



# FCC TEST REPORT (15.247)

**REPORT NO.:** RF930507H07P  
**MODEL NO.:** MP-620  
**RECEIVED:** Nov. 23, 2005  
**TESTED:** Dec. 04 to 16, 2005  
**ISSUED:** Dec. 20, 2005

**APPLICANT:** Trapeze Networks, Inc.

**ADDRESS:** 5753 W. Las Positas Blvd., Pleasanton, CA  
94588

**ISSUED BY:** Advance Data Technology Corporation

**TEST LOCATION:** No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung  
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien,  
Taiwan, R.O.C.

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0536

ILAC MRA



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:** ENGINEERING SAMPLE  
**TESTED:** Dec. 04 to 16, 2005  
**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:** Dec. 20, 2005  
 ( Carol Liao )

**TECHNICAL ACCEPTANCE :** Hank Chung , **DATE:** Dec. 20, 2005  
 Responsible for RF ( Hank Chung )

**APPROVED BY :** May Chen , **DATE:** Dec. 20, 2005  
 (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 -0.4dB at 2487.0MHz
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.

## 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 -7.3dB at 875.01MHz
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:**

The EUT was operating in 2.412 ~ 2.462GHz and 5.725 ~ 5.850GHz frequencies band.





### 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>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 (Turbo mode: up to 108Mbps *see Note 2)
<b>FREQUENCY RANGE</b>	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.725 ~ 5.850GHz
<b>NUMBER OF CHANNEL</b>	802.11b & 802.11g: 11 802.11a: 5 (2 for 802.11a Turbo mode)
<b>CHANNEL SPACING</b>	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
<b>OUTPUT POWER</b>	802.11b: 125.893mW 802.11g: 131.826mW 802.11a: 186.638mW
<b>DATA CABLE</b>	POE Cable x 1 (Shielded, 30m)
<b>ANTENNA TYPE</b>	Please see note 4 (on next page)
<b>I/O PORTS</b>	RJ 45 Port x 1
<b>ASSOCIATED DEVICES</b>	NA

**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. This EUT is capable of providing data rates of up to 108 Mbps in 802.11a Turbo mode depending upon reception quality.
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>	INPUT: 100-240V~ 1.5A 47-63Hz
<b>OUTPUT:</b>	OUTPUT: 48V, 1.2A



4. There are two antennas provided to this EUT, please refer to the following table:

<b>For 2.4GHz</b>				
No.	Model No.	Gain (dBi)	Antenna Type	Antenna Connector
1	ACC04-05427A	8.0 dBi	Omnidirectional (Dipole)	N-type
<b>For 5GHz</b>				
No.	Model No.	Gain (dBi)	Antenna Type	Antenna Connector
1	ACC04-090380	8.0 dBi	Omnidirectional (5725~5850 ) (Dipole)	N-type

5. 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 normal mode (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

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

Channel	Frequency
1	5760 MHz
2	5800 MHz



3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT configure mode	Applicable to				Description
	PLC	RE<1G	RE≥1G	APCM	
-	X	X	X	X	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
802.11a turbo	1, 2	1, 2	OFDM	BPSK	12



### **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
802.11a turbo	1, 2	1, 2	OFDM	BPSK	12

### **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
802.11a turbo	1, 2	1, 2	OFDM	BPSK	12

### **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.

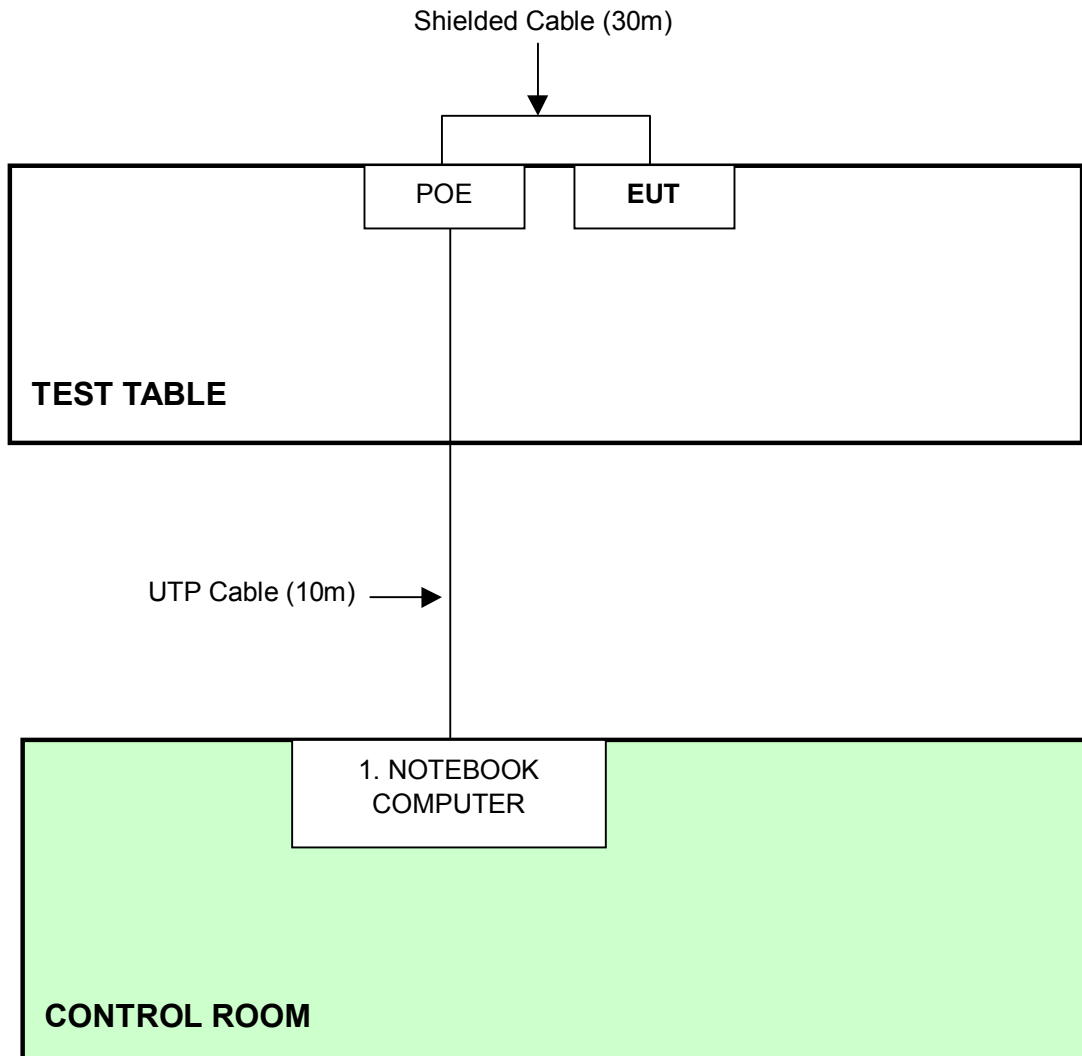
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	Dell	PP01L	TW-09c748- 12800-165-3171	DoC

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

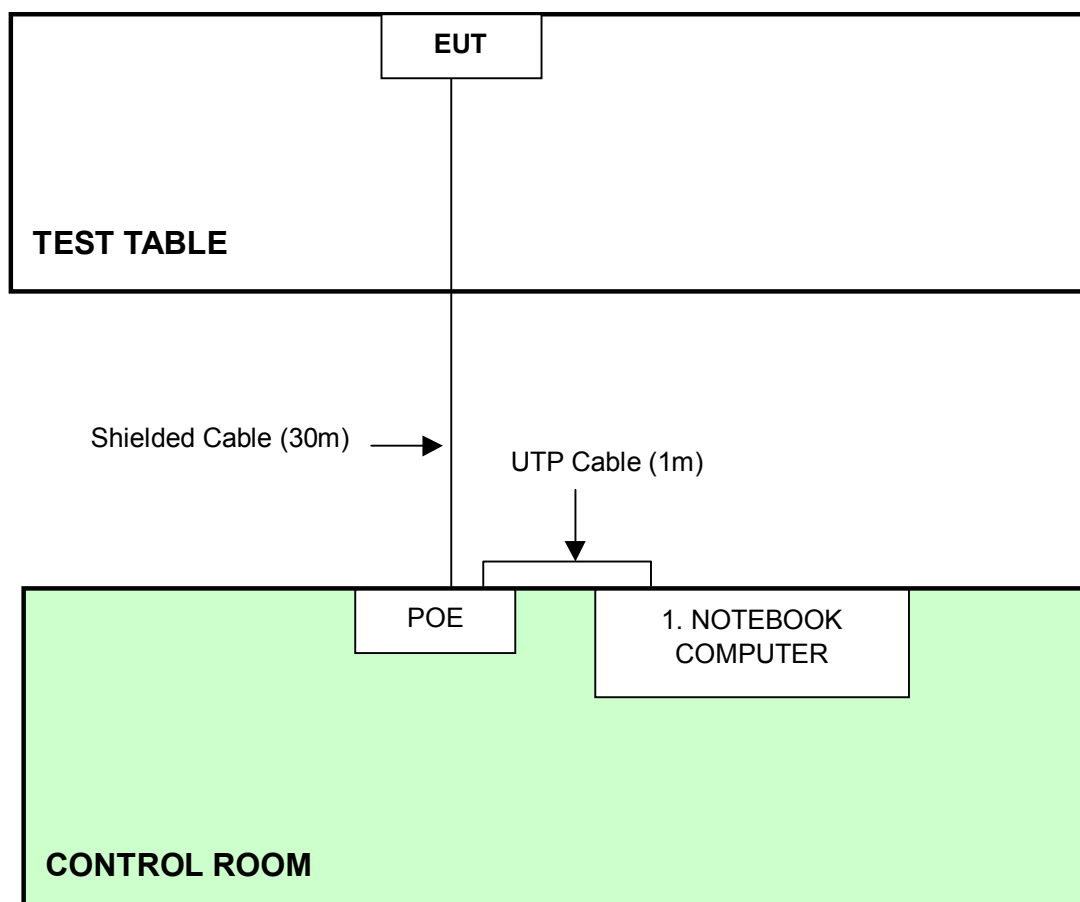
For Conducted Test:



- 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 (dBµV)	
	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
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 14, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100072	Oct. 05, 2006
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 19, 2006
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 19, 2006
Terminator(for KYORITSU)	50	1	Oct. 08, 2006
Software	Cond-V2e	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. A.
  3. The VCCI Con A Registration No. is C-817.
  4. The measurement uncertainty is 2.53 dB, which is calculated as per the document CISPR 16-4



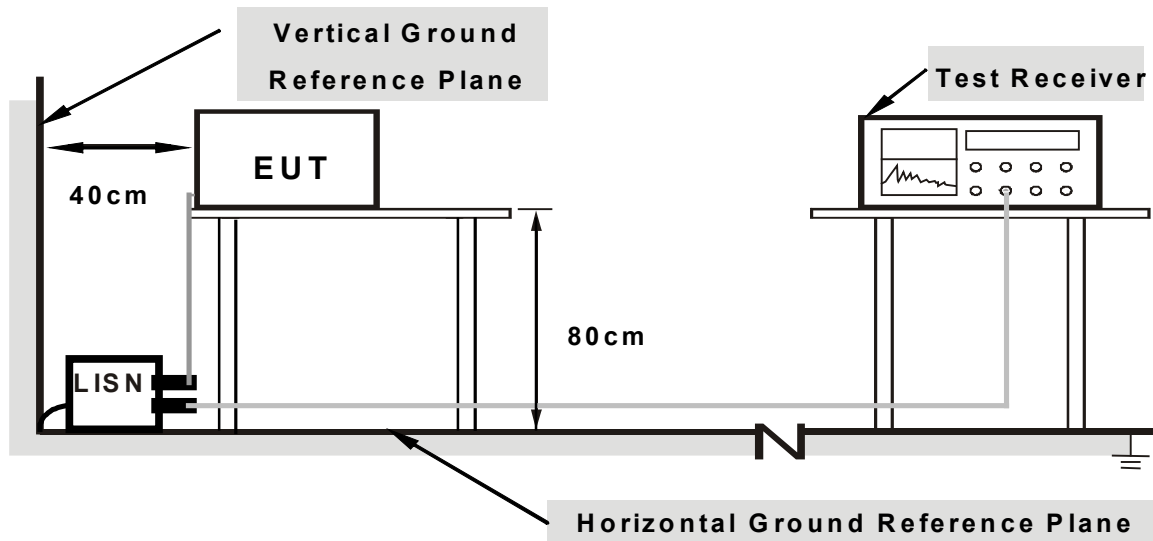
#### 4.1.3 TEST PROCEDURES

- 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 levels under (Limit - 20dB) were 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.



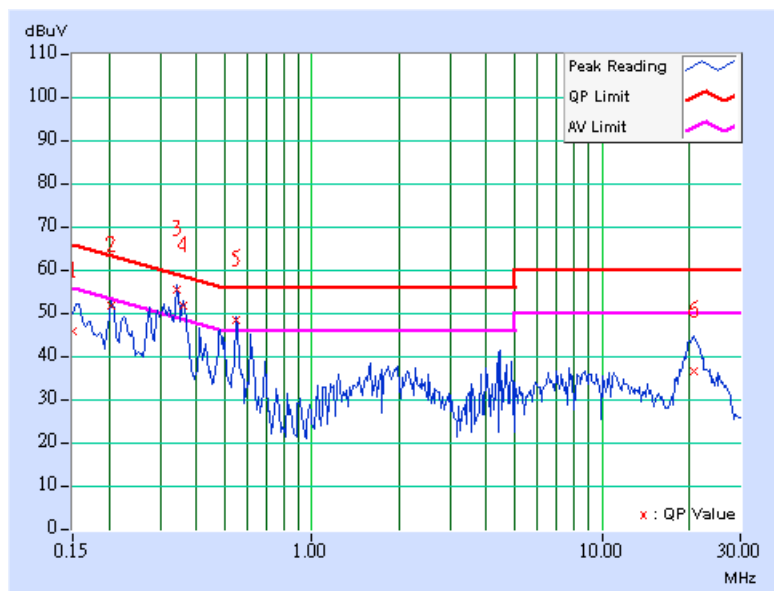
4.1.7 TEST RESULTS

**Conducted Worst-Case Data**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>6dB BANDWIDTH</b>	9 kHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa	<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.

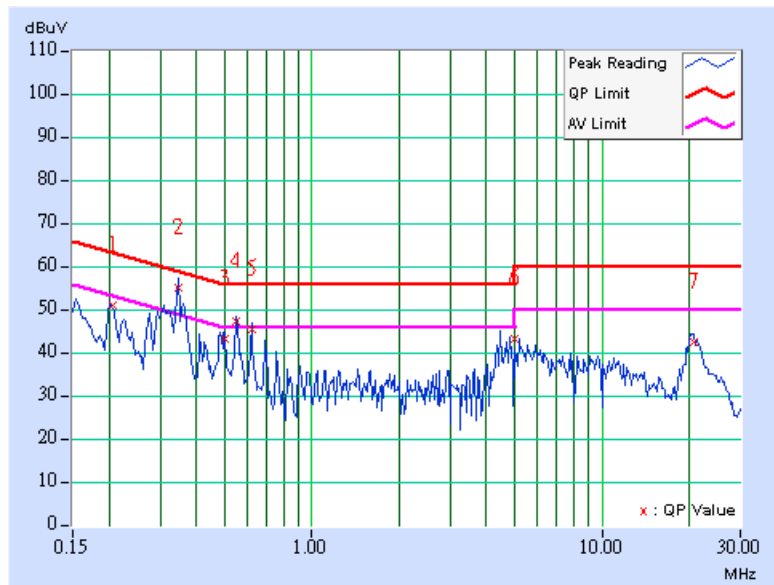




<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>6dB BANDWIDTH</b>	9 kHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 60%RH, 973hPa	<b>TESTED BY</b>	Eric Lee

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	-
<b>2</b>	<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, 2005
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 30, 2006
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.

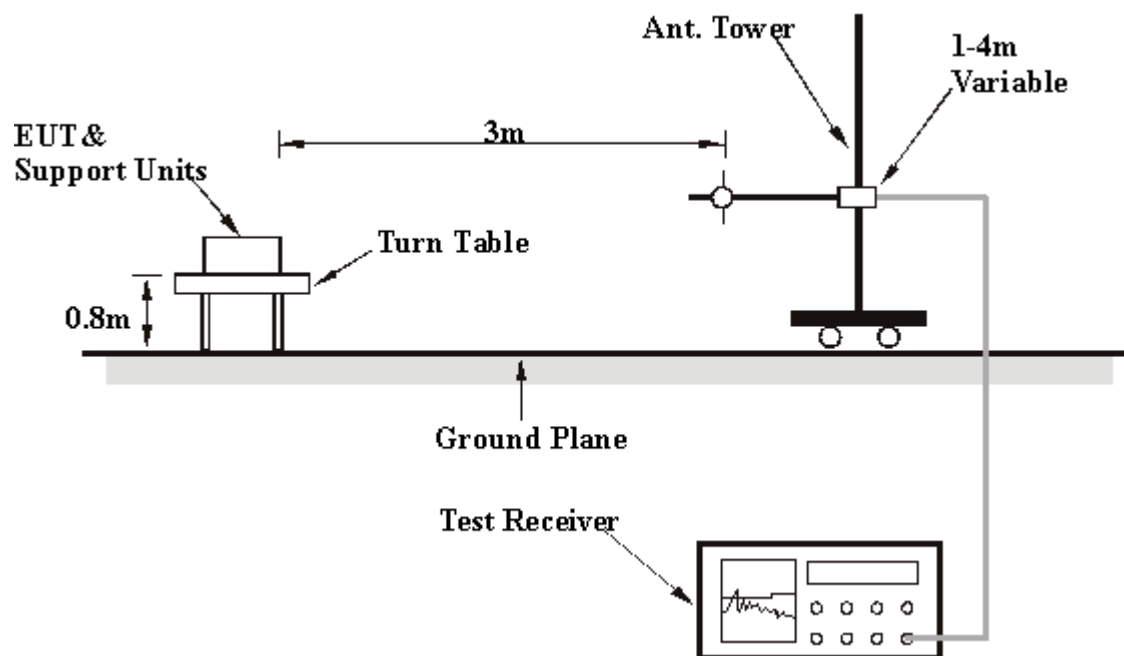
**NOTE:**

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

## Below 1GHz Worst-Case Data

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>TESTED BY</b>	Rex Huang

**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	21.90 QP	43.50	-21.60	2.12 H	58	10.00	11.90
2	240.00	24.60 QP	46.00	-21.40	1.91 H	156	11.80	12.90
3	250.00	25.90 QP	46.00	-20.10	1.71 H	139	12.60	13.30
4	375.01	27.90 QP	46.00	-18.10	1.50 H	275	10.30	17.60
5	400.00	28.10 QP	46.00	-17.90	1.34 H	235	9.70	18.40
6	500.01	31.10 QP	46.00	-14.90	1.17 H	56	10.20	20.90
7	624.99	34.20 QP	46.00	-11.80	1.23 H	162	10.40	23.80
8	750.00	37.40 QP	46.00	-8.60	1.00 H	308	11.00	26.40
9	874.99	39.10 QP	46.00	-6.90	1.26 H	273	11.50	27.70
10	1000.00	39.90 QP	54.00	-14.10	1.16 H	124	11.00	28.90

**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	124.99	27.50 QP	43.50	-16.00	1.00 V	121	15.60	11.90
2	240.01	28.10 QP	46.00	-17.90	1.00 V	344	15.20	12.90
3	250.00	30.40 QP	46.00	-15.60	1.00 V	90	17.10	13.30
4	375.00	28.90 QP	46.00	-17.10	1.00 V	61	11.40	17.60
5	400.00	30.20 QP	46.00	-15.80	1.00 V	317	11.80	18.40
6	500.01	31.90 QP	46.00	-14.10	1.34 V	104	11.00	20.90
7	625.00	33.90 QP	46.00	-12.10	1.67 V	126	10.10	23.80
8	750.00	37.60 QP	46.00	-8.40	1.53 V	332	11.20	26.40
9	875.01	38.90 QP	46.00	-7.10	1.29 V	251	11.20	27.70
10	1000.01	41.40 QP	54.00	-12.60	1.17 V	88	12.50	28.90

- 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>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 1	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	CCK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	11Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	19deg. C, 59%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	45.10 PK	74.00	-28.90	1.28 H	333	14.60	30.50
1	2360.00	37.10 AV	54.00	-16.90	1.28 H	333	6.60	30.50
2	2387.00	49.00 PK	74.00	-25.00	1.53 H	264	16.20	32.80
2	2387.00	39.10 AV	54.00	-14.90	1.53 H	264	6.30	32.80
3	2390.00	50.50 PK	74.00	-23.50	1.53 H	264	16.80	33.70
3	2390.00	39.40 AV	54.00	-14.60	1.53 H	264	5.70	33.70
4	*2412.00	99.80 PK			1.53 H	264	70.00	29.80
4	*2412.00	93.00 AV			1.53 H	264	63.20	29.80
5	4824.00	38.70 PK	74.00	-35.30	1.58 H	67	3.60	35.10
5	4824.00	29.20 AV	54.00	-24.80	1.58 H	67	-5.90	35.10
6	7236.00	44.30 PK	74.00	-29.70	1.14 H	38	3.80	40.50
6	7236.00	33.60 AV	54.00	-20.40	1.14 H	38	-6.90	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	2360.00	56.20 PK	74.00	-17.80	1.12 V	78	25.70	30.50
1	2360.00	47.20 AV	54.00	-6.80	1.12 V	78	16.70	30.50
2	2387.00	62.70 PK	74.00	-11.30	1.46 V	355	29.90	32.80
2	2387.00	52.30 AV	54.00	-1.70	1.46 V	355	19.50	32.80
3	2390.00	64.20 PK	74.00	-9.80	1.46 V	355	30.50	33.70
3	2390.00	52.60 AV	54.00	-1.40	1.46 V	355	18.90	33.70
4	*2412.00	113.50 PK			1.46 V	355	83.70	29.80
4	*2412.00	106.20 AV			1.46 V	355	76.30	29.80
5	4824.00	39.70 PK	74.00	-34.30	1.11 V	92	4.60	35.10
5	4824.00	28.70 AV	54.00	-25.30	1.11 V	92	-6.40	35.10
6	7236.00	46.10 PK	74.00	-27.90	1.08 V	108	5.60	40.50
6	7236.00	34.50 AV	54.00	-19.50	1.08 V	108	-6.00	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>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 6	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	CCK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	11Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	19deg. C, 59%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	47.10 PK	74.00	-26.90	1.31 H	318	16.60	30.50
1	2360.00	36.20 AV	54.00	-17.80	1.31 H	318	5.70	30.50
2	*2437.00	106.70 PK			1.53 H	264	76.80	29.90
2	*2437.00	99.50 AV			1.53 H	264	69.60	29.90
3	4874.00	39.20 PK	74.00	-34.80	1.43 H	68	3.90	35.30
3	4874.00	28.90 AV	54.00	-25.10	1.43 H	68	-6.40	35.30
4	7311.00	43.10 PK	74.00	-30.90	1.00 H	67	2.50	40.70
4	7311.00	33.30 AV	54.00	-20.70	1.00 H	67	-7.30	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	2360.00	56.50 PK	74.00	-17.50	1.18 V	99	26.00	30.50
1	2360.00	47.60 AV	54.00	-6.40	1.18 V	99	17.10	30.50
2	*2437.00	120.40 PK			1.47 V	350	90.50	29.90
2	*2437.00	112.30 AV			1.47 V	350	82.40	29.90
3	4874.00	39.00 PK	74.00	-35.00	1.13 V	100	3.70	35.30
3	4874.00	29.20 AV	54.00	-24.80	1.13 V	100	-6.10	35.30
4	7311.00	45.10 PK	74.00	-28.90	1.11 V	90	4.50	40.70
4	7311.00	33.80 AV	54.00	-20.20	1.11 V	90	-6.80	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>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 11	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	CCK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	11Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	19deg. C, 59%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	48.20 PK	74.00	-25.80	1.16 H	82	17.70	30.50
1	2360.00	37.10 AV	54.00	-16.90	1.16 H	82	6.60	30.50
2	*2462.00	100.10 PK			1.51 H	265	70.00	30.00
2	*2462.00	92.70 AV			1.51 H	265	62.60	30.00
3	2483.50	48.20 PK	74.00	-25.80	1.51 H	265	18.10	30.10
3	2483.50	37.40 AV	54.00	-16.60	1.51 H	265	7.30	30.10
4	2487.00	47.10 PK	74.00	-26.90	1.51 H	265	17.00	30.10
4	2487.00	37.80 AV	54.00	-16.20	1.51 H	265	7.60	30.10
5	4924.00	38.50 PK	74.00	-35.50	1.38 H	351	3.00	35.50
5	4924.00	29.20 AV	54.00	-24.80	1.38 H	351	-6.30	35.50
6	7386.00	44.70 PK	74.00	-29.30	1.26 H	1	3.90	40.80
6	7386.00	33.90 AV	54.00	-20.10	1.26 H	1	-6.90	40.80

### 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	2360.00	58.10 PK	74.00	-15.90	1.28 V	168	27.60	30.50
1	2360.00	42.50 AV	54.00	-11.50	1.28 V	168	12.00	30.50
2	*2462.00	116.60 PK			1.51 V	351	86.60	30.00
2	*2462.00	108.50 AV			1.51 V	351	78.50	30.00
3	2483.50	64.70 PK	74.00	-9.30	1.51 V	351	34.60	30.10
3	2483.50	53.20 AV	54.00	-0.80	1.51 V	351	23.10	30.10
4	2487.00	63.60 PK	74.00	-10.40	1.51 V	351	33.50	30.10
<b>4</b>	<b>2487.00</b>	<b>53.60 AV</b>	<b>54.00</b>	<b>-0.40</b>	<b>1.51 V</b>	<b>351</b>	<b>23.40</b>	<b>30.10</b>
5	4924.00	40.10 PK	74.00	-33.90	1.08 V	44	4.60	35.50
5	4924.00	29.60 AV	54.00	-24.40	1.08 V	44	-5.90	35.50
6	7386.00	45.20 PK	74.00	-28.80	1.17 V	79	4.40	40.80
6	7386.00	34.70 AV	54.00	-19.30	1.17 V	79	-6.10	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

**802.11g OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 1	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	14deg. C, 57%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	44.10 PK	74.00	-29.90	1.03 H	110	13.60	30.50
1	2360.00	36.10 AV	54.00	-17.90	1.03 H	110	5.60	30.50
2	2390.00	52.40 PK	74.00	-21.60	1.66 H	285	18.70	33.70
2	2390.00	42.70 AV	54.00	-11.30	1.66 H	285	9.00	33.70
3	*2412.00	97.10 PK			1.66 H	285	67.20	29.80
3	*2412.00	89.20 AV			1.66 H	285	59.40	29.80
4	4824.00	37.10 PK	74.00	-36.90	1.16 H	58	2.00	35.10
4	4824.00	27.10 AV	54.00	-26.90	1.16 H	58	-8.00	35.10
5	7236.00	43.20 PK	74.00	-30.80	1.23 H	70	2.70	40.50
5	7236.00	32.90 AV	54.00	-21.10	1.23 H	70	-7.60	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	2360.00	55.50 PK	74.00	-18.50	1.09 V	62	25.00	30.50
1	2360.00	47.90 AV	54.00	-6.10	1.09 V	62	17.40	30.50
2	2390.00	63.90 PK	74.00	-10.10	1.47 V	353	30.20	33.70
2	2390.00	53.20 AV	54.00	-0.80	1.47 V	353	19.50	33.70
3	*2412.00	108.60 PK			1.47 V	353	78.80	29.80
3	*2412.00	99.70 AV			1.47 V	353	69.90	29.80
4	4824.00	40.70 PK	74.00	-33.30	1.15 V	62	5.60	35.10
4	4824.00	29.00 AV	54.00	-25.00	1.15 V	62	-6.10	35.10
5	7236.00	44.40 PK	74.00	-29.60	1.28 V	311	3.90	40.50
5	7236.00	33.70 AV	54.00	-20.30	1.28 V	311	-6.80	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>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 6	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	14deg. C, 57%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	41.40 PK	74.00	-32.60	1.14 H	270	10.90	30.50
1	2360.00	33.90 AV	54.00	-20.10	1.14 H	270	3.40	30.50
2	*2437.00	102.90 PK			1.63 H	284	73.00	29.90
2	*2437.00	95.20 AV			1.63 H	284	65.30	29.90
3	4874.00	38.00 PK	74.00	-36.00	1.78 H	66	2.70	35.30
3	4874.00	28.20 AV	54.00	-25.80	1.78 H	66	-7.10	35.30
4	7311.00	44.10 PK	74.00	-29.90	1.64 H	134	3.50	40.70
4	7311.00	33.70 AV	54.00	-20.30	1.64 H	134	-6.90	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	2360.00	54.00 PK	74.00	-20.00	1.72 V	11	23.50	30.50
1	2360.00	47.10 AV	54.00	-6.90	1.72 V	11	16.60	30.50
2	*2437.00	115.30 PK			1.48 V	349	85.40	29.90
2	*2437.00	106.30 AV			1.48 V	349	76.40	29.90
3	4874.00	40.30 PK	74.00	-33.70	1.58 V	48	5.00	35.30
3	4874.00	30.30 AV	54.00	-23.70	1.58 V	48	-5.00	35.30
4	7311.00	43.30 PK	74.00	-30.70	1.31 V	62	2.70	40.70
4	7311.00	34.70 AV	54.00	-19.30	1.31 V	62	-5.90	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>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 11	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 25GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	14deg. C, 57%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<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	2360.00	42.90 PK	74.00	-31.10	1.06 H	50	12.40	30.50
1	2360.00	34.90 AV	54.00	-19.10	1.06 H	50	4.40	30.50
2	*2462.00	97.40 PK			1.63 H	286	67.30	30.00
2	*2462.00	89.20 AV			1.63 H	286	59.20	30.00
3	2483.50	51.10 PK	74.00	-22.90	1.63 H	286	21.00	30.10
3	2483.50	39.30 AV	54.00	-14.70	1.63 H	286	9.20	30.10
4	4924.00	37.50 PK	74.00	-36.50	1.43 H	316	2.00	35.50
4	4924.00	28.40 AV	54.00	-25.60	1.43 H	316	-7.10	35.50
5	7386.00	42.00 PK	74.00	-32.00	1.38 H	150	1.20	40.80
5	7386.00	32.20 AV	54.00	-21.80	1.38 H	150	-8.60	40.80

### 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	2360.00	53.50 PK	74.00	-20.50	1.02 V	72	23.00	30.50
1	2360.00	45.50 AV	54.00	-8.50	1.02 V	72	15.00	30.50
2	*2462.00	111.70 PK			1.51 V	347	81.70	30.00
2	*2462.00	102.90 AV			1.51 V	347	72.90	30.00
3	2483.50	65.50 PK	74.00	-8.50	1.51 V	347	35.30	30.10
3	2483.50	53.00 AV	54.00	-1.00	1.51 V	347	22.90	30.10
4	4924.00	39.10 PK	74.00	-34.90	1.28 V	258	3.60	35.50
4	4924.00	29.60 AV	54.00	-24.40	1.28 V	258	-5.90	35.50
5	7386.00	45.90 PK	74.00	-28.10	1.04 V	164	5.10	40.80
5	7386.00	33.30 AV	54.00	-20.70	1.04 V	164	-7.50	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

### 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.
- 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

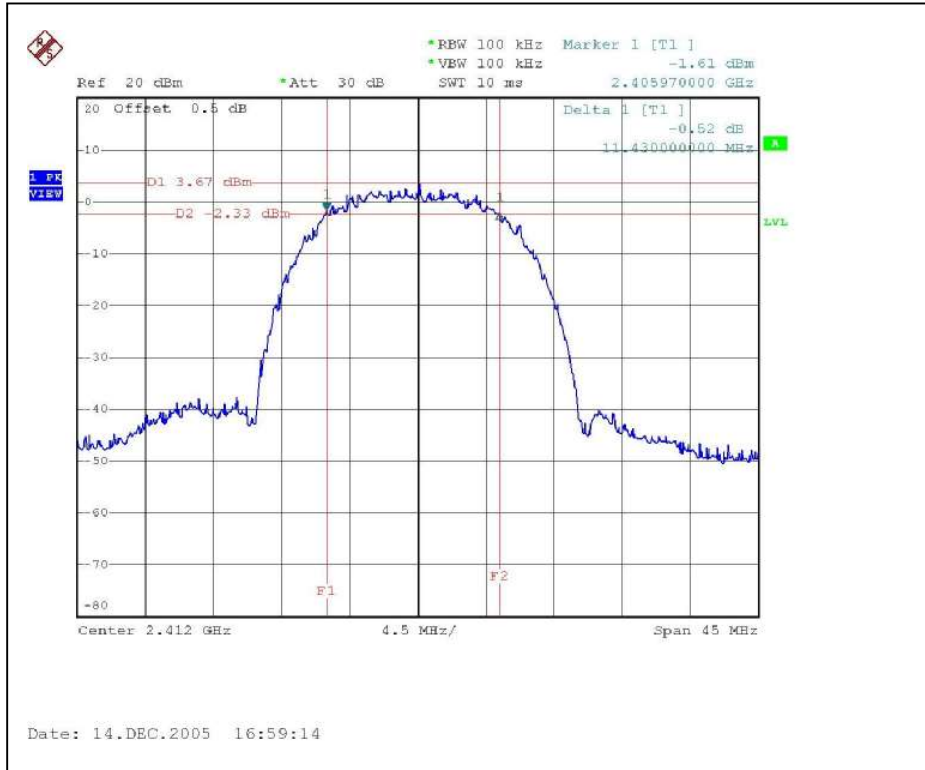
**802.11b DSSS modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	11Mbps
<b>MODULATION TYPE</b>	CCK	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TESTED BY</b>	Moris Lin

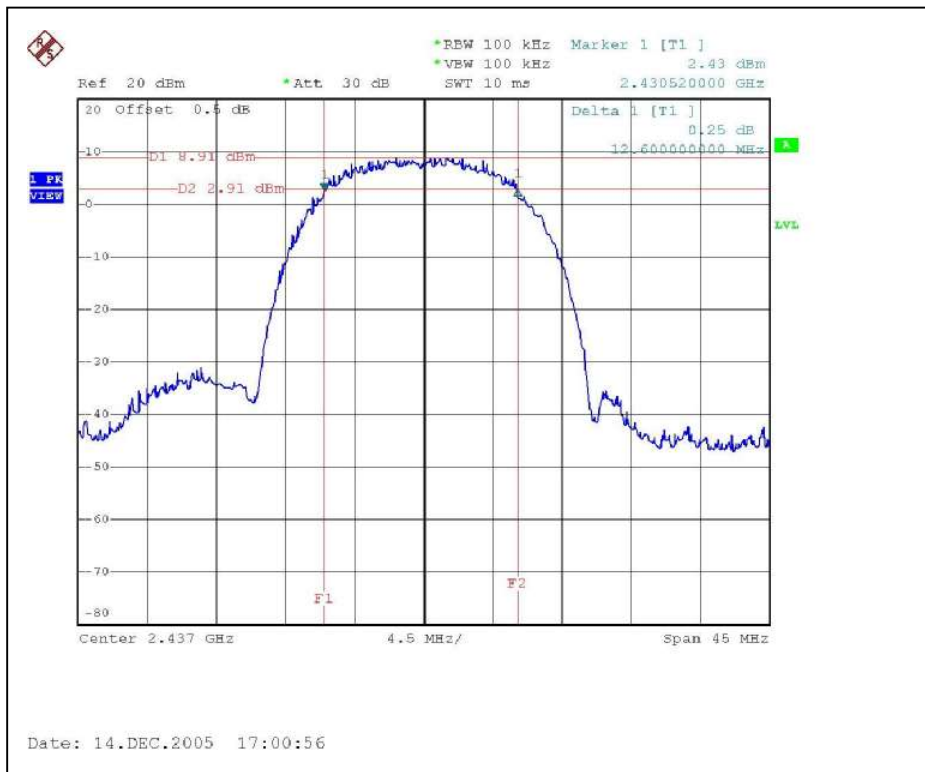
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	11.43	0.5	PASS
6	2437	12.60	0.5	PASS
11	2462	12.15	0.5	PASS



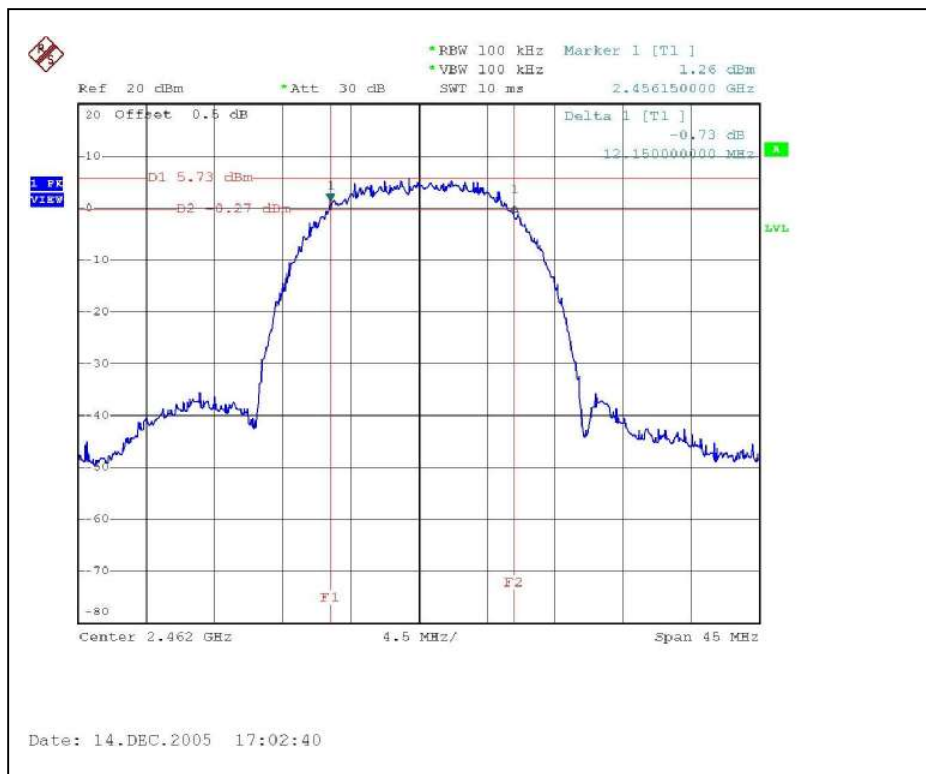
CH1



CH6



CH11



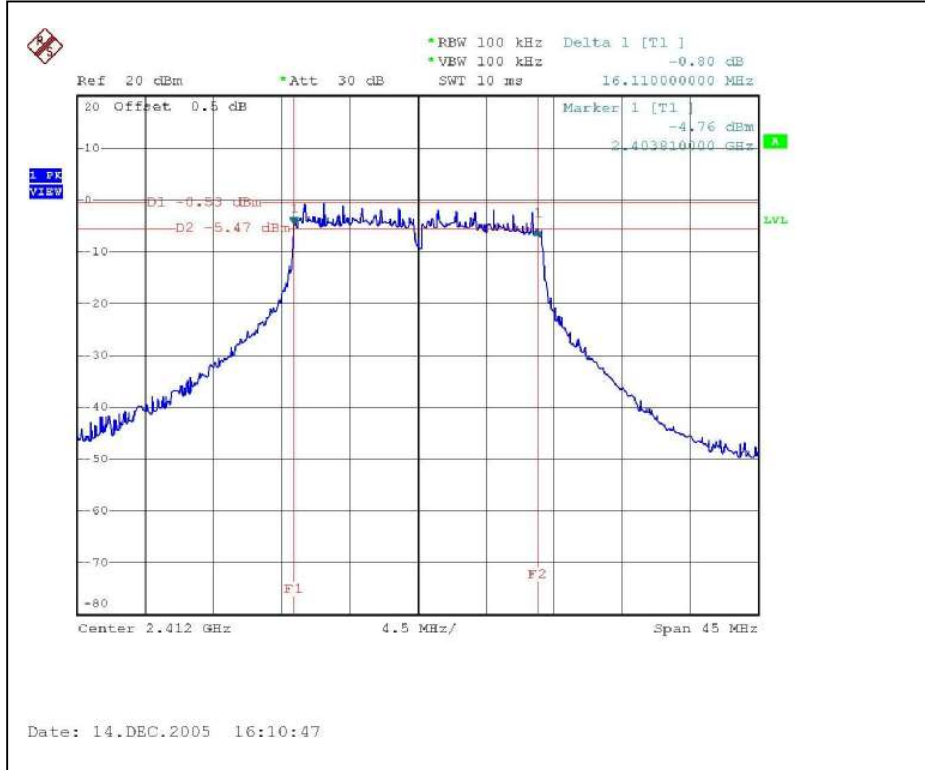
**802.11g OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	6Mbps
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TESTED BY</b>	Moris Lin

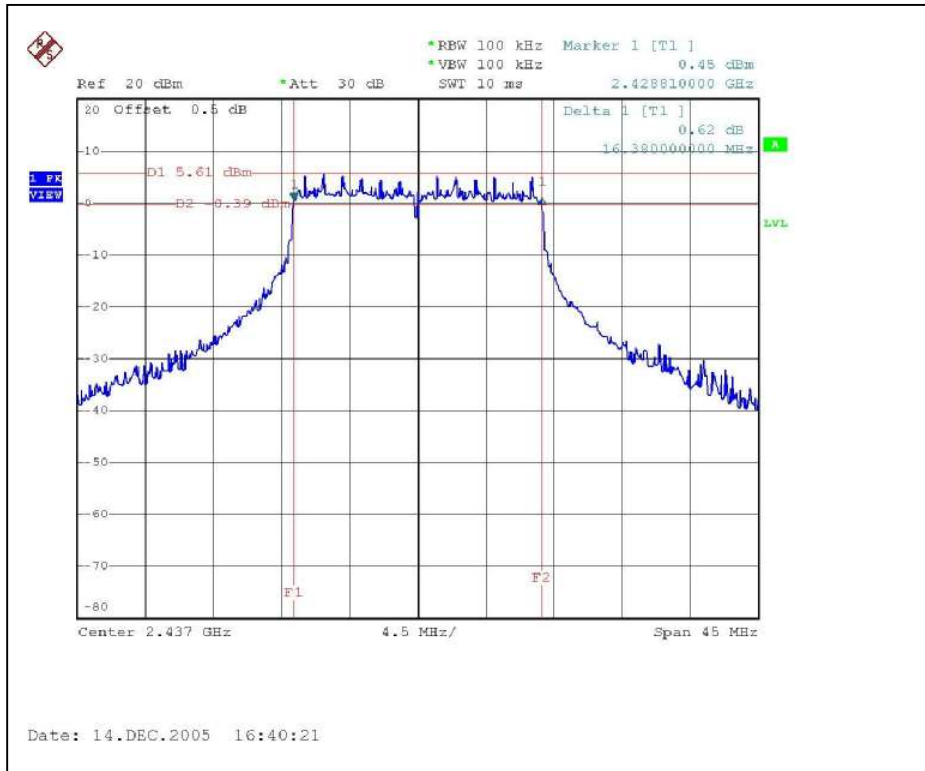
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	16.11	0.5	PASS
6	2437	16.38	0.5	PASS
11	2462	16.38	0.5	PASS



CH1



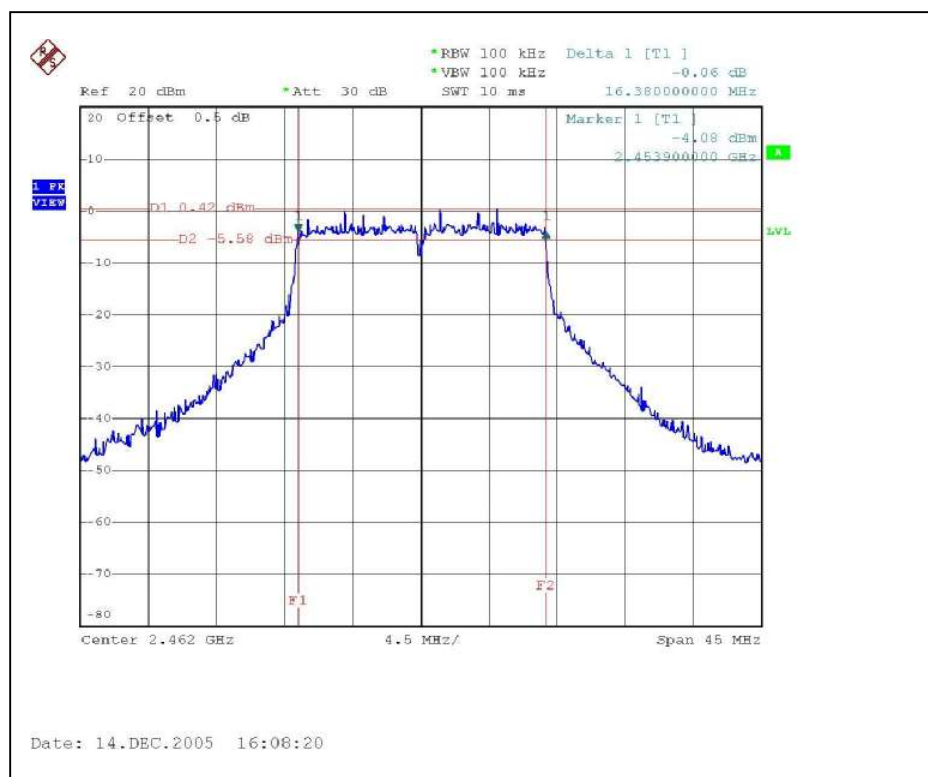
CH6







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

**802.11b DSSS modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	11Mbps
<b>MODULATION TYPE</b>	CCK	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>TESTED BY</b>	Moris Lin

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	31.623	15.00	28	PASS
6	2437	125.893	21.00	28	PASS
11	2462	56.234	17.50	28	PASS

**802.11g OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	6Mbps
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>TESTED BY</b>	Moris Lin

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (mW)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	35.481	15.50	28	PASS
6	2437	131.826	21.20	28	PASS
11	2462	58.884	17.70	28	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.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

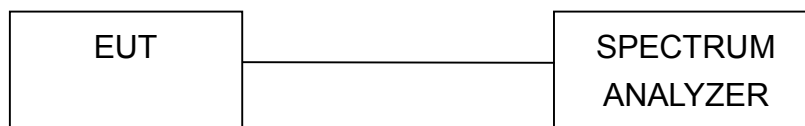
#### 4.5.3 TEST PROCEDURE

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

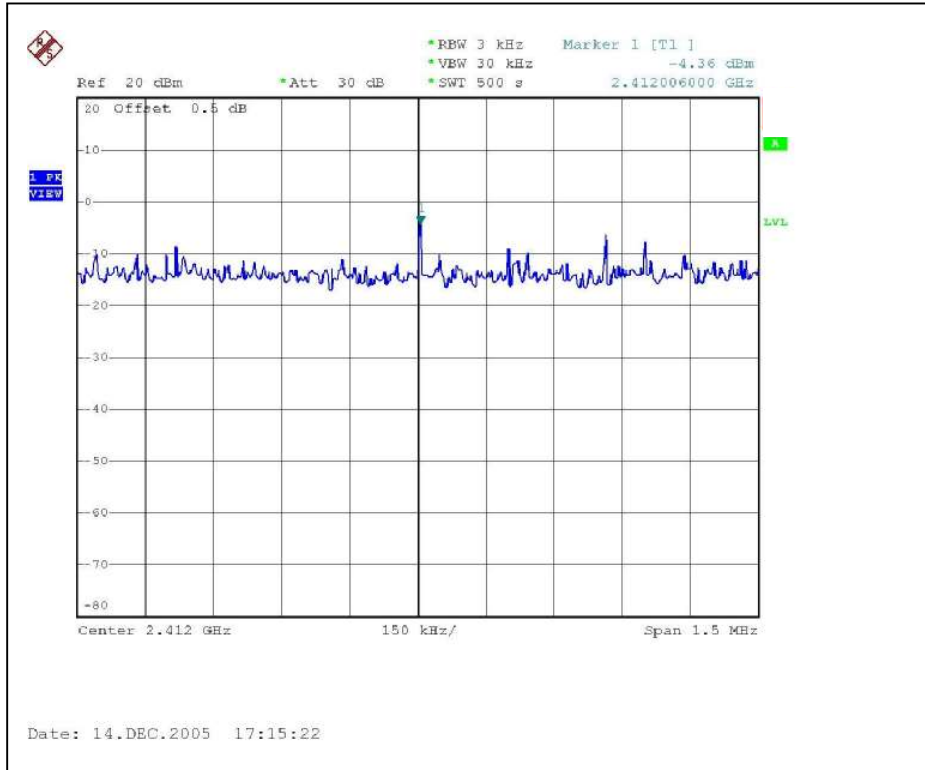
**802.11b DSSS modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	CCK	<b>TRANSFER RATE</b>	11Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>TESTED BY</b>	MORIS LIN

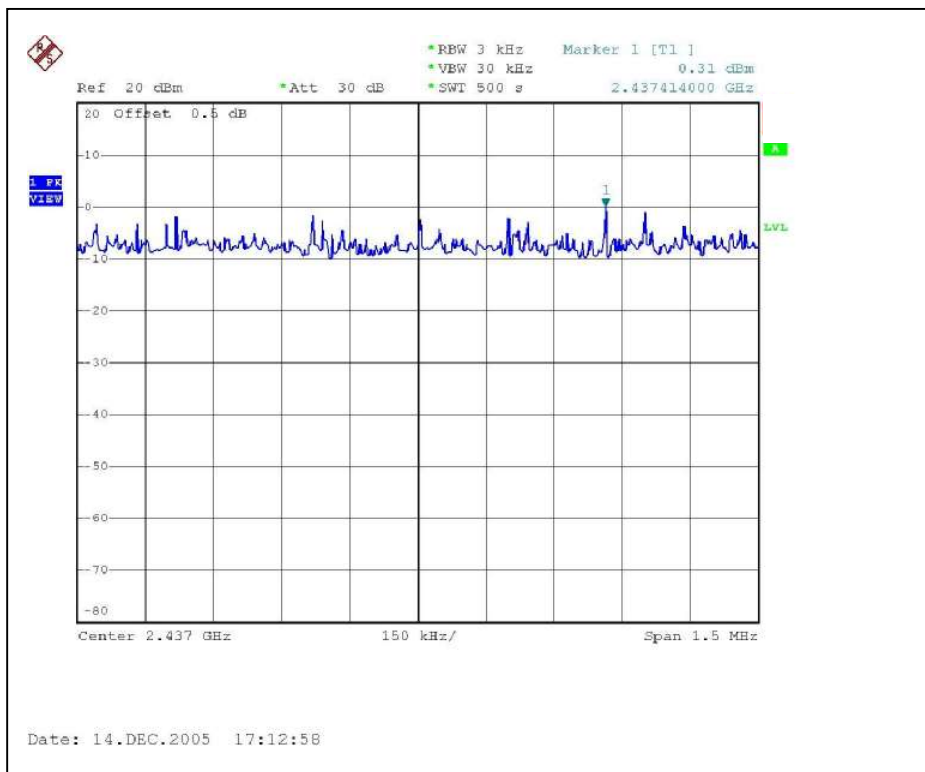
<b>CHANNEL NUMBER</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3 KHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-4.36	8	PASS
6	2437	0.31	8	PASS
11	2462	-3.33	8	PASS



CH1

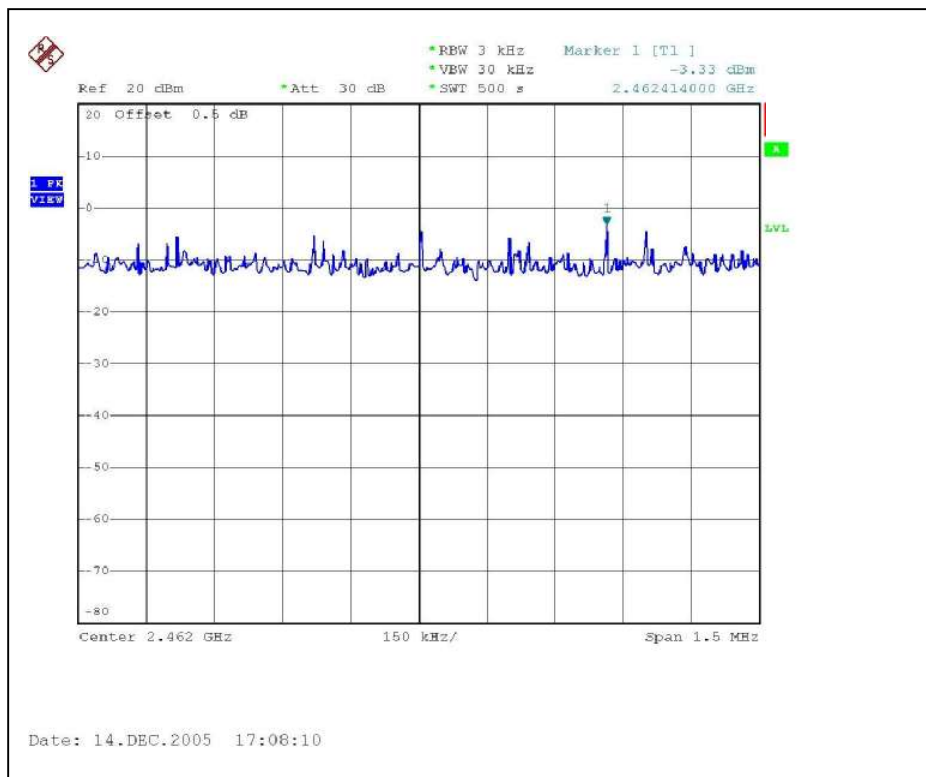


CH6





CH11

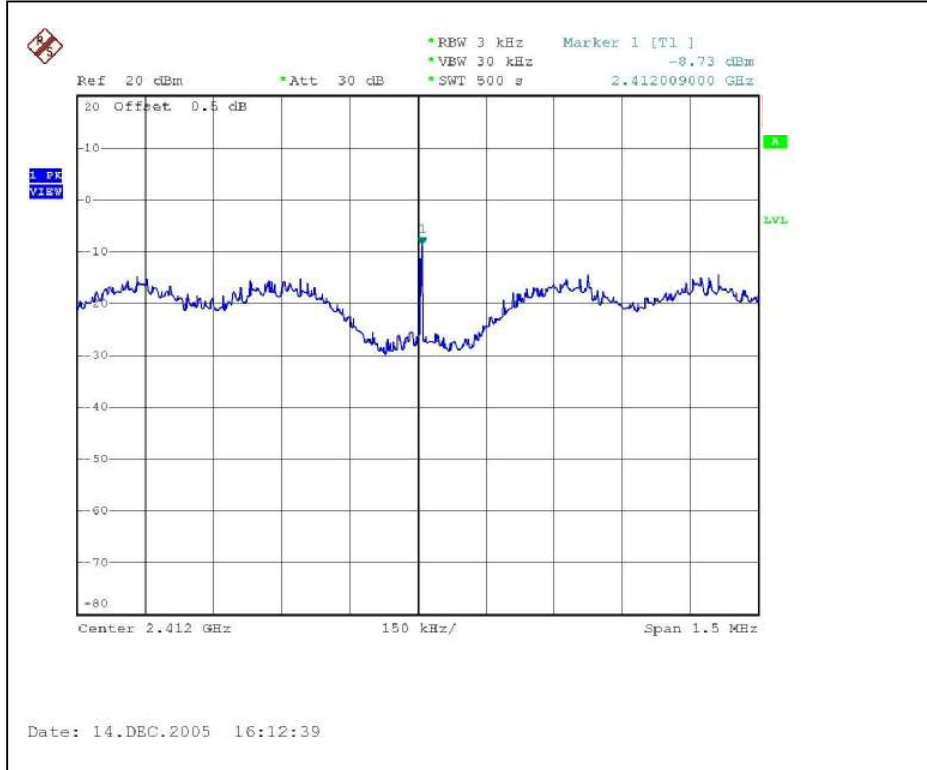


**802.11g OFDM modulation**

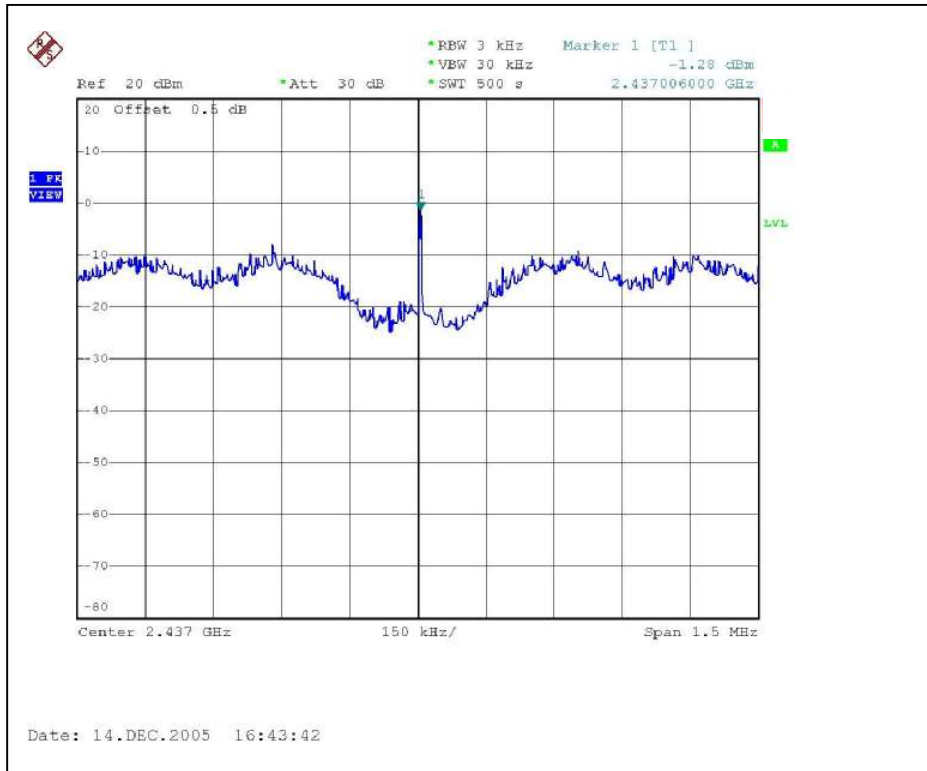
<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 55%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>TESTED BY</b>	MORIS LIN

<b>CHANNEL NUMBER</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3 KHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-8.73	8	PASS
6	2437	-1.28	8	PASS
11	2462	-7.97	8	PASS

CH1

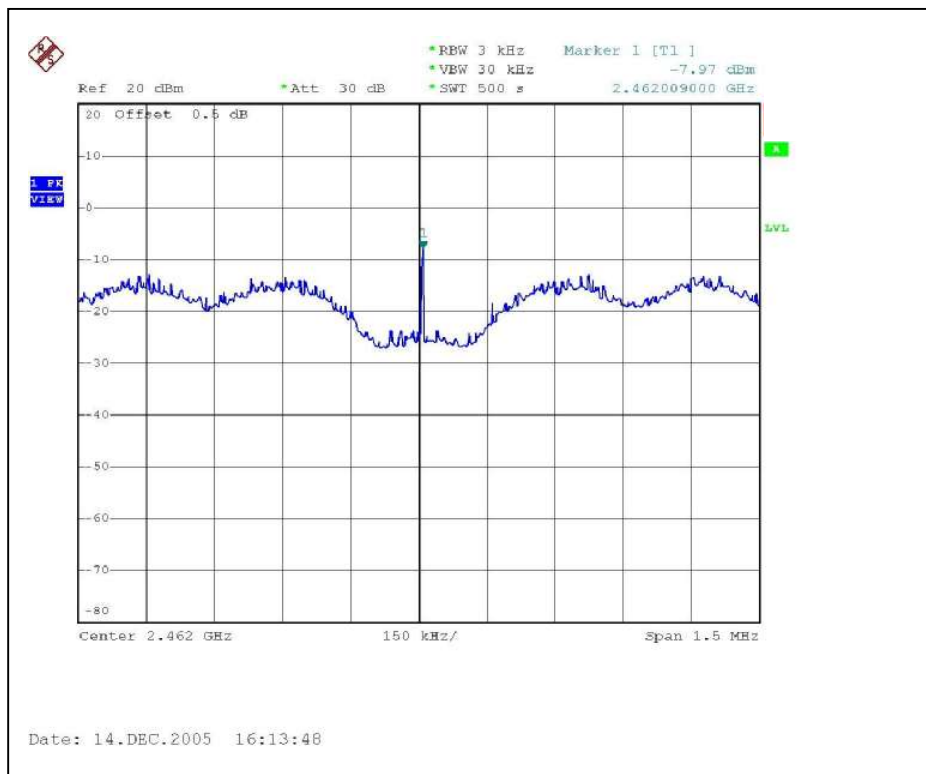


CH6





CH11





**4.6 BAND EDGES MEASUREMENT**

**4.6.1 LIMITS OF BAND EDGES MEASUREMENT**

Below -20dB of the highest emission level of operating band (in 1MHz 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 +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 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 lose cable. Set RBW spectrum analyzer to 1 MHz and set VBW spectrum analyzer to 10 Hz with suitable frequency span including 1 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz ; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

**4.6.4 EUT OPERATING CONDITION**

Same as Item 4.3.5

#### 4.6.5 TEST RESULTS

##### **802.11b DSSS modulation**

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

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

##### **NOTE (Peak):**

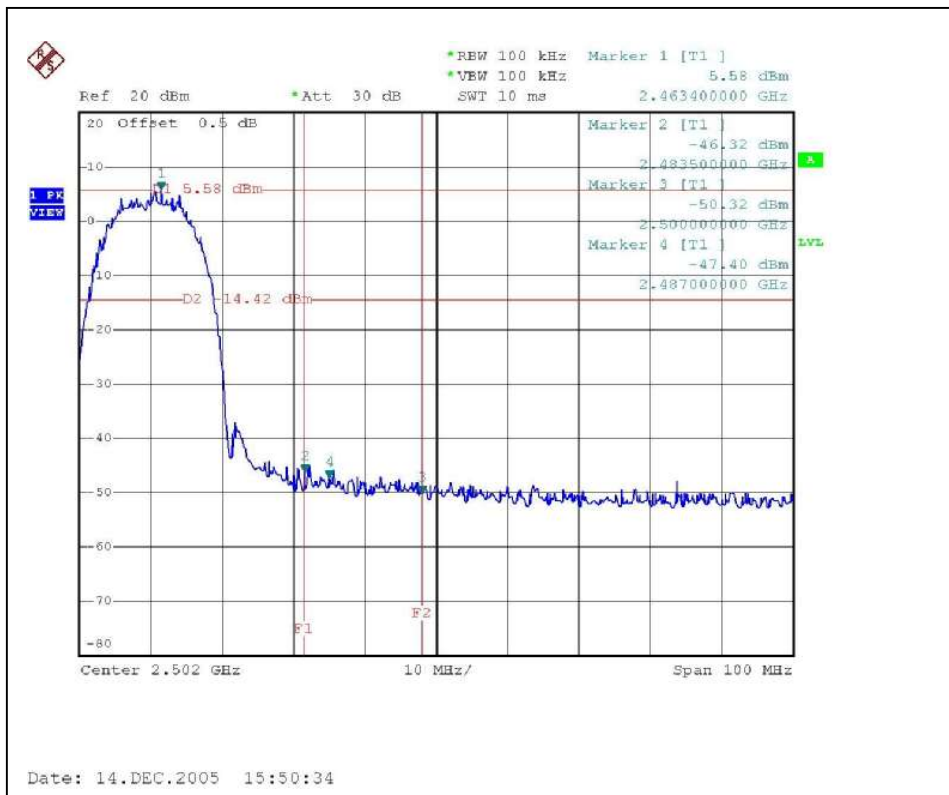
The band edge emission plot of DSSS technique on the following first page show 49.27dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 113.5dBuV/m, so the maximum field strength in restrict band is  $113.5-49.27=64.23$ dBuV/m which is under 74 dBuV/m limit.

The band edge emission plot of DSSS technique on the following first page shows 51.9dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 116.6dBuV/m, so the maximum field strength in restrict band is  $116.6-51.9=64.7$ dBuV/m which is under 74 dBuV/m limit.

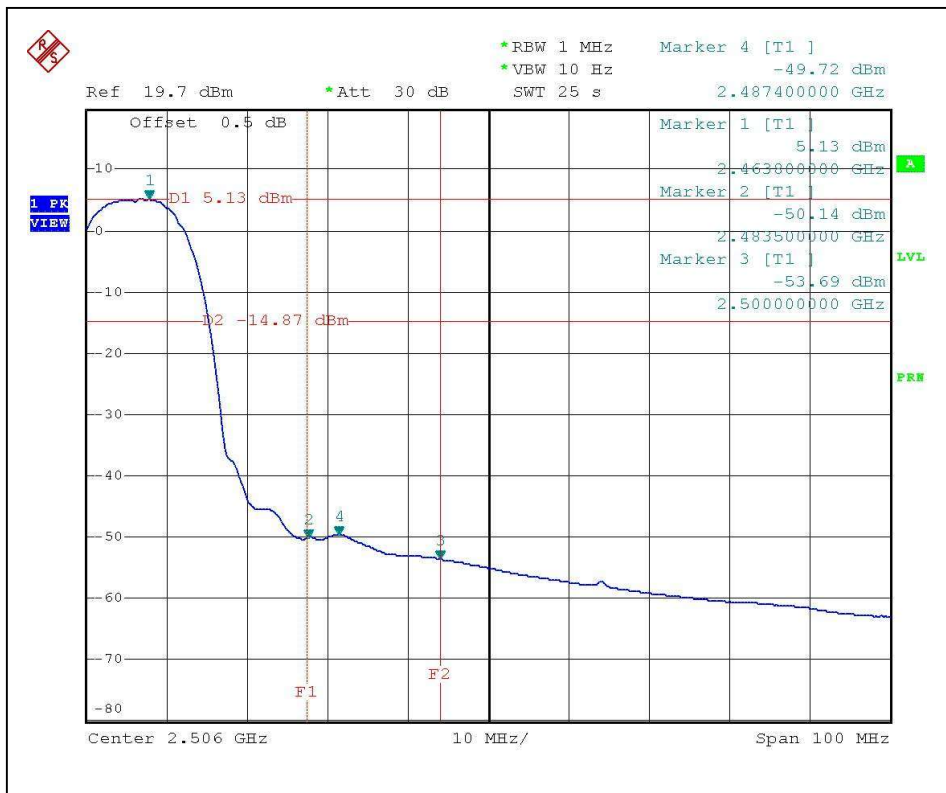
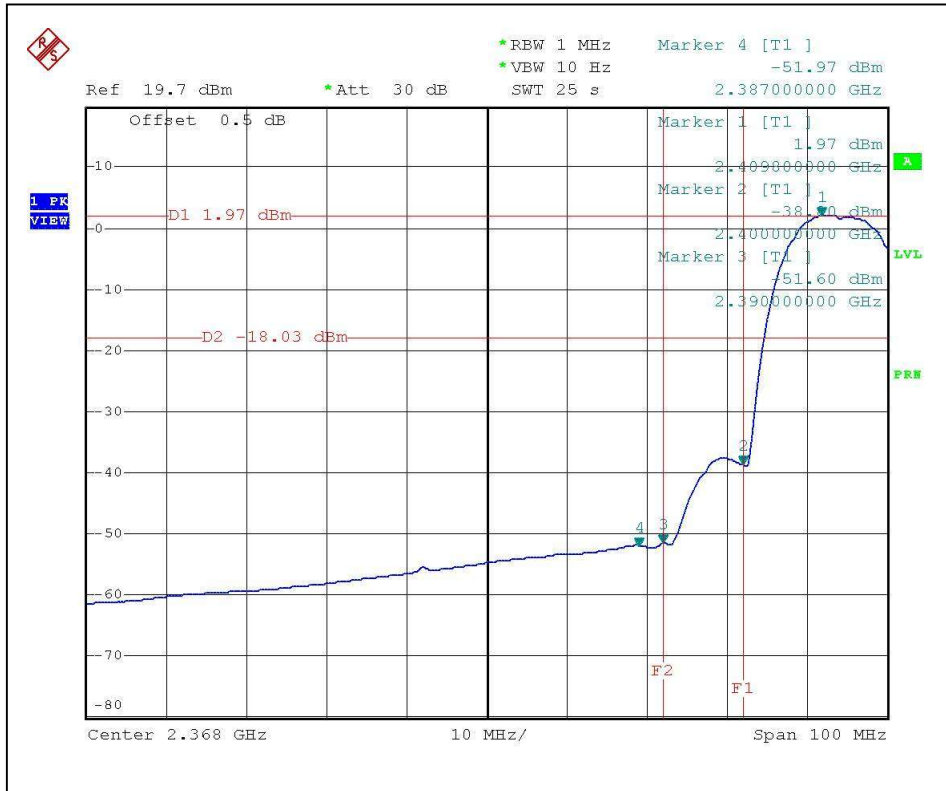
##### **NOTE (Average):**

The band edge emission plot of DSSS technique on the following second page shows 53.57dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 106.2dBuV/m, so the maximum field strength in restrict band is  $106.2-53.57=52.63$ dBuV/m which is under 54 dBuV/m limit.

The band edge emission plot of DSSS technique on the following second page shows 55.27dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 108.5dBuV/m, so the maximum field strength in restrict band is  $108.5-55.27=53.23$ dBuV/m which is under 54 dBuV/m limit.

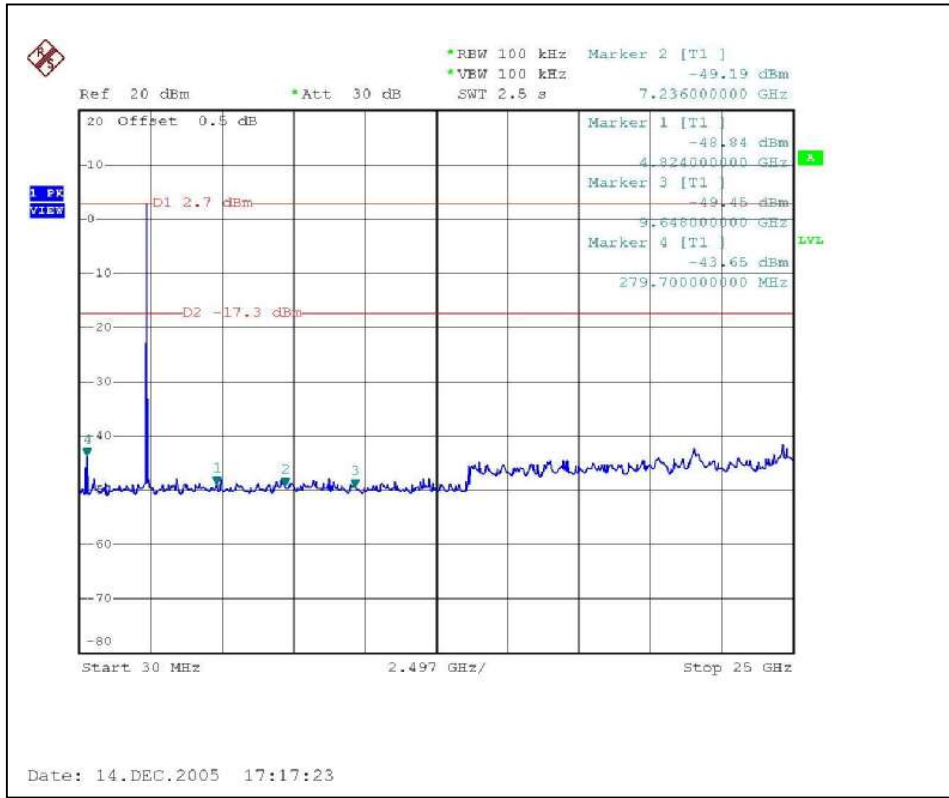




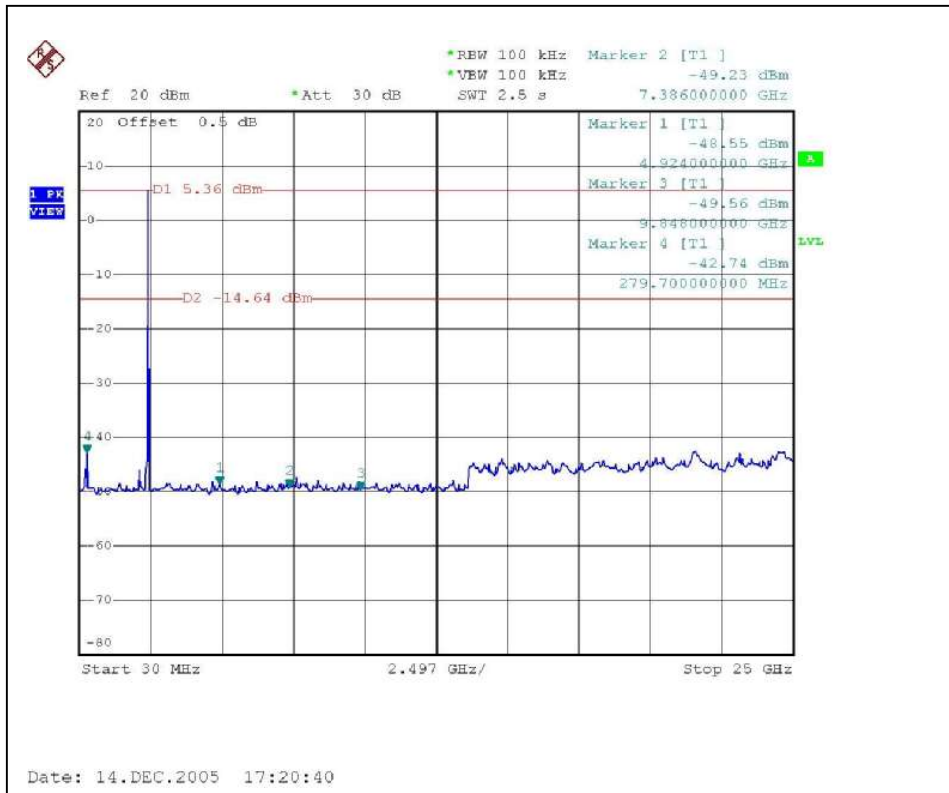




CH 1



CH 11



## 802.11g OFDM modulation

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

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

### NOTE (Peak):

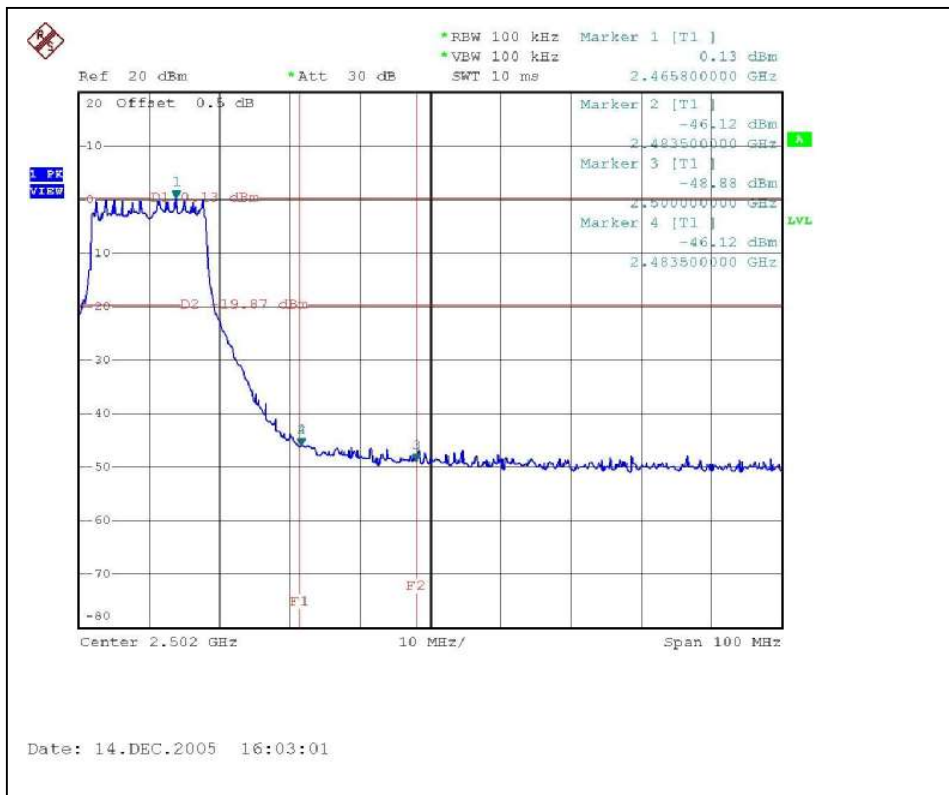
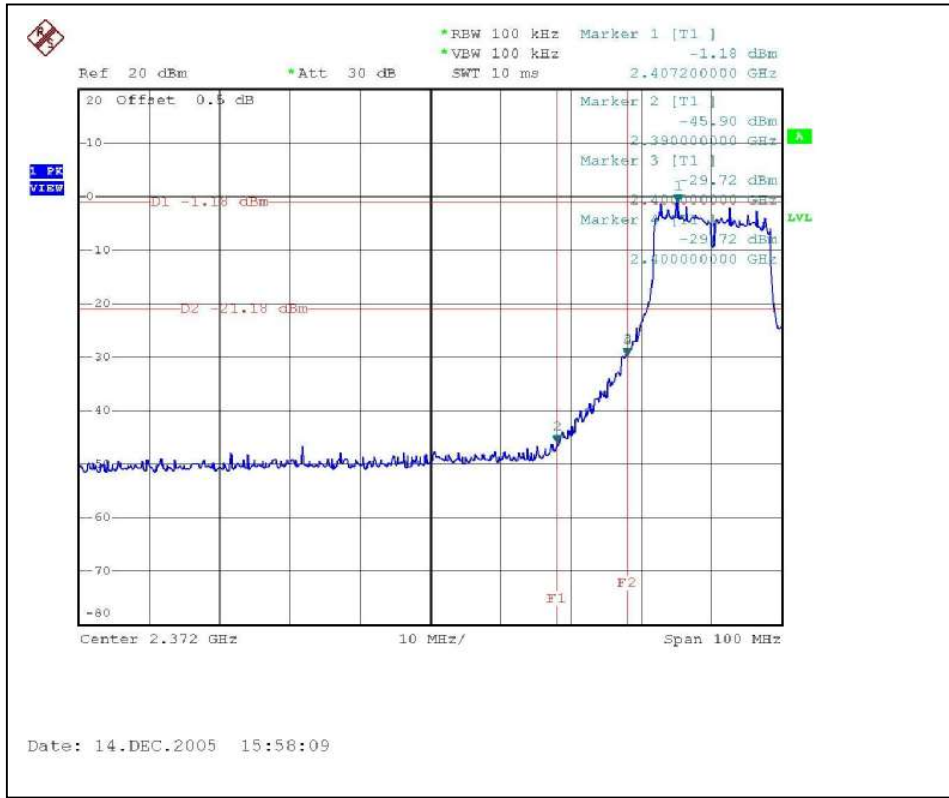
The band edge emission plot of OFDM technique on the following first page show 44.72dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 108.6dBuV/m, so the maximum field strength in restrict band is  $108.6-44.72=63.88$ dBuV/m which is under 74 dBuV/m limit.

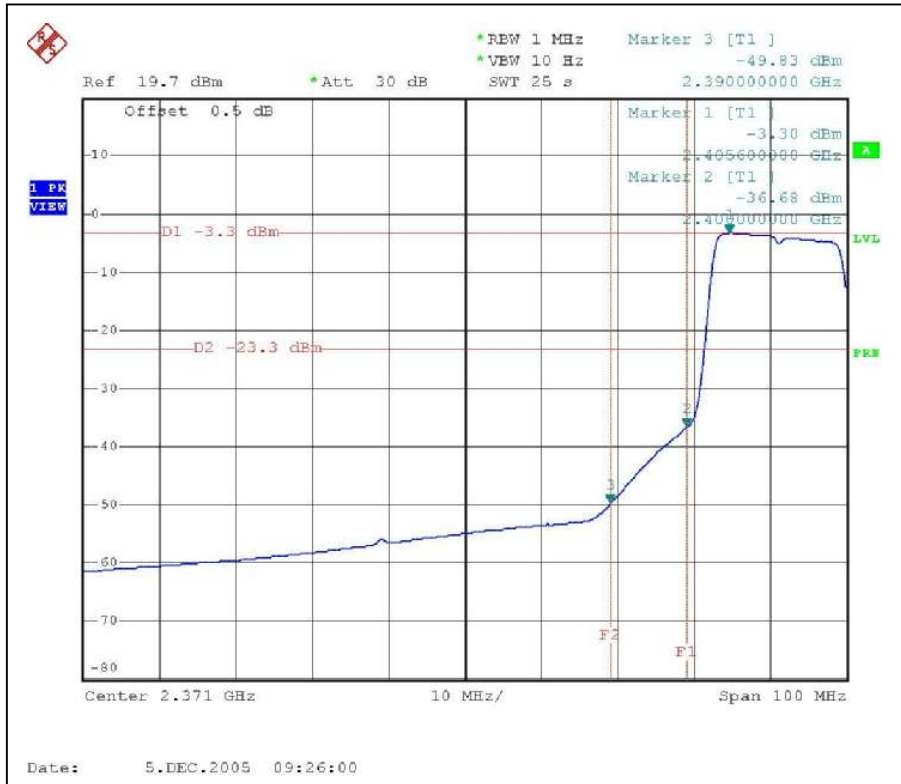
The band edge emission plot of OFDM technique on the following first page shows 46.25dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 111.7dBuV/m, so the maximum field strength in restrict band is  $111.7-46.25=65.45$ dBuV/m which is under 74 dBuV/m limit.

### NOTE (Average):

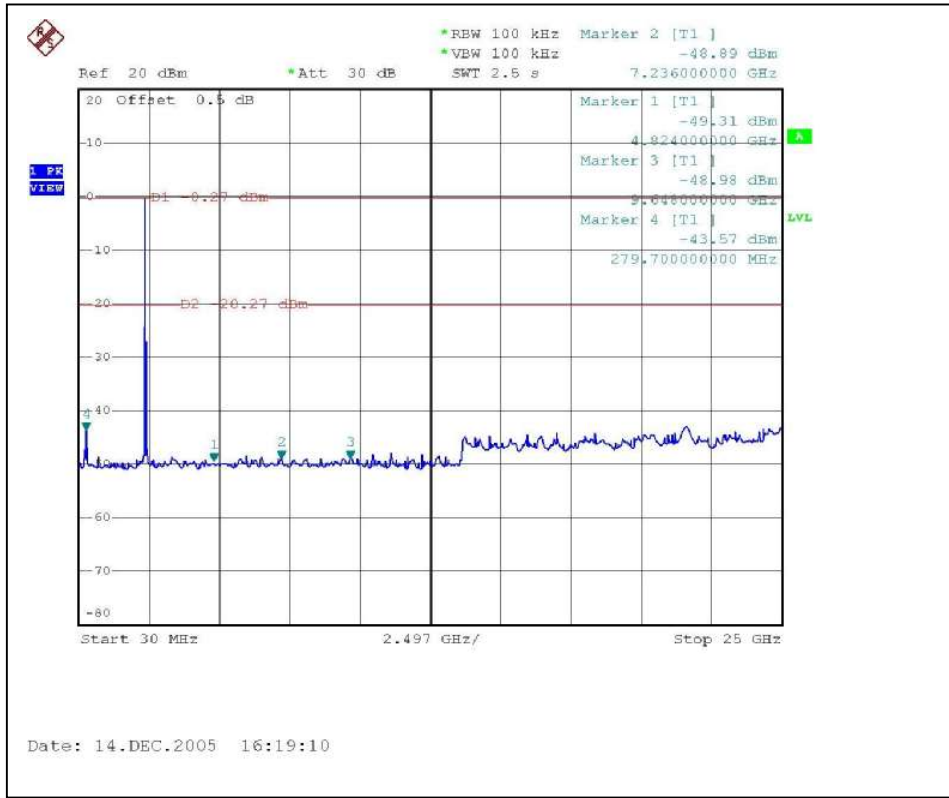
The band edge emission plot of OFDM technique on the following second page shows 46.53dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 99.7dBuV/m, so the maximum field strength in restrict band is  $99.7-46.53=53.17$ dBuV/m which is under 54 dBuV/m limit.

The band edge emission plot of OFDM technique on the following second page shows 49.91dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 102.9dBuV/m, so the maximum field strength in restrict band is  $102.9-49.91=52.99$ dBuV/m which is under 54 dBuV/m limit.

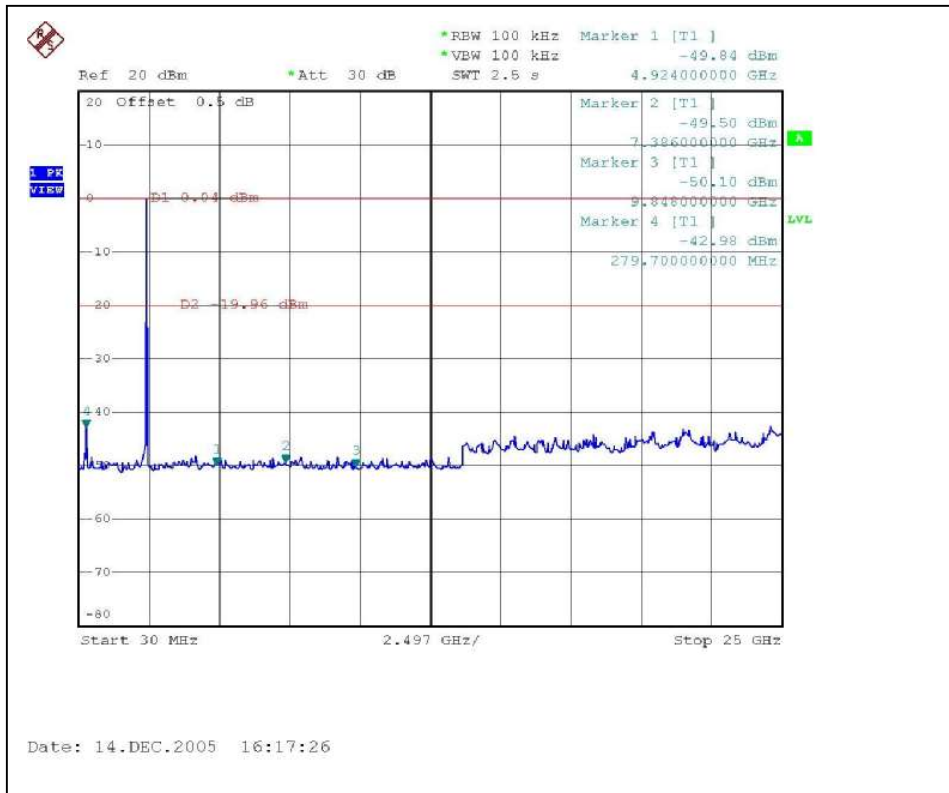




CH 1



CH 11





## **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 antenna used in this product is Omnidirectional (Dipole Antenna) with N-type connector. The maximum Gain of the antenna is 8dBi.

## 5. TEST TYPES AND RESULTS (802.11a, 5725~5850MHz Band)

### 5.1 CONDUCTED EMISSION MEASUREMENT

#### 5.1.1 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.

#### 5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 14, 2006
Line-Impedance Stabilization Network(for EUT)	ENV-216	100072	Oct. 05, 2006
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 19, 2006
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 19, 2006
Terminator(for KYORITSU)	50	1	Oct. 08, 2006
Software	Cond-V2e	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. A.
3. The VCCI Con A Registration No. is C-817.
4. The measurement uncertainty is 2.53 dB, which is calculated as per the document CISPR 16-4





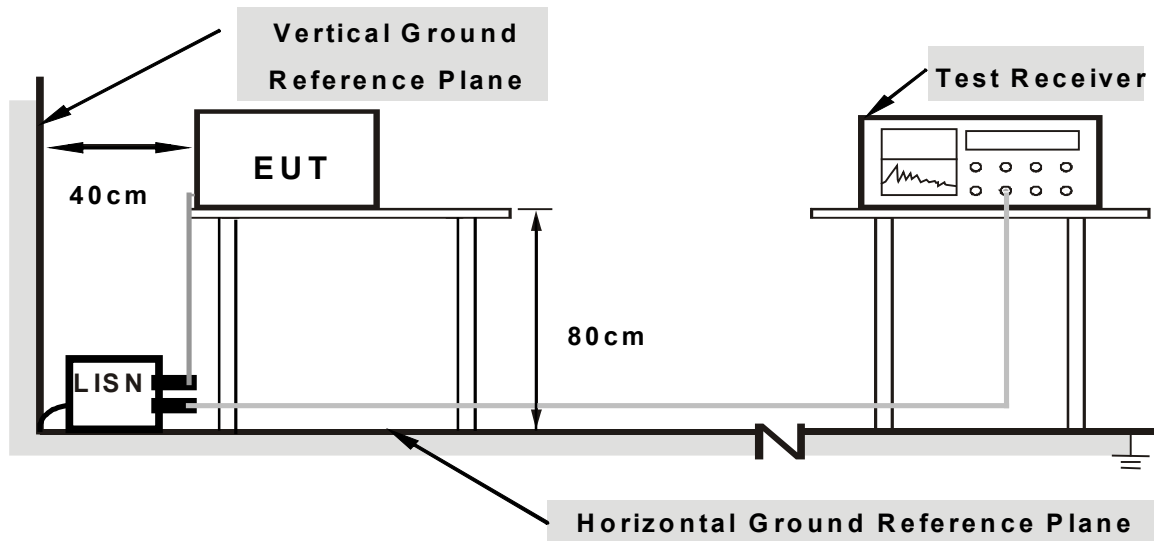
### 5.1.3 TEST PROCEDURES

- 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 levels under (Limit – 20dB) were not recorded.

### 5.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.1.5 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.

### 5.1.6 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.



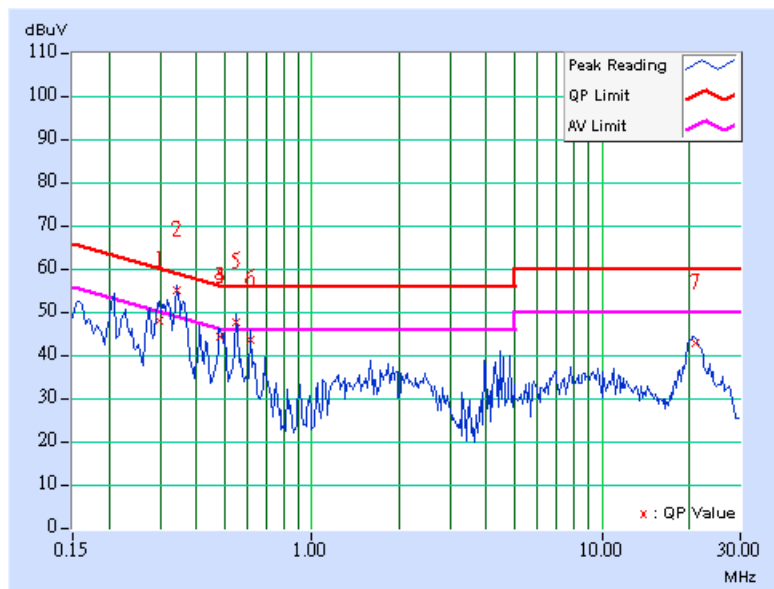
5.1.7 TEST RESULTS

**Conducted Worst-Case Data**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>6dB BANDWIDTH</b>	9 kHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 66%RH, 973hPa	<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	0.298	9.80	37.83	-	47.63	-	60.29
2	<b>0.343</b>	<b>9.80</b>	<b>44.89</b>	<b>37.95</b>	<b>54.69</b>	<b>47.75</b>	<b>59.14</b>	<b>49.14</b>	<b>-4.45</b>	<b>-1.39</b>
3	0.482	9.81	34.40	-	44.21	-	56.30	46.30	-12.09	-
4	0.482	9.81	34.30	-	44.11	-	56.30	46.30	-12.19	-
5	0.548	9.82	37.56	30.10	47.38	39.92	56.00	46.00	-8.62	-6.08
6	0.615	9.84	33.72	-	43.56	-	56.00	46.00	-12.44	-
7	20.976	10.14	32.96	-	43.10	-	60.00	50.00	-16.90	-

- 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.

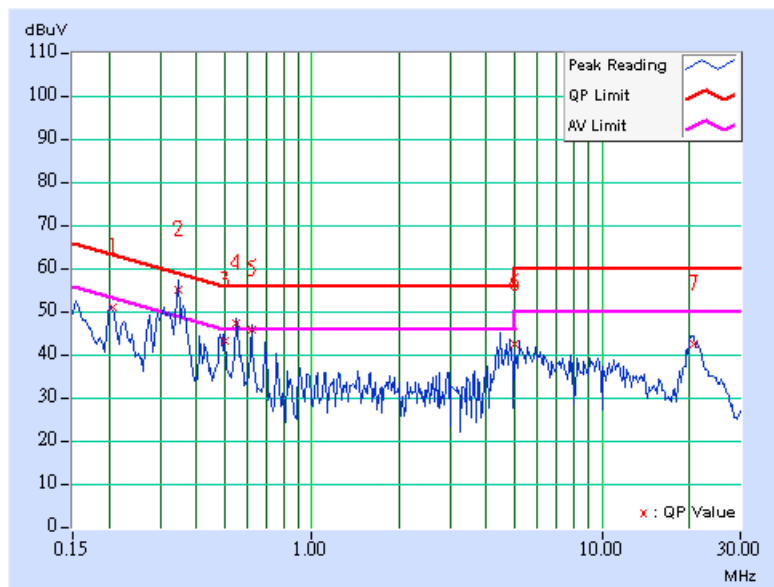




<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>6dB BANDWIDTH</b>	9 kHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 66%RH, 973hPa	<b>TESTED BY</b>	Eric Lee

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	40.56	-	50.36	-	63.33	53.33	-12.97	-
2	0.345	9.80	44.60	37.24	54.40	47.04	59.07	49.07	-4.67	-2.03
3	0.500	9.82	32.81	-	42.63	-	56.00	46.00	-13.37	-
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	35.46	-	45.30	-	56.00	46.00	-10.70	-
6	5.016	10.12	32.35	-	42.47	-	60.00	50.00	-17.53	-
7	20.682	10.43	32.01	-	42.44	-	60.00	50.00	-17.56	-

- 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.



## 5.2 RADIATED EMISSION MEASUREMENT

### 5.2.1 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.

## 5.2.2 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, 2005
Schwarzbeck Horn_Antenna	BBHA9120	D124	Dec. 11, 2006
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 30, 2006
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

### 5.2.3 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 chamber. 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 10dB 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

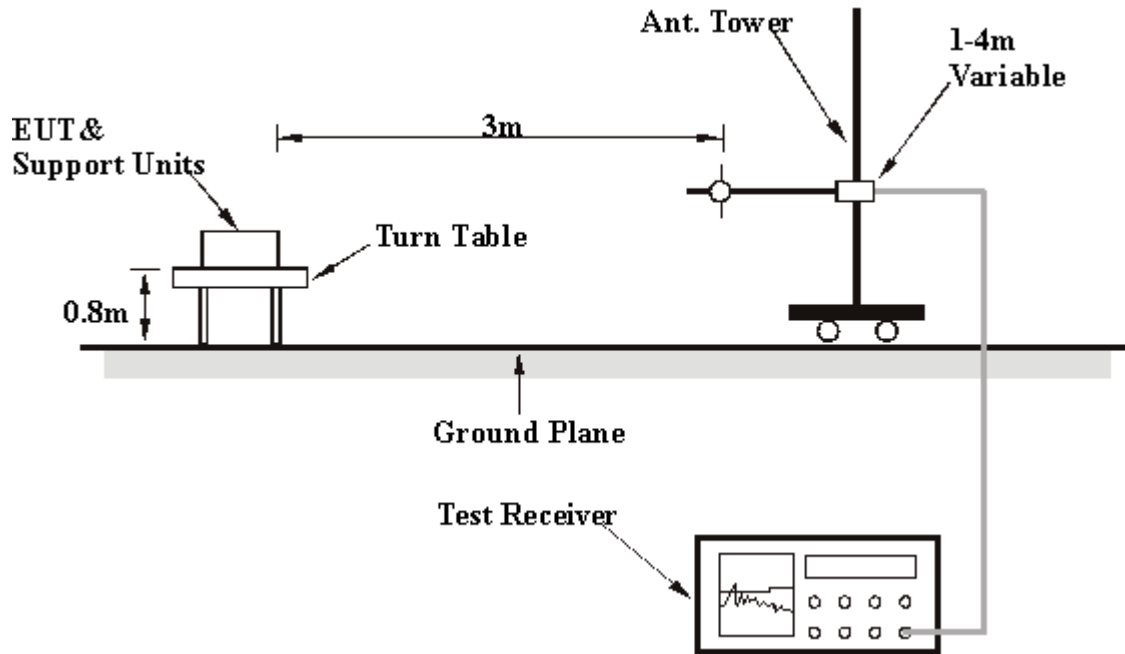
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection 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.

### 5.2.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.2.5 TEST SETUP



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

### 5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6



## 5.2.7 TEST RESULTS

## Below 1GHz Worst-Case Data

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>TESTED BY</b>	Rex Huang

**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	21.80 QP	43.50	-21.80	2.11 H	167	9.90	11.90
2	240.00	22.20 QP	46.00	-23.80	1.84 H	2	9.30	12.90
3	250.00	22.60 QP	46.00	-23.40	1.78 H	85	9.30	13.30
4	375.00	27.70 QP	46.00	-18.30	1.70 H	321	10.10	17.60
5	400.03	28.20 QP	46.00	-17.80	1.46 H	220	9.80	18.40
6	499.99	31.60 QP	46.00	-14.40	1.35 H	348	10.80	20.90
7	625.00	34.80 QP	46.00	-11.20	1.28 H	168	11.10	23.80
8	750.02	37.20 QP	46.00	-8.80	1.04 H	164	10.80	26.40
<b>9</b>	<b>875.01</b>	<b>38.70 QP</b>	<b>46.00</b>	<b>-7.30</b>	<b>1.36 H</b>	<b>352</b>	<b>11.00</b>	<b>27.70</b>
10	1000.00	39.60 QP	54.00	-14.40	1.23 H	223	10.70	28.90

**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	26.90 QP	43.50	-16.60	1.00 V	81	15.00	11.90
2	240.02	26.70 QP	46.00	-19.30	1.00 V	343	13.90	12.90
3	250.02	30.10 QP	46.00	-15.90	1.00 V	81	16.80	13.30
4	374.99	28.10 QP	46.00	-17.90	1.00 V	269	10.50	17.60
5	399.99	31.00 QP	46.00	-15.00	1.00 V	6	12.70	18.40
6	500.05	32.90 QP	46.00	-13.10	1.54 V	36	12.00	20.90
7	625.03	34.90 QP	46.00	-11.10	1.75 V	177	11.20	23.80
8	749.98	37.20 QP	46.00	-8.80	1.46 V	240	10.80	26.40
9	874.98	38.60 QP	46.00	-7.40	1.22 V	315	10.90	27.70
10	999.98	40.30 QP	54.00	-13.70	1.08 V	117	11.40	28.90

- 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



**802.11a OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 1	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>TESTED BY</b>	Rex Huang		

<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	*5745.00	95.60 PK			1.54 H	293	59.20	36.40
1	*5745.00	87.90 AV			1.54 H	293	51.50	36.40
2	#11490.00	48.80 PK	74.00	-25.20	1.48 H	300	-2.40	51.10
2	#11490.00	41.60 AV	54.00	-12.40	1.48 H	300	-9.60	51.10

<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	*5745.00	115.10 PK			1.08 V	207	78.70	36.40
1	*5745.00	107.90 AV			1.08 V	207	71.50	36.40
2	#11490.00	50.80 PK	74.00	-23.20	1.35 V	70	-0.40	51.10
2	#11490.00	41.50 AV	54.00	-12.50	1.35 V	70	-9.70	51.10

- NOTE:**
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. "\*" : Fundamental frequency
  6. "#"The radiated frequency falling in the restricted band.
  7. The limit value is defined as per 15.247

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 3	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>TESTED BY</b>	Rex Huang		

#### 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	*5785.00	96.50 PK			1.48 H	309	60.00	36.50
1	*5785.00	88.90 AV			1.48 H	309	52.40	36.50
2	#11570.00	47.10 PK	74.00	-26.90	1.34 H	98	-3.90	50.90
2	#11570.00	38.40 AV	54.00	-15.60	1.34 H	98	-12.60	50.90

#### 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	*5785.00	115.80 PK			1.10 V	216	79.30	36.50
1	*5785.00	108.60 AV			1.10 V	216	72.10	36.50
2	#11570.00	51.60 PK	74.00	-22.40	1.48 V	22	0.60	50.90
2	#11570.00	42.30 AV	54.00	-11.70	1.48 V	22	-8.70	50.90

- NOTE:**
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. "\*" : Fundamental frequency
  6. "#"The radiated frequency falling in the restricted band.
  7. The limit value is defined as per 15.247



<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 5	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>TESTED BY</b>	Rex Huang		

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	*5825.00	97.50 PK			1.44 H	300	60.90	36.60
1	*5825.00	89.50 AV			1.44 H	300	52.90	36.60
2	#11650.00	46.10 PK	74.00	-27.90	1.63 H	80	-4.60	50.60
2	#11650.00	37.90 AV	54.00	-16.10	1.63 H	80	-12.80	50.60

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	*5825.00	117.50 PK			1.05 V	198	80.90	36.60
1	*5825.00	109.30 AV			1.05 V	198	72.70	36.60
2	#11650.00	49.10 PK	74.00	-24.90	1.11 V	234	-1.60	50.60
2	#11650.00	41.70 AV	54.00	-12.30	1.11 V	234	-9.00	50.60

- NOTE:**
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. “\*” : Fundamental frequency
  6. “#”The radiated frequency falling in the restricted band.
  7. The limit value is defined as per 15.247

**802.11a Turbo OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 1	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	12Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>TESTED BY</b>	Rex Huang		

**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	*5760.00	95.50 PK			1.44 H	108	59.10	36.40
1	*5760.00	86.70 AV			1.44 H	108	50.30	36.40
2	#11520.00	47.50 PK	74.00	-26.50	1.78 H	64	-3.60	51.10
2	#11520.00	38.40 AV	54.00	-15.60	1.78 H	64	-12.70	51.10

**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	*5760.00	112.30 PK			1.09 V	300	75.90	36.40
1	*5760.00	104.70 AV			1.09 V	300	68.30	36.40
2	#11520.00	51.70 PK	74.00	-22.30	1.08 V	64	0.60	51.10
2	#11520.00	38.60 AV	54.00	-15.40	1.08 V	64	-12.50	51.10

- NOTE:**
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. "\*" : Fundamental frequency
  6. "#"The radiated frequency falling in the restricted band.
  7. The limit value is defined as per 15.247

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>CHANNEL</b>	Channel 2	<b>MODEL</b>	MP-620
<b>MODULATION TYPE</b>	BPSK	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	12Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>TESTED BY</b>	Rex Huang		

#### 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	*5800.00	95.20 PK			1.38 H	96	58.60	36.60
1	*5800.00	86.80 AV			1.38 H	96	50.20	36.60
2	#11600.00	47.00 PK	74.00	-27.00	1.00 H	148	-3.80	50.80
2	#11600.00	38.20 AV	54.00	-15.80	1.00 H	148	-12.60	50.80

#### 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	*5800.00	111.80 PK			1.08 V	298	75.20	36.60
1	*5800.00	104.80 AV			1.08 V	298	68.20	36.60
2	#11600.00	50.20 PK	74.00	-23.80	1.00 V	2	-0.60	50.80
2	#11600.00	39.80 AV	54.00	-14.20	1.00 V	2	-11.00	50.80

- NOTE:**
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. "\*" : Fundamental frequency
  6. "#"The radiated frequency falling in the restricted band.
  7. The limit value is defined as per 15.247



### 5.3 6dB BANDWIDTH MEASUREMENT

#### 5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 5.3.2 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.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 5.3.3 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.

### 5.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.3.5 TEST SETUP



### 5.3.6 EUT OPERATING CONDITIONS

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



## 5.3.7 TEST RESULTS

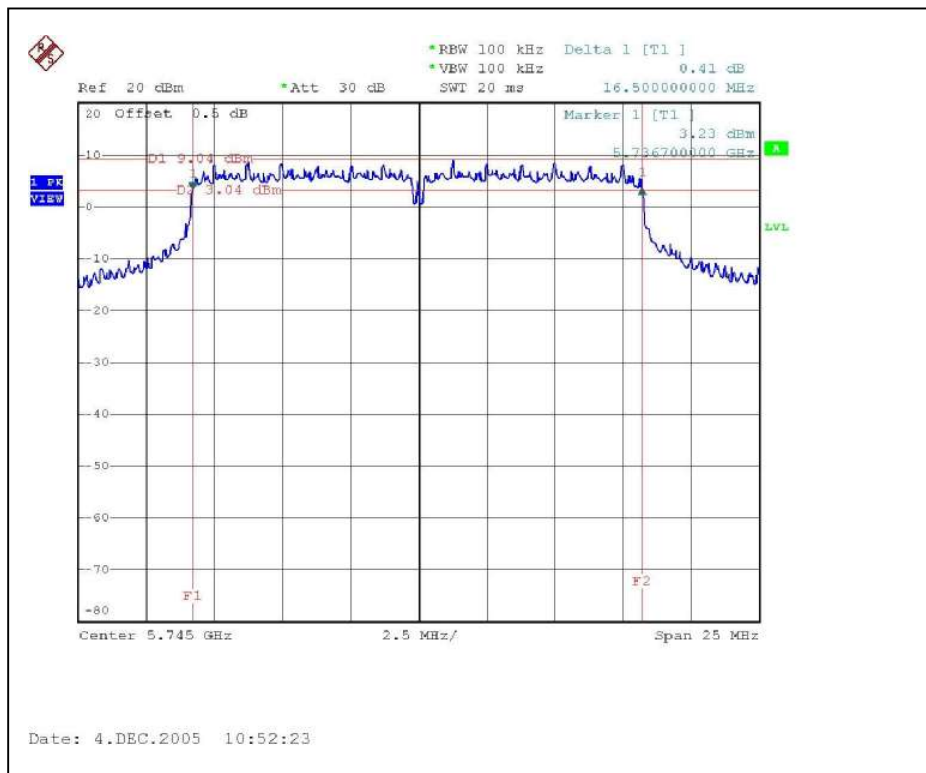
**802.11a OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	BPSK	<b>MODEL</b>	MP-620
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>TESTED BY</b>	Rex Huang	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa

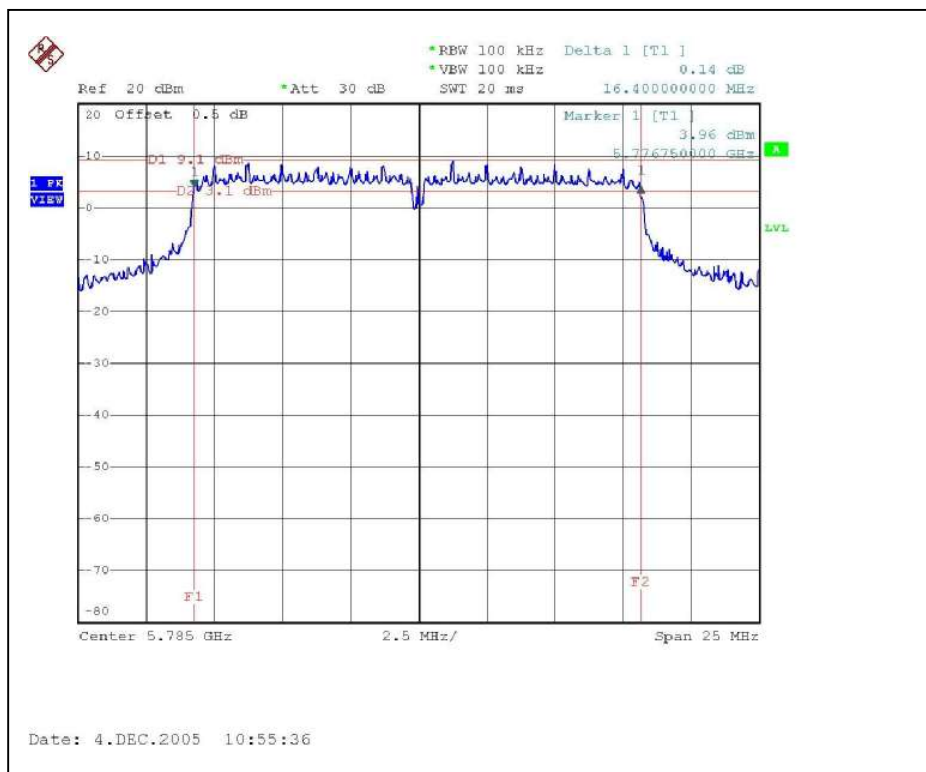
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	5745	16.5	0.5	PASS
3	5785	16.4	0.5	PASS
5	5825	16.5	0.5	PASS



CH1

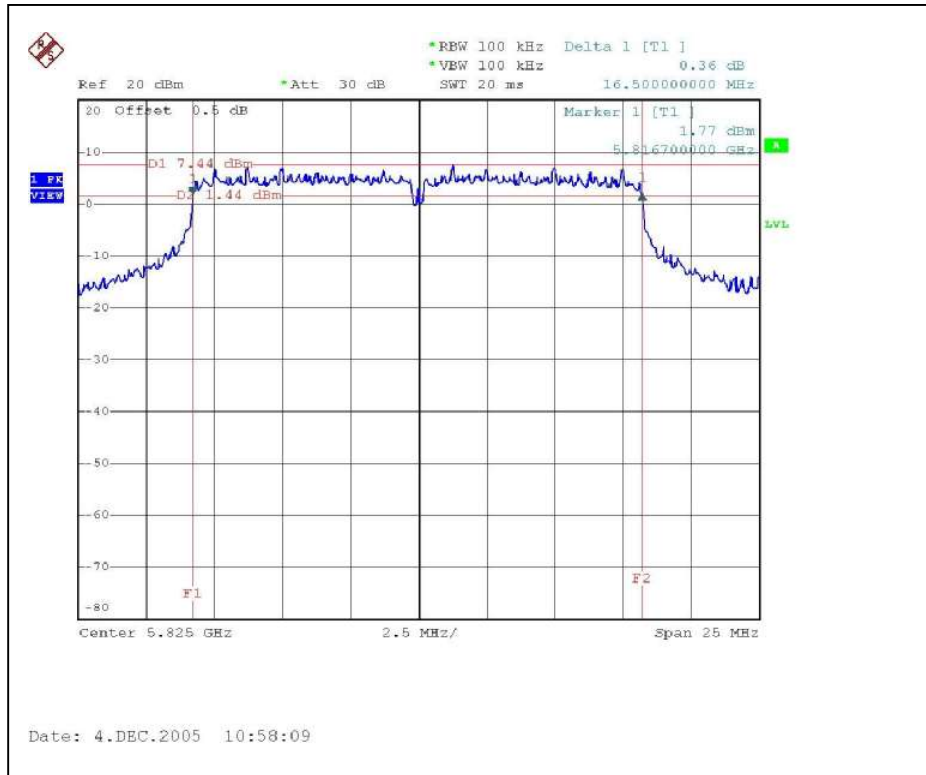


CH3





CH5



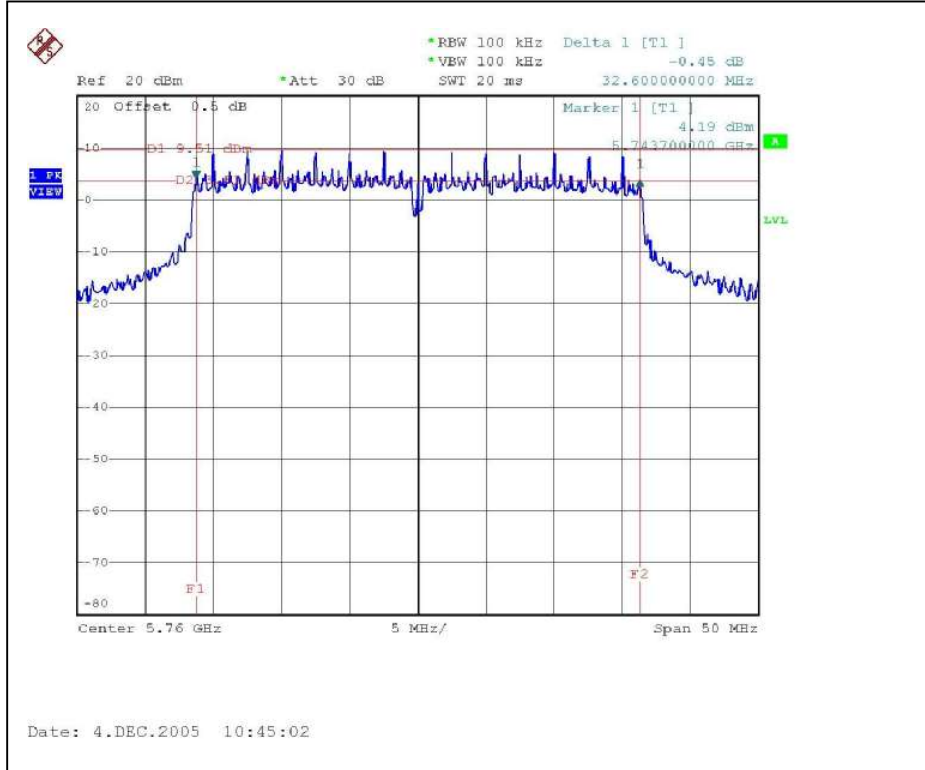
**802.11a Turbo OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	BPSK	<b>MODEL</b>	MP-620
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	12Mbps
<b>TESTED BY</b>	Rex Huang	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa

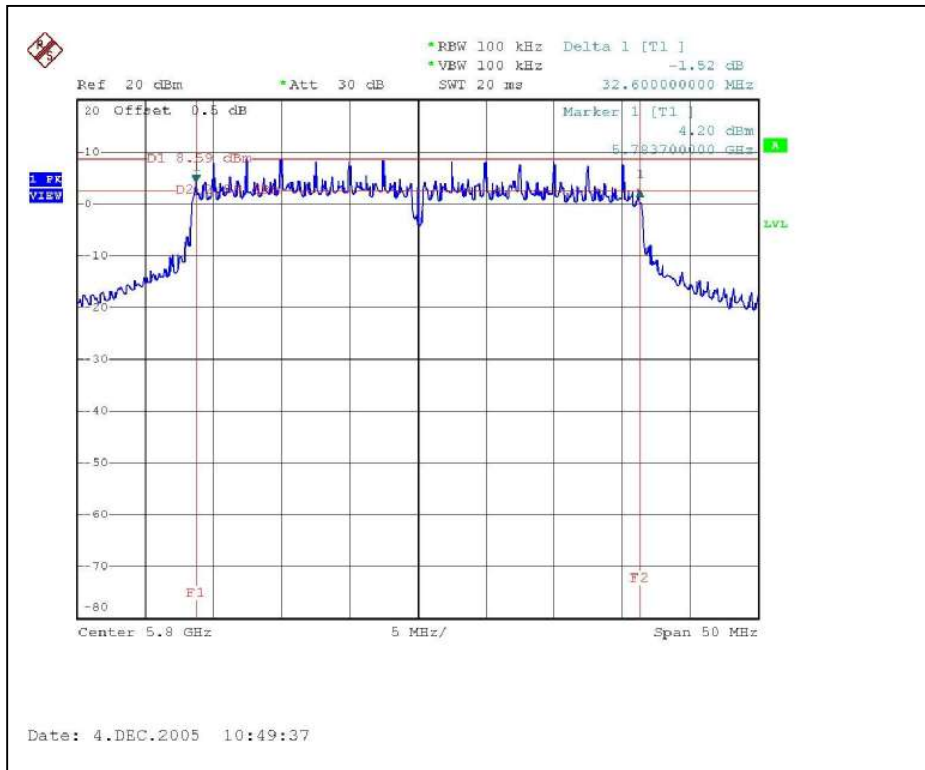
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	5760	32.6	0.5	PASS
2	5800	32.6	0.5	PASS



CH1



CH2



## 5.4 MAXIMUM PEAK OUTPUT POWER

### 5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

### 5.4.2 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.

### 5.4.3 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.

### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.4.5 TEST SETUP



### 5.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

## 5.4.7 TEST RESULTS

**802.11a OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	BPSK	<b>MODEL</b>	MP-620
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>TESTED BY</b>	Eric Lee	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	5745	186.638	22.71	28	PASS
3	5785	164.059	22.15	28	PASS
5	5825	142.561	21.54	28	PASS



**802.11a Turbo OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODULATION TYPE</b>	BPSK	<b>MODEL</b>	MP-620
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	12Mbps
<b>TESTED BY</b>	Eric Lee	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (mW)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	5760	165.196	22.18	28	PASS
2	5800	146.893	21.67	28	PASS

## 5.5 POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.5.2 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.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 5.5.3 TEST PROCEDURE

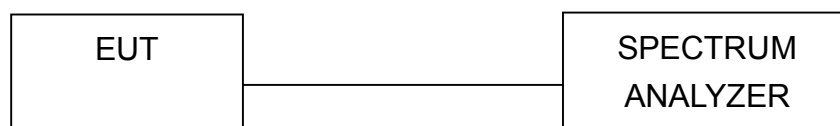
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.5.5 TEST SETUP



### 5.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

## 5.5.7 TEST RESULTS

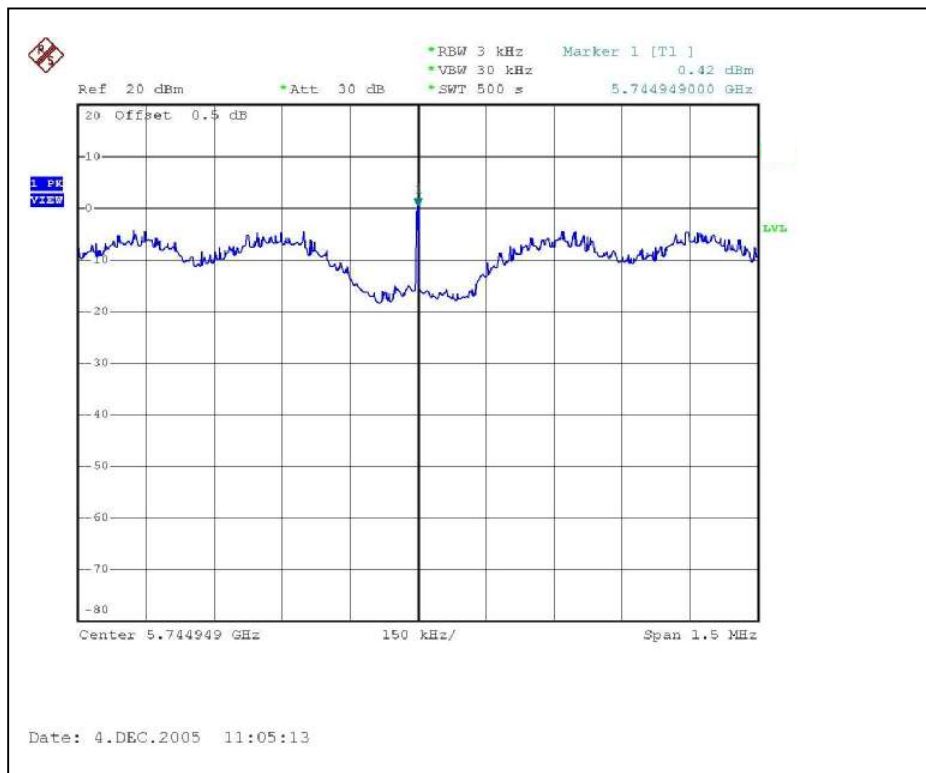
## 802.11a OFDM modulation

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	6Mbps
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TESTED BY</b>	Eric Lee

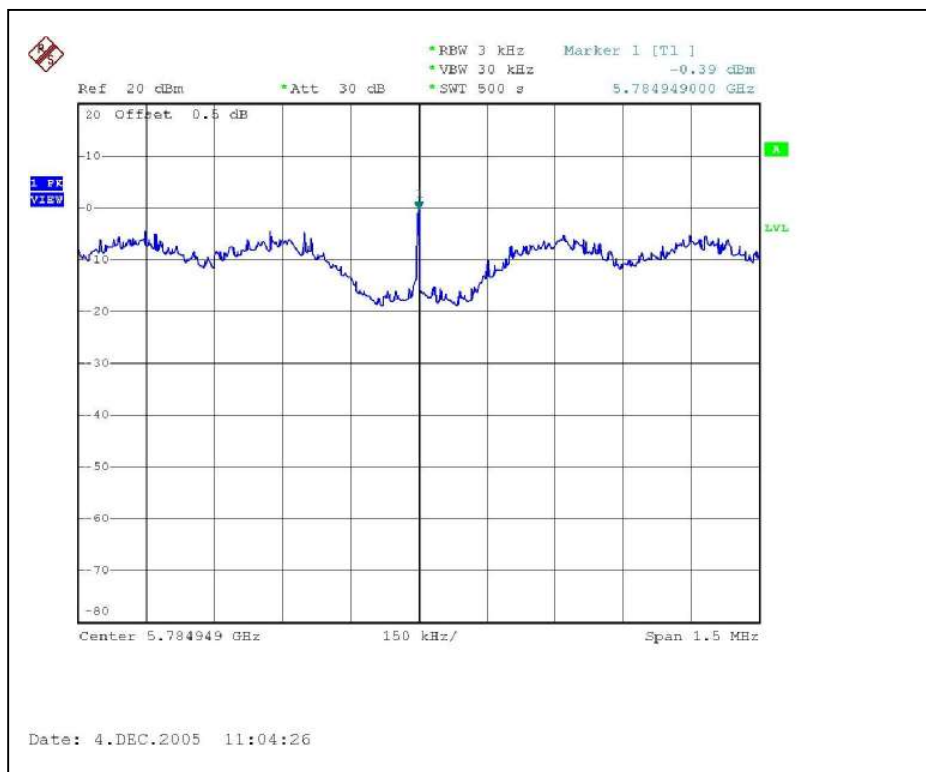
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3 kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	5745	0.42	8	PASS
3	5785	-0.39	8	PASS
5	5825	-1.95	8	PASS



CH1

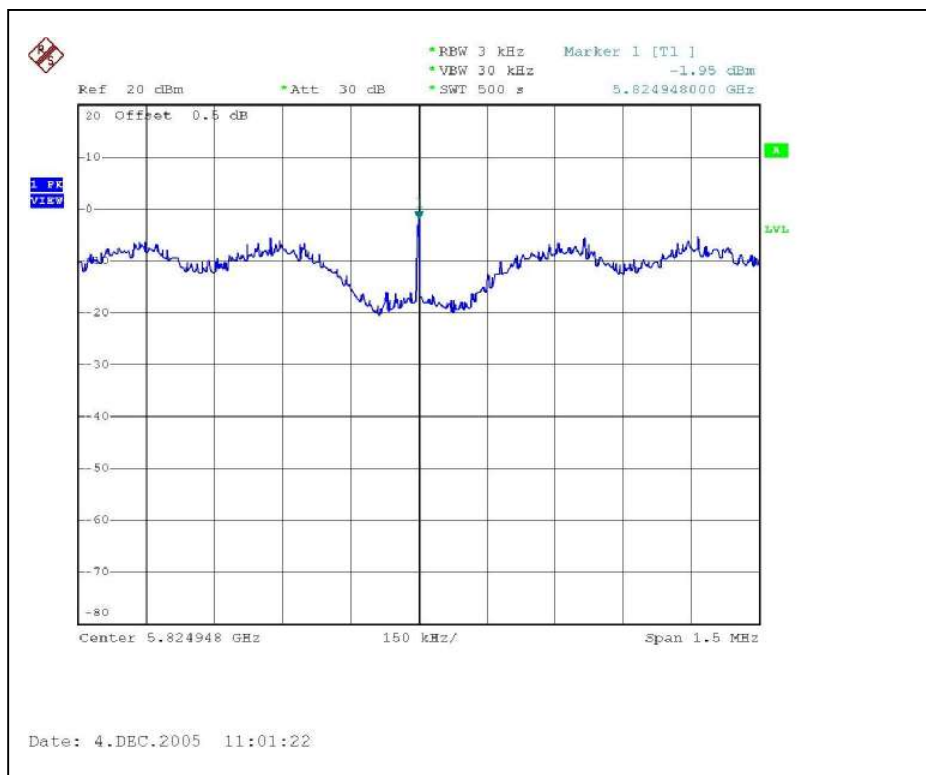


CH3





CH5



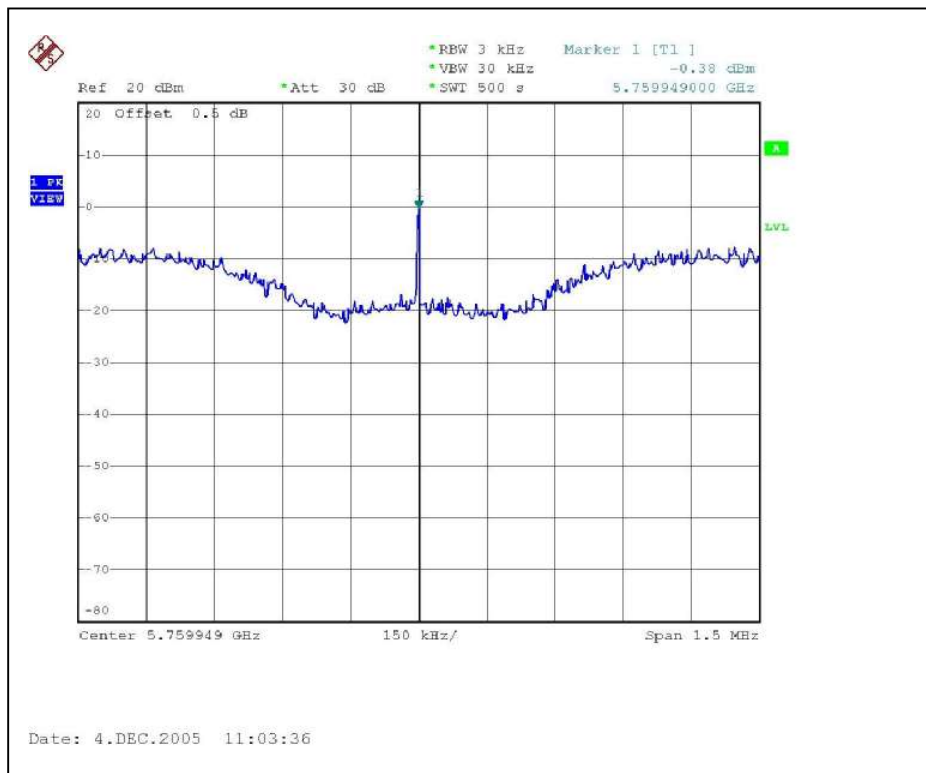
**802.11a Turbo OFDM modulation**

<b>EUT</b>	Dual mode 2.4GHz / 5GHz Access Point		
<b>MODEL</b>	MP-620	<b>TRANSFER RATE</b>	12Mbps
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	22deg. C, 63%RH, 973hPa
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TESTED BY</b>	Eric Lee

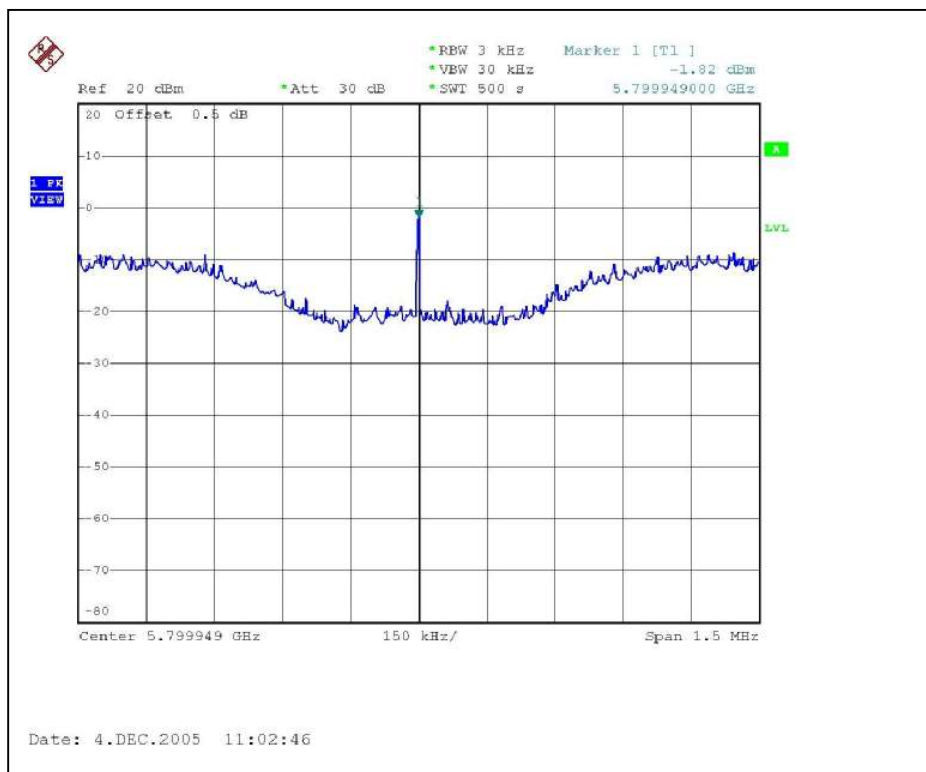
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3 kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	5760	-0.38	8	PASS
2	5800	-1.82	8	PASS



CH1



CH2





## 5.6 BAND EDGES MEASUREMENT

### 5.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

### 5.6.2 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 +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



### 5.6.3 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 100 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

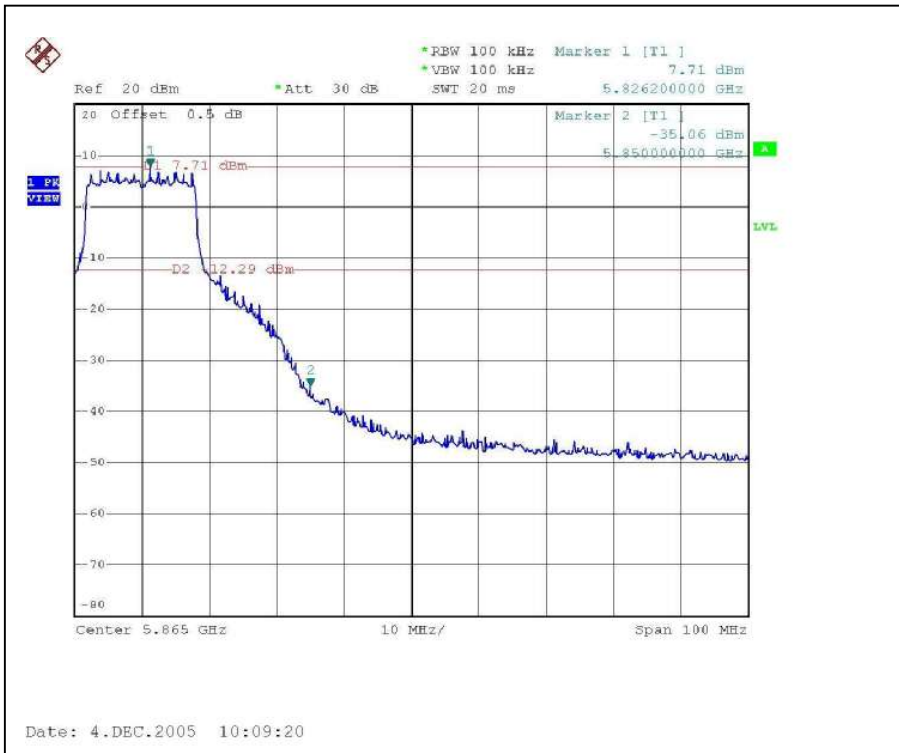
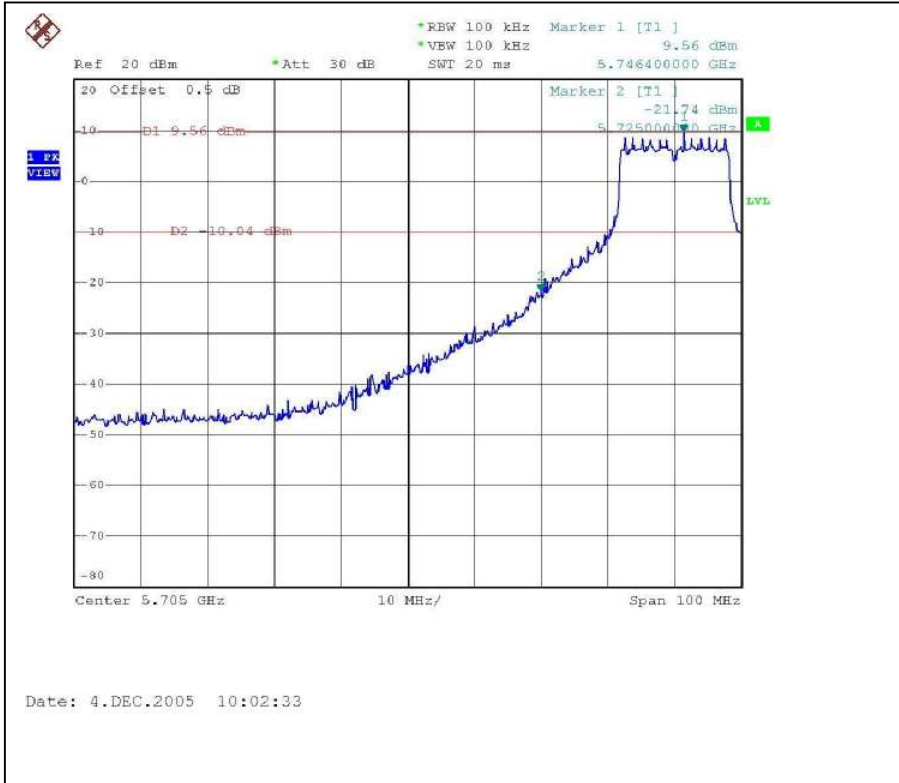


### 5.6.6 TEST RESULTS

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

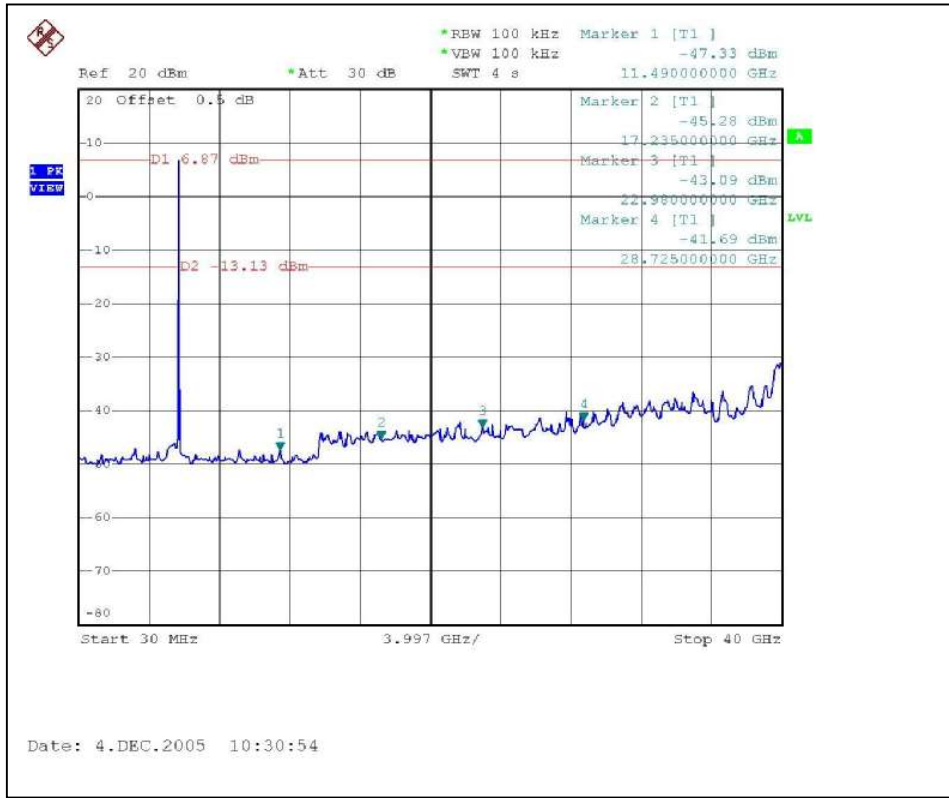


### 802.11a OFDM modulation

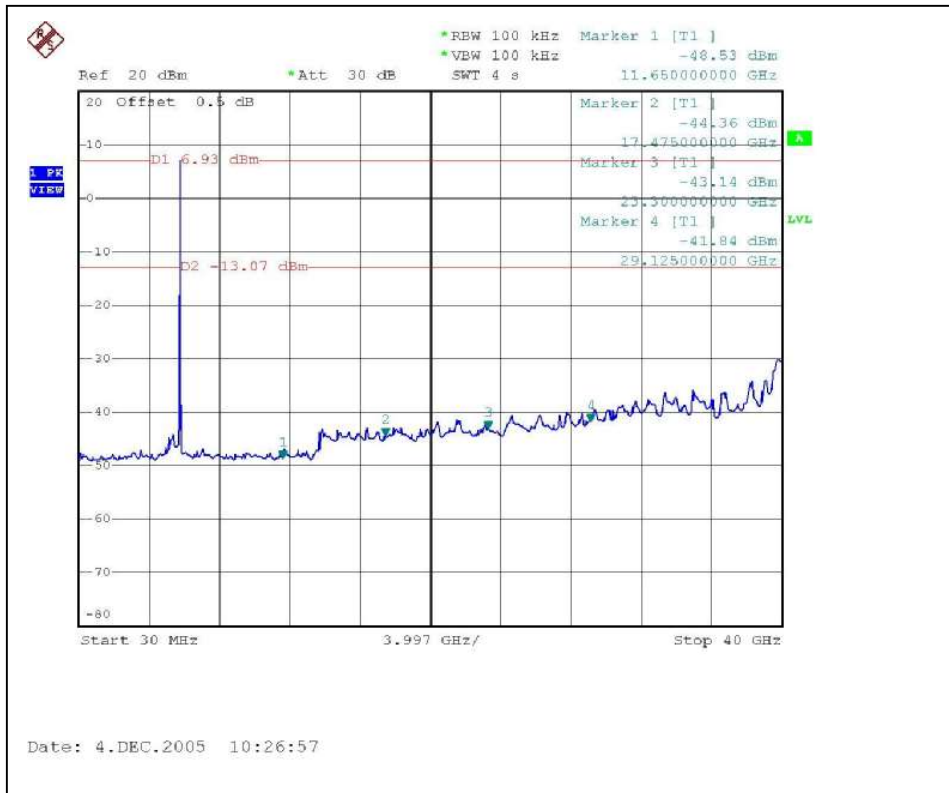




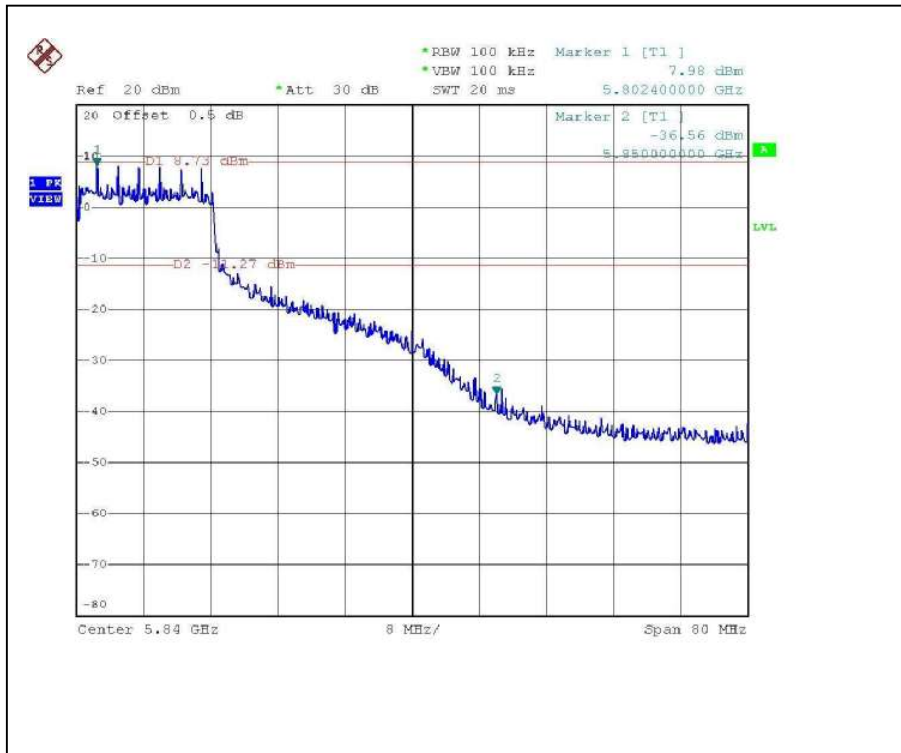
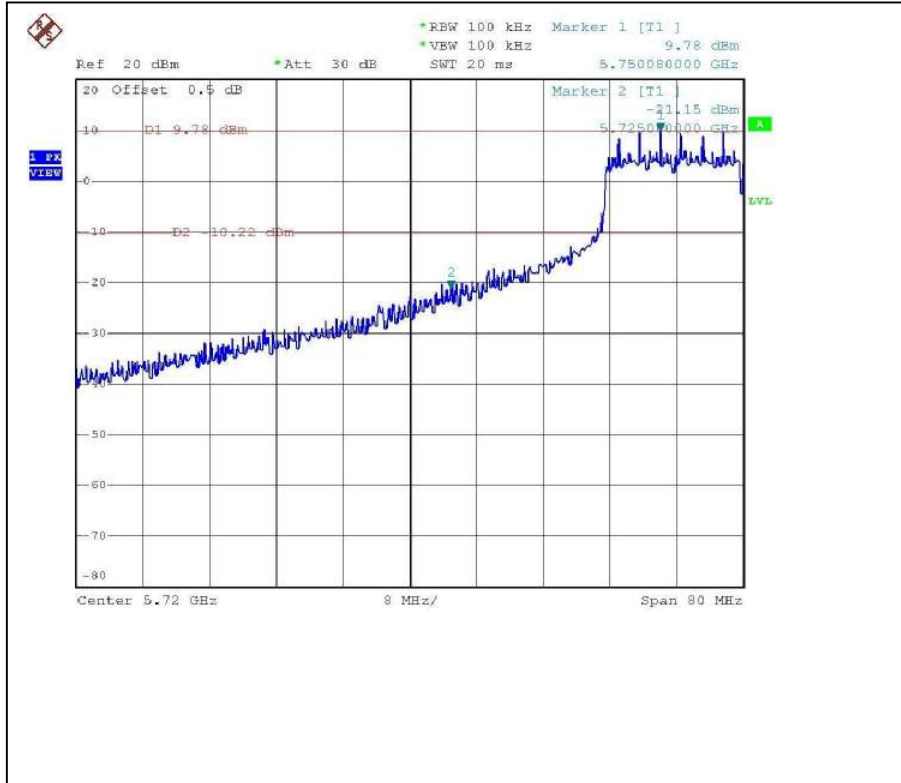
CH 1



CH 5

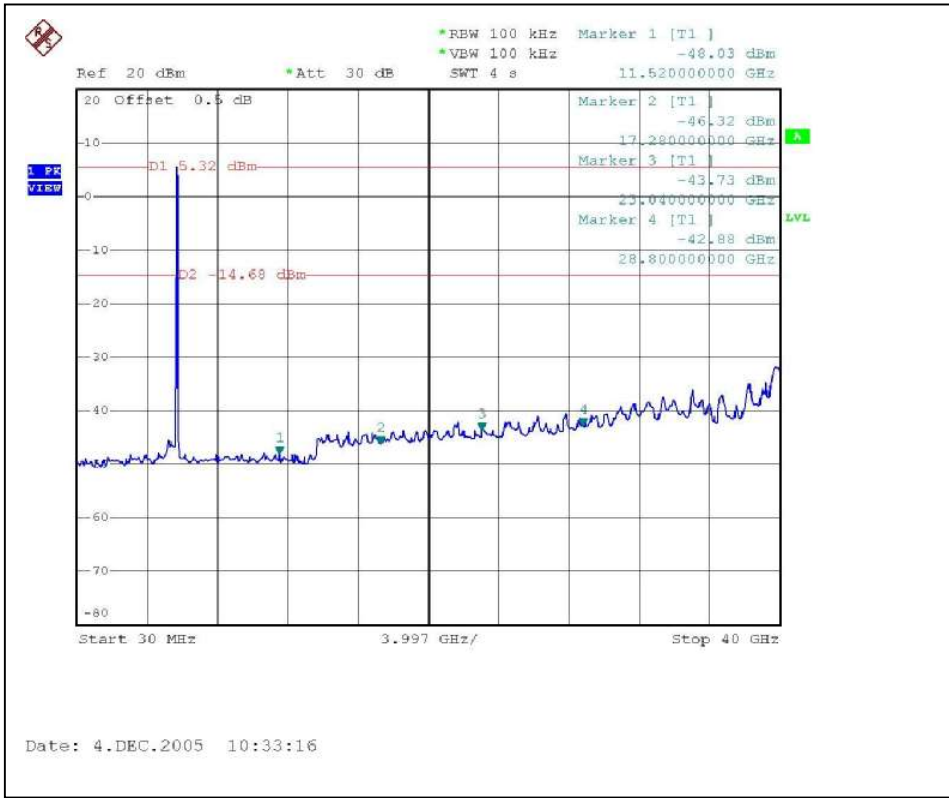


### 802.11a Turbo OFDM modulation

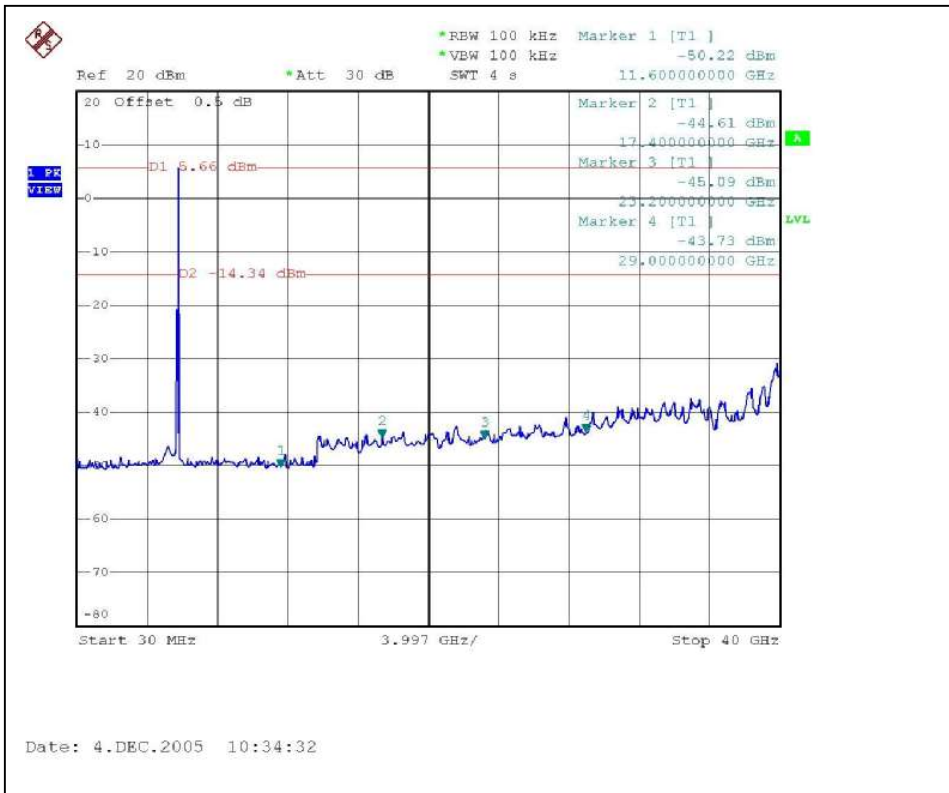




Turbo CH 1



Turbo CH 2





## **5.7 ANTENNA REQUIREMENT**

### **5.7.1 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(a), 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.

### **5.7.2 ANTENNA CONNECTED CONSTRUCTION**

The antenna used in this product is Omnidirectional (Dipole Antenna) with N-type connector. The maximum Gain of the antenna is 8dBi.



## 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (For 2.4GHz)



CONDUCTED EMISSION TEST (For 5GHz)



RADIATED EMISSION TEST (For 2.4GHz)



RADIATED EMISSION TEST (For 5GHz)





## 7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

<b>USA</b>	FCC, NVLAP, UL, A2LA
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA , CSA
<b>R.O.C.</b>	CNLA, BSMI, DGT
<b>Netherlands</b>	Telefication
<b>Singapore</b>	PSB , GOST-ASIA(MOU)
<b>Russia</b>	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

[www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml). If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety Telecom Lab:**

Tel: 886-3-3183232

Fax: 886-3-3185050

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also



## **APPENDIX-A**

### **MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.