



# FCC TEST REPORT (15.247)

**REPORT NO.:** RF930507H07S  
**MODEL NO.:** MP-620  
**RECEIVED:** April 17, 2006  
**TESTED:** April 21 to 27, 2006  
**ISSUED:** May 2, 2006

**APPLICANT:** Trapeze Networks, Inc.

**ADDRESS:** 5753 W. Las Positas Blvd., Pleasanton, CA  
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**ISSUED BY:** Advance Data Technology Corporation

**TEST LOCATION:** No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung  
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Taiwan, R.O.C.

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No. 2177-01

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# 1. CERTIFICATION

**PRODUCT:** Dual mode 2.4GHz / 5GHz Access Point  
**BRAND NAME:** Trapeze NETWORKS  
**MODEL NO.:** MP-620  
**TEST SAMPLE:** MASS-PRODUCTION  
**TESTED:** April 21 to 27, 2006  
**APPLICANT:** Trapeze Networks, Inc.  
**STANDARDS:** FCC Part 15, Subpart C (Section 15.247),  
ANSI C63.4-2003

The above equipment (Model: MP-620) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :** Carol Liao , **DATE:** May 2, 2006  
( Carol Liao )

**TECHNICAL ACCEPTANCE :** Hank Chung , **DATE:** May 2, 2006  
Responsible for RF ( Hank Chung )

**APPROVED BY :** May Chen , **DATE:** May 2, 2006  
(May Chen, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For 802.11b & g, 2412~2462MHz Band

<b>APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>Remark</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.88dB at 0.345MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -0.2dB at 2483.50MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

For 802.11a, 5725~5850MHz Band

<b>APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>Remark</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -1.39dB at 0.343MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -5.40dB at 11570.0MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

**NOTE:**

1. The EUT was operating in 2.412 ~ 2.462GHz, 5.250 ~ 5.350GHz and 5.725 ~ 5.850GHz frequencies band. This report was recorded the RF parameters including 2.412 ~ 2.462GHz and 5.725 ~ 5.850GHz. For the 5.250 ~ 5.350GHz RF parameters was recorded in another test report.



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point
<b>MODEL NO.</b>	MP-620
<b>FCC ID</b>	QZE301
<b>POWER SUPPLY</b>	DC 48V from POE (Power over Ethernet)
<b>MODULATION TYPE</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps 802.11a: 54/48/36/24/18/12/9/6Mbps
<b>FREQUENCY RANGE</b>	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.25 ~ 5.35GHz and 5.725 ~ 5.850GHz
<b>NUMBER OF CHANNEL</b>	802.11b & 802.11g: 11 802.11a: 9
<b>CHANNEL SPACING</b>	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode
<b>OUTPUT POWER</b>	802.11b: 123.027mW 802.11g: 177.828mW 802.11a: 316.228mW
<b>ANTENNA TYPE</b>	Please see note 4 (on next page)

#### NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. The EUT can operate in 5GHz and 2.4GHz Bands at the same time. The equipment is professionally installed.
3. The EUT was powered by the following POE (Power Over Ethernet)

<b>BRAND:</b>	MICROELECTRONICS TECH. INC.
<b>MODEL:</b>	TR60A-POE-L(0640-0086)
<b>INPUT:</b>	100-240V~ 1.5A 47-63Hz
<b>OUTPUT:</b>	48V, 1.2A

4. The EUT can be equipped with following antennas:

<b>For 2.4GHz</b>						
No.	Model No.	Gain (dBi)	min. Cable Loss (dB)	Net Gain (dB)	Antenna Type	Antenna Connector
1	ANT-1360-OUT	8.0	1.07	6.93	2.4GHz Dipole	N-type
2	ANT-1120-OUT	10.0	1.07	8.93	2.4GHz 120° Sector	N-type
<b>For 5GHz</b>						
No.	Model No.	Gain (dBi)	min. Cable Loss (dB)	Net Gain (dB)	Antenna Type	Antenna Connector
A	ANT-5360-OUT	8.0	1.79	6.21	5GHz Dipole	N-type
B	ANT-5120-OUT	13.5	1.79	11.71	5GHz 120° Sector	N-type
C	ANT-5PNL-OUT	18.0	1.79	16.21	5GHz Directional Panel	N-type
<b>Note:</b>						
1. All of the above antennas are outdoor Antenna.						
2. From above antennas, the different type of antennas was chosen for final test and its data were recorded in this report.						
3. All of the antennas are different type or frequency band, was selected as all antenna for the test.						
4. Antenna Model No. ANT-5PNL-OUT can be used in point-to-point applications.						

5. RF cable loss:

<b>Cable Loss</b>					
Frequency	AL-LSXMA Poly Phase Lighting protector	3m	option		
			1.8m	1m	0.3m
2.4 GHz	0.08	0.75	0.59	0.35	0.24
5 GHz	0.25	1.17	0.89	0.45	0.37

6. Frequency Range of each Antennas are as followings:

<b>For 2.4GHz</b>	
Antenna No.	Frequency Range
No. 1	2400MHz ~ 2500MHz
No. 2	2400MHz ~ 2500MHz
<b>For 5GHz</b>	
Antenna No.	Frequency Range
A	5.47GHz ~ 5.875GHz
B	5.15 GHz ~ 5.875GHz
C	4.9 GHz ~ 5.875 GHz

7. Maximum peak output power (Unit : dBm) :

No.	Model No. (Antenna)	Operating Frequency (MHz)		
		2412~2462	5250~5350	5725~5850
1	ANT-1360-OUT	22.50	NA	NA
2	ANT-1120-OUT	20.90	NA	NA
A	ANT-5360-OUT	NA	NA	25.00
B	ANT-5120-OUT	NA	18.15	24.05
C	ANT-5PNL-OUT	NA	13.76	25.00

8. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 DESCRIPTION OF TEST MODES

Operated in 2400 ~ 2483.5MHz band:

For 802.11b/g: Eleven channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

Operated in 5725 ~ 5850MHz band:

For 802.11a (5725 ~ 5850MHz band): Five channels are provided to this EUT.

Channel	Frequency
1	5745 MHz
2	5765 MHz
3	5785 MHz
4	5805 MHz
5	5825 MHz

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	√	√	√	√	NA

Where PLC: Power Line Conducted Emission

RE<1G RE: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

#### **Power Line Conducted Emission Test:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6
802.11a	1 to 5	5	OFDM	BPSK	6

#### **Radiated Emission Test (Below 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11g	1 to 11	11	OFDM	BPSK	6
802.11a	1 to 5	5	OFDM	BPSK	6

#### **Radiated Emission Test (Above 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	CCK	11
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6

### **Bandedge Measurement:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 11	DSSS	CCK	11
802.11g	1 to 11	1, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 5	OFDM	BPSK	6

### **Antenna Port Conducted Measurement:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	CCK	11
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11a	1 to 5	1, 3, 5	OFDM	BPSK	6



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a Dual mode 2.4GHz / 5GHz Access Point. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart C. (15.247)**

**ANSI C63.4-2003**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP01L	TW-09c748- 12800-165-3171	FCC DoC

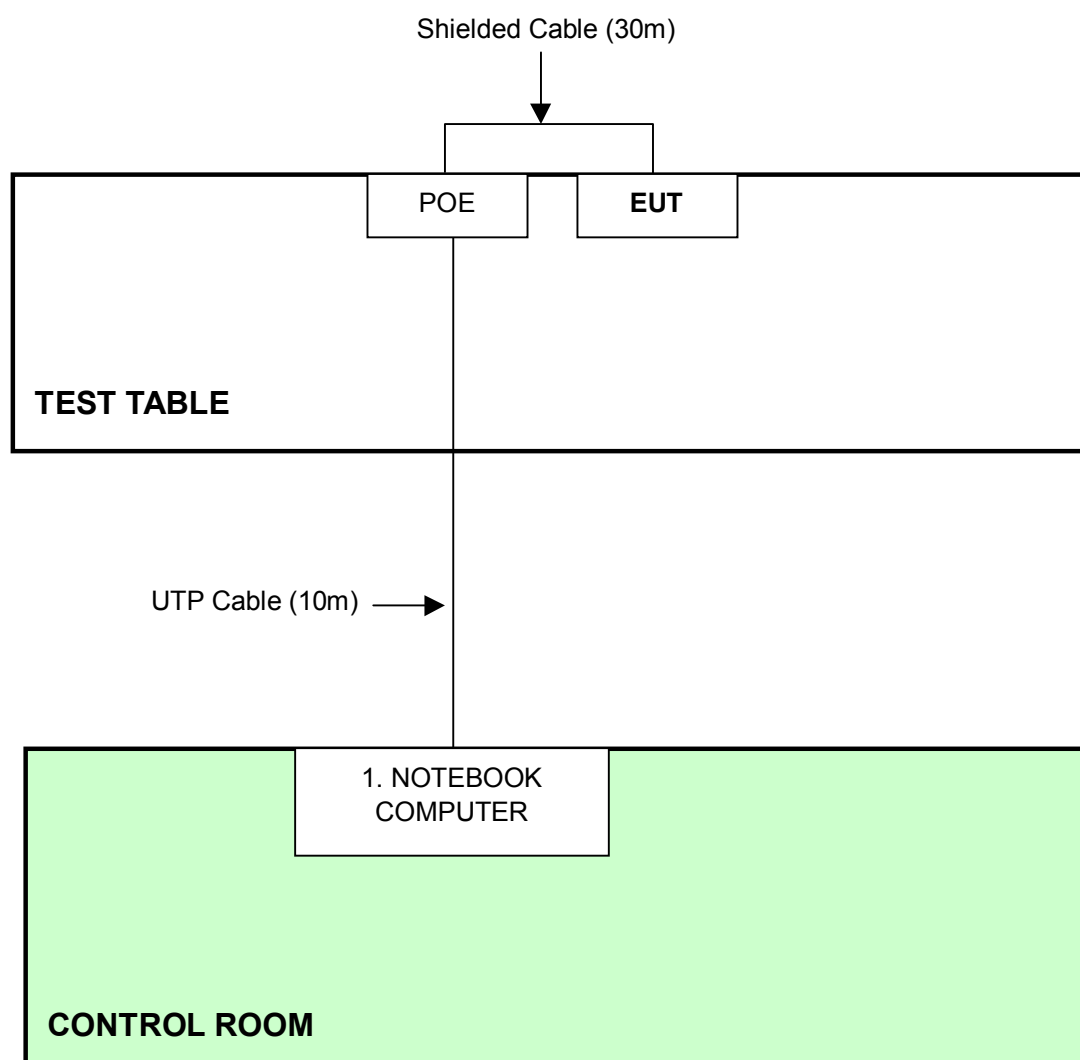
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA

**NOTE:** All power cords of the above support units are non shielded (1.8m).



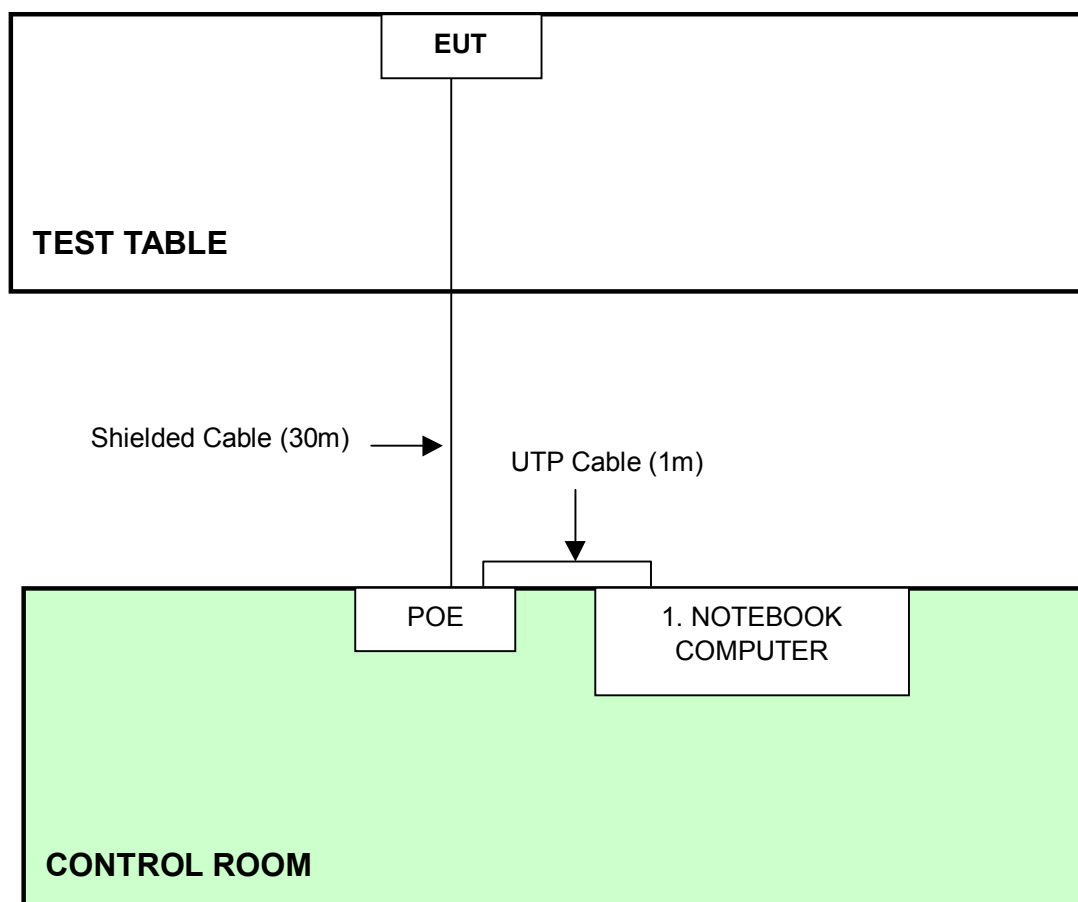
### 3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted Test:



**NOTE:** 1. Support unit 1 was kept in the control room during the test.  
2. Please refer to the photos of test configuration in Item 6 also.

**For Radiated Test:**



- NOTE:**
1. Support unit 1 was kept in the control room during the test.
  2. Please refer to the photos of test configuration in Item 6 also.

## 4. TEST TYPES AND RESULTS (802.11b & g, 2400 ~ 2483.5MHz Band)

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver	ESCS 30	100375	Sep. 19, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 10, 2006
ROHDE & SCHWARZ LISN	KNW-407	8/1395/12	Jul. 19, 2006
RF Signal Cable	RG233/U	Cable_CA_02	Dec. 10, 2006
Terminator(for KYORITSU)	50	2	Oct. 08, 2006
Software	ADT_Cond_V7.3.2	NA	NA

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ADT Shielded Room No. B.
3. The VCCI Con B Registration No. is C-2193.
4. \* = These equipment are used for the final measurement.
5. The measurement uncertainty is 2.26 dB, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

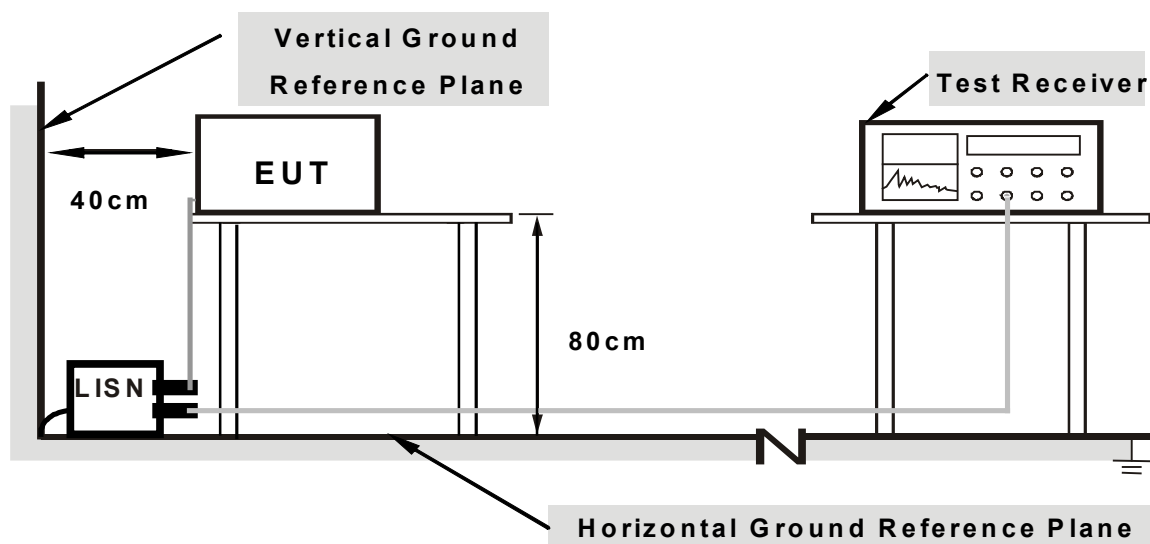
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission level under (Limit - 20dB) was not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**Note: 1. Support units were connected to second LISN.**

**2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table.
- b. Prepared other computer system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run test program “Art 48 Build5” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable and wireless.

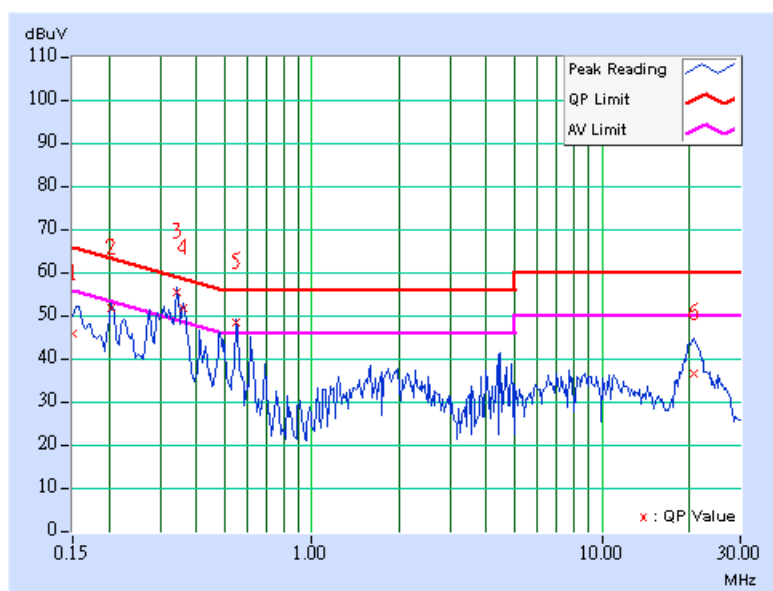
#### 4.1.7 TEST RESULTS

##### Conducted Worst-Case Data

<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa	<b>PHASE</b>	Line (L)
<b>TESTED BY</b>	Eric Lee		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.150	9.80	35.94	-	45.74	-	66.00
2	0.205	9.80	41.60	-	51.40	-	63.42	53.42	-12.02	-
3	0.341	9.80	45.59	37.30	55.39	47.10	59.17	49.17	-3.78	-2.07
4	0.361	9.80	41.57	34.44	51.37	44.24	58.71	48.71	-7.34	-4.47
5	0.548	9.82	38.38	30.88	48.20	40.70	56.00	46.00	-7.80	-5.30
6	20.863	10.13	26.39	-	36.52	-	60.00	50.00	-23.48	-

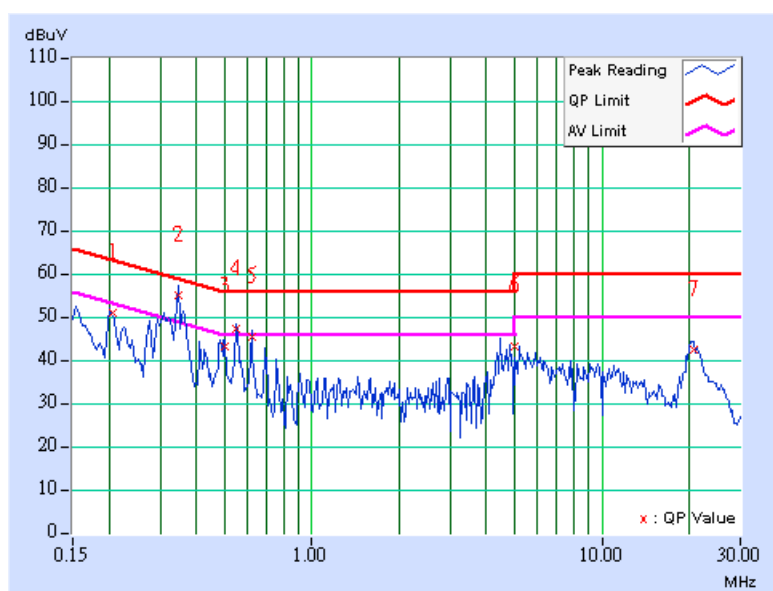
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa	<b>PHASE</b>	Neutral (N)
<b>TESTED BY</b>	Eric Lee		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.207	9.80	40.57	-	50.37	-	63.33	53.33	-12.96	-
2	<b>0.345</b>	<b>9.80</b>	<b>44.60</b>	<b>37.39</b>	<b>54.40</b>	<b>47.19</b>	<b>59.07</b>	<b>49.07</b>	<b>-4.67</b>	<b>-1.88</b>
3	0.500	9.82	32.73	-	42.55	-	56.00	46.00	-13.45	-
4	0.548	9.82	37.14	30.10	46.96	39.92	56.00	46.00	-9.04	-6.08
5	0.619	9.84	35.28	-	45.12	-	56.00	46.00	-10.88	-
6	5.016	10.12	32.85	-	42.97	-	60.00	50.00	-17.03	-
7	20.682	10.43	32.00	-	42.43	-	60.00	50.00	-17.57	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



#### 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 07, 2006
HP Pre_Amplifier	8449B	3008A01922	Oct. 02, 2006
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2006
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2006
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2007
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 16. 2006
RF Cable(RICHTEC)	9913-30M	STCCAB-30M- 1GHz-021	Jul. 16, 2006
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Open Site No. C.
4. The FCC Site Registration No. is 656396.
5. The VCCI Site Registration No. is R-1626.
6. The CANADA Site Registration No. is IC 4824-3.
7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

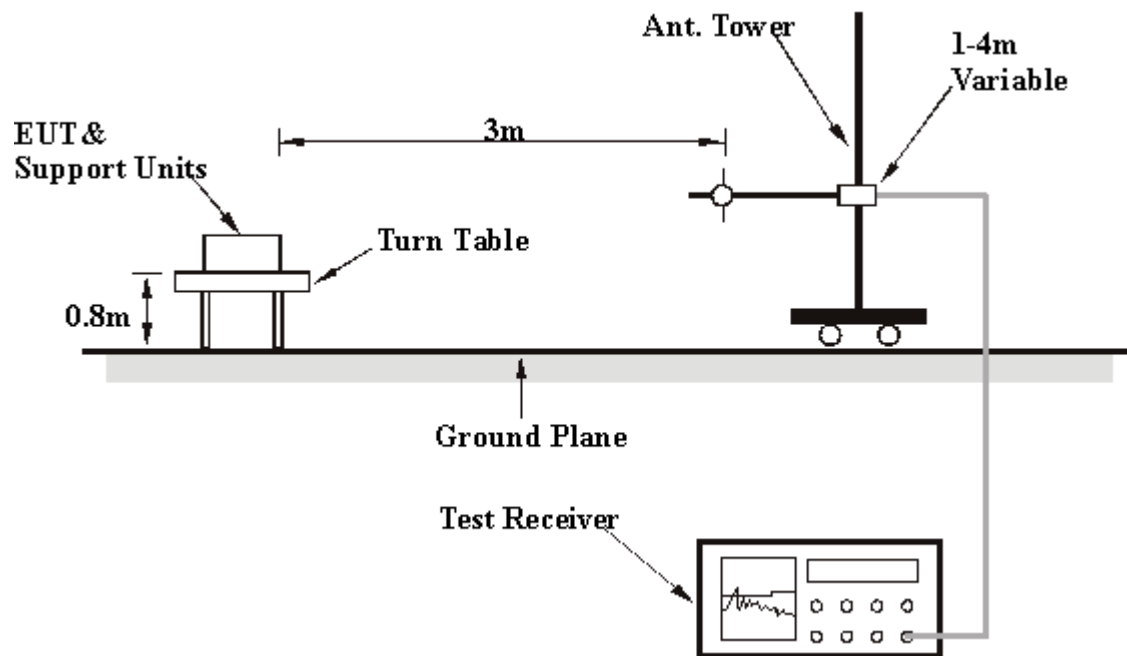
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

#### 4.2.7 TEST RESULTS (ANTENNA 1)

##### Below 1GHz Worst-Case Data

<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>TESTED BY</b>	Eric Lee		

##### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	26.50 QP	43.50	-17.00	1.36 H	62	15.90	10.60
2	220.01	27.20 QP	46.00	-18.80	1.11 H	263	17.20	10.00
3	250.01	25.30 QP	46.00	-20.70	1.35 H	62	14.00	11.30
4	284.01	29.90 QP	46.00	-16.10	1.05 H	258	18.50	11.40
5	375.00	30.00 QP	46.00	-16.00	1.02 H	293	11.60	18.40
6	500.00	31.30 QP	46.00	-14.70	1.12 H	5	6.70	24.60

##### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.00	26.70 QP	43.50	-16.80	1.52 V	41	14.90	11.80
2	175.02	23.90 QP	43.50	-19.60	1.96 V	32	10.10	13.80
3	250.01	25.60 QP	46.00	-20.40	1.36 V	9	14.90	10.70
4	500.00	24.10 QP	46.00	-21.90	1.25 V	99	-1.50	25.60
5	550.00	35.20 QP	46.00	-10.80	1.01 V	47	9.20	26.00
6	625.01	24.90 QP	46.00	-21.10	1.08 V	25	-3.20	28.10
7	769.99	27.10 QP	46.00	-18.90	1.09 V	91	-4.60	31.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value

### 802.11b DSSS modulation

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.00 PK	74.00	-20.00	1.47 H	120	24.40	29.70
1	2390.00	43.10 AV	54.00	-10.90	1.47 H	120	13.40	29.70
2	*2412.00	89.40 PK			1.47 H	120	59.60	29.80
2	*2412.00	85.40 AV			1.47 H	120	55.60	29.80
3	4824.00	46.40 PK	74.00	-27.60	1.32 H	58	11.30	35.10
3	4824.00	35.00 AV	54.00	-19.00	1.32 H	58	-0.10	35.10
4	7236.00	52.10 PK	74.00	-21.90	1.04 H	230	11.60	40.50
4	7236.00	38.70 AV	54.00	-15.30	1.04 H	230	-1.80	40.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.00	64.00 PK	74.00	-10.00	1.33 V	236	34.40	29.70
1	2386.00	51.10 AV	54.00	-2.90	1.33 V	236	21.40	29.70
2	2390.00	62.50 PK	74.00	-11.50	1.33 V	236	32.80	29.70
2	2390.00	50.80 AV	54.00	-3.20	1.33 V	236	21.10	29.70
3	*2412.00	108.90 PK			1.33 V	236	79.10	29.80
3	*2412.00	105.40 AV			1.33 V	236	75.60	29.80
4	4824.00	46.00 PK	74.00	-28.00	1.02 V	234	10.90	35.10
4	4824.00	34.40 AV	54.00	-19.60	1.02 V	234	-0.80	35.10
5	7236.00	52.10 PK	74.00	-21.90	1.14 V	110	11.60	40.50
5	7236.00	40.10 AV	54.00	-13.90	1.14 V	110	-0.40	40.50

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	97.00 PK			1.42 H	118	67.10	29.90
1	*2437.00	92.60 AV			1.42 H	118	62.70	29.90
2	4874.00	45.80 PK	74.00	-28.20	1.24 H	360	10.50	35.30
2	4874.00	35.20 AV	54.00	-18.80	1.24 H	360	-0.10	35.30
3	7311.00	52.30 PK	74.00	-21.70	1.10 H	54	11.70	40.70
3	7311.00	39.50 AV	54.00	-14.50	1.10 H	54	-1.20	40.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2378.00	63.50 PK	74.00	-10.50	1.21 V	289	33.90	29.60
1	2378.00	53.30 AV	54.00	-0.70	1.21 V	289	23.70	29.60
2	*2437.00	115.90 PK			1.21 V	289	86.00	29.90
2	*2437.00	112.00 AV			1.21 V	289	82.10	29.90
3	4874.00	46.60 PK	74.00	-27.40	1.22 V	147	11.30	35.30
3	4874.00	35.50 AV	54.00	-18.50	1.22 V	147	0.20	35.30
4	7311.00	48.50 PK	74.00	-25.50	1.23 V	58	7.90	40.70
4	7311.00	39.30 AV	54.00	-14.70	1.23 V	58	-1.40	40.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency



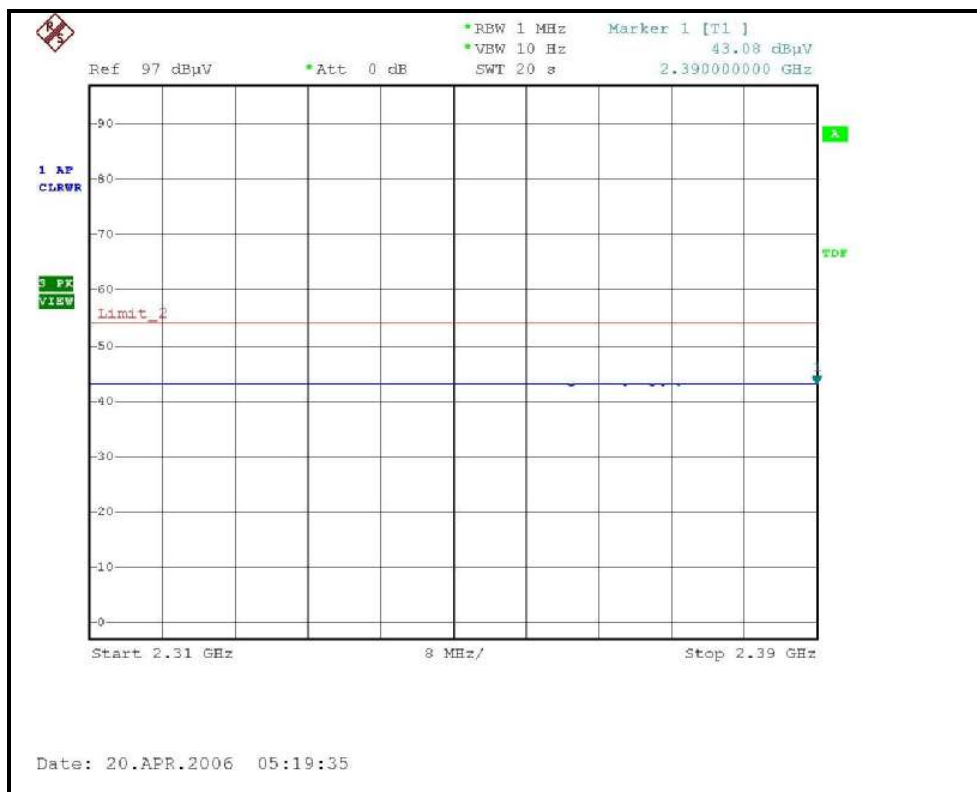
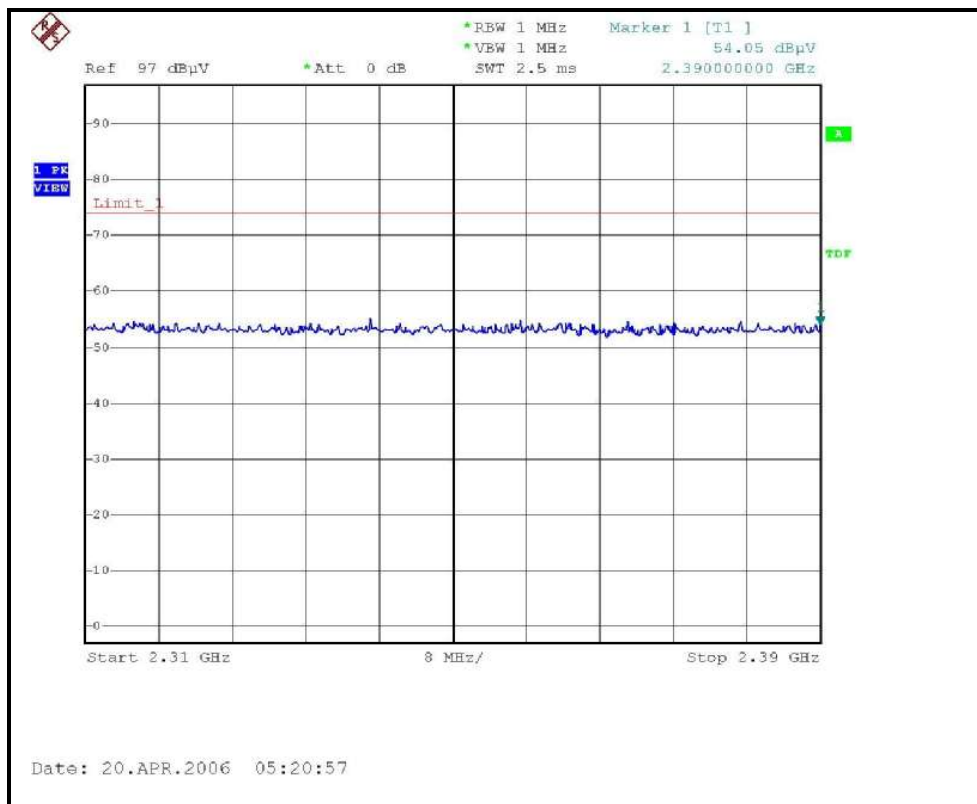
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	93.40 PK			1.44 H	120	63.40	30.00
1	*2462.00	89.50 AV			1.44 H	120	59.40	30.00
2	2483.50	54.80 PK	74.00	-19.20	1.44 H	120	24.70	30.10
2	2483.50	43.60 AV	54.00	-10.40	1.44 H	120	13.50	30.10
3	4924.00	47.40 PK	74.00	-26.60	1.19 H	147	11.90	35.50
3	4924.00	36.40 AV	54.00	-17.60	1.19 H	147	0.90	35.50
4	7386.00	52.10 PK	74.00	-21.90	1.27 H	269	11.30	40.80
4	7386.00	39.40 AV	54.00	-14.60	1.27 H	269	-1.40	40.80

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.70 PK			1.40 V	258	79.70	30.00
1	*2462.00	106.80 AV			1.40 V	258	76.80	30.00
<b>2</b>	<b>2483.50</b>	<b>73.80 PK</b>	<b>74.00</b>	<b>-0.20</b>	<b>1.40 V</b>	<b>258</b>	<b>43.70</b>	<b>30.10</b>
2	2483.50	52.40 AV	54.00	-1.60	1.40 V	258	22.30	30.10
3	2488.00	71.90 PK	74.00	-2.10	1.40 V	258	41.80	30.10
3	2488.00	53.40 AV	54.00	-0.60	1.40 V	258	23.30	30.10
4	4924.00	46.10 PK	74.00	-27.90	1.21 V	60	10.60	35.50
4	4924.00	34.90 AV	54.00	-19.10	1.21 V	60	-0.60	35.50
5	7386.00	52.40 PK	74.00	-21.60	1.07 V	267	11.60	40.80
5	7386.00	39.40 AV	54.00	-14.60	1.07 V	267	-1.40	40.80

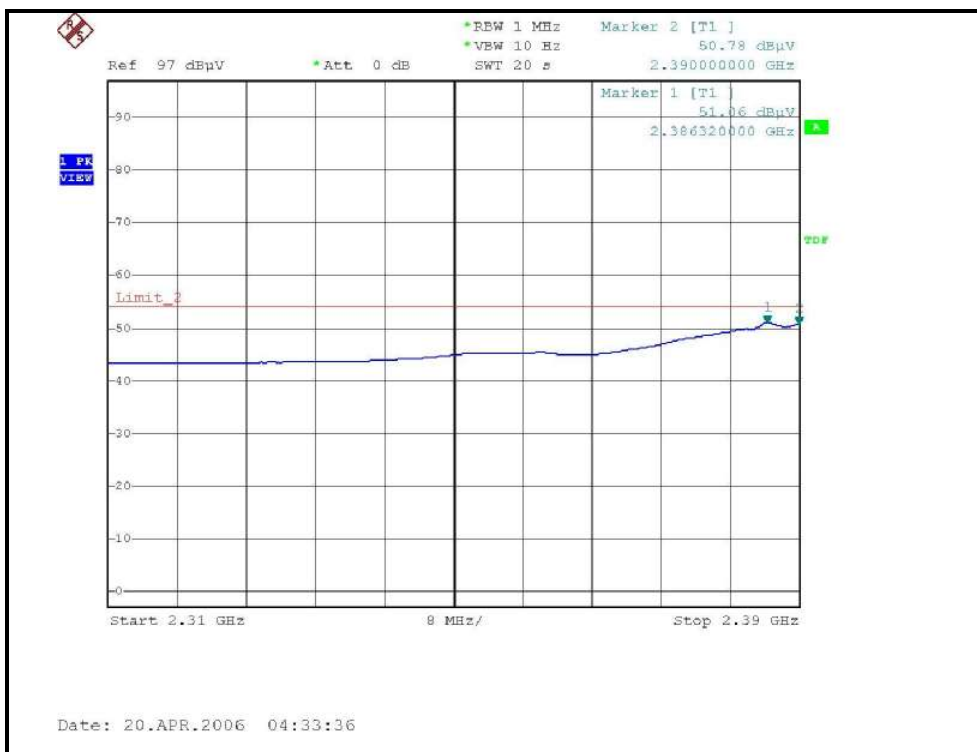
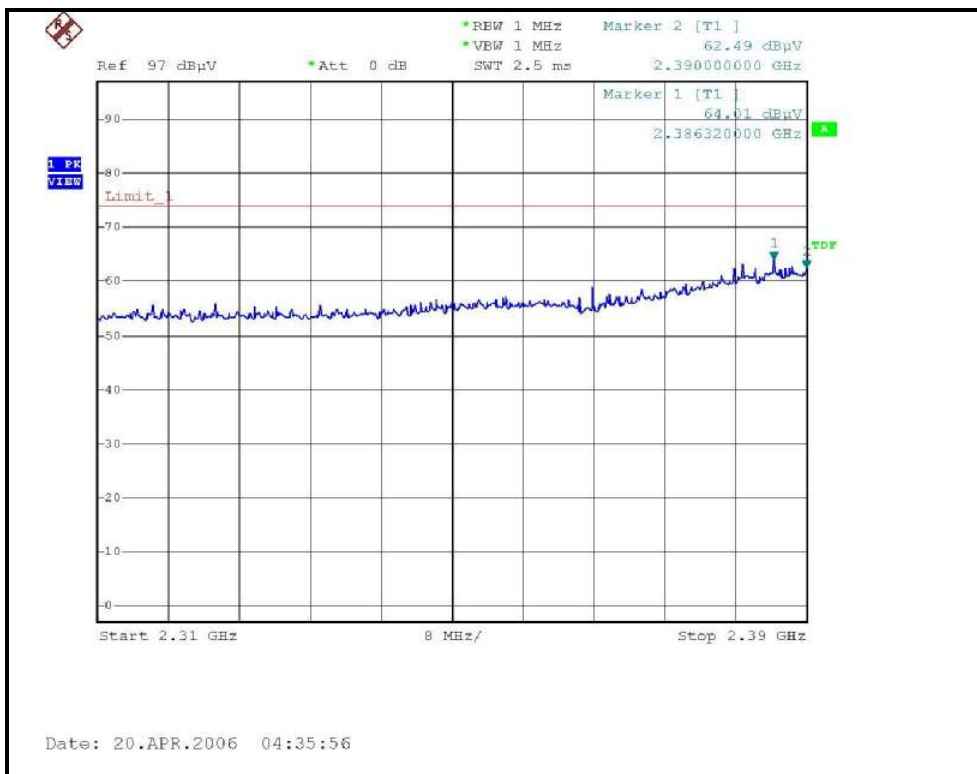
- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. " \* " : Fundamental frequency

RESTRICTED BANDEDGE (802.11b MODE, CH1, HORIZONTAL )

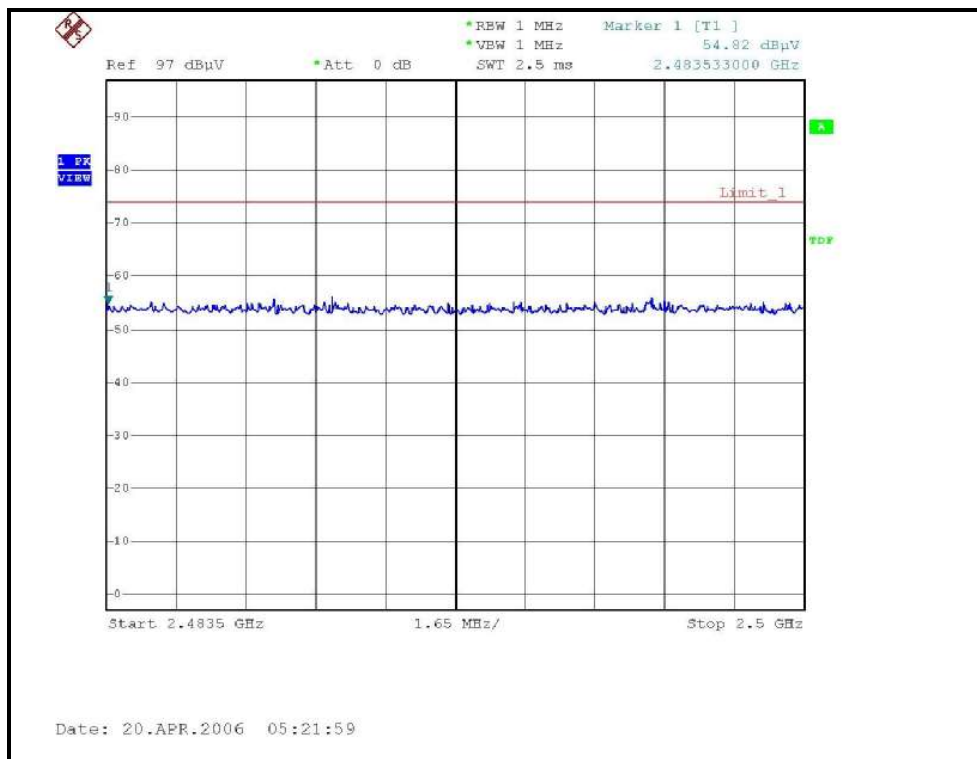




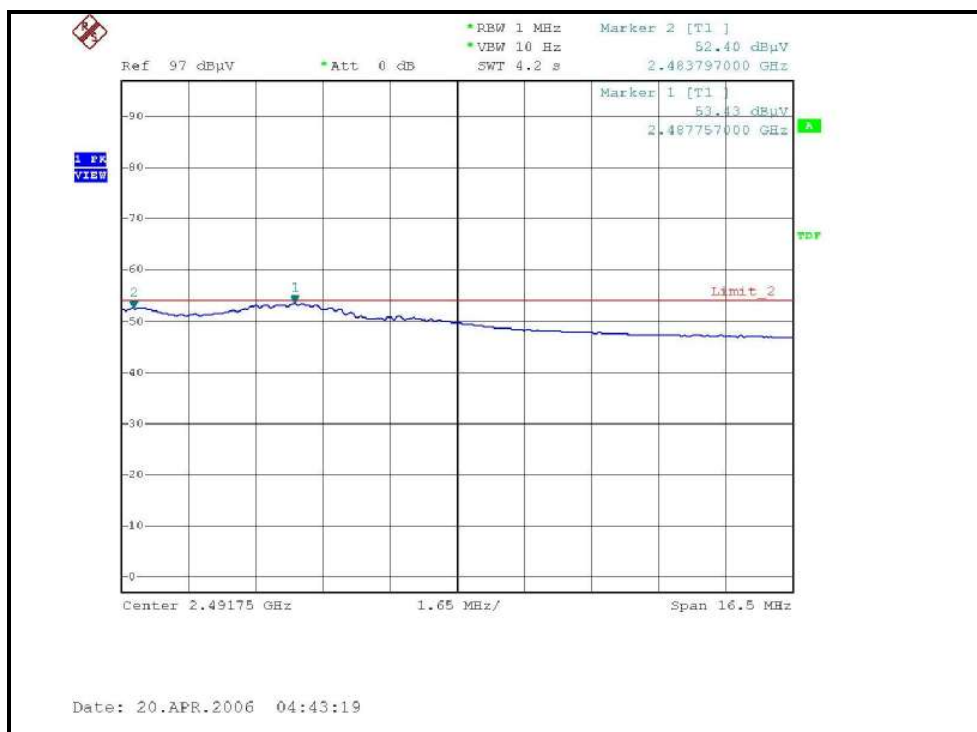
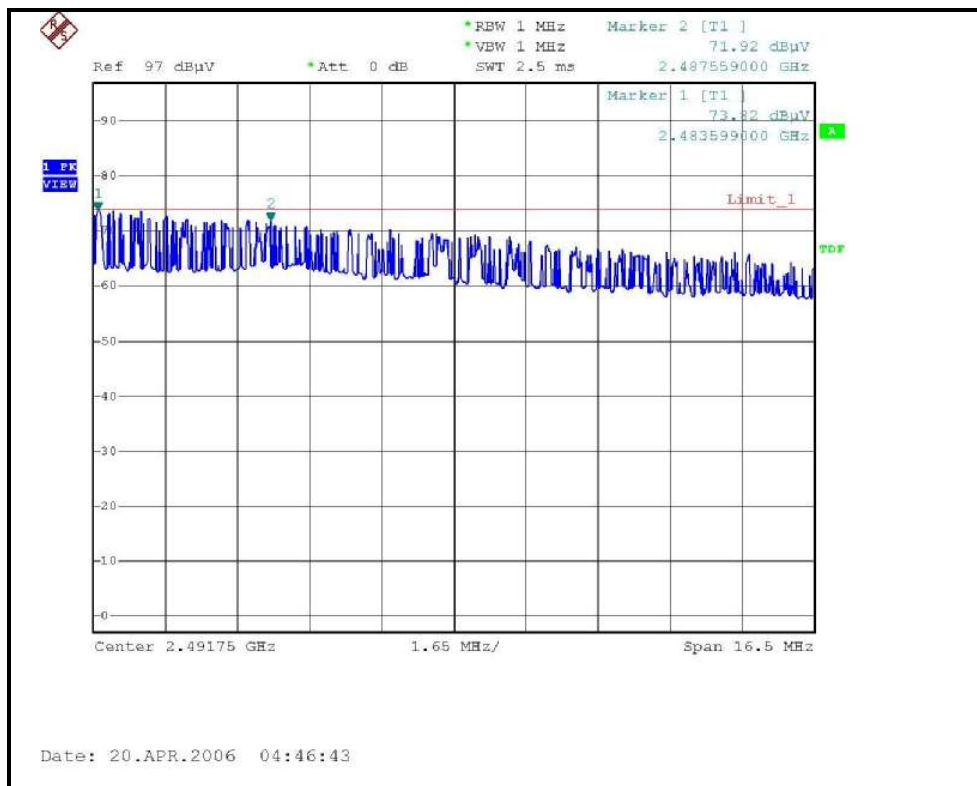
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL )



RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL )



RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL)



### 802.11g OFDM modulation

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.70 PK	74.00	-18.30	1.54 H	42	26.00	29.70
1	2390.00	43.70 AV	54.00	-10.30	1.54 H	42	14.00	29.70
2	*2412.00	92.70 PK			1.54 H	42	62.90	29.80
2	*2412.00	83.50 AV			1.54 H	42	53.70	29.80
3	4824.00	43.50 PK	74.00	-30.50	1.24 H	53	8.40	35.10
3	4824.00	34.50 AV	54.00	-19.50	1.24 H	53	-0.60	35.10
4	7236.00	49.00 PK	74.00	-25.00	1.64 H	114	8.50	40.50
4	7236.00	39.00 AV	54.00	-15.00	1.64 H	114	-1.50	40.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	70.70 PK	74.00	-3.30	1.24 V	31	41.00	29.70
1	2390.00	53.60 AV	54.00	-0.40	1.24 V	31	23.90	29.70
2	*2412.00	111.50 PK			1.24 V	31	81.70	29.80
2	*2412.00	102.30 AV			1.24 V	31	72.50	29.80
3	4824.00	44.00 PK	74.00	-30.00	1.24 V	69	8.90	35.10
3	4824.00	35.10 AV	54.00	-18.90	1.24 V	69	0.00	35.10
4	7236.00	50.60 PK	74.00	-23.40	1.11 V	321	10.10	40.50
4	7236.00	40.60 AV	54.00	-13.40	1.11 V	321	0.10	40.50

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	101.30 PK			1.56 H	7	71.40	29.90
1	*2437.00	91.30 AV			1.56 H	7	61.30	29.90
2	4874.00	42.10 PK	74.00	-31.90	1.62 H	320	6.80	35.30
2	4874.00	34.70 AV	54.00	-19.30	1.62 H	320	-0.60	35.30
3	7311.00	48.90 PK	74.00	-25.10	1.21 H	235	8.20	40.70
3	7311.00	39.00 AV	54.00	-15.00	1.21 H	235	-1.70	40.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	120.20 PK			1.05 V	34	90.20	29.90
1	*2437.00	110.10 AV			1.05 V	34	80.20	29.90
2	4874.00	46.70 PK	74.00	-27.30	1.04 V	33	11.40	35.30
2	4874.00	35.30 AV	54.00	-18.70	1.04 V	33	0.00	35.30
3	7311.00	50.40 PK	74.00	-23.60	1.03 V	258	9.70	40.70
3	7311.00	41.00 AV	54.00	-13.00	1.03 V	258	0.30	40.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency



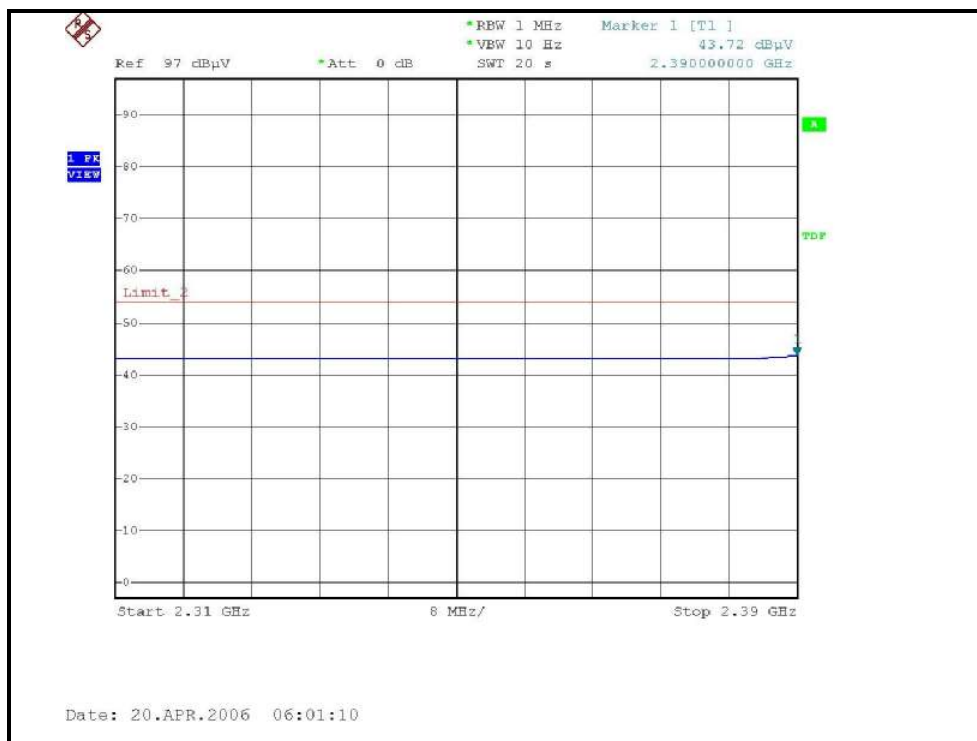
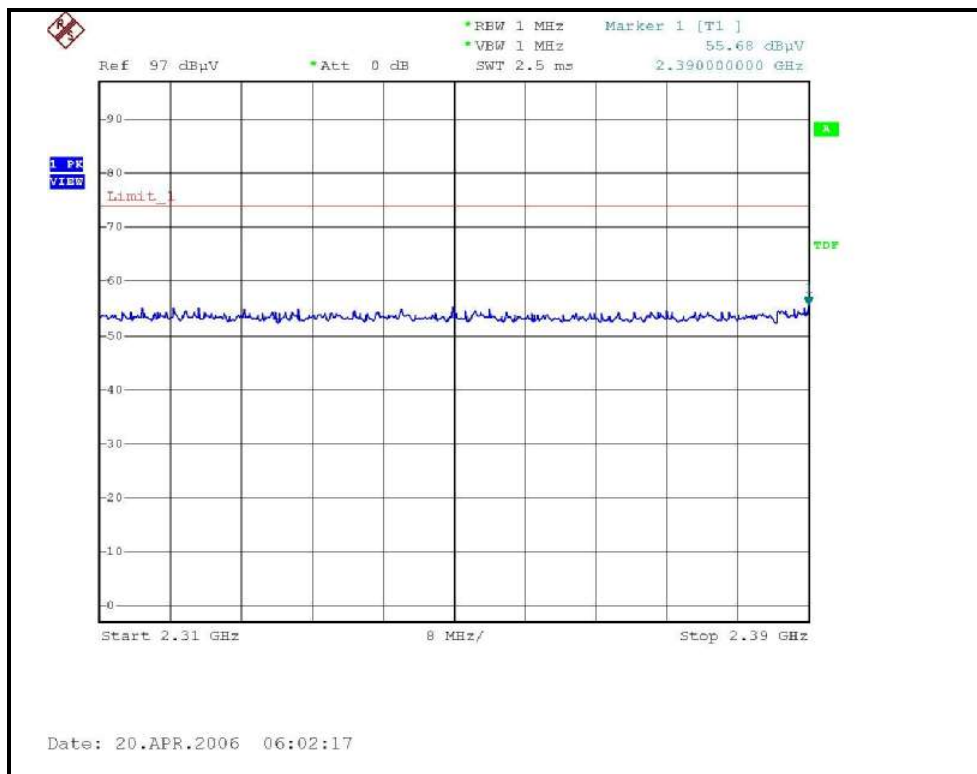
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	92.40 PK			1.56 H	35	62.40	30.00
1	*2462.00	83.40 AV			1.56 H	35	53.30	30.00
2	2483.50	54.80 PK	74.00	-19.20	1.56 H	35	24.70	30.10
2	2483.50	43.50 AV	54.00	-10.50	1.56 H	35	13.40	30.10
3	4924.00	44.30 PK	74.00	-29.70	1.26 H	78	8.70	35.50
3	4924.00	34.60 AV	54.00	-19.40	1.26 H	78	-1.00	35.50
4	7386.00	49.00 PK	74.00	-25.00	1.30 H	142	8.20	40.80
4	7386.00	39.10 AV	54.00	-14.90	1.30 H	142	-1.70	40.80

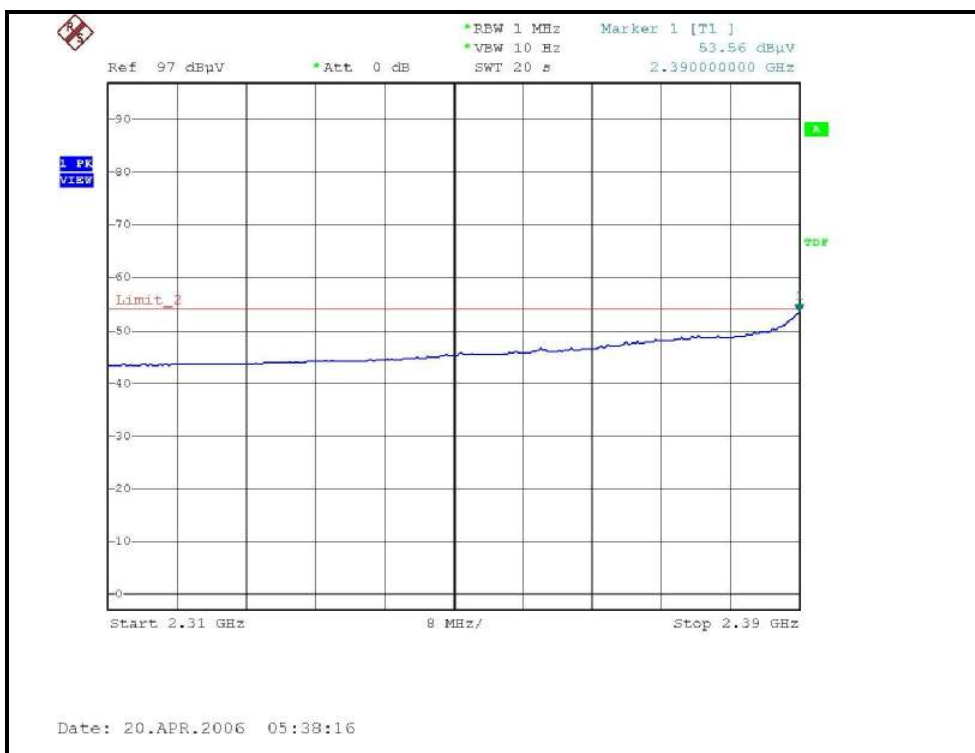
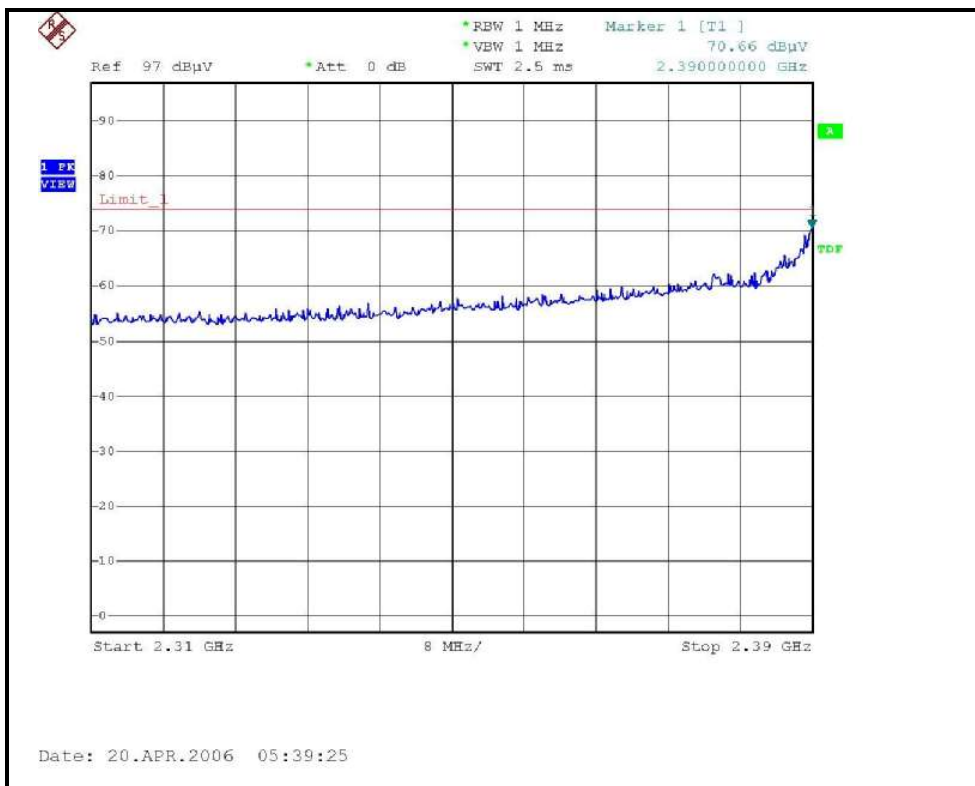
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.90 PK			1.23 V	34	82.90	30.00
1	*2462.00	102.90 AV			1.23 V	34	72.80	30.00
2	2483.50	71.80 PK	74.00	-2.20	1.23 V	6	41.70	30.10
2	2483.50	53.30 AV	54.00	-0.70	1.23 V	6	23.20	30.10
3	4924.00	45.40 PK	74.00	-28.60	1.12 V	69	9.80	35.50
3	4924.00	35.00 AV	54.00	-19.00	1.12 V	69	-0.60	35.50
4	7386.00	50.00 PK	74.00	-24.00	1.38 V	271	9.20	40.80
4	7386.00	39.10 AV	54.00	-14.90	1.38 V	271	-1.70	40.80

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL )



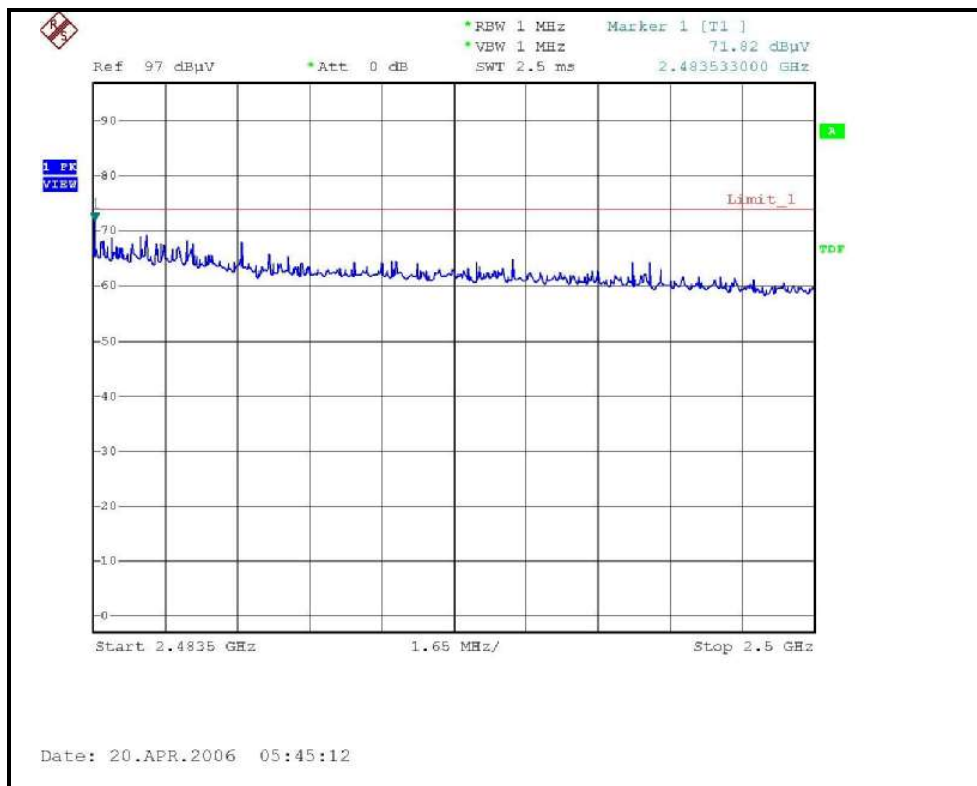
### RESTRICTED BANDEdge (802.11g MODE, CH1, VERTICAL )







RESTRICTED BANDEDGE (802.11g MODE, CH11, VERTICAL )



#### 4.2.8 TEST RESULTS (ANTENNA 2)

##### Below 1GHz Worst-Case Data

<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 65%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>TESTED BY</b>	Eric Lee		

##### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.01	24.90 QP	43.50	-18.60	1.53 H	32	14.30	10.60
2	220.01	26.50 QP	46.00	-19.50	1.01 H	1	16.50	10.00
3	250.00	24.70 QP	46.00	-21.30	1.55 H	24	13.40	11.30
4	284.00	28.20 QP	46.00	-17.80	1.08 H	24	16.80	11.40
5	375.00	29.80 QP	46.00	-16.20	1.56 H	98	11.40	18.40
6	500.00	30.00 QP	46.00	-16.00	1.11 H	54	5.40	24.60

##### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	125.01	27.30 QP	43.50	-16.20	1.49 V	356	15.50	11.80
2	175.02	25.80 QP	43.50	-17.70	1.32 V	62	12.00	13.80
3	250.01	25.60 QP	46.00	-20.40	1.36 V	9	14.90	10.70
4	500.01	25.10 QP	46.00	-20.90	1.30 V	65	-0.50	25.60
5	550.01	34.60 QP	46.00	-11.40	1.00 V	65	8.60	26.00
6	625.00	25.00 QP	46.00	-21.00	4.00 V	25	-3.10	28.10
7	770.00	26.30 QP	46.00	-19.70	4.00 V	91	-5.40	31.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value

### 802.11b DSSS modulation

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	53.60 PK	74.00	-20.40	1.45 H	12	23.90	29.70
1	2390.00	42.80 AV	54.00	-11.20	1.45 H	12	13.10	29.70
2	*2412.00	87.10 PK			1.45 H	12	57.30	29.80
2	*2412.00	83.10 AV			1.45 H	12	53.30	29.80
3	4824.00	45.50 PK	74.00	-28.50	1.43 H	33	10.40	35.10
3	4824.00	34.20 AV	54.00	-19.80	1.43 H	33	-0.90	35.10
4	7236.00	51.20 PK	74.00	-22.80	1.35 H	26	10.70	40.50
4	7236.00	38.70 AV	54.00	-15.30	1.35 H	26	-1.80	40.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2386.00	71.60 PK	74.00	-2.40	1.13 V	19	41.90	29.70
1	2386.00	52.50 AV	54.00	-1.50	1.13 V	19	22.80	29.70
2	2390.00	72.70 PK	74.00	-1.30	1.13 V	19	43.00	29.70
2	2390.00	50.30 AV	54.00	-3.70	1.13 V	19	20.60	29.70
3	*2412.00	110.50 PK			1.47 V	11	80.70	29.80
3	*2412.00	106.90 AV			1.47 V	11	77.10	29.80
4	4824.00	45.50 PK	74.00	-28.50	1.07 V	0	10.40	35.10
4	4824.00	34.00 AV	54.00	-20.00	1.07 V	0	-1.10	35.10
5	7236.00	51.60 PK	74.00	-22.40	1.18 V	2	11.10	40.50
5	7236.00	39.80 AV	54.00	-14.20	1.18 V	2	-0.70	40.50

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	93.40 PK			1.44 H	13	63.50	29.90
1	*2437.00	89.40 AV			1.44 H	13	59.50	29.90
2	4874.00	46.20 PK	74.00	-27.80	1.29 H	21	10.80	35.30
2	4874.00	34.20 AV	54.00	-19.80	1.29 H	21	-1.10	35.30
3	7311.00	51.90 PK	74.00	-22.10	1.20 H	33	11.30	40.70
3	7311.00	39.30 AV	54.00	-14.70	1.20 H	33	-1.30	40.70

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	117.20 PK			1.50 V	9	87.30	29.90
1	*2437.00	115.20 AV			1.50 V	9	85.30	29.90
2	4874.00	45.30 PK	74.00	-28.70	1.07 V	360	10.00	35.30
2	4874.00	35.50 AV	54.00	-18.50	1.07 V	360	0.10	35.30
3	7311.00	50.50 PK	74.00	-23.50	1.20 V	300	9.80	40.70
3	7311.00	38.60 AV	54.00	-15.40	1.20 V	300	-2.10	40.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency



<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

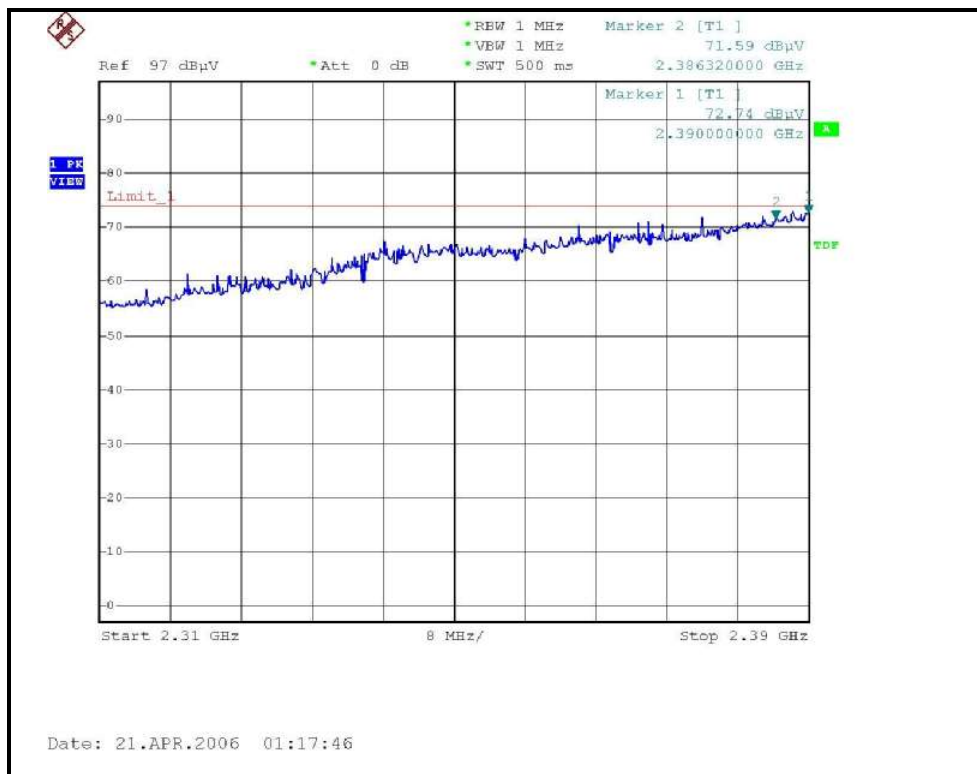
<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	88.70 PK			1.47 H	15	58.70	30.00
1	*2462.00	84.90 AV			1.47 H	15	54.90	30.00
2	2483.50	62.30 PK	74.00	-11.70	1.47 H	15	32.20	30.10
2	2483.50	43.40 AV	54.00	-10.60	1.47 H	15	13.30	30.10
3	4924.00	47.00 PK	74.00	-27.00	1.20 H	328	11.40	35.50
3	4924.00	35.40 AV	54.00	-18.60	1.20 H	328	-0.10	35.50
4	7386.00	51.00 PK	74.00	-23.00	1.24 H	24	10.20	40.80
4	7386.00	38.40 AV	54.00	-15.60	1.24 H	24	-2.40	40.80

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.00 PK			1.27 V	15	82.00	30.00
1	*2462.00	108.30 AV			1.27 V	15	78.30	30.00
2	2483.50	62.90 PK	74.00	-11.10	1.27 V	15	32.70	30.10
2	2483.50	53.40 AV	54.00	-0.60	1.27 V	15	23.20	30.10
3	4924.00	45.90 PK	74.00	-28.10	1.10 V	14	10.40	35.50
3	4924.00	34.90 AV	54.00	-19.10	1.10 V	14	-0.70	35.50
4	7386.00	51.40 PK	74.00	-22.60	1.08 V	200	10.60	40.80
4	7386.00	39.00 AV	54.00	-15.00	1.08 V	200	-1.80	40.80

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

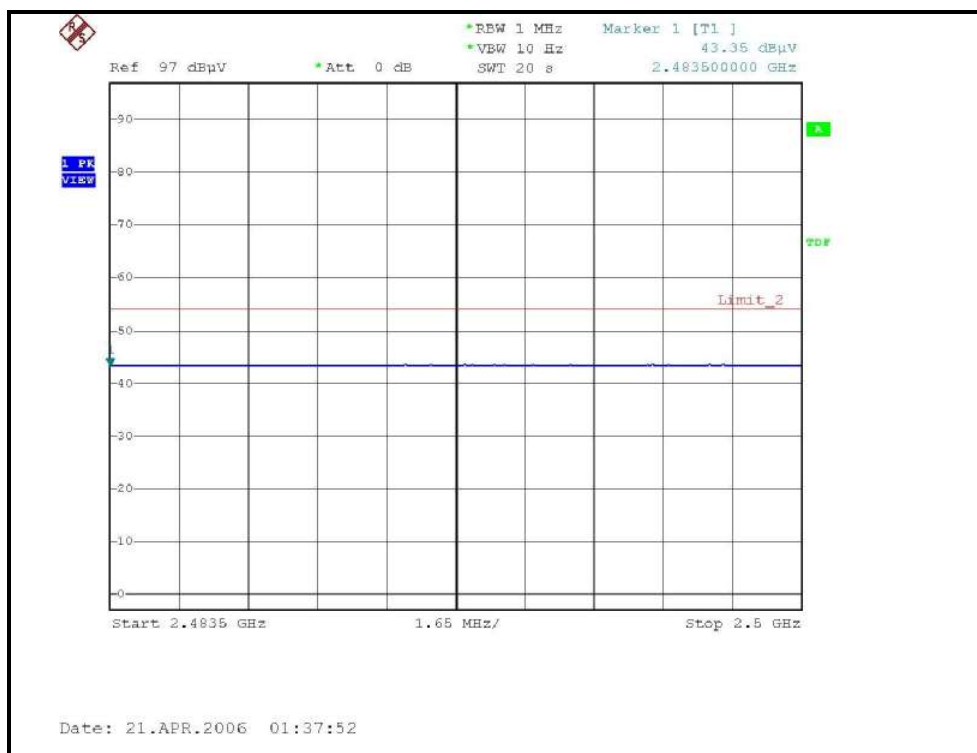
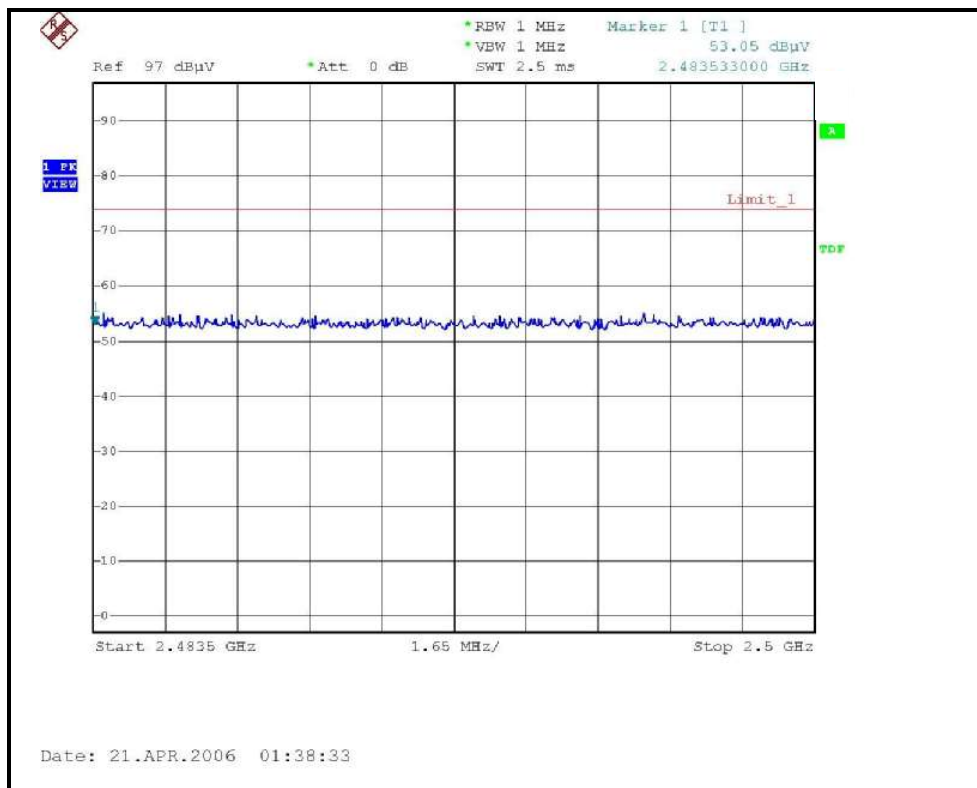


RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL )

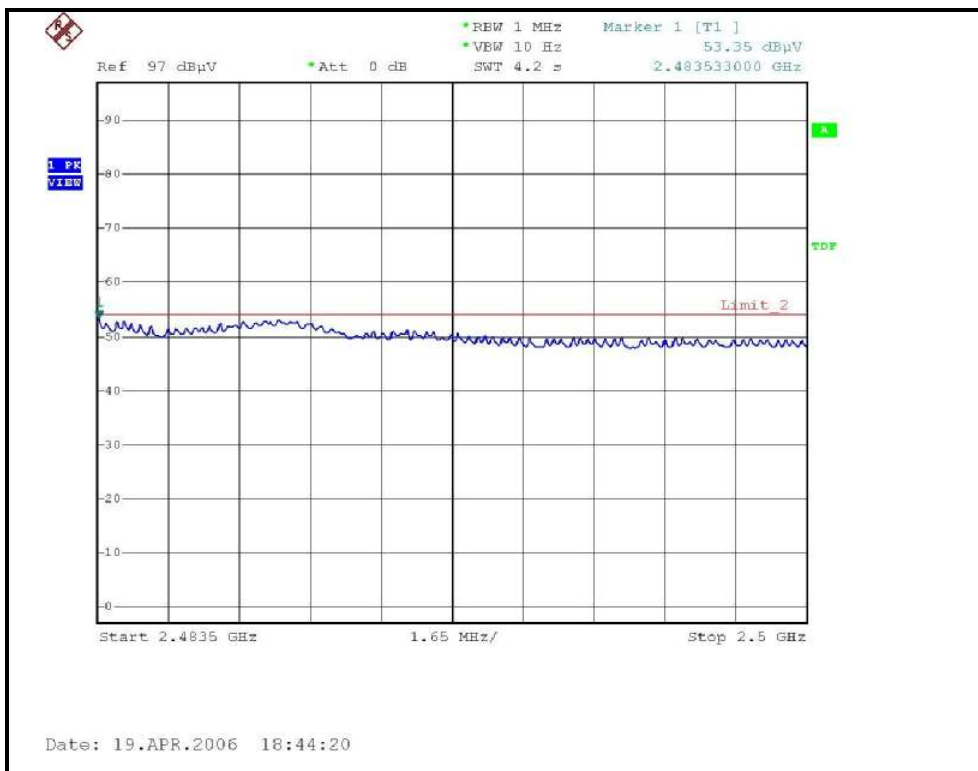
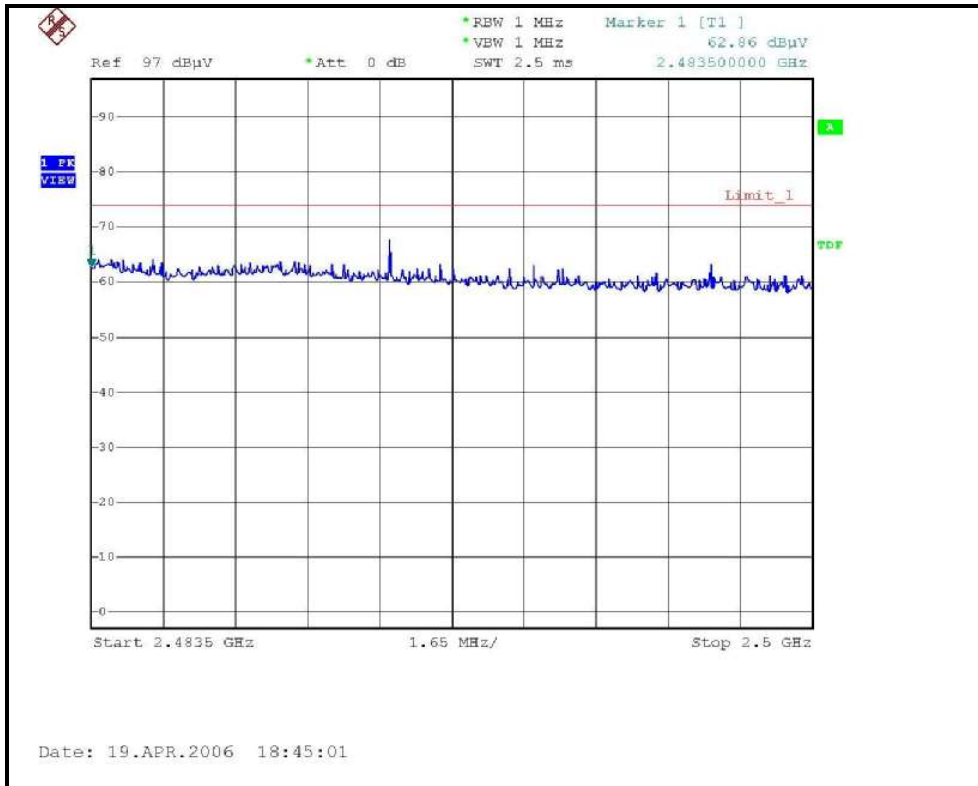




RESTRICTED BANDEDGE (802.11b MODE, CH11, HORIZONTAL )



RESTRICTED BANDEDGE (802.11b MODE, CH11, VERTICAL )



### 802.11g OFDM modulation

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	52.90 PK	74.00	-21.10	1.07 H	302	23.20	29.70
1	2390.00	43.10 AV	54.00	-10.90	1.07 H	302	13.40	29.70
2	*2412.00	90.40 PK			1.07 H	302	60.60	29.80
2	*2412.00	81.00 AV			1.07 H	302	51.20	29.80
3	4824.00	45.40 PK	74.00	-28.60	1.24 H	321	10.30	35.10
3	4824.00	32.40 AV	54.00	-21.60	1.24 H	321	-2.70	35.10
4	7236.00	50.90 PK	74.00	-23.10	1.10 H	206	10.40	40.50
4	7236.00	38.50 AV	54.00	-15.50	1.10 H	206	-2.00	40.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	68.80 PK	74.00	-5.20	1.17 V	347	39.10	29.70
1	2390.00	53.30 AV	54.00	-0.70	1.17 V	347	23.60	29.70
2	*2412.00	111.00 PK			1.14 V	347	81.20	29.80
2	*2412.00	100.50 AV			1.14 V	347	70.70	29.80
3	4824.00	44.60 PK	74.00	-29.40	1.31 V	260	9.50	35.10
3	4824.00	32.20 AV	54.00	-21.80	1.31 V	260	-2.90	35.10
4	7236.00	49.70 PK	74.00	-24.30	1.20 V	300	9.20	40.50
4	7236.00	39.20 AV	54.00	-14.80	1.20 V	300	-1.30	40.50

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency



<b>CHANNEL</b>	Channel 6	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	98.20 PK			1.08 H	300	68.30	29.90
1	*2437.00	87.10 AV			1.08 H	300	57.20	29.90
2	4874.00	45.10 PK	74.00	-28.90	1.24 H	320	9.80	35.30
2	4874.00	32.40 AV	54.00	-21.60	1.24 H	320	-2.90	35.30
3	7311.00	51.10 PK	74.00	-22.90	1.10 H	206	10.40	40.70
3	7311.00	38.30 AV	54.00	-15.70	1.10 H	206	-2.40	40.70

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	116.60 PK			1.12 V	342	86.70	29.90
1	*2437.00	107.20 AV			1.12 V	342	77.30	29.90
2	4874.00	44.90 PK	74.00	-29.10	1.24 V	214	9.60	35.30
2	4874.00	32.30 AV	54.00	-21.70	1.24 V	214	-3.00	35.30
3	7311.00	51.20 PK	74.00	-22.80	1.24 V	250	10.50	40.70
3	7311.00	39.00 AV	54.00	-15.00	1.24 V	250	-1.70	40.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency



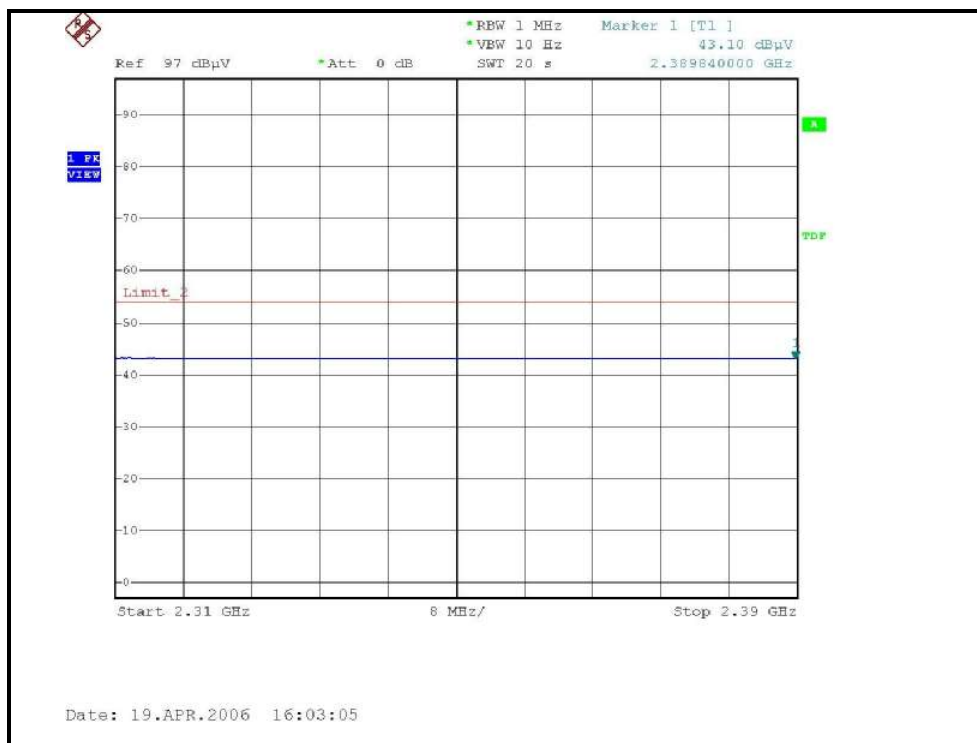
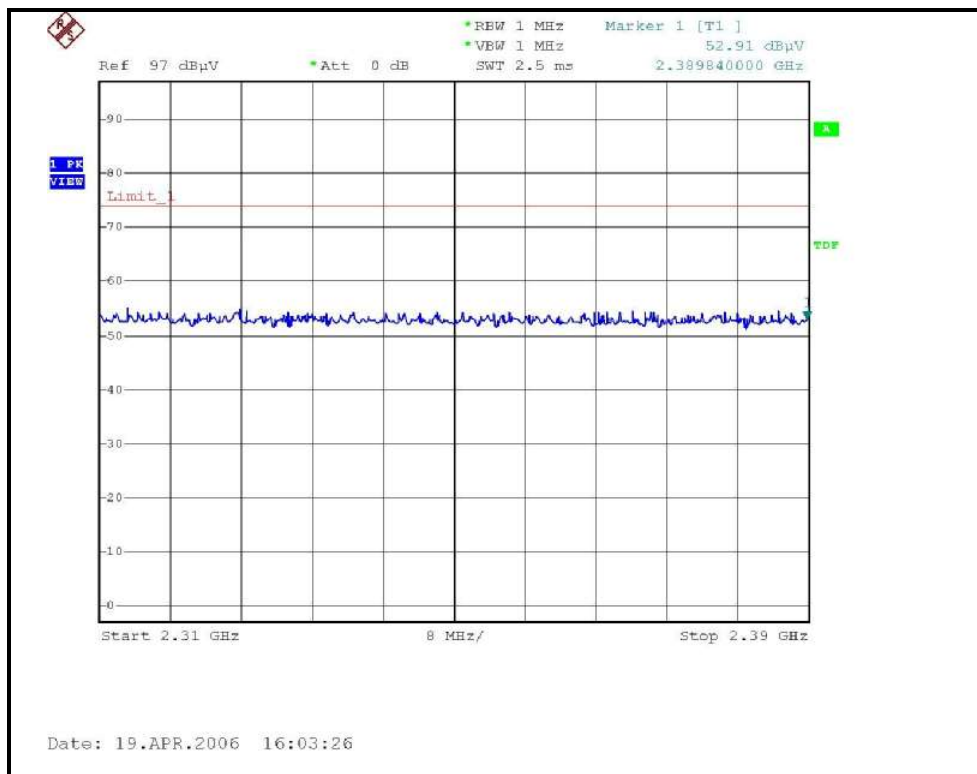
<b>CHANNEL</b>	Channel 11	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 57%RH, 973hPa	<b>TESTED BY</b>	Tony Chen

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	92.10 PK			1.04 H	273	62.00	30.00
1	*2462.00	82.30 AV			1.04 H	273	52.20	30.00
2	2483.50	52.90 PK	74.00	-21.10	1.00 H	210	22.80	30.10
2	2483.50	43.40 AV	54.00	-10.60	1.00 H	210	13.30	30.10
3	4924.00	45.20 PK	74.00	-28.80	1.40 H	26	9.70	35.50
3	4924.00	32.80 AV	54.00	-21.20	1.40 H	26	-2.80	35.50
4	7386.00	51.60 PK	74.00	-22.40	1.50 H	33	10.70	40.80
4	7386.00	39.20 AV	54.00	-14.80	1.50 H	33	-1.70	40.80

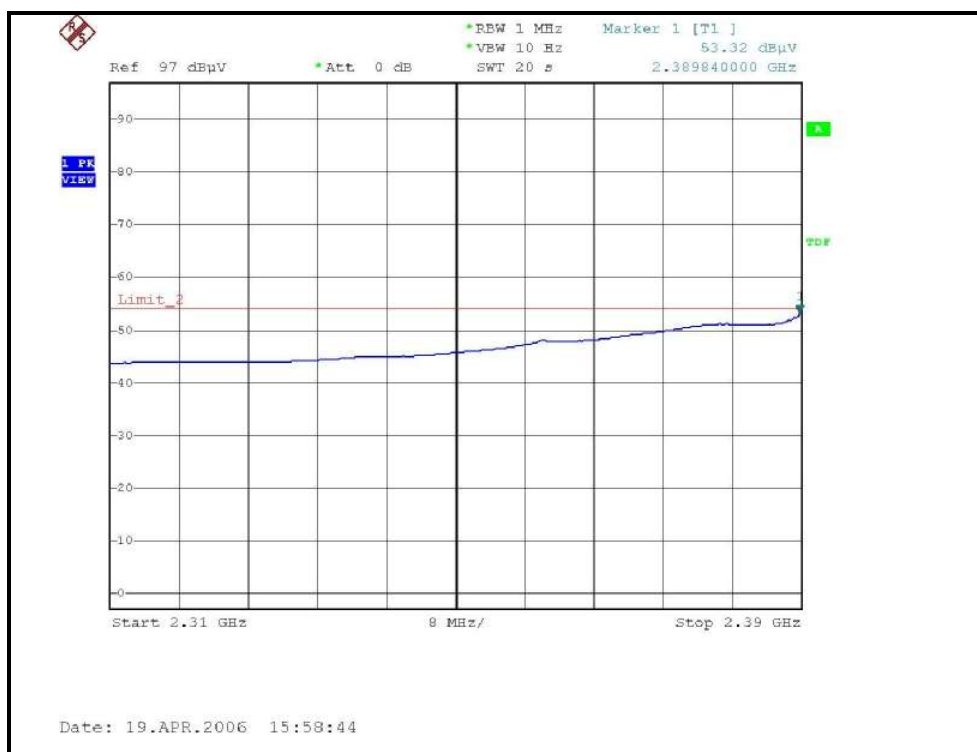
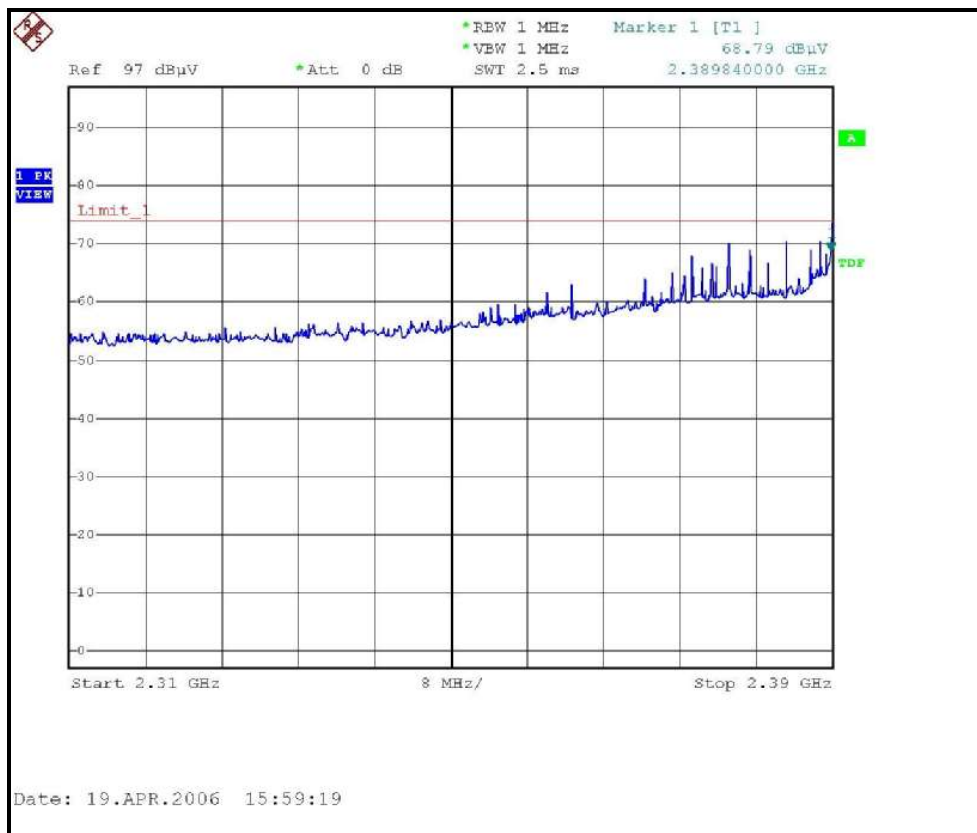
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.50 PK			1.25 V	350	83.40	30.00
1	*2462.00	103.70 AV			1.25 V	350	73.70	30.00
2	2483.50	67.30 PK	74.00	-6.70	1.25 V	350	37.20	30.10
2	2483.50	53.50 AV	54.00	-0.50	1.25 V	350	23.40	30.10
3	4924.00	45.60 PK	74.00	-28.40	1.00 V	120	10.10	35.50
3	4924.00	32.50 AV	54.00	-21.50	1.00 V	120	-3.00	35.50
4	7386.00	51.50 PK	74.00	-22.50	1.10 V	210	10.60	40.80
4	7386.00	39.10 AV	54.00	-14.90	1.10 V	210	-1.70	40.80

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. The limit value is defined as per 15.247
  6. “ \* “ : Fundamental frequency

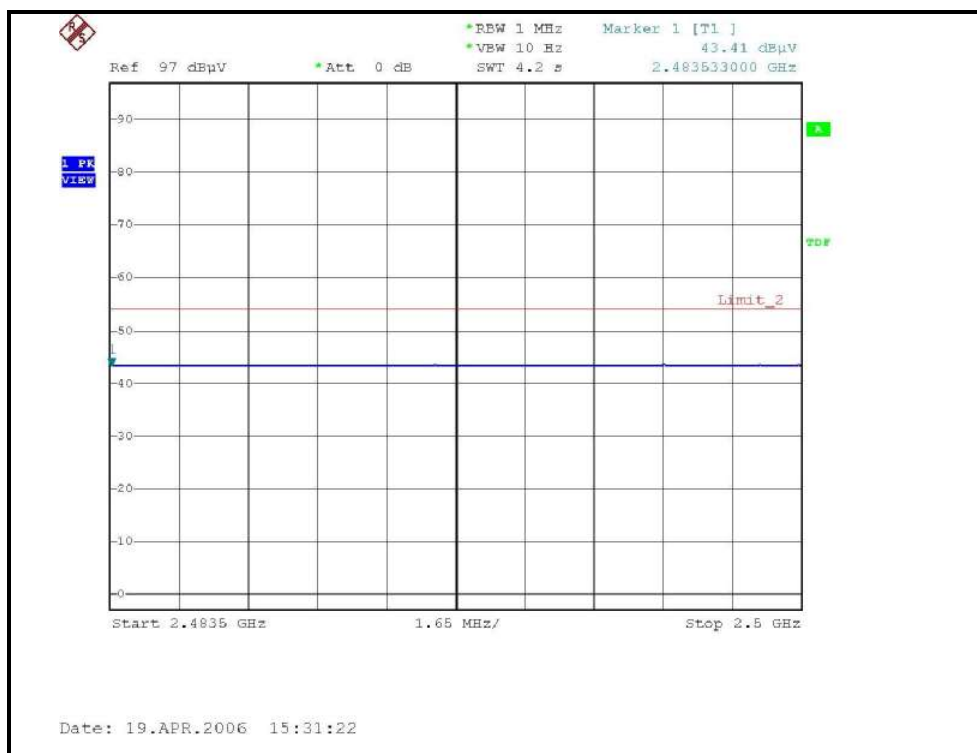
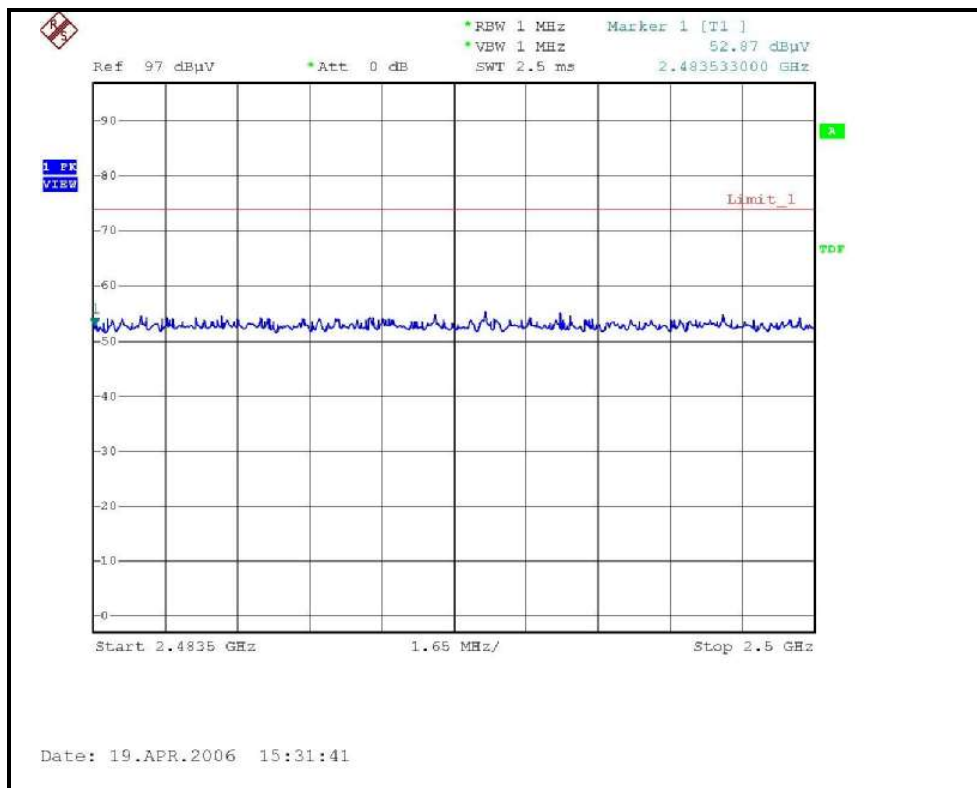
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL )



RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL )

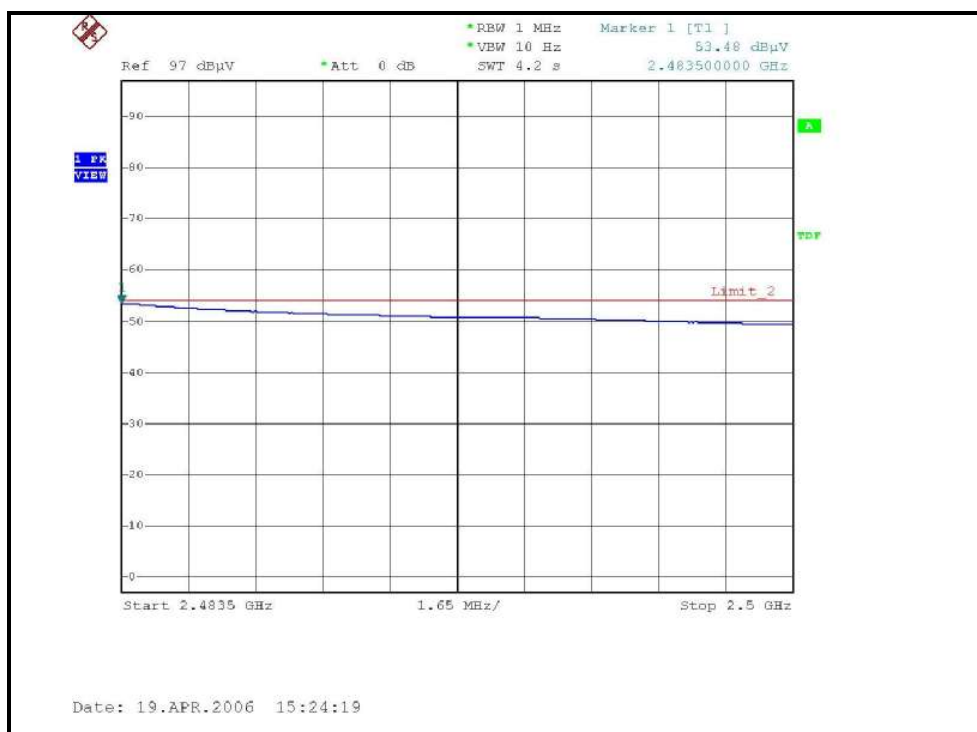
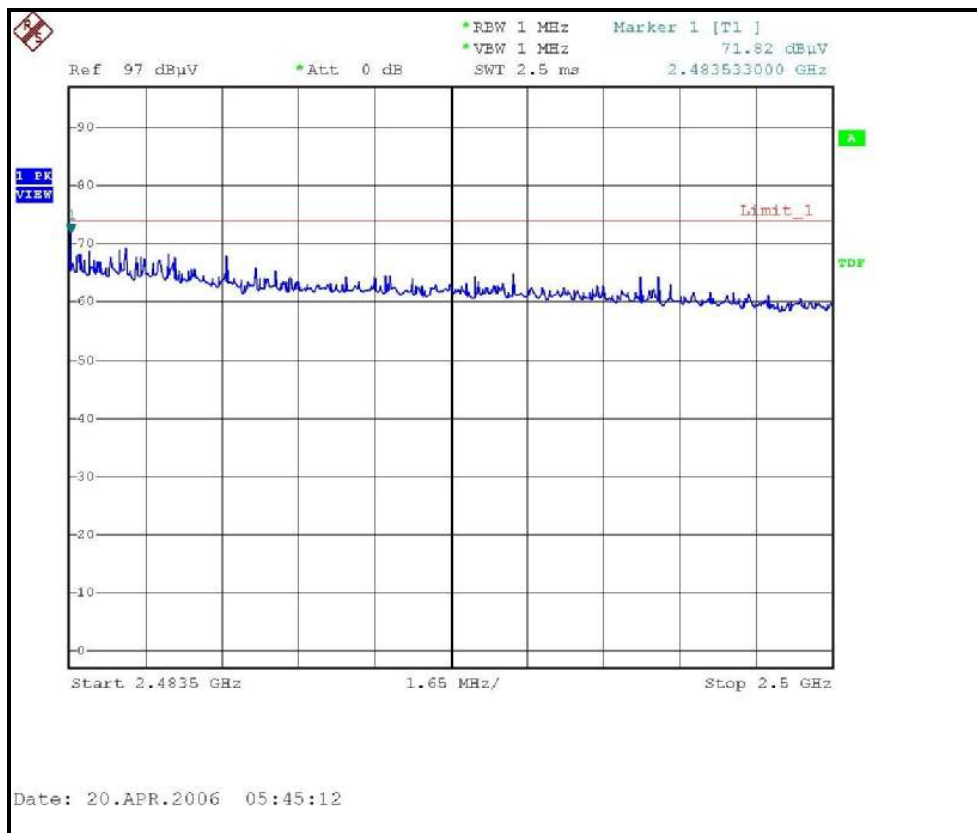


# RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL )





RESTRICTED BANDEDGE (802.11g MODE, CH11, VERTICAL )



### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

**NOTE:**

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.3.5 TEST SETUP



### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

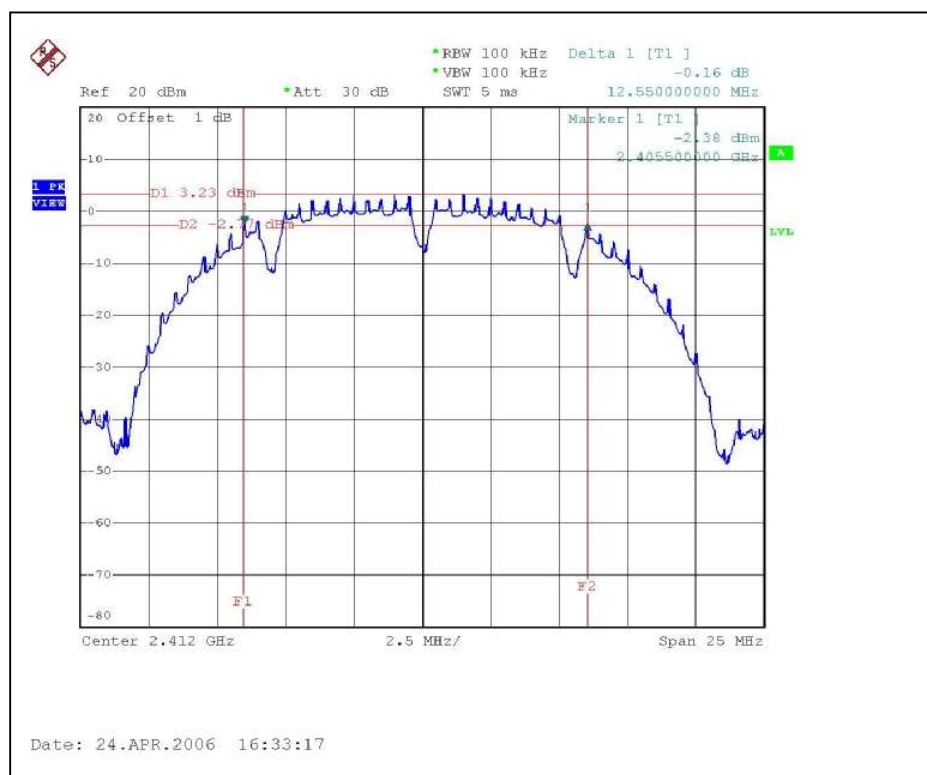
### 4.3.7 TEST RESULTS (ANTENNA 1)

#### 802.11b DSSS modulation

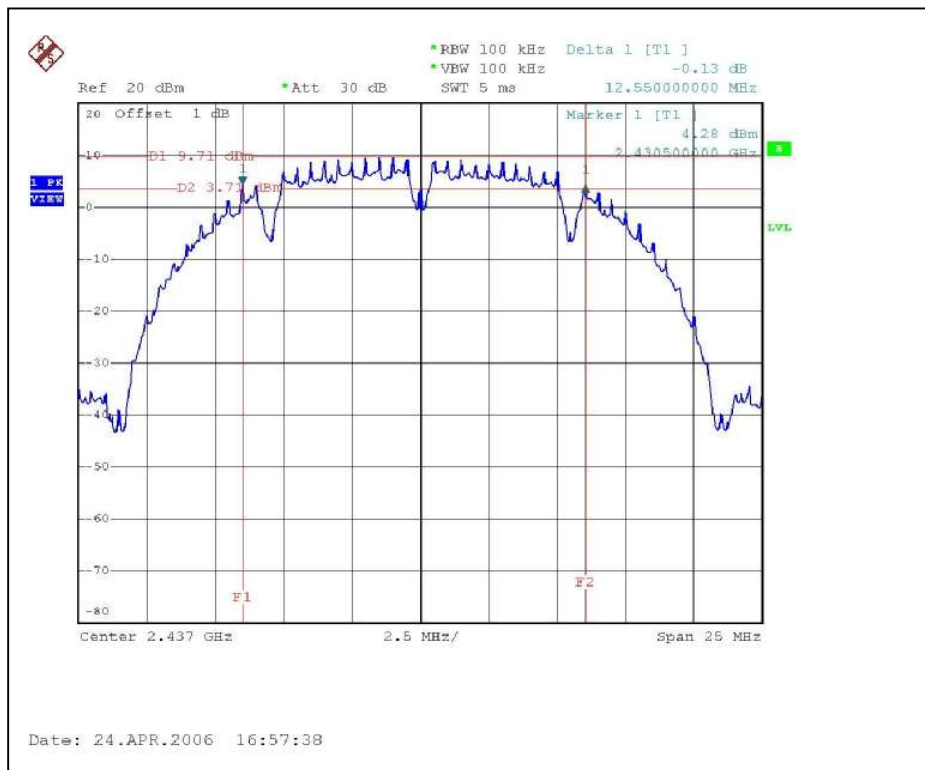
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.55	0.5	PASS
6	2437	12.55	0.5	PASS
11	2462	12.55	0.5	PASS

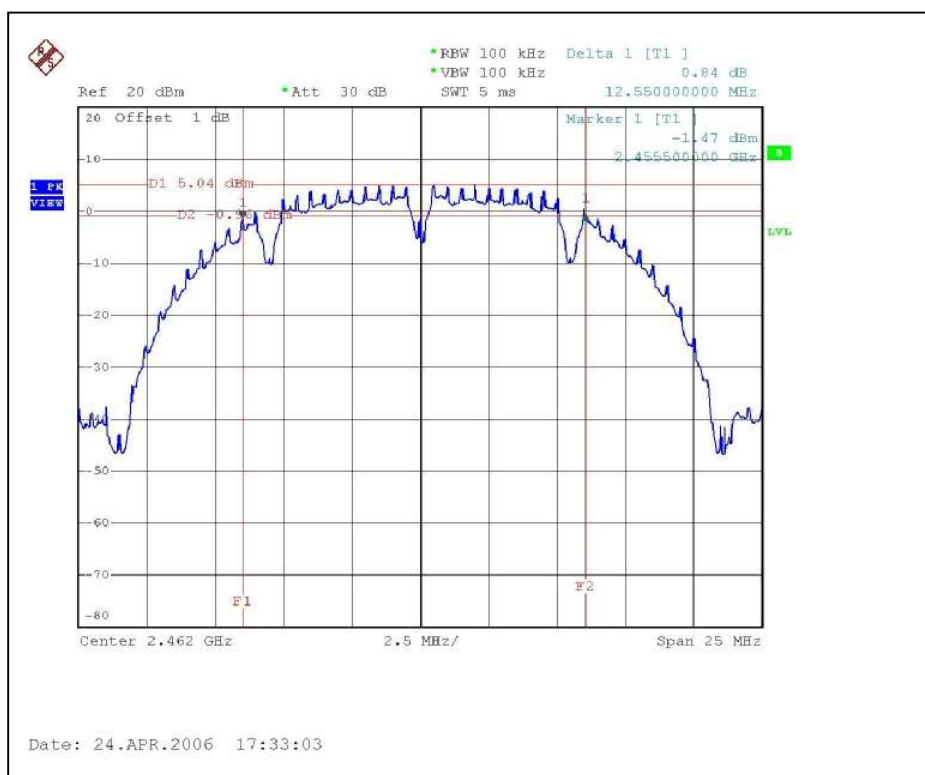
#### CH1



### CH6



### CH11

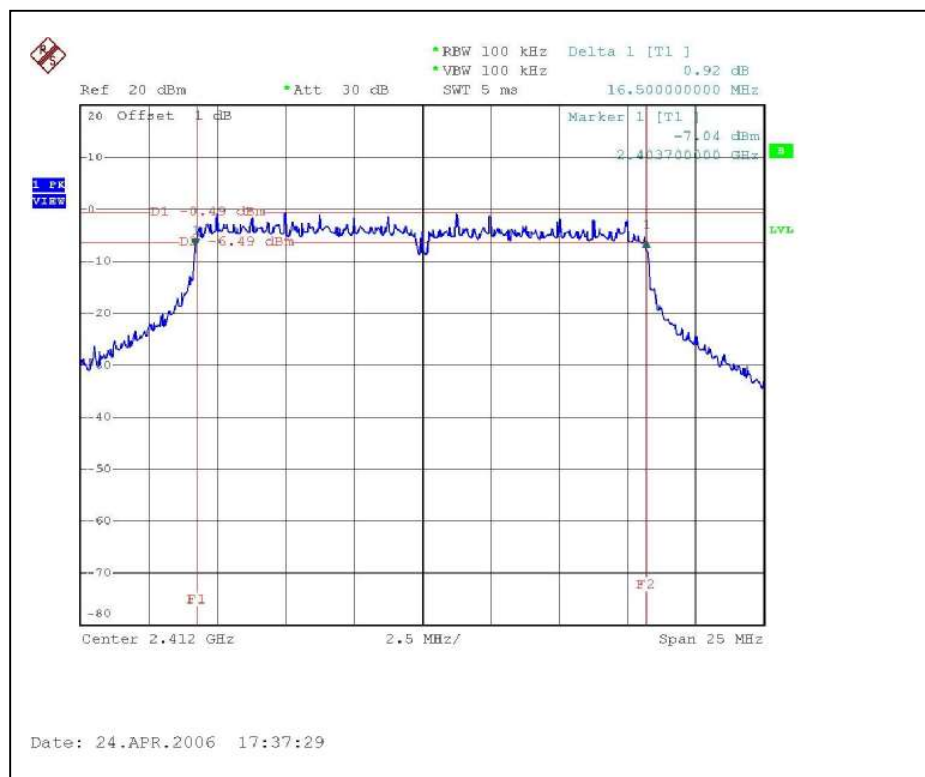


### 802.11g OFDM modulation

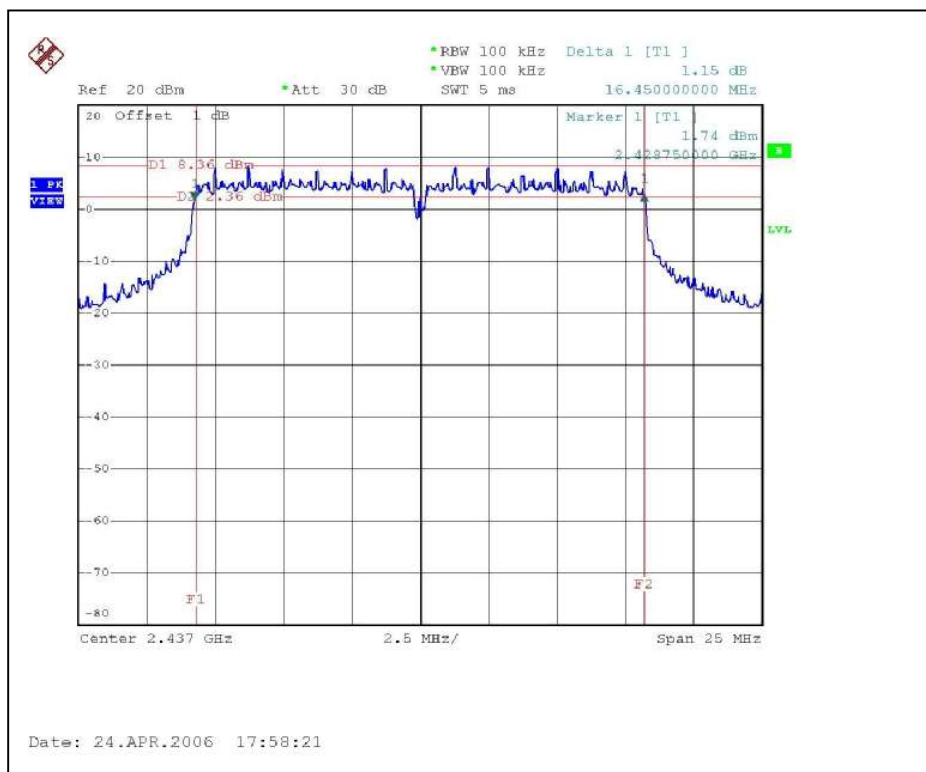
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.50	0.5	PASS
6	2437	16.45	0.5	PASS
11	2462	16.50	0.5	PASS

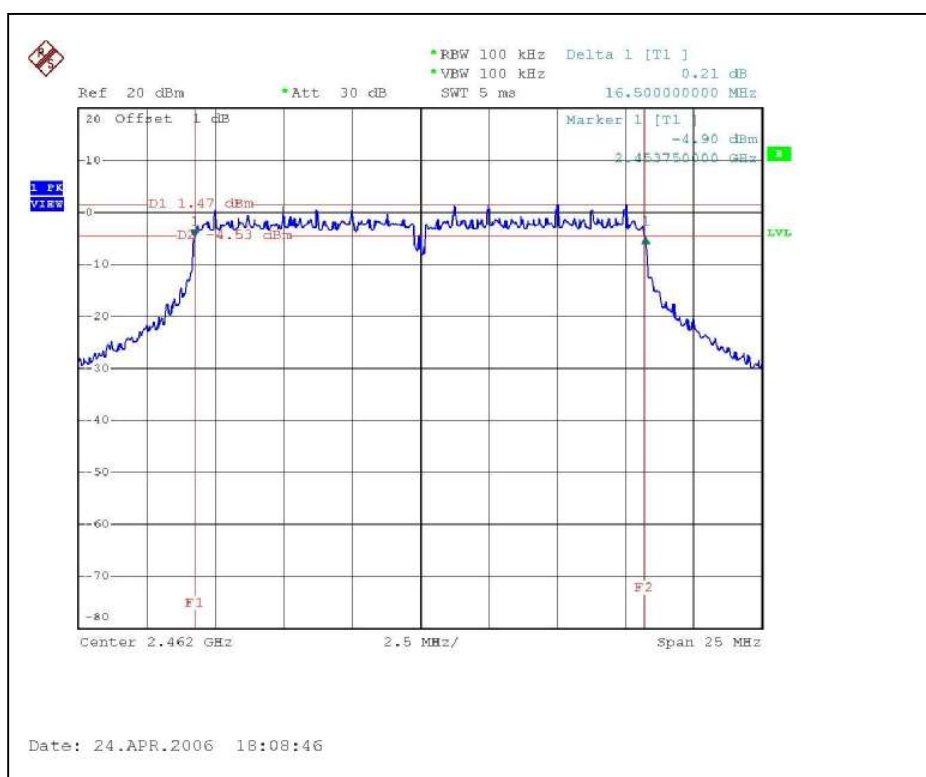
### CH1



CH6



CH11



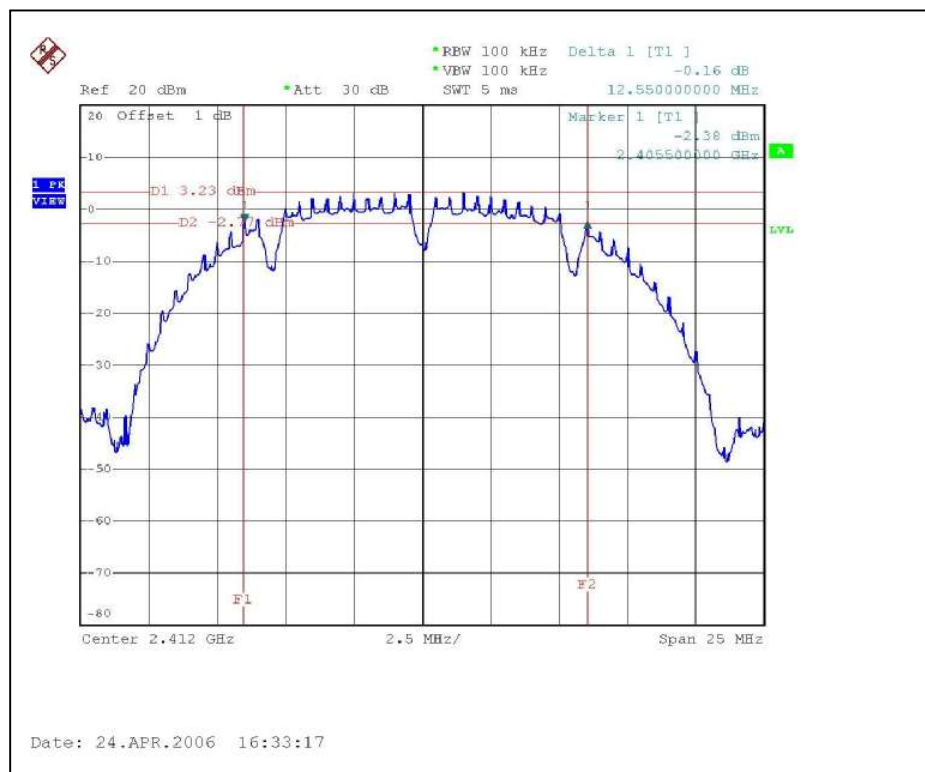
### 4.3.8 TEST RESULTS (ANTENNA 2)

#### 802.11b DSSS modulation

<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

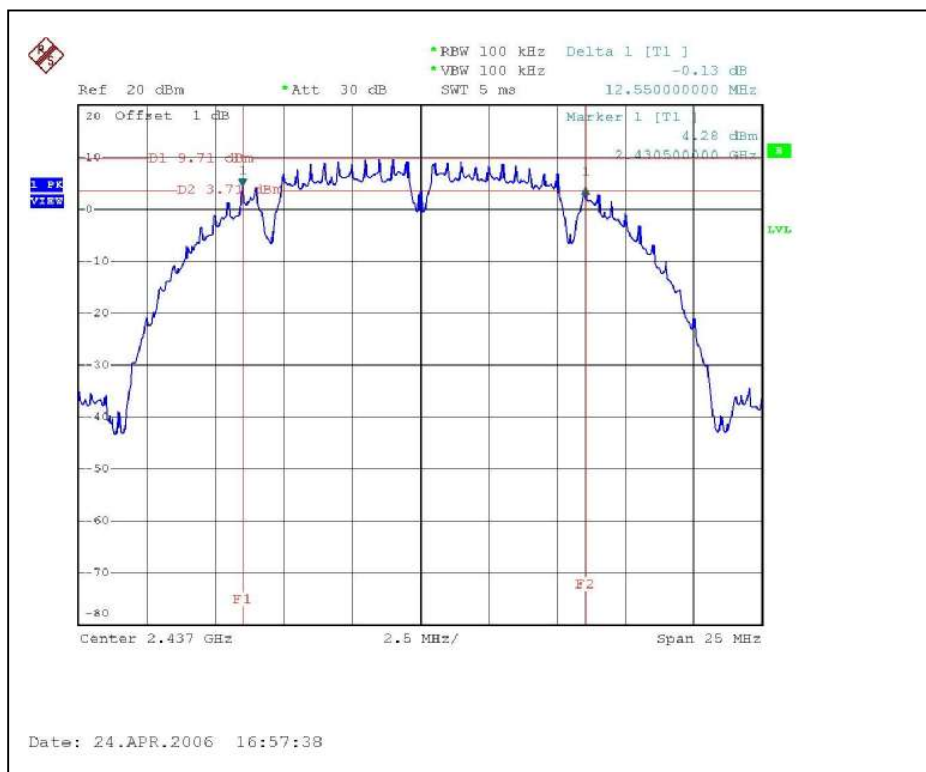
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.55	0.5	PASS
6	2437	12.55	0.5	PASS
11	2462	12.55	0.5	PASS

#### CH1

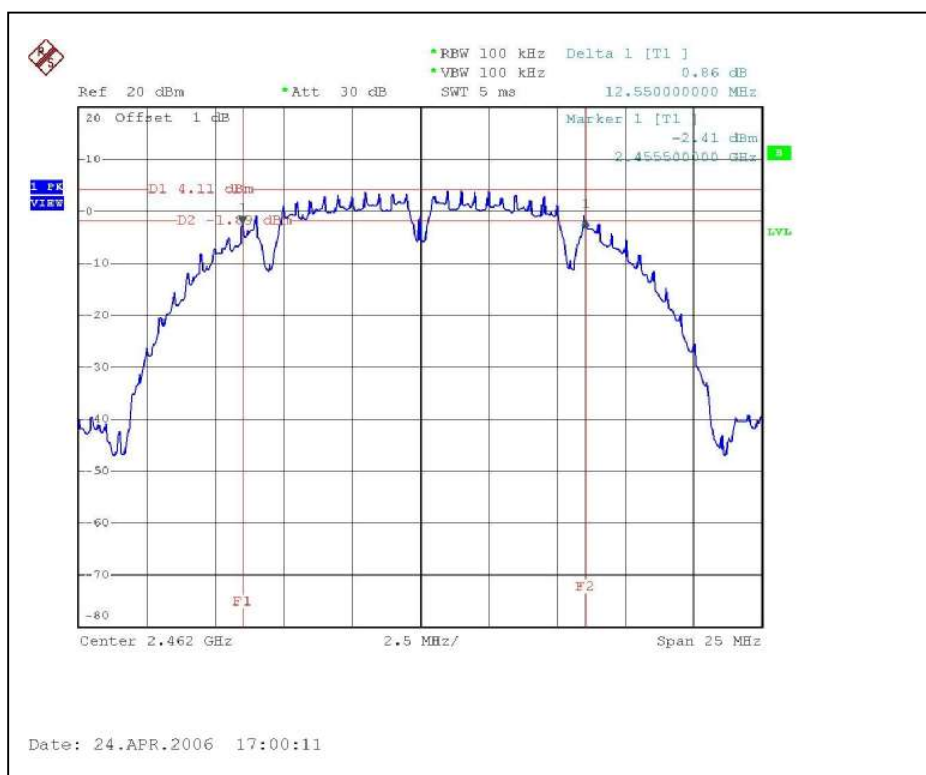




### CH6



### CH11

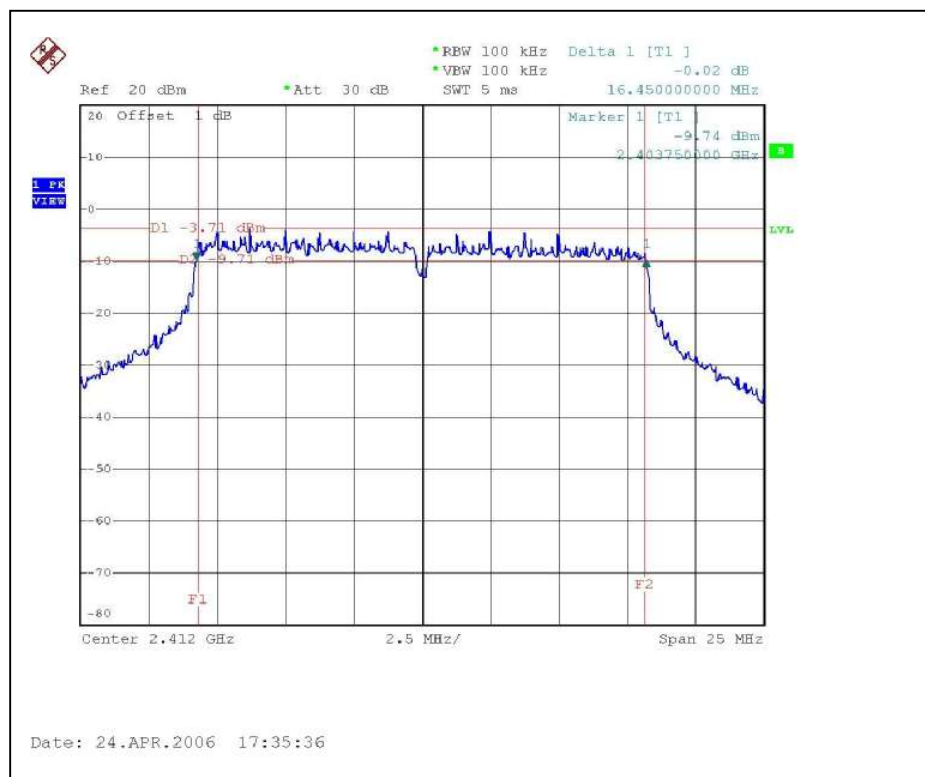


### 802.11g OFDM modulation

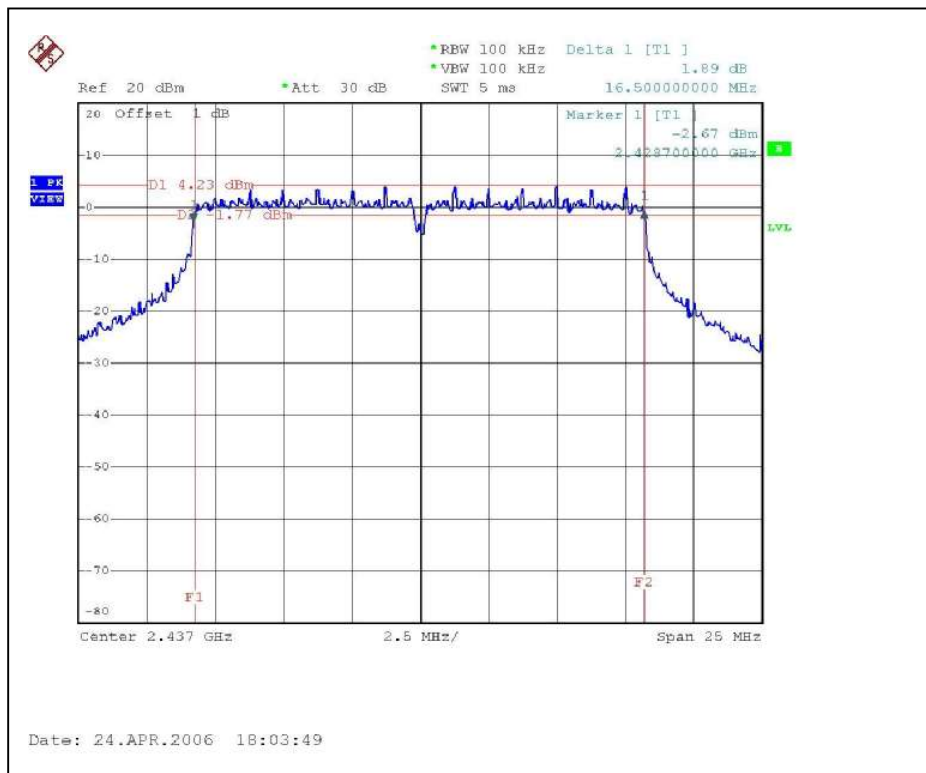
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.45	0.5	PASS
6	2437	16.50	0.5	PASS
11	2462	16.50	0.5	PASS

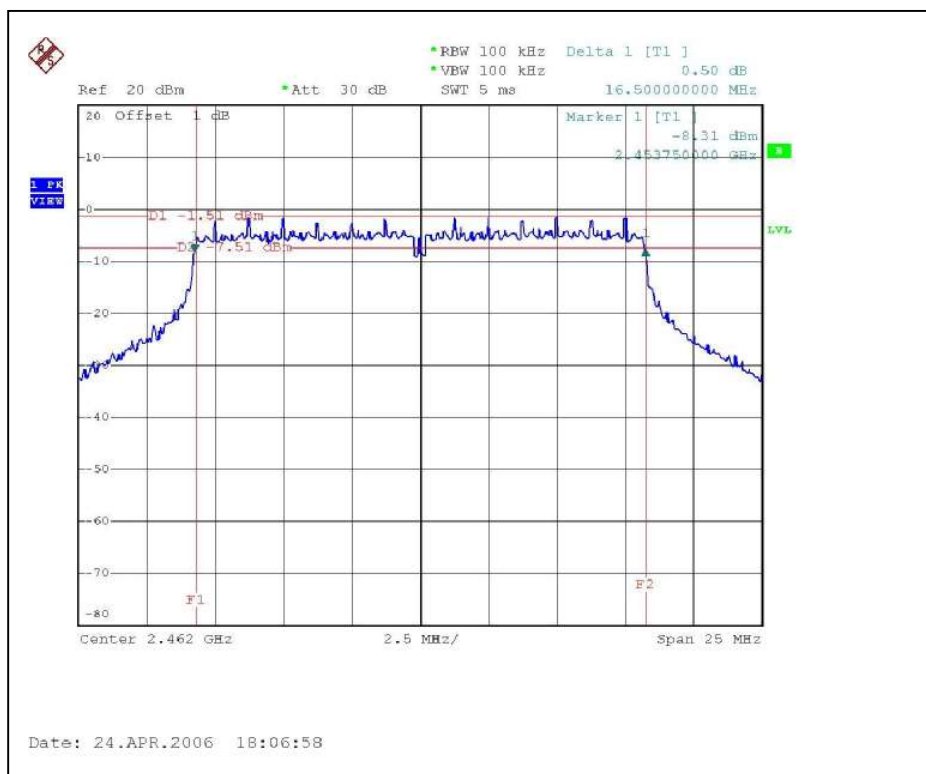
### CH1



### CH6



### CH11





#### 4.4 MAXIMUM PEAK OUTPUT POWER

##### 4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

##### 4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006
Agilent SIGNAL GENERATOR	E8257C	MY43320668	Dec. 07, 2006
TEKTRONIX OSCILLOSCOPE	TDS380	B016335	Jun. 22, 2006
NARDA DETECTOR	4503A	FSCM99899	NA

**NOTE:**

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

#### 4.4.7 TEST RESULTS (ANTENNA 1)

##### 802.11b DSSS modulation

<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

Antenna (Gain : 8.0 dBi) +Cable loss (1.07dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	22.909	13.6	29.07	PASS
6	2437	123.027	20.9	29.07	PASS
11	2462	35.481	15.5	29.07	PASS

##### 802.11g OFDM modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

Antenna (Gain : 8.0 dBi) +Cable loss (1.07dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	38.019	15.8	29.07	PASS
6	2437	177.828	22.5	29.07	PASS
11	2462	53.703	17.3	29.07	PASS

#### 4.4.8 TEST RESULTS (ANTENNA 2)

##### 802.11b DSSS modulation

<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

Antenna (Gain : 10.0 dBi) +Cable loss (1.07dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	20.893	13.2	27.07	PASS
6	2437	123.027	20.9	27.07	PASS
11	2462	33.884	15.3	27.07	PASS

##### 802.11g OFDM modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

Antenna (Gain : 10.0 dBi) +Cable loss (1.07dB)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.488	11.9	27.07	PASS
6	2437	120.226	20.8	27.07	PASS
11	2462	30.200	14.8	27.07	PASS



## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

**NOTE:**

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



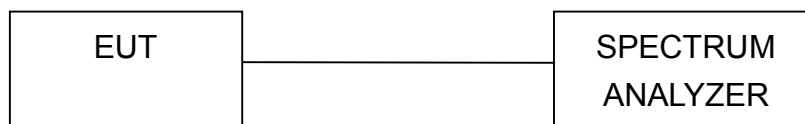
#### 4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

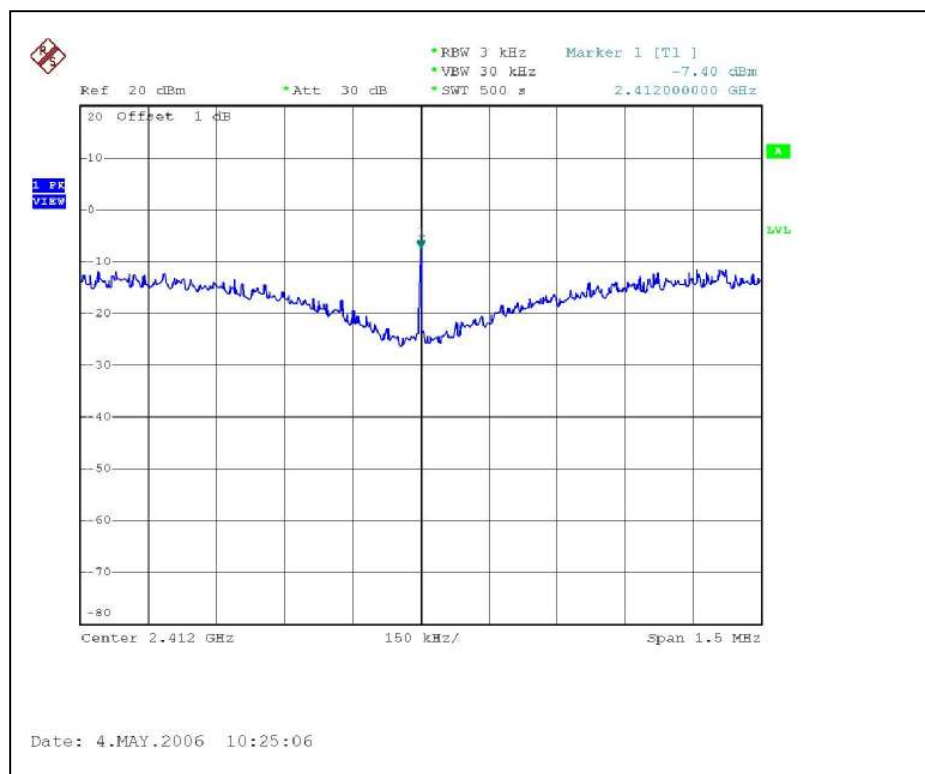
### 4.5.7 TEST RESULTS (ANTENNA 1)

#### 802.11b DSSS modulation

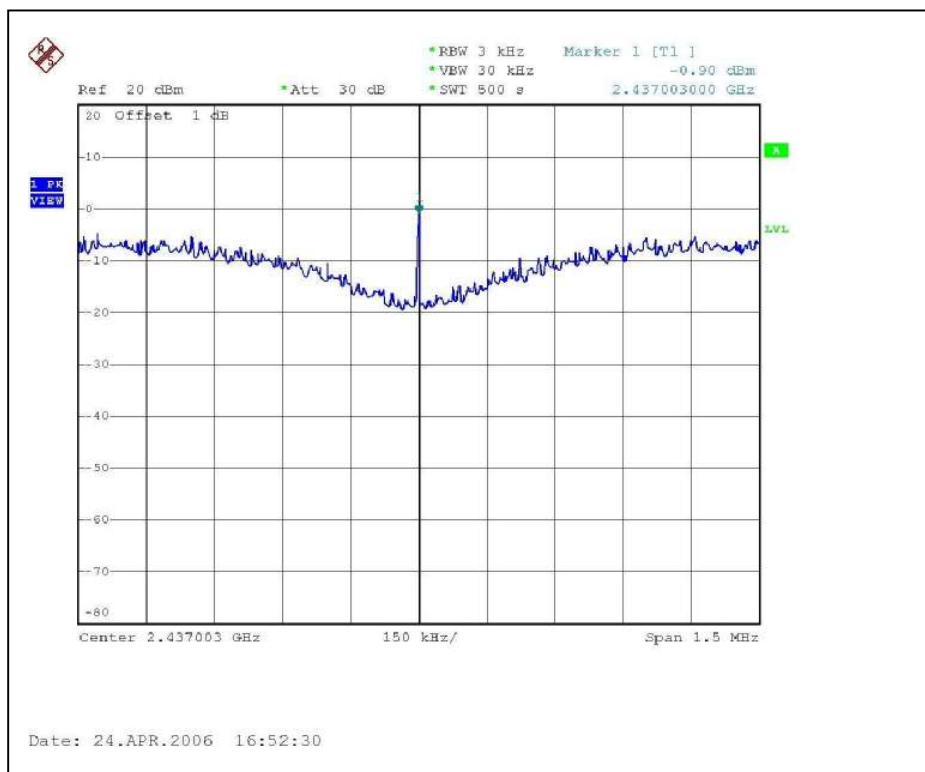
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-7.40	8	PASS
6	2437	-0.90	8	PASS
11	2462	-5.85	8	PASS

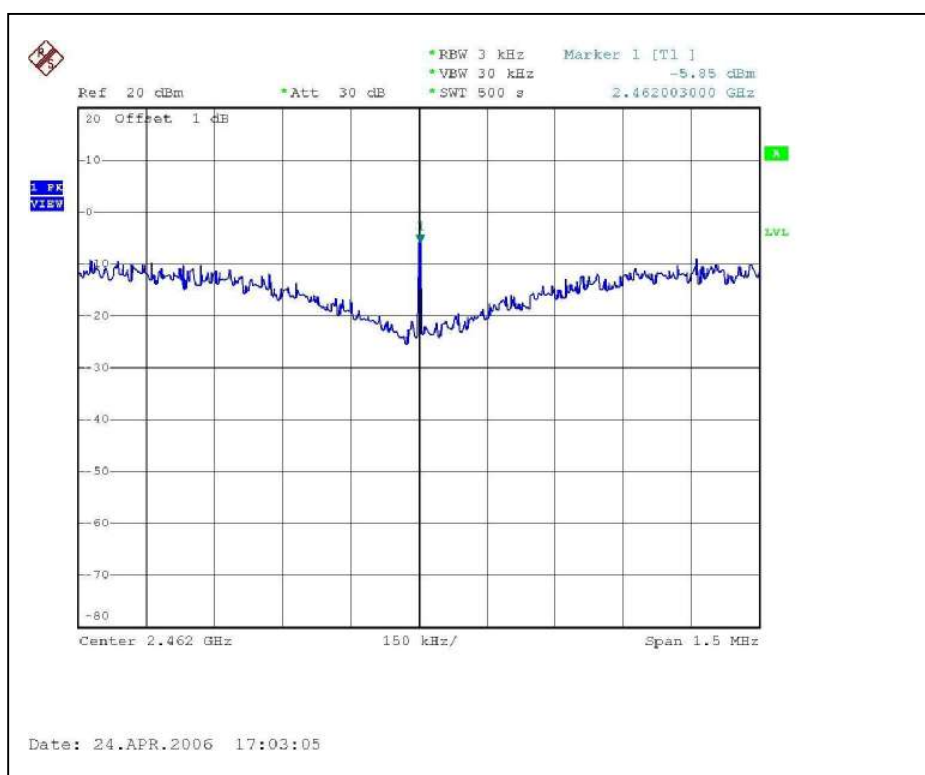
#### CH1



### CH6



### CH11

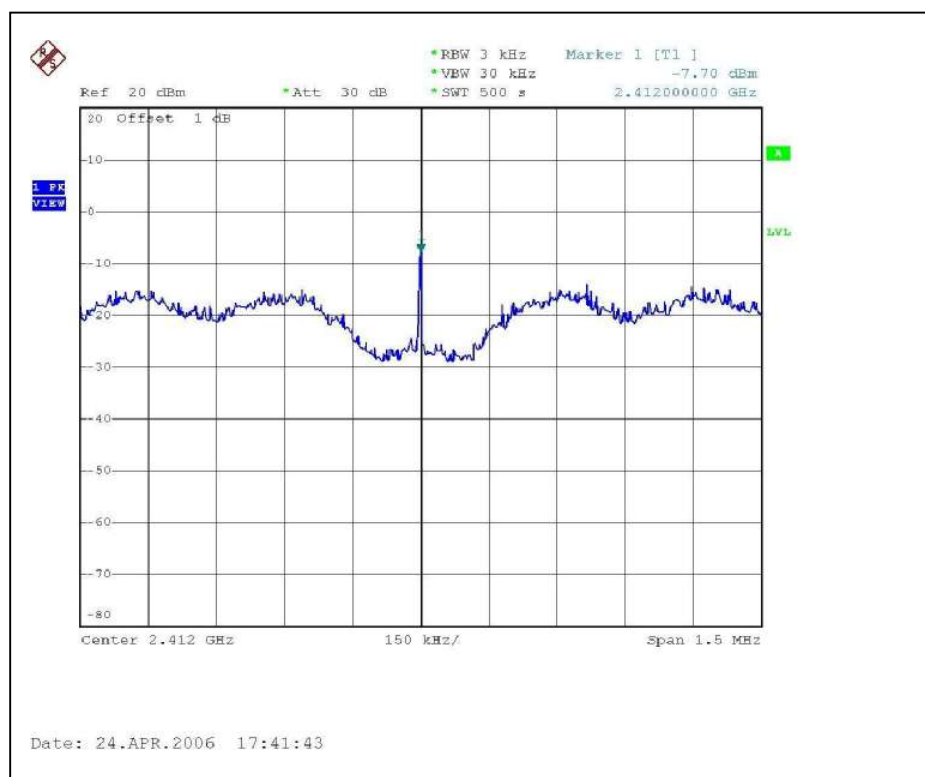


### 802.11g OFDM modulation

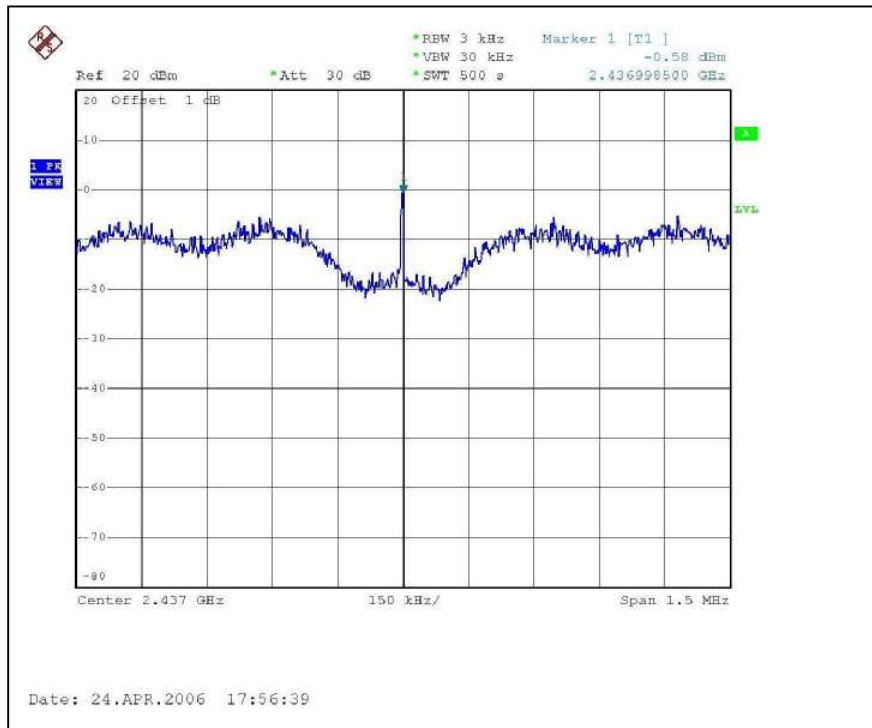
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-7.70	8	PASS
6	2437	-0.58	8	PASS
11	2462	-6.78	8	PASS

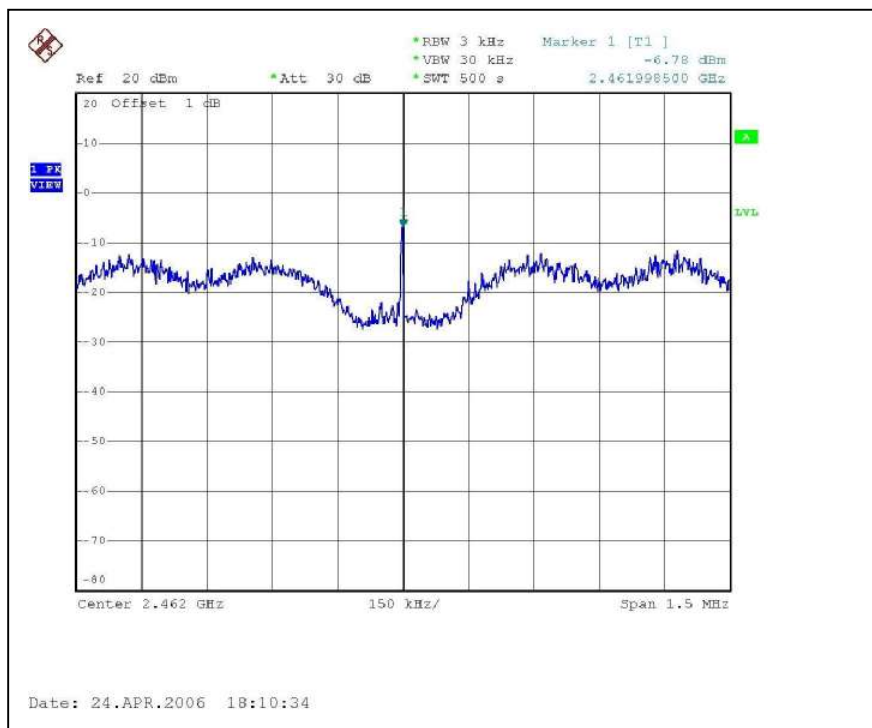
CH1



## CH6



## CH11



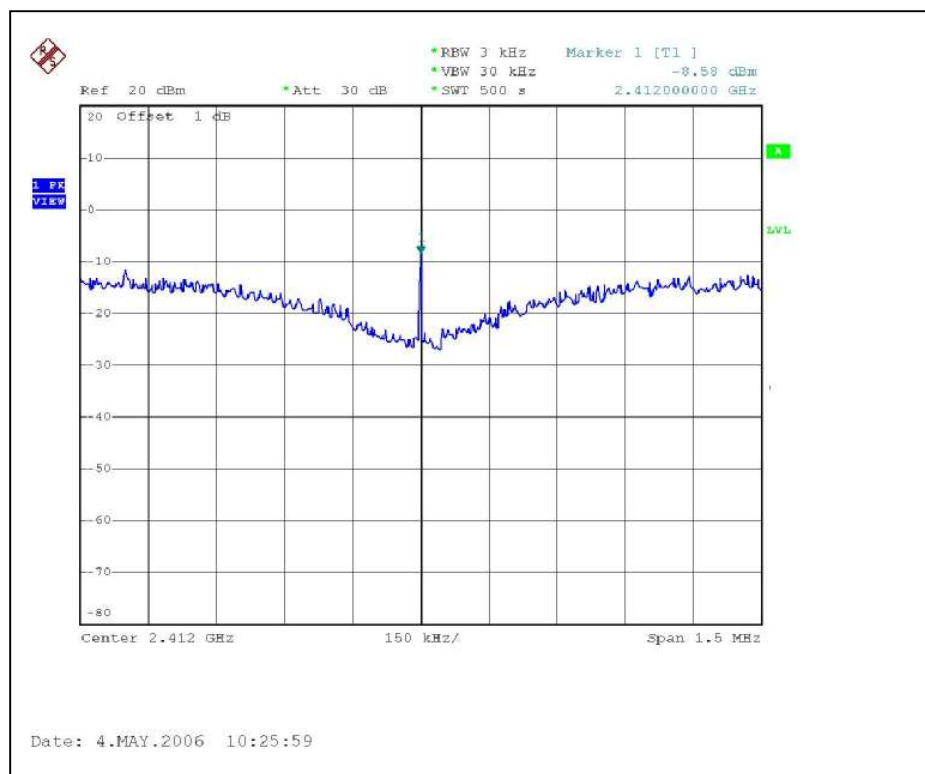
## 4.5.8 TEST RESULTS (ANTENNA 2)

### 802.11b DSSS modulation

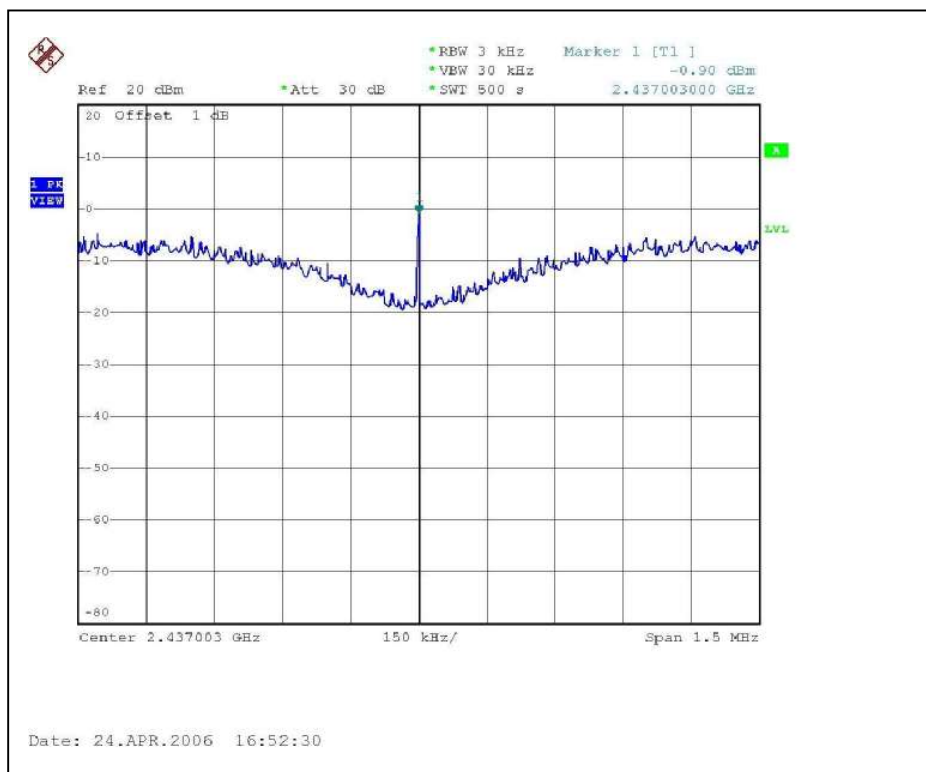
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-8.58	8	PASS
6	2437	-0.90	8	PASS
11	2462	-6.22	8	PASS

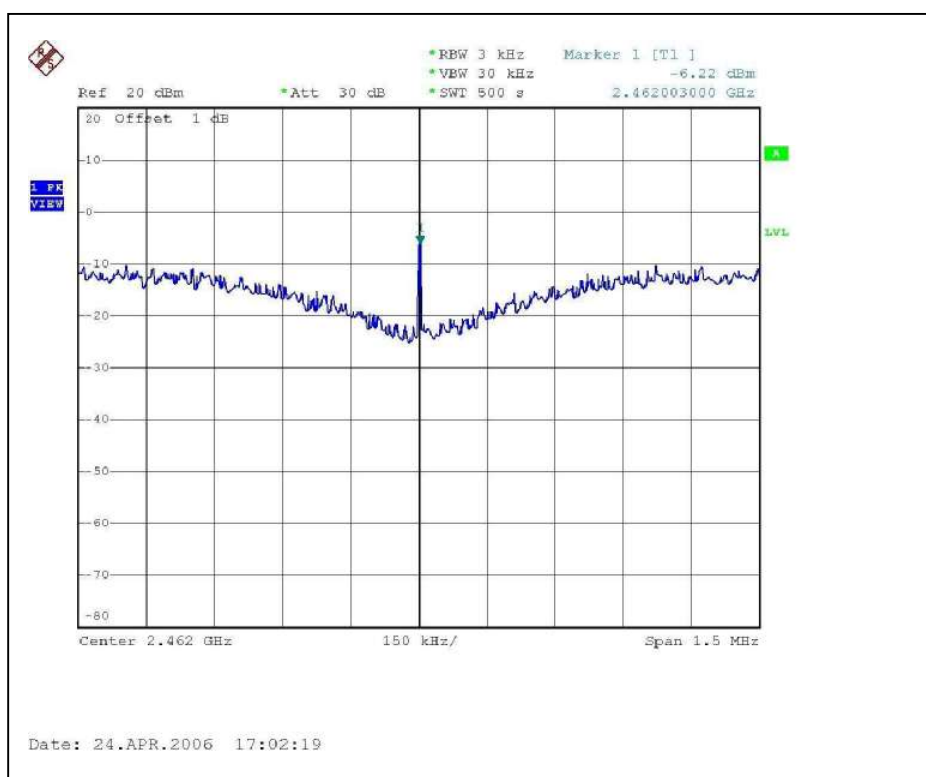
### CH1



### CH6



### CH11

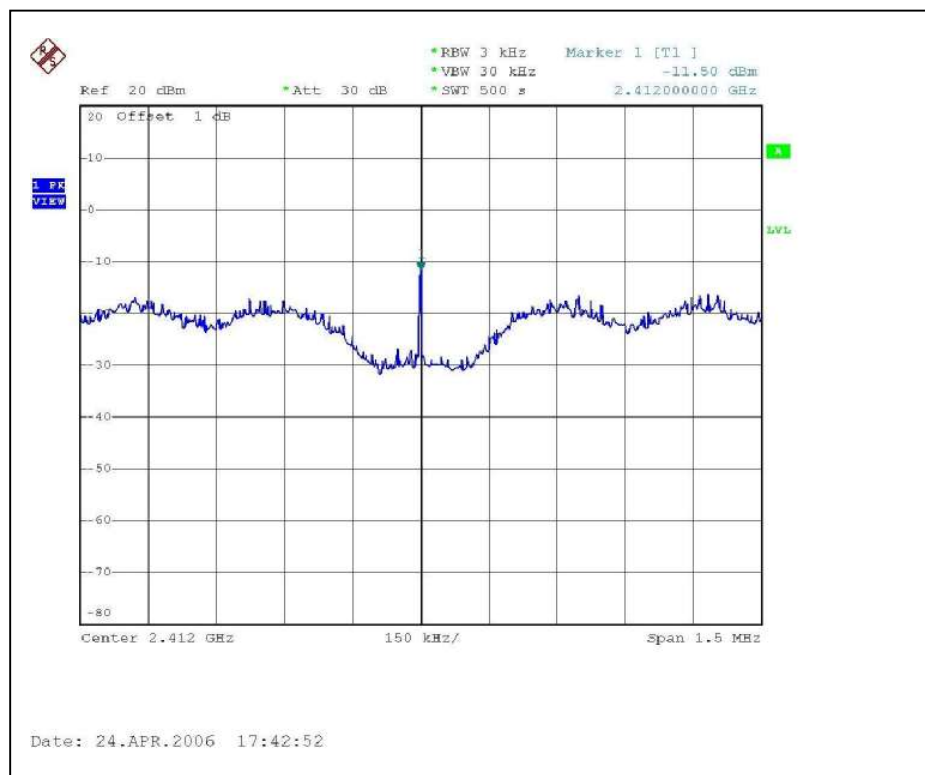


### 802.11g OFDM modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa
<b>TESTED BY</b>	Rex Huang		

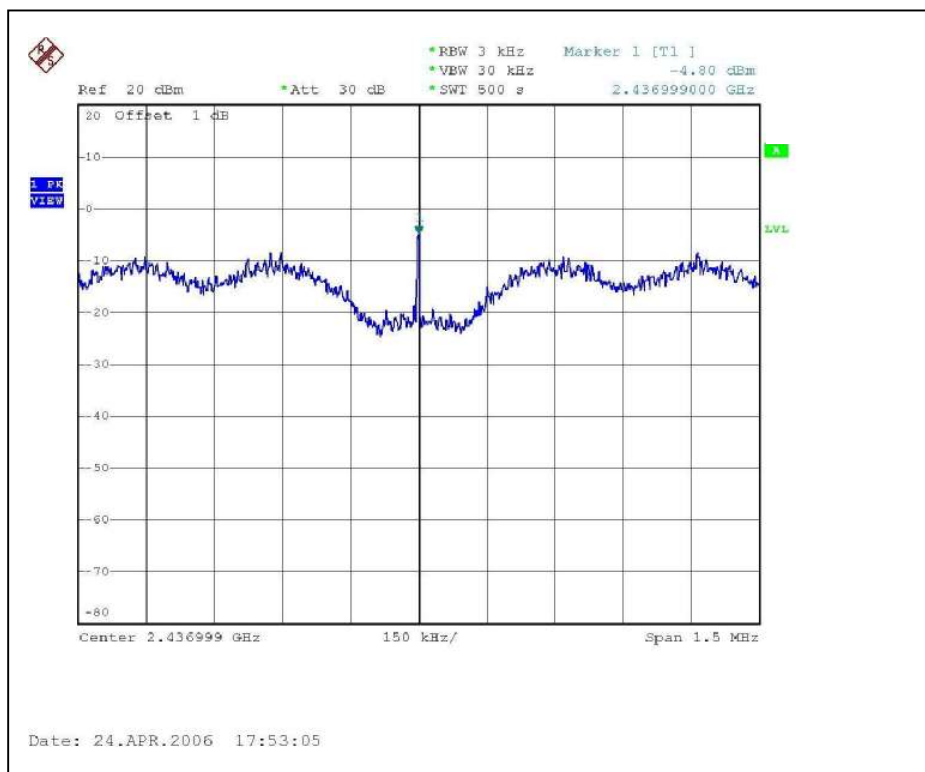
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.50	8	PASS
6	2437	-4.80	8	PASS
11	2462	-8.41	8	PASS

CH1

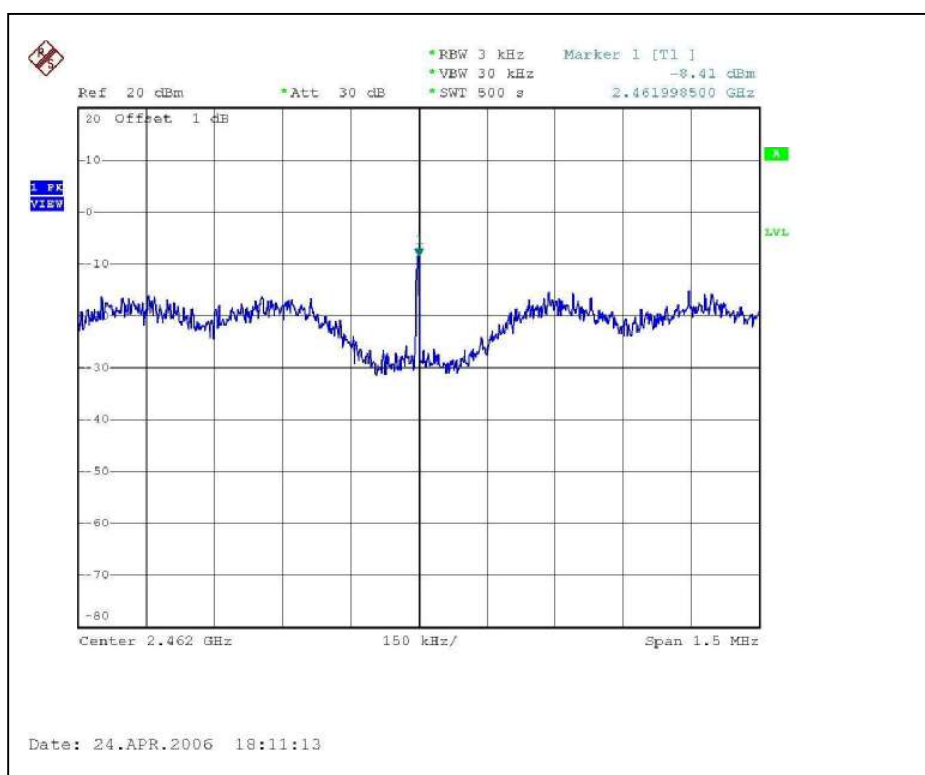




### CH6



### CH11



## 4.6 CONDUCTED EMISSION AND BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED EMISSION AND BAND EDGES MEASUREMENT

Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2006

#### NOTE:

1. The measurement uncertainty is less than  $\pm 2.6\text{dB}$ , which is calculated as per the NAMAS document NIS81. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges were measured and recorded.

The spectrum plots (RBW = VBW = 100kHz) are attached on the following pages.

### 4.6.4 EUT OPERATING CONDITION

Same as Item 4.3.5

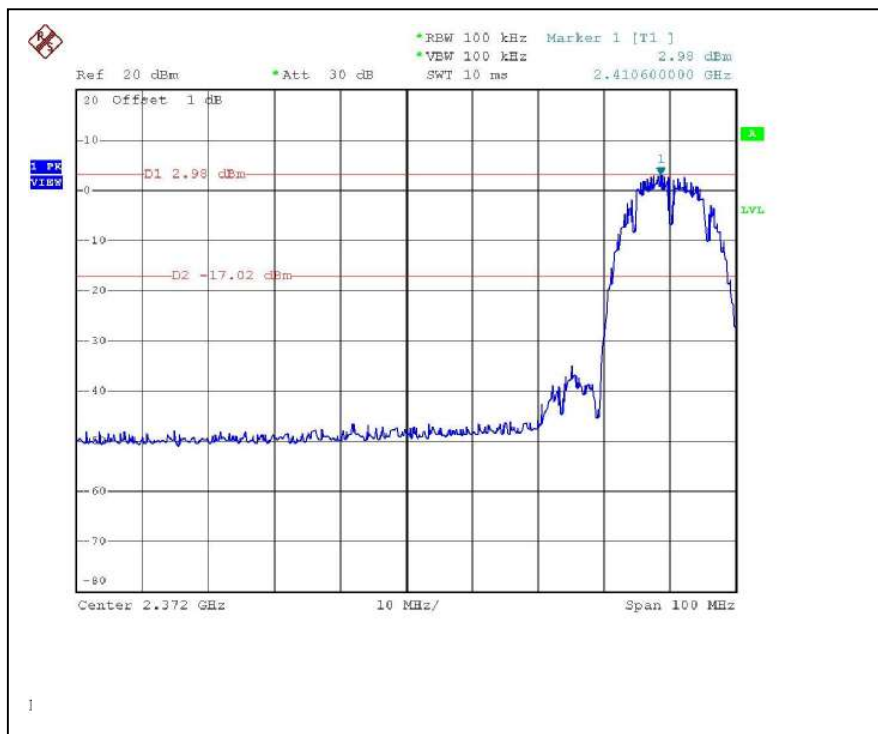


#### 4.6.5 TEST RESULTS (ANTENNA 1)

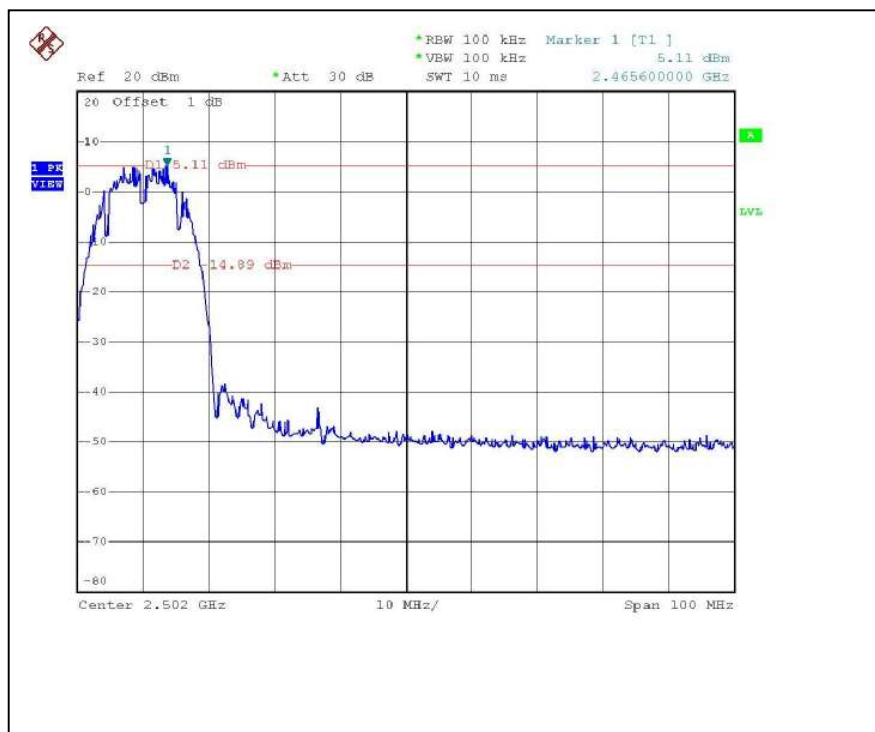
The spectrum plots are attached on the following 8 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

## 802.11b DSSS MODULATION:

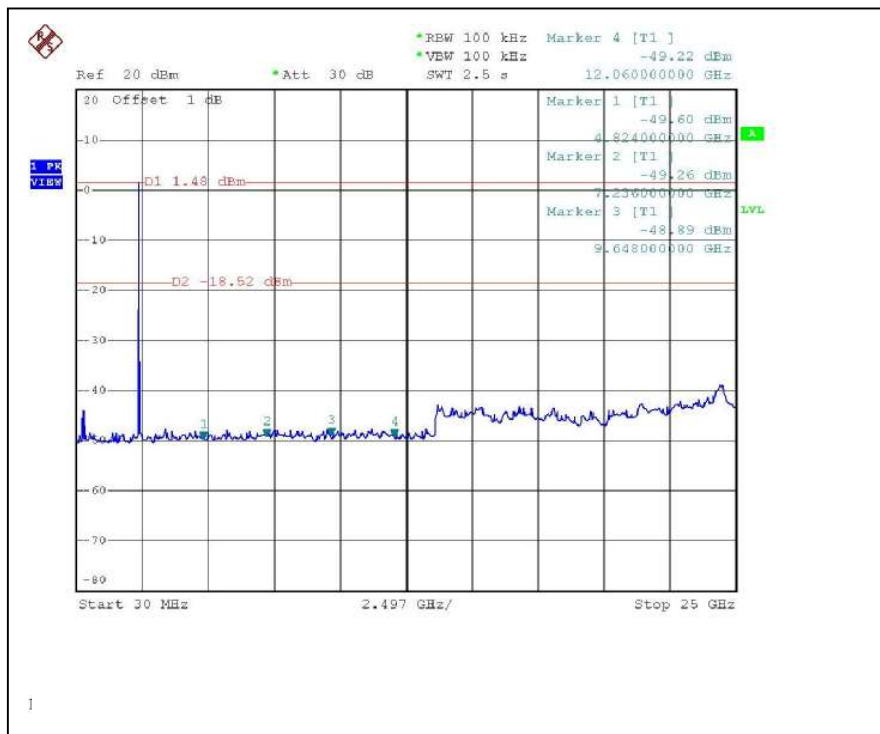
CH1



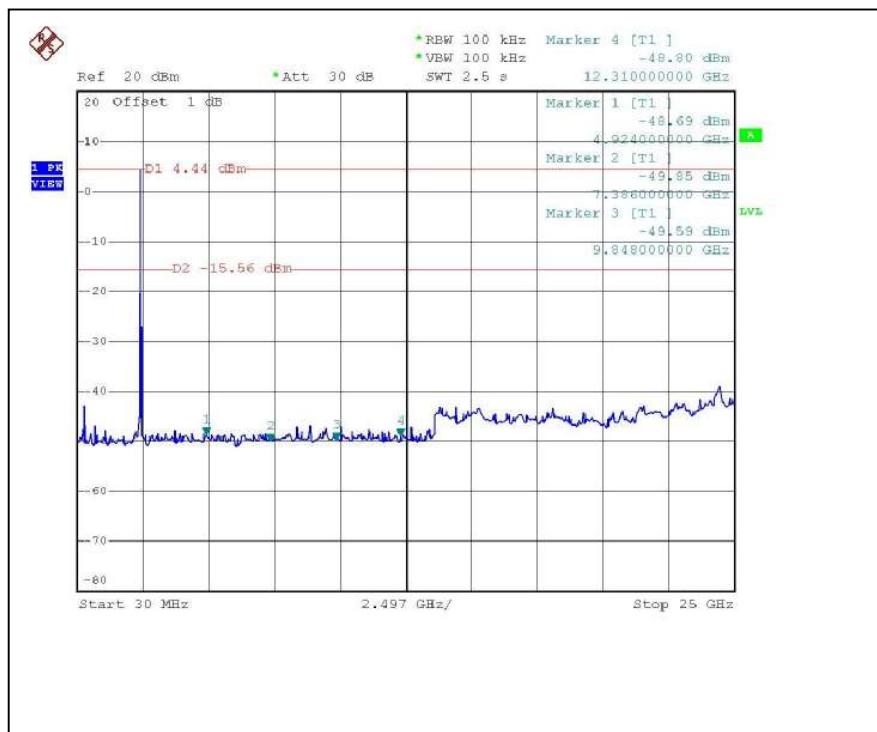
CH11



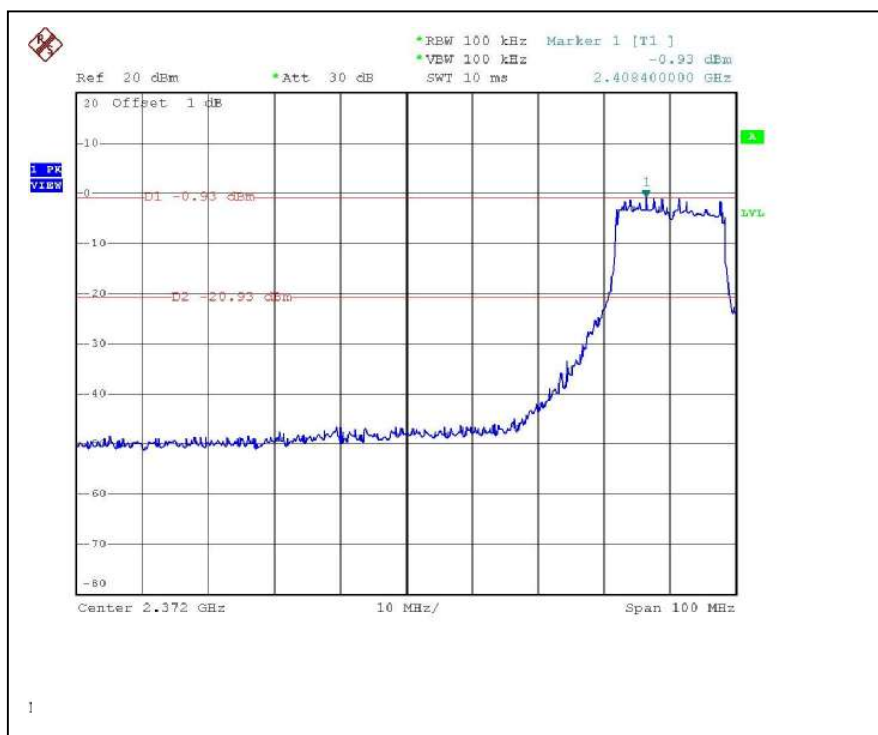
# CH1



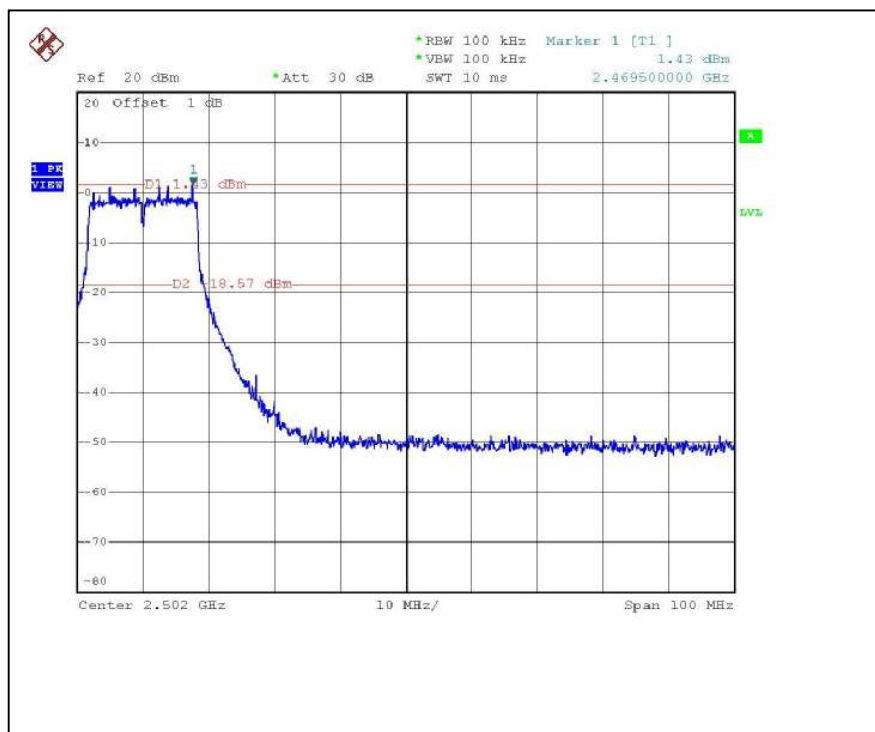
# CH11



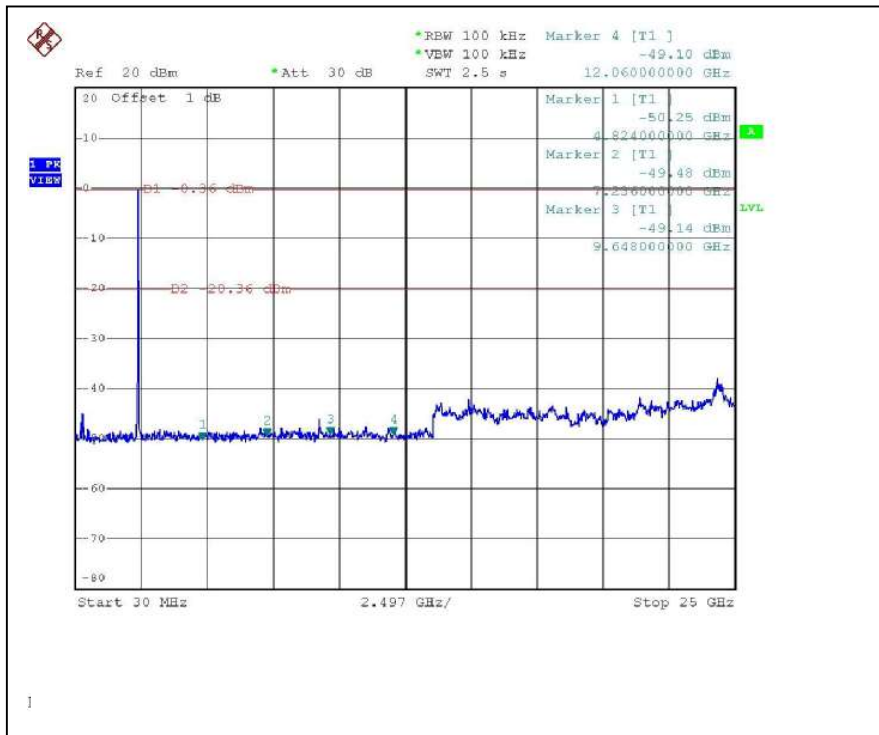
## 802.11g OFDM MODULATION: CH1



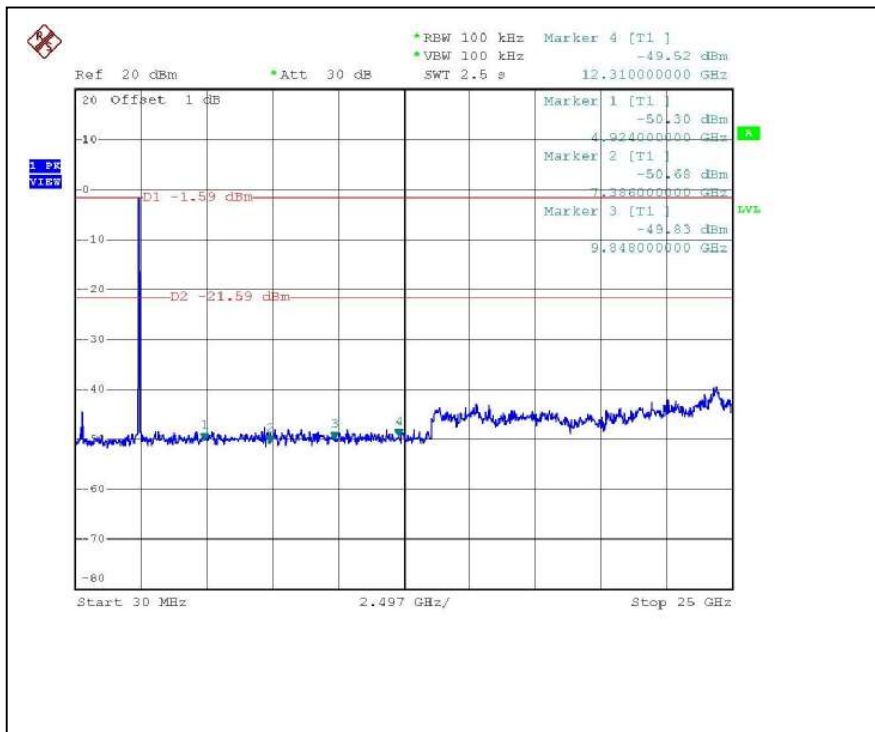
CH11



CH1



CH11





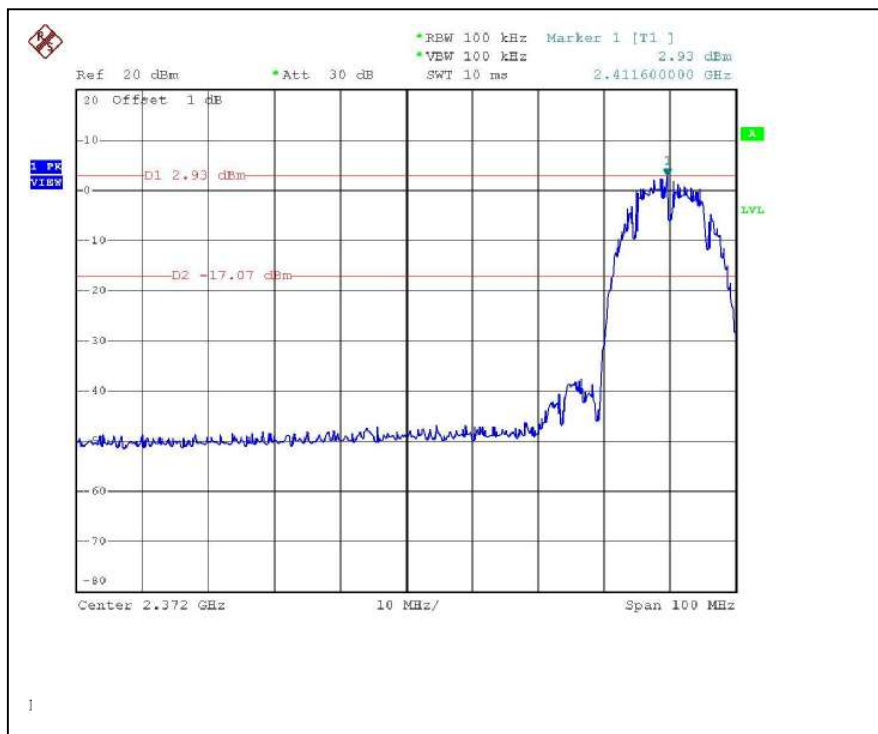
#### 4.6.6 TEST RESULTS (ANTENNA 2)

The spectrum plots are attached on the following 8 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

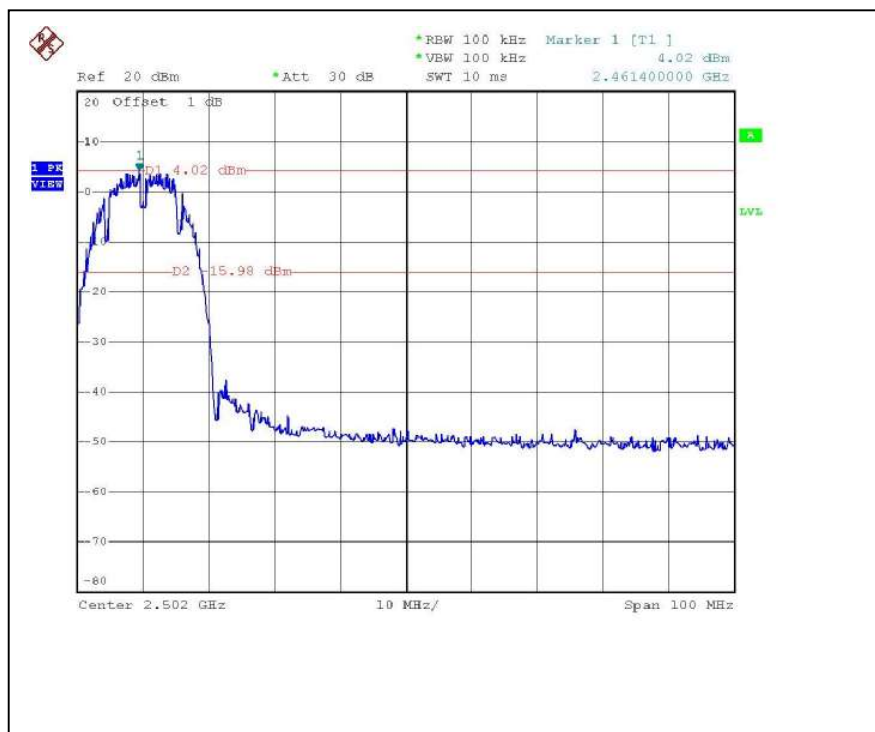


## 802.11b DSSS MODULATION:

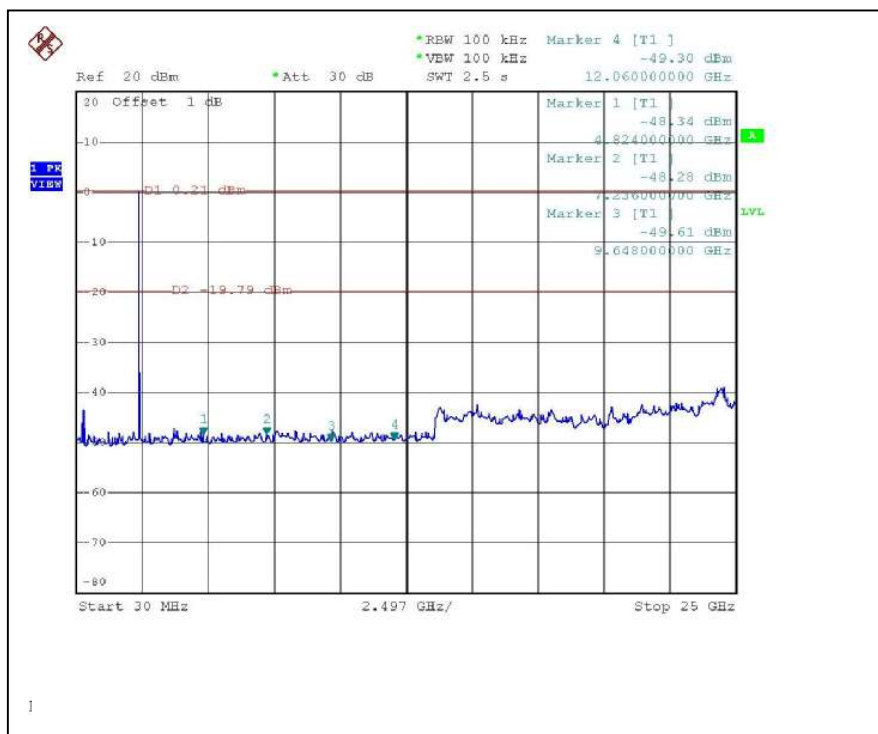
CH1



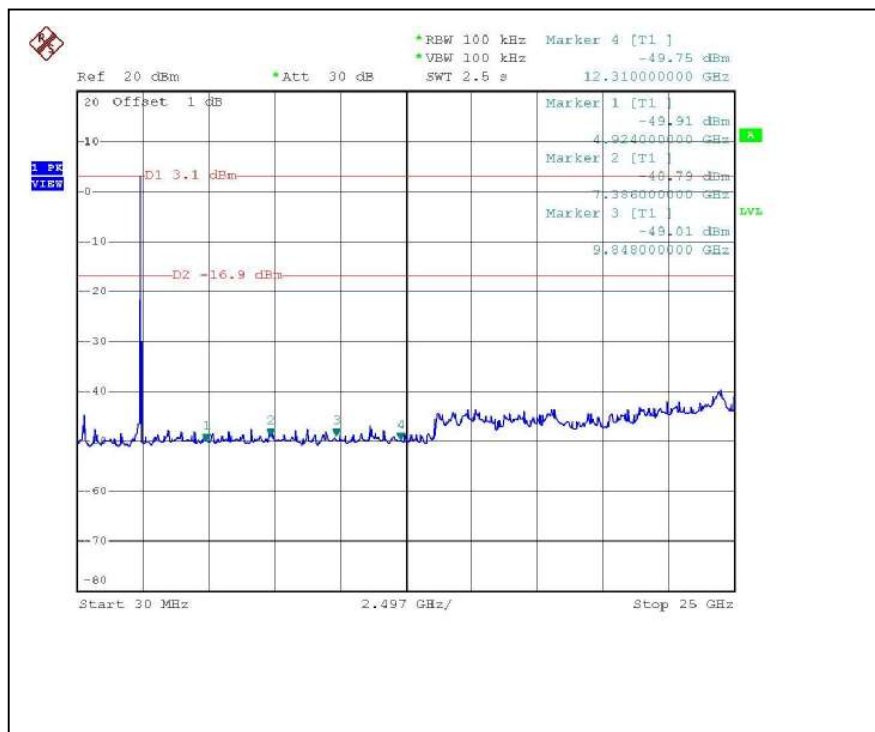
CH11



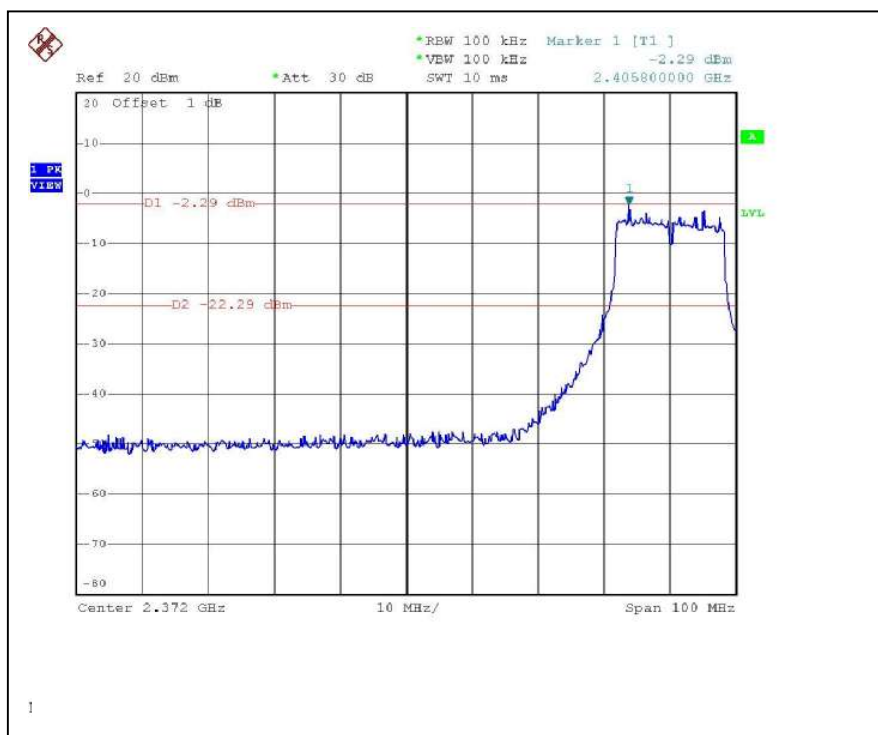
# CH1



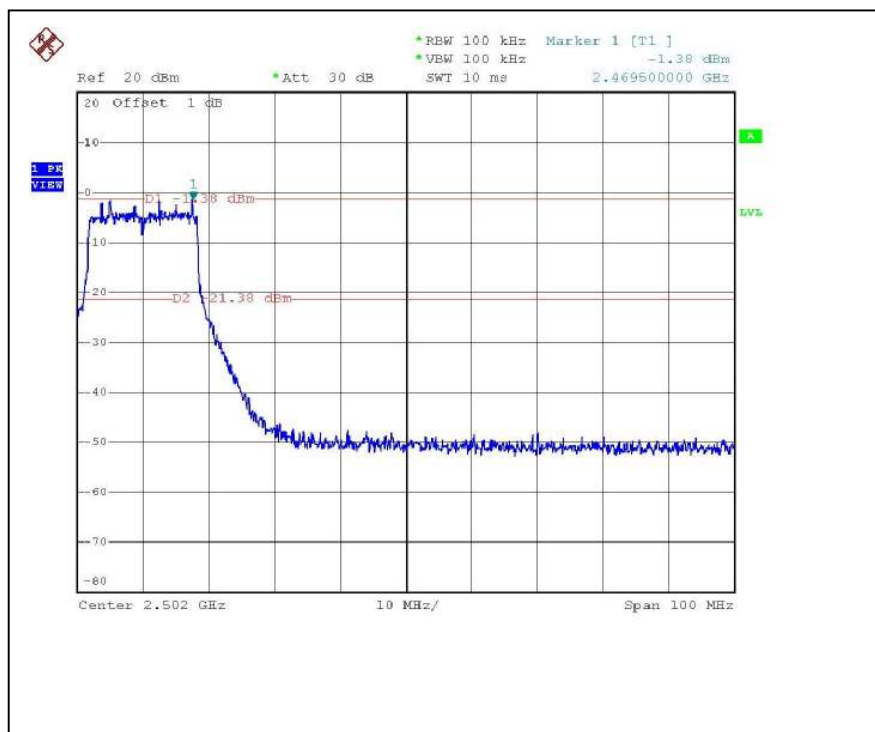
# CH11



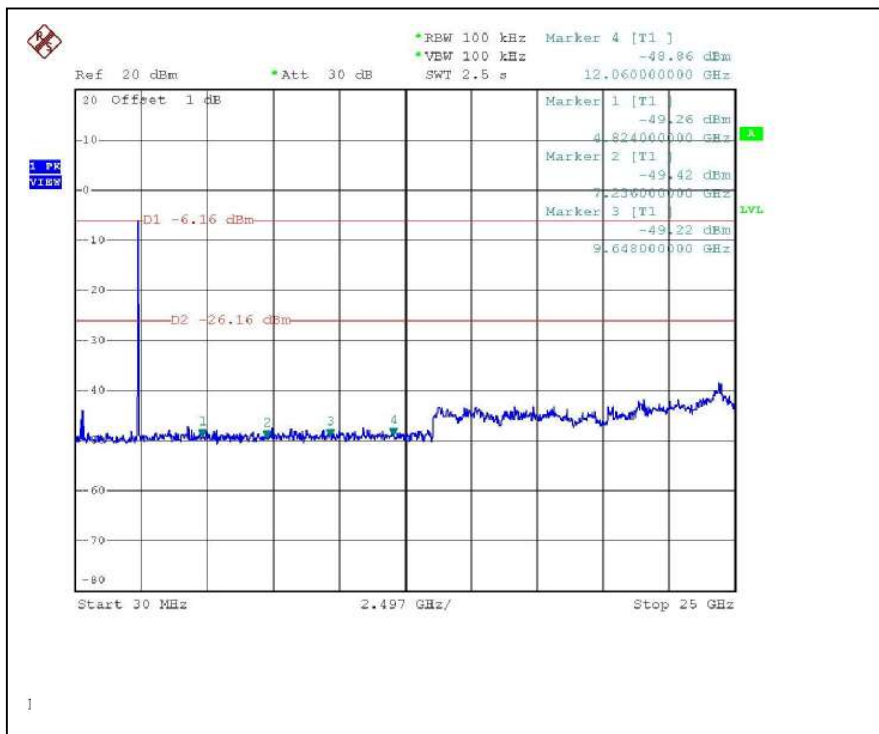
## 802.11g OFDM MODULATION: CH1



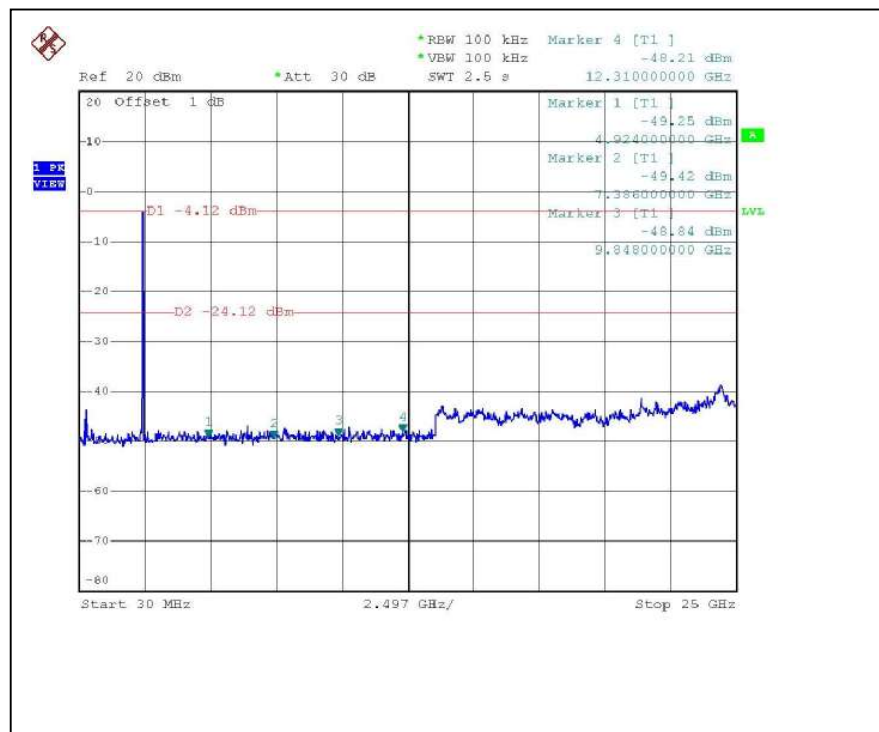
CH11



# CH1



# CH11



## 4.7 ANTENNA REQUIREMENT

### 4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are as below:

No.	Model No.	Gain (dBi)	min. Cable Loss (dB)	Net Gain (dB)	Antenna Type	Antenna Connector
1	ANT-1360-OUT	8.0	1.07	6.93	2.4GHz Dipole	N-type
2	ANT-1120-OUT	10.0	1.07	8.93	2.4GHz 120° Sector	N-type