



# Test Report

Product Name : Home Gateway  
Model No. : EchoLife HG520c, EchoLife HG520u  
FCC ID : QISHG520C

Applicant : Huawei Technologies Co., Ltd.  
Address : Administration Building, Huawei Base, Bantian,  
Longgang District, Shenzhen 518129 P.R.C.

Date of Receipt : 2009/04/16  
Issued Date : 2009/06/11  
Report No. : 095S005-RF-US-P05V01

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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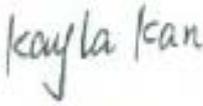
# Test Report Certification

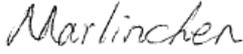
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Applicant : Huawei Technologies Co., Ltd.  
Address : Administration Building, Huawei Base, Bantian,  
Longgang District, Shenzhen 518129 P.R.C.  
Manufacturer : Huawei Technologies Co., Ltd.  
Model No. : EchoLife HG520c, EchoLife HG520u  
FCC ID : QISHG520C  
Rated Voltage : AC 120 V / 60 Hz  
EUT Voltage : DC 12 V  
Trade Name : HUAWEI  
Applicable Standard : FCC CFR Title 47 Part 15 Subpart C: 2008  
ANSI C63.4: 2003  
Test Result : Complied  
Performed Location : SuZhou EMC laboratory  
No.99 Hongye Rd., Suzhou Industrial Park Loufeng  
Hi-Tech Development Zone., SuZhou, China  
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098  
FCC Registration Number: 800392

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## Laboratory Information

We , **Quietek Corporation**, are an independent EMC and safety consultancy that was established the whole facility in our laboratories. The test facility has been accredited by the following accreditation Bodies in compliance with ISO 17025, EN 45001 and Guide 25:

Taiwan R.O.C.	: BSMI, DGT, CNLA
Germany	: TUV Rheinland
Norway	: Nemko, DNV
USA	: FCC, NVLAP
Japan	: VCCI

The related certificate for our laboratories about the test site and management system can be downloaded from Quietek Corporation's Web Site : <http://tw.quietek.com/modules/myalbum/>  
 The address and introduction of Quietek Corporation's laboratories can be founded in our Web site : <http://www.quietek.com/>  
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## 1. General Information

### 1.1. EUT Description

Product Name	Home Gateway
Trade Name	HUAWEI
Model No.	EchoLife HG520c, EchoLife HG520u
Working Voltage	DC 12V
Frequency Range	<b>For 2.4GHz Band</b> 802.11b/g: 2412 - 2462 MHz
Channel Number	<b>For 2.4GHz Band</b> 802.11b/g: 11
Type of Modulation	802.11b: DSSS 802.11g: OFDM
Data Rate	802.11g: 6/9/12/18/24/36/48/54 Mbps 802.11b: 1/2/5.5/11 Mbps
Channel Control	Auto
Antenna Type	Dipole Antenna
Antenna Gain	2dBi

Note: This product includes two models EchoLife HG520c and EchoLife HG520u; EchoLife HG520u hasn't C250 contrasting of hardware, besides of which, C253 and C254 transfer from 3.3nF to 1.5nF.

Component	
AC Adapter #1	<p>SWITCHING MODE POWER ADAPTER</p> <p>Manufacturer: SHENZHEN FRECOM ELECTRONICS CO., LTD.</p> <p>Model: FM120005-US</p> <p>Input: 100-150V~, 50/60Hz, 0.3A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #2	<p>I.T.E POWER SUPPLY</p> <p>Manufacturer: AMIGO</p> <p>Model: AMS47-1200200SH</p> <p>Input: 200-240V~, 50/60Hz, 0.2A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #3	<p>SWITCHING MODE POWER ADAPTER</p> <p>Manufacturer: SHENZHEN FRECOM ELECTRONICS CO., LTD.</p> <p>Model: UE06L4-120050SPAU</p> <p>Input: 100-150V~, 50/60Hz, 0.2A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #4	<p>SWITCHING MODE POWER ADAPTER</p> <p>Manufacturer: SHENZHEN FRECOM ELECTRONICS CO., LTD.</p> <p>Model: FM120005-US</p> <p>Input: 100-240V~, 50/60Hz, 0.3A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #5	<p>SWITCHING MODE POWER ADAPTER</p> <p>Manufacturer: SHENZHEN FRECOM ELECTRONICS CO., LTD.</p> <p>Model: FM120005-US</p> <p>Input: 200-240V~, 50/60Hz, 0.3A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #6	<p>SWITCHING MODE POWER ADAPTER</p> <p>Manufacturer: SHENZHEN FRECOM ELECTRONICS CO., LTD.</p> <p>Model: FM120005-UC</p> <p>Input: 100-240V~, 50/60Hz, 0.3A</p> <p>Output: 12VDC, 0.5A</p>
AC Adapter #7	<p>Fuhua</p> <p>Model: UE06L4-120050SPAU</p> <p>Input: 100-240V~, 50/60Hz, 0.2A MAX</p> <p>Output: 12VDC, 0.5A</p>

AC Adapter #8	Fuhua Model: UE06L4-120050SPAD Input: 100-240V~, 50/60Hz, 0.2A MAX Output: 12VDC, 0.5A
AC Adapter #9	Fuhua Model: UE06L4-120050SPAU Input: 200-240V~, 50/60Hz, 0.2A MAX Output: 12VDC, 0.5A

802.11b/g Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz	04	2427 MHz
05	2432 MHz	06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz	N/A	N/A

**1.2. Mode of Operation**

Quietek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by 802.11b
Mode 2: Transmit by 802.11g

Note:

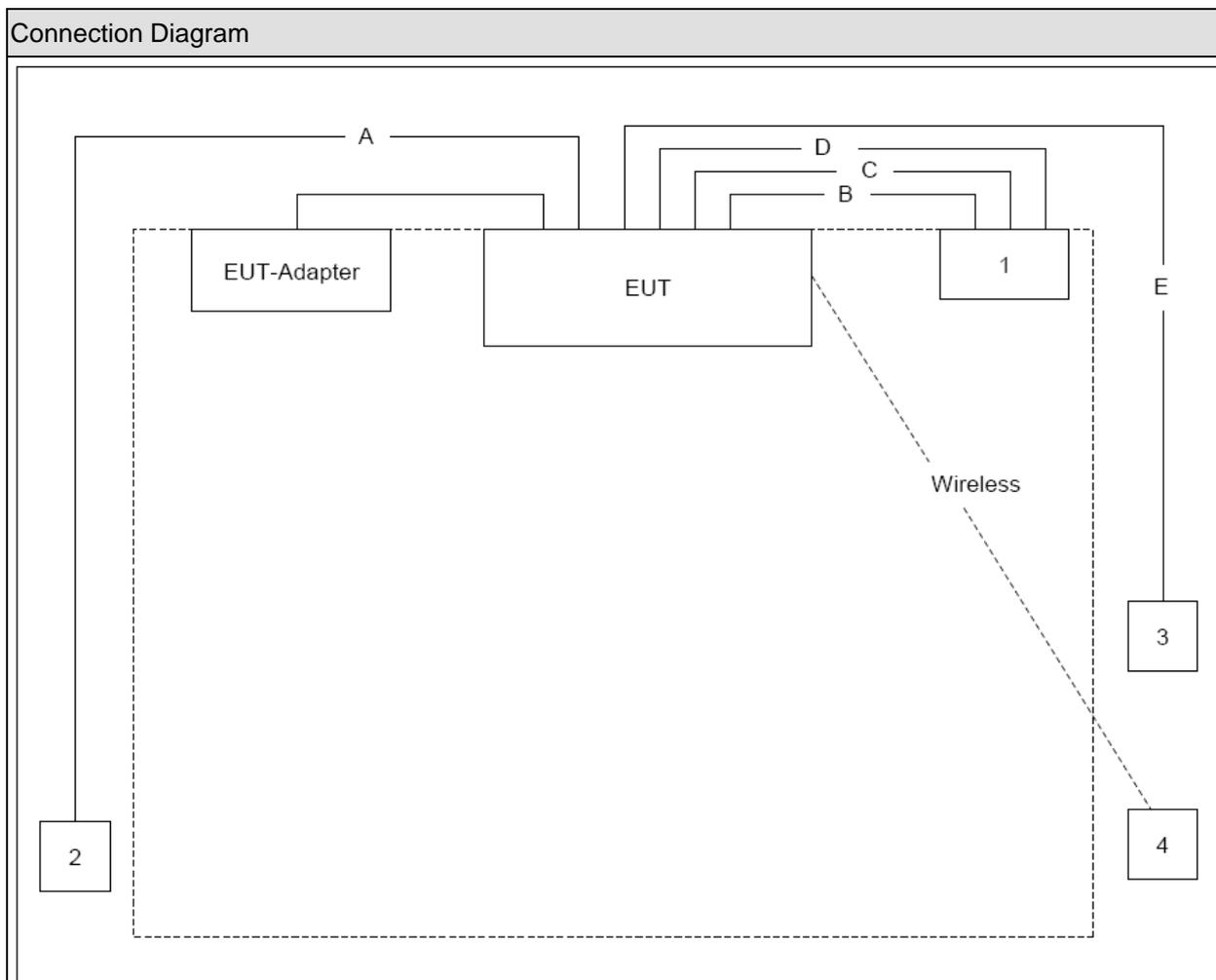
1. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.
2. This device is a composite device in accordance with Part 15 Subpart B regulations. The function for the receiver was measured and made a test report that the report number is 095S005R-IT-US-P01V02, certified under Declaration of Conformity.

### 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1   Switch	D-Link	DES-1016D	F30A15B001906	Non-Shielded, 1.8m
2   IP Express	ZyXEL	IES-1248-71	S523825530	Non-Shielded, 1.8m
3   MacBook	Apple	MB061CH	W8732B4TZ5V	Power by adapter
4   Notebook	DELL	PP19L	JH097 A01	Power by adapter

### 1.4. Configuration of Tested System



Signal Cable Type		Signal cable Description
A	Telecom Cable	Non-Shielded, >10m
B	LAN Cable	Non-Shielded, 1.8m
C	LAN Cable	Non-Shielded, 1.8m
D	LAN Cable	Non-Shielded, 1.8m
E	LAN Cable	Non-Shielded, >10m

**1.5. EUT Exercise Software**

1	Setup the EUT and simulators as shown on 1.4.
2	Turn on the power of all equipment.
3	Set Notebook (4) communication with EUT by wireless.
4	Set Notebook (3) ping EUT IP address and ping telecom switch IP address through LAN port and ADSL port.

## 2. Technical Test

### 2.1. Summary of Test Result

- No deviations from the test standards  
 Deviations from the test standards as below description:

Performed Test Item	Normative References	Test Performed	Deviation
Conducted Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.207	Yes	No
Radiated Emission	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.209	Yes	No
RF Antenna Conducted Spurious	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(d)	Yes	No
Radiated Emission Band Edge	FCC CFR Title 47 Part 15 Subpart C: 2008 15.247(d)	Yes	No
Operation Frequency Range of 20dB Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 15.215(c)	Yes	No
Occupied Bandwidth	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(a)(2)	Yes	No
Power Output	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(b)(3)	Yes	No
Power Spectral Density	FCC CFR Title 47 Part 15 Subpart C: 2008 Section 15.247(e)	Yes	No

**2.2. Test Environment**

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	51
Barometric pressure (mbar)	860-1060	950-1000

### 3. Conducted Emission

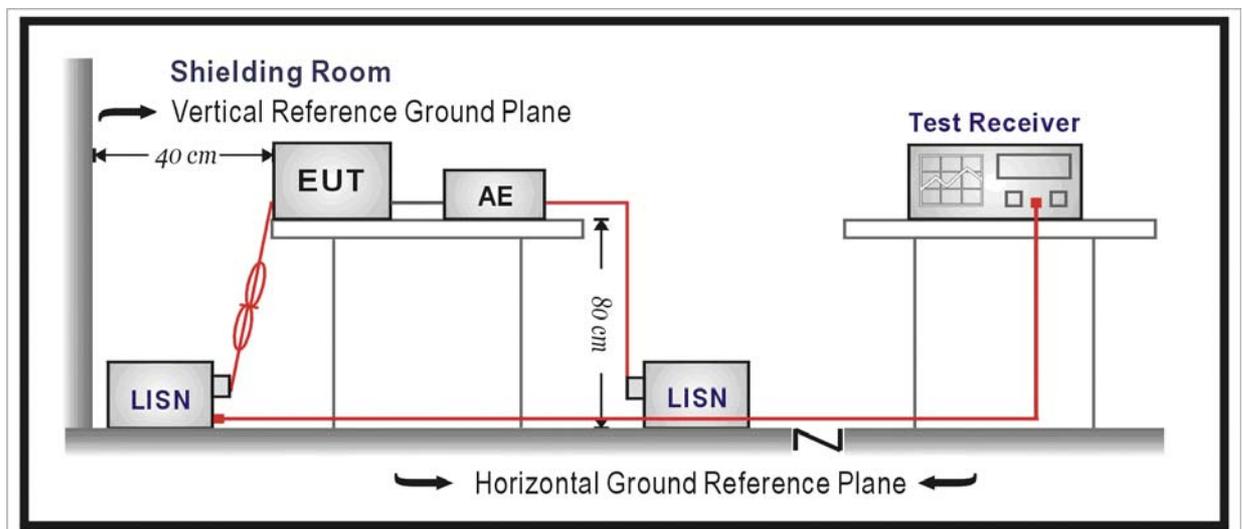
#### 3.1. Test Equipment

Conducted Emission / SR-1

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
EMI Test Receiver	R&S	ESCI	100726	2009/04/23
Two-Line V-Network	R&S	ENV216	100013	2009/06/11
Two-Line V-Network	R&S	ENV216	100014	2009/04/23
50ohm Coaxial Switch	Anritsu	MP59B	6200464462	2008/11/24
50ohm Termination	SHX	TF2	07081401	2008/09/28
Coaxial Cable	Luthi	RG214	519358	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH004	2009/03/31

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

#### 3.2. Test Setup



**3.3. Limit**

FCC Part 15 Subpart C Paragraph 15.207 Limits		
Frequency (MHz)	QP (dBuV)	AV (dBuV)
0.15 - 0.50	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

**3.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

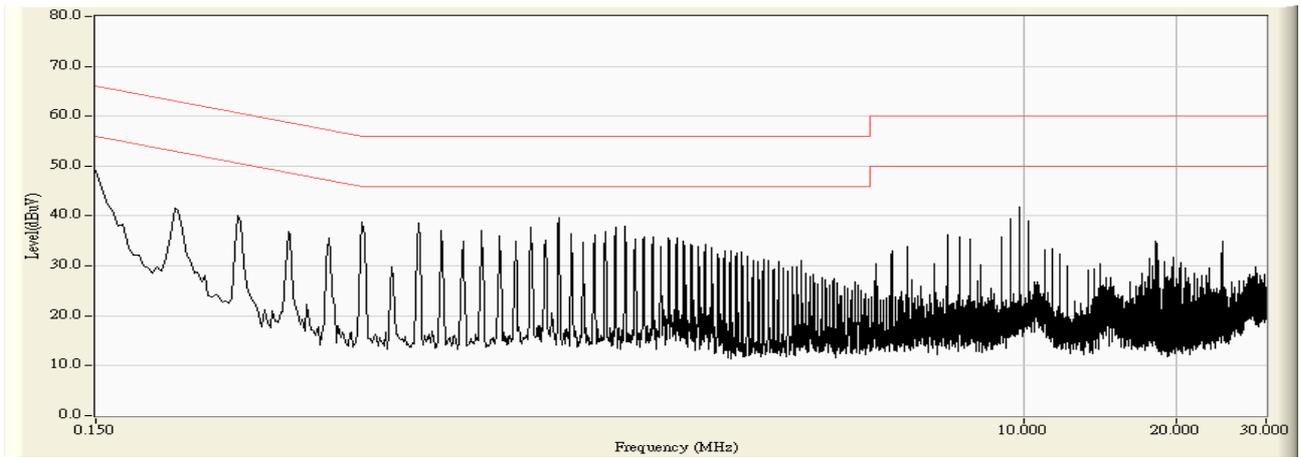
The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

**3.5. Uncertainty**

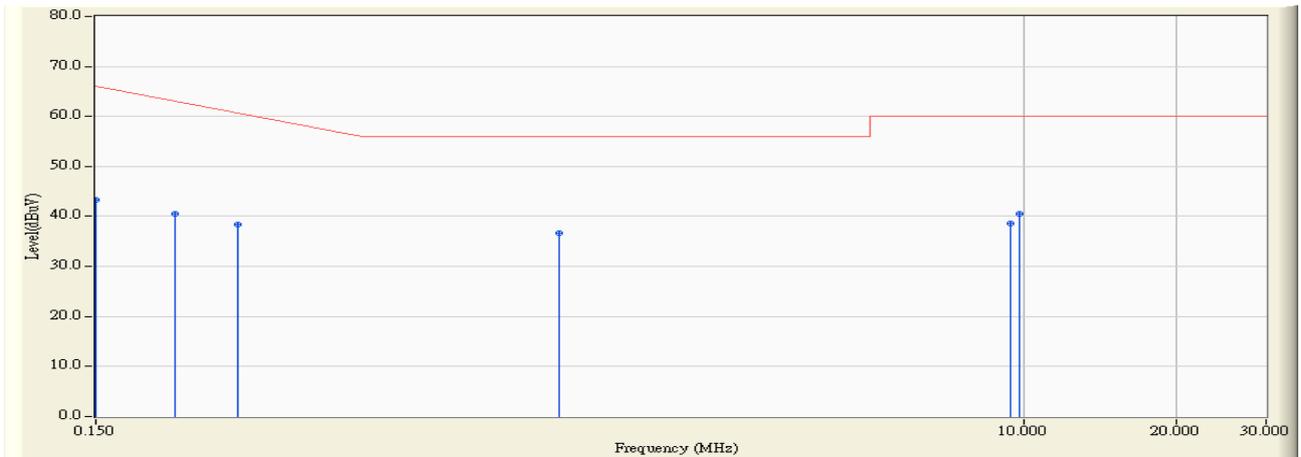
The measurement uncertainty is defined as  $\pm 2.02$  dB

**3.6. Test Result**

Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:49
Limit : FCC_SpartC_15.207_00M_QP	Margin : 10
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line1
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)



Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:52
Limit : FCC_SpartC_15.207_00M_QP	Margin : 0
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line1
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)

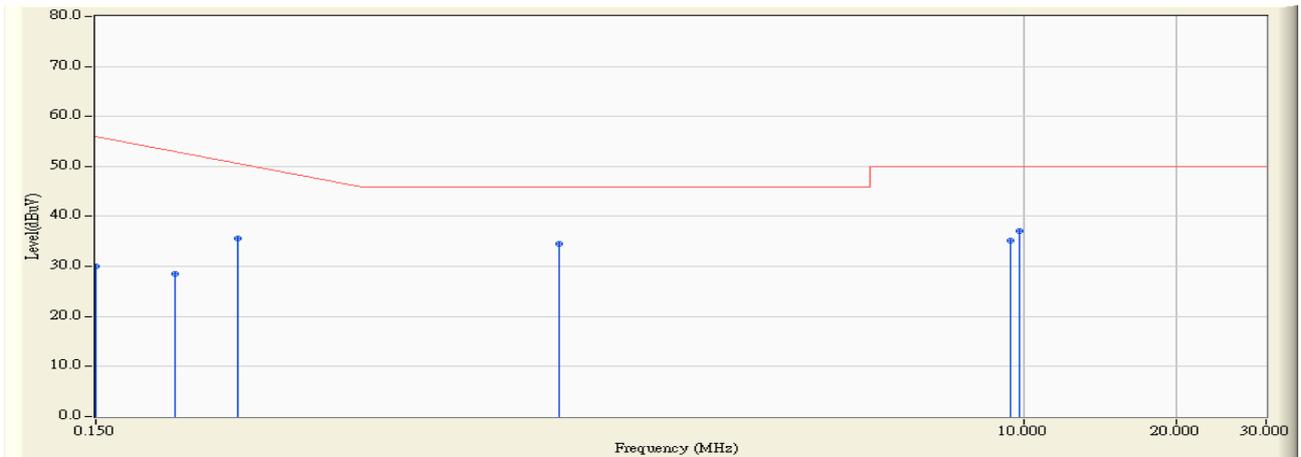


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	10.160	33.200	43.360	-22.640	66.000	QUASIPeAK
2		0.214	9.473	31.000	40.473	-23.698	64.171	QUASIPeAK
3		0.286	9.485	28.900	38.385	-23.729	62.114	QUASIPeAK
4	*	1.222	9.710	26.900	36.610	-19.390	56.000	QUASIPeAK
5		9.442	9.950	28.700	38.650	-21.350	60.000	QUASIPeAK
6		9.838	9.950	30.500	40.450	-19.550	60.000	QUASIPeAK

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:52
Limit : FCC_SpartC_15.207_00M_AV	Margin : 0
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line1
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)

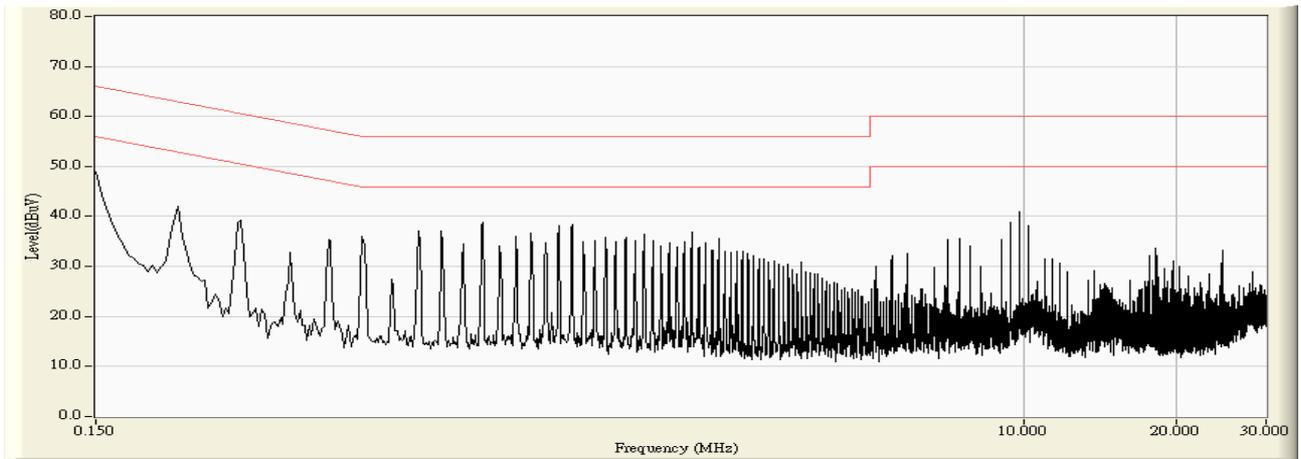


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	10.160	19.800	29.960	-26.040	56.000	AVERAGE
2		0.214	9.473	19.000	28.473	-25.698	54.171	AVERAGE
3		0.286	9.485	26.100	35.585	-16.529	52.114	AVERAGE
4	*	1.222	9.710	24.900	34.610	-11.390	46.000	AVERAGE
5		9.442	9.950	25.300	35.250	-14.750	50.000	AVERAGE
6		9.838	9.950	27.200	37.150	-12.850	50.000	AVERAGE

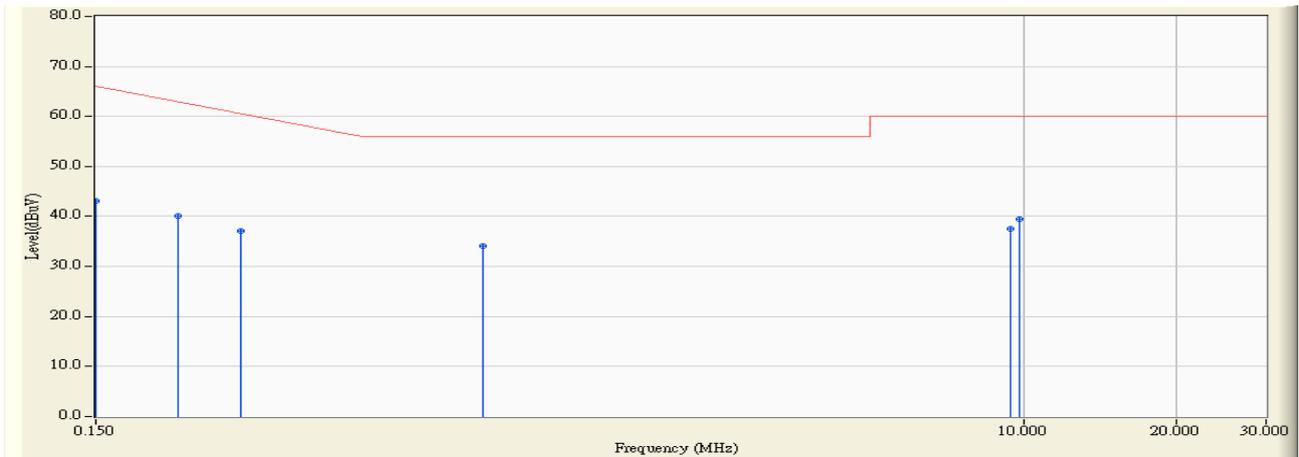
**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:54
Limit : FCC_SpartC_15.207_00M_QP	Margin : 10
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line2
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)



Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:56
Limit : FCC_SpartC_15.207_00M_QP	Margin : 0
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line2
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)

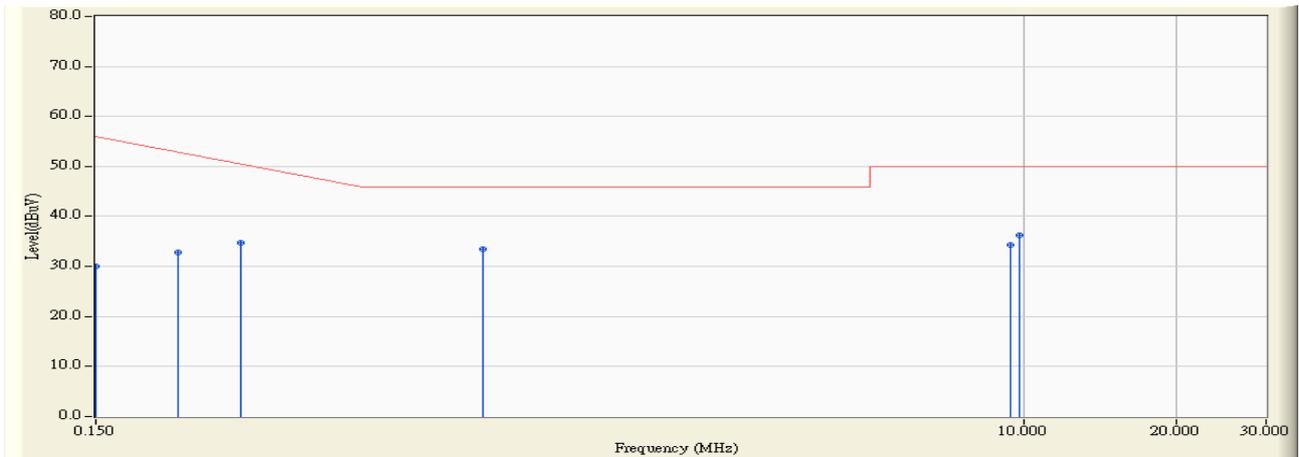


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	10.006	33.200	43.206	-22.794	66.000	QUASIPeAK
2		0.218	9.584	30.500	40.084	-23.973	64.057	QUASIPeAK
3		0.290	9.590	27.600	37.190	-24.810	62.000	QUASIPeAK
4		0.866	9.760	24.400	34.160	-21.840	56.000	QUASIPeAK
5		9.442	9.930	27.700	37.630	-22.370	60.000	QUASIPeAK
6	*	9.838	9.930	29.500	39.430	-20.570	60.000	QUASIPeAK

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Engineer : Robin	
Site : SR-1 (Conducted Emission and Power Disturbance Test)	Time : 2009/04/25 - 03:56
Limit : FCC_SpartC_15.207_00M_AV	Margin : 0
EUT : Home Gateway	Probe : ENV216_100014(0.009-30MHz) - Line2
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2437MHz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV)	Margin (dB)	Limit (dBuV)	Detector Type
1		0.150	10.006	20.000	30.006	-25.994	56.000	AVERAGE
2		0.218	9.584	23.200	32.784	-21.273	54.057	AVERAGE
3		0.290	9.590	25.100	34.690	-17.310	52.000	AVERAGE
4	*	0.866	9.760	23.700	33.460	-12.540	46.000	AVERAGE
5		9.442	9.930	24.300	34.230	-15.770	50.000	AVERAGE
6		9.838	9.930	26.300	36.230	-13.770	50.000	AVERAGE

**Note:**

1. All Reading Levels are Quasi-Peak and average value.
2. " \* ", means this data is the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

## 4. Radiated Emission

### 4.1. Test Equipment

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2008/11/12
EMI Test Receiver	R&S	ESCI	100573	2009/04/23
Preamplifier	Quietek	AP-025C	QT-AP003	2008/11/24
Preamplifier	Quietek	AP-180C	CHM-0602012	2008/11/24
Bilog Type Antenna	Schaffner	CBL6112B	2932	2009/02/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2009/06/11
High-Pass Filter	Wainwright	WHKX2.8/18G-12SS	SN1	2009/03/03
Band Reject Filter	Wainwright	WRCG2400/2485-2375 /2510-60/11SS	SN9	2009/03/03
High-Pass Filter	Wainwright	WHKX7.0/18G-8SS	SN16	2009/03/03
Low-Pass Filter	Wainwright	WLKS4500-9SS	SN2	2009/03/03
50ohm Coaxial Switch	Anritsu	MP59B	6200447304	2008/11/24
Coaxial Cable	Huber+Suhner	AC2-C	04	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2009/03/31

Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2009/04/23
EMI Test Receiver	R&S	ESCI	100176	2008/11/15
Preamplifier	Quietek	AP-025C	QT-AP004	2008/11/24
Preamplifier	Quietek	AP-180C	CHM-0602012	2009/05/05
Bilog Type Antenna	Schaffner	CBL6112D	22254	2009/02/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2009/06/11
High-Pass Filter	Wainwright	WHKX2.8/18G-12SS	SN1	2009/03/03
Band Reject Filter	Wainwright	WRCG2400/2485-2375 /2510-60/11SS	SN9	2009/03/03
High-Pass Filter	Wainwright	WHKX7.0/18G-8SS	SN16	2009/03/03
Low-Pass Filter	Wainwright	WLKS4500-9SS	SN2	2009/03/03
50ohm Coaxial Switch	Anritsu	MP59B	6200464463	2008/11/24
Coaxial Cable	Huber+Suhner	AC2-C	05	2009/05/25

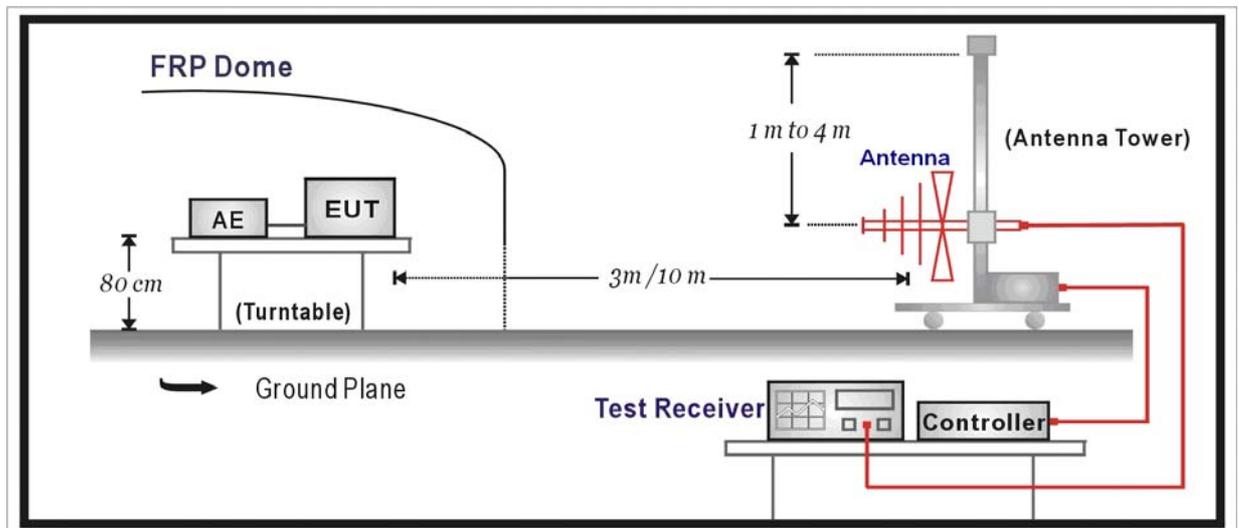
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2009/03/31
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Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

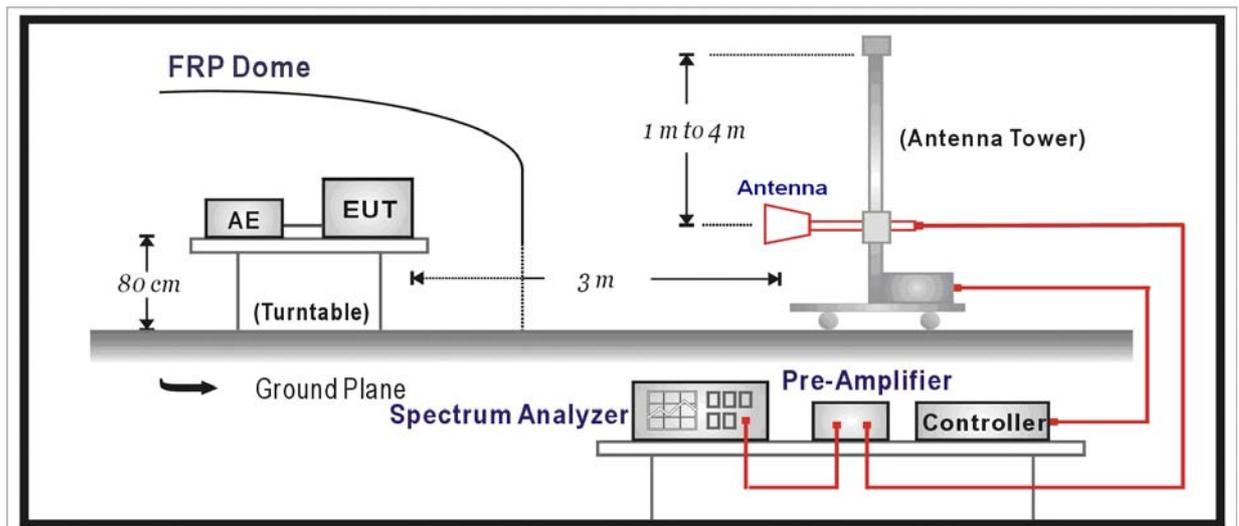
Note 2: The test instruments marked with "X" are used to measure the final test results.

## 4.2. Test Setup

Under 1GHz Test Setup:



Above 1GHz Test Setup:



**4.3. Limit**

FCC Part 15 Subpart C Paragraph 15.209		
Frequency (MHz)	Distance (m)	Level (dBuV/m)
30 - 88	3	40
88 - 216	3	43.5
216 - 960	3	46
Above 960	3	54

Note 1: The lower limit shall apply at the transition frequency.

Note 2: 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 3: E field strength (dBuV/m) = 20 log E field strength (uV/m)

**4.4. Test Procedure**

The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

The frequency range from 30MHz to 10th harmonic is checked.

Note: When measurement above 1GHz, the horn antenna will bend down a little (as horn antenna have the narrow beamwidth) in order to find the maximum emission of EUT.

**4.5. Uncertainty**

The measurement uncertainty above 1G is defined as ± 3.9 dB

below 1G is defined as ± 3.8 dB

**4.6. Test Result**

Mode 1: Transmit by 802.11b							
Frequency (MHz)	Polarization (H/V)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (degree)
Channel 1 (2412MHz)							
500.450	H	38.432	46.020	-7.588	QP	116.5	238.0
500.450	V	37.540	46.020	-8.480	QP	100.2	95.0
600.360	H	38.329	46.020	-7.691	QP	120.4	219.0
600.360	V	32.474	46.020	-13.546	QP	105.6	116.0
666.320	H	32.244	46.020	-13.776	QP	119.3	157.4
666.320	V	31.588	46.020	-14.432	QP	100.0	100.0
Channel 6 (2437MHz)							
500.450	H	31.549	46.020	-14.471	QP	122.5	208.0
500.450	V	33.343	46.020	-12.677	QP	100.0	195.0
600.360	H	32.043	46.020	-13.977	QP	121.4	206.0
600.360	V	31.641	46.020	-14.379	QP	115.6	106.0
666.320	H	32.721	46.020	-13.299	QP	109.3	163.4
666.320	V	37.385	46.020	-8.635	QP	100.0	70.0
Channel 11 (2462MHz)							
500.450	H	37.451	46.020	-8.569	QP	116.5	228.0
500.450	V	37.930	46.020	-8.090	QP	100.0	165.0
600.360	H	31.002	46.020	-15.018	QP	111.4	226.0
600.360	V	37.457	46.020	-8.563	QP	113.6	116.0
666.320	H	35.399	46.020	-10.621	QP	116.3	143.4
666.320	V	36.950	46.020	-9.070	QP	100.0	85.0

Mode 1: Transmit by 802.11b							
Frequency (MHz)	Polarization (H/V)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (degree)
Channel 1 (2412MHz)							
4825.000	H	52.433	73.970	-21.537	PK	114.5	65.8
4825.000	H	50.376	53.970	-3.594	AV	114.5	65.8
4825.000	V	51.558	73.970	-22.412	PK	100.0	144.8
4825.000	V	49.878	53.970	-4.092	AV	100.0	144.8
Channel 6 (2437MHz)							
4876.000	H	53.484	73.970	-20.486	PK	112.8	106.4
4876.000	H	51.255	53.970	-2.715	AV	112.8	106.4
4876.000	V	51.362	73.970	-22.608	PK	100.0	225.0
4876.000	V	48.638	53.970	-5.332	AV	100.0	225.0
Channel 11 (2462MHz)							
4927.000	H	52.639	73.970	-21.331	PK	116.3	83.5
4927.000	H	50.023	53.970	-3.947	AV	116.3	83.5
4927.000	V	51.430	73.970	-22.54	PK	103.7	189.3
4927.000	V	48.522	53.970	-5.448	AV	103.7	189.3

Mode 2: 802.11g							
Frequency (MHz)	Polarization (H/V)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (degree)
Channel 1 (2412MHz)							
500.450	H	31.598	46.020	-14.422	QP	126.5	328.0
500.450	V	31.336	46.020	-14.684	QP	100.0	265.0
600.360	H	29.354	46.020	-16.666	QP	121.4	206.0
600.360	V	32.733	46.020	-13.287	QP	105.6	66.0
666.320	H	31.348	46.020	-14.672	QP	118.3	173.4
666.320	V	37.830	46.020	-8.190	QP	100.0	77.0
Channel 6 (2437MHz)							
500.450	H	31.598	46.020	-14.422	QP	121.5	314.0
500.450	V	31.336	46.020	-14.684	QP	100.0	165.0
600.360	H	29.354	46.020	-16.666	QP	147.4	214.0
600.360	V	32.733	46.020	-13.287	QP	105.6	86.0
666.320	H	31.348	46.020	-14.672	QP	125.3	163.4
666.320	V	30.570	46.020	-15.450	QP	100.0	97.0
Channel 11 (2462MHz)							
500.450	H	30.850	46.020	-15.17	QP	118.5	307.0
500.450	V	29.025	46.020	-16.995	QP	100.0	135.0
600.360	H	32.956	46.020	-13.064	QP	144.7	154.0
600.360	V	32.479	46.020	-13.541	QP	105.6	96.0
666.320	H	36.633	46.020	-9.387	QP	121.3	143.4
666.320	V	37.899	46.020	-8.121	QP	100.0	107.0

Mode 2: Transmit by 802.11g							
Frequency (MHz)	Polarization (H/V)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (degree)
Channel 1 (2412MHz)							
4825.000	H	46.705	73.970	-27.265	PK	119.3	304.6
4825.000	H	43.584	53.970	-10.386	AV	119.3	304.6
4825.000	V	45.108	73.970	-28.862	PK	104.0	167.0
4825.000	V	42.046	53.970	-11.924	AV	104.0	167.0
Channel 6 (2437MHz)							
4876.000	H	51.161	73.970	-22.809	PK	122.7	233.5
4876.000	H	48.326	53.970	-5.644	AV	122.7	233.5
4876.000	V	47.318	73.970	-26.652	PK	100.0	214.9
4876.000	V	44.563	53.970	-9.407	AV	100.0	214.9
Channel 11 (2462MHz)							
4927.000	H	49.166	73.970	-24.804	PK	107.7	226.5
4927.000	H	46.128	53.970	-7.842	AV	107.7	226.5
4927.000	V	45.395	73.970	-28.575	PK	100.0	126.0
4927.000	V	42.745	53.970	-11.225	AV	100.0	126.0

## 5. RF Antenna Conducted Spurious

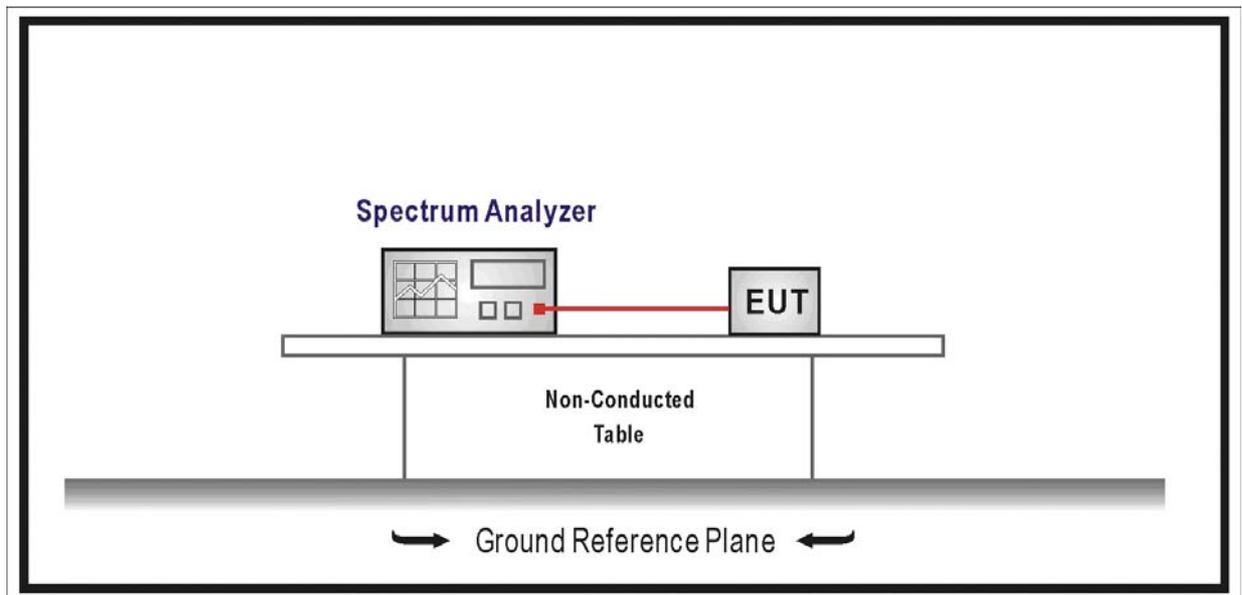
### 5.1. Test Equipment

RF Antenna Conducted Spurious / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Coaxial Cable	Huber+Suhner	AC4-RF	09	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 5.2. Test Setup



### 5.3. Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator 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.

#### **5.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

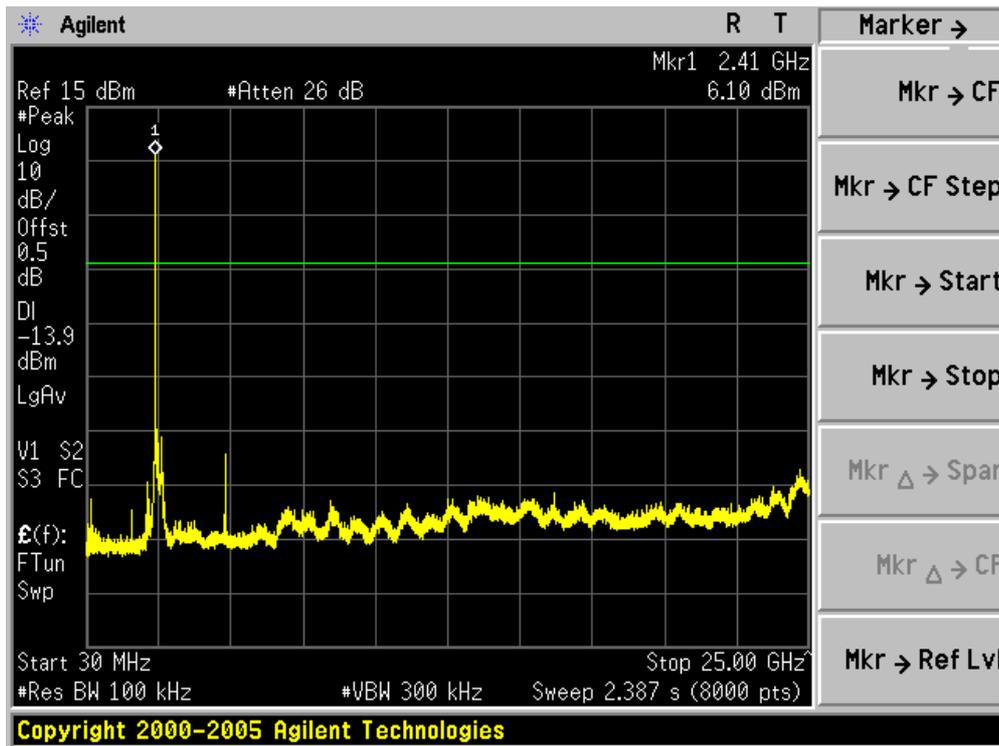
#### **5.5. Uncertainty**

The measurement uncertainty is defined as  $\pm 1.27$  dB

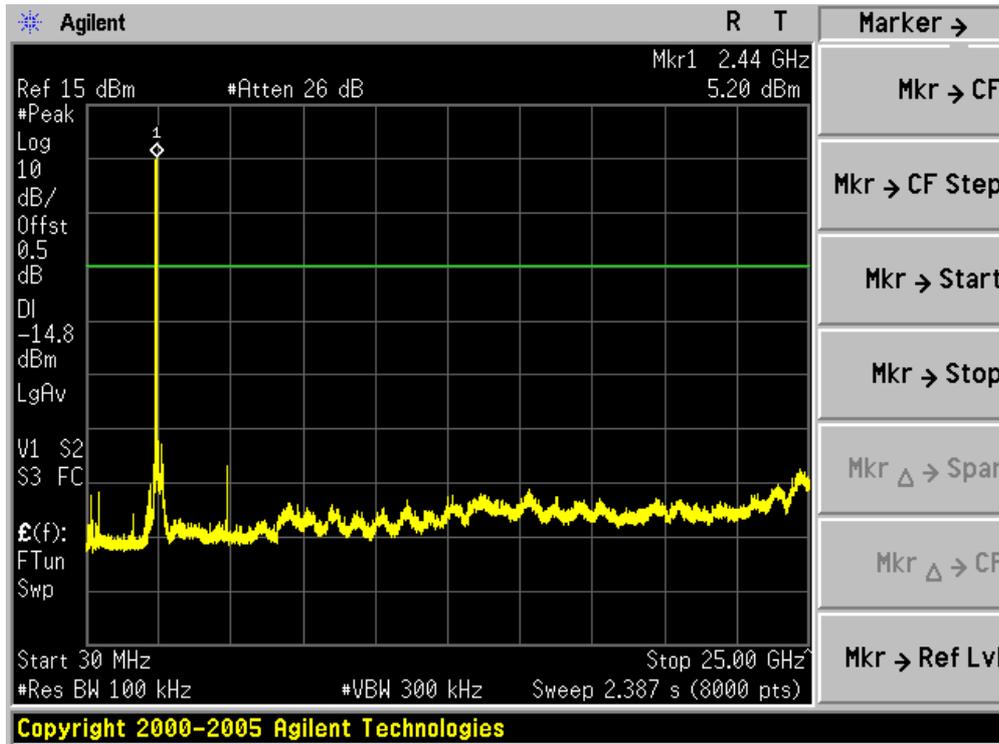
5.6. Test Result

Product	:	Home Gateway
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11b

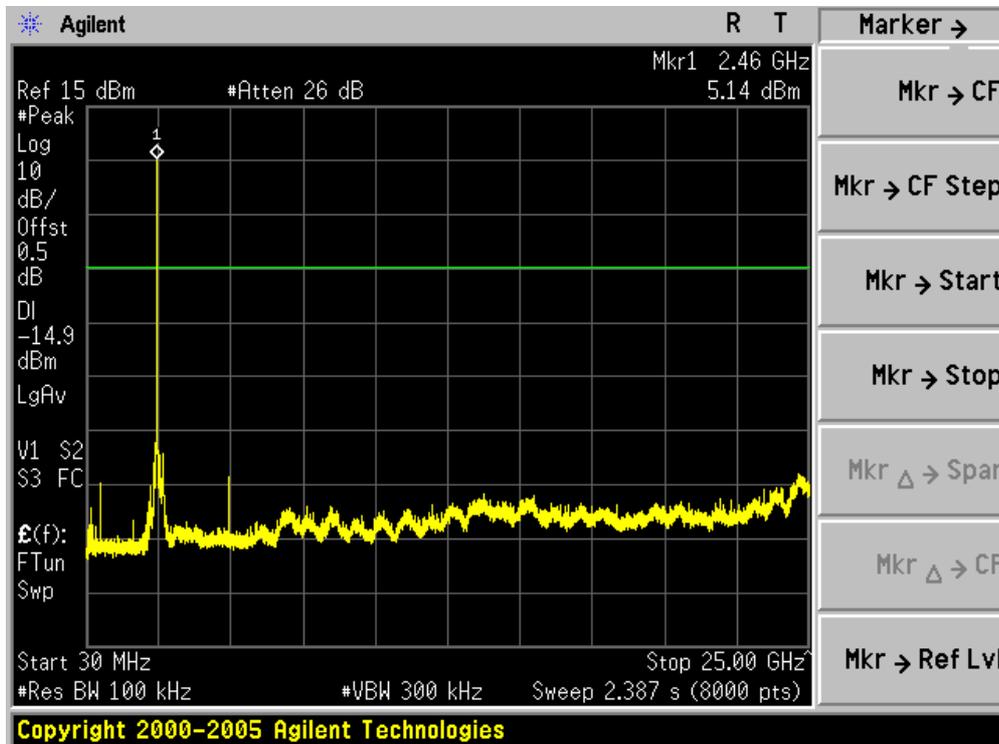
Channel 01 (2412MHz)



Channel 06 (2437MHz)

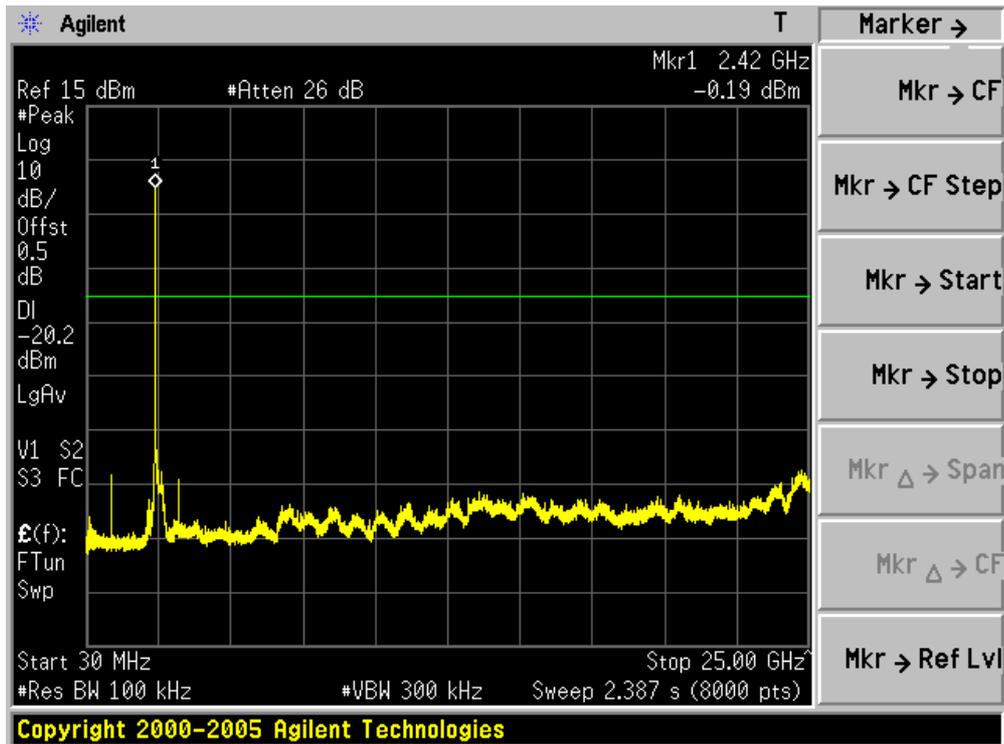


Channel 11 (2462MHz)

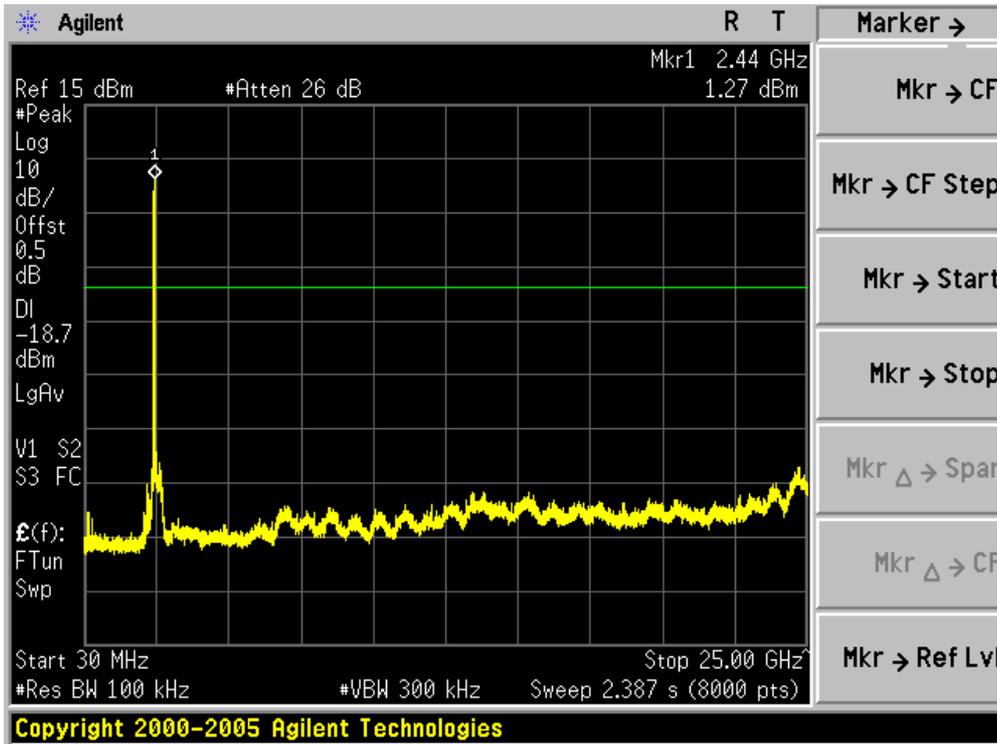


Product	:	Home Gateway
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11g

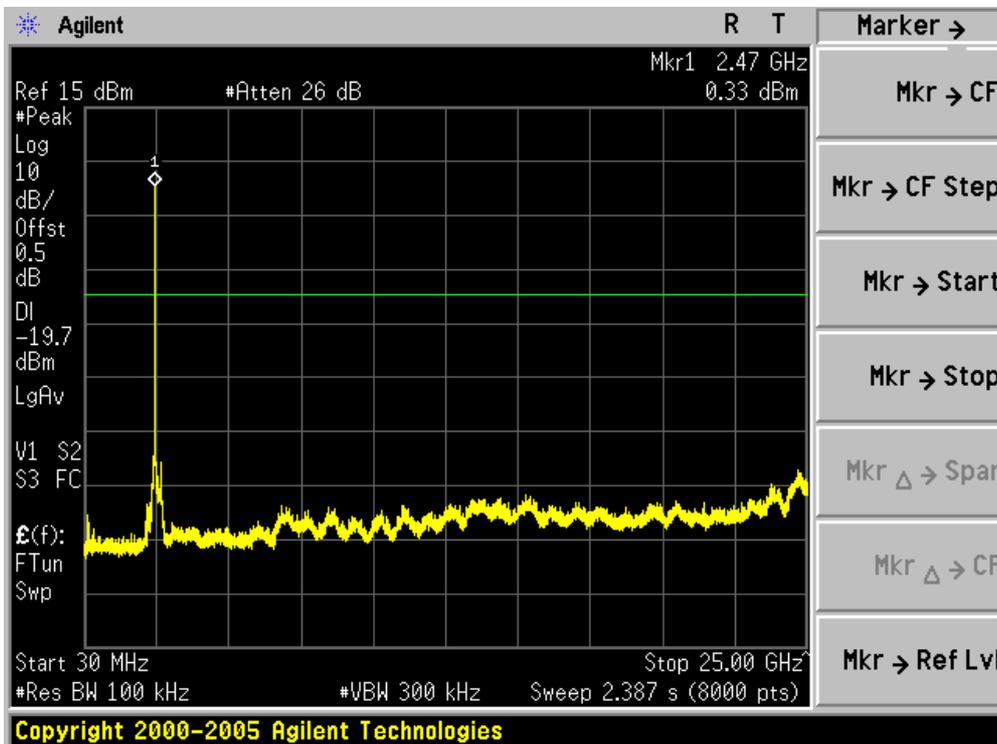
### Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



**6. Radiated Emission Band Edge**

**6.1. Test Equipment**

Radiated Emission / AC-2

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4408B	MY45102679	2009/04/23
EMI Test Receiver	R&S	ESCI	100573	2009/04/23
Preamplifier	Quietek	AP-025C	QT-AP003	2008/11/24
Preamplifier	Quietek	AP-180C	CHM-0602012	2009/05/05
Bilog Type Antenna	Schaffner	CBL6112B	2932	2009/02/25
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2009/06/11
50ohm Coaxial Switch	Anritsu	MP59B	6200447304	2008/11/24
Coaxial Cable	Huber+Suhner	AC2-C	04	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH002	2009/03/31

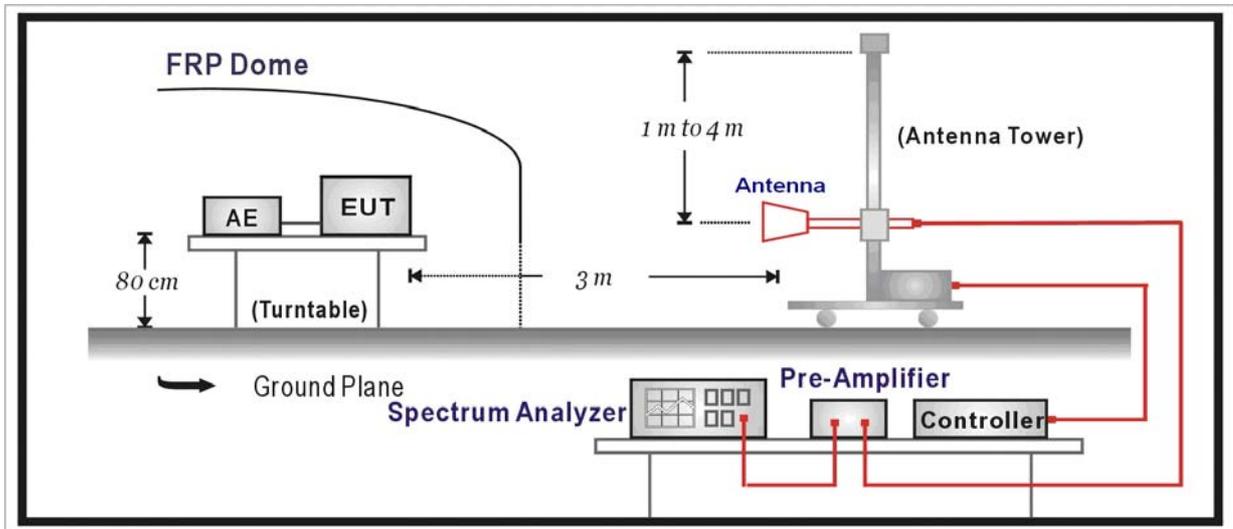
Radiated Emission / AC-3

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	N9010A	MY48030494	2009/04/23
EMI Test Receiver	R&S	ESCI	100176	2008/11/15
Preamplifier	Quietek	AP-025C	QT-AP004	2008/11/24
Preamplifier	Quietek	AP-180C	CHM-0602012	2009/05/05
Bilog Type Antenna	Schaffner	CBL6112D	22254	2008/11/24
Broad-Band Horn Antenna	Schwarzbeck	BBHA9120D	496	2009/06/11
50ohm Coaxial Switch	Anritsu	MP59B	6200464463	2008/11/24
Coaxial Cable	Huber+Suhner	AC2-C	05	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH003	2009/03/31

Note 1: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

Note 2: The test instruments marked with "X" are used to measure the final test results.

**6.2. Test Setup**



**6.3. Limit**

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

**6.4. Test Procedure**

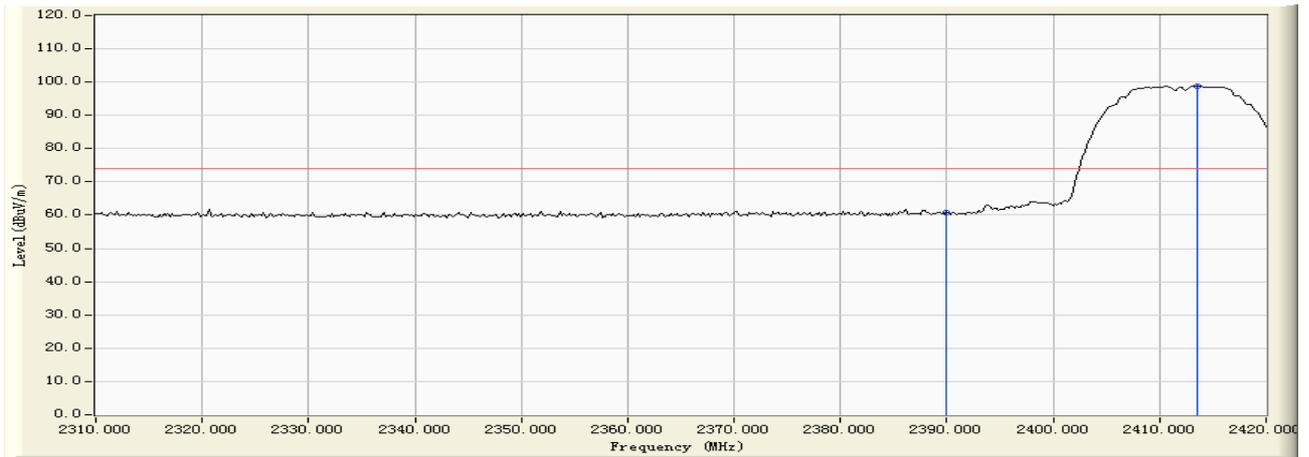
The EUT was setup according to ANSI C63.4, 2003 and tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

**6.5. Uncertainty**

The measurement uncertainty above 1G is defined as  $\pm 3.9$  dB

6.6. Test Result

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:42
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2412MHz)

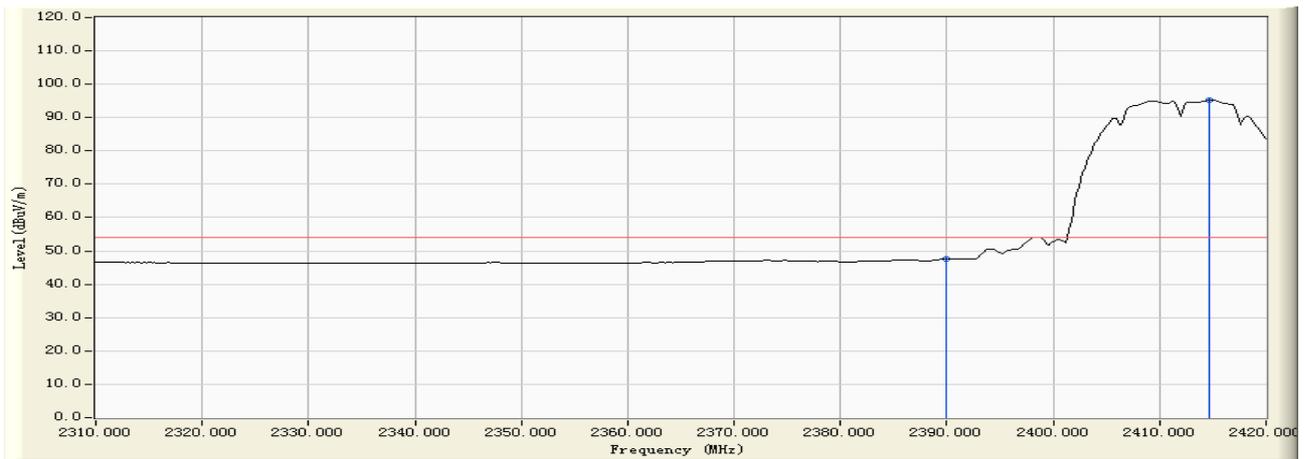


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	28.200	60.922	-13.048	73.970	PEAK
2	*	2413.583	32.734	66.067	98.802	N/A	N/A	PEAK

Note:

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:43
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2412MHz)

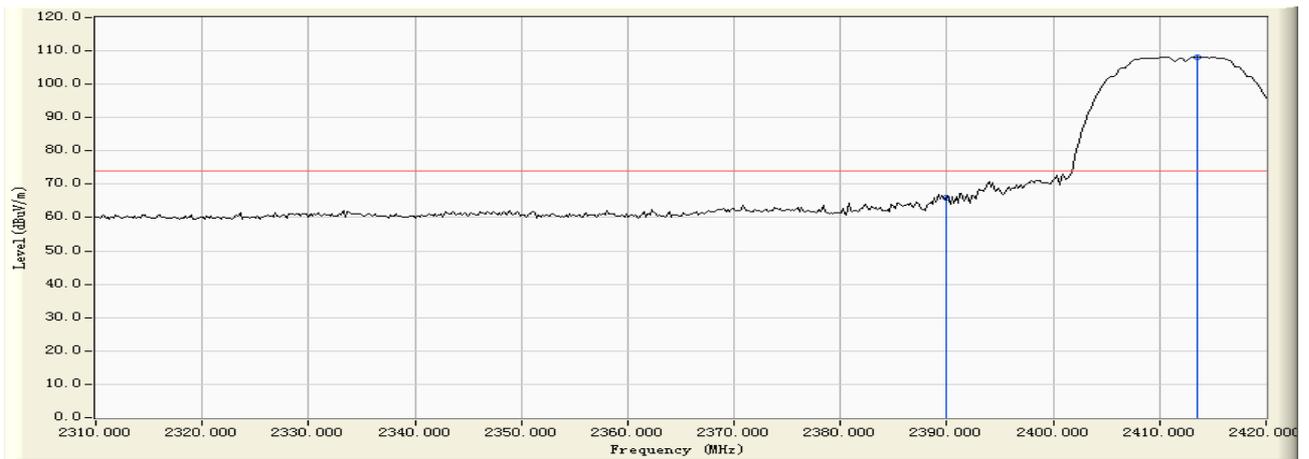


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	14.891	47.613	-6.357	53.970	AVERAGE
2	*	2414.683	32.737	62.569	95.306	N/A	N/A	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:37
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2412MHz)

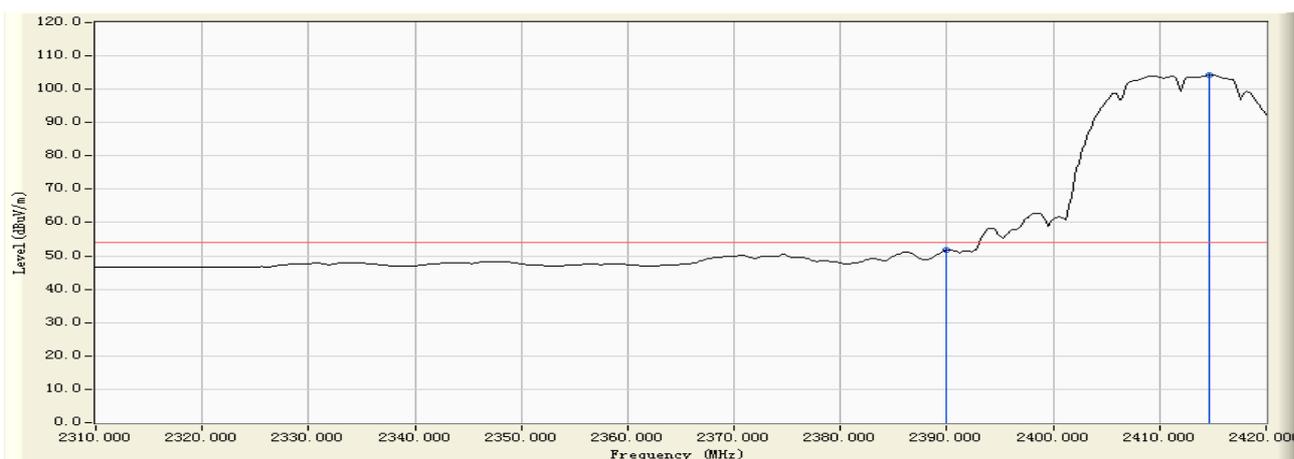


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	33.082	65.804	-8.166	73.970	PEAK
2	*	2413.583	32.734	75.405	108.140	N/A	N/A	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:38
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2412MHz)

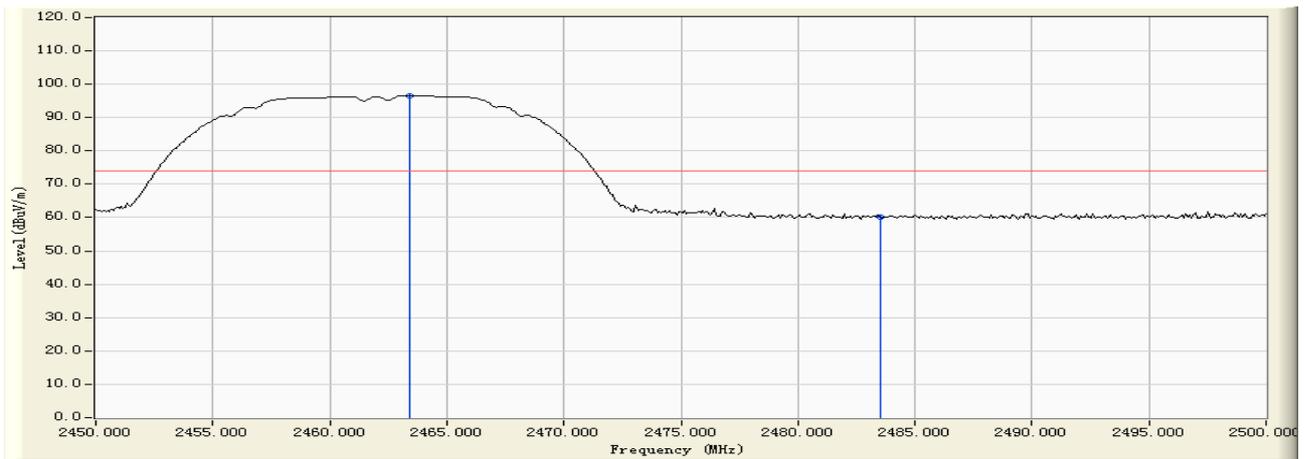


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	18.970	51.692	-2.278	53.970	AVERAGE
2	*	2414.683	32.737	71.577	104.314	N/A	N/A	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:50
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2462MHz)

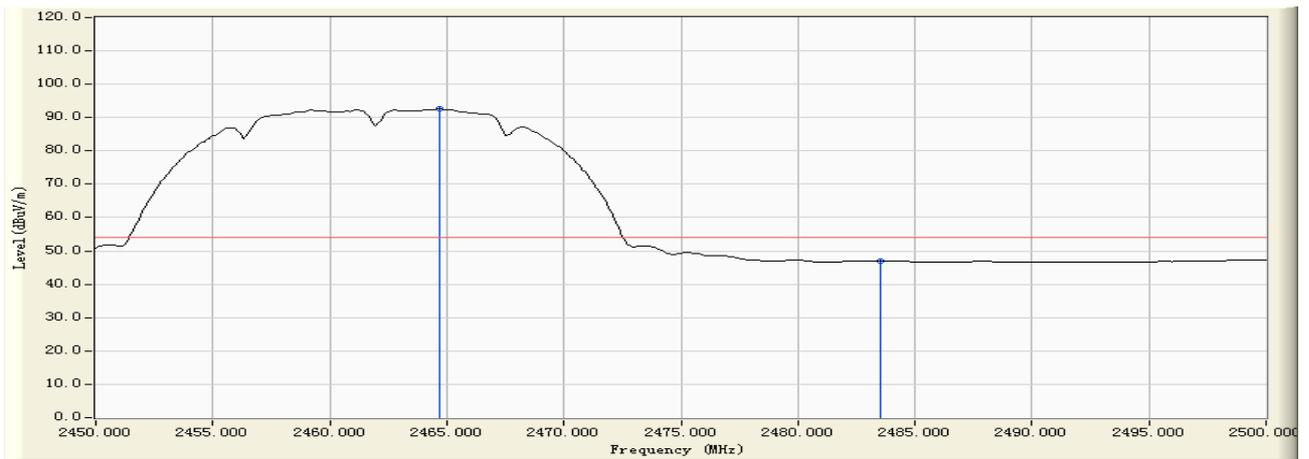


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2463.417	32.790	63.841	96.631	N/A	N/A	PEAK
2		2483.500	32.787	27.286	60.073	-13.897	73.970	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:51
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2462MHz)

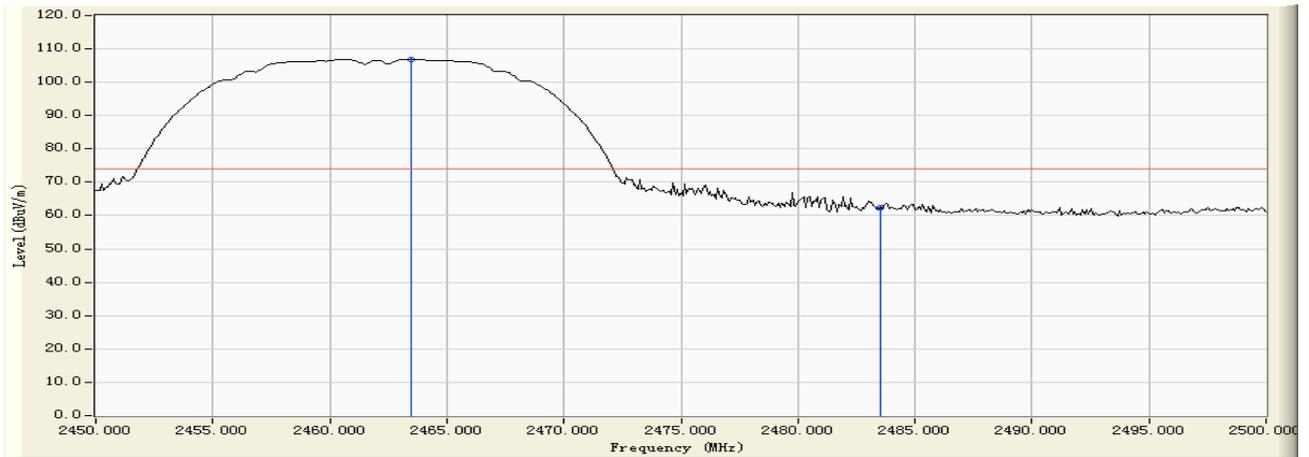


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.667	32.790	59.823	92.613	N/A	N/A	AVERAGE
2		2483.500	32.787	14.243	47.030	-6.940	53.970	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:52
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2462MHz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2463.500	32.790	74.058	106.848	N/A	N/A	PEAK
2		2483.500	32.787	29.692	62.479	-11.491	73.970	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/22 - 19:52
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 1:Transmit by 802.11b (2462MHz)

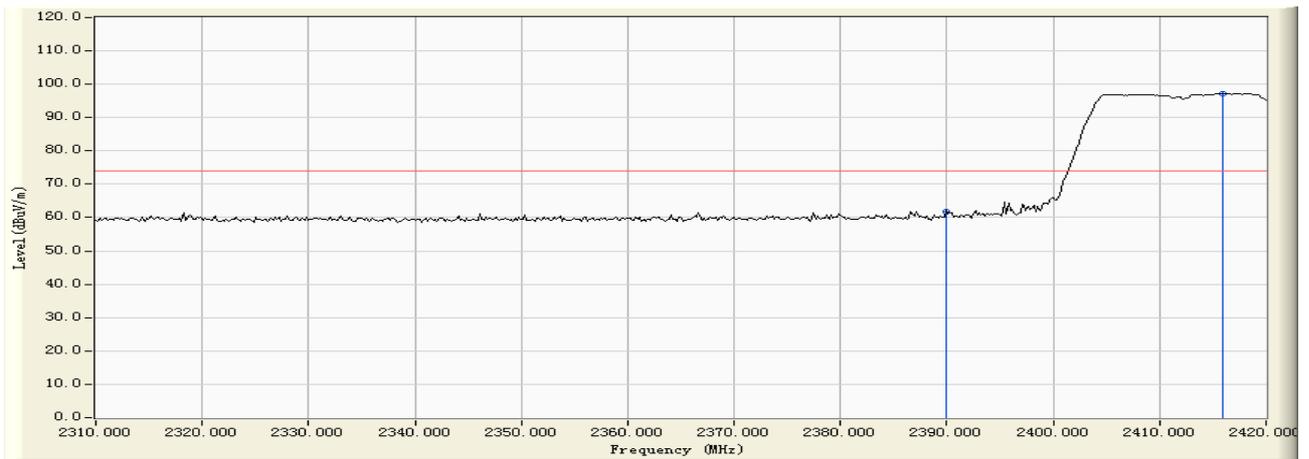


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.667	32.790	69.641	102.431	N/A	N/A	AVERAGE
2		2483.500	32.787	16.861	49.648	-4.322	53.970	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:53
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2412MHz)

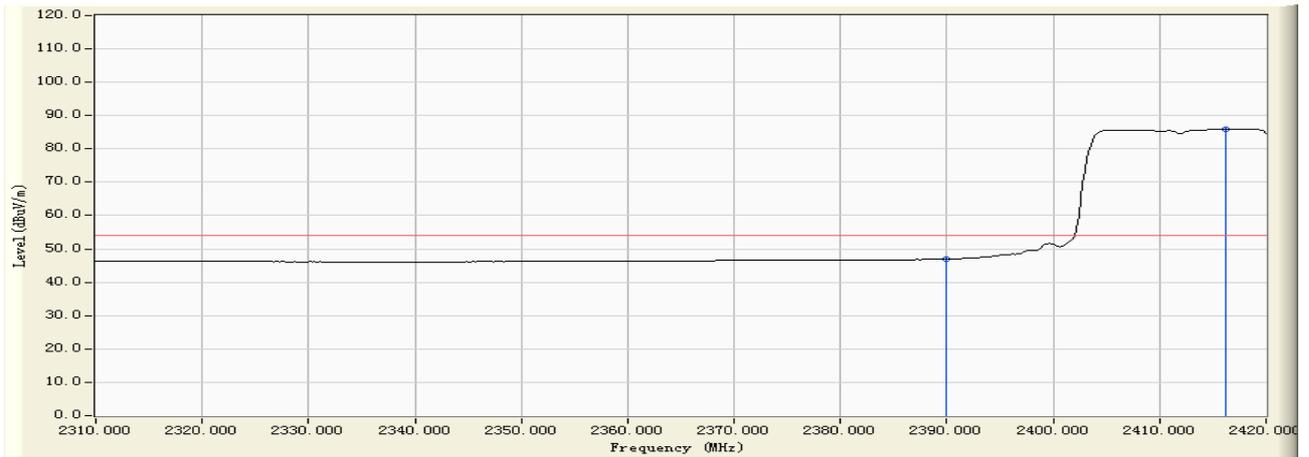


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	29.122	61.844	-12.126	73.970	PEAK
2	*	2415.967	32.739	64.507	97.246	N/A	N/A	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:54
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2412MHz)

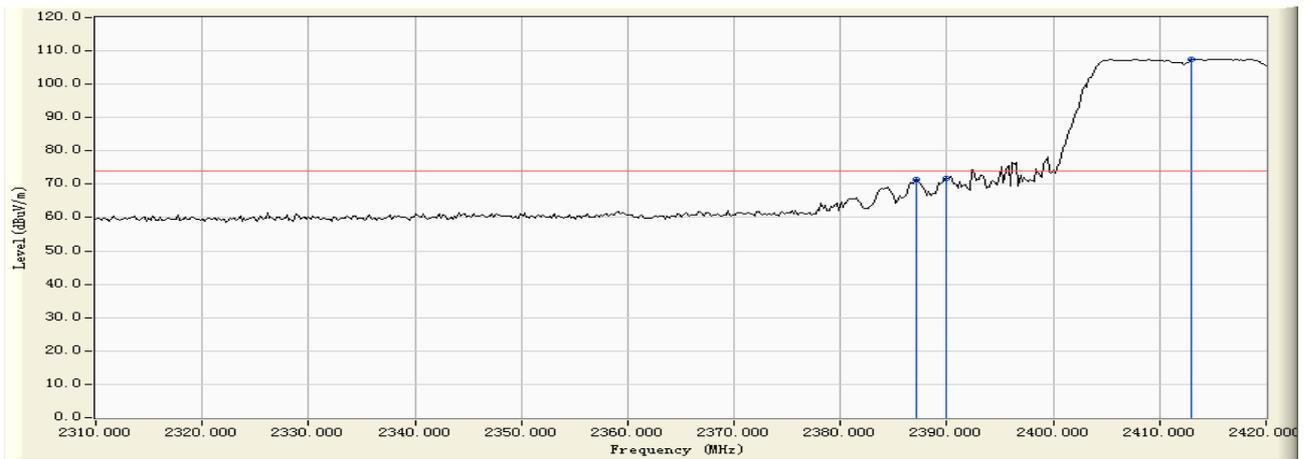


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2390.000	32.722	14.240	46.962	-7.008	53.970	AVERAGE
2	*	2416.150	32.739	53.313	86.052	N/A	N/A	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:51
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2412MHz)

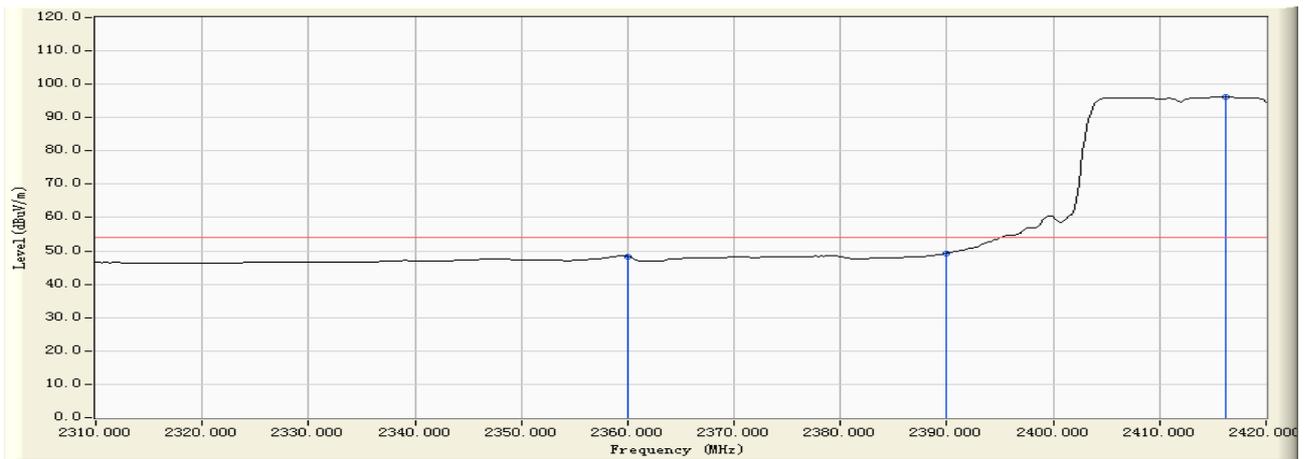


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2387.183	32.724	38.585	71.309	-2.661	73.970	PEAK
2		2390.000	32.722	39.118	71.840	-2.130	73.970	PEAK
3	*	2413.033	32.734	74.827	107.561	N/A	N/A	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:51
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2412MHz)

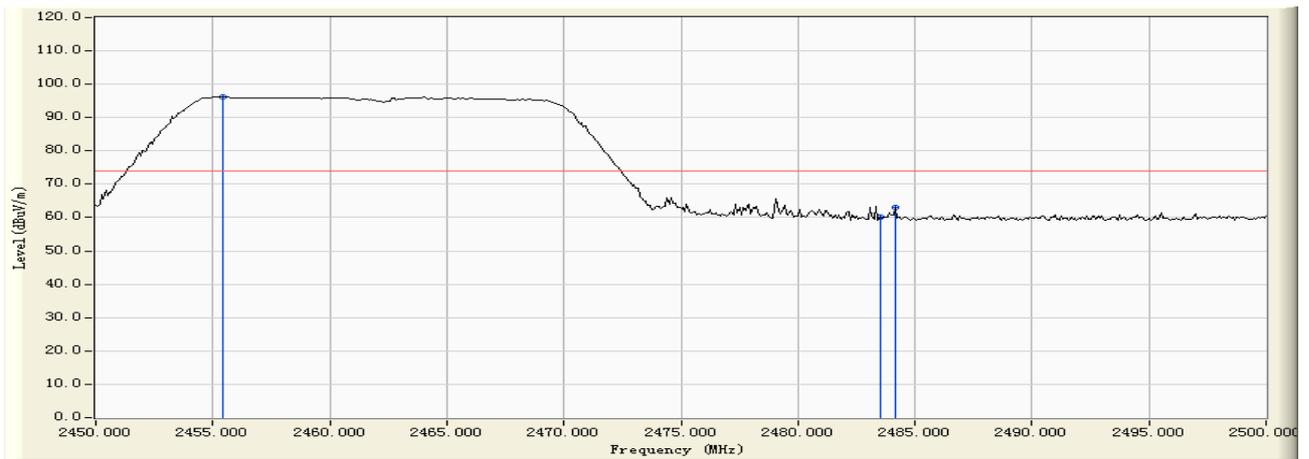


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1		2360.050	32.750	15.630	48.380	-5.590	53.970	AVERAGE
2		2390.000	32.722	16.608	49.330	-4.640	53.970	AVERAGE
3	*	2416.150	32.739	63.477	96.216	N/A	N/A	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 18:01
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2462MHz)

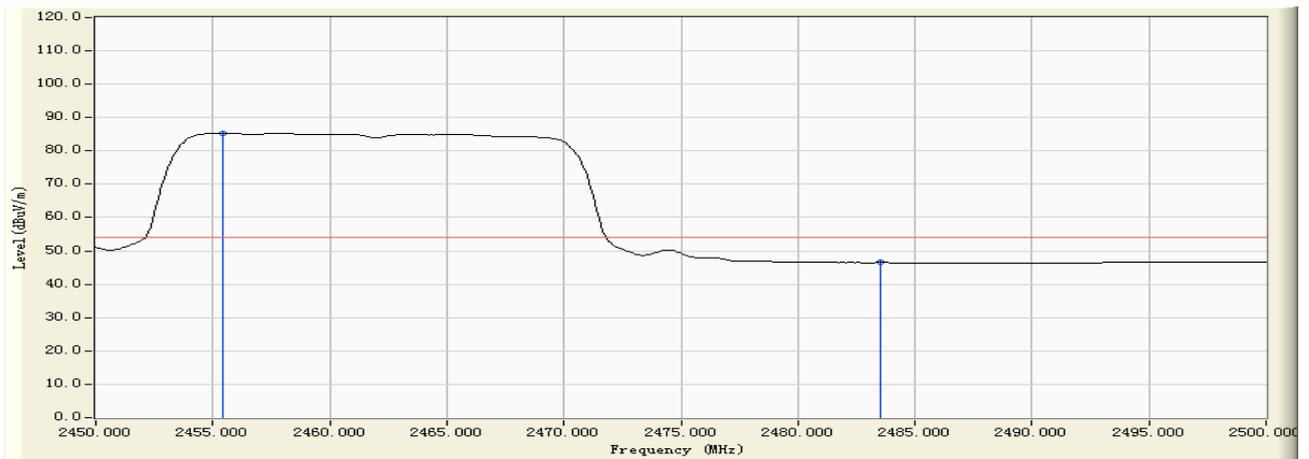


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.417	32.786	63.518	96.304	N/A	N/A	PEAK
2		2483.500	32.787	27.278	60.065	-13.905	73.970	PEAK
3		2484.167	32.787	30.141	62.928	-11.042	73.970	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 18:02
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - HORIZONTAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2462MHz)

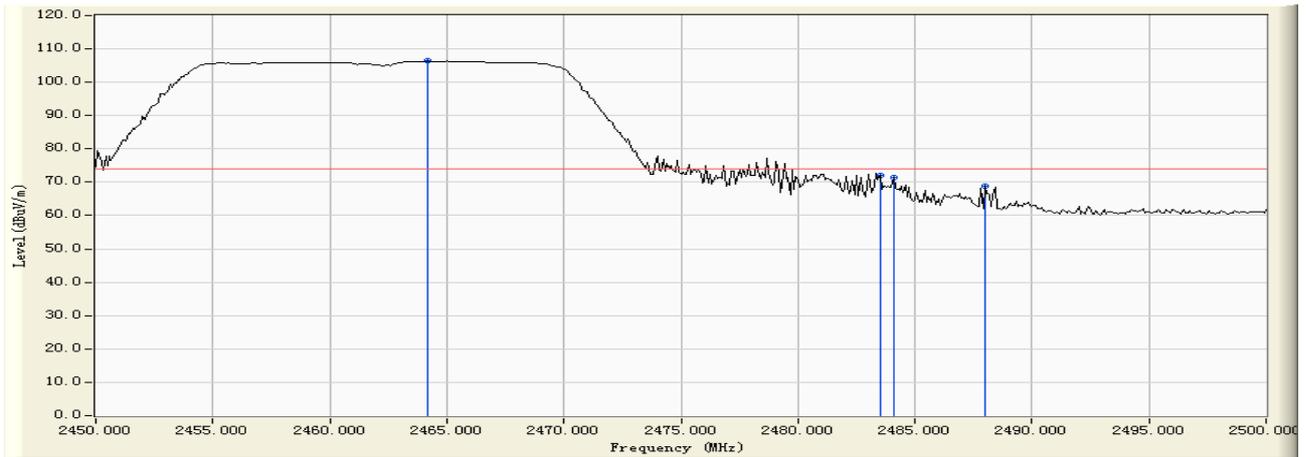


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2455.417	32.786	52.460	85.246	N/A	N/A	AVERAGE
2		2483.500	32.787	13.716	46.503	-7.467	53.970	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:59
Limit : FCC_SpartC_15.209_03M_PK	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2462MHz)

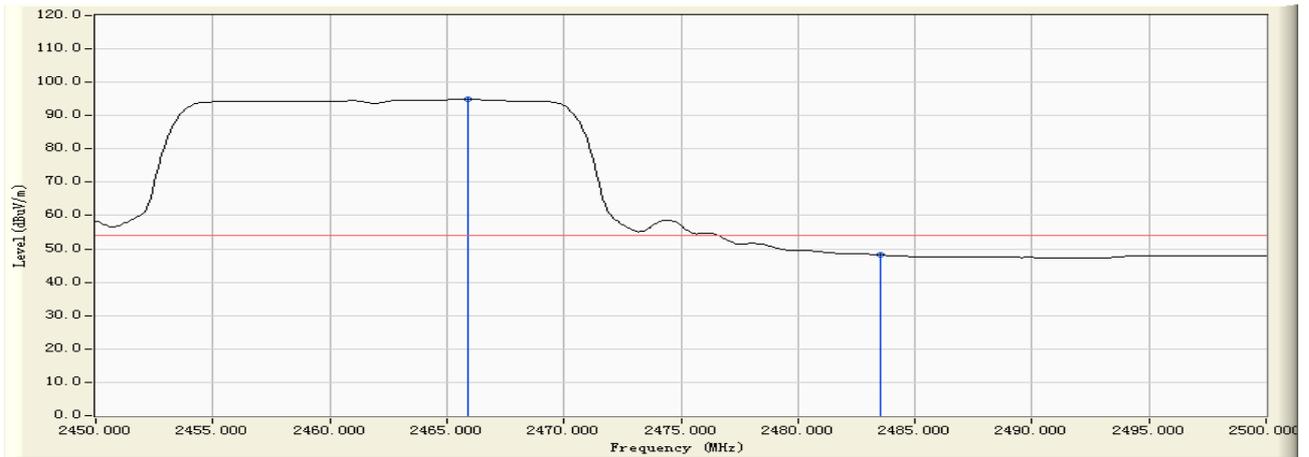


		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2464.167	32.790	73.822	106.612	N/A	N/A	PEAK
2		2483.500	32.787	39.342	72.129	-1.841	73.970	PEAK
3		2484.083	32.787	38.744	71.531	-2.439	73.970	PEAK
4		2488.000	32.785	35.992	68.777	-5.193	73.970	PEAK

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

Engineer : Robin	
Site : AC 2 (Semi Anechoic Chamber)	Time : 2009/04/23 - 17:59
Limit : FCC_SpartC_15.209_03M_AV	Margin : 0
EUT : Home Gateway	Probe : BBHA9120D_496(1-18GHz) - VERTICAL
Power : AC 120V/60Hz	Note : Mode 2:Transmit by 802.11g (2462MHz)



		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	*	2465.917	32.790	62.006	94.796	N/A	N/A	AVERAGE
2		2483.500	32.787	15.435	48.222	-5.748	53.970	AVERAGE

**Note:**

1. Peak detector set as follows: RBW=1MHz, VBW=3MHz, Sweep time = 500ms;
2. Average detector set as follows: RBW=1MHz, VBW=10Hz, Sweep time = Auto.

**7. Operation Frequency Range of 20dB Bandwidth**

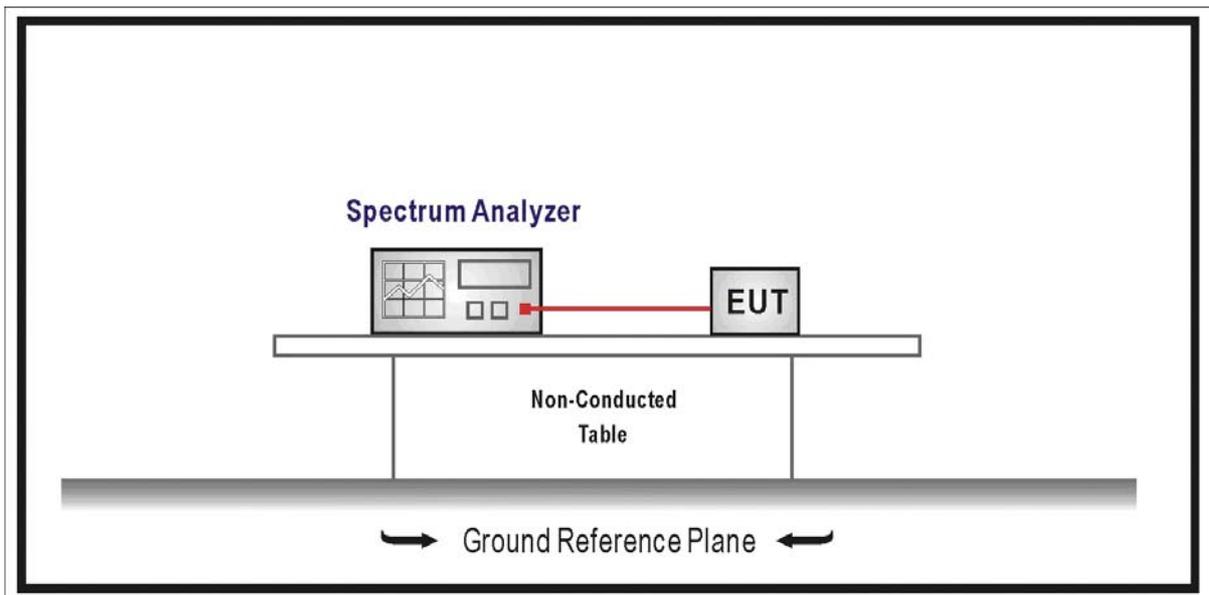
**7.1. Test Equipment**

Operation Frequency Range of 20dB Bandwidth / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Coaxial Cable	Huber+Suhner	AC4-RF	09	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31s

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

**7.2. Test Setup**



**7.3. Limit**

20 dB bandwidth of the emission is contained within the operation frequency band.

**7.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

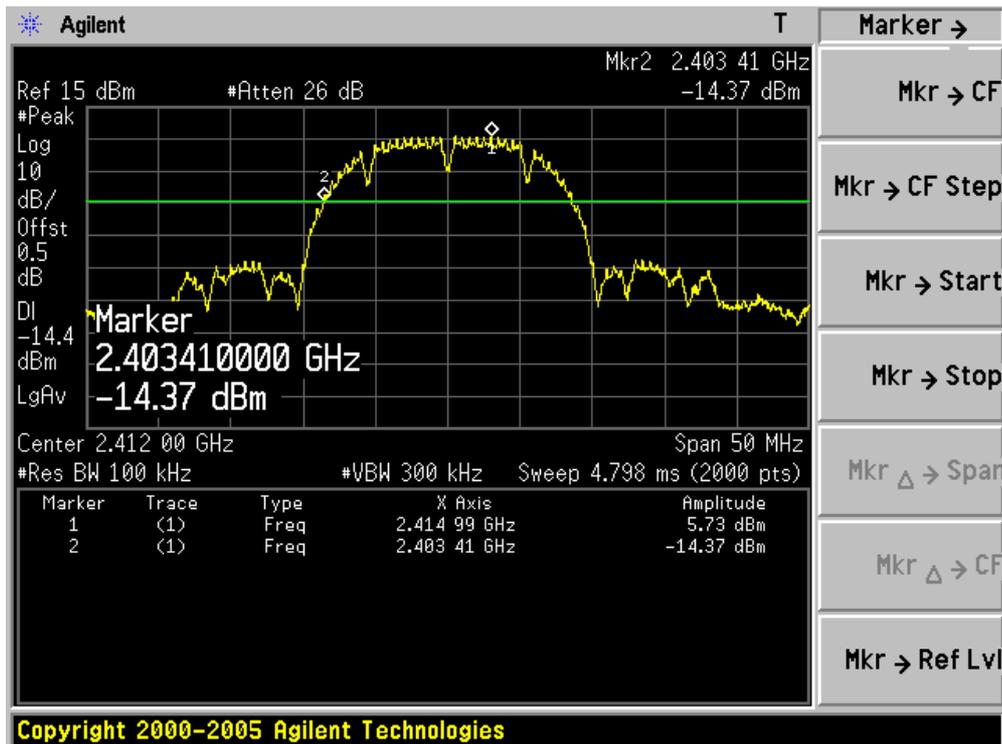
**7.5. Uncertainty**

The measurement uncertainty is defined as  $\pm 1$  kHz

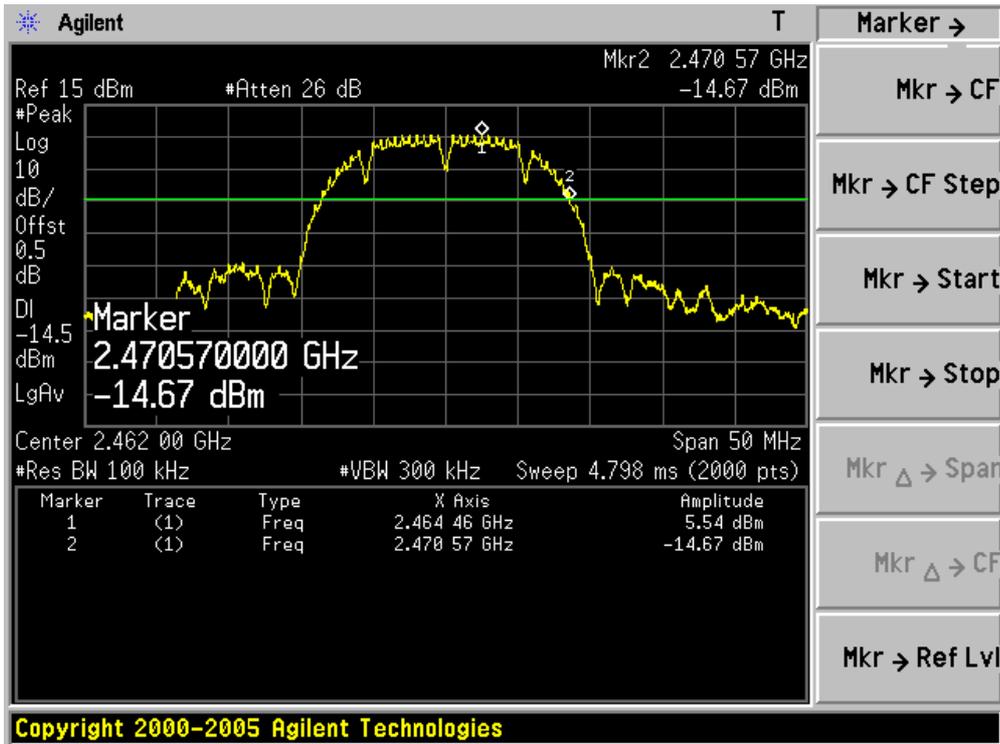
7.6. Test Result

Product	:	Home Gateway
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11b

Channel 01 (2412MHz)

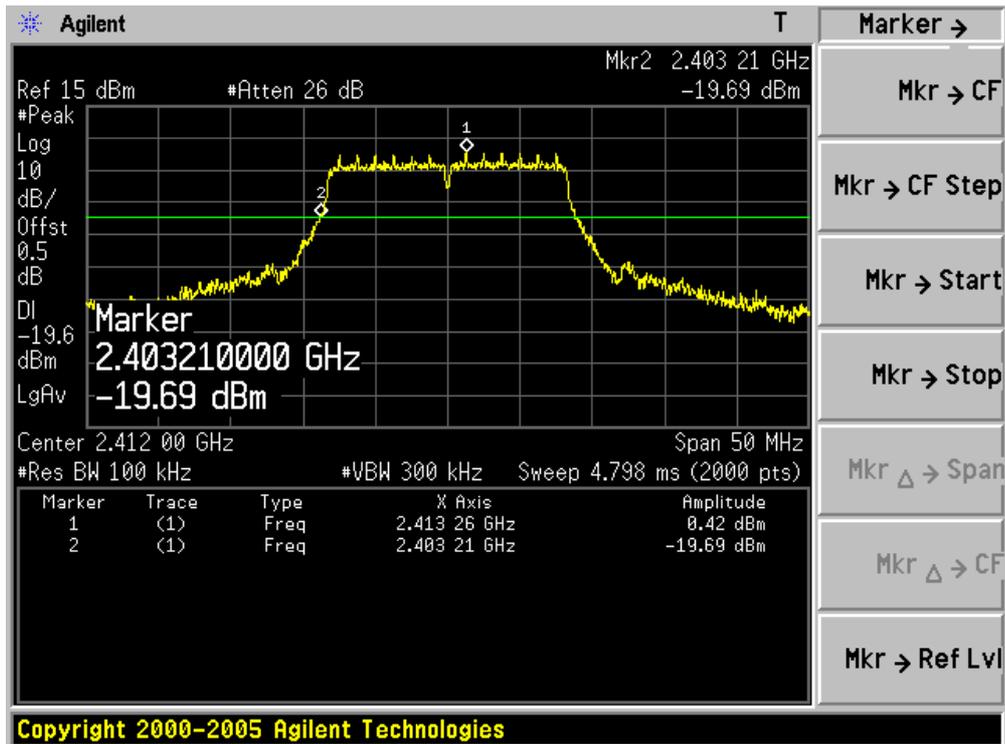


Channel 11 (2462MHz)

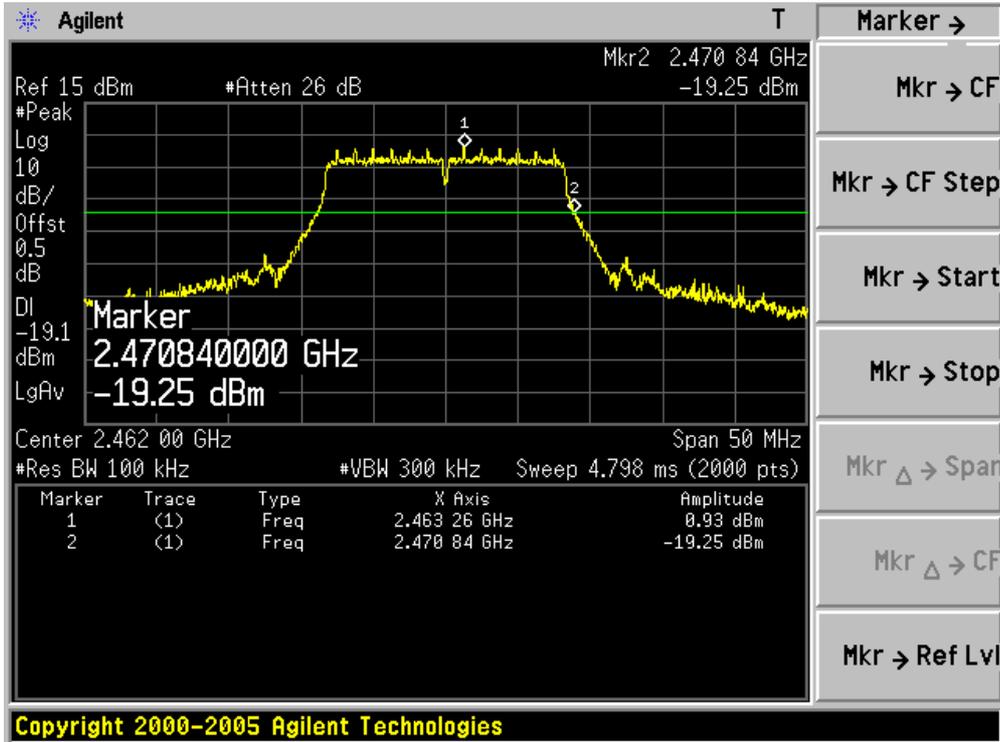


Product	:	Home Gateway
Test Item	:	Operation Frequency Range of 20dB Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11g

### Channel 01 (2412MHz)



Channel 11 (2462MHz)



**8. Occupied Bandwidth**

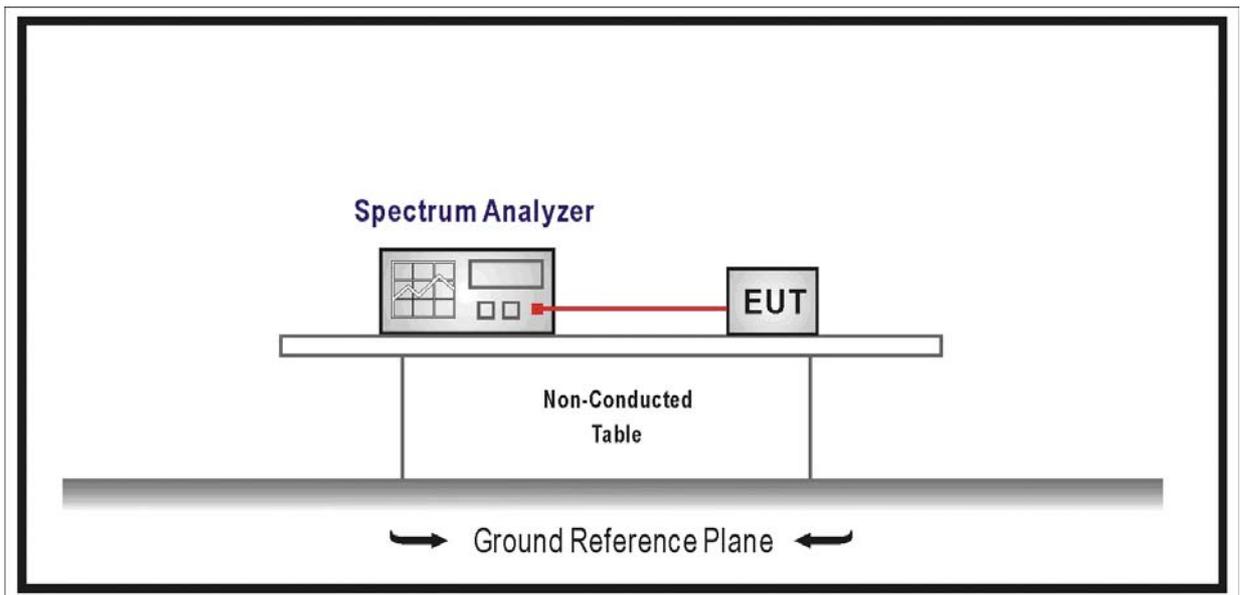
**8.1. Test Equipment**

Occupied Bandwidth / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Coaxial Cable	Huber+Suhner	AC4-RF	09	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

**8.2. Test Setup**



**8.3. Limit**

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

**8.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Span greater than RBW.

**8.5. Uncertainty**

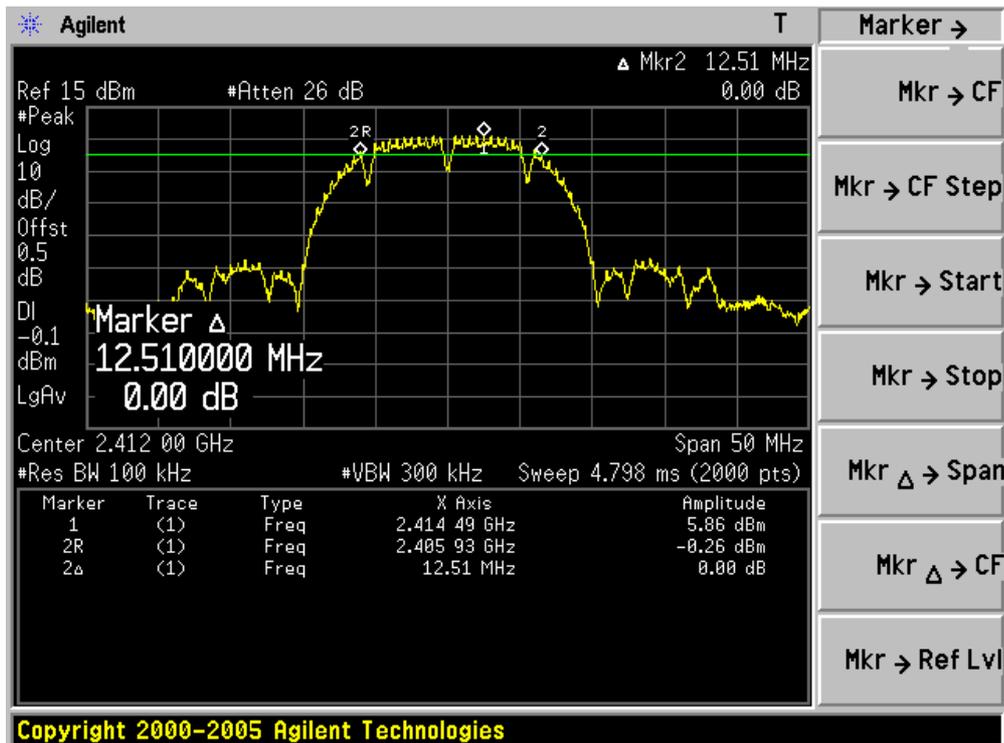
The measurement uncertainty is defined as  $\pm 1$  kHz

8.6. Test Result

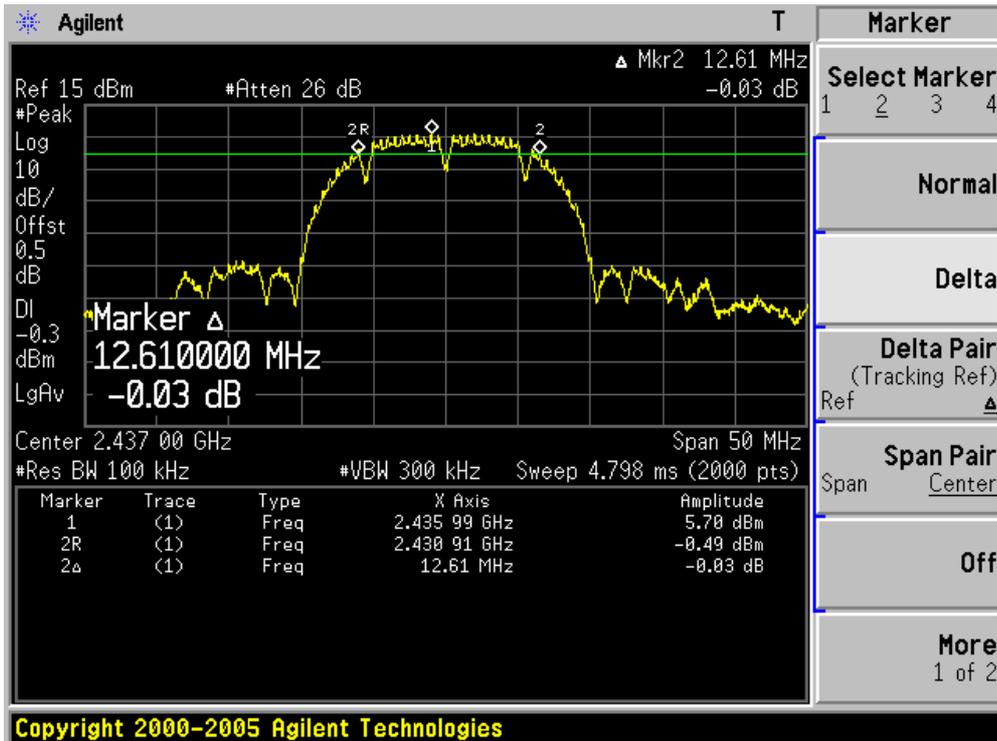
Product	:	Home Gateway
Test Item	:	Occupied Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	12510	500	Pass
06	2437	12610	500	Pass
11	2462	12610	500	Pass

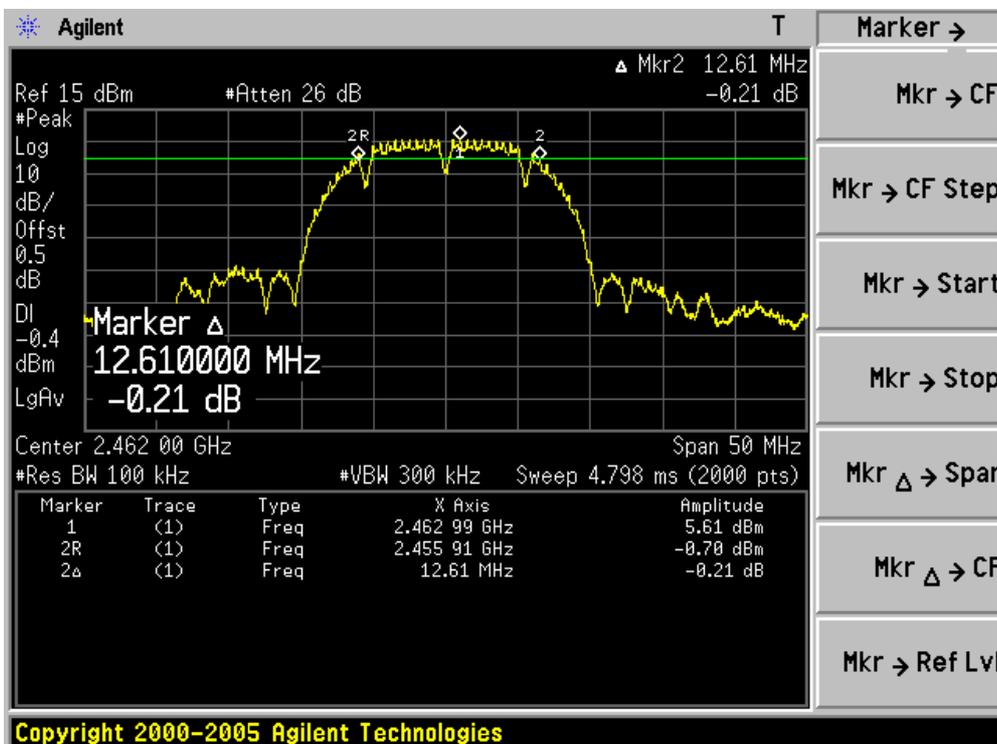
Channel 01 (2412MHz)



Channel 06 (2437MHz)



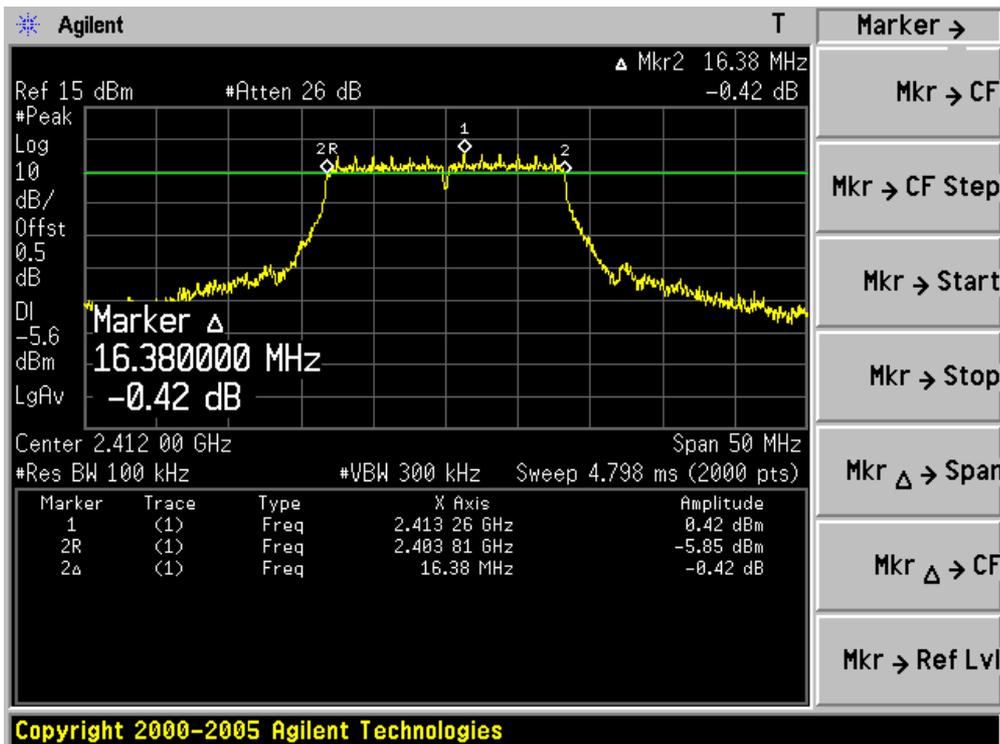
Channel 11 (2462MHz)



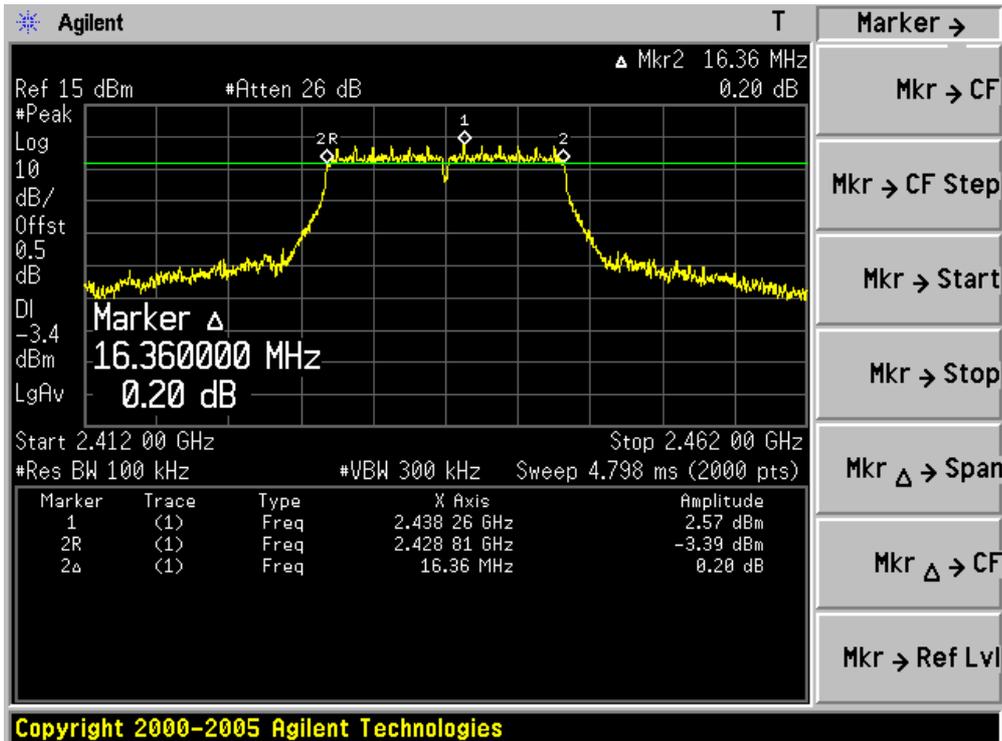
Product	:	Home Gateway
Test Item	:	Occupied Bandwidth
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Occupied Bandwidth (kHz)	Limit (kHz)	Result
01	2412	16380	500	Pass
06	2437	16360	500	Pass
11	2462	16410	500	Pass

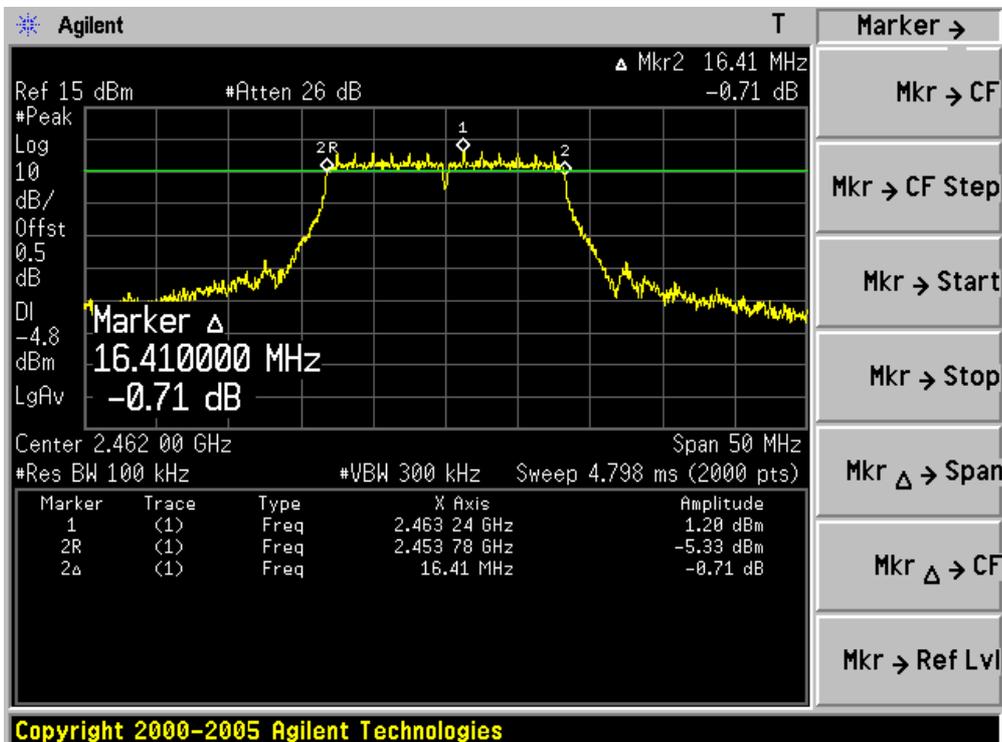
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)



## 9. Power Output

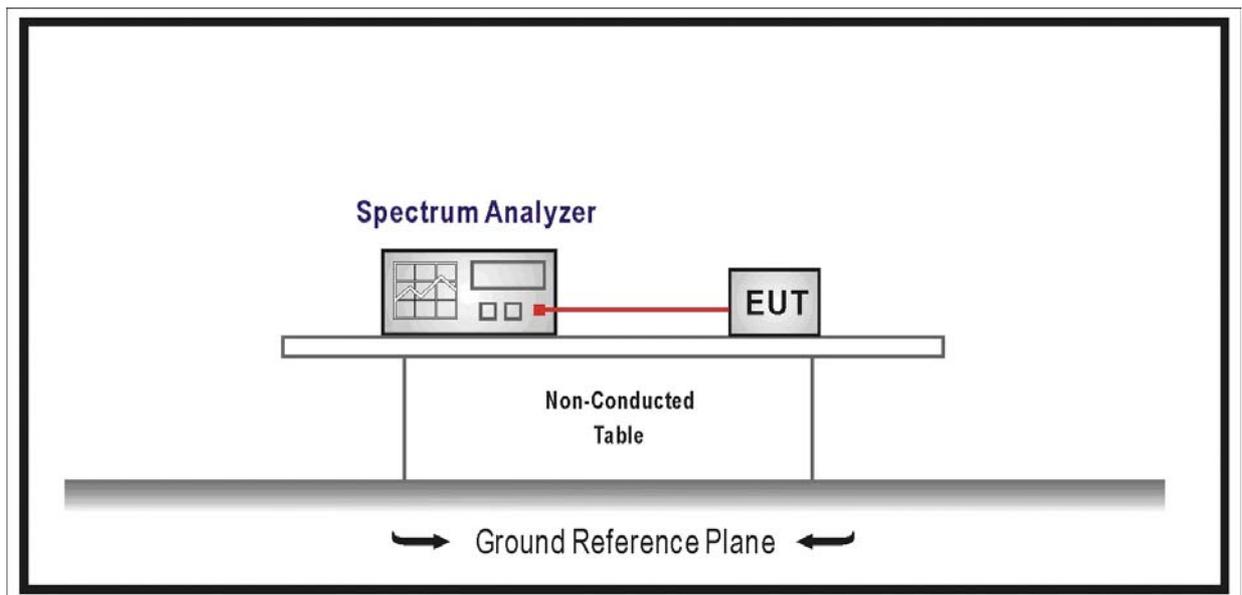
### 9.1. Test Equipment

Power Output / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Wideband Peak Power Meter	Anritsu	ML2495A	0905006	2009/02/12
Power Sensor	Anritsu	MA2411B	0846014	2009/01/12
Coaxial Cable	Huber+Suhner	AC4-RF	09	2008/11/24
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/01

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 9.2. Test Setup



### 9.3. Limit

The maximum peak power shall be less 1 Watt (30dBm).

Note: the conducted output power limit specified above is based on the use the antennas with directional gains that do not exceed 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values above, as appropriate, by the amount in dB that the directional gain of antenna exceeds 6 dBi.

#### **9.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Power output measurement allowed per Section 15.247(b)(3).

Use the wideband power meter to test peak power and record the result.

#### **9.5. Uncertainty**

The measurement uncertainty is defined as  $\pm 1.27$  dB

**9.6. Test Result**

Product	:	Home Gateway
Test Item	:	Power Output
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Data Rate (Mbps)				Limit (dBm)
		1	2	5.5	11	
01	2412	18.84	--	--	--	30
06	2437	18.70	18.65	18.61	18.53	30
11	2462	18.44	--	--	--	30

Note: The antenna gain of transmitter is less than 6 dBi and other than fixed, point-to-point operation, therefore the limit is 30 dBm.

Product	:	Home Gateway
Test Item	:	Power Output
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Data Rate (Mbps)								Limit (dBm)
		6	9	12	18	24	36	48	54	
01	2412	20.55	--	--	--	--	--	--	--	30
06	2437	21.13	21.08	21.00	20.97	20.92	20.88	20.85	20.80	30
11	2462	20.90	--	--	--	--	--	--	--	30

Note: The antenna gain of transmitter is less than 6 dBi and other than fixed, point-to-point operation, therefore the limit is 30 dBm.

**10. Power Spectral Density**

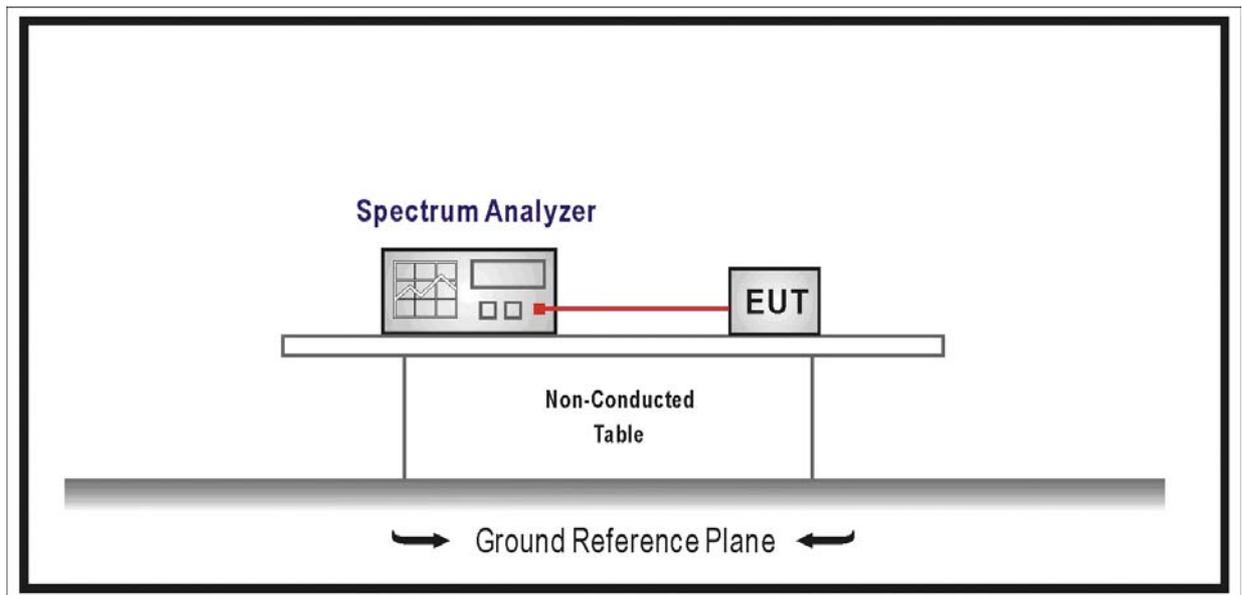
**10.1. Test Equipment**

Power Spectral Density / AC-4

Instrument	Manufacturer	Type No.	Serial No.	Cal. Date
Spectrum Analyzer	Agilent	E4446A	MY45300103	2009/06/11
Coaxial Cable	Huber+Suhner	AC4-RF	09	2009/05/25
Temperature/Humidity Meter	zhicheng	ZC1-2	QT-TH007	2009/03/31

Note: All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

**10.2. Test Setup**



**10.3. Limit**

For digitally modulated systems, the power spectral density conducted from the intentional radiated to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

**10.4. Test Procedure**

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW= 3 kHz, Set VBW  $\geq$  9 kHz, Sweep time=Auto, Set detector=Peak detector.

### **10.5. Uncertainty**

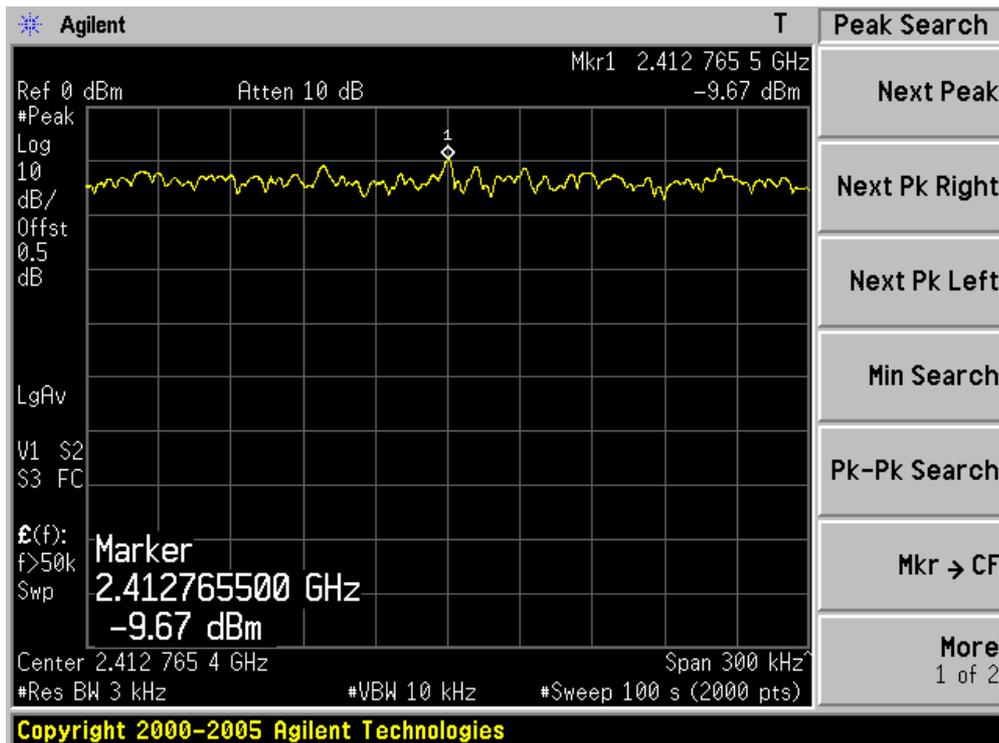
The measurement uncertainty is defined as  $\pm 1.27$  dB

10.6. Test Result

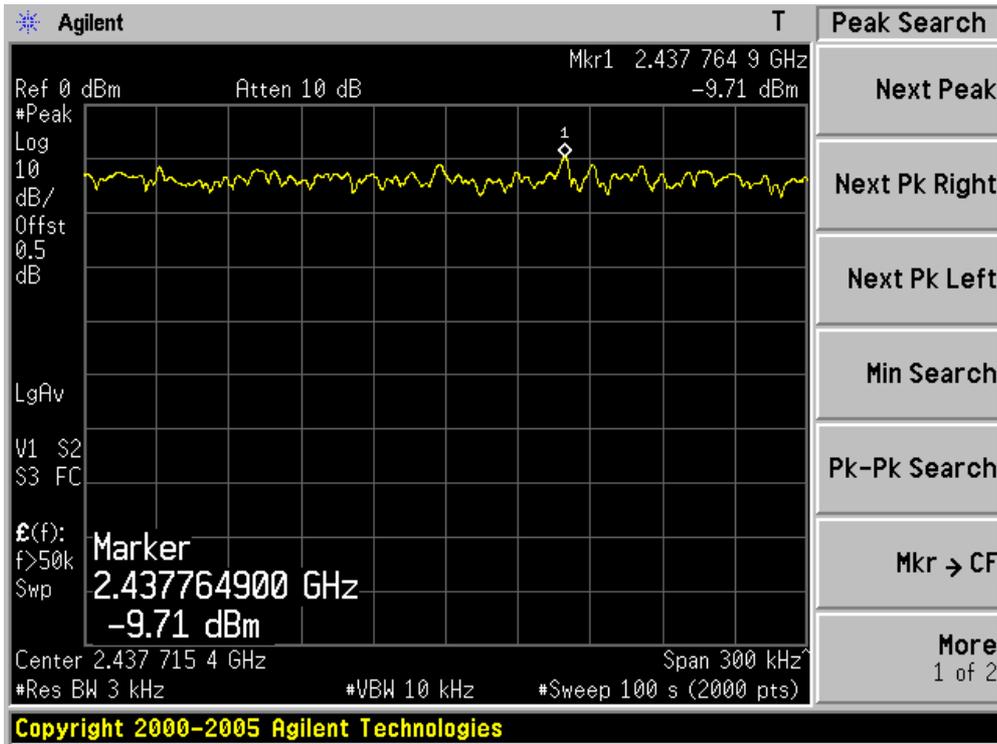
Product	:	Home Gateway
Test Item	:	Power Spectral Density
Test Site	:	AC-4
Test Mode	:	Mode 1: Transmit by 802.11b

Channel No.	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
01	2412	-9.67	8	Pass
06	2437	-9.71	8	Pass
11	2462	-9.93	8	Pass

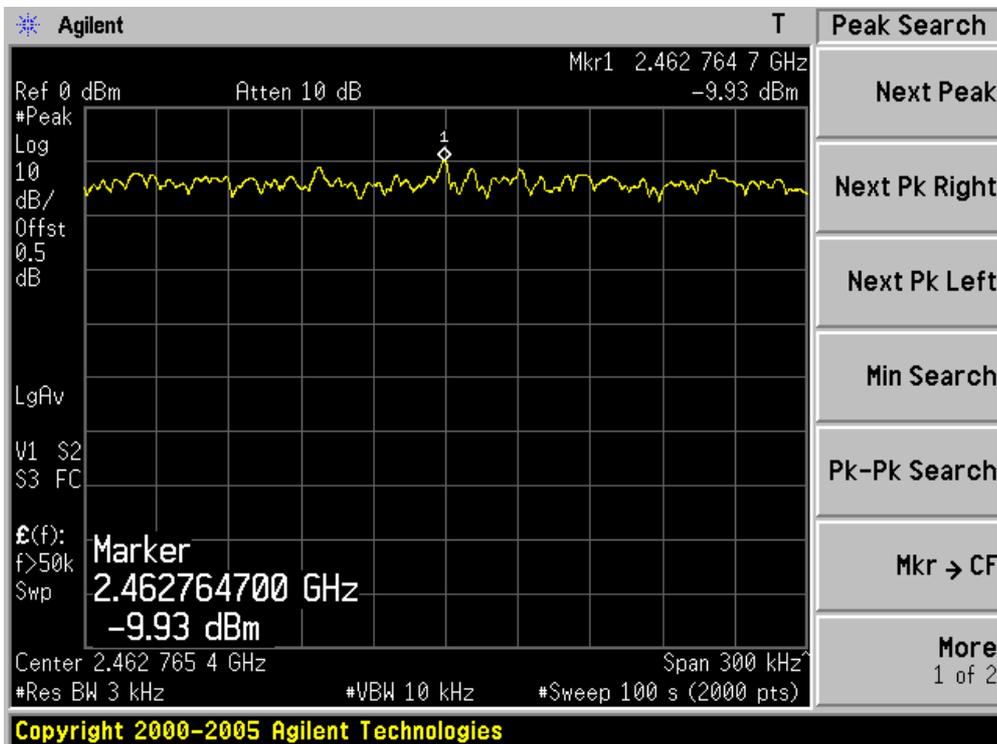
Channel 01 (2412MHz)



Channel 06 (2437MHz)



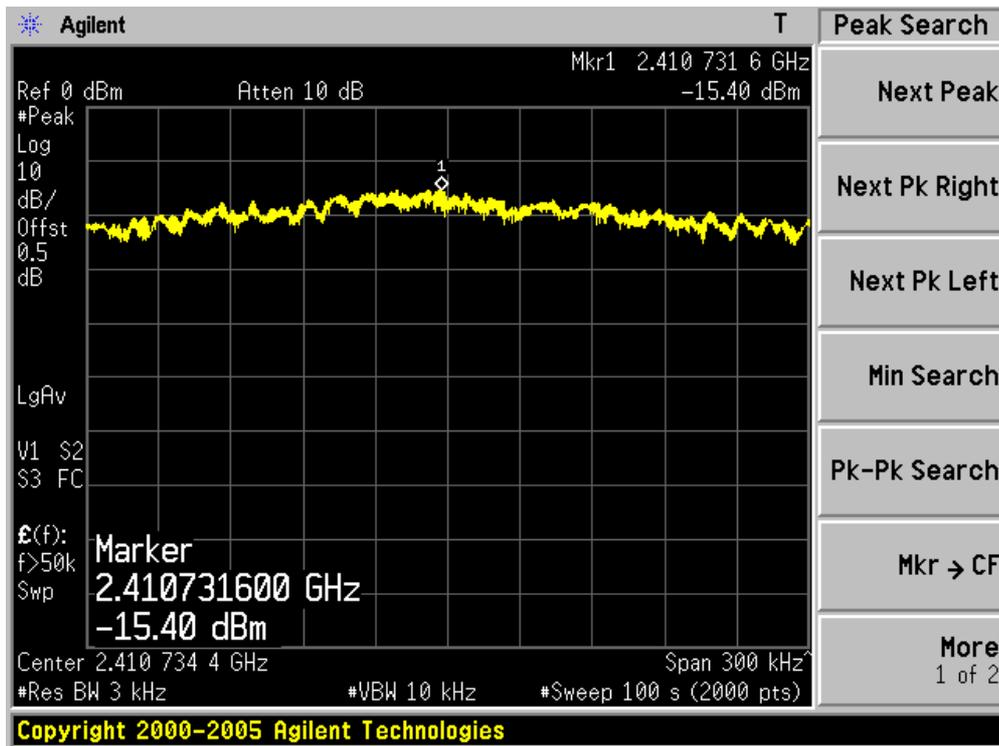
Channel 11 (2462MHz)



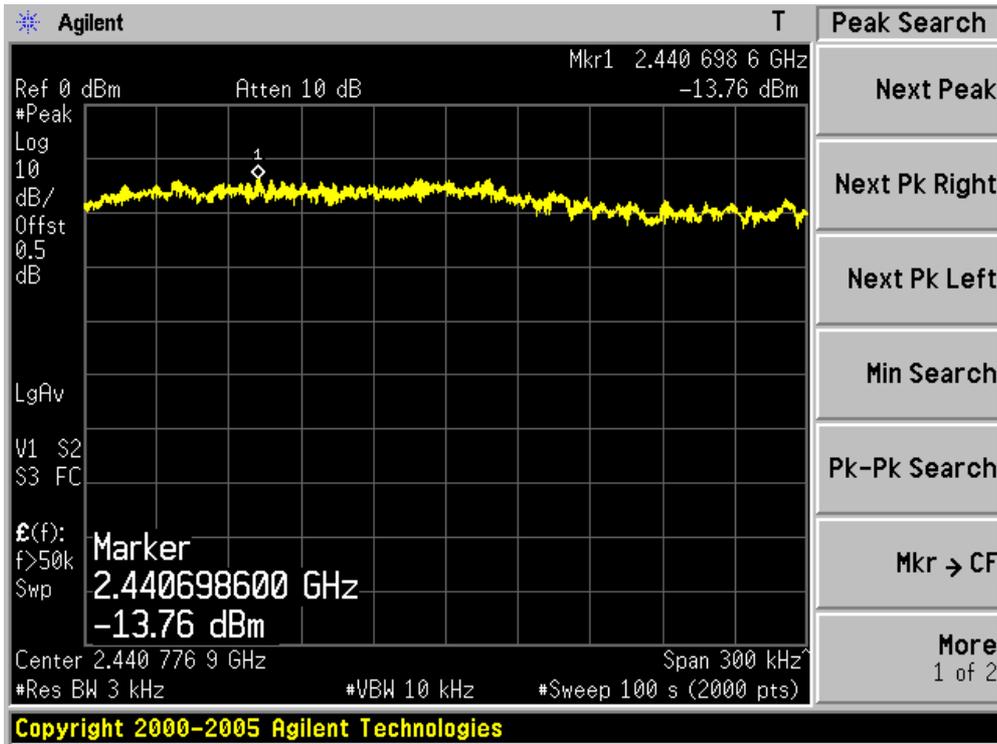
Product	:	Home Gateway
Test Item	:	Power Spectral Density
Test Site	:	AC-4
Test Mode	:	Mode 2: Transmit by 802.11g

Channel No.	Frequency (MHz)	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
01	2412	-15.40	8	Pass
06	2437	-13.76	8	Pass
11	2462	-14.17	8	Pass

Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

