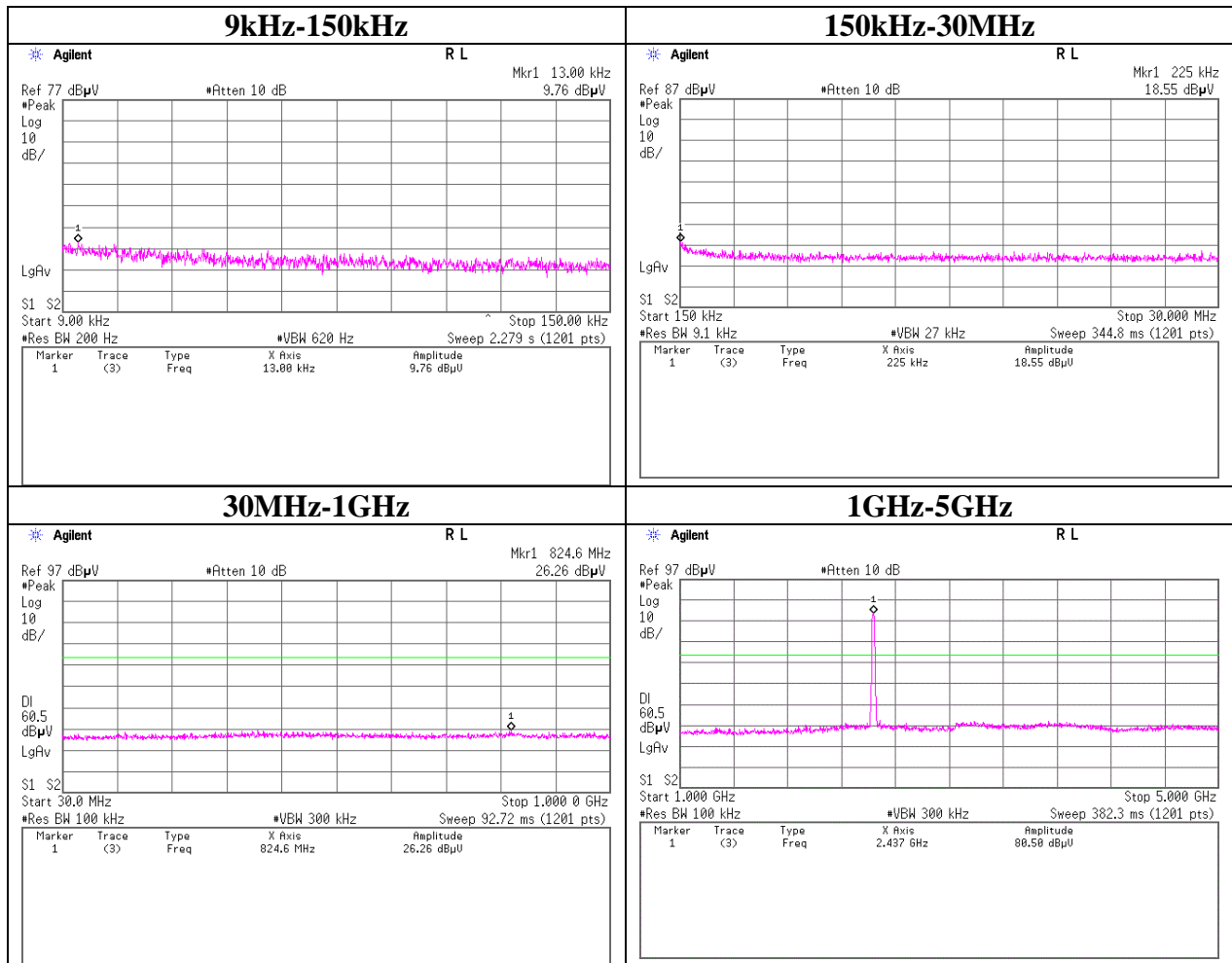
Conducted Spurious Emission
ANT1
11n-20 Tx 2412MHz



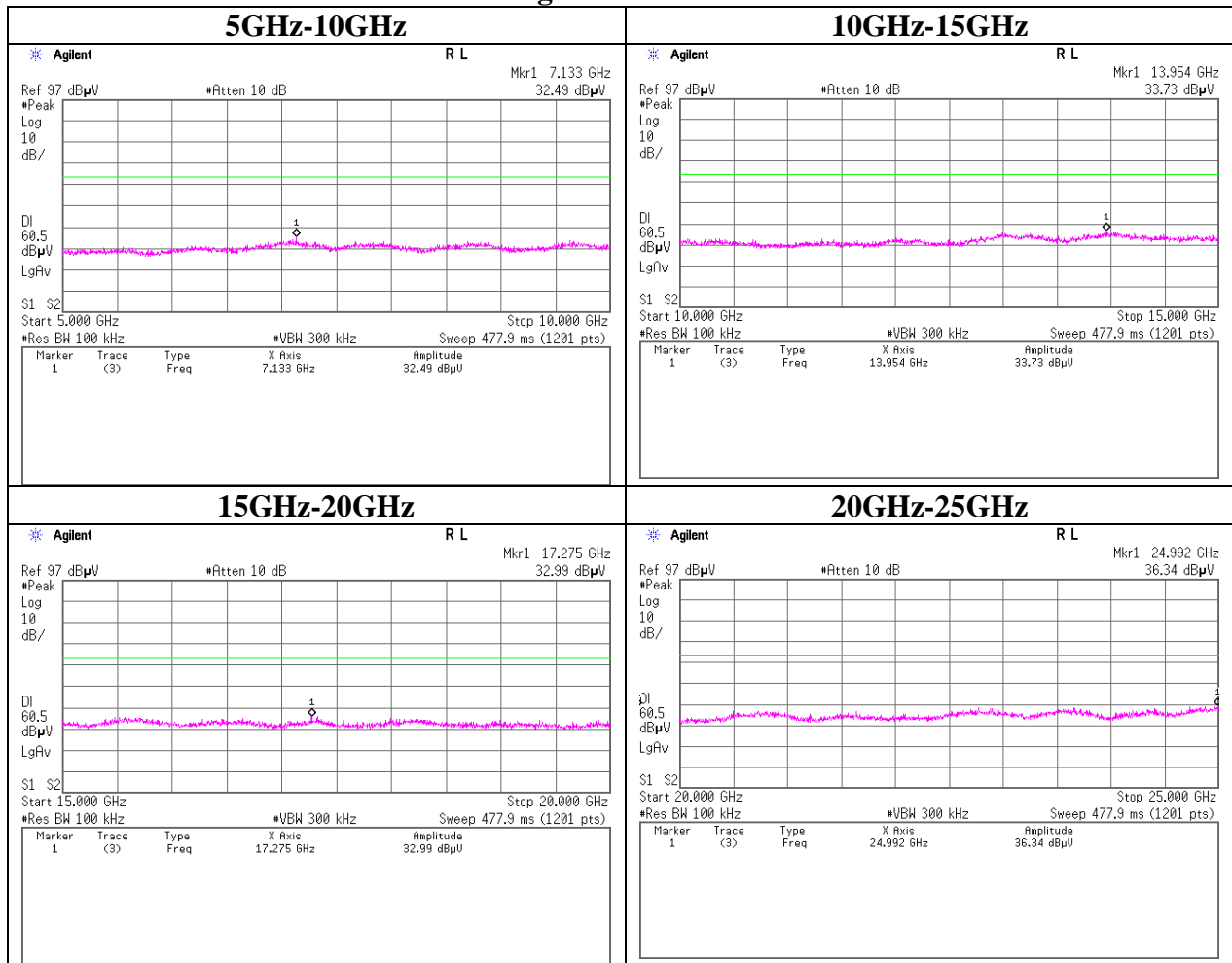
Conducted Spurious Emission
ANT1
11n-20 Tx 2412MHz



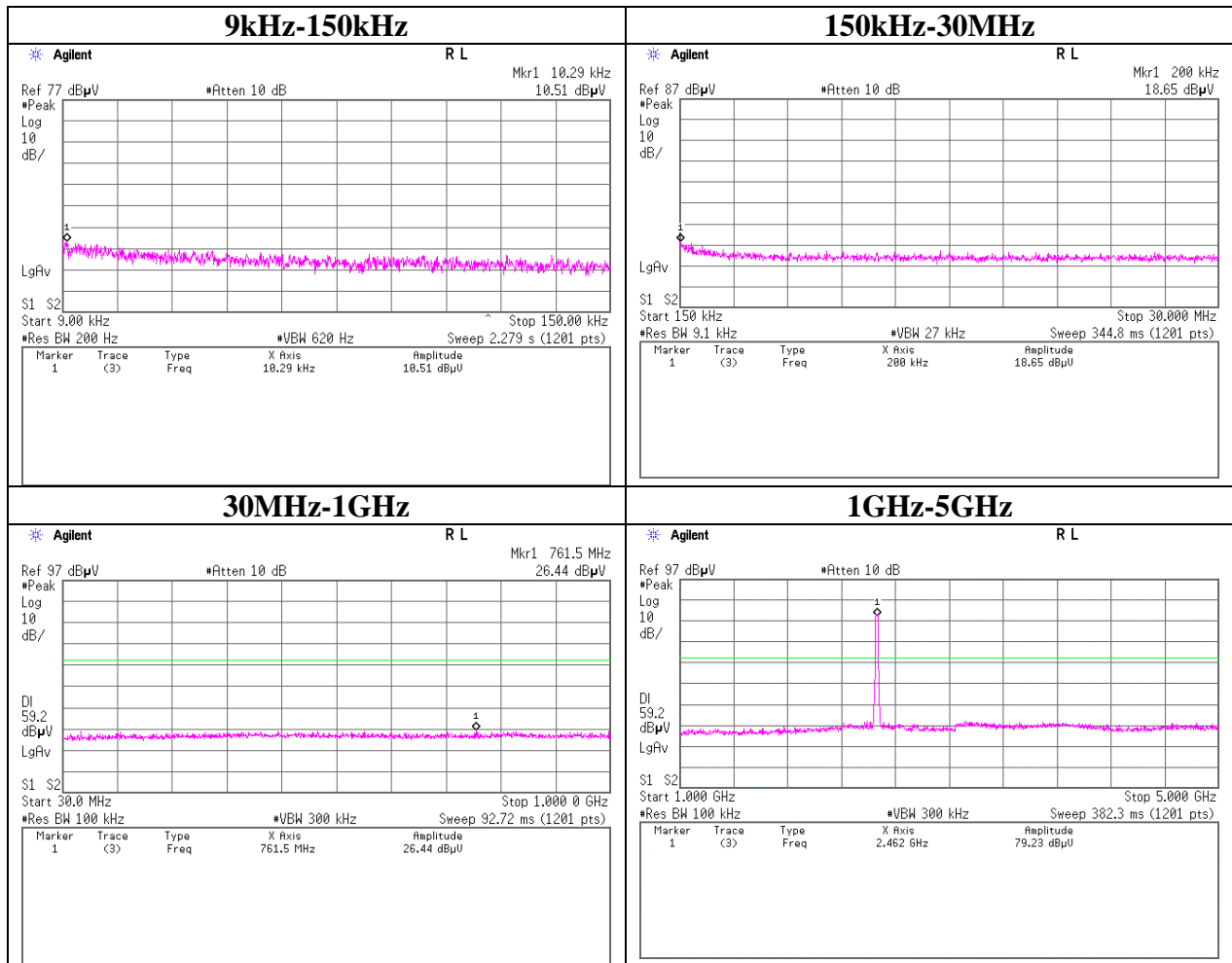
Conducted Spurious Emission
ANT1
11n-20 Tx 2437MHz



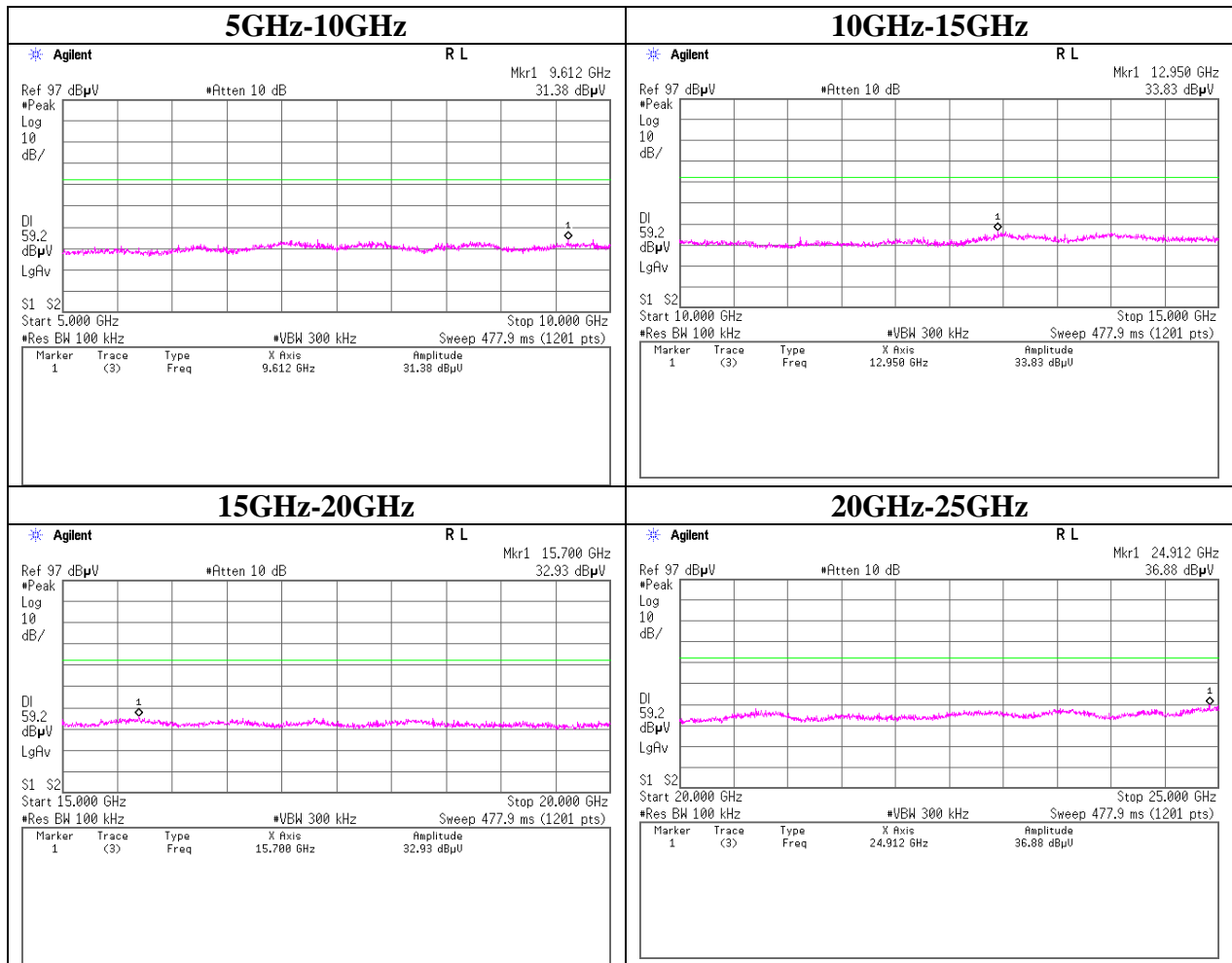
Conducted Spurious Emission
ANT1
11g Tx 2437MHz



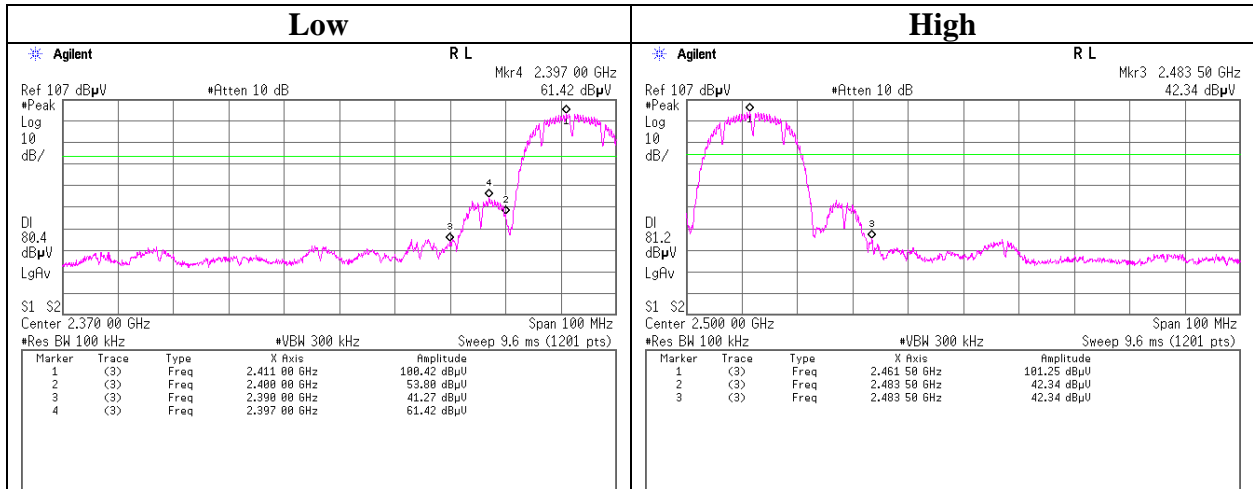
Conducted Spurious Emission
ANT1
11n-20 Tx 2462MHz



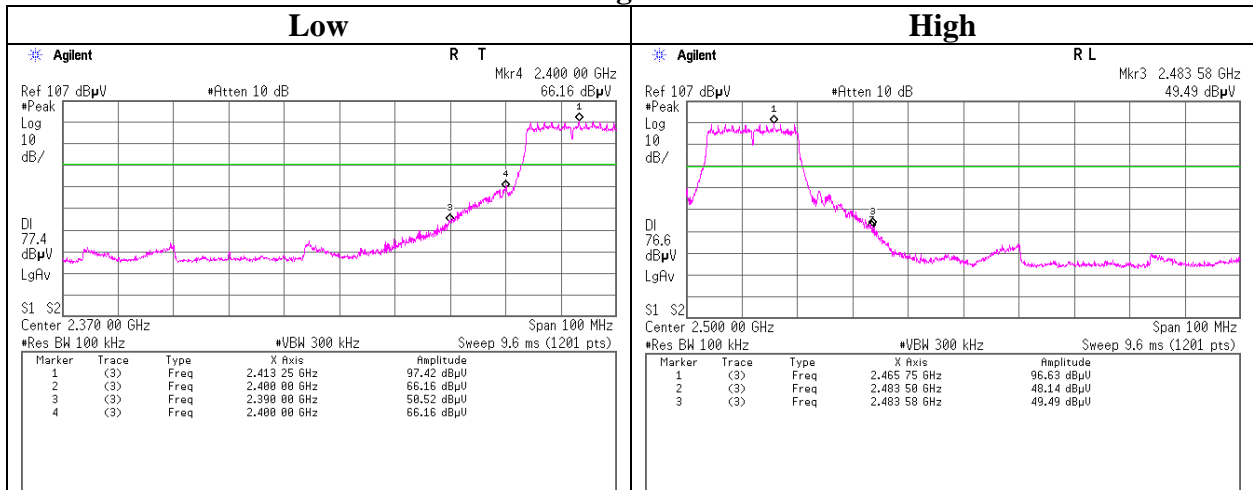
Conducted Spurious Emission
ANT1
11n-20 Tx 2462MHz



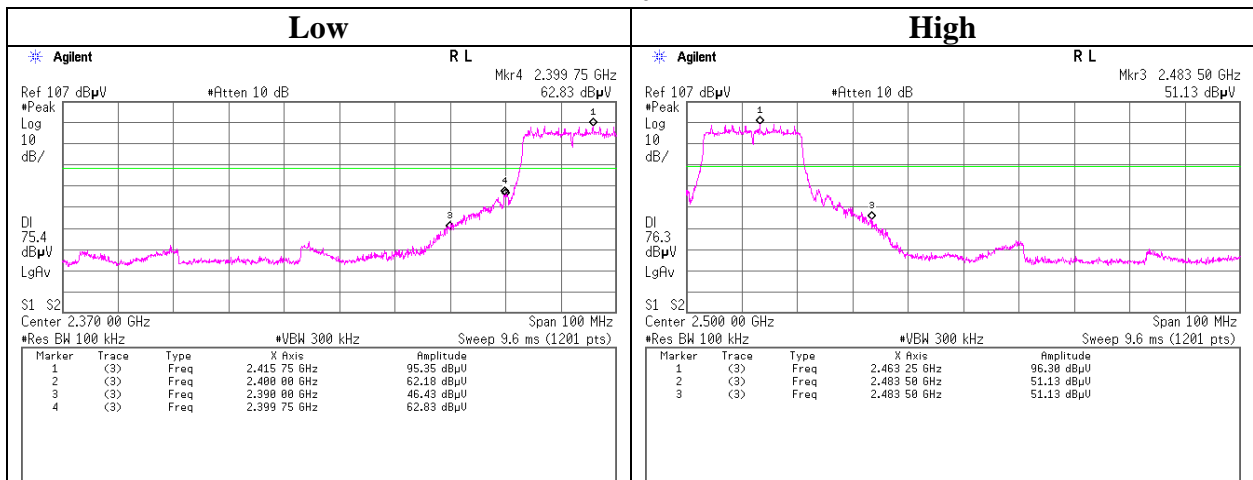
Conducted Emission Band Edge compliance
ANT1
11b Tx



11g Tx



11n-20 Tx



Power Density
ANT1

Test place Head Office EMC Lab. No.6 Shielded Room
 and No.11 measurement room
Report No. 32CE0047-HO-06
Date 02/25/2012
Temperature/ Humidity 22deg. C / 33% RH
Engineer Tomohisa Nakagawa
Mode 11b Tx / 11g Tx / 11n-20 Tx

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-8.27	1.53	10.08	3.34	8.00	4.66
2437.00	-7.78	1.54	10.09	3.85	8.00	4.15
2462.00	-6.94	1.54	10.09	4.69	8.00	3.31

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-14.14	1.34	20.08	7.28	8.00	0.72
2437.00	-13.89	1.34	20.08	7.53	8.00	0.47
2462.00	-14.18	1.35	20.08	7.25	8.00	0.75

11n-20

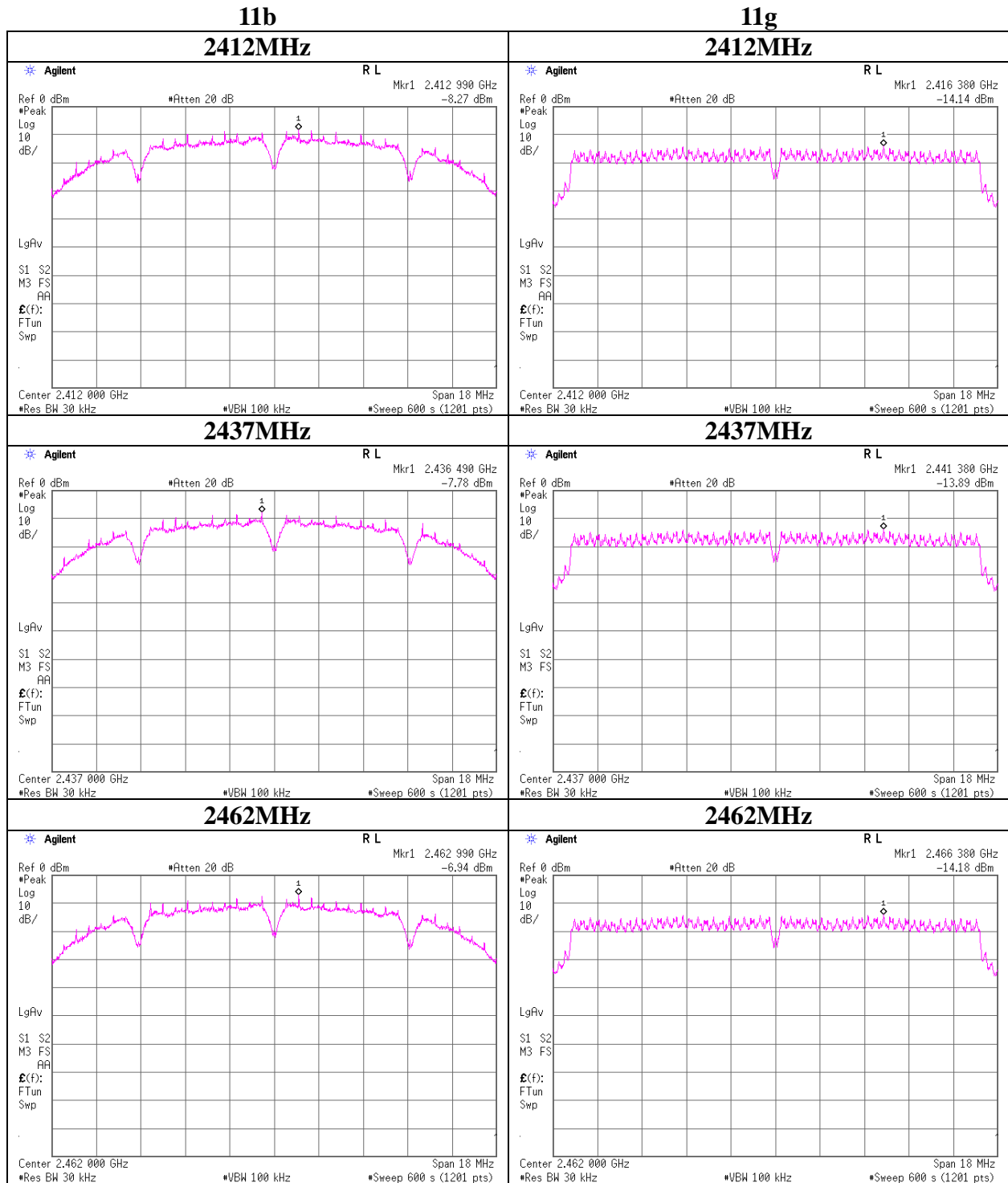
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-15.38	1.34	20.08	6.04	8.00	1.96
2437.00	-14.99	1.34	20.08	6.43	8.00	1.57
2462.00	-15.29	1.35	20.08	6.14	8.00	1.86

Sample Calculation:

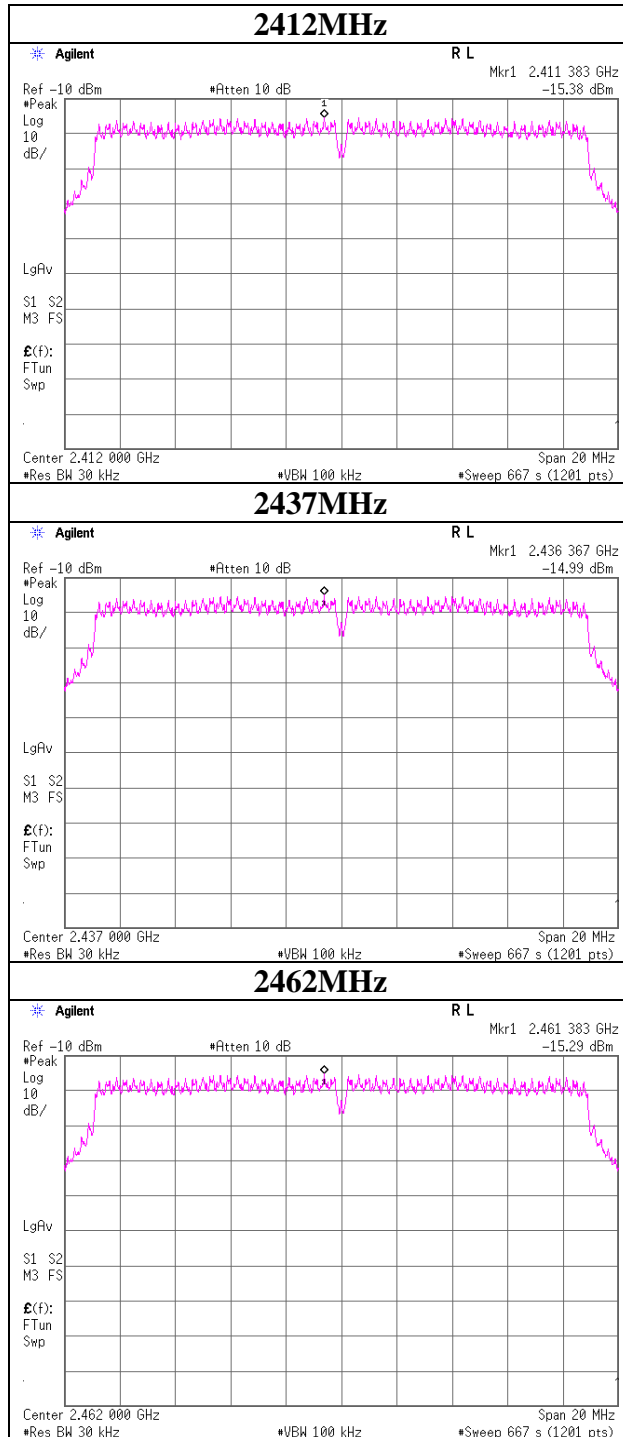
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

Power Density

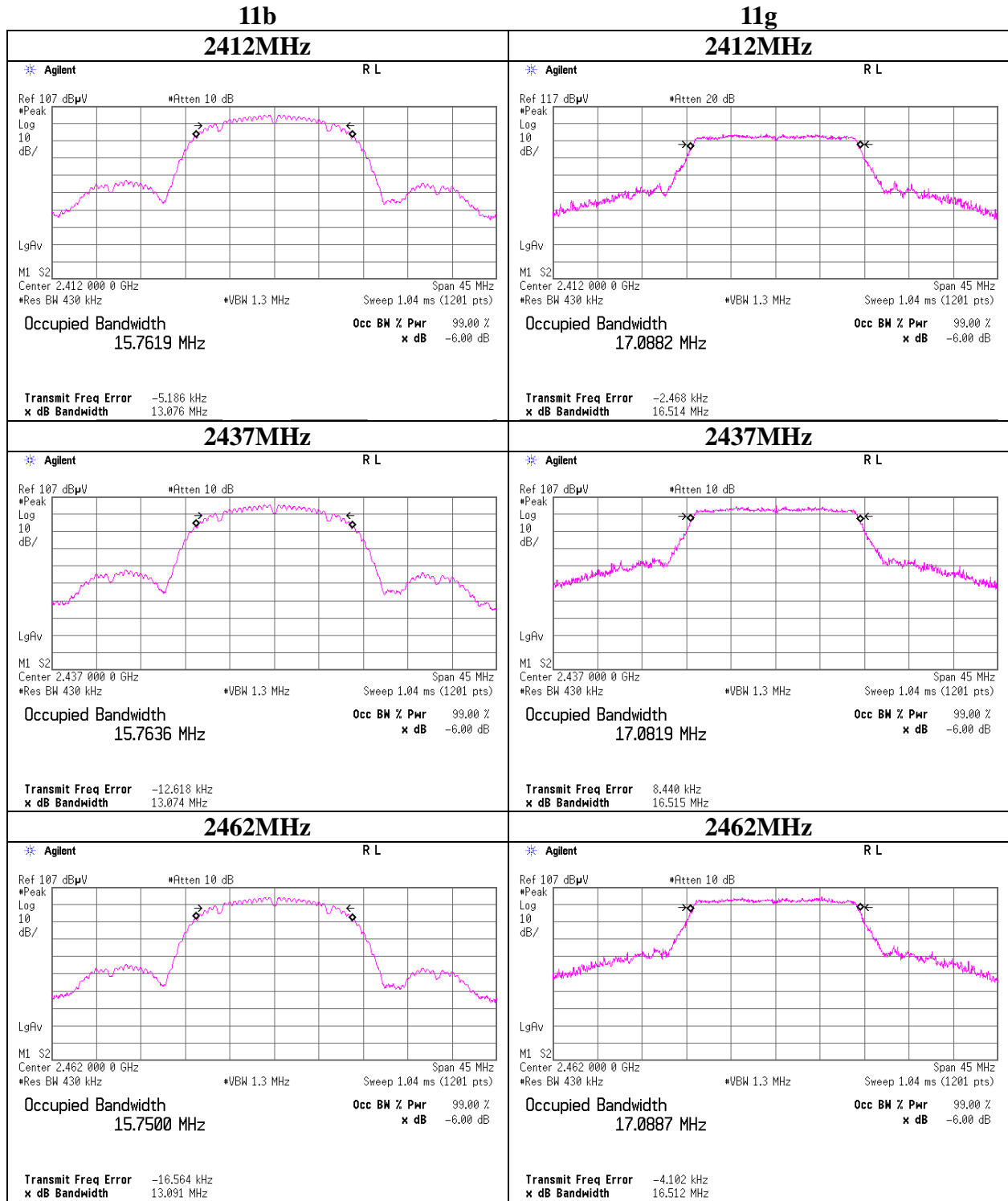
ANT1



Power Density
ANT1
11n-20



99% Occupied Bandwidth
ANT1

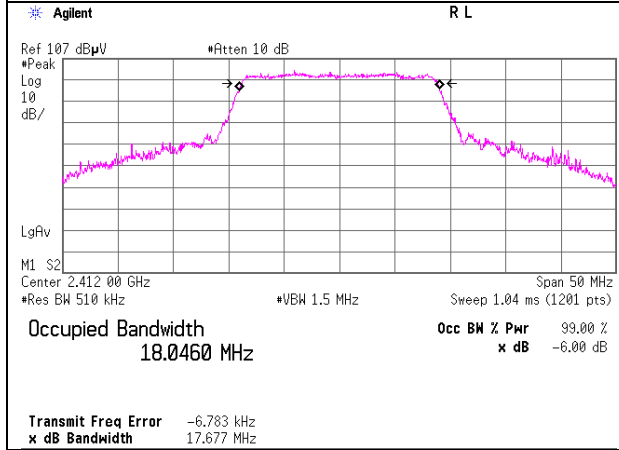


99% Occupied Bandwidth

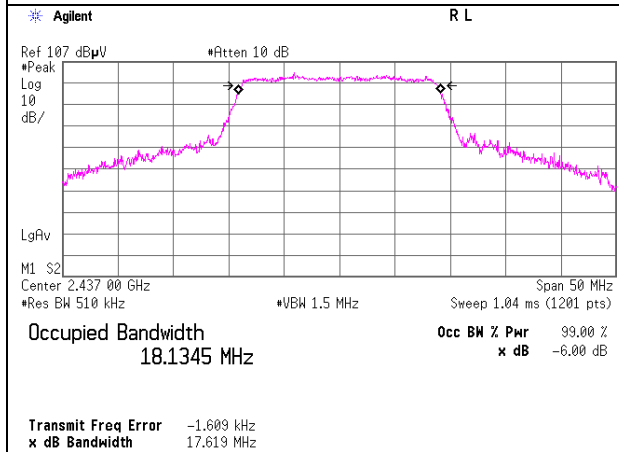
ANT1

11n-20

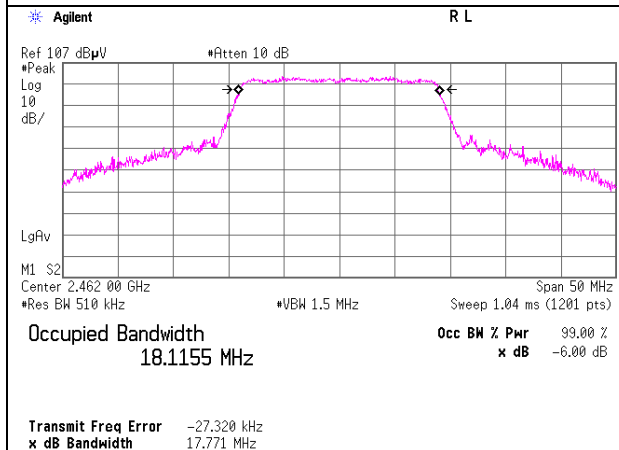
2412MHz



2437MHz



2462MHz



APPENDIX 2: Test instruments

EMI test equipment (1/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	AT	2012/02/08 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	AT	2011/08/09 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	AT	2011/08/09 * 12
MAT-24	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71389	AT	2011/06/23 * 12
MAEC-04	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2011/03/01 * 12
MOS-15	Thermo-Hygrometer	Custom	CTH-180	-	RE	2012/02/06 * 12
MJM-07	Measure	PROMART	SEN1955	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE/CE	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE/AT	2011/06/30 * 12
MHA-21	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	9120D-557	RE	2011/08/11 * 12
MCC-56	Microwave Cable	Suhner	SUCOFLEX104	270875/4(1m) / 284655(5m)	RE	2011/03/02 * 12
MPA-12	MicroWave System Amplifier	Agilent	83017A	MY39500780	RE	2011/03/10 * 12
MHF-20	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCC	607	RE	2011/09/08 * 12
MCC-79	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	278923/4	RE	2011/12/08 * 12
MTR-07	Test Receiver	Rohde & Schwarz	ESCI	100635	RE	2011/10/19 * 12
MBA-05	Biconical Antenna	Schwarzbeck	BBA9106	1302	RE	2011/11/16 * 12
MLA-08	Logperiodic Antenna	Schwarzbeck	UKLP9140-A	N/A	RE	2011/11/16 * 12
MCC-50	Coaxial Cable	UL Japan	-	-	RE	2011/03/25 * 12
MAT-51	Attenuator(6dB)	Weinschel	2	AS3557	RE	2012/01/11 * 12
MPA-14	Pre Amplifier	SONOMA INSTRUMENT	310	260833	RE	2011/03/04 * 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	2012/02/06 * 12
MJM-06	Measure	PROMART	SEN1955	-	RE/CE	
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	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
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2011/05/23 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2011/09/07 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2011/03/10 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2011/05/23 * 12

EMI test equipment (2/2)

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	8127364	CE(EUT)	2012/02/09 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(AE)	2012/02/06 * 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	2012/01/28 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	AT	2011/10/28 * 12
MAT-20	Attenuator(10dB)(above 1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	AT	2012/01/12 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	AT	2012/02/06 * 12
MCC-137	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37954/2	AT	2011/10/28 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2011/03/14 * 12
MAT-25	Attenuator(10dB)(above 1GHz)	Agilent	8493C	71642	AT	2011/06/23 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	AT	2011/04/08 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2011/12/09 * 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**