

Application for FCC Certification
On behalf of

Spring Design Inc.

Product Name: alexTM reader

Model No.: DS-10

Serial No.: B102009C000010

FCC ID: XY9SDI001SH

Prepared For : Spring Design Inc.
Suite 1006, Building 67, No. 421, Hongcao Rd.
Shanghai, China

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Report No. : ACI-F10019
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Date of Report : Mar. 05, 2010

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TEST REPORT FOR FCC CERTIFICATE

Applicant : Spring Design Inc.
Manufacturer : Tech-Giant (Shanghai) Computer Co., Ltd.
EUT Description : alexTM reader
(A) Model No. : DS-10
(B) Serial No. : B102009C000010
(C) Power Supply : DC 3.7V (Lithium Battery)
(D) Test Voltage : AC 120V/60Hz via switching adapter

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C OCTOBER 2008
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: DS-10, S/N: B102009C000010), which was tested on Feb. 04 - 09, 2010 is technically compliance with the FCC limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Feb. 04 – Mar. 04, 2010 Date of Report : Mar. 05, 2010

Producer : Alan He
ALAN HE / Assistant

Review : Dio Yang
DIO YANG / Deputy Assistant Manager

AUDIX[®] For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN/ Assistant Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit
EMISSION			
Conducted Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.207
Radiated Emission	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.209(a) 15.205(a)(c)
6 dB Bandwidth Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(a)(2)
Maximum Peak Output Power Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(b)(3)
Emission Limitations Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Band Edge Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(d)
Power Spectral Density Measurement	FCC RULES AND REGULATIONS PART 15 SUBPART C October 2008 AND ANSI C63.4:2003 AND KDB558074	Pass	15.247(e)

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description : alexTM reader

Type of EUT ☒ Production ☐ Pre-product ☐ Pro-type

Model Number : DS-10

Serial Number : B102009C000010

Note : The EUT has two different color models:
Black model as DSB-10 & white model as DSW-10

Applicant : Spring Design Inc.
Suite 1006, Building 67, No. 421, Hongcao Rd.
Shanghai, China

Manufacturer : Tech-Giant (Shanghai) Computer Co., Ltd.
B# No.68, Rongjiang Road, Songjiang EPZ,
Shanghai 201613 China

Power Supply : DC 3.7V (Lithium Battery)

Lithium Battery : Manufacturer : Spring Design Inc.
P/N No : 99-26-050013
Rating : 3.7V 1530mAh 5.66Wh

Switching Adapter : Manufacturer : Spring Design Inc.
M/N : SA105K-05
I/P : AC 100-240V 50/60Hz 0.15A
O/P : DC 5V 1A 5W

Radio Tech : IEEE 802.11b/g

Freq. Band : 2412 MHz - 2462 MHz
Total 11 Channels in 5 MHz Separation

Tested Freq. : 2412 MHz (Channel 01)
2437 MHz (Channel 06)
2462 MHz (Channel 11)

Modulation : DSSS for 802.11b
OFDM for 802.11g

Transmit data rate: 802.11b: 1, 2, 5.5, 11, 22 Mbps
802.11g: 6, 9, 12, 18, 24, 36, 48, 54, 72 Mbps
After testing, the highest peak output power of the EUT was at 11 Mbps in 802.11b mode and 6 Mbps in 802.11g mode.
So 11 Mbps and 6 Mbps mode were representative selected to test in this report.

Antenna Gain : 1.41dBi

2.2 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
Apr 29, 2009 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3 F 34 Bldg 680 Guiping Rd.,
Caohejing Hi-Tech Park,
Shanghai 200233, China

FCC registration Number : 91789

Accredited by NVLAP, Lab Code : 200371-0

2.3 Measurement Uncertainty

Conducted Emission Expanded Uncertainty : U = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB
6 dB Bandwidth Expanded Uncertainty : U = 0.05 kHz
Maximum Peak Output Power Expanded Uncertainty : U = 0.30 dBm
Emission Limitations Expanded Uncertainty : U = 0.15 dB
Band Edge Expanded Uncertainty : U = 0.15 dB
Power Spectral Density Expanded Uncertainty : U = 0.15 dB

3 CONDUCTED EMISSION TEST

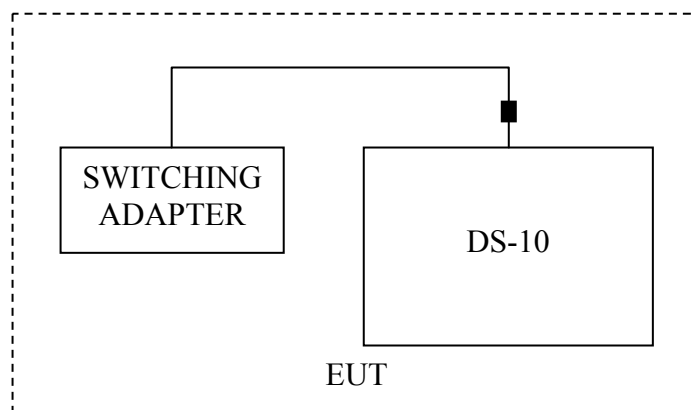
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

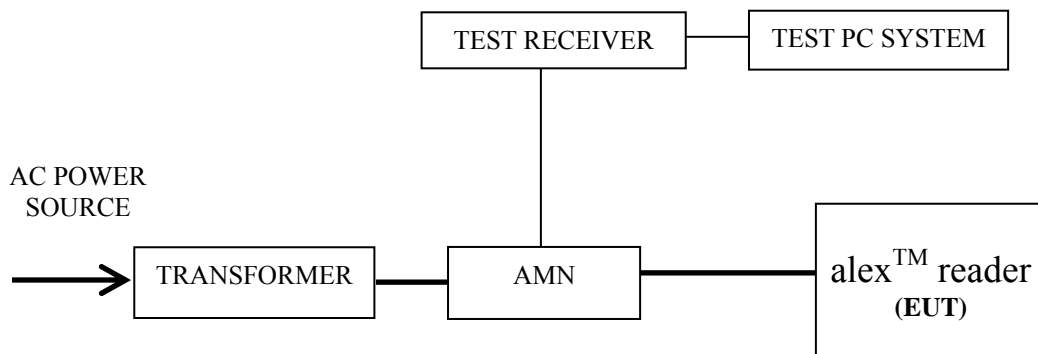
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESCI	100841	Nov 21, 2009	Nov 21, 2010
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2009	Apr 02, 2010
3.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep19, 2009	Mar 19, 2010
4.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2009	Apr 02, 2010
5.	Software	Audix	E3	SET00200 9804M592	--	--

3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



3.2.2 Conducted Disturbance Test Setup



— : Signal Line
 — : Power Line
 ■ : 50 ohm Terminator

3.3 Conducted Emission Limits [FCC Part 15 Subpart C 15.207]

Frequency Range (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56*	56~46*
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE – *Decreases with the logarithm of the frequency.		

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the EUT on the test mode (Transmitting), and then test.

3.6 Test Procedures

The EUT was connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 – The worst emission is detected at 0.163 MHz (Average Value) with corrected signal level of 43.51 dB (μV) (limit is 55.31 dB (μV)), when the Neutral of the EUT is connected to AMN.

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 48%RH

Serial No. : B102009C000010 Date of Test : Feb. 04, 2010

Test Mode : Transmitting

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.163	45.59	0.24	45.83	65.32	19.49	QP
	0.199	39.20	0.25	39.45	63.67	24.22	
	0.239	34.97	0.33	35.30	62.13	26.83	
	0.493	32.53	0.47	33.00	56.11	23.11	
	0.552	30.87	0.46	31.33	56.00	24.67	
	1.324	23.79	0.50	24.29	56.00	31.71	
	0.163	38.80	0.24	39.04	55.32	16.28	AV
	0.199	31.21	0.25	31.46	53.67	22.21	
	0.239	26.17	0.33	26.50	52.13	25.63	
	0.493	22.70	0.47	23.17	46.11	22.94	
	0.552	20.99	0.46	21.45	46.00	24.55	
	1.324	14.96	0.50	15.46	46.00	30.54	
Neutral	0.163	50.60	0.21	50.81	65.31	14.50	QP
	0.197	43.00	0.23	43.23	63.76	20.53	
	0.237	41.06	0.31	41.37	62.22	20.85	
	0.484	33.30	0.44	33.74	56.27	22.53	
	0.552	32.40	0.44	32.84	56.00	23.16	
	1.503	26.16	0.51	26.67	56.00	29.33	
	0.163	43.30	0.21	43.51	55.31	11.80	AV
	0.197	30.90	0.23	31.13	53.76	22.63	
	0.237	30.49	0.31	30.80	52.22	21.42	
	0.484	22.60	0.44	23.04	46.27	23.23	
	0.552	20.78	0.44	21.22	46.00	24.78	
	1.503	17.59	0.51	18.10	46.00	27.90	

TEST ENGINEER: HUGH HUANG

4 RADIATED EMISSION TEST

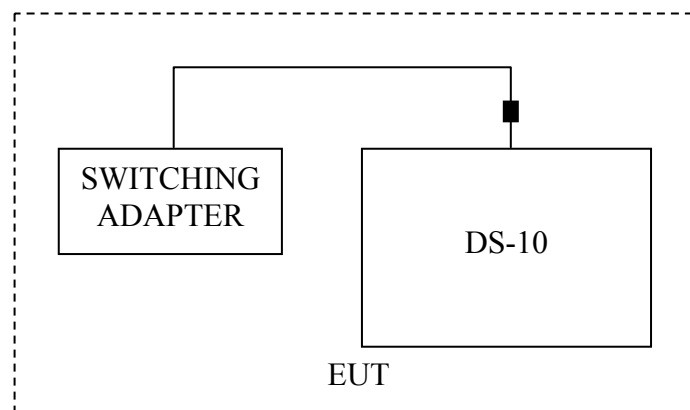
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

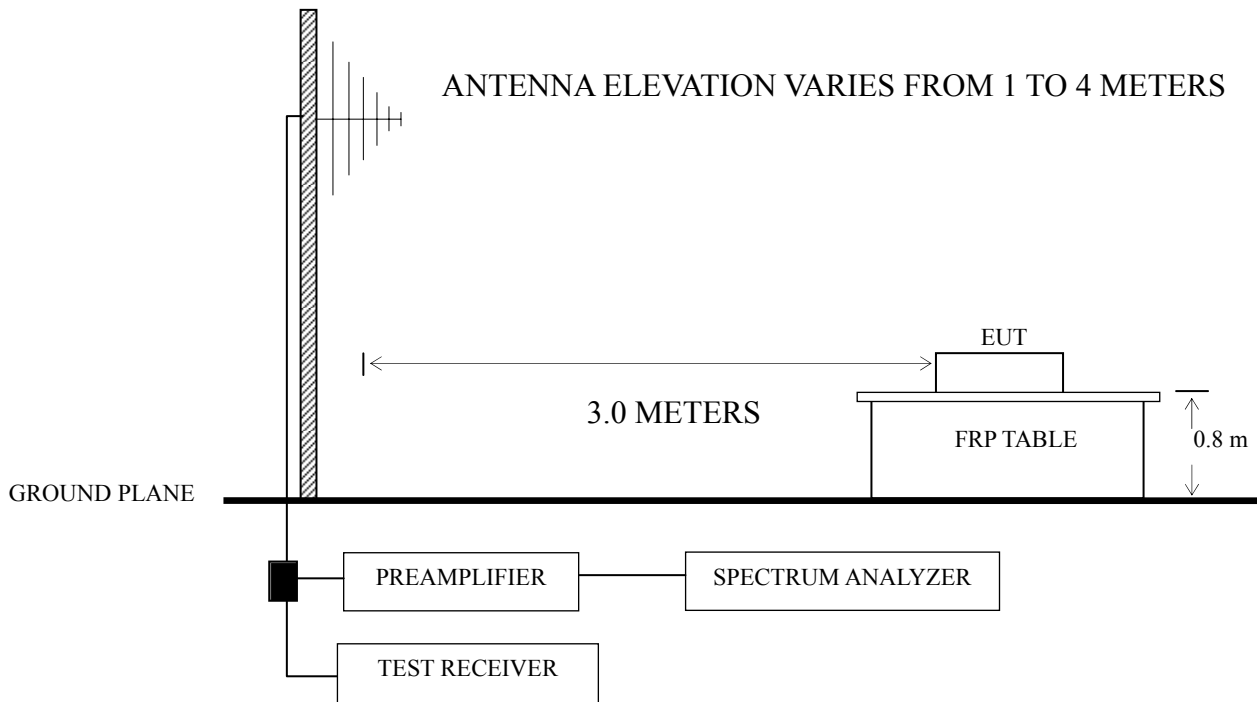
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Preamplifier	Agilent	8447D	2944A10548	Sep 19, 2009	Mar 19, 2010
2.	Preamplifier	HP	8449B	3008A00864	May 19, 2009	May 19, 2010
3.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010
4.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2009	Mar 07, 2010
5.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2009	May 14, 2010
6.	Horn Antenna	EMCO	3115	9607-4878	Oct 26, 2009	Oct 26, 2010
7.	Horn Antenna	EMCO	3116	00062643	Oct 26, 2009	Oct 26, 2010
8.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426390	Sep 19, 2009	Mar 19, 2010
9.	Software	Audix	E3	SET00200 9912M295-2	-	-

4.2 Block Diagram of Test Setup

4.2.1 EUT & Peripherals



4.2.2 Test Setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart C 15.209]

Frequency (MHz)	Distance (m)	Field strength limits ($\mu\text{V/m}$)	
		($\mu\text{V/m}$)	$\text{dB}(\mu\text{V/m})$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level $\text{dB}(\mu\text{V/m}) = 20 \log \text{Emission Level}(\mu\text{V/m})$

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.3.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn on the power of all equipment.

4.5.3 Turn the EUT on the test mode, and then test.

4.5.4 Configured the EUT in three axis: Lying, Side, Stand, and test separately.

4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of the VBW was set at 1MHz and RBW was set at 1MHz for peak emission measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emission above 1GHz for Spectrum Agilent E7405A.

The frequency range from 30 MHz to 25 GHz (Up to 10th harmonics from fundamental frequency) was checked.

The EUT was tested under the following test modes:

Mode	Operation	Channel	Frequency
1.	Transmitting	01	2412 MHz
2.		06	2437 MHz
3.		11	2462 MHz
4.	Receiving	06	2437 MHz
5.	Transmitting Band-Edge	01	2412 MHz
6.		11	2462 MHz

All the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

No.	Operation	Modulation	Channel	Frequency	Data Page
1.	Transmitting	802.11b	01	2412 MHz	P18
2.			06	2437 MHz	P19
3.			11	2462 MHz	P20
4.		802.11g	01	2412 MHz	P21
5.			06	2437 MHz	P22
6.			11	2462 MHz	P23
7.	Receiving	--	--	--	P24
9.	Transmitting	802.11b	01	2412 MHz	Band Edge P25-P28 P29-P32 P33-P36 P37-P40
10.			11	2462 MHz	
11.		802.11g	01	2412 MHz	
12.			11	2462 MHz	

NOTE 1 - All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
For Band-Edge measurements, both peak and average value were measured.

NOTE 2 - The emission levels recorded below is data of EUT configured in Lying direction, for Lying direction was the maximum emission direction during the test. The data of Side & Stand direction are too low against the official limit to be reported.

NOTE 3 - Measurement was up to 25GHz, only data of 30MHz to 8GHz were recorded in the report, because the emission levels of 8GHz to 25GHz were too low against the official limit and not reported.

NOTE 4 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11b Transmitting
Ch01

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	70.740	12.00	6.58	0.87	--	19.45	40.00	20.55	QP
	237.580	11.37	12.44	1.67	--	25.48	46.00	20.52	
	275.410	15.34	13.45	1.79	--	30.58	46.00	15.42	
	312.270	19.23	14.24	1.92	--	35.39	46.00	10.61	
	360.770	17.46	15.61	2.09	--	35.16	46.00	10.84	
	697.360	4.80	19.69	2.94	--	27.43	46.00	18.57	
	1308.000	46.06	25.46	3.49	34.13	40.88	74.00	33.12	PK
	2218.000	52.18	28.35	4.72	34.20	51.05	74.00	22.95	
	2526.000	49.77	29.28	5.03	34.20	49.88	74.00	24.12	
	3436.000	45.90	31.49	5.93	34.20	49.12	74.00	24.88	
	4824.000	46.78	33.26	7.09	34.28	52.85	74.00	21.15	
	7236.000	43.49	35.16	8.57	34.90	52.32	74.00	21.68	
Vertical	33.880	5.22	17.44	0.64	--	23.30	40.00	16.70	QP
	76.560	11.64	7.36	0.91	--	19.91	40.00	20.09	
	224.000	8.84	11.85	1.62	--	22.31	46.00	23.69	
	279.290	16.17	13.52	1.80	--	31.49	46.00	14.51	
	312.270	12.99	14.24	1.92	--	29.15	46.00	16.85	
	360.770	9.35	15.61	2.09	--	27.05	46.00	18.95	
	1553.000	45.77	26.32	3.86	34.16	41.79	74.00	32.21	PK
	2211.000	48.69	28.33	4.67	34.20	47.49	74.00	26.51	
	3079.000	45.91	30.69	5.50	34.20	47.90	74.00	26.10	
	3954.000	44.03	32.52	6.41	34.20	48.76	74.00	25.24	
	4824.000	44.28	33.75	7.55	34.34	51.24	74.00	22.76	
	7236.000	42.87	35.84	9.22	35.41	52.52	74.00	21.48	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11b Transmitting
Ch06

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	75.590	11.12	7.24	0.91	--	19.27	40.00	20.73	QP
	218.180	8.63	11.52	1.60	--	21.75	46.00	24.25	
	275.410	14.99	13.45	1.79	--	30.23	46.00	15.77	
	312.270	18.72	14.24	1.92	--	34.88	46.00	11.12	
	360.770	17.03	15.61	2.09	--	34.73	46.00	11.27	
	706.090	4.18	19.76	2.96	--	26.90	46.00	19.10	
	1259.000	46.31	25.27	3.45	34.12	40.91	74.00	33.09	PK
	2267.000	51.39	28.49	4.75	34.20	50.43	74.00	23.57	
	3051.000	46.06	30.63	5.50	34.20	47.99	74.00	26.01	
	4874.000	45.75	33.31	7.14	34.29	51.91	74.00	22.09	
	5977.000	43.32	34.38	9.01	34.40	52.31	74.00	21.69	
	7311.000	42.83	35.63	9.02	35.26	52.22	74.00	21.78	
Vertical	33.880	4.16	17.44	0.64	--	22.24	40.00	17.76	QP
	77.530	11.13	7.49	0.92	--	19.54	40.00	20.46	
	110.510	5.67	12.32	1.11	--	19.10	43.50	24.40	
	279.290	15.46	13.52	1.80	--	30.78	46.00	15.22	
	312.270	12.93	14.24	1.92	--	29.09	46.00	16.91	
	360.770	8.98	15.61	2.09	--	26.68	46.00	19.32	
	1294.000	46.00	25.40	3.49	34.13	40.76	74.00	33.24	PK
	1770.000	46.83	26.99	4.17	34.18	43.81	74.00	30.19	
	2316.000	48.08	28.66	4.82	34.20	47.36	74.00	26.64	
	2981.000	46.06	30.46	5.42	34.20	47.74	74.00	26.26	
	4874.000	44.44	32.97	6.81	34.24	49.98	74.00	24.02	
	7311.000	43.85	35.18	8.57	34.90	52.70	74.00	21.30	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11b Transmitting
Ch11

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	77.530	10.38	7.49	0.92	--	18.79	40.00	21.21	QP
	237.580	10.28	12.44	1.67	--	24.39	46.00	21.61	
	299.660	18.41	13.90	1.88	--	34.19	46.00	11.81	
	312.270	18.69	14.24	1.92	--	34.85	46.00	11.15	
	360.770	16.59	15.61	2.09	--	34.29	46.00	11.71	
	374.350	12.75	15.95	2.13	--	30.83	46.00	15.17	
	1280.000	48.54	25.34	3.47	34.13	43.22	74.00	30.78	PK
	2211.000	51.38	28.33	4.67	34.20	50.18	74.00	23.82	
	3303.000	45.68	31.19	5.77	34.20	48.44	74.00	25.56	
	4924.000	44.64	32.96	6.76	34.24	50.12	74.00	23.88	
	5739.000	44.15	34.16	8.35	34.38	52.28	74.00	21.72	
	7386.000	42.69	35.80	9.22	35.38	52.33	74.00	21.67	
Vertical	33.880	5.01	17.44	0.64	--	23.09	40.00	16.91	QP
	76.560	11.63	7.36	0.91	--	19.90	40.00	20.10	
	109.540	5.77	12.25	1.11	--	19.13	43.50	24.37	
	279.290	15.35	13.52	1.80	--	30.67	46.00	15.33	
	312.270	12.49	14.24	1.92	--	28.65	46.00	17.35	
	360.770	8.89	15.61	2.09	--	26.59	46.00	19.41	
	1294.000	46.39	25.40	3.49	34.13	41.15	74.00	32.85	PK
	1959.000	45.89	27.50	4.38	34.20	43.57	74.00	30.43	
	2267.000	48.29	28.49	4.75	34.20	47.33	74.00	26.67	
	3828.000	44.86	32.26	6.25	34.20	49.17	74.00	24.83	
	4924.000	44.30	33.94	7.92	34.36	51.80	74.00	22.20	
	7386.000	43.40	34.96	8.45	34.74	52.07	74.00	21.93	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11g Transmitting
Ch01

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	77.530	10.49	7.49	0.92	--	18.90	40.00	21.10	QP
	237.580	10.55	12.44	1.67	--	24.66	46.00	21.34	
	275.410	14.87	13.45	1.79	--	30.11	46.00	15.89	
	312.270	18.46	14.24	1.92	--	34.62	46.00	11.38	
	349.130	15.64	15.29	2.05	--	32.98	46.00	13.02	
	360.770	16.33	15.61	2.09	--	34.03	46.00	11.97	
	1679.000	46.84	26.71	4.03	34.17	43.41	74.00	30.59	PK
	2218.000	53.94	28.35	4.72	34.20	52.81	74.00	21.19	
	2498.000	49.59	29.19	4.99	34.20	49.57	74.00	24.43	
	3534.000	46.79	31.70	6.02	34.20	50.31	74.00	23.69	
	4824.000	46.96	33.26	7.09	34.28	53.03	74.00	20.97	
	7236.000	43.53	35.70	9.02	35.31	52.94	74.00	21.06	
Vertical	32.910	3.84	17.95	0.64	--	22.43	40.00	17.57	QP
	77.530	11.03	7.49	0.92	--	19.44	40.00	20.56	
	108.570	5.21	12.17	1.11	--	18.49	43.50	25.01	
	299.660	11.73	13.90	1.88	--	27.51	46.00	18.49	
	312.270	12.44	14.24	1.92	--	28.60	46.00	17.40	
	360.770	8.88	15.61	2.09	--	26.58	46.00	19.42	
	1476.000	46.28	26.07	3.76	34.15	41.96	74.00	32.04	PK
	2211.000	49.28	28.33	4.67	34.20	48.08	74.00	25.92	
	2939.000	46.56	30.35	5.39	34.20	48.10	74.00	25.90	
	4824.000	44.51	32.91	6.71	34.23	49.90	74.00	24.10	
	5879.000	43.87	34.29	8.79	34.39	52.56	74.00	21.44	
	7236.000	43.58	34.93	8.38	34.72	52.17	74.00	21.83	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11g Transmitting
Ch06

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	70.740	11.52	6.58	0.87	--	18.97	40.00	21.03	QP
	237.580	11.12	12.44	1.67	--	25.23	46.00	20.77	
	299.660	18.24	13.90	1.88	--	34.02	46.00	11.98	
	312.270	18.44	14.24	1.92	--	34.60	46.00	11.40	
	360.770	16.44	15.61	2.09	--	34.14	46.00	11.86	
	740.040	3.55	20.10	3.04	--	26.69	46.00	19.31	
	1315.000	46.93	25.49	3.51	34.13	41.80	74.00	32.20	PK
	2267.000	50.26	28.49	4.75	34.20	49.30	74.00	24.70	
	2995.000	47.07	30.50	5.42	34.20	48.79	74.00	25.21	
	3716.000	46.07	32.05	6.15	34.20	50.07	74.00	23.93	
	4874.000	44.09	33.91	7.70	34.35	51.35	74.00	22.65	
	7311.000	43.24	35.49	8.83	35.15	52.41	74.00	21.59	
Vertical	33.880	32.59	17.44	0.64	--	22.17	40.00	17.83	QP
	77.530	38.70	7.49	0.92	--	18.96	40.00	21.04	
	275.410	35.26	13.45	1.79	--	23.28	46.00	22.72	
	299.660	39.90	13.90	1.88	--	28.50	46.00	17.50	
	312.270	40.28	14.24	1.92	--	29.05	46.00	16.95	
	360.770	36.89	15.61	2.09	--	26.26	46.00	19.74	
	1539.000	47.20	26.27	3.83	34.16	43.14	74.00	30.86	PK
	2211.000	51.51	28.33	4.67	34.20	50.31	74.00	23.69	
	2582.000	49.14	29.42	5.07	34.20	49.43	74.00	24.57	
	3667.000	45.69	31.97	6.11	34.20	49.57	74.00	24.43	
	4874.000	44.69	33.54	7.32	34.31	51.24	74.00	22.76	
	7311.000	43.89	34.81	8.48	34.63	52.55	74.00	21.45	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

Test Mode : 802.11g Transmitting
Ch11

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	77.530	10.11	7.49	0.92	--	18.52	40.00	21.48	QP
	218.180	8.87	11.52	1.60	--	21.99	46.00	24.01	
	275.410	14.67	13.45	1.79	--	29.91	46.00	16.09	
	299.660	18.54	13.90	1.88	--	34.32	46.00	11.68	
	312.270	18.20	14.24	1.92	--	34.36	46.00	11.64	
	360.770	16.44	15.61	2.09	--	34.14	46.00	11.86	
	1525.000	46.43	26.23	3.83	34.15	42.34	74.00	31.66	PK
	2288.000	53.15	28.55	4.79	34.20	52.29	74.00	21.71	
	3100.000	46.87	30.73	5.55	34.20	48.95	74.00	25.05	
	4213.000	44.33	32.79	6.61	34.22	49.51	74.00	24.49	
	4924.000	43.34	33.35	7.20	34.29	49.60	74.00	24.40	
	7386.000	42.74	35.63	9.02	35.25	52.14	74.00	21.86	
Vertical	32.910	32.06	17.95	0.64	--	22.17	40.00	17.83	QP
	77.530	39.28	7.49	0.92	--	19.54	40.00	20.46	
	107.600	34.22	12.10	1.10	--	19.28	43.50	24.22	
	299.660	38.81	13.90	1.88	--	27.41	46.00	18.59	
	312.270	39.15	14.24	1.92	--	27.92	46.00	18.08	
	360.770	36.26	15.61	2.09	--	25.63	46.00	20.37	
	1714.000	45.81	26.81	4.10	34.17	42.55	74.00	31.45	PK
	2309.000	49.18	28.64	4.79	34.20	48.41	74.00	25.59	
	3100.000	47.37	30.73	5.55	34.20	49.45	74.00	24.55	
	4924.000	44.86	32.93	6.76	34.24	50.31	74.00	23.69	
	5599.000	43.64	34.02	8.13	34.36	51.43	74.00	22.57	
	7386.000	43.48	35.49	8.83	35.15	52.65	74.00	21.35	

TEST ENGINEER: RAVEN JIN

EUT : alexTM reader Temperature : 22°C

Model No. : DS-10 Humidity : 60%RH

Serial No. : B102009C000010 Date of Test : Feb. 09, 2010

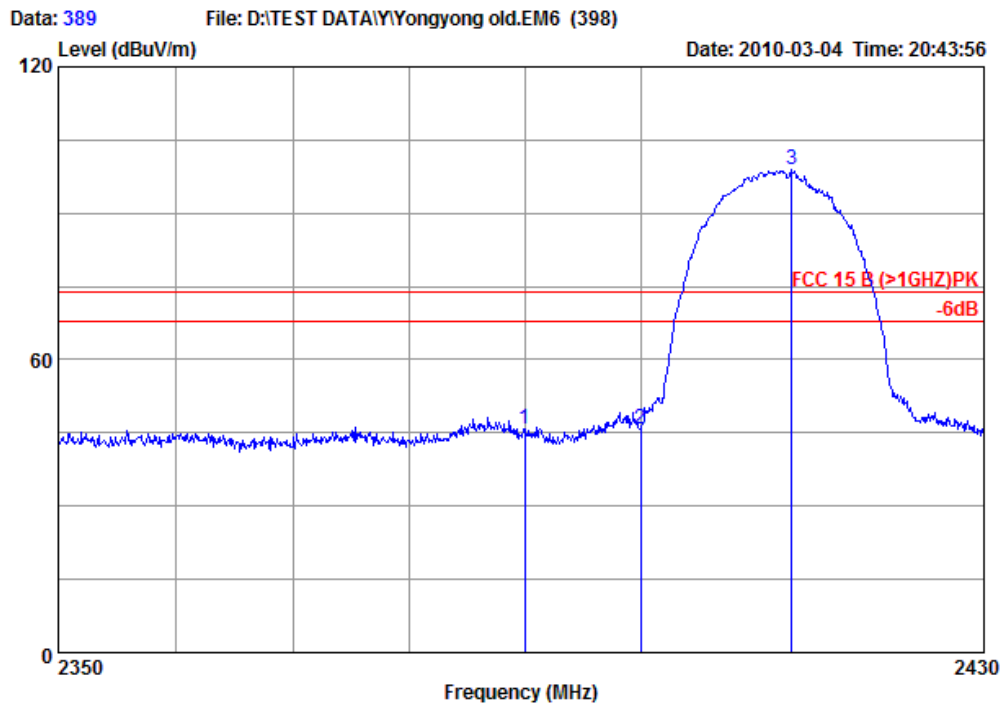
Test Mode : Receiving

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	71.710	10.49	6.69	0.87	--	18.05	40.00	21.95	QP
	237.580	9.99	12.44	1.67	--	24.10	46.00	21.90	
	288.020	13.86	13.71	1.84	--	29.41	46.00	16.59	
	349.130	14.89	15.29	2.05	--	32.23	46.00	13.77	
	374.350	12.27	15.95	2.13	--	30.35	46.00	15.65	
	696.390	3.59	19.69	2.94	--	26.22	46.00	19.78	
	1161.000	46.68	24.86	3.33	34.11	40.76	74.00	33.24	PK
	2435.000	48.19	29.01	4.92	34.20	47.92	74.00	26.08	
	2960.000	45.98	30.40	5.42	34.20	47.60	74.00	26.40	
	3450.000	44.88	31.51	5.93	34.20	48.12	74.00	25.88	
	4871.000	43.01	33.31	7.14	34.29	49.17	74.00	24.83	
Vertical	6782.000	41.47	35.11	8.57	34.85	50.30	74.00	23.70	QP
	33.880	32.15	17.44	0.64	--	21.73	40.00	18.27	
	76.560	38.91	7.36	0.91	--	19.02	40.00	20.98	
	115.360	32.74	12.71	1.13	--	18.49	43.50	25.01	
	288.020	36.05	13.71	1.84	--	24.40	46.00	21.60	
	349.130	35.91	15.29	2.05	--	25.13	46.00	20.87	
	374.350	34.50	15.95	2.13	--	24.00	46.00	22.00	PK
	1308.000	45.77	25.46	3.49	34.13	40.59	74.00	33.41	
	2372.000	44.90	28.82	4.86	34.20	44.38	74.00	29.62	
	2960.000	46.18	30.40	5.42	34.20	47.80	74.00	26.20	
	5011.000	43.55	33.42	7.25	34.30	49.92	74.00	24.08	
	6173.000	42.84	34.57	8.80	34.49	51.72	74.00	22.28	
	7902.000	42.38	36.03	9.40	35.55	52.26	74.00	21.74	

TEST ENGINEER: RAVEN JIN



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Site no : Audix ACI (3m Chamber)
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ)PK
 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH01

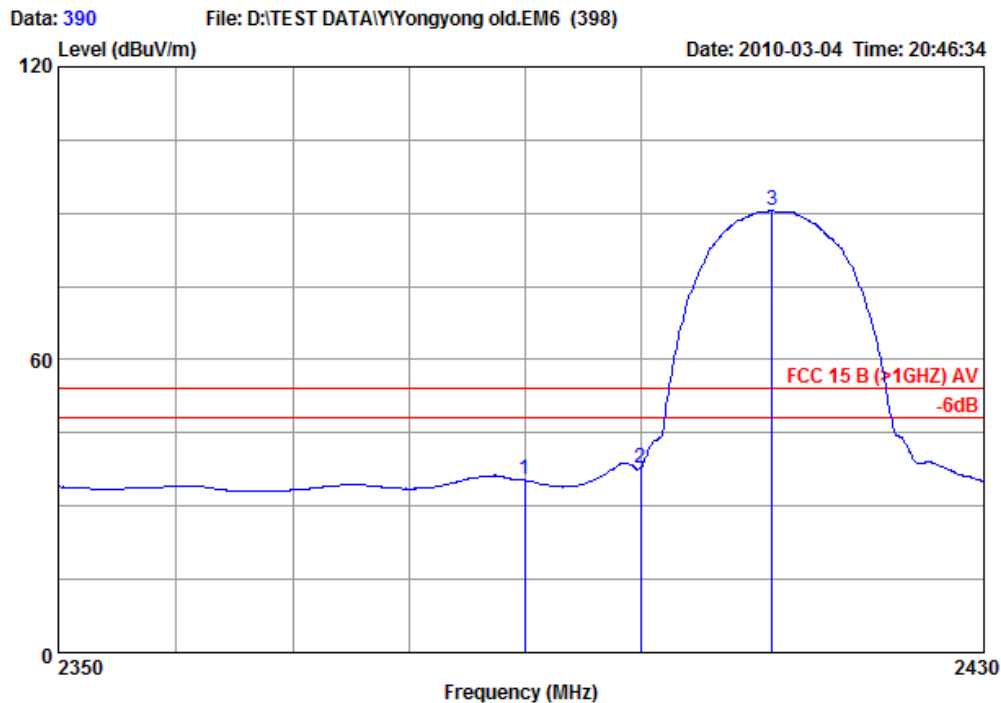
Data no. : 389
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	46.30	45.85	74.00	28.15	Peak
2	2400.000	28.91	34.20	4.89	46.13	45.73	74.00	28.27	Peak
3	2413.200	28.95	34.20	4.92	99.13	98.80	74.00	-24.80	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH01

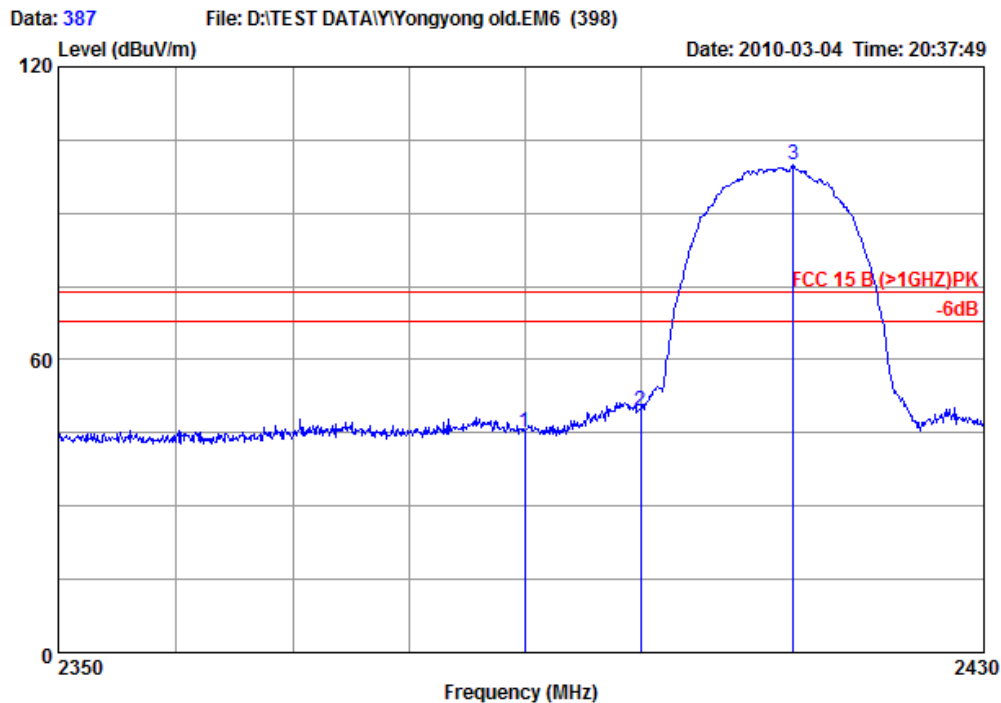
Data no. : 390
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	35.81	35.36	54.00	18.64	Average
2	2400.000	28.91	34.20	4.89	38.27	37.87	54.00	16.13	Average
3	2411.440	28.95	34.20	4.89	90.85	90.49	54.00	-36.49	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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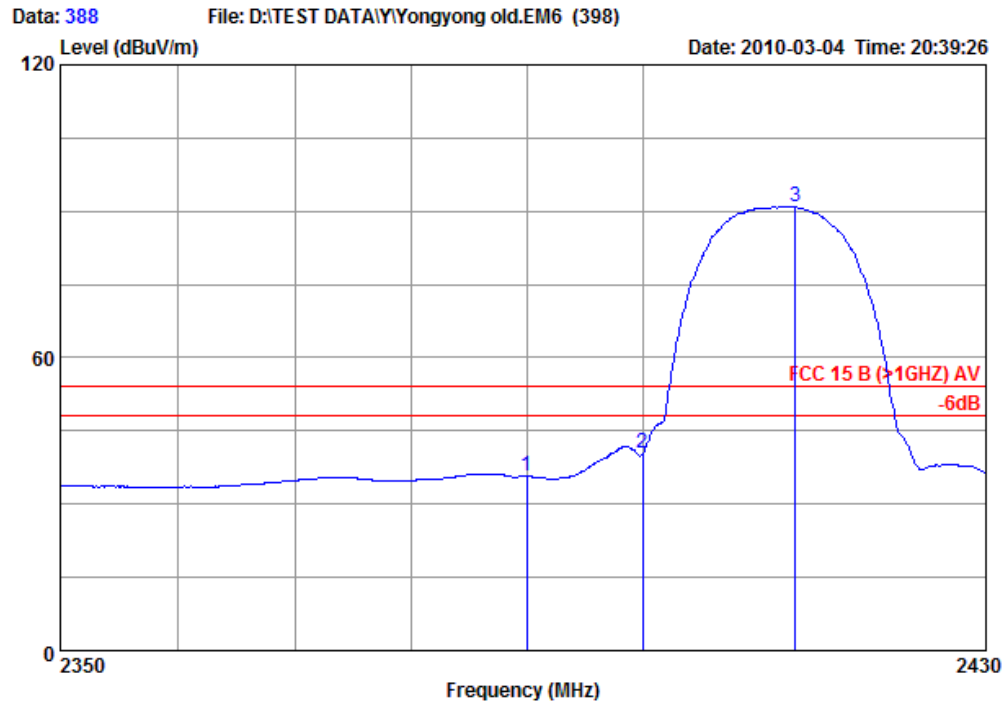
Site no : Audix ACI (3m Chamber) Data no. : 387
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHz)PK Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	45.73	45.28	74.00	28.72	Peak
2	2400.000	28.91	34.20	4.89	49.89	49.49	74.00	24.51	Peak
3	2413.280	28.95	34.20	4.92	100.18	99.85	74.00	-25.85	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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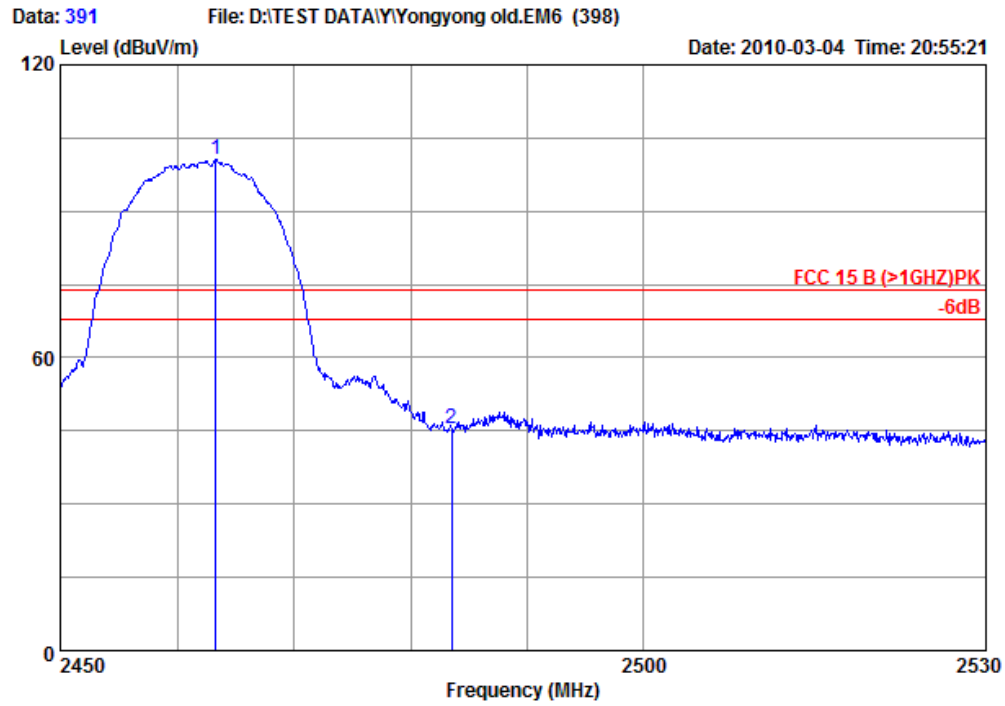
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 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	36.11	35.66	54.00	18.34	Average
2	2400.000	28.91	34.20	4.89	40.74	40.34	54.00	13.66	Average
3	2413.280	28.95	34.20	4.92	91.30	90.97	54.00	-36.97	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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Site no : Audix ACI (3m Chamber)
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHz)PK
 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH11

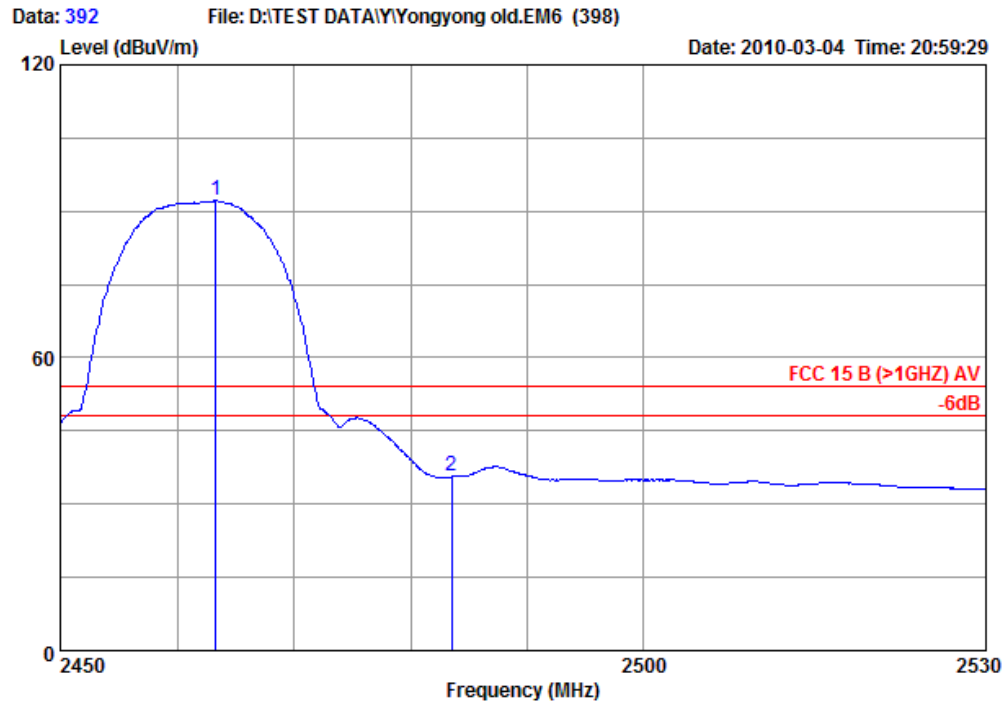
Data no. : 391
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.280	29.09	34.20	4.96	100.80	100.65	74.00	-26.65	Peak
2	2483.500	29.15	34.20	4.96	45.64	45.55	74.00	28.45	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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Site no : Audix ACI (3m Chamber)
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV
 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH11

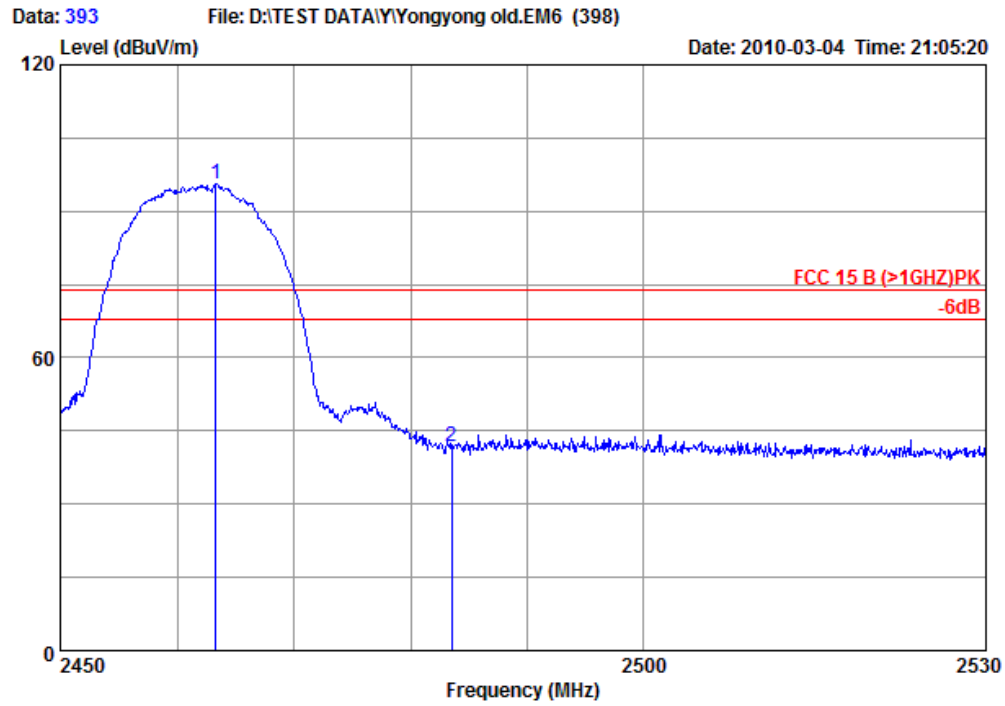
Data no. : 392
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.280	29.09	34.20	4.96	92.31	92.16	54.00	-38.16	Average
2	2483.500	29.15	34.20	4.96	35.72	35.63	54.00	18.37	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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audixaci@audix.com



Site no : Audix ACI (3m Chamber)
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK
Env. / Ins. : 22'C 60%RH / E7405A
EUT : alex reader
M/N : DS-10
S/N : B102009C000010
Power Rating: 120V/60Hz
Test Mode : Transmitting 802.11b CH11

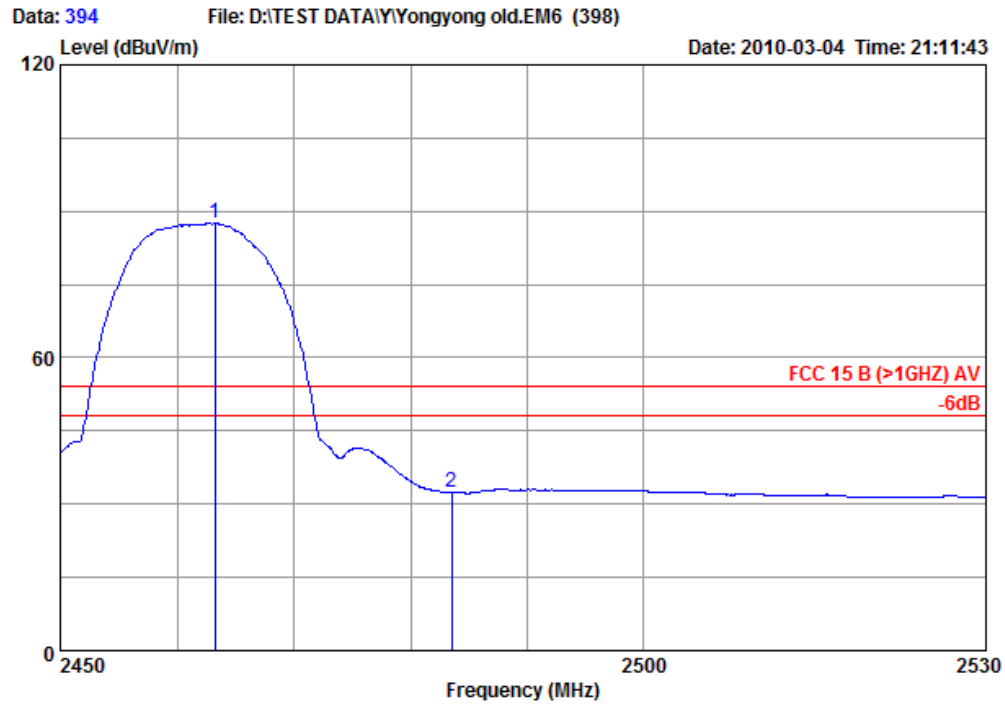
Data no. : 393
Ant. pol. : VERTICAL
Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.280	29.09	34.20	4.96	95.88	95.73	74.00	-21.73	Peak
2	2483.500	29.15	34.20	4.96	41.89	41.80	74.00	32.20	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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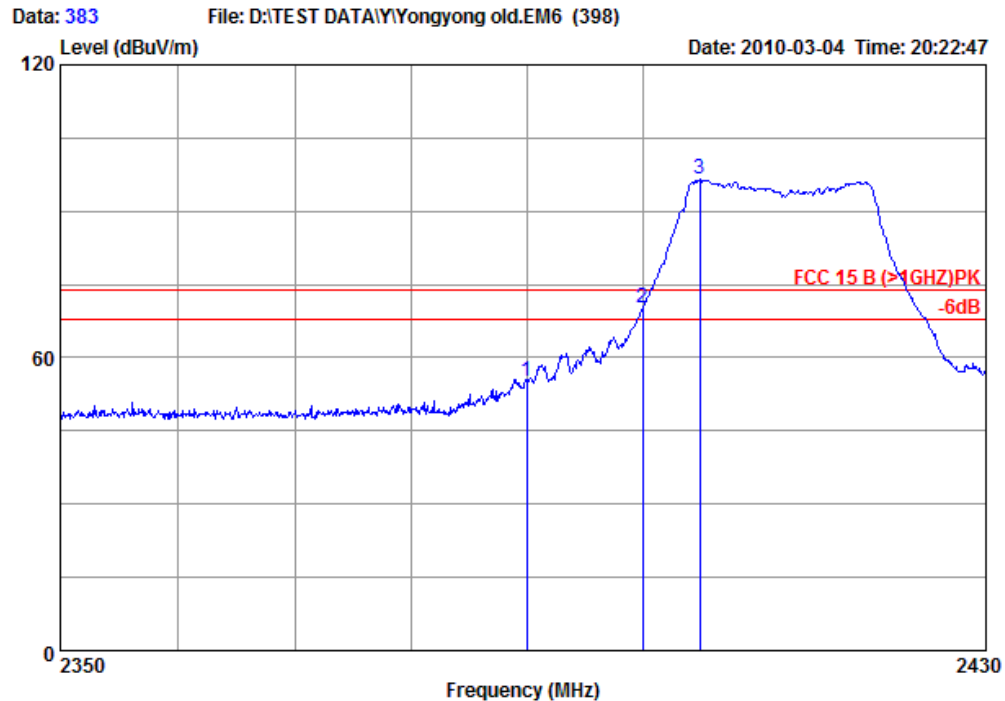
Site no : Audix ACI (3m Chamber) Data no. : 394
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11b CH11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2463.200	29.09	34.20	4.96	87.76	87.61	54.00	-33.61	Average
2	2483.500	29.15	34.20	4.96	32.57	32.48	54.00	21.52	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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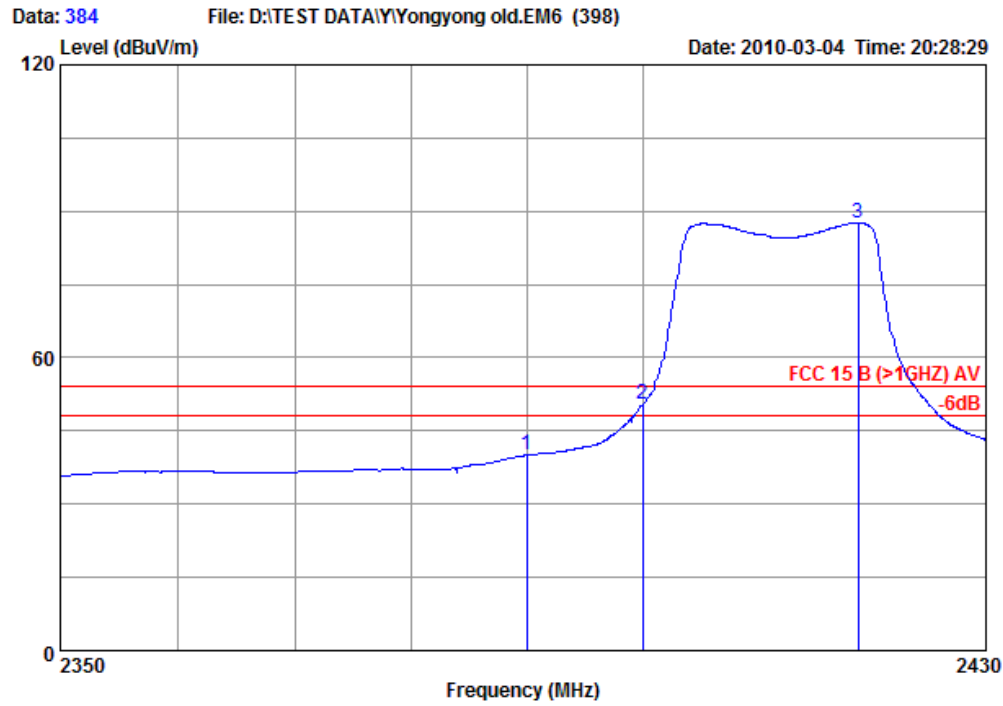
Site no : Audix ACI (3m Chamber) Data no. : 383
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHz)PK Ant. pol. : HORIZONTAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	55.65	55.20	74.00	18.80	Peak
2	2400.000	28.91	34.20	4.89	70.66	70.26	74.00	3.74	Peak
3	2404.960	28.93	34.20	4.89	96.83	96.45	74.00	-22.45	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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Site no : Audix ACI (3m Chamber)
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV
 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH01

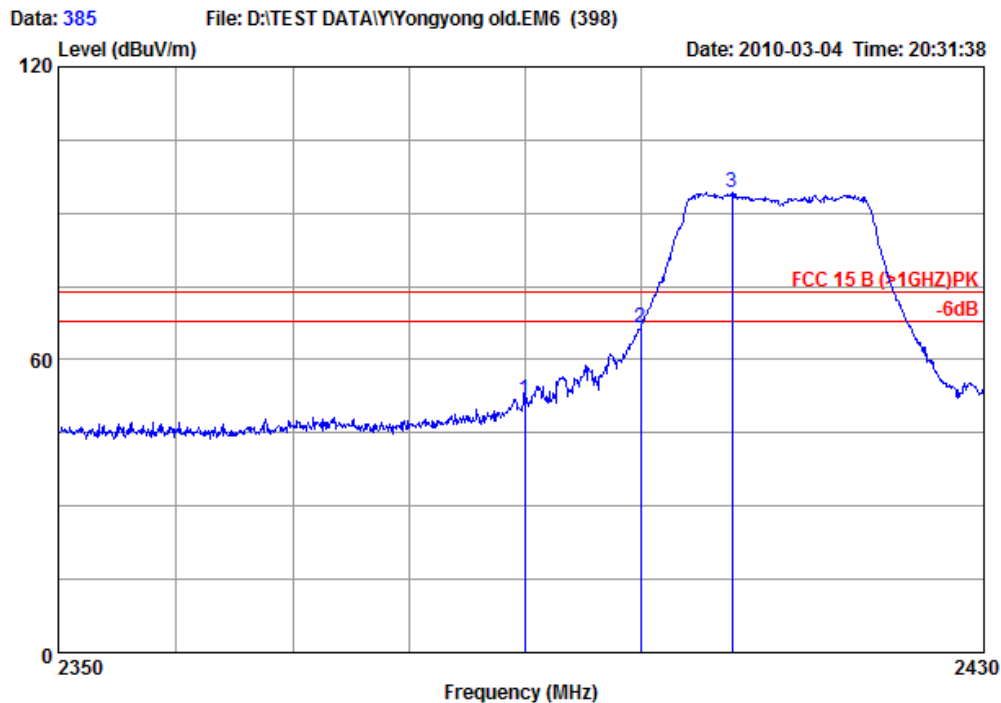
Data no. : 384
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	40.46	40.01	54.00	13.99	Average
2	2400.000	28.91	34.20	4.89	50.90	50.50	54.00	3.50	Average
3	2418.800	28.97	34.20	4.92	88.02	87.71	54.00	-33.71	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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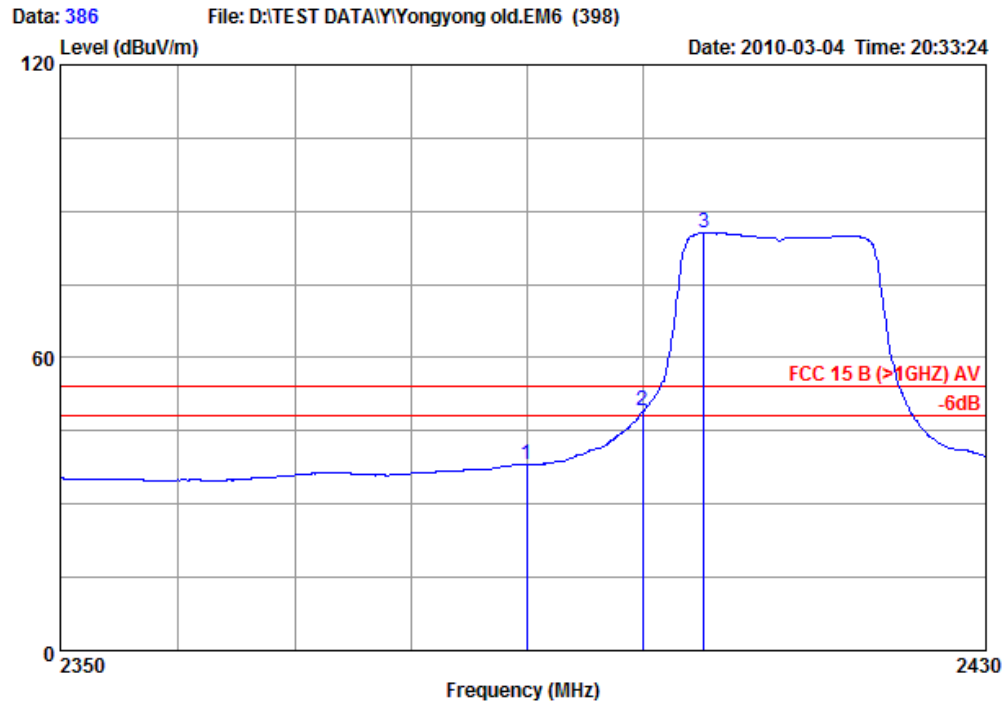
Site no : Audix ACI (3m Chamber) Data no. : 385
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	52.42	51.97	74.00	22.03	Peak
2	2400.000	28.91	34.20	4.89	67.06	66.66	74.00	7.34	Peak
3	2408.000	28.93	34.20	4.89	94.72	94.34	74.00	-20.34	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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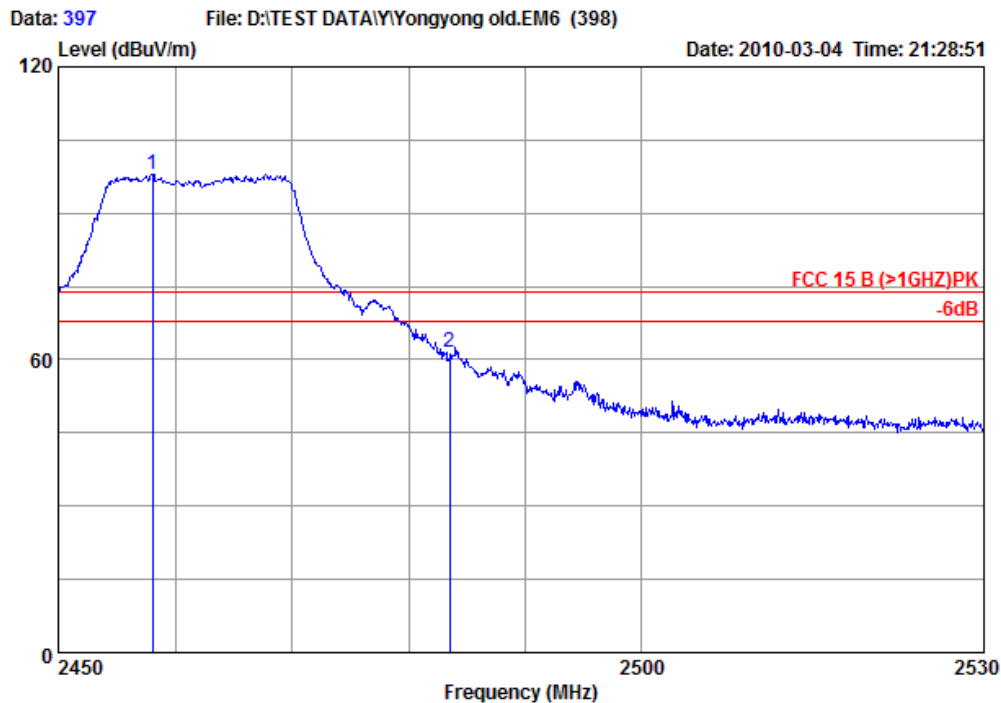
Site no : Audix ACI (3m Chamber) Data no. : 386
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH01

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.86	34.20	4.89	38.67	38.22	54.00	15.78	Average
2	2400.000	28.91	34.20	4.89	49.40	49.00	54.00	5.00	Average
3	2405.360	28.93	34.20	4.89	86.03	85.65	54.00	-31.65	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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Site no : Audix ACI (3m Chamber)
Dis. / Ant. : 3m /EMCO3115
Limit : FCC 15 B (>1GHZ)PK
Env. / Ins. : 22'C 60%RH / E7405A
EUT : alex reader
M/N : DS-10
S/N : B102009C000010
Power Rating: 120V/60Hz
Test Mode : Transmitting 802.11g CH11

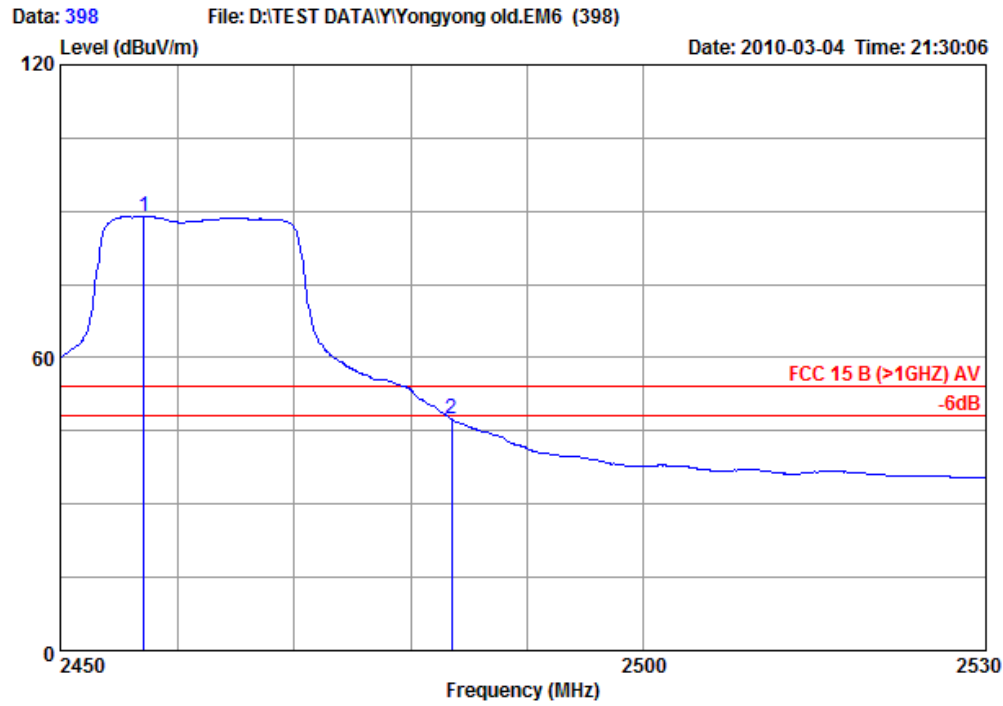
Data no. : 397
Ant. pol. : HORIZONTAL
Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2458.000	29.07	34.20	4.96	98.13	97.96	74.00	-23.96	Peak
2	2483.500	29.15	34.20	4.96	61.60	61.51	74.00	12.49	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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Site no : Audix ACI (3m Chamber)
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV
 Env. / Ins. : 22'C 60%RH / E7405A
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH11

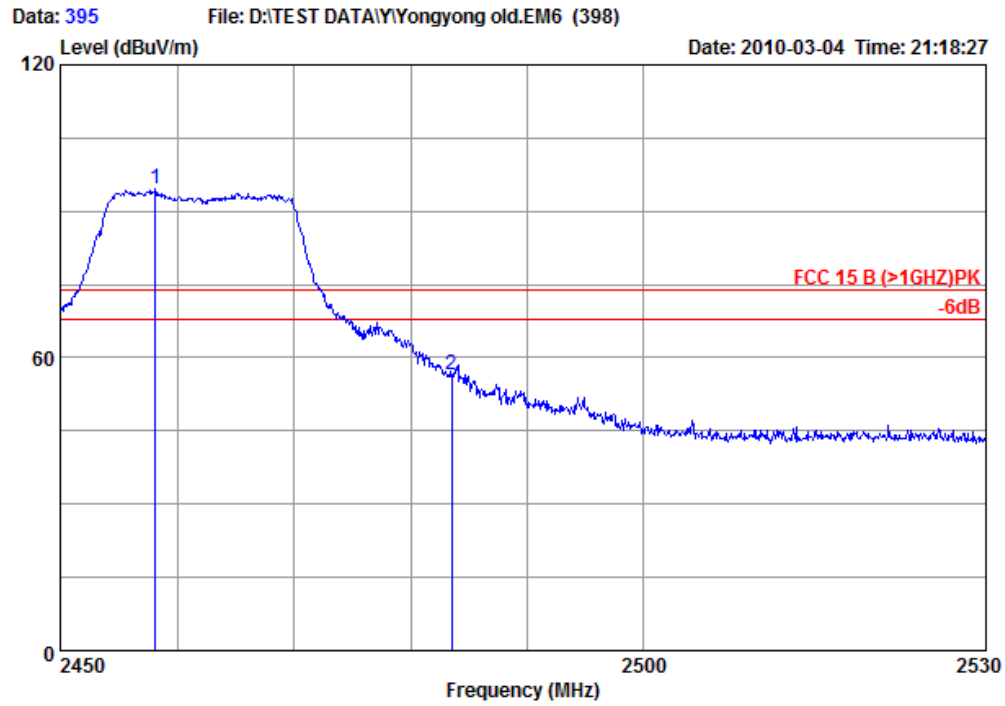
Data no. : 398
 Ant. pol. : HORIZONTAL
 Engineer : Raven

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBUV)	Emission Level (dBUV/m)	Limits (dBUV/m)	Margin (dB)	Remark
1	2457.120	29.07	34.20	4.96	89.18	89.01	54.00	-35.01	Average
2	2483.500	29.15	34.20	4.96	47.48	47.39	54.00	6.61	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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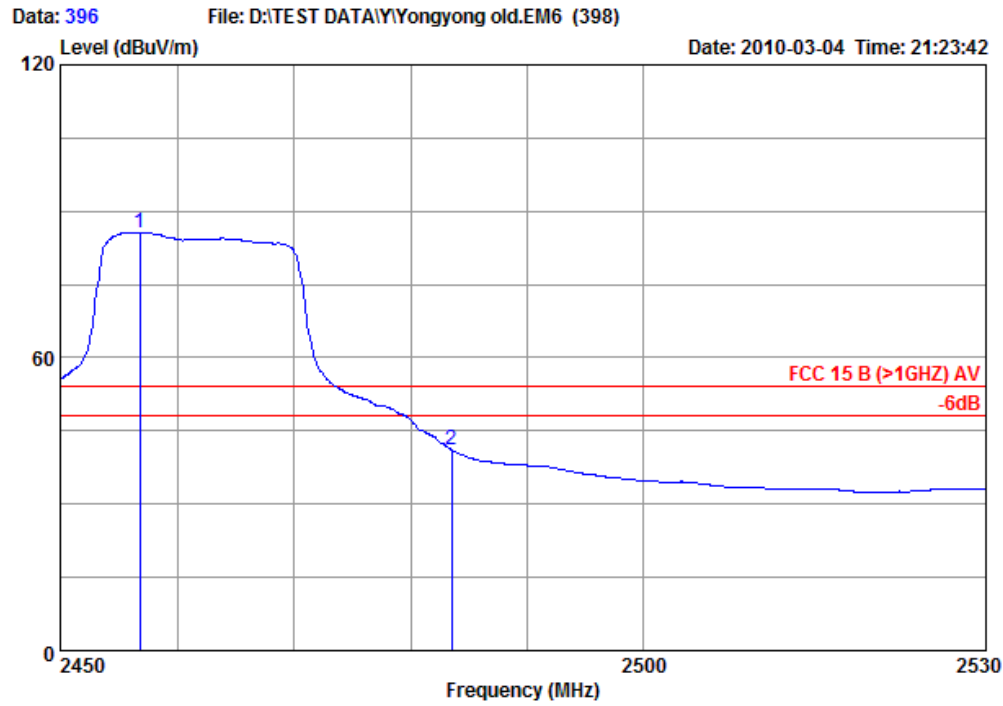
Site no : Audix ACI (3m Chamber) Data no. : 395
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ)PK Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2458.080	29.07	34.20	4.96	94.67	94.50	74.00	-20.50	Peak
2	2483.500	29.15	34.20	4.96	56.72	56.63	74.00	17.37	Peak

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.



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 audixaci@audix.com



Site no : Audix ACI (3m Chamber) Data no. : 396
 Dis. / Ant. : 3m /EMCO3115
 Limit : FCC 15 B (>1GHZ) AV Ant. pol. : VERTICAL
 Env. / Ins. : 22'C 60%RH / E7405A Engineer : Raven
 EUT : alex reader
 M/N : DS-10
 S/N : B102009C000010
 Power Rating: 120V/60Hz
 Test Mode : Transmitting 802.11g CH11

	Freq. (MHz)	Antenna Factor (dB/m)	Preamp Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2456.800	29.07	34.20	4.96	85.86	85.69	54.00	-31.69	Average
2	2483.500	29.15	34.20	4.96	41.17	41.08	54.00	12.92	Average

Remarks: Emission Level= Antenna Factor + Cable Loss - Preamp Factor + Reading.

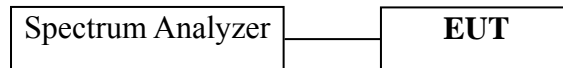
5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010

5.2 Block Diagram of Test Setup



5.3 Specification Limits (§15.247(a)(2))

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.4 Operating Condition of EUT

The test program “fcctestwifi” was used to enable the EUT to transmit data at different channel frequency individually.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB. The test procedure is defined in KDB558074.

5.6 Test Results

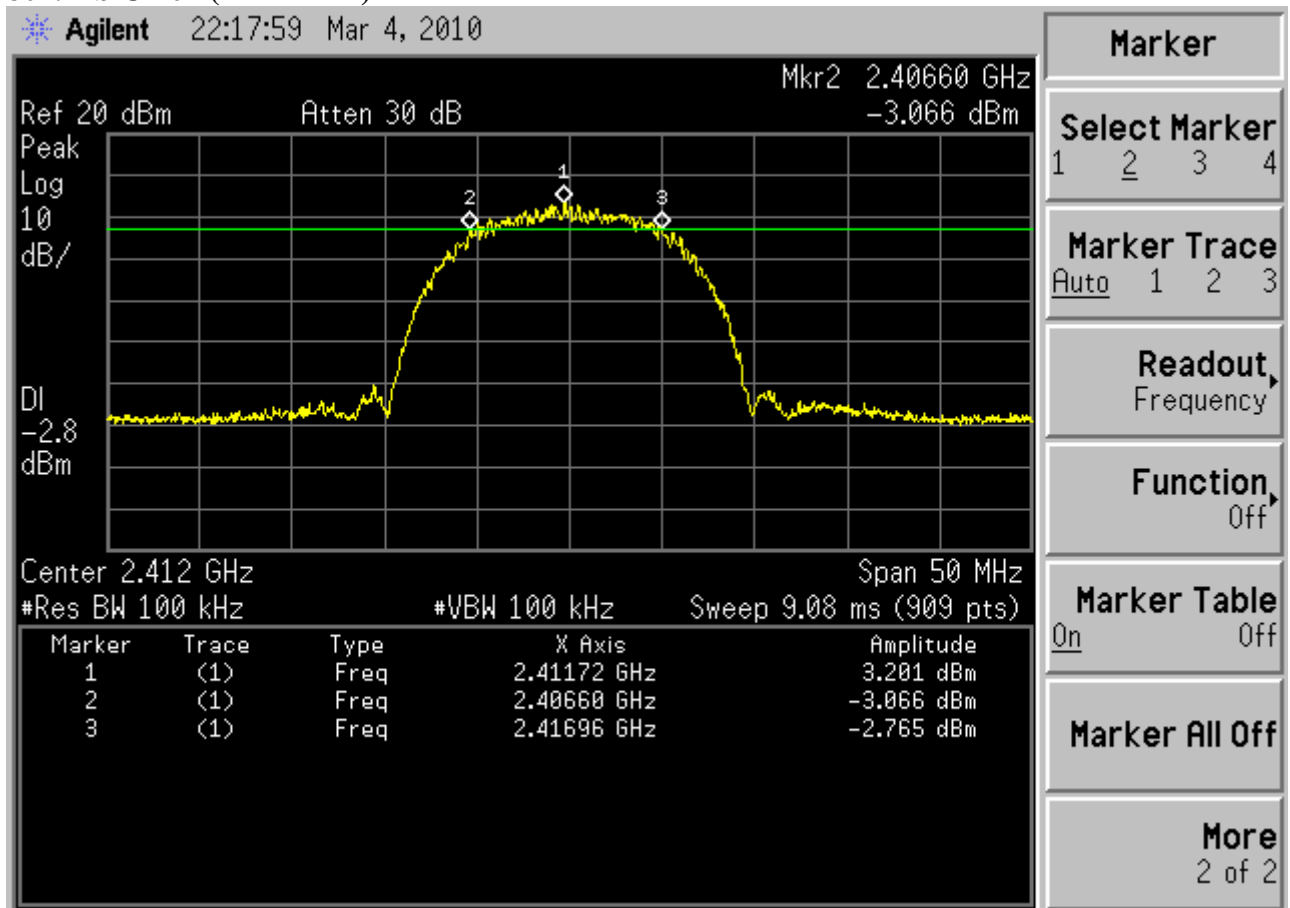
PASSED.

All the test results are attached in next pages.

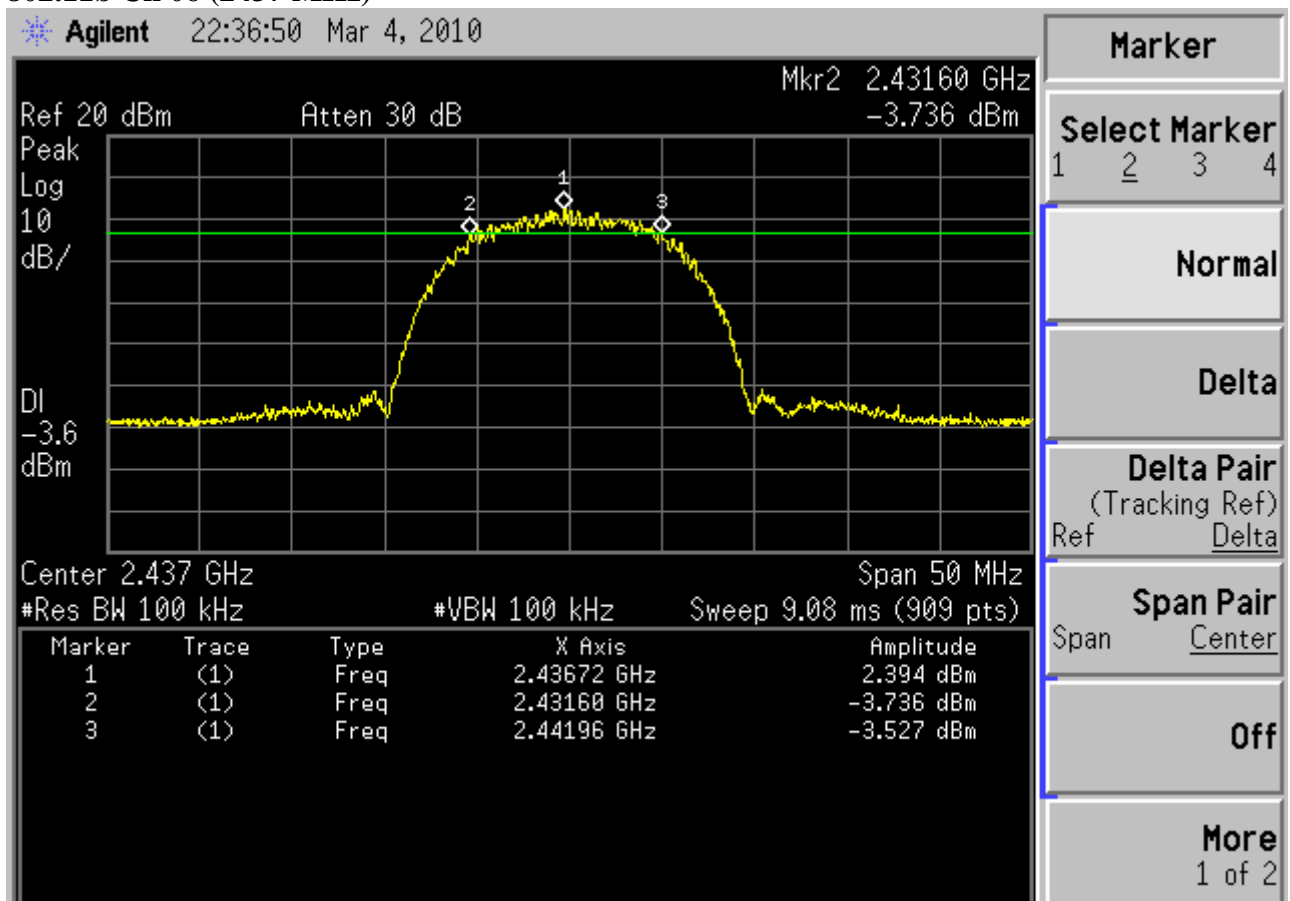
(Test Date : Mar. 04, 2010 Temperature : 21℃ Humidity : 46 %)

Modulation	Channel	Frequency	6dB Bandwidth
802.11b	01	2412 MHz	10.36 MHz
	06	2437 MHz	10.36 MHz
	11	2462 MHz	10.36 MHz
802.11g	01	2412 MHz	16.57 MHz
	06	2437 MHz	16.57 MHz
	11	2462 MHz	16.57 MHz

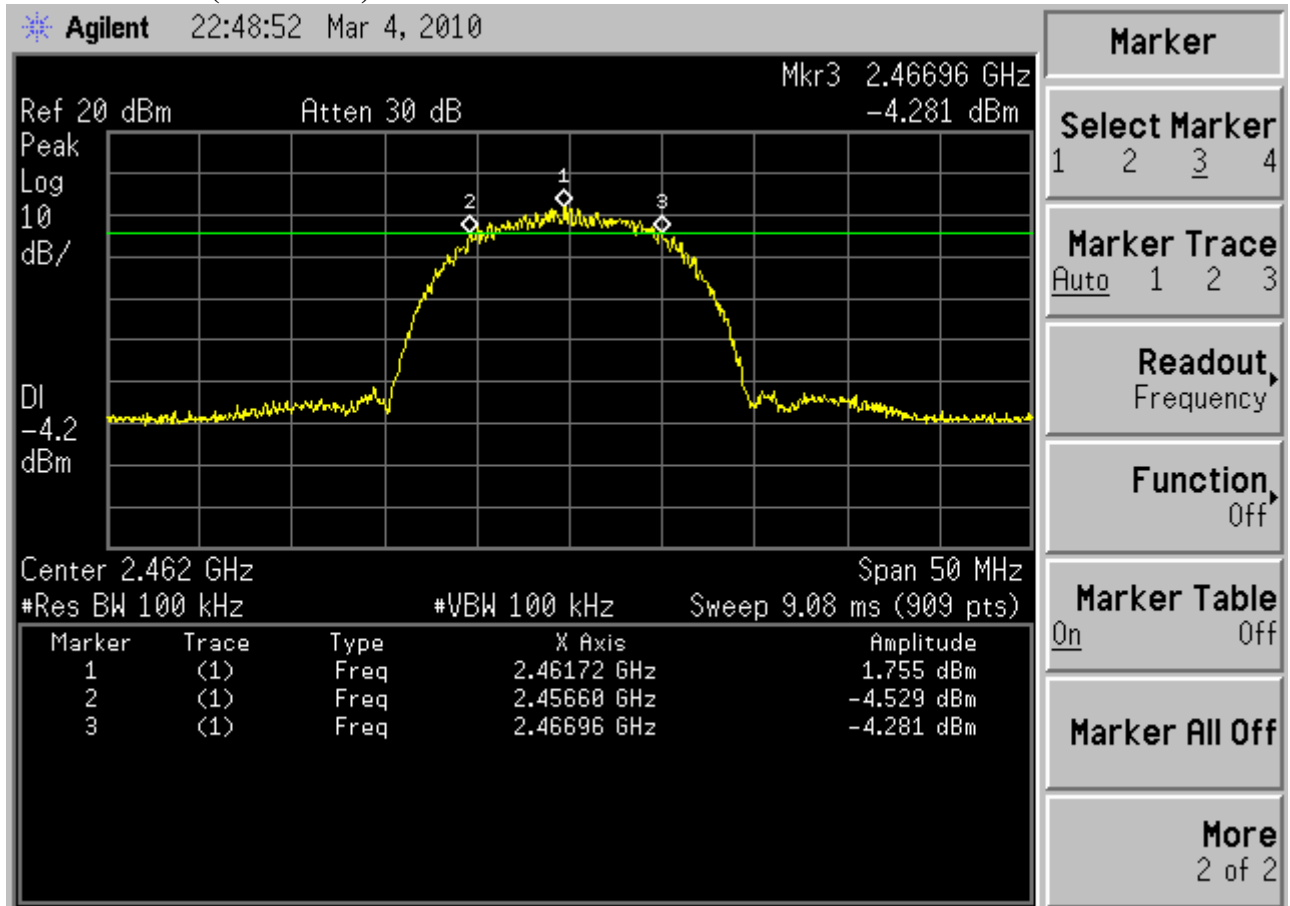
802.11b Ch 01 (2412 MHz)



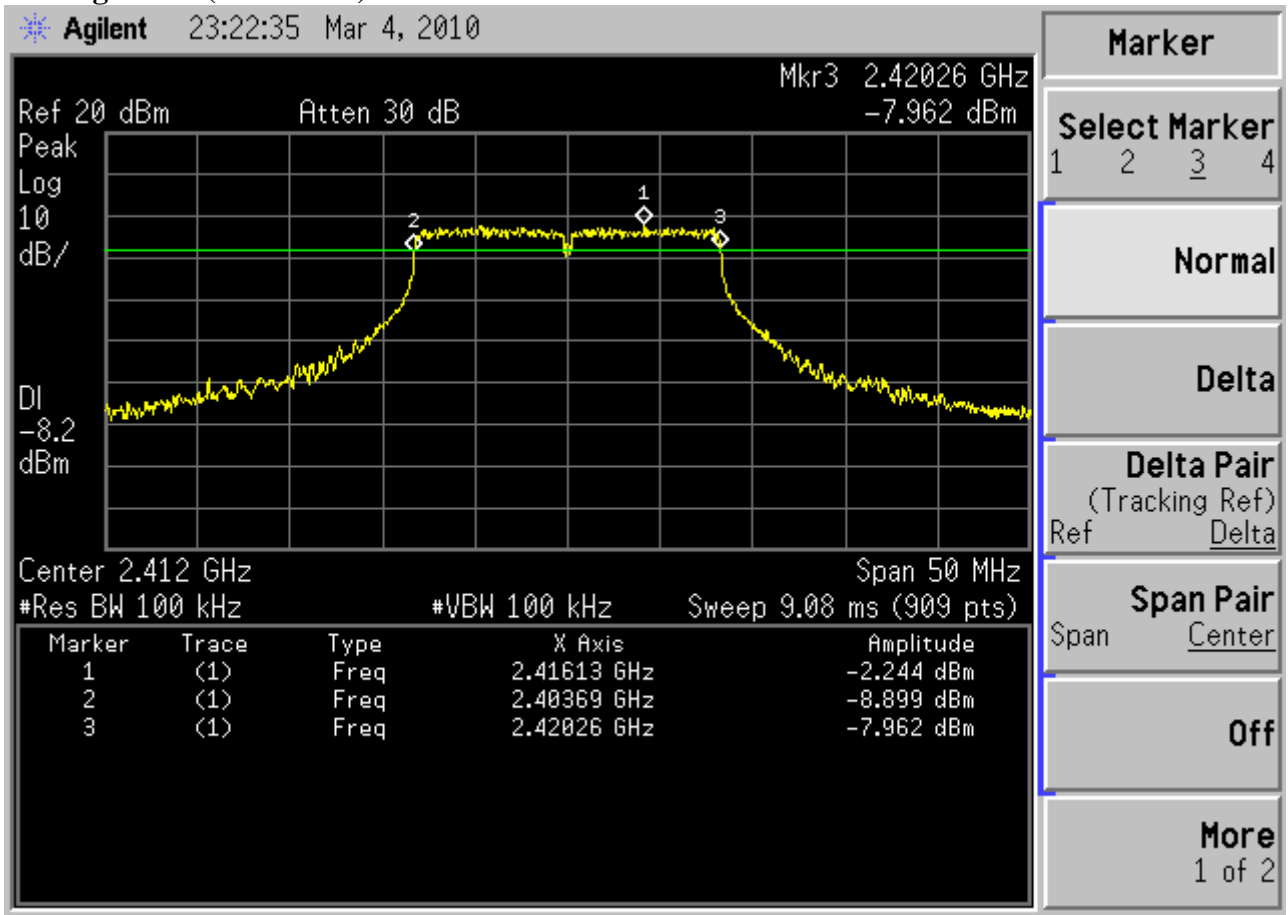
802.11b Ch 06 (2437 MHz)



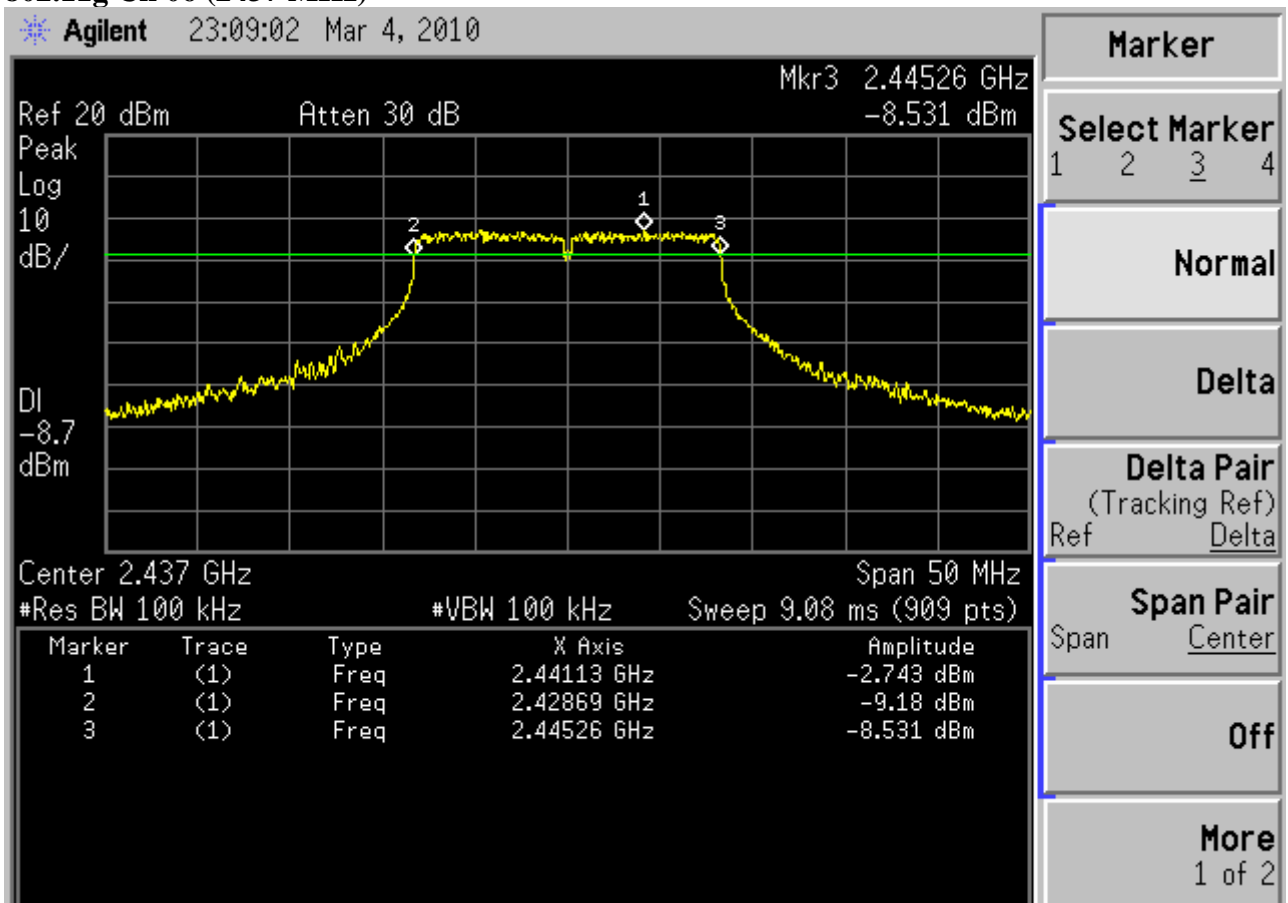
802.11b Ch 11 (2462 MHz)



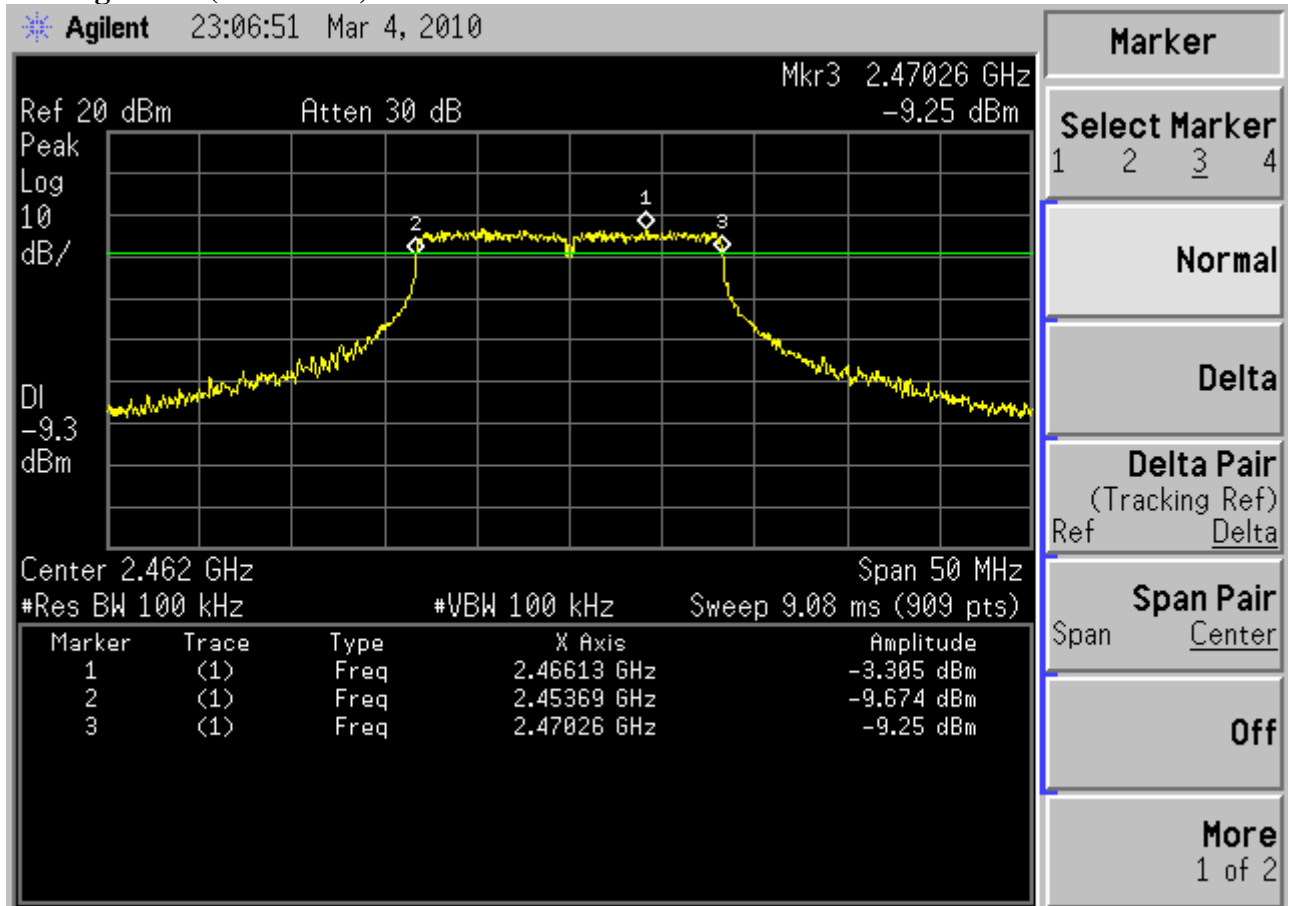
802.11g Ch 01 (2412 MHz)



802.11g Ch 06 (2437 MHz)



802.11g Ch 11 (2462 MHz)



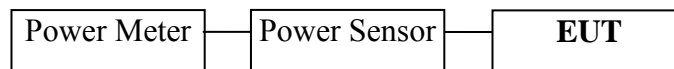
6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Power Meter	Anritsu	ML2487A	6K00003245	Aug 05, 2009	Aug 05, 2010
2.	Power Sensor	Anritsu	MA2491A	32489	Aug 05, 2009	Aug 05, 2010

6.2 Block Diagram of Test Setup



6.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

6.4 Operating Condition of EUT

The test program “fcctestwifi” was used to enable the EUT to transmit data at different channel frequency individually.

6.5 Test Procedure

This is an RF conducted test. Use a direct connection between the antenna port of the transmitter and the power meter, through suitable attenuation. We use Power Output Option 1 (which defined in KDB558074) to measure the power output. Power Output Option 1 is a peak measurement. The transmitter output was connected to the power meter that was designed to detect peak value automatically.

6.6 Test Results

PASSED. All the test results are listed below.

(Test date: Mar. 04, 2010 Temperature : 21 °C Humidity : 46 %)

Modulation	Channel	Frequency	Peak Output Power	Average Output Power	Limit
802.11b	01	2412 MHz	15.17 dBm	12.65 dBm	30 dBm
	06	2437 MHz	14.98 dBm	12.43 dBm	30 dBm
	11	2462 MHz	14.18 dBm	11.64 dBm	30 dBm
802.11g	01	2412 MHz	20.16 dBm	12.48 dBm	30 dBm
	06	2437 MHz	19.47 dBm	11.85 dBm	30 dBm
	11	2462 MHz	18.68 dBm	11.22 dBm	30 dBm

7 EMISSION LIMITATIONS MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010

7.2 Block Diagram of Test Setup

The same as Section. 5.2.

7.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (See Section 15.205(c)).(※This test result attaching to Section. 4.7)

7.4 Operating Condition of EUT

The test program “fcctestwifi” was used to enable the EUT to transmit data at different channel frequency individually.

7.5 Test Procedure

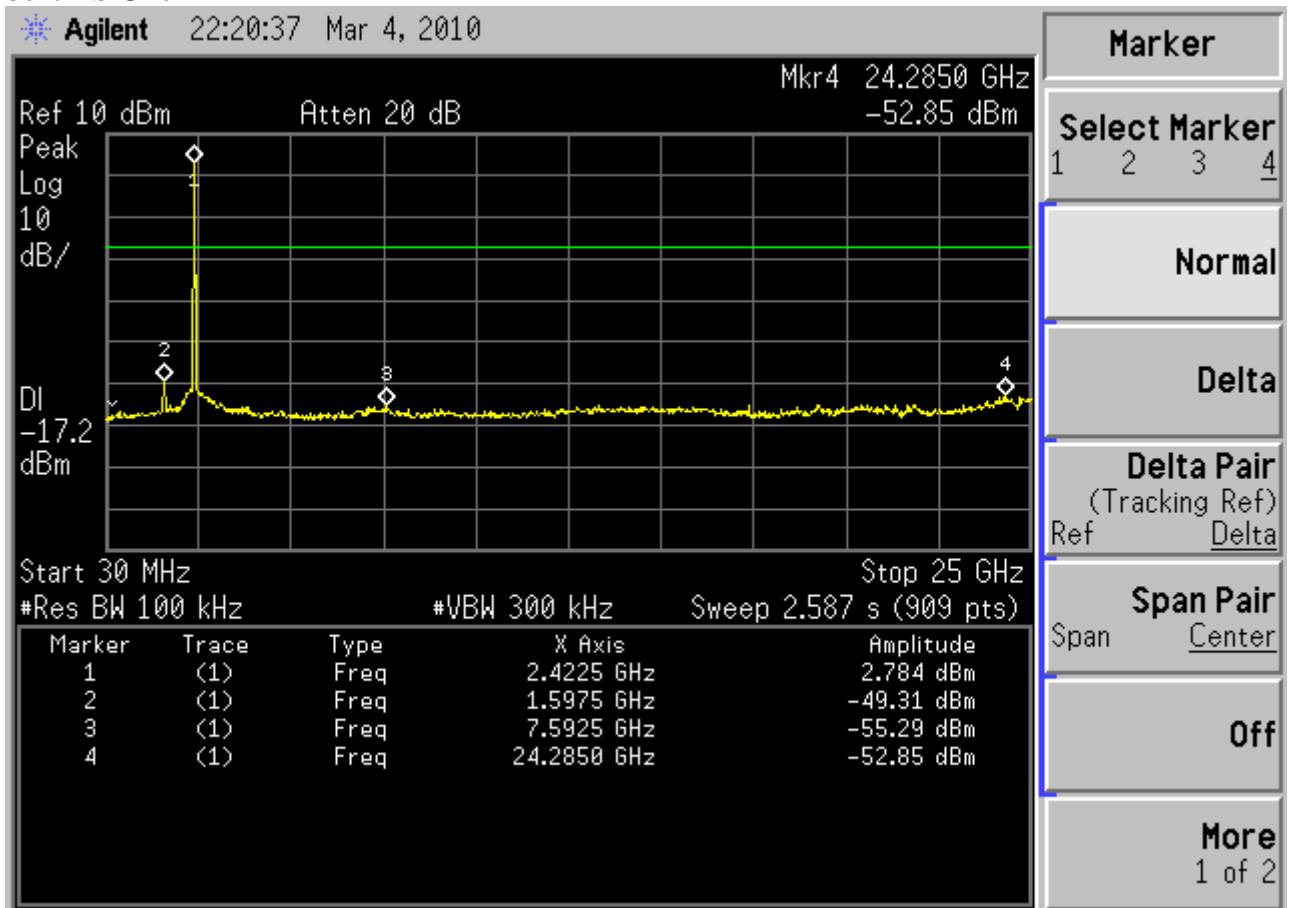
The transmitter output was connected to the spectrum analyzer. Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10th harmonic. All harmonics/spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.

7.6 Test Results

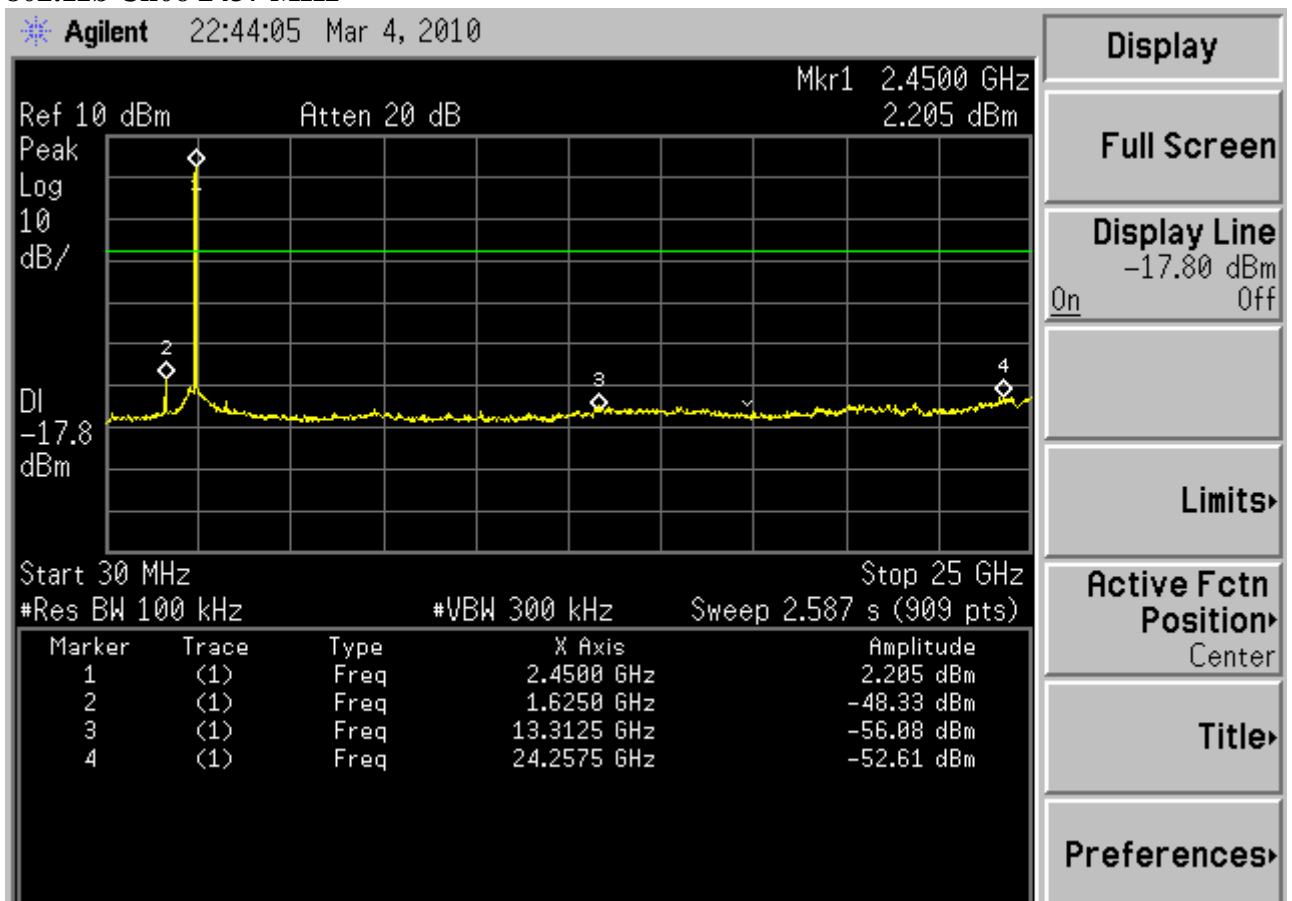
PASSED.

The test data was attached in the next pages.

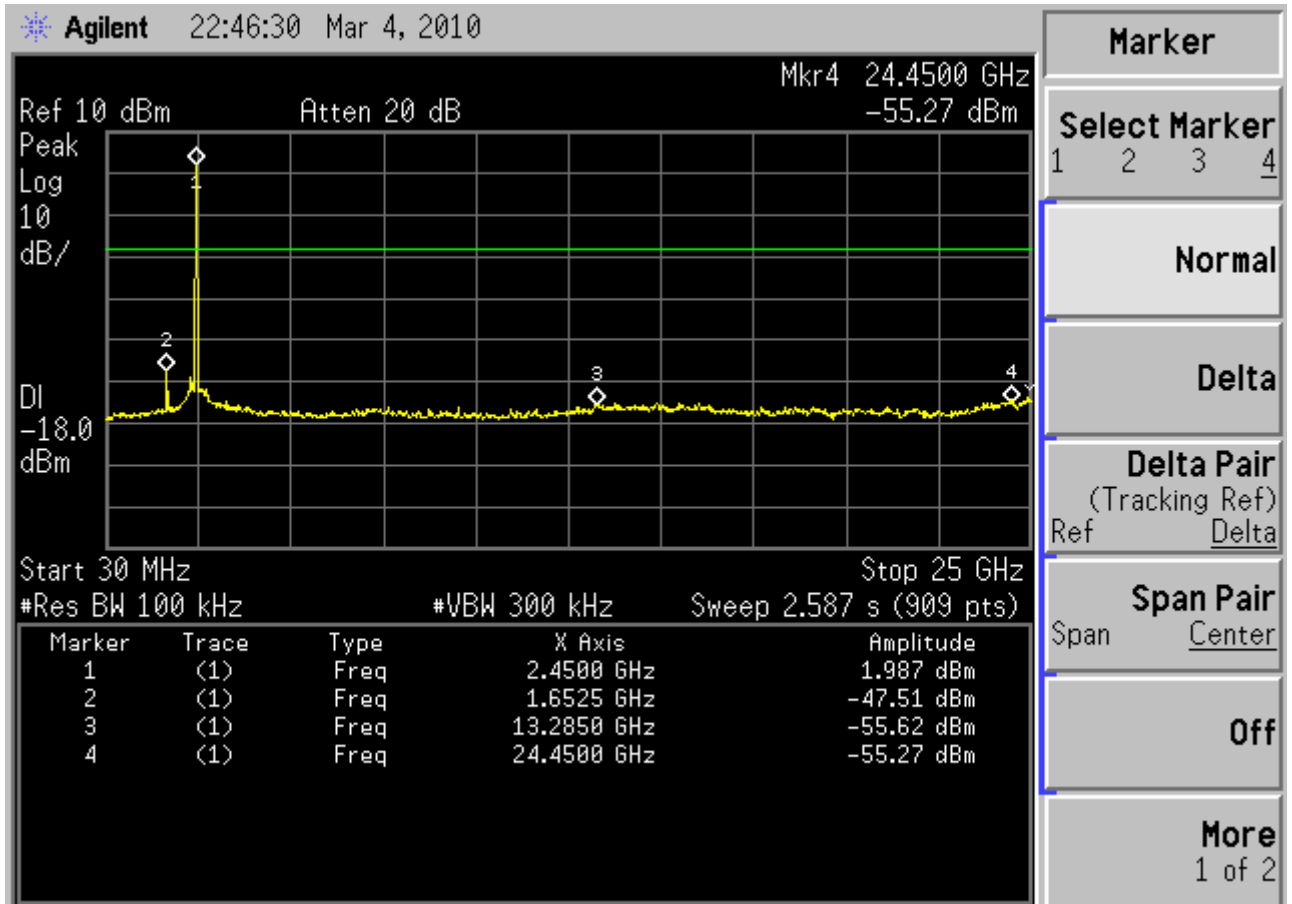
802.11b Ch01 2412 MHz



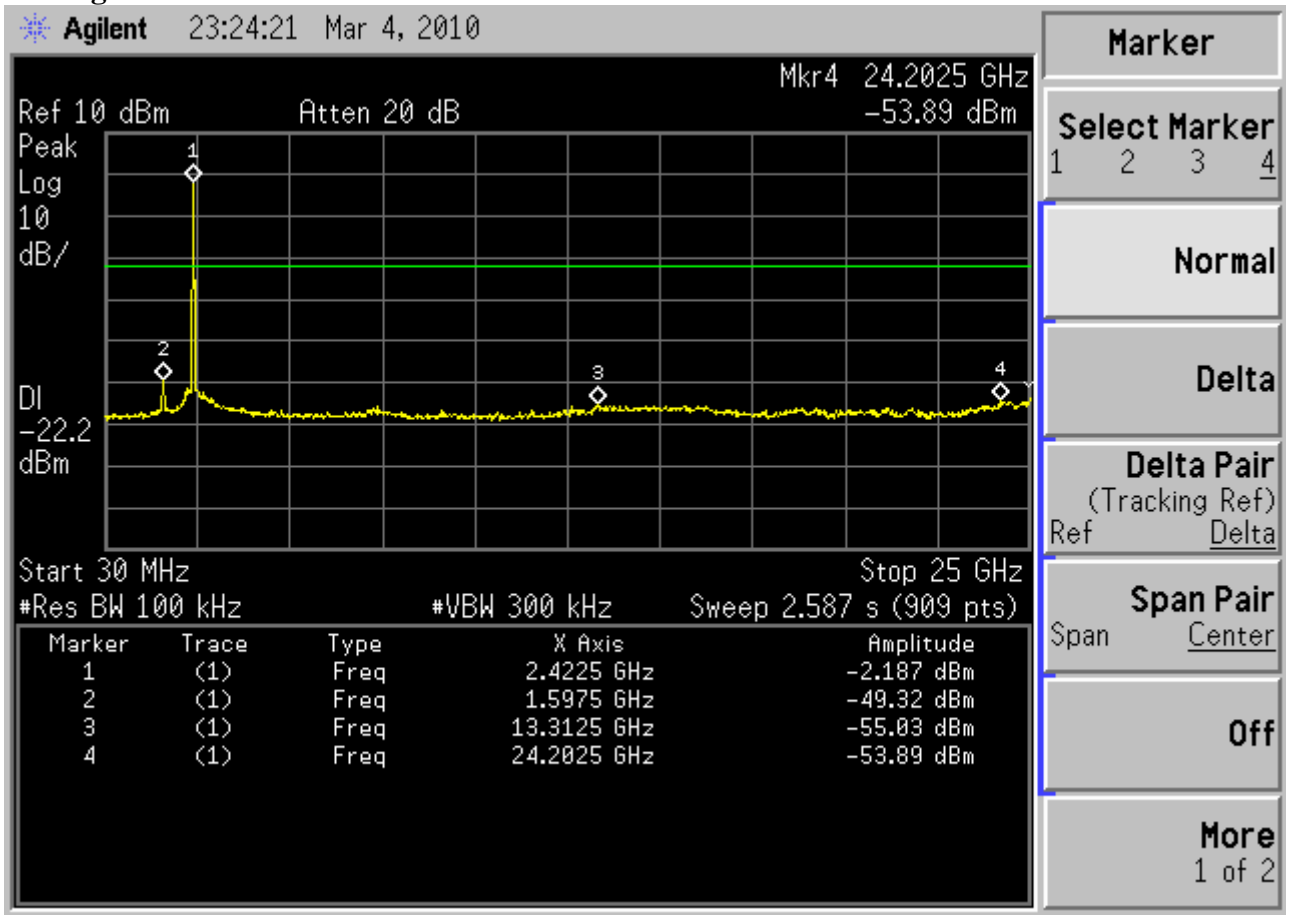
802.11b Ch06 2437 MHz



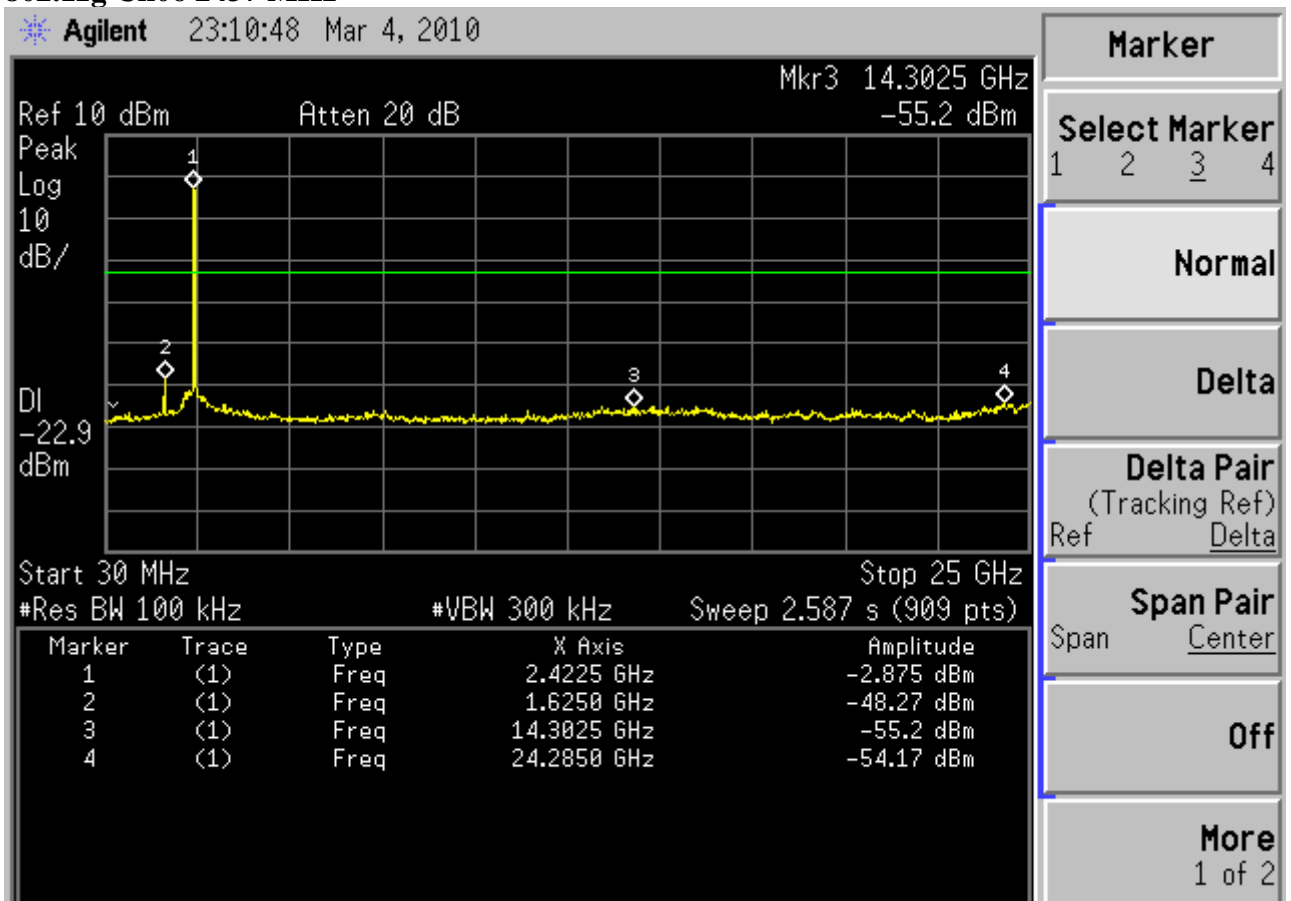
802.11b Ch11 2462 MHz



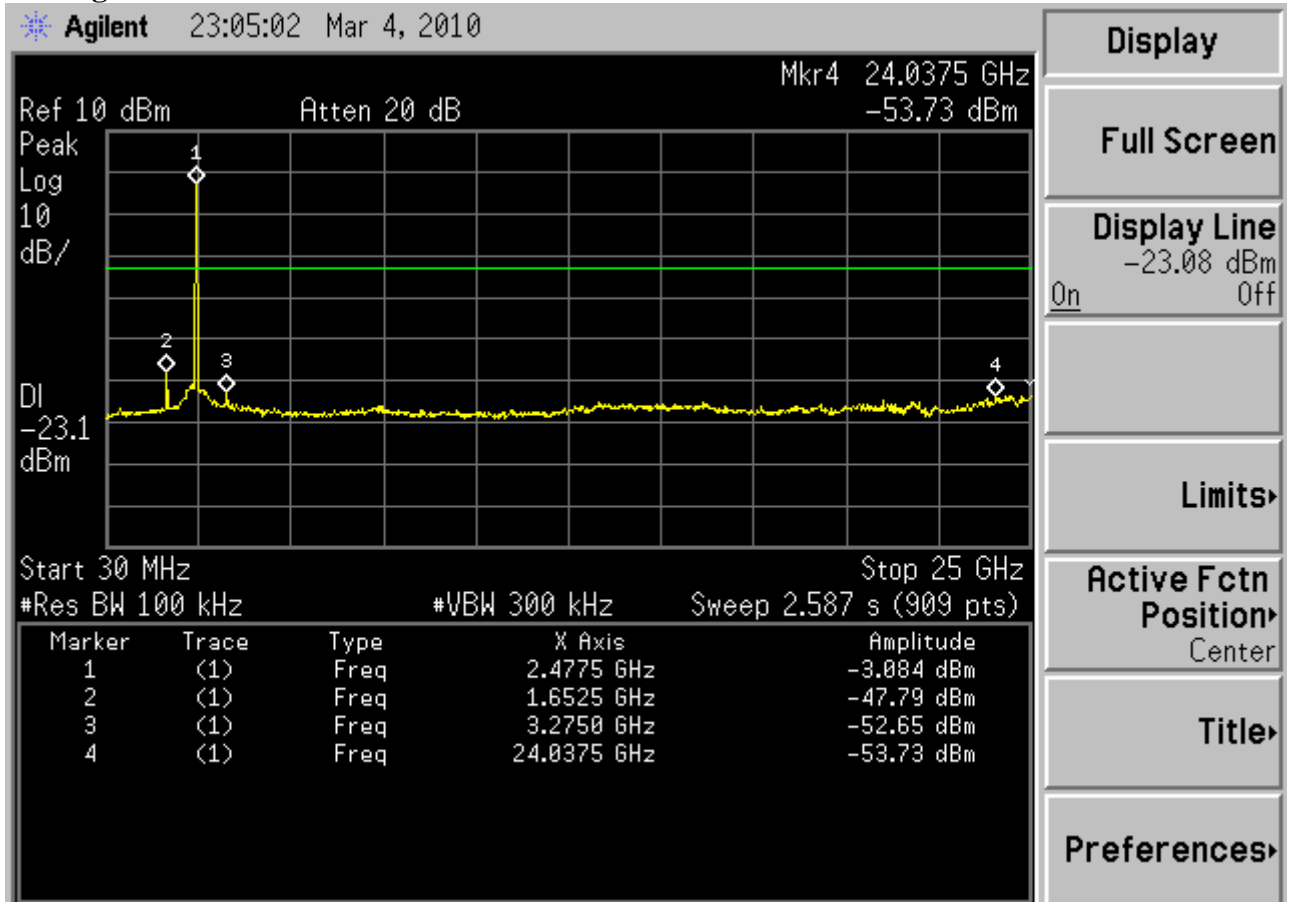
802.11g Ch01 2412 MHz



802.11g Ch06 2437 MHz



802.11g Ch11 2462 MHz



8 BAND EDGES MEASUREMENT

8.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010

8.2 Block Diagram of Test Setup

The same as section.5.2.

8.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.4 Operating Condition of EUT

The test program “Telnet” was used to enable the EUT to transmit and receive data at different channel frequency individually.

8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100kHz bandwidth from band edge.

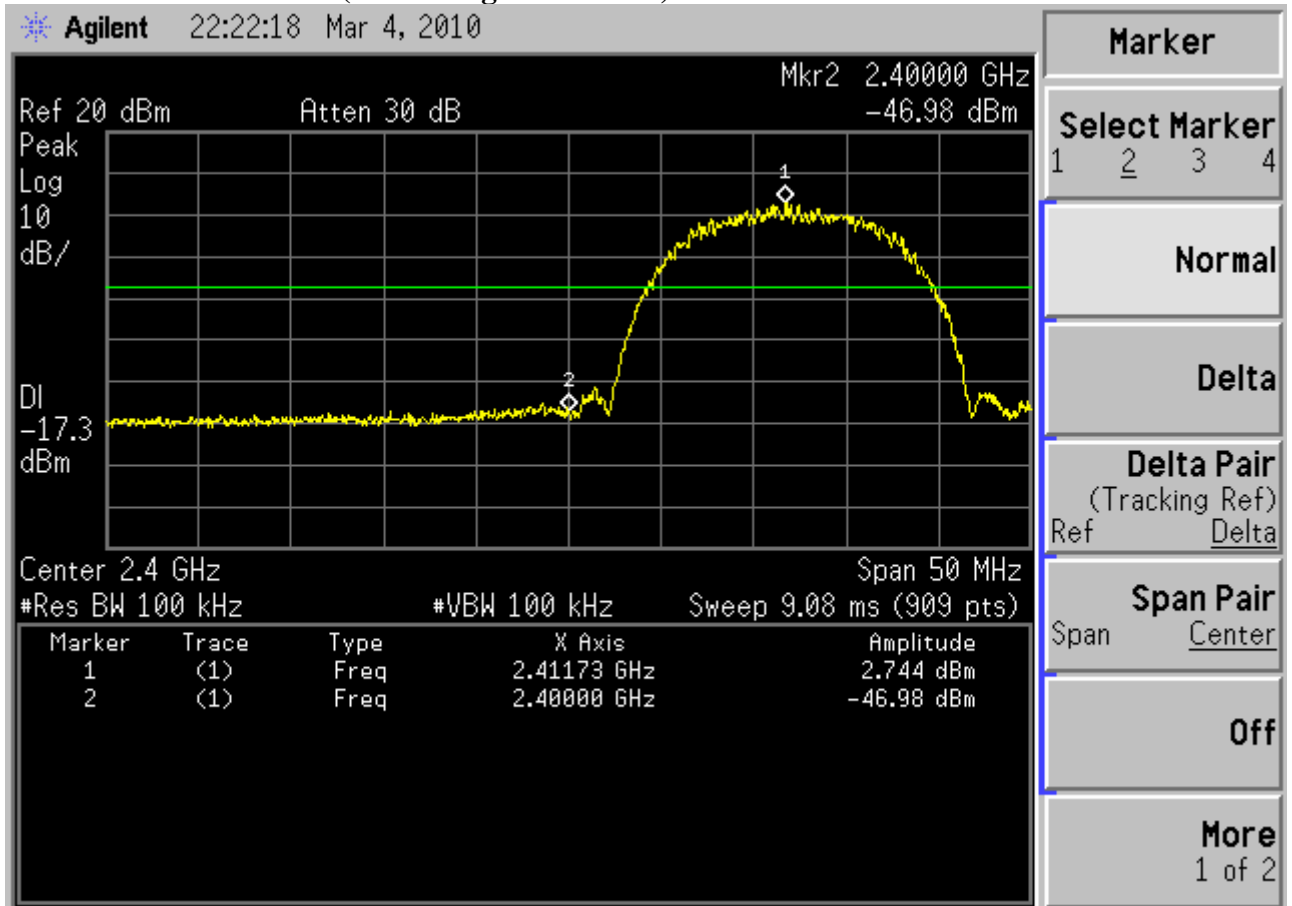
8.6 Test Results

PASSED. All the test results are attached in next pages.

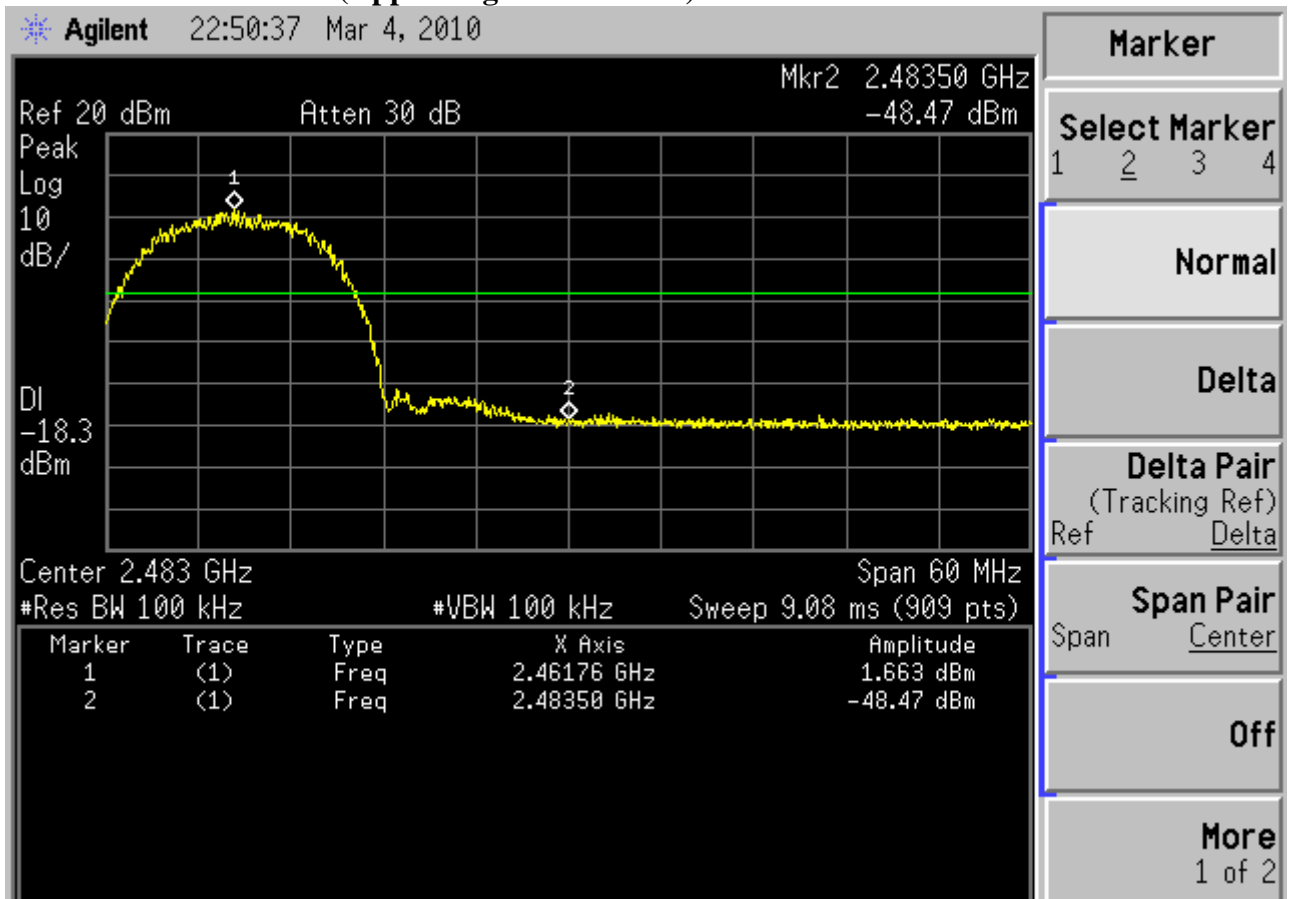
(Test date: Mar. 04, 2010 Temperature : 21℃ Humidity : 46 %)

Modulation	Location	Channel	Frequency	Delta Marker	Result
802.11b	Below Band Edge	01	2400 MHz	49.724 dB	More than 20 dB below the highest level of the desired power
	Upper Band Edge	11	2483.5 MHz	50.133 dB	
802.11g	Below Band Edge	01	2400 MHz	31.321 dB	
	Upper Band Edge	11	2483.5 MHz	41.053 dB	

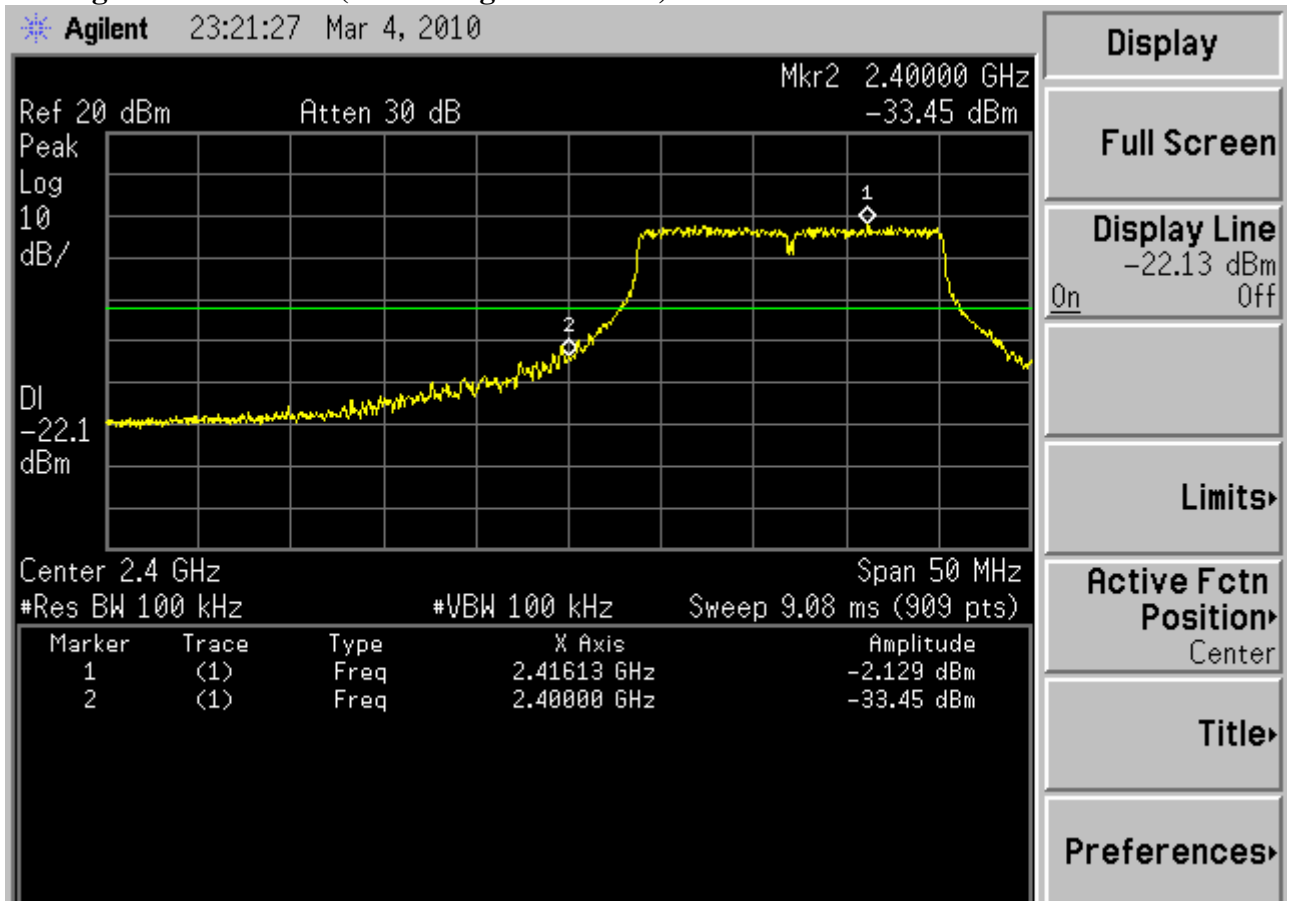
802.11b Ch01 2412MHz (Below Edge 2400 MHz)



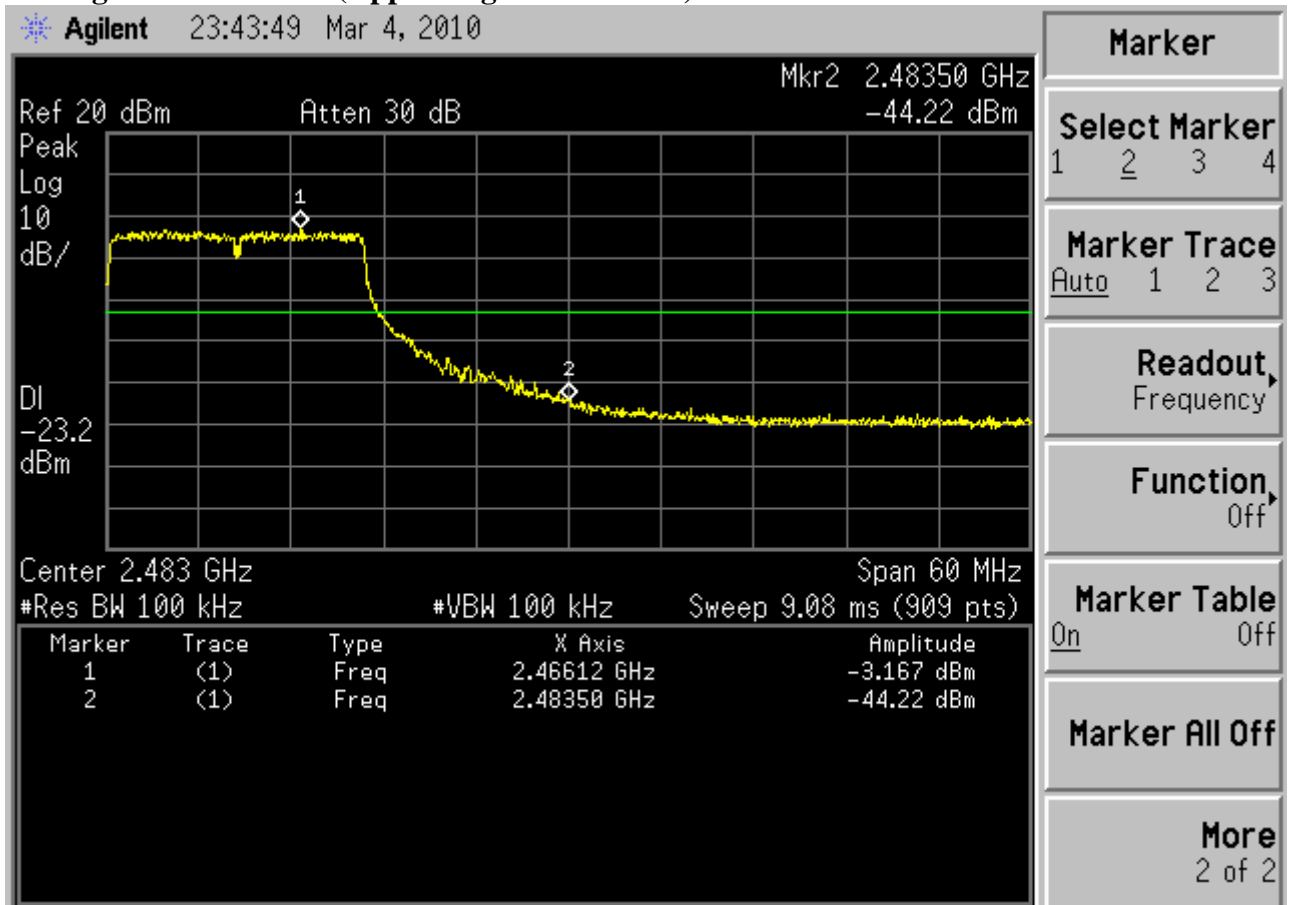
802.11b Ch11 2462MHz (Upper Edge 2483.5 MHz)



802.11g Ch01 2412MHz (Below Edge 2400 MHz)



802.11g Ch11 2462MHz (Upper Edge 2483.5 MHz)



9 POWER SPECTRAL DENSITY MEASUREMENT

9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Spectrum Analyzer	Agilent	E7405A	MY45106600	May 19, 2009	May 19, 2010

9.2 Block Diagram of Test Setup

The same as section.5.2.

9.3 Specification Limits (§15.247(e))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

9.4 Operating Condition of EUT

The test program “fcctestwifi” was used to enable the EUT to transmit data at different channel frequency individually.

9.5 Test Procedure

The same method of determining the conducted output power shall be used to determine the power spectral density. If a peak output is measured, then a peak power spectral density measurement is required. Use PSD Option 1 (which defined in KDB558074) if Power output Option 1 was used.

PSD Option 1:

Locate and zoom in on emission peak(s) within the passband. Set RBW = 3kHz, VBW > RBW, sweep = (SPAN/3kHz). The peak level measured must be no greater than +8 dBm.

The transmitter output was connected to the spectrum analyzer. The fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz.

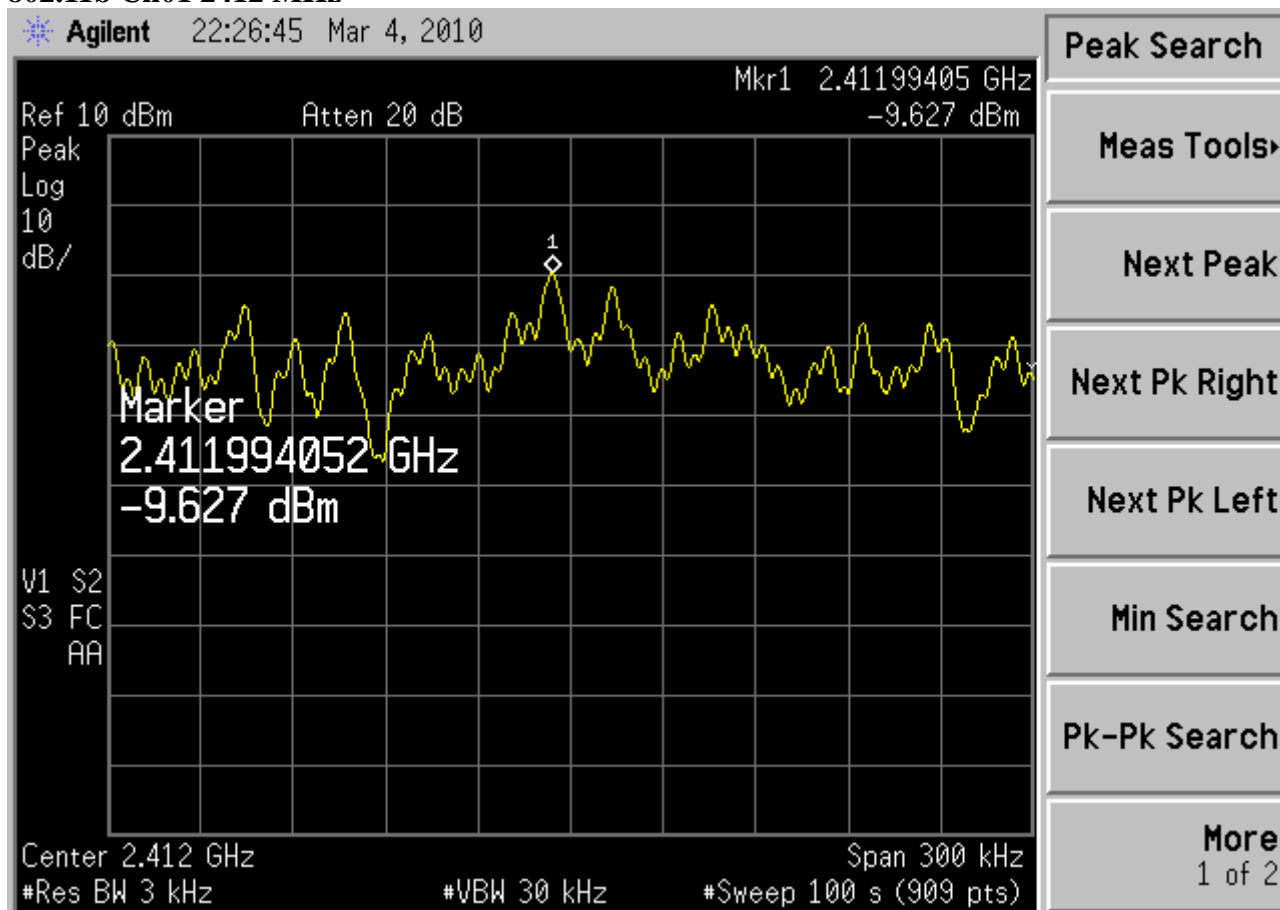
9.6 Test Results

PASSED. All the test results are attached in next pages.

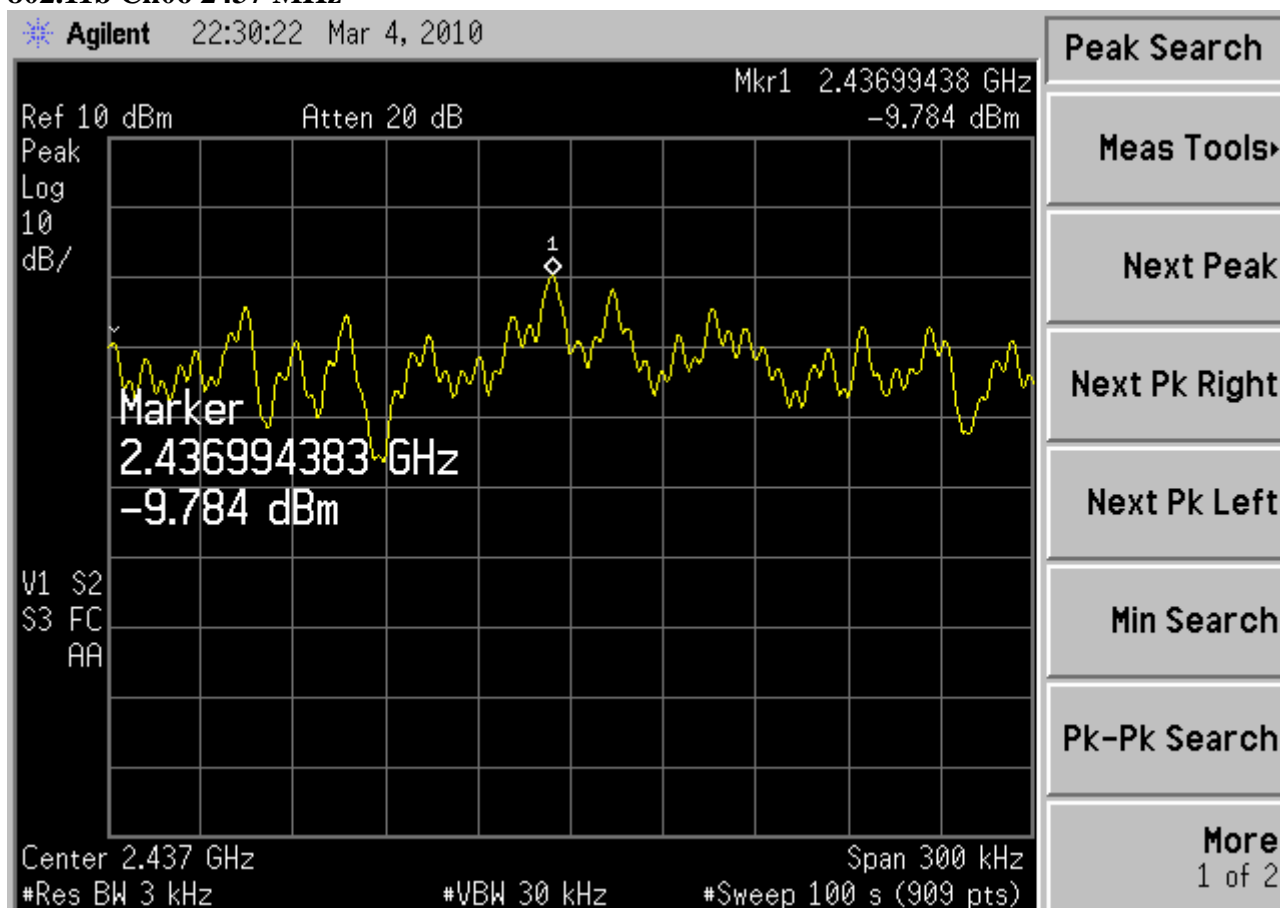
(Test date: Mar. 04, 2010 Temperature : 21°C Humidity : 46 %)

Modulation	Channel	Frequency	Power Spectral Density	Limit
802.11b	01	2412 MHz	-9.627 dBm	8dBm
	06	2437MHz	-9.784 dBm	8dBm
	11	2462MHz	-9.649 dBm	8dBm
802.11g	01	2412 MHz	-12.75 dBm	8dBm
	06	2437MHz	-12.44 dBm	8dBm
	11	2462MHz	-11.21 dBm	8dBm

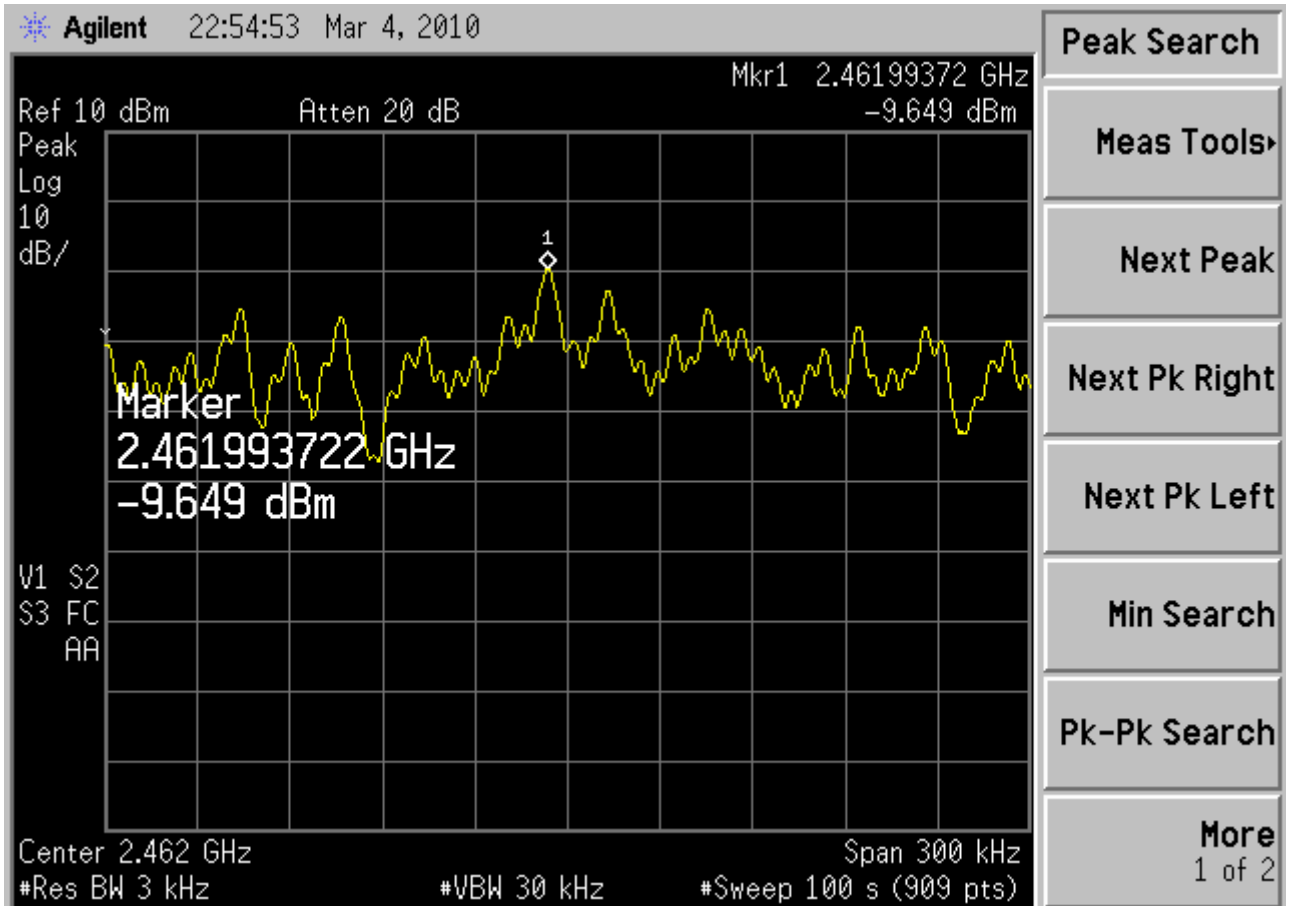
802.11b Ch01 2412 MHz



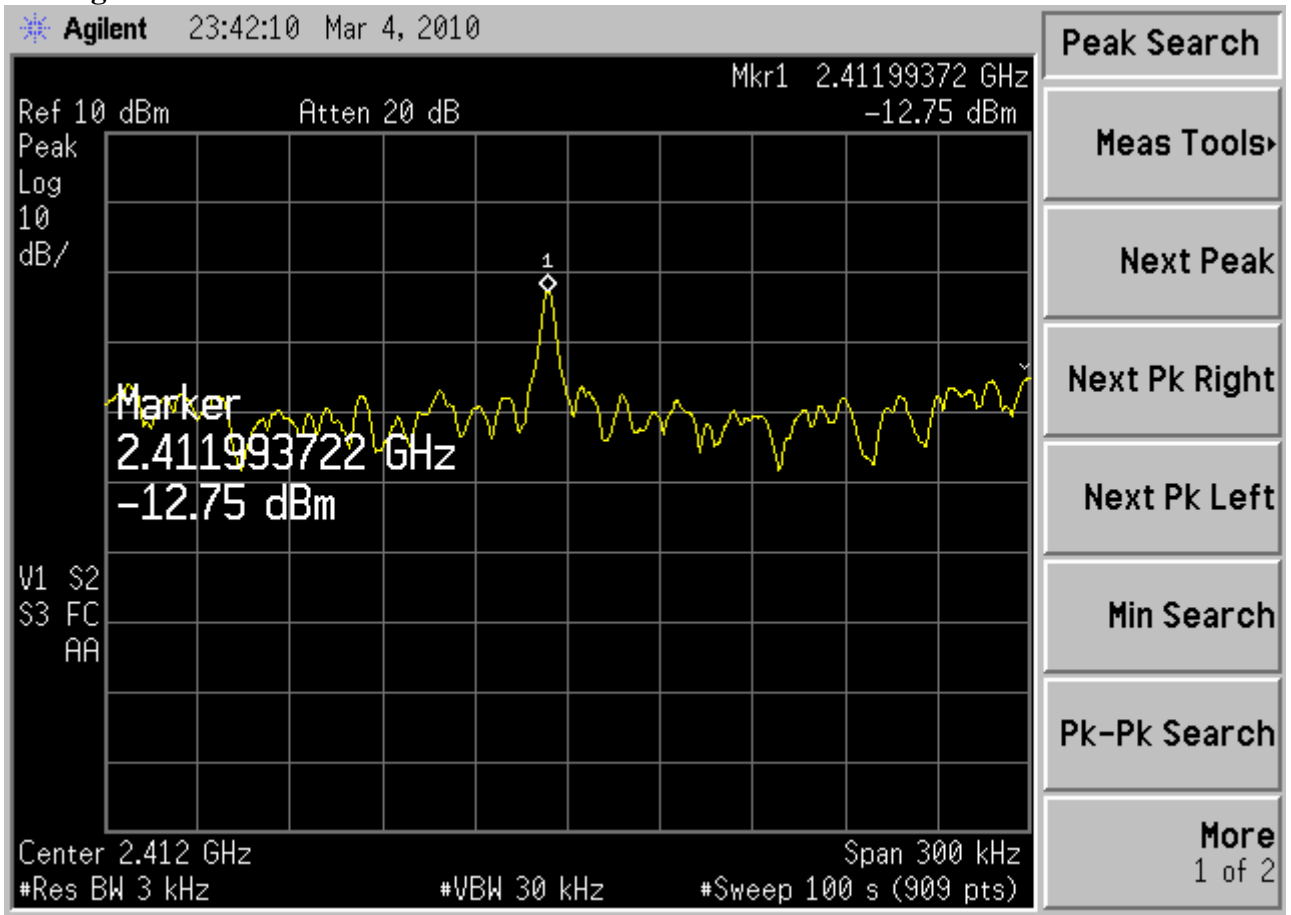
802.11b Ch06 2437 MHz



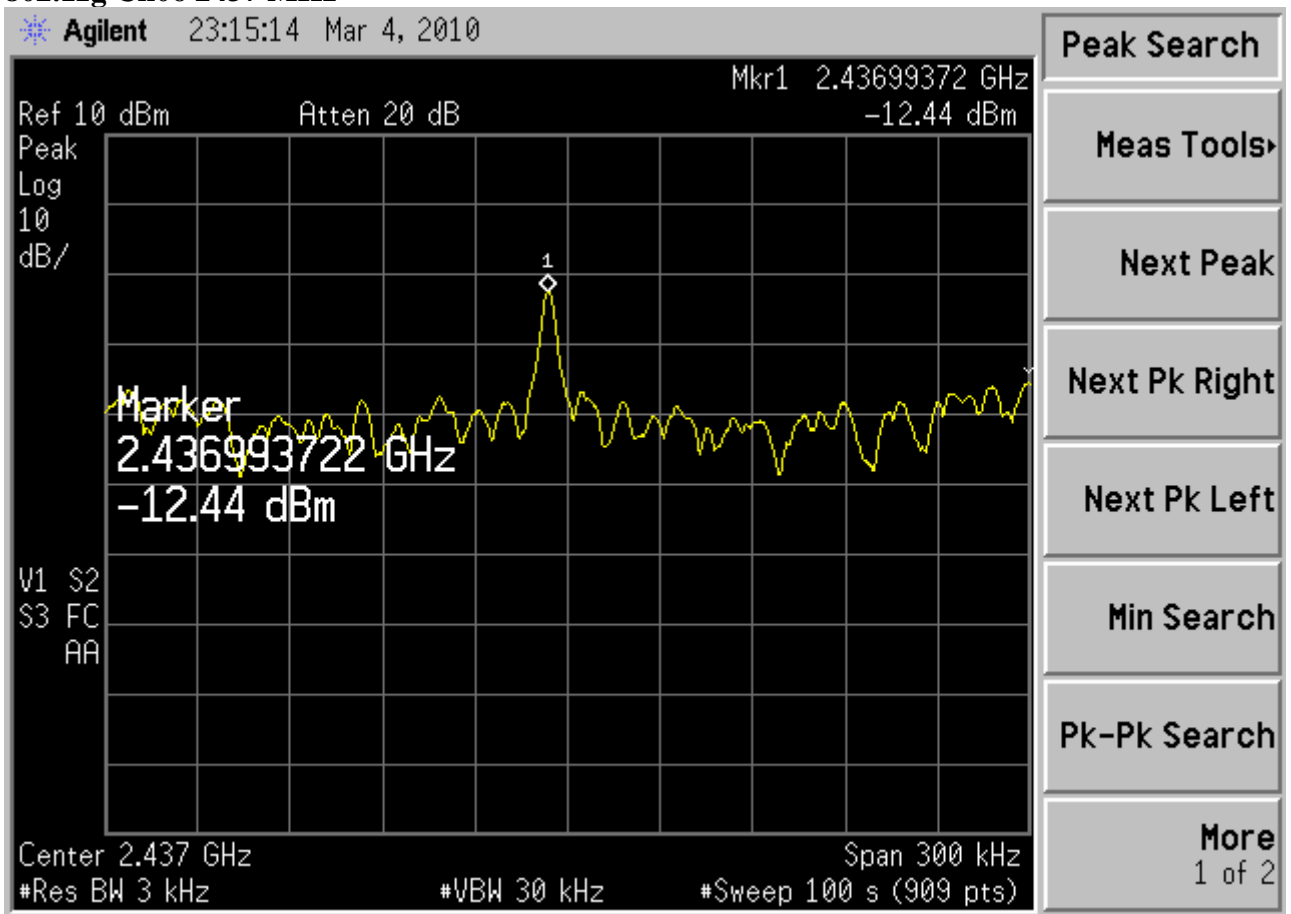
802.11b Ch11 2462 MHz



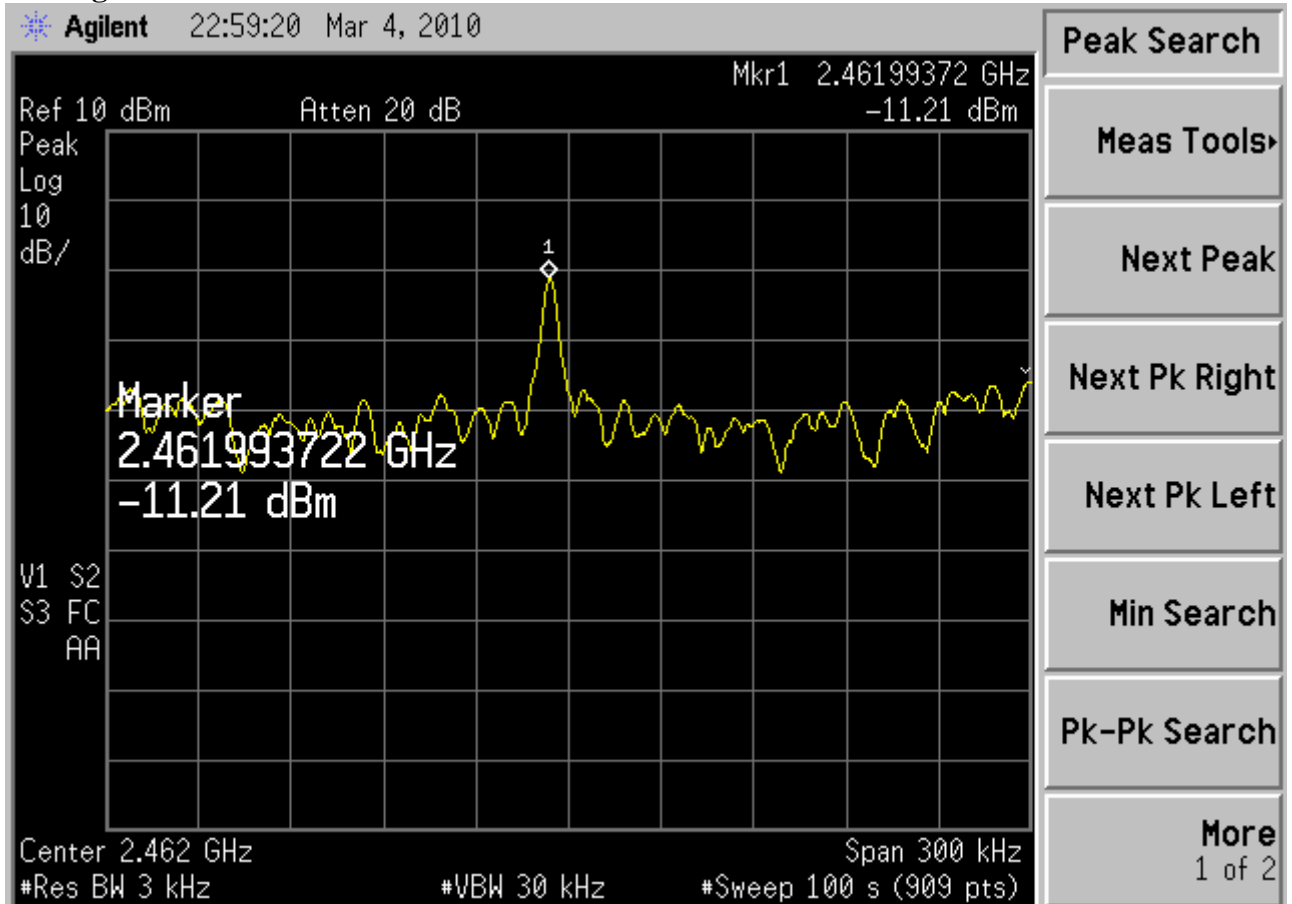
802.11g Ch01 2412 MHz



802.11g Ch06 2437 MHz



802.11g Ch11 2462 MHz



10 DEVIATION TO TEST SPECIFICATIONS

None.