

## FCC TEST REPORT (15.407)

**REPORT NO.:** RF940705L06  
**MODEL NO.:** AP41  
**RECEIVED:** Jul. 05, 2005  
**TESTED:** Jul. 05 ~ Jul. 12, 2005  
**ISSUED:** Jul. 13, 2005

**APPLICANT:** Delta Networks, Inc.

**ADDRESS:** 252, Shang Ying Road, Kuei San Taoyuan  
Shien 333, Taiwan, R.O.C.

**ISSUED BY:** Advance Data Technology Corporation

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**TEST LOCATION:** No. 19, Hwa Ya 2<sup>nd</sup> Rd., Wen Hwa Tsuen, Kwei  
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R.O.C.

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0528  
ILAC MRA



No. 2177-01

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## 1. CERTIFICATION

**PRODUCT:** 802.11 a+b+g wireless AP  
**BRAND NAME:** ARUBA  
**MODEL NO.:** AP41  
**APPLICANT:** Delta Networks, Inc.  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**TESTED:** Jul. 05 ~ Jul. 12, 2005  
**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.4-2003

The above equipment 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 :** Andrea Hsia, **DATE:** Jul. 13, 2005  
( Andrea Hsia )

**TECHNICAL**  
**ACCEPTANCE :** Gary Chang, **DATE:** Jul. 13, 2005  
Responsible for RF ( Gary Chang )

**APPROVED BY :** Cody Chang, **DATE:** Jul. 13, 2005  
( Cody Chang, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)</b>			
<b>Standard Section</b>	<b>Test Type</b>	<b>Result</b>	<b>Remark</b>
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -13.21dB at 0.310MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.60dB at 10360.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

### 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

<b>Measurement</b>	<b>Frequency</b>	<b>Uncertainty</b>
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.73 dB
	200MHz ~1000MHz	3.74 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	802.11 a+b+g wireless AP
<b>MODEL NO.</b>	AP41
<b>POWER SUPPLY</b>	48Vdc from POE
<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: 2.412 ~ 2.462GHz 802.11a: 5.150 ~ 5.350GHz and 5.725 ~ 5.850GHz
<b>NUMBER OF CHANNEL</b>	802.11b & 802.11g: 11 802.11a: 12
<b>CHANNEL SPACING</b>	802.11b & 802.11g: 5MHz 802.11a: 20MHz
<b>OUTPUT POWER</b>	50.933mW for 802.11b 51.168mW for 802.11g 20.941mW for 5.150 ~ 5.350GHz 50.816mW for 5.725 ~ 5.850GHz
<b>ANTENNA TYPE</b>	For 2.4GHz Dipole antenna with 2.11dBi gain Printed antenna with 0.86dBi gain For 5.0GHz Dipole antenna with 2.07dBi gain Printed antenna with 0.66dBi gain
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	RJ45
<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. 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.

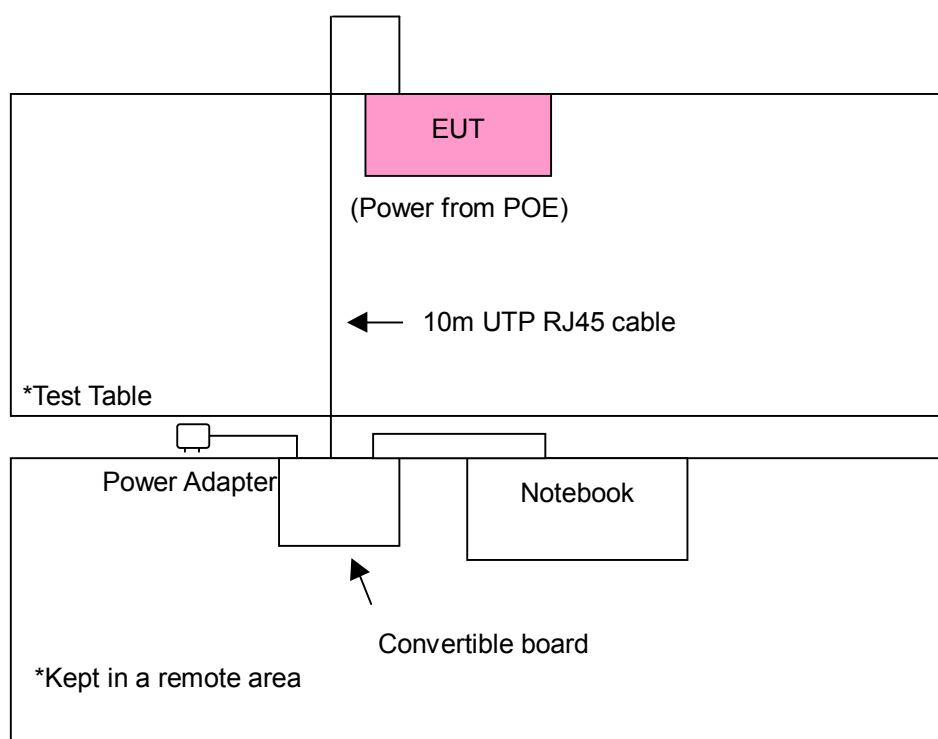
### 3.2 DESCRIPTION OF TEST MODES

Operated in 5150 ~ 5250MHz, 5250MHz ~ 5350MHz bands:

Eight channels are provided to this EUT.

Channel	Frequency
1	5180 MHz
2	5200 MHz
3	5220 MHz
4	5240 MHz
5	5260 MHz
6	5280 MHz
7	5300 MHz
8	5320 MHz

### 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST





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

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

Where PLC: Power Line Conducted Emission

RE&lt;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)
802.11a	1 to 8	1	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)
802.11a	1 to 8	1	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)
802.11a	1 to 8	1, 4, 5, 8	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)
802.11a	1 to 8	1, 8	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)
802.11a	1 to 8	1, 4, 5, 8	OFDM	BPSK	6

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 802.11 a+b+g wireless AP. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

#### FCC Part 15, Subpart E (15.407)

#### 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	PP05L	12130898320	E2K24CLNS
2	POWER ADAPTER	POE-PSE	DSA-0421S-50 1	NA	FCC DoC Approved

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

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

## 4. TEST TYPES AND RESULTS (5150 ~ 5350MHz 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 ROHDE & SCHWARZ	ESCS30	100291	Nov. 16, 2005
RF signal cable Woken	5D-FB	Cable-HYC01-01	Jan. 09, 2006
LISN SCHWARZBECK	NNBL 8226-2	8226-142	May. 02, 2006
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Feb. 15, 2006
Software ADT	ADT_Cond_V3	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 HwaYa Shielded Room 1.
  3. The VCCI Site Registration No. is C-2040.



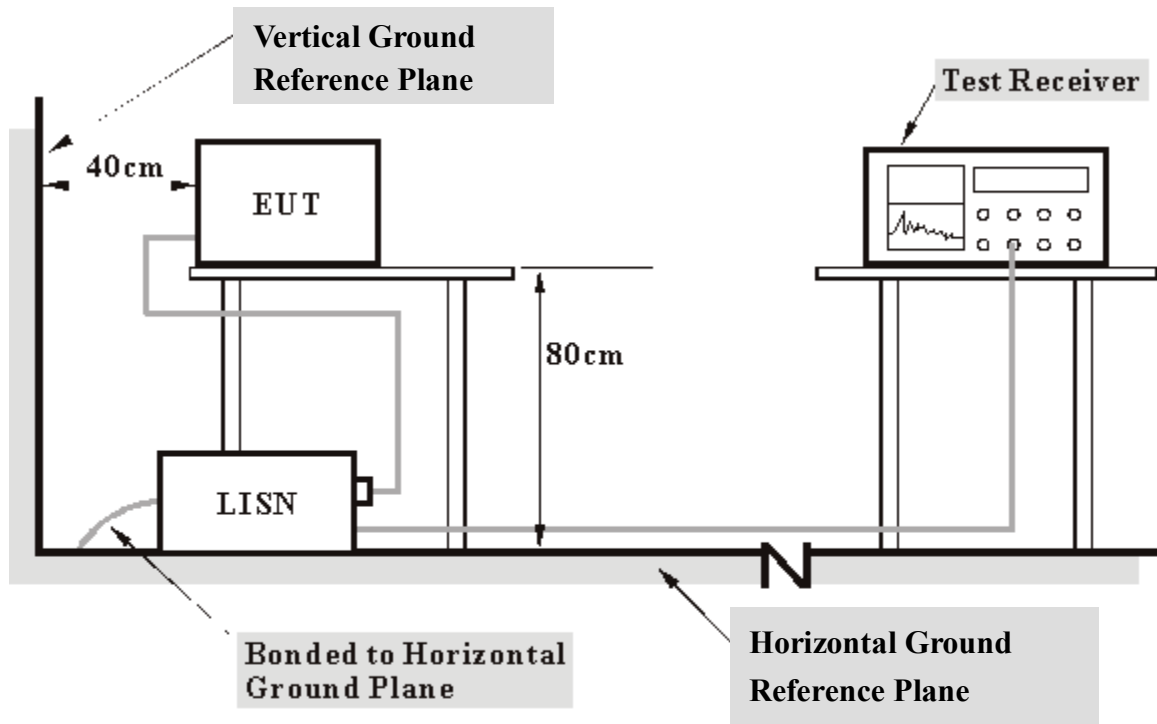
#### 4.1.3 TEST PROCEDURES

- 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) 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) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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 another notebook system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ45 cable.
- d. The communication partner sent data to EUT by command "PING".

## 4.1.7 TEST RESULTS

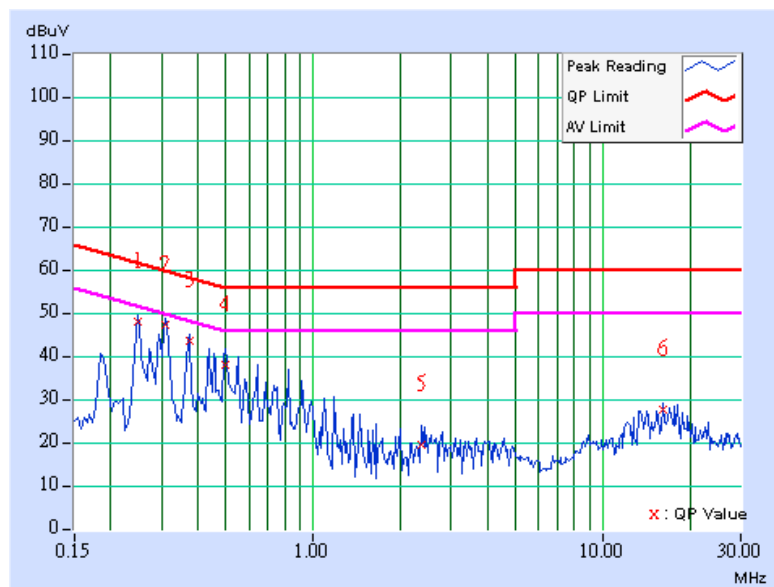
**Conducted Worst-Case Data**

<b>EUT</b>	802.11 a+b+g wireless AP	<b>MEASUREMENT DETAIL</b>	
<b>MODEL</b>	AP41	<b>PHASE</b>	Line 1
<b>CHANNEL</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 65%RH, 991hPa
<b>TRANSFER RATE</b>	6Mbps	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Gary Chang		

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	0.248	0.11	47.62	-	47.73	-	61.84	51.84	-14.11	-
2	<b>0.310</b>	<b>0.11</b>	<b>46.65</b>	-	<b>46.76</b>	-	<b>59.97</b>	<b>49.97</b>	<b>-13.21</b>	-
3	0.373	0.11	43.12	-	43.23	-	58.44	48.44	-15.21	-
4	0.500	0.13	37.46	-	37.59	-	56.00	46.00	-18.41	-
5	2.375	0.28	19.10	-	19.38	-	56.00	46.00	-36.62	-
6	16.227	0.67	27.14	-	27.81	-	60.00	50.00	-32.19	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

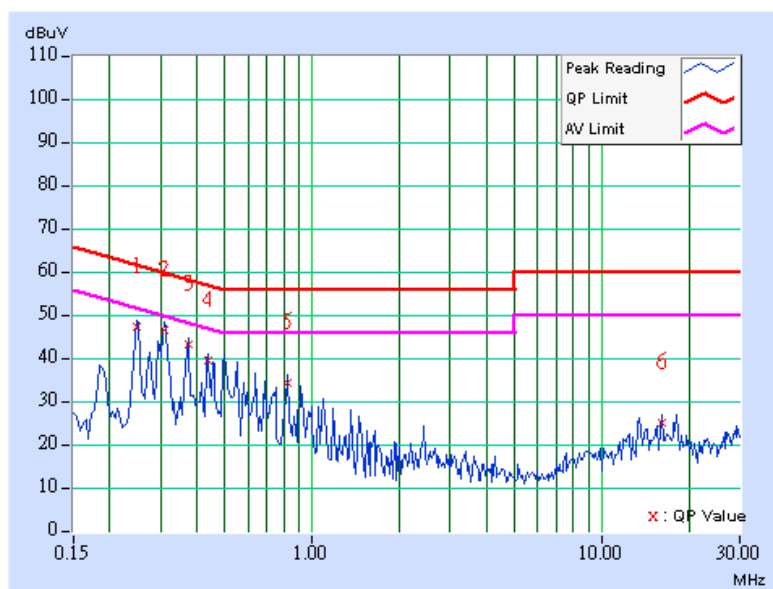
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission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



EUT	802.11 a+b+g wireless AP	MEASUREMENT DETAIL	
MODEL	AP41	PHASE	Line 2
CHANNEL	Channel 1	6dB BANDWIDTH	9 kHz
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Gary Chang		

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	0.248	0.11	46.98	-	47.09	-	61.84	51.84	-14.75	-
2	0.310	0.11	46.14	-	46.25	-	59.97	49.97	-13.72	-
3	0.373	0.11	42.90	-	43.01	-	58.44	48.44	-15.43	-
4	0.435	0.12	39.16	-	39.28	-	57.15	47.15	-17.88	-
5	0.822	0.20	33.85	-	34.05	-	56.00	46.00	-21.95	-
6	16.227	0.52	24.65	-	25.17	-	60.00	50.00	-34.83	-

- 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 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	EIRP Limit (dBm)	Equivalent Field Strength at 3m (dBμV/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

**NOTE:**

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

$$E = \frac{1000000\sqrt{30P}}{3} \mu\text{V/m, where P is the eirp (Watts)}$$

## 4.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	100033	May. 19, 2006
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Nov. 21, 2006
BILOG Antenna SCHWARZBECK	VULB9168	9168-160	Jun. 01, 2006
HORN Antenna SCHWARZBECK	9120D	9120D-408	Jan. 17, 2006
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170243	Jan. 23, 2006
Preamplifier Agilent	8447D	2944A10633	Nov. 09, 2005
Preamplifier Agilent	8449B	3008A01964	Nov. 06, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Jan. 26, 2006
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Jan. 26, 2006
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	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 HwaYa Chamber 2.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The VCCI Site Registration No. is R-237.

5. The IC Site Registration No. is IC4924-3.

#### 4.2.4 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

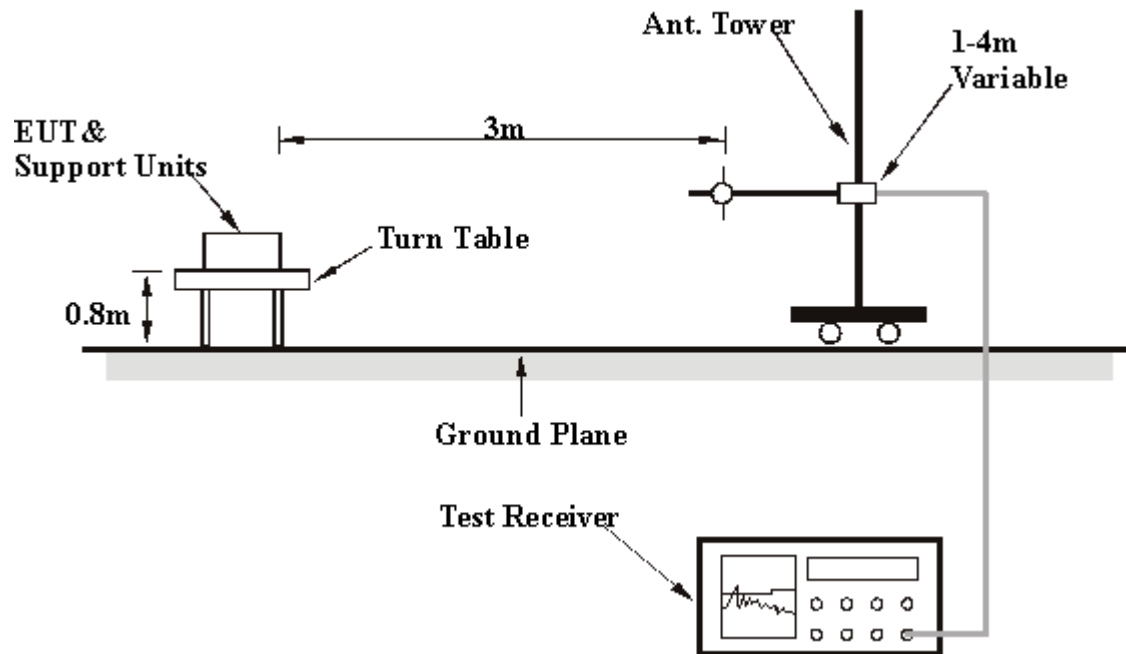
**NOTE:**

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.

#### 4.2.5 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.6 TEST SETUP



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

#### 4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

#### 4.2.8 TEST RESULTS

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

EUT	802.11 a+b+g wireless AP	MEASUREMENT DETAIL	
MODEL	AP41	FREQUENCY RANGE	Below 1000MHz
CHANNEL	Channel 1	DETECTOR FUNCTION	Quasi-Peak
MODULATION TYPE	BPSK	ENVIRONMENTAL CONDITIONS	24deg. C, 70%RH, 991hPa
TRANSFER RATE	6Mbps	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Morgan 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	47.49	29.43 QP	40.00	-10.57	1.25 H	64	14.76	14.68
2	84.43	26.54 QP	40.00	-13.46	1.00 H	151	16.56	9.98
3	249.66	30.89 QP	46.00	-15.11	1.00 H	52	18.28	12.61
4	500.42	36.63 QP	46.00	-9.37	1.25 H	115	16.34	20.29
5	624.83	31.64 QP	46.00	-14.36	1.00 H	133	8.57	23.07
6	751.18	36.46 QP	46.00	-9.54	1.00 H	100	10.54	25.91

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	47.49	37.39 QP	40.00	-2.61	1.25 V	193	22.71	14.68
2	84.43	35.24 QP	40.00	-4.76	1.00 V	259	25.27	9.98
3	142.75	32.25 QP	43.50	-11.25	1.00 V	70	18.90	13.35
4	249.66	34.85 QP	46.00	-11.15	1.00 V	31	22.24	12.61
5	500.42	41.21 QP	46.00	-4.79	1.00 V	10	20.91	20.29
6	751.18	35.79 QP	46.00	-10.21	1.00 V	244	9.88	25.91

**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 Normal modulation**

<b>EUT</b>	802.11 a+b+g wireless AP	<b>MEASUREMENT DETAIL</b>	
<b>MODEL</b>	AP41	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>CHANNEL</b>	Channel 1	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 70%RH, 991hPa
<b>TRANSFER RATE</b>	6Mbps	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Morgan 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	3453.00	42.58 PK	68.30	-25.72	1.03 H	326	9.24	33.34
2	#5150.00	49.04 PK	74.00	-24.96	1.00 H	311	10.51	38.53
3	*5180.00	94.54 PK			1.00 H	311	56.02	38.52
3	*5180.00	84.60 AV			1.00 H	311	46.08	38.52
4	10360.00	61.94 PK	68.30	-6.36	1.08 H	99	14.27	47.67

**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	3453.00	44.65 PK	68.30	-23.65	1.00 V	300	11.31	33.34
2	#5150.00	58.60 PK	74.00	-15.40	1.00 V	313	20.07	38.53
3	*5180.00	104.10 PK			1.00 V	313	65.58	38.52
3	*5180.00	93.43 AV			1.00 V	313	54.91	38.52
4	10360.00	66.70 PK	68.30	-1.60	1.08 V	99	19.03	47.67

- 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.

<b>EUT</b>	802.11 a+b+g wireless AP	<b>MEASUREMENT DETAIL</b>	
<b>MODEL</b>	AP41	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>CHANNEL</b>	Channel 4	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 70%RH, 991hPa
<b>TRANSFER RATE</b>	6Mbps	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Morgan 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	3493.00	42.87 PK	68.30	-25.43	1.01 H	354	9.53	33.34
2	*5240.00	95.61 PK			1.11 H	21	57.07	38.54
2	*5240.00	85.72 AV			1.11 H	21	47.18	38.54
3	10480.00	62.12 PK	68.30	-6.18	1.07 H	68	14.08	48.04

#### 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	3493.00	44.85 PK	68.30	-23.45	1.02 V	315	11.51	33.34
2	*5240.00	105.37 PK			1.19 V	20	66.83	38.54
2	*5240.00	94.09 AV			1.19 V	20	55.55	38.54
3	10480.00	66.18 PK	68.30	-2.12	1.11 V	8	18.14	48.04

- 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.



<b>EUT</b>	802.11 a+b+g wireless AP	<b>MEASUREMENT DETAIL</b>	
<b>MODEL</b>	AP41	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>CHANNEL</b>	Channel 5	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 70%RH, 991hPa
<b>TRANSFER RATE</b>	6Mbps	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Morgan 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	3506.00	42.31 PK	68.30	-25.99	1.02 H	318	8.94	33.37
2	*5260.00	95.72 PK			1.13 H	37	57.18	38.54
2	*5260.00	85.83 AV			1.13 H	37	47.29	38.54
3	10520.00	62.32 PK	68.30	-5.98	1.09 H	57	14.19	48.13

**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	3506.00	44.75 PK	68.30	-23.55	1.03 V	326	11.38	33.37
2	*5260.00	105.42 PK			1.15 V	18	66.88	38.54
2	*5260.00	94.21 AV			1.15 V	18	55.67	38.54
3	10520.00	66.14 PK	68.30	-2.16	1.10 V	8	18.01	48.13

- 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.

<b>EUT</b>	802.11 a+b+g wireless AP	<b>MEASUREMENT DETAIL</b>	
<b>MODEL</b>	AP41	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>CHANNEL</b>	Channel 8	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	BPSK	<b>ENVIRONMENTAL CONDITIONS</b>	24deg.C, 70%RH, 991hPa
<b>TRANSFER RATE</b>	6Mbps	<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz
<b>TESTED BY</b>	Morgan 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	3546.00	42.75 PK	68.30	-25.55	1.01 H	319	9.19	33.56
2	*5320.00	94.65 PK			1.12 H	45	56.10	38.55
2	*5320.00	84.58 AV			1.12 H	45	46.03	38.55
3	#5350.00	47.74 PK	74.00	-26.26	1.12 H	45	9.21	38.53
3	#5350.00	37.65 AV	54.00	-16.35	1.12 H	45	-0.88	38.53
4	#10640.00	62.02 PK	74.00	-11.98	1.07 H	64	13.80	48.22
4	#10640.00	48.32 AV	54.00	-5.68	1.07 H	64	0.10	48.22

#### 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	3546.00	44.85 PK	68.30	-23.45	1.05 V	315	11.29	33.56
2	*5320.00	104.21 PK			1.00 V	325	65.66	38.55
2	*5320.00	93.54 AV			1.00 V	325	54.99	38.55
3	#5350.00	57.21 PK	74.00	-16.79	1.09 V	7	18.68	38.53
3	#5350.00	46.54 AV	54.00	-7.46	1.09 V	7	8.01	38.53
4	#10640.00	65.10 PK	74.00	-8.90	1.13 V	37	16.88	48.22
4	#10640.00	52.25 AV	54.00	-1.75	1.13 V	37	4.03	48.22

- 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.

### 4.3 PEAK TRANSMIT POWER MEASUREMENT

#### 4.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

**NOTE:** Where B is the 26dB emission bandwidth in MHz.

#### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

**NOTE:** 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

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 3MHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

**NOTE:**

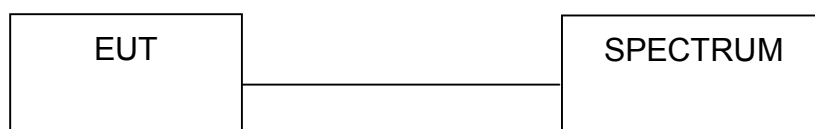
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

The transmitter output operates continuously therefore Method # 1 is used.

#### 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 specific channel frequencies individually.

## 4.3.7 TEST RESULTS

## 802.11a OFDM modulation

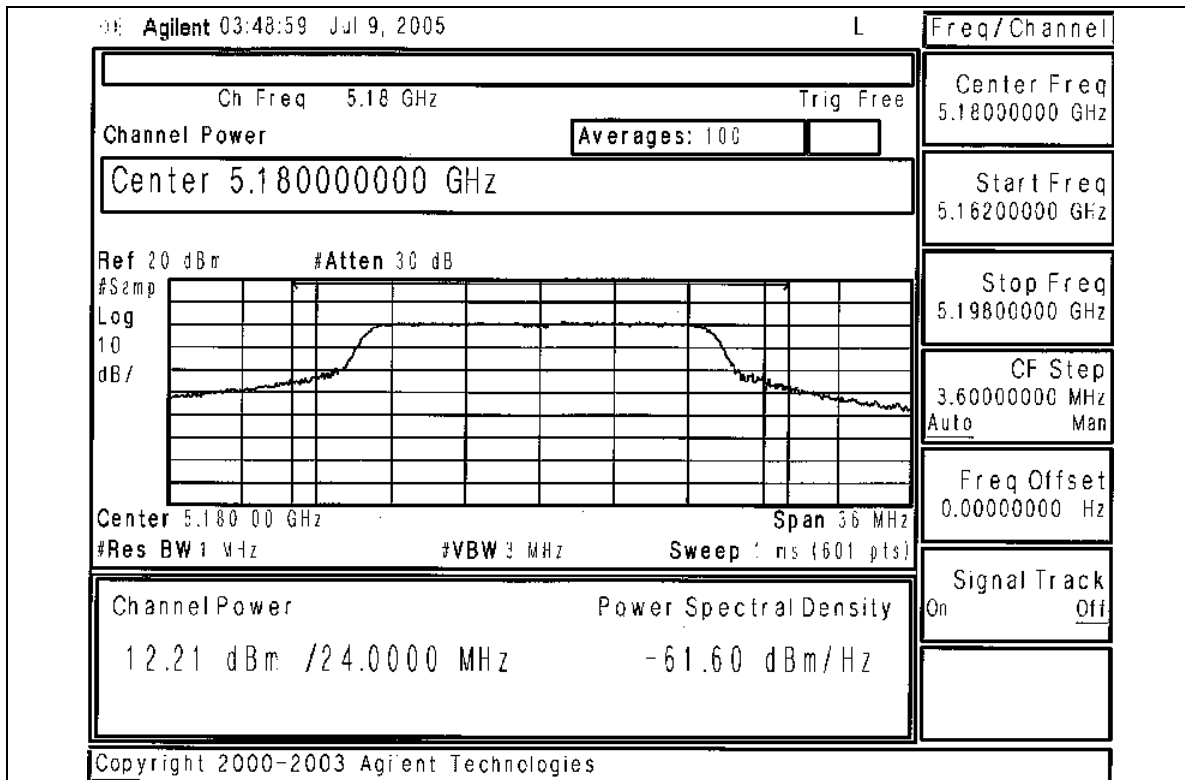
<b>EUT</b>	802.11 a+b+g wireless AP	<b>MODEL</b>	AP41
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	26deg.C, 63%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	16.634	12.21	17.00	23.56	PASS
4	5240	20.749	13.17	17.00	23.98	PASS
5	5260	20.941	13.21	24.00	23.98	PASS
8	5320	17.219	12.36	24.00	24.68	PASS

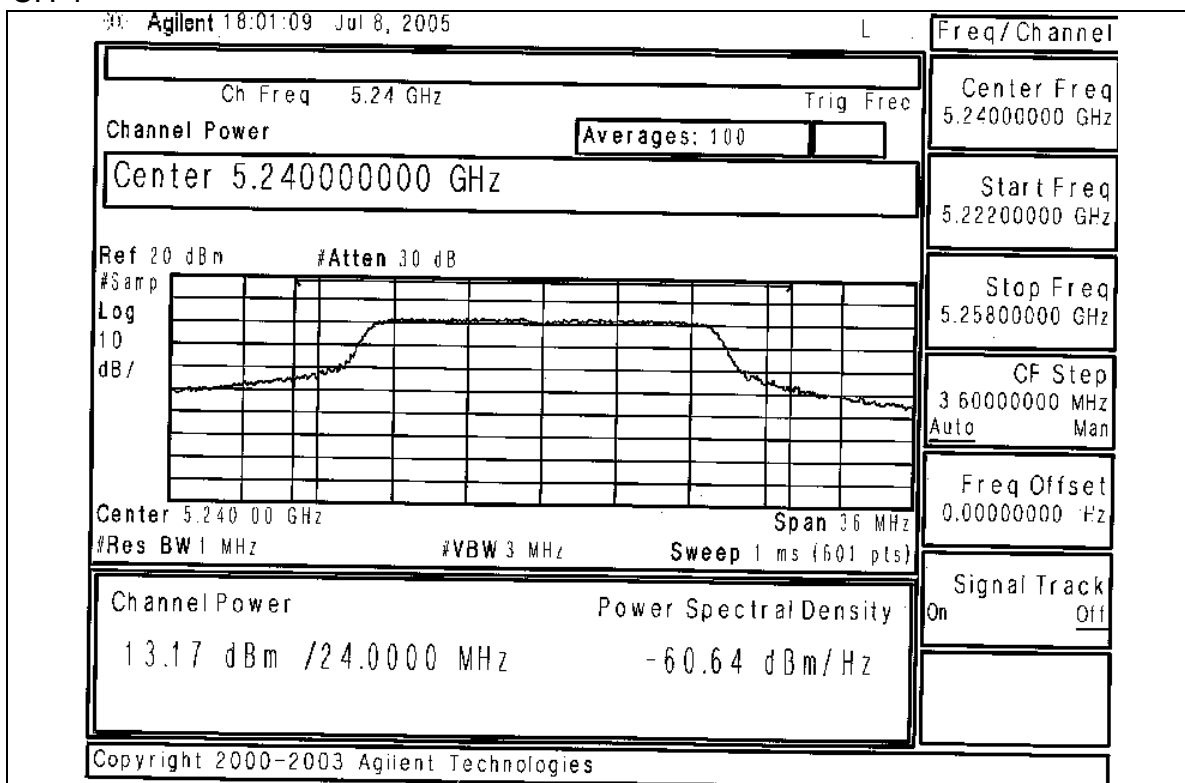
**NOTE:** The 26dBc Occupied Bandwidth plot, please refer to the following pages.



# Peak Power Output: CH 1

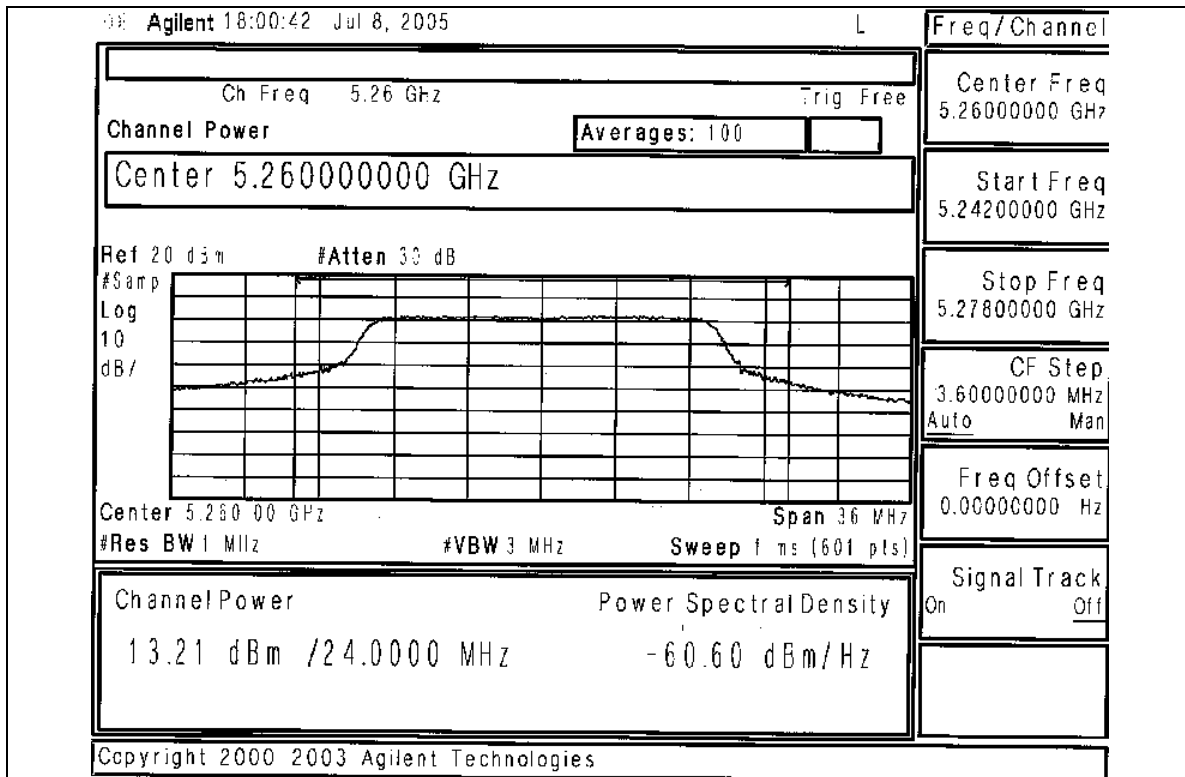


## CH 4

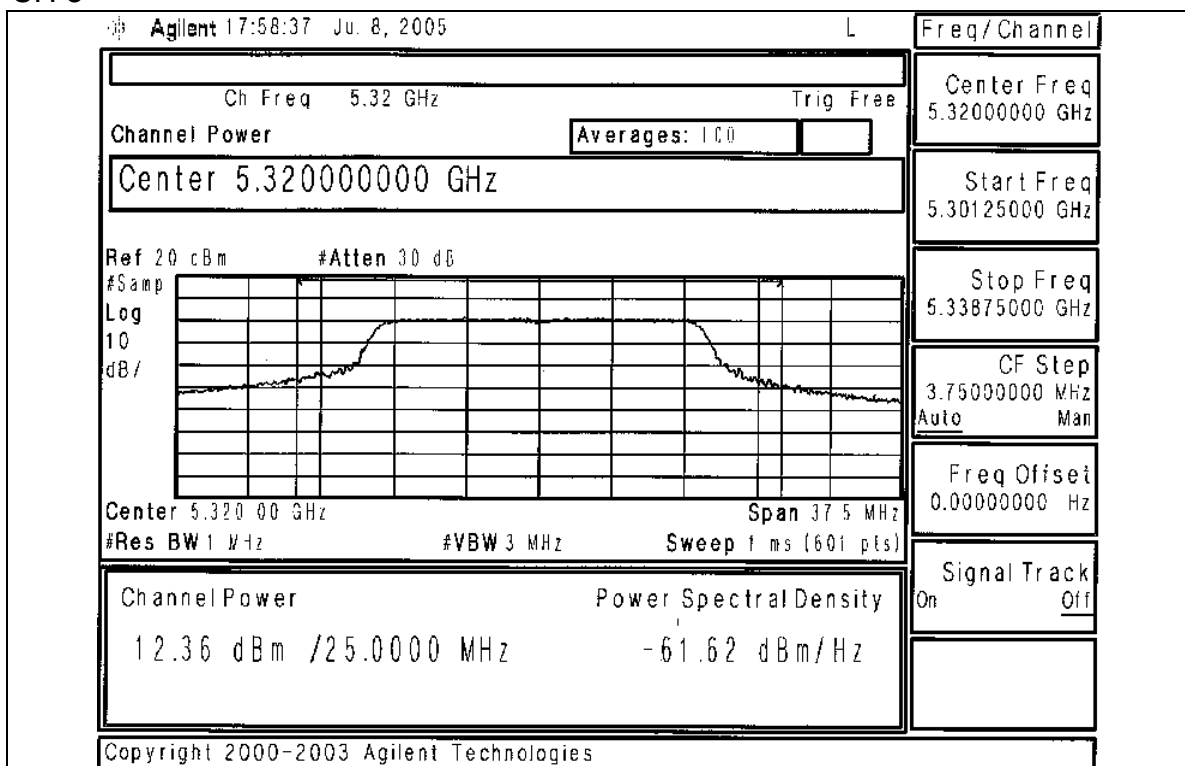




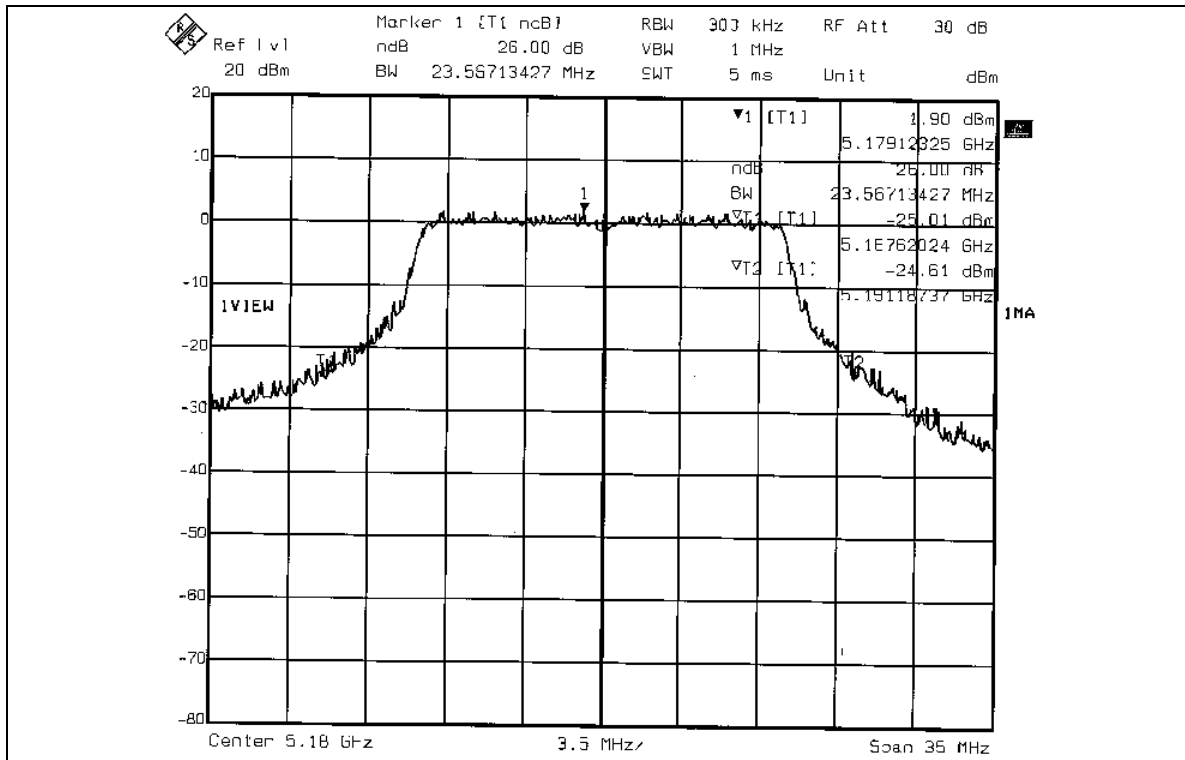
## CH 5



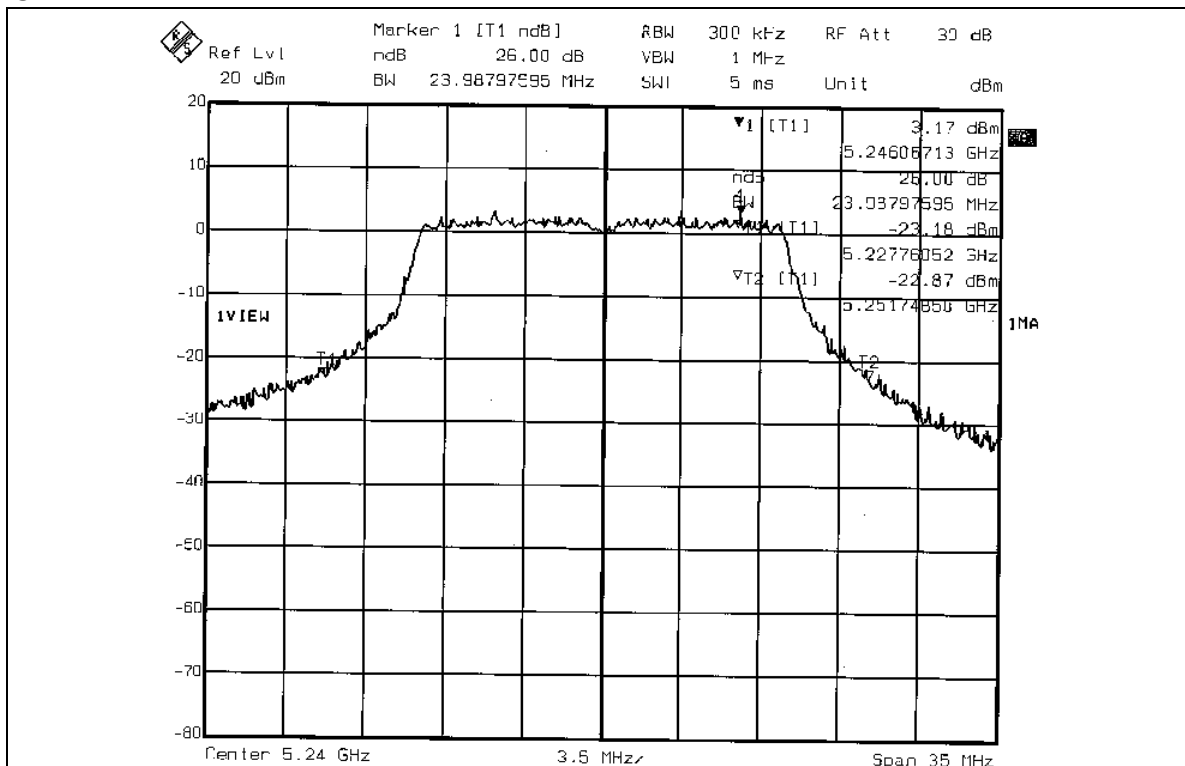
## CH 8



## 26dB Occupied Bandwidth: CH 1

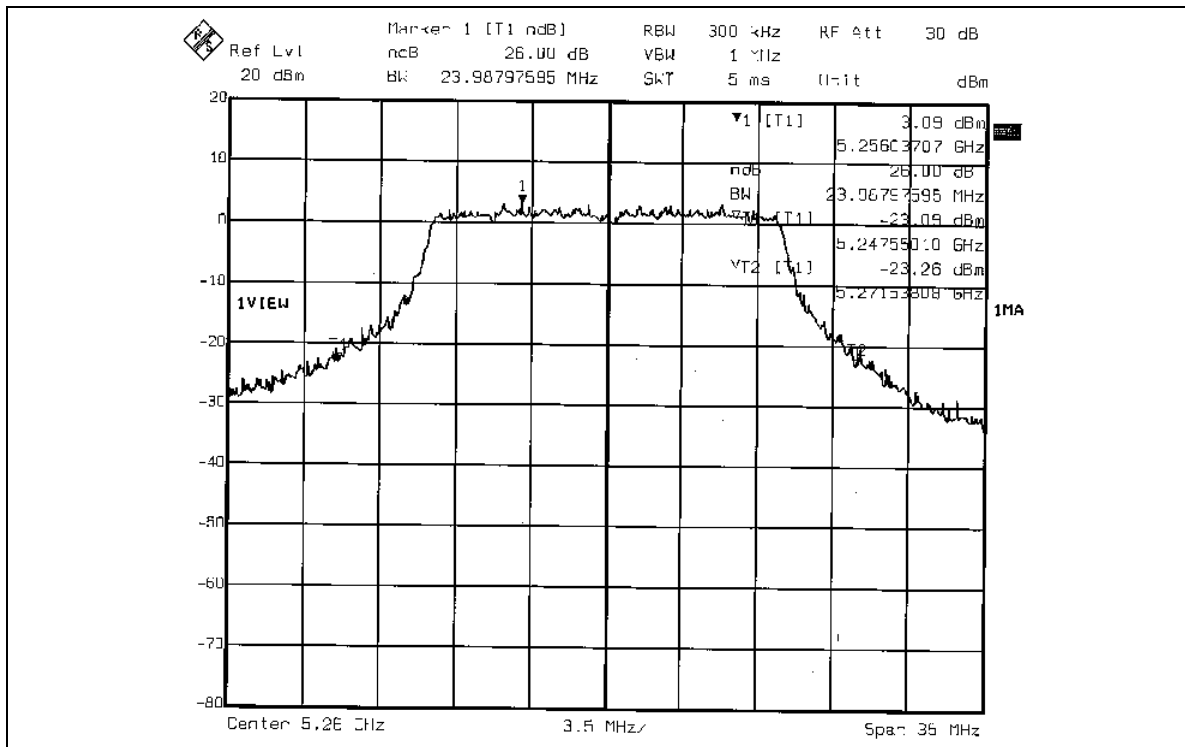


## CH 4

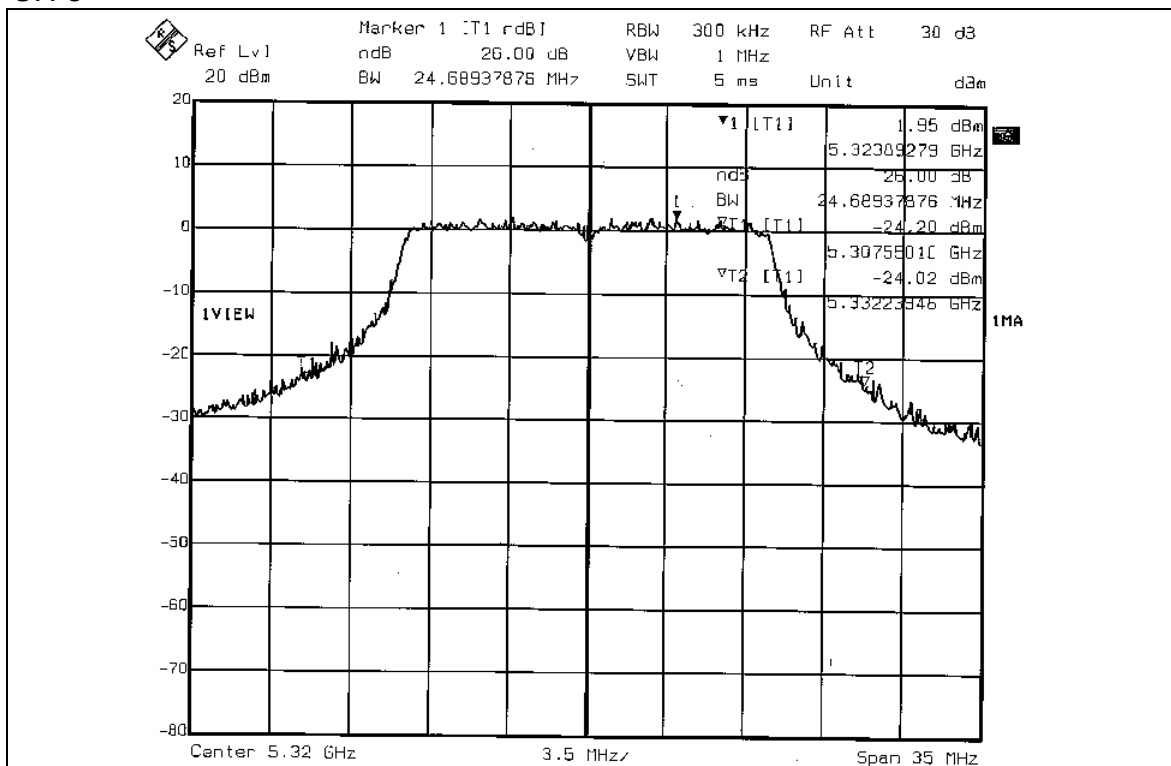




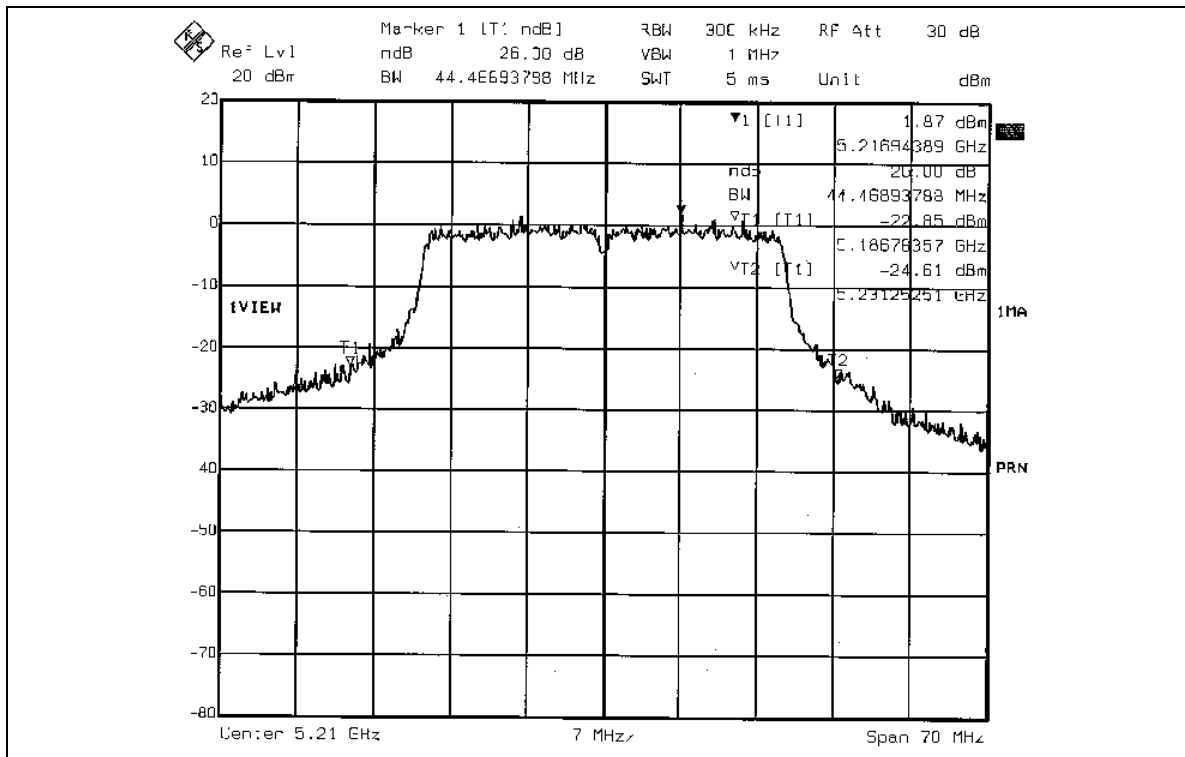
## CH 5



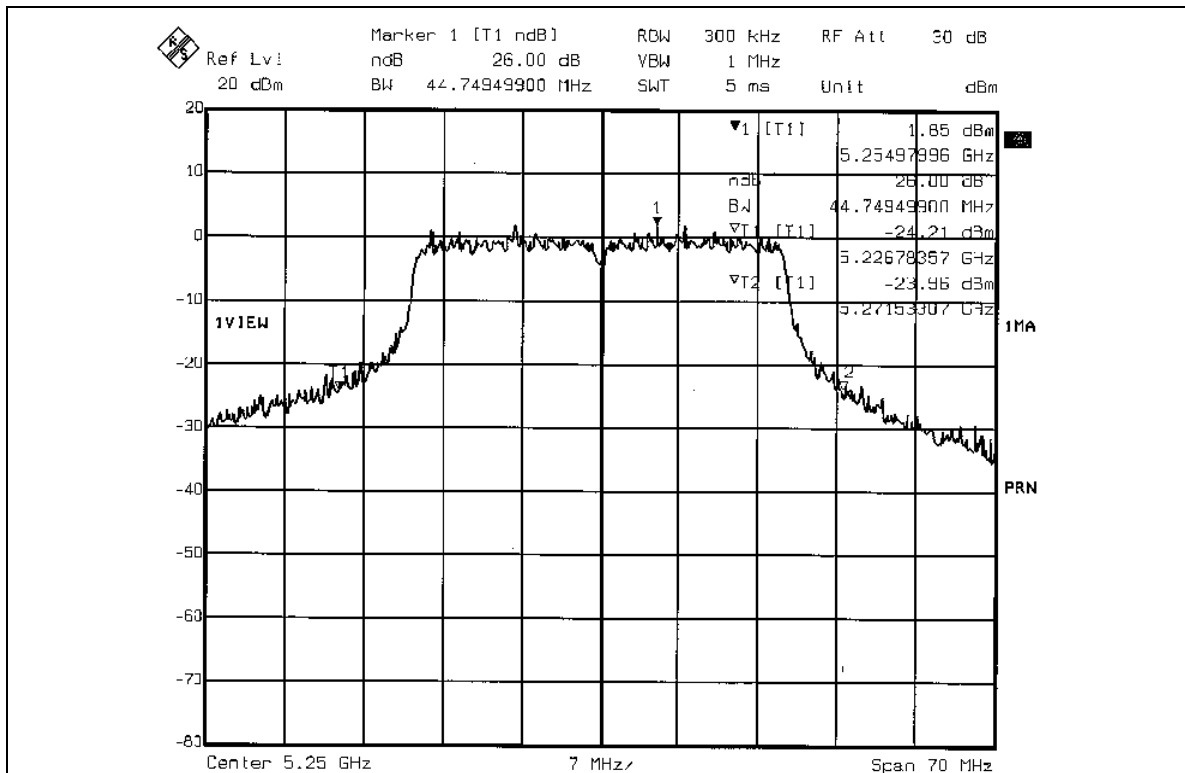
## CH 8



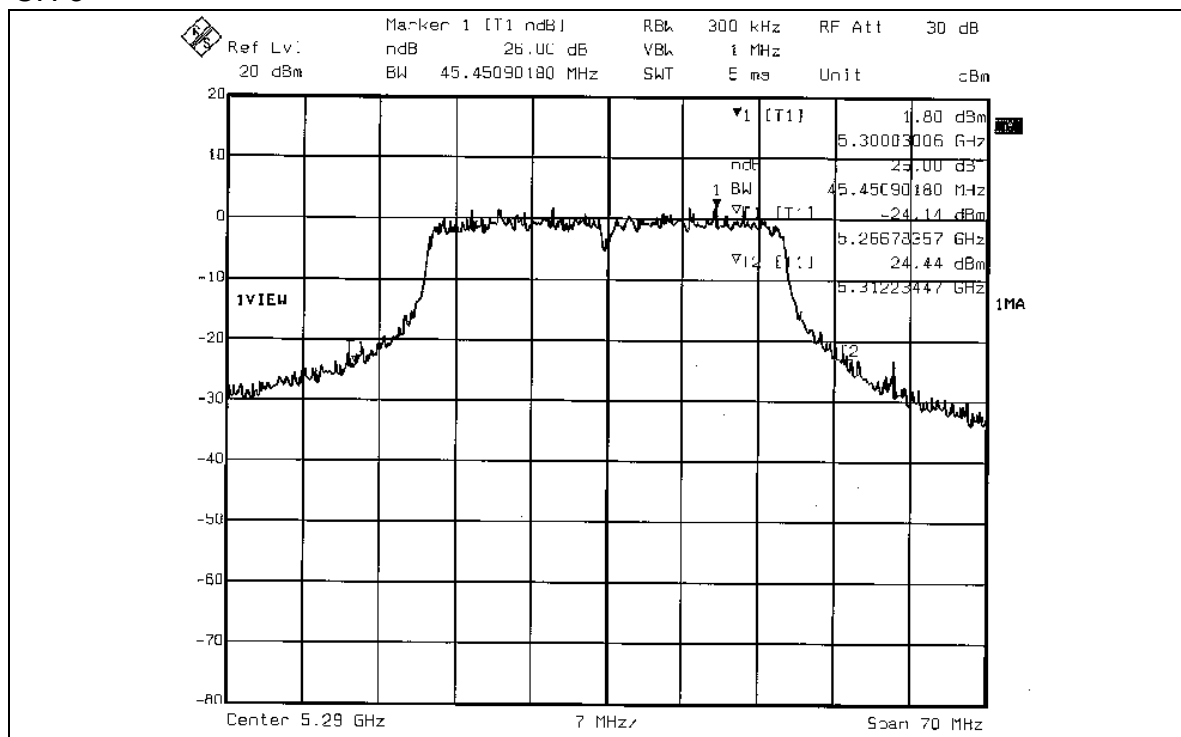
## 26dB Occupied Bandwidth: CH 1



## CH 2



## CH 3



#### 4.4 PEAK POWER EXCURSION MEASUREMENT

##### 4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.725 – 5.825 GHz	13dB

##### 4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

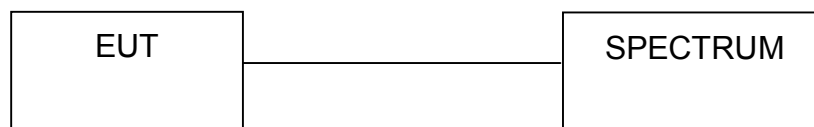
#### 4.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300KHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

#### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.5 TEST SETUP



#### 4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

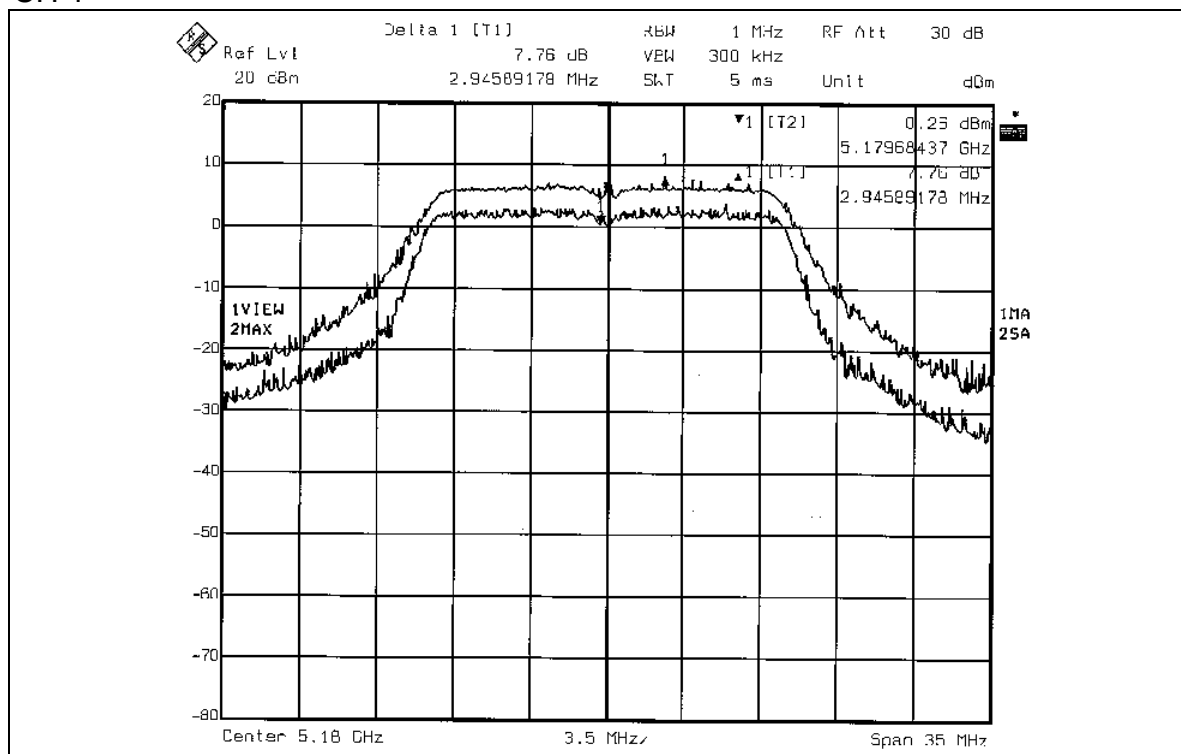
## 4.4.7 TEST RESULTS

## 802.11a OFDM modulation

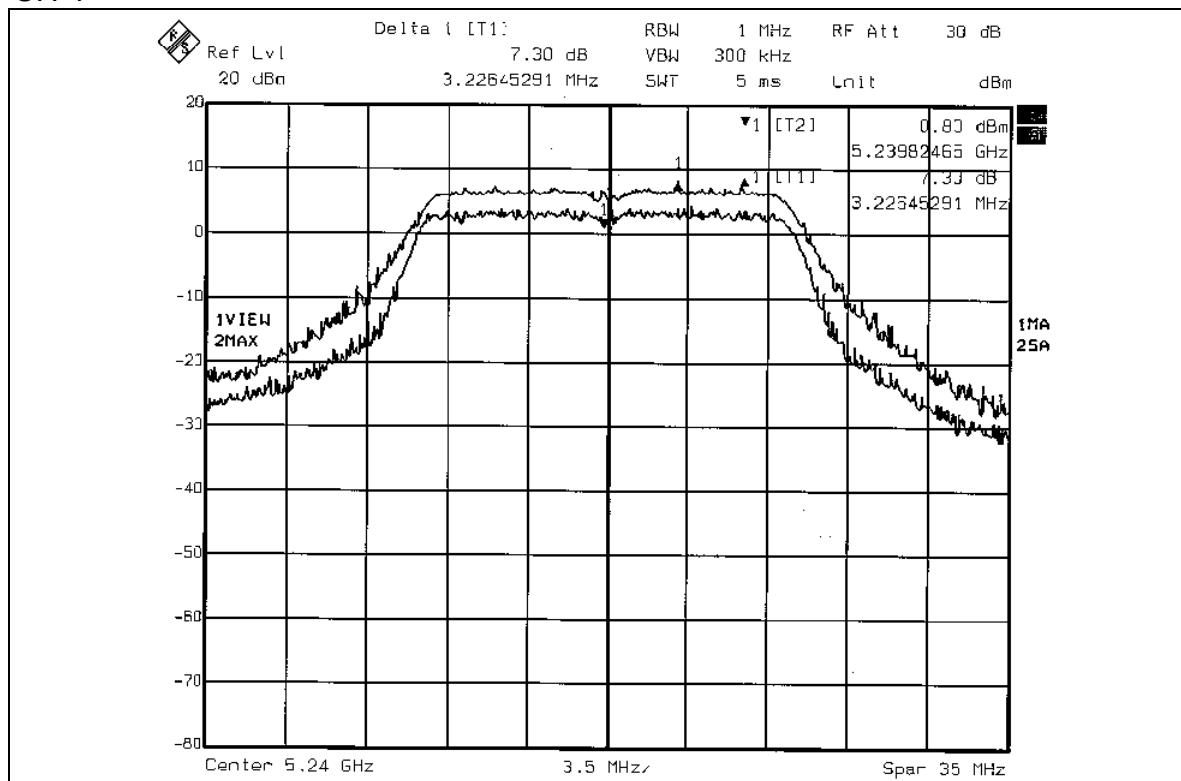
<b>EUT</b>	802.11 a+b+g wireless AP	<b>MODEL</b>	AP41
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	26deg.C, 63%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER EXCURSION (dB)</b>	<b>PEAK to AVERAGE EXCURSION LIMIT (dB)</b>	<b>PASS/FAIL</b>
1	5180	7.76	13	PASS
4	5240	7.30	13	PASS
5	5260	6.23	13	PASS
8	5320	6.07	13	PASS

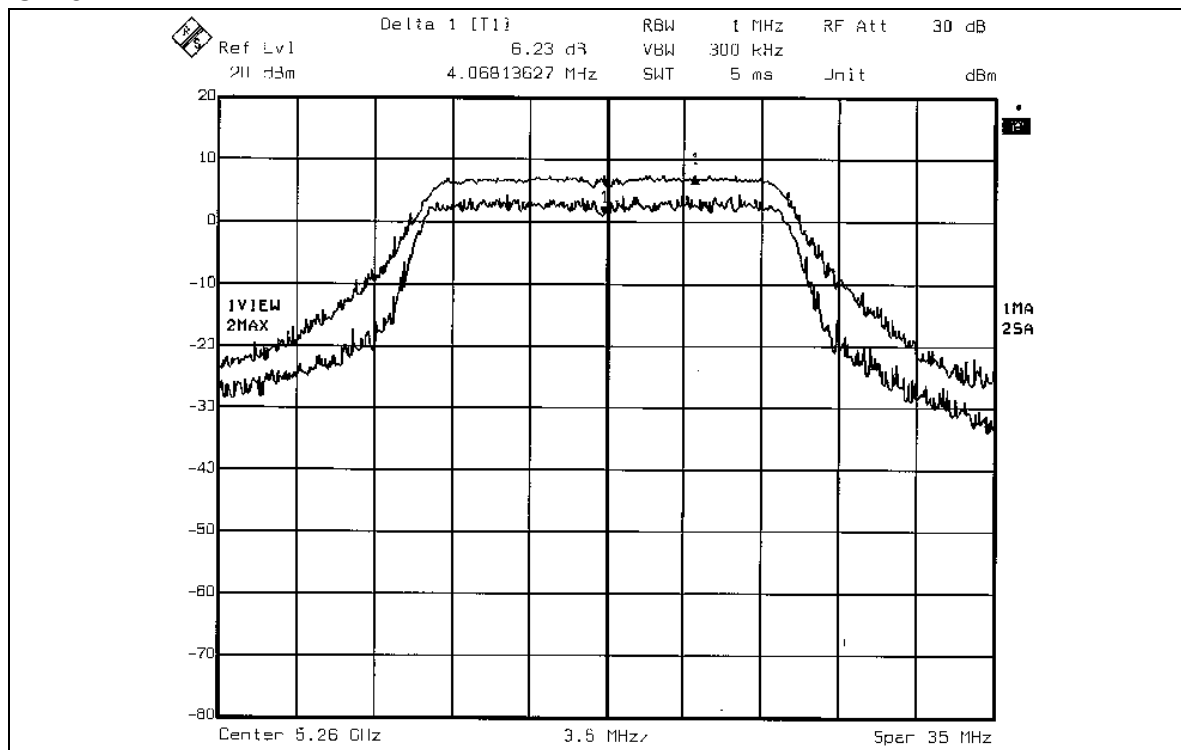
## CH 1



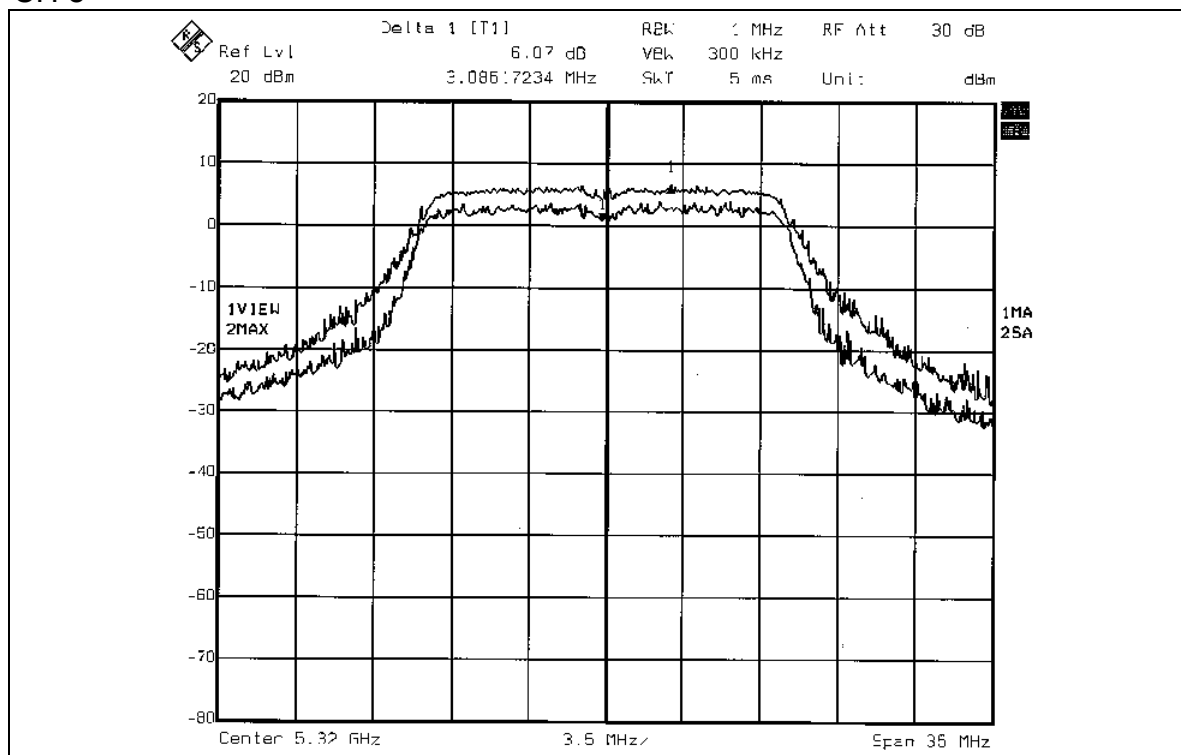
## CH 4



## CH 5



## CH 8





## 4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 ~ 5.25GHz	4dBm
5.25 ~ 5.35GHz	11dBm
5.725 ~ 5.825GHz	17dBm

### 4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

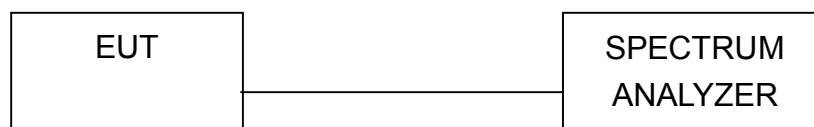
#### 4.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6

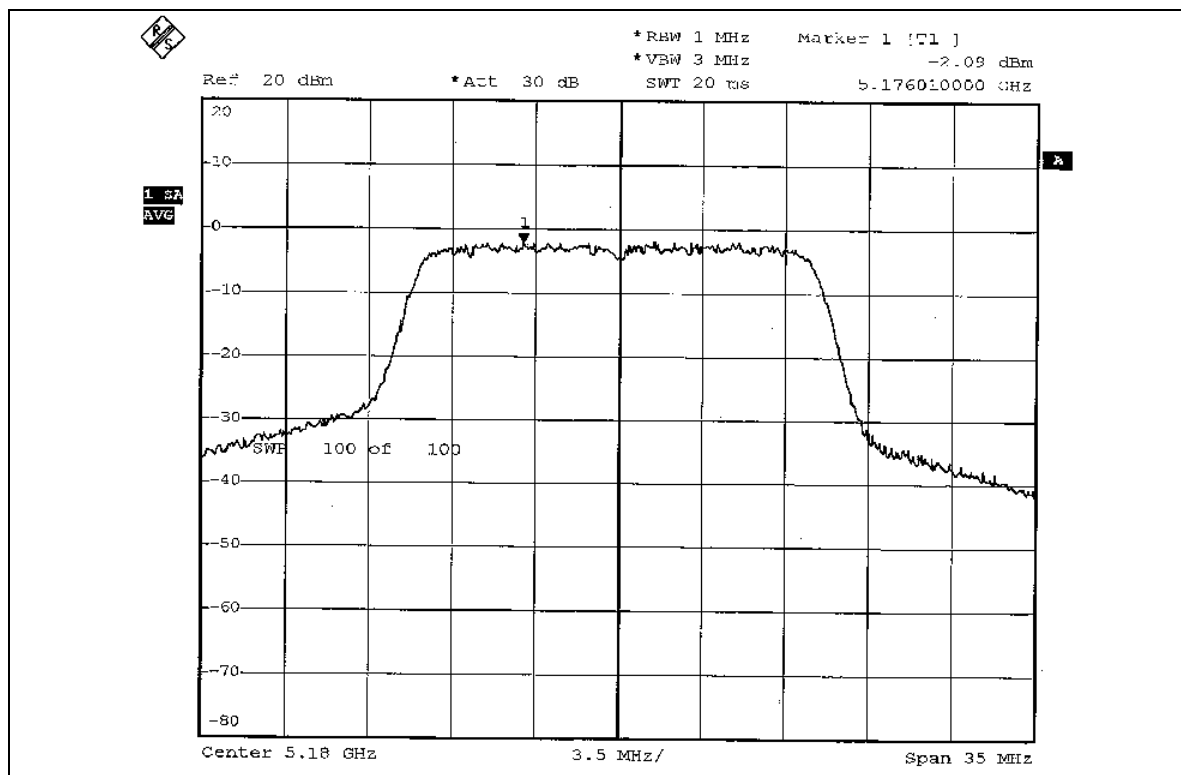
## 4.5.7 TEST RESULTS

## 802.11a OFDM modulation

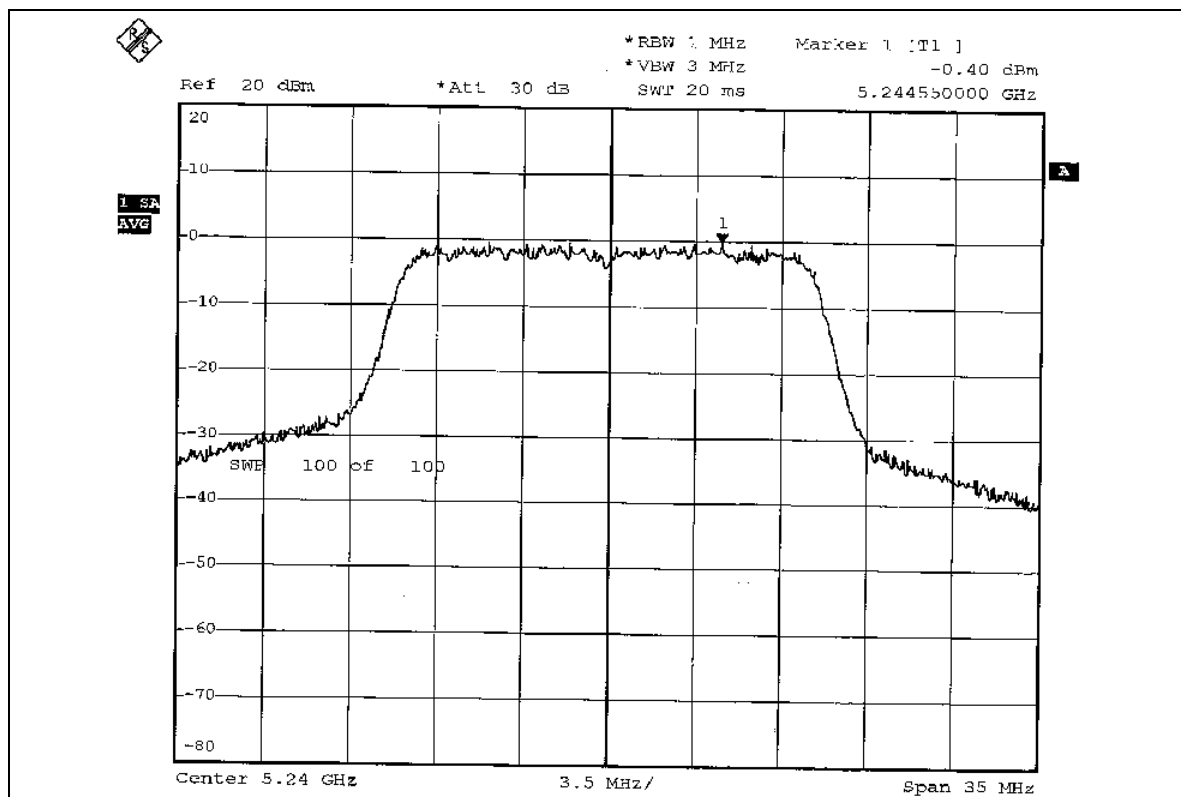
<b>EUT</b>	802.11 a+b+g wireless AP	<b>MODEL</b>	AP41
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	26deg.C, 63%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

CHANNEL	CHANNEL FREQUENCY (MHz )	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-2.09	4	PASS
4	5240	-0.40	4	PASS
5	5260	-0.65	11	PASS
8	5320	-2.15	11	PASS

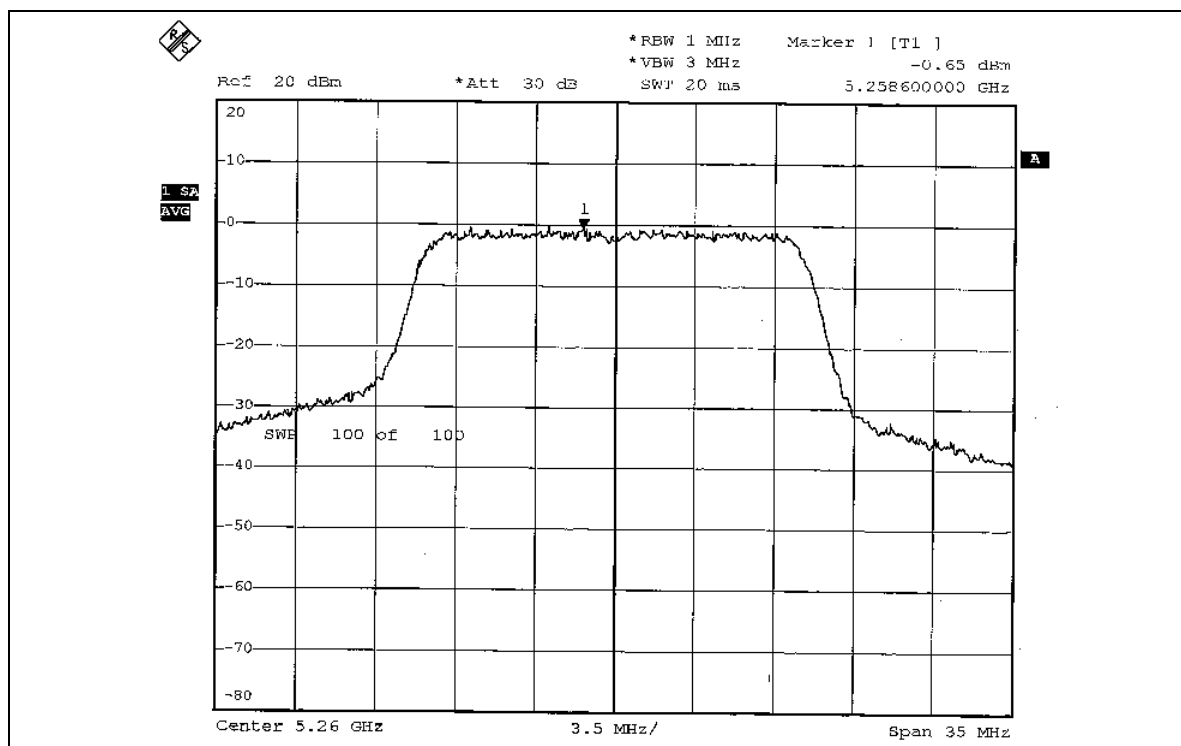
## CH 1



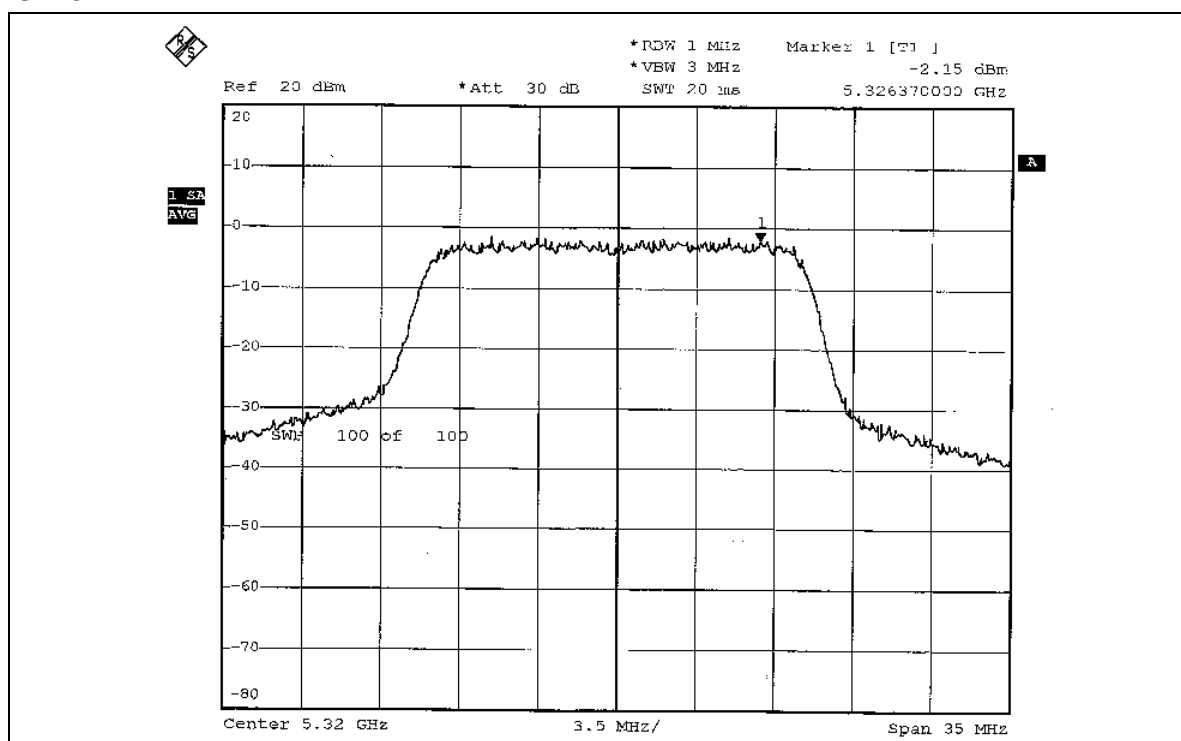
## CH 4



## CH 5



## CH 8



## 4.6 FREQUENCY STABILITY

### 4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

### 4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Mar. 09, 2006
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jul. 18, 2006

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

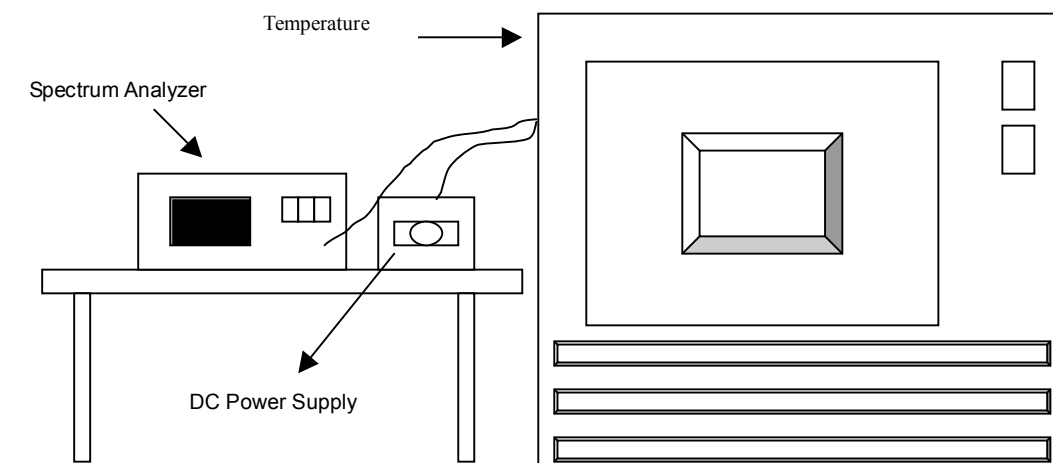
### 4.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.6.5 TEST SETUP



#### 4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

## 4.6.7 TEST RESULTS

Operating frequency: 5320MHz						Limit : $\pm 0.015\%$			
Temp. (°C)	Power supply (Vac)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	138	5319.9812	-0.0003529	5319.9812	-0.0003527	5319.9813	-0.0003524	5319.9813	-0.0003518
	120	5319.9813	-0.0003521	5319.9813	-0.0003517	5319.9812	-0.0003526	5319.9813	-0.0003516
	102	5319.9813	-0.0003523	5320.9813	0.0184450	5319.9813	-0.0003516	5319.9812	-0.0003527
40	138	5319.9854	-0.0002739	5319.9855	-0.0002733	5319.9855	-0.0002733	5319.9855	-0.0002727
	120	5319.9855	-0.0002727	5319.9854	-0.0002738	5319.9855	-0.0002729	5319.9855	-0.0002731
	102	5319.9855	-0.0002734	5319.9855	-0.0002732	5319.9855	-0.0002728	5319.9855	-0.0002733
30	138	5319.9922	-0.0001465	5319.9922	-0.0001458	5319.9923	-0.0001450	5319.9923	-0.0001449
	120	5319.9923	-0.0001454	5319.9923	-0.0001449	5319.9923	-0.0001450	5319.9923	-0.0001452
	102	5319.9922	-0.0001459	5319.9923	-0.0001454	5319.9923	-0.0001456	5319.9923	-0.0001451
20	138	5319.9972	-0.0000532	5319.9972	-0.0000535	5319.9972	-0.0000532	5319.9971	-0.0000538
	120	5319.9972	-0.0000535	5319.9972	-0.0000536	5319.9971	-0.0000538	5319.9971	-0.0000543
	102	5319.9971	-0.0000545	5319.9972	0.0000234	5319.9972	-0.0000529	5319.9971	-0.0000544
10	138	5320.0012	0.0000230	5320.0012	0.0000240	5320.0012	0.0000228	5320.0012	0.0000229
	120	5320.0012	0.0000234	5320.0013	0.0000591	5320.0013	0.0000243	5320.0012	0.0000233
	102	5320.0013	0.0000237	5320.0031	0.0000598	5320.0012	0.0000233	5320.0013	0.0000238
0	138	5320.0032	0.0000595	5320.0032	0.0000594	5320.0031	0.0000592	5320.0032	0.0000593
	120	5320.0032	0.0000601	5320.0032	0.0001720	5320.0032	0.0000595	5320.0031	0.0000590
	102	5320.0032	0.0000592	5320.0092	0.0001721	5320.0031	0.0000591	5320.0031	0.0000590
-10	138	5320.0092	0.0001725	5320.0092	0.0001716	5320.0091	0.0001719	5320.0092	0.0001725
	120	5320.0092	0.0001724	5320.0091	0.0002556	5320.0092	0.0001723	5320.0091	0.0001718
	102	5320.0092	0.0001726	5320.0136	0.0002474	5320.0092	0.0001721	5320.0092	0.0001725
-20	138	5320.0131	0.0002465	5320.0132	0.0002472	5320.0131	0.0002468	5320.0131	0.0002471
	120	5320.0132	0.0002480	5320.0132	0.0003696	5320.0131	0.0002471	5320.0132	0.0002475
	102	5320.0132	0.0002481	5320.0197	0.0003693	5620.0132	5.6393453	5320.0132	0.0002478
-30	138	5320.0197	0.0003700	5320.0196	0.0003694	5320.0196	0.0003688	5320.0197	0.0003702
	120	5320.0197	0.0003702	5320.0197	0.0007538	5320.0196	0.0003692	5320.0197	0.0003701
	102	5320.0196	0.0003687	5320.0401	0.0007538	5320.0196	0.0003690	5320.0196	0.0003692



## 4.7 BAND EDGES MEASUREMENT

### 4.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

### 4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

### 4.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

### 4.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

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

**802.11a OFDM modulation****Channel 1 (5180MHz)**

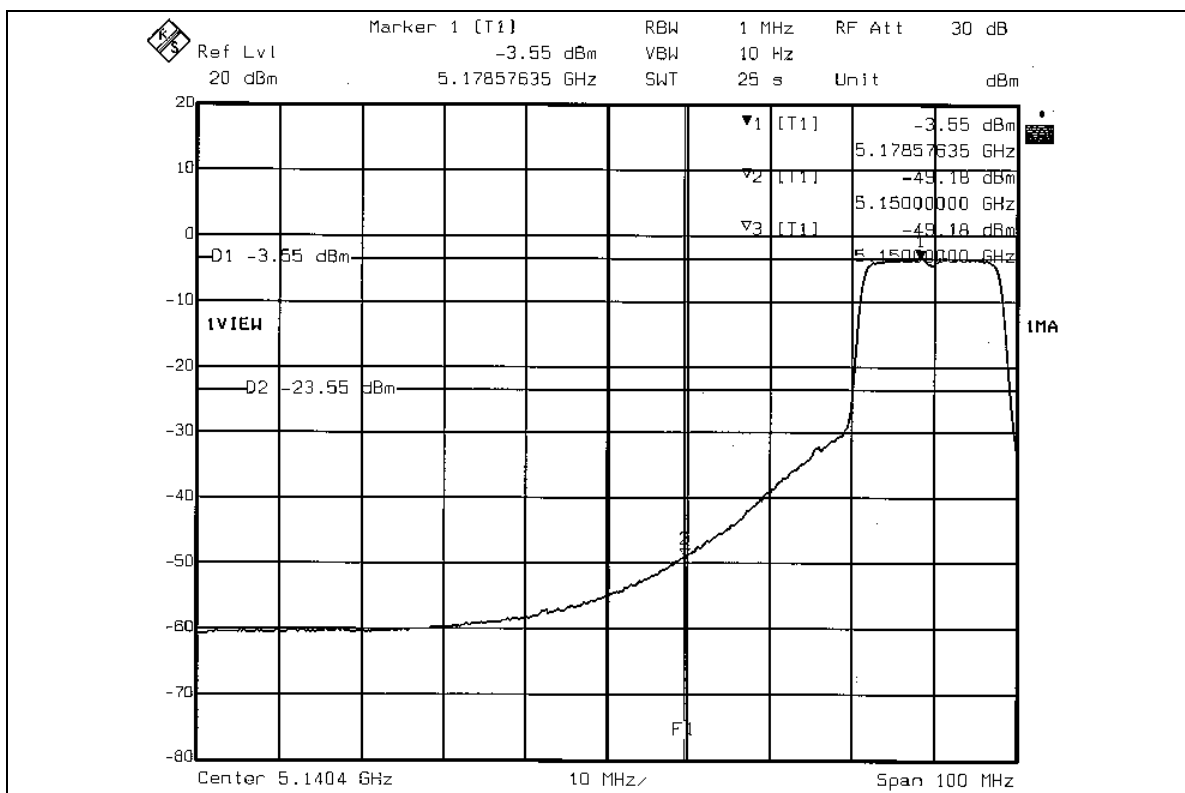
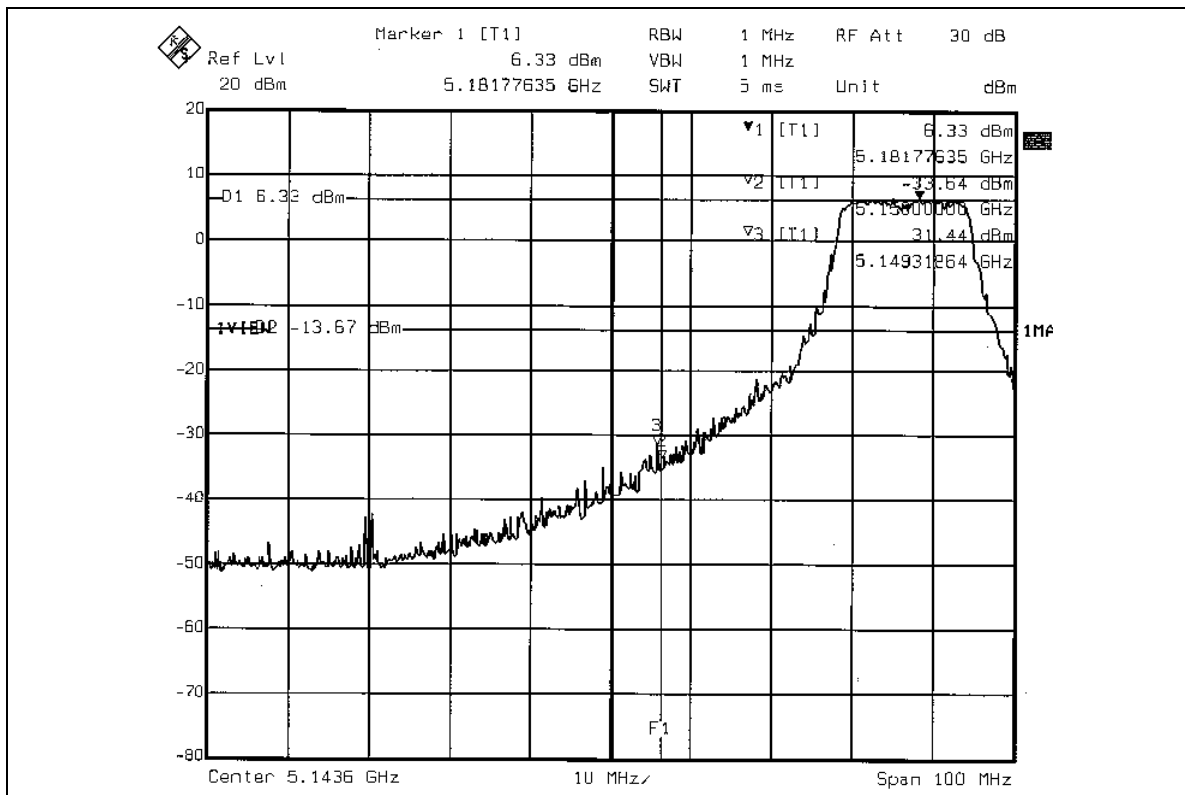
The band edge emission plot on page 63 shows 37.77dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 104.10dBuV/m (Peak), so the maximum field strength in restrict band is  $104.10 - 37.77 = 66.33$ dBuV/m which is under 74dBuV/m limit.

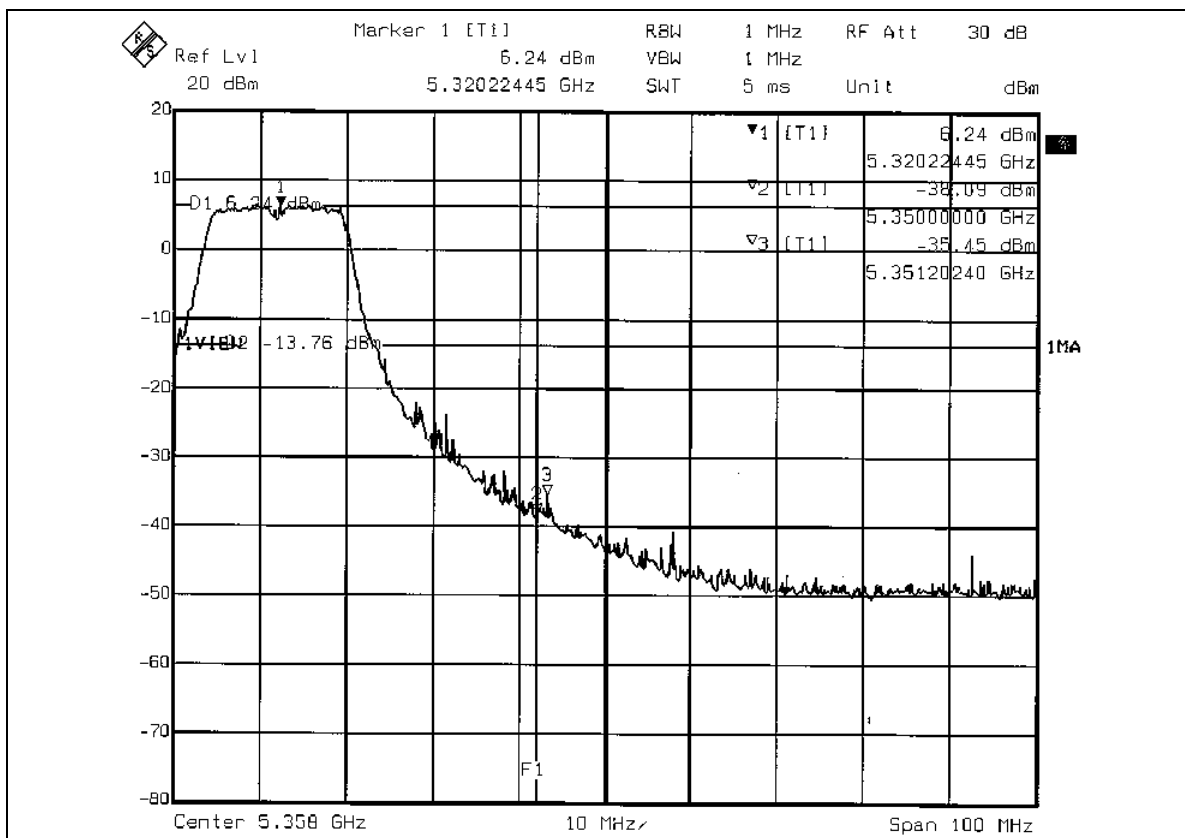
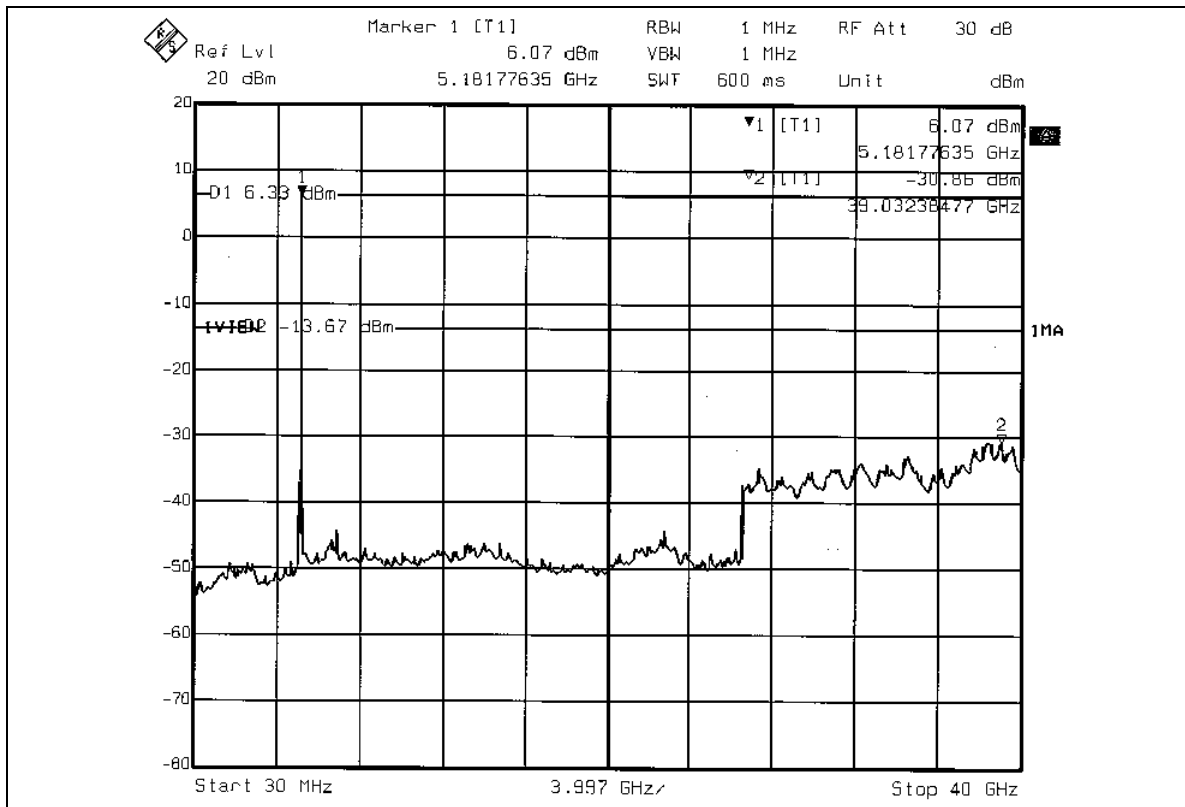
The band edge emission plot on page 63 shows 45.63dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 93.43dBuV/m (Average), so the maximum field strength in restrict band is  $93.43 - 45.63 = 47.80$ dBuV/m which is under 54dBuV/m limit.

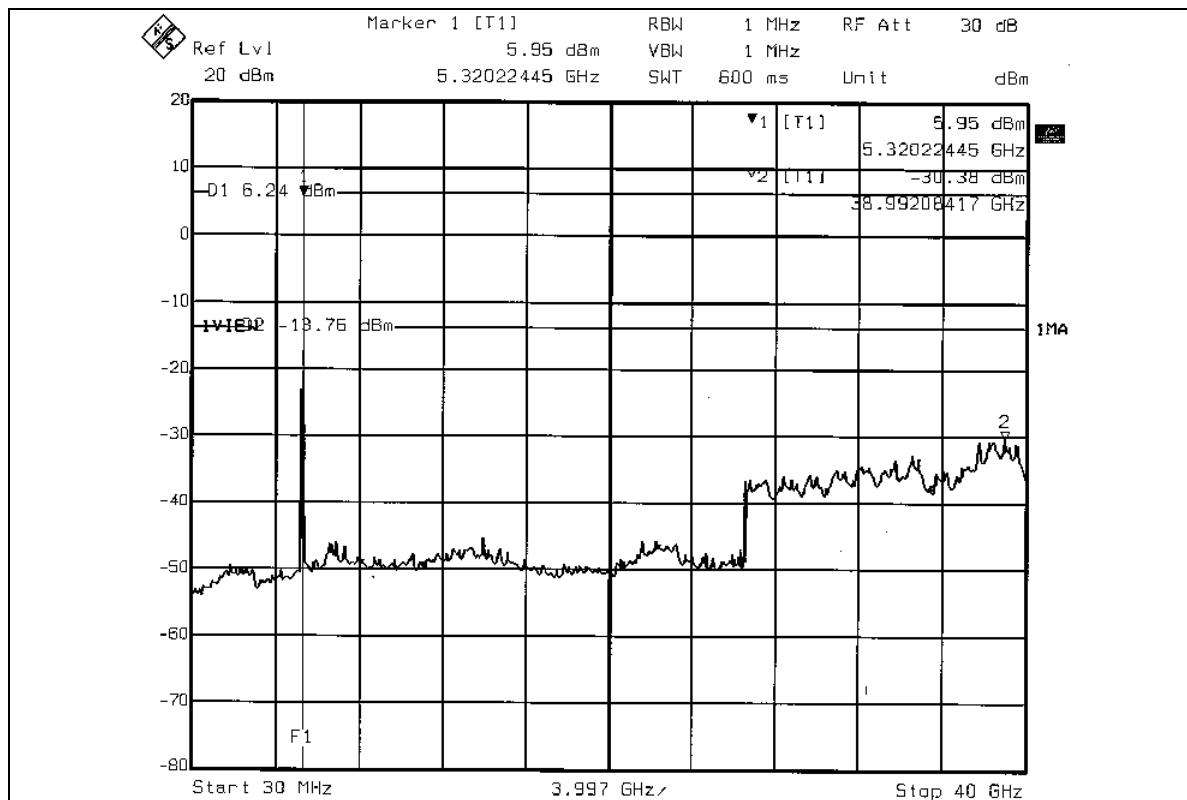
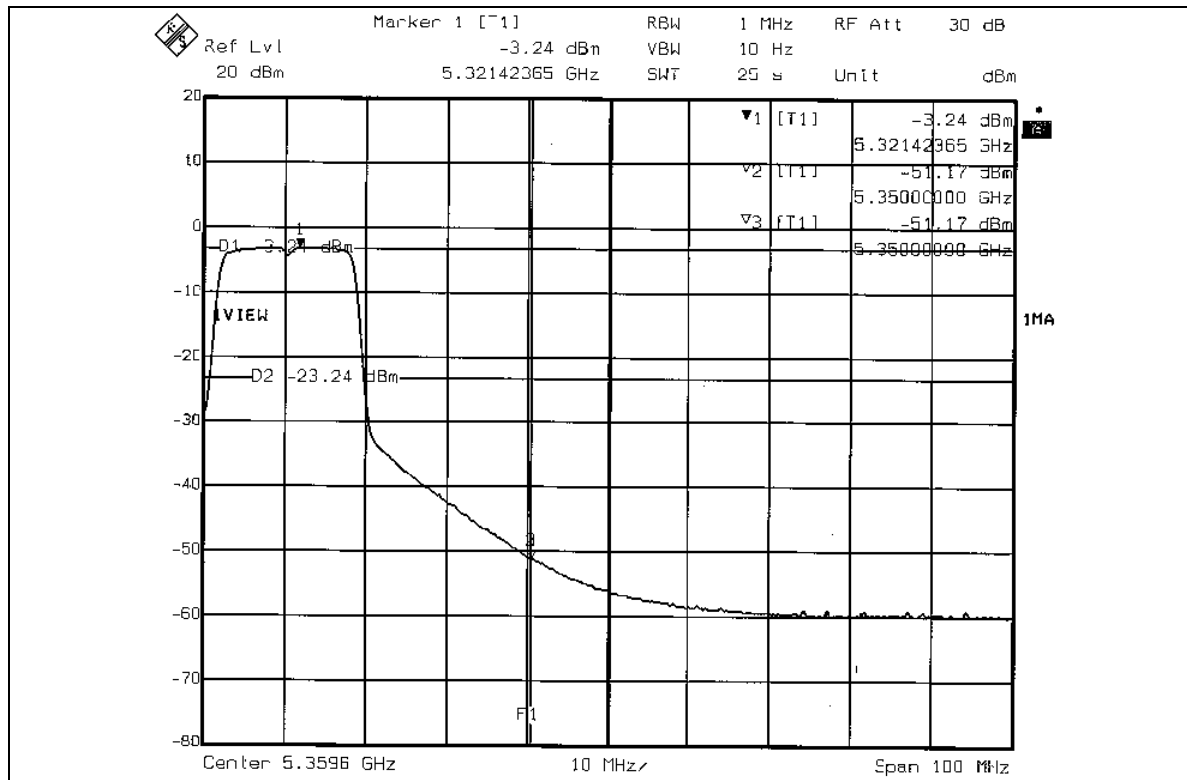
**Channel 8 (5320MHz)**

The band edge emission plot on page 64 shows 41.69dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 104.21dBuV/m (Peak), so the maximum field strength in restrict band is  $104.21 - 41.69 = 62.52$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 65 shows 47.93dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 93.54dBuV/m (Average), so the maximum field strength in restrict band is  $93.54 - 47.93 = 45.61$ dBuV/m which is under 54dBuV/m limit.

**802.11a OFDM modulation**







## **4.8 ANTENNA REQUIREMENT**

### **4.8.1 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.

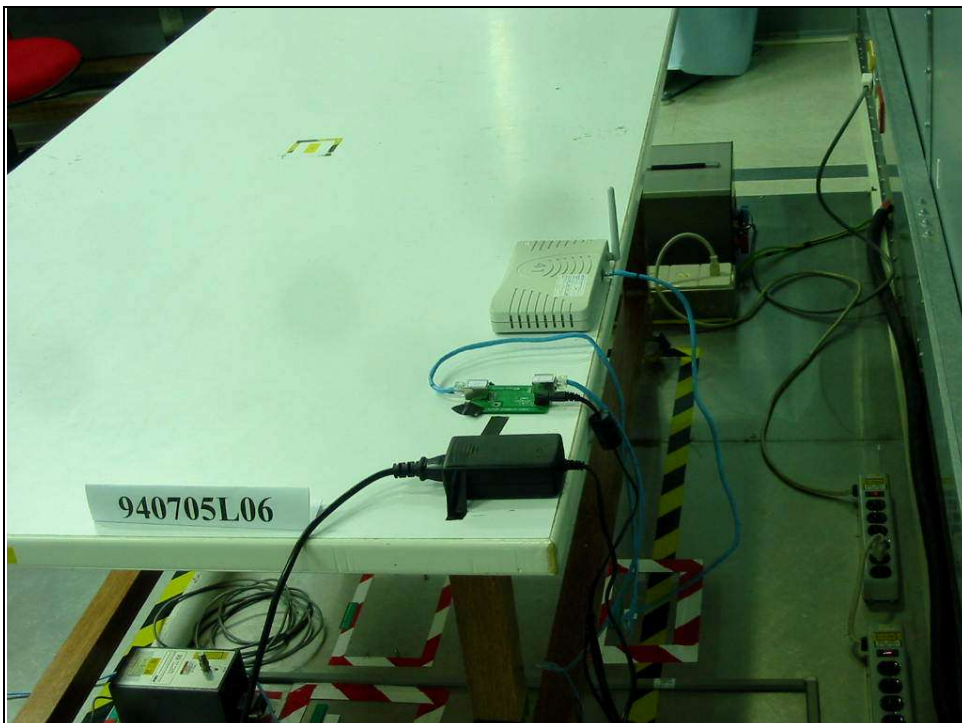
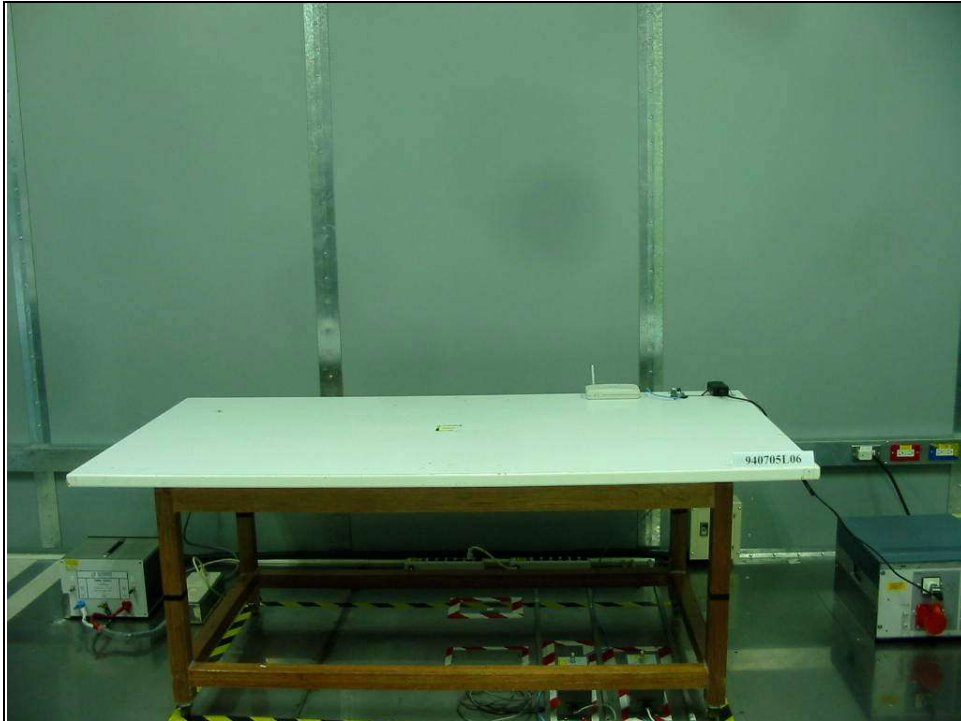
And according to FCC 47 CFR Section 15.407(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### **4.8.2 ANTENNA CONNECTED CONSTRUCTION**

The antennas used in this product are Dipole antenna and Printed antenna with UFL connector. The maximum Gain of the antenna is 2.11dBi.

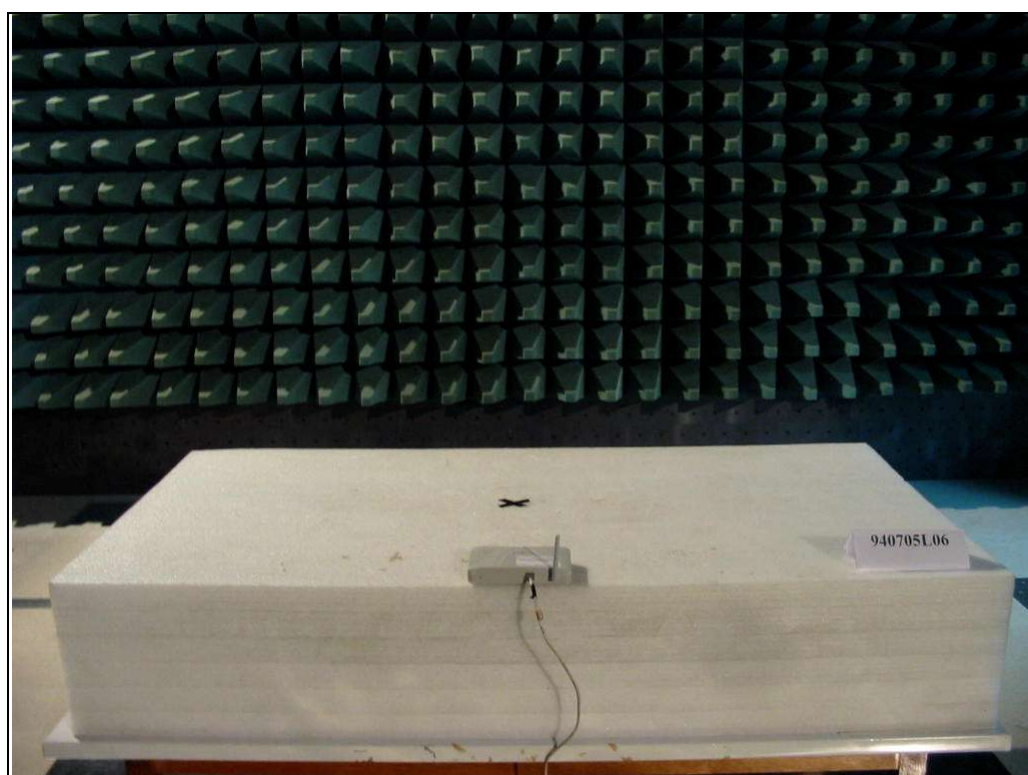
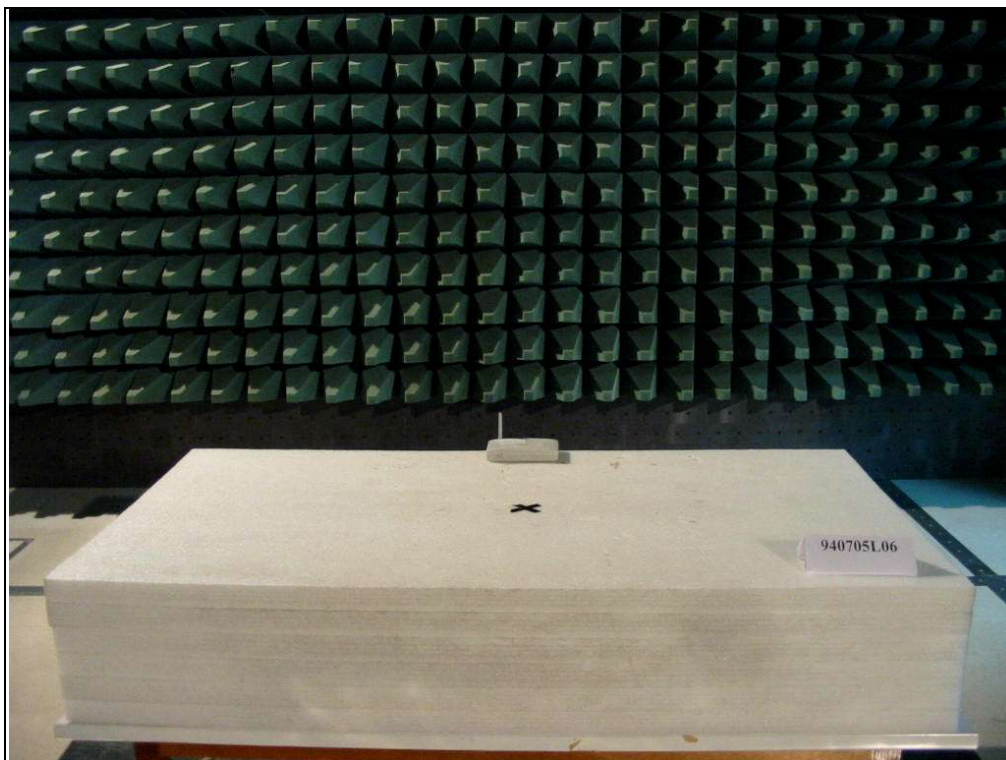
## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST





## RADIATED EMISSION TEST





## 6. 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:

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Tel: 886-2-26052180

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

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Fax: 886-3-3185050

**Linko RF Lab.**

Tel: 886-3-3270910

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**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