



# FCC TEST REPORT (15.407)

**REPORT NO.:** RF960507H01

**MODEL NO.:** IP250

**RECEIVED:** May 07, 2006

**TESTED:** June 05 to 13, 2007

**ISSUED:** June 15, 2007

**APPLICANT:** IronPoint 250 Access Point

**ADDRESS:** No.1, Creation Rd. III, Science-based  
Industrial Park, Hsinchu, Taiwan, R.O.C.

**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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No. 2177-01

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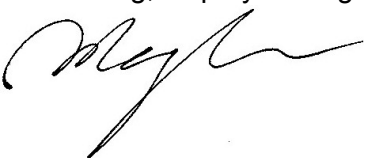
# 1. CERTIFICATION

**PRODUCT:** IronPoint 250 Access Point  
**BRAND NAME:** Foundry Networks  
**MODEL NO.:** IP250  
**TEST SAMPLE:** R&D SAMPLE  
**TESTED:** June 05 to 13, 2007  
**APPLICANT:** IronPoint 250 Access Point  
**STANDARDS:** FCC Part 15, Subpart E (Section 15.407)  
ANSI C63.4-2003

The above equipment (Model: IP250) 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 :**  , **DATE:** June 15, 2007  
( Midoli Peng, Specialist )

**TECHNICAL ACCEPTANCE :**  , **DATE:** June 15, 2007  
Responsible for RF ( Hank Chung, Deputy Manager )

**APPROVED BY :**  , **DATE:** June 15, 2007  
(May Chen, 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 -0.82dB at 1.185MHz
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 -0.5dB at 5150.0MHz
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.

**NOTE:**

1. The EUT was operating in 2.412 ~ 2.462GHz, 5.150 ~ 5.250GHz and 5.725 ~ 5.850GHz frequencies band. This report was recorded the RF parameters including 5.150 ~ 5.250GHz. For the 2.412 ~ 2.462GHz and 5.725 ~ 5.850GHz RF parameters was recorded in another test report.

## 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:

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

Measurement	Value
Conducted emissions	2.41 dB
Radiated emissions (30MHz-1GHz)	3.89 dB
Radiated emissions (1GHz -18GHz)	2.21 dB
Radiated emissions (18GHz -40GHz)	1.88 dB



### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>EUT</b>	IronPoint 250 Access Point
<b>MODEL NO.</b>	IP250
<b>FCC ID</b>	HEDIP250
<b>POWER SUPPLY</b>	DC 48V from Adapter or 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>	For 15.407 802.11a: 5.18 ~ 5.24GHz For 15.247 802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.745 ~ 5.825GHz
<b>NUMBER OF CHANNEL</b>	For 15.407 802.11a (5.15 ~ 5.25GHz):4(1 for 802.11a Turbo mode) For 15.247 802.11b & 802.11g: 11 802.11a (5.725 ~ 5.850GHz):5(2 for 802.11a Turbo mode)
<b>CHANNEL SPACING</b>	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode
<b>OUTPUT POWER</b>	Please see note 5 (on next page)
<b>DATA CABLE</b>	Console cable(unshielded, 1.6m)
<b>POWER CORE</b>	AC input cable (unshielded, 1.9m)
<b>ANTENNA TYPE</b>	Please see note 4 (on next page)
<b>I/O PORTS</b>	Console Port x1, LAN Port x1
<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 operated with the following power adapter or POE:

Power adapter	
<b>BRAND:</b>	PHIHONG
<b>MODEL:</b>	PSA 18U-480C
<b>INPUT:</b>	AC 100~240V, 0.5A, 50~60Hz
<b>OUTPUT:</b>	DC 48V, 0.38A , 1.5m/ nonshield/ with one core

POE (Only for test, not for sale)	
<b>BRAND:</b>	3Com
<b>MODEL:</b>	PW130
<b>INPUT:</b>	AC100-250V, 0.5A, 50/60Hz
<b>OUTPUT:</b>	DC 48V, 0.42A

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

For 2.4GHz						
No.	Model No.	Gain (dBi)	Cable lose (dB)	Net Gain (dBi)	Antenna Type	Connector
1	MHA2400PT	4	0	4	Bi-Directional	BNC,male
2	MP24013XFPT	13	0	13	Directional Panel	N, female
3	*MMO24580608	6	1	5	Omni Directional	N, female
4	*FDS_2FED01+I3G * FDS_2FED02+I3G	2	0	2	Dipole	UFL

For 5GHz						
No.	Model No.	Gain (dBi)	Cable lose (dB)	Net Gain (dBi)	Antenna Type	Connector
A	*MMO24580608	8	2	6	Omni Directional	N, female
B	*FDS_2FED01+I3G * FDS_2FED02+I3G	4.5	0	4.5	Dipole	UFL

**Note:**

1. "\*" is a Dual Band antenna can be used in both 2.4GHz and 5GHz.
2. The model : FDS\_2FED01+I3G and FDS\_2FED02+I3G is one set antenna

5. Peak output power (Unit : mW) :

No.	Model No.	Operating Frequency (MHz)	
		2412MHz ~ 2462MHz	
1	MHA2400PT	251.189	
2	MP24013XFPT	149.624	
3	MMO24580608	251.189	
4	FDS_2FED01+I3G FDS_2FED02+I3G	281.838	
No.	Model No.	Operating Frequency (MHz)	
		5150~5250	5725~5850
A	MMO24580608	24.378	245.471
B	FDS_2FED01+I3G FDS_2FED02+I3G	30.974	331.131

6. 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 5150MHz ~ 5250MHz bands:

Four channels are provided to this EUT for normal mode.

Channel	Frequency
1	5180 MHz
2	5200 MHz
3	5220 MHz
4	5240 MHz

One channel is provided to this EUT for turbo mode.

Channel	Frequency
1	5210 MHz

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

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

Where PLC: Power Line Conducted Emission RE<1G RE: Radiated Emission below 1GHz  
 RE≥1G: Radiated Emission above 1GHz APCM: Antenna Port Conducted Measurement

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

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

Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	1 to 4	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 4	1	OFDM	BPSK	6

- For spurious emissions (below 1GHz), the EUT was pre-tested in chamber as the following test modes:

Test Mode	Description
Mode 1	With Adapter
Mode 2	With POE

**Mode 1**, the worse case one, was chosen for final test.

#### **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 4	1, 4	OFDM	BPSK	6
Turbo 802.11a	1	1	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 4	1, 4	OFDM	BPSK	6
Turbo 802.11a	1	1	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 4	1, 4	OFDM	BPSK	6
Turbo 802.11a	1	1	OFDM	BPSK	6



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

The EUT is an IronPoint 250 Access Point. 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.

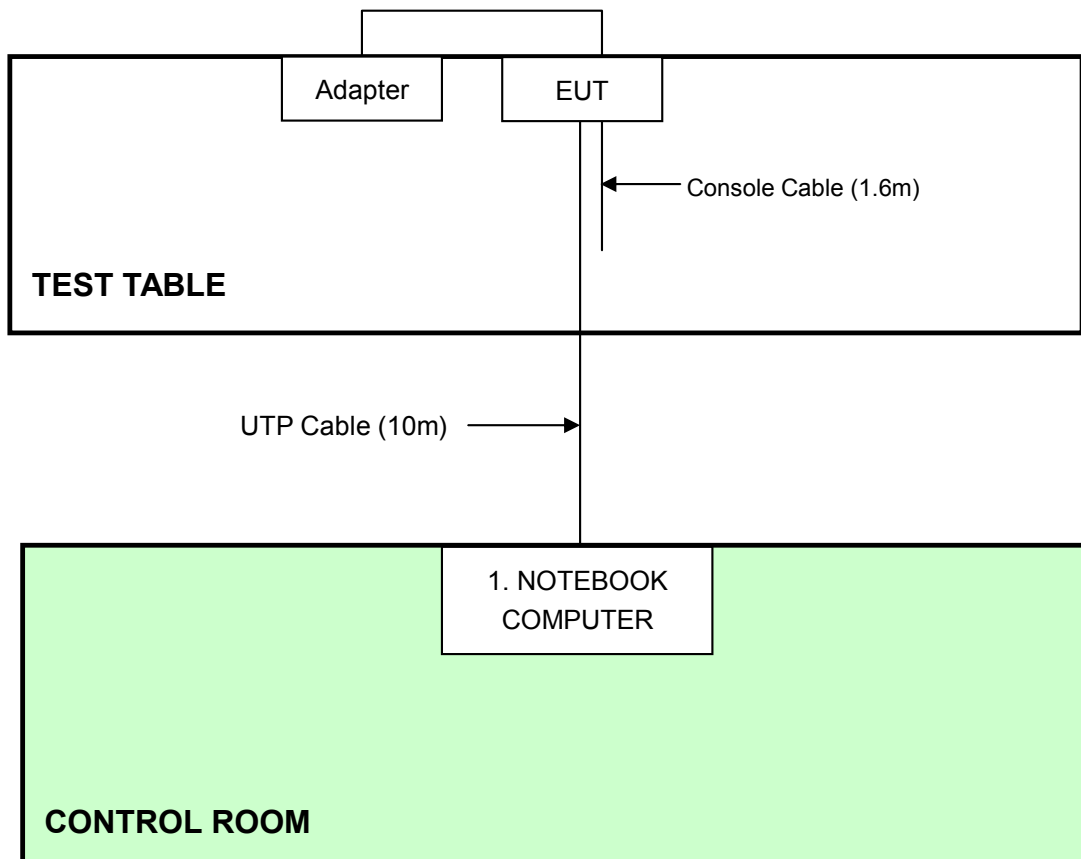
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP18L	6976685584	FCC DoC

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

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

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST

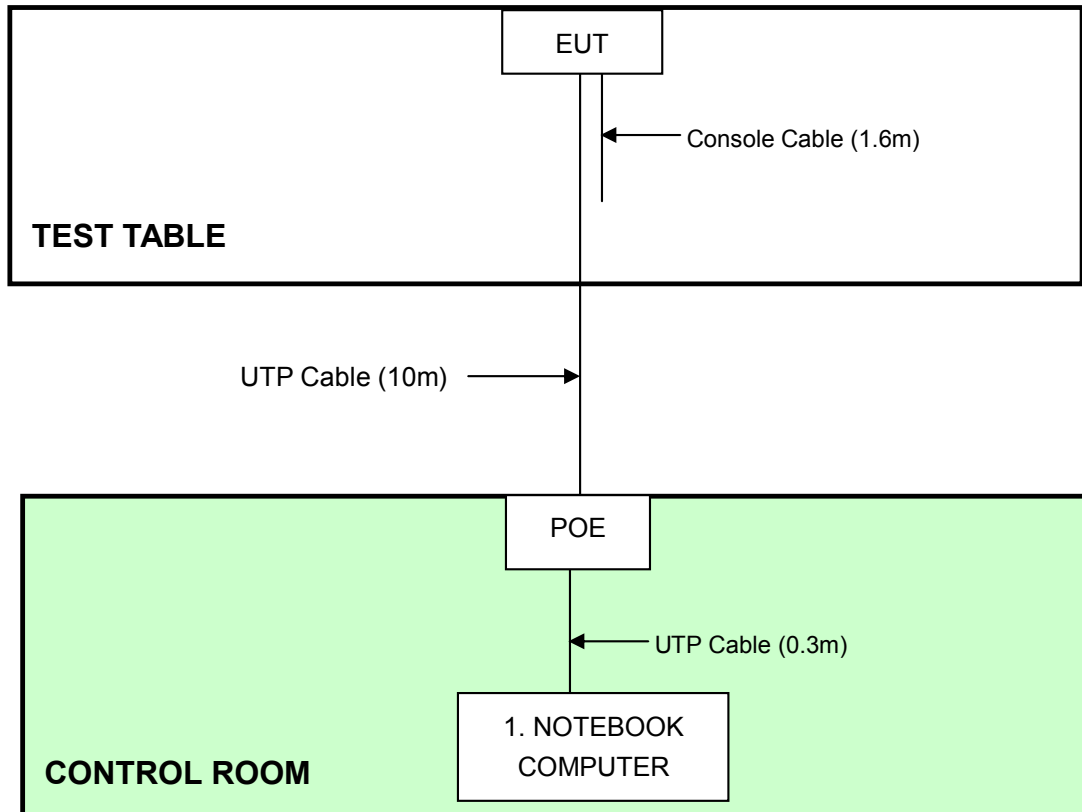
With adapter mode:



**NOTE:** 1. Support unit 1 was kept in the control room during the test.



With POE mode:



**NOTE:** 1. Support unit 1 was kept in the control room during the test.

## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

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

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver	ESCS 30	847124/029	Mar. 28, 2008
Line-Impedance Stabilization Network(for EUT)	ENV-216	100071	Nov. 26, 2007
Line-Impedance Stabilization Network(for Peripheral)	ESH3-Z5	848773/004	Oct. 26, 2007
RF Cable (JETBAO)	RG233/U	Cable_CB_01	Dec. 09, 2007
Terminator	50	2	Oct. 30, 2007
Software	ADT_Cond_V7.3.2	NA	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. The test was performed in ADT Shielded Room No. B.
  3. The VCCI Con B Registration No. is C-2193.

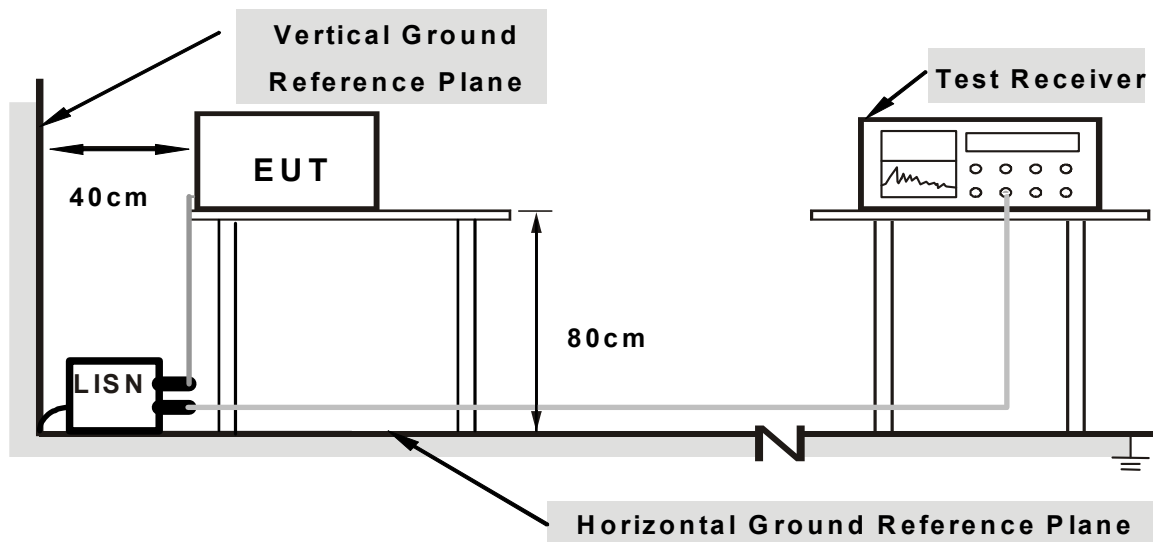
#### 4.1.3 TEST PROCEDURES

- 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 systems to act as a communication partner and placed them outside of testing area.
- c. The communication partner run test program “ART 48 Build 5” to enable EUT under transmission/receiving condition continuously at specific channel frequency via UTP cable and wireless.

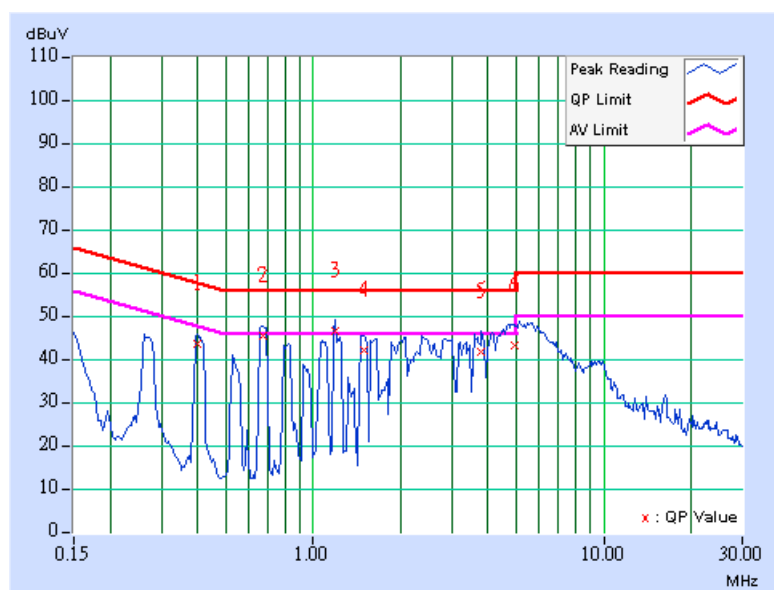
#### 4.1.7 TEST RESULTS – With adapter mode

##### Conducted Worst-Case Data

<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 68%RH, 961hPa	<b>PHASE</b>	Line (L)
<b>TESTED BY</b>	Rex Huang		

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	0.400	0.40	42.96	-	43.39	-	57.85
2	0.673	0.40	44.93	-	45.39	-	56.00	46.00	-10.61	-
<b>3</b>	<b>1.185</b>	<b>0.42</b>	<b>46.04</b>	<b>44.72</b>	<b>46.44</b>	<b>45.18</b>	<b>56.00</b>	<b>46.00</b>	<b>-9.56</b>	<b>-0.82</b>
4	1.502	0.45	41.42	-	41.87	-	56.00	46.00	-14.13	-
5	3.801	0.59	41.28	-	41.84	-	56.00	46.00	-14.16	-
6	4.941	0.63	42.52	-	43.11	-	56.00	46.00	-12.89	-

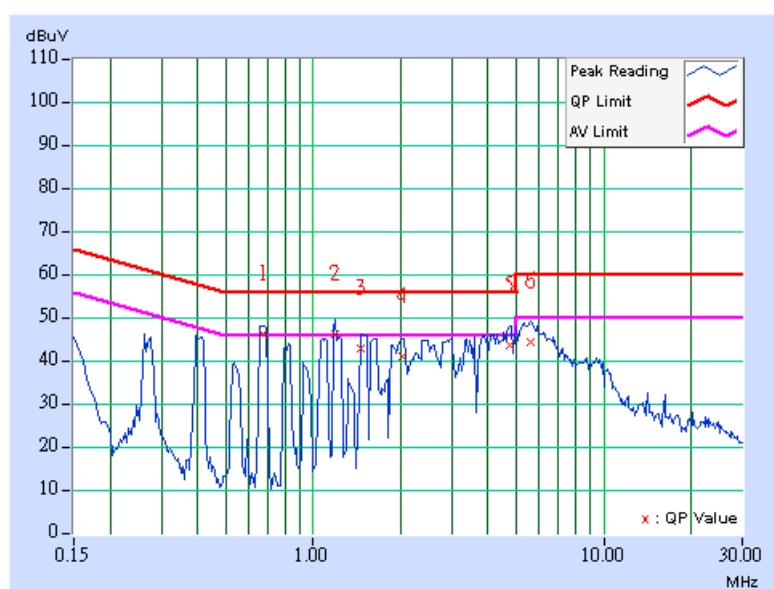
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	20deg. C, 68%RH, 961hPa	<b>PHASE</b>	Neutral (N)
<b>TESTED BY</b>	Rex Huang		

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	0.673	0.25	45.75	-	46.00	-	56.00
2	1.184	0.32	45.56	-	45.88	-	56.00	46.00	-10.12	-
3	1.451	0.35	42.33	-	42.68	-	56.00	46.00	-13.32	-
4	2.037	0.40	40.68	-	41.08	-	56.00	46.00	-14.92	-
5	4.734	0.55	42.92	-	43.47	-	56.00	46.00	-12.53	-
6	5.629	0.61	43.96	-	44.57	-	60.00	50.00	-15.43	-

- 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.



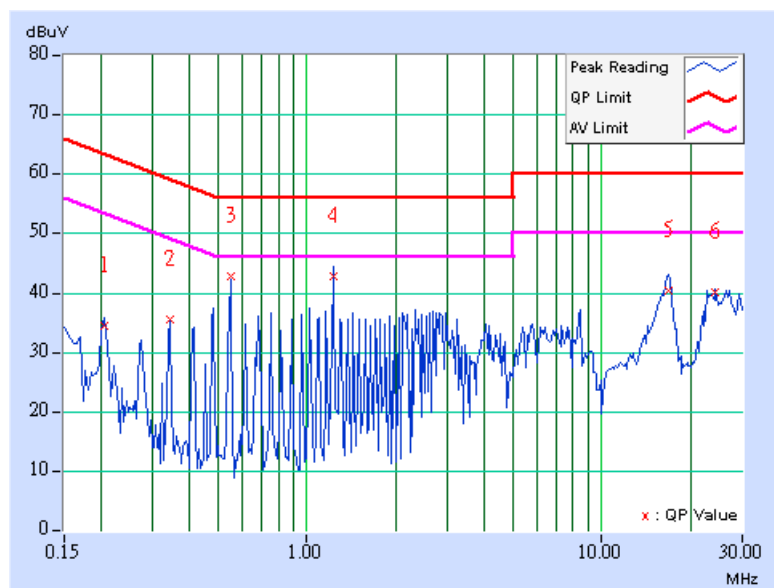
#### 4.1.8 TEST RESULTS – With POE mode

##### Conducted Worst-Case Data

<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 62%RH, 961hPa	<b>PHASE</b>	Line (L)
<b>TESTED BY</b>	Rex Huang		

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	0.205	0.40	33.54	-	33.94	-	63.42
2	0.341	0.40	34.68	-	35.08	-	59.17	49.17	-24.09	-
3	0.548	0.40	41.76	-	42.16	-	56.00	46.00	-13.84	-
4	1.228	0.42	41.76	-	42.18	-	56.00	46.00	-13.82	-
5	16.766	1.06	39.52	-	40.58	-	60.00	50.00	-19.42	-
6	24.352	1.00	39.03	-	40.03	-	60.00	50.00	-19.97	-

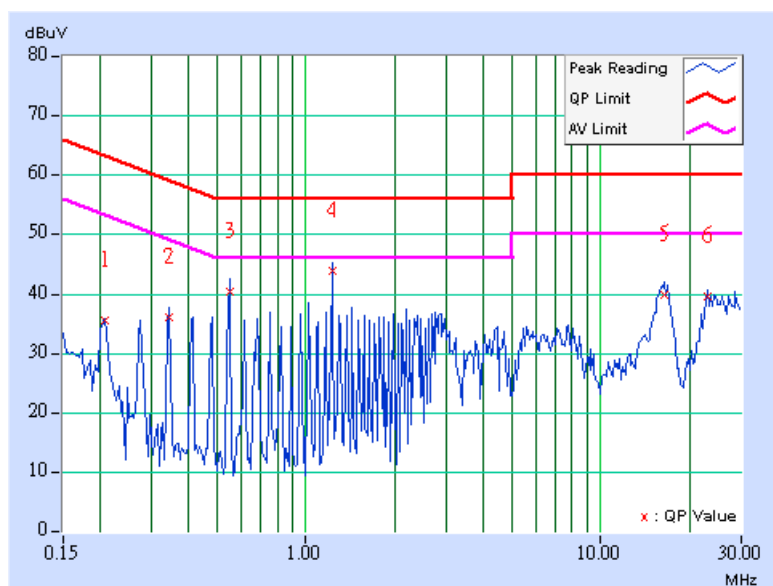
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



<b>MODULATION TYPE</b>	BPSK	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>TRANSFER RATE</b>	6Mbps
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 62%RH, 961hPa	<b>PHASE</b>	Neutral (N)
<b>TESTED BY</b>	Rex Huang		

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	0.209	0.20	34.14	-	34.34	-	63.26
2	0.341	0.20	34.73	-	34.93	-	59.17	49.17	-24.24	-
3	0.548	0.22	39.15	-	39.37	-	56.00	46.00	-16.63	-
4	1.228	0.32	42.65	-	42.97	-	56.00	46.00	-13.03	-
5	16.500	1.23	38.42	-	39.65	-	60.00	50.00	-20.35	-
6	23.125	1.36	38.14	-	39.50	-	60.00	50.00	-20.50	-

- 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 (dB $\mu$ V/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
ADVANTEST Spectrum Analyzer	R3271A	85060311	July 03, 2007
HP Pre_Amplifier	8449B	3008A01922	Sep. 18, 2007
ROHDE & SCHWARZ Test Receiver	ESCS30	100375	Sep. 20, 2007
CHASE Broadband Antenna	VULB 9168	138	July 17, 2007
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jan. 01, 2008
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 05, 2008
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 08, 2009
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 08, 2009
RF Switches (ARNITSU)	CS-201	1565157	NA
RF CABLE (Chaintek)	SF102	22054-2	Nov. 14. 2007
RF Cable(RICHTEC)	9913-30M N-N Cable	STCCAB-30M-1 GHz	Jul. 15, 2007
Software	ADT_Radiated_V 7.6.15.7	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 Biconical and Periodic Antenna)and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: R3271A) 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 4824A-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 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.

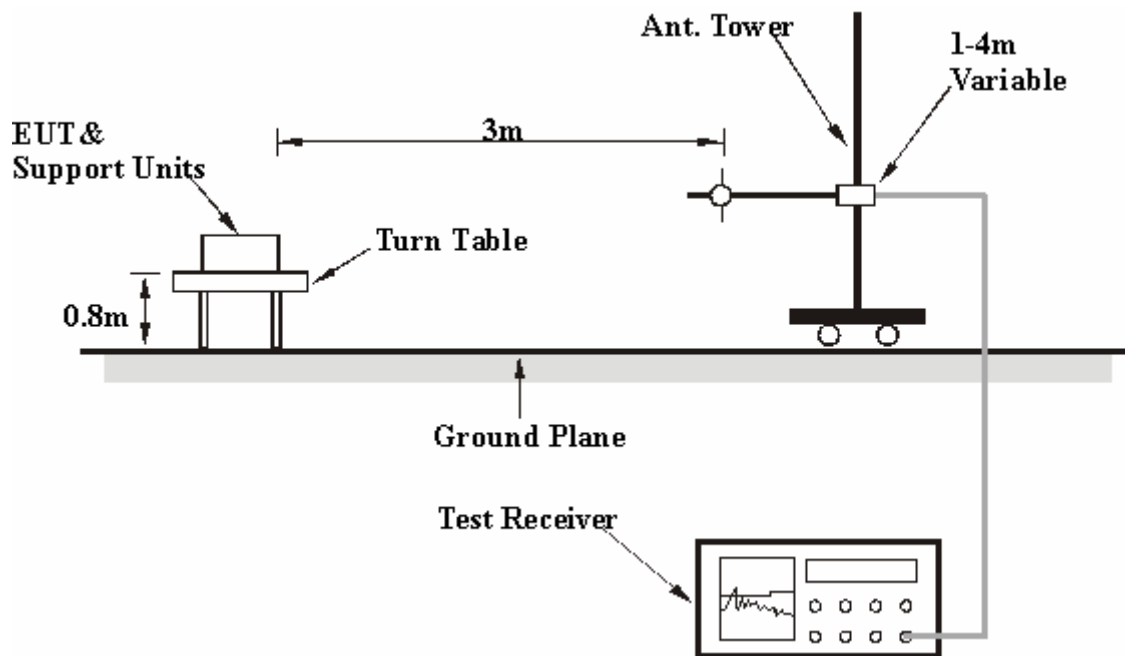
**NOTE:**

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 of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 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.

#### 4.2.5 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 (ANTENNA A)

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

<b>TEST MODE</b>	With adapter	<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>	21deg. C, 68%RH, 961hPa	<b>TESTED BY</b>	Sky Liao

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	110.88	31.80 QP	43.50	-11.70	1.00 H	305	21.03	10.77
2	200.01	27.50 QP	43.50	-16.00	1.02 H	185	15.90	11.60
3	300.00	30.00 QP	46.00	-16.00	1.00 H	106	13.17	16.83
4	500.00	36.00 QP	46.00	-10.00	1.32 H	282	14.24	21.76
5	600.00	31.00 QP	46.00	-15.00	1.42 H	305	6.52	24.48
6	800.00	37.00 QP	46.00	-9.00	1.05 H	238	9.44	27.56
7	900.01	35.30 QP	46.00	-10.70	1.00 H	196	6.45	28.85

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	39.66	33.20 QP	40.00	-6.80	1.00 V	290	19.02	14.18
2	108.84	34.00 QP	43.50	-9.50	1.00 V	62	23.46	10.54
3	200.00	25.20 QP	43.50	-18.30	1.00 V	296	13.60	11.60
4	359.90	33.60 QP	46.00	-12.40	1.00 V	152	15.90	17.70
5	500.00	34.30 QP	46.00	-11.70	1.04 V	252	12.54	21.76
6	600.01	28.60 QP	46.00	-17.40	1.10 V	235	4.12	24.48
7	800.00	36.80 QP	46.00	-9.20	1.42 V	268	9.24	27.56
8	899.99	35.20 QP	46.00	-10.80	1.18 V	312	6.35	28.85

- 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 – Normal mode

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix 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	#5150.00	57.50 PK	74.00	-16.50	1.28 H	246	21.26	36.24
2	#5150.00	44.40 AV	54.00	-9.60	1.28 H	246	8.16	36.24
3	*5180.00	99.70 PK			1.48 H	305	63.42	36.28
4	*5180.00	87.20 AV			1.48 H	305	50.92	36.28
5	10360.00	55.70 PK	88.30	-32.60	1.06 H	321	9.80	45.90
6	10360.00	42.80 AV	68.30	-25.50	1.06 H	321	-3.10	45.90

#### 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	#5150.00	70.80 PK	74.00	-3.20	1.47 V	344	34.56	36.24
2	#5150.00	50.70 AV	54.00	-3.30	1.47 V	344	14.46	36.24
3	*5180.00	113.70 PK			1.46 V	290	77.42	36.28
4	*5180.00	102.90 AV			1.46 V	290	66.62	36.28
5	10360.00	56.10 PK	88.30	-32.20	1.26 V	263	10.20	45.90
6	10360.00	43.20 AV	68.30	-25.10	1.26 V	263	-2.70	45.90

- 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.

<b>CHANNEL</b>	Channel 4	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix 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	*5240.00	101.80 PK			1.17 H	312	65.45	36.35
2	*5240.00	89.90 AV			1.17 H	312	53.55	36.35
3	#5350.00	57.30 PK	74.00	-16.70	1.16 H	303	20.82	36.48
4	#5350.00	44.30 AV	54.00	-9.70	1.16 H	303	7.82	36.48
5	10480.00	57.30 PK	88.30	-31.00	1.26 H	357	11.19	46.11
6	10480.00	44.70 AV	68.30	-23.60	1.26 H	357	-1.41	46.11

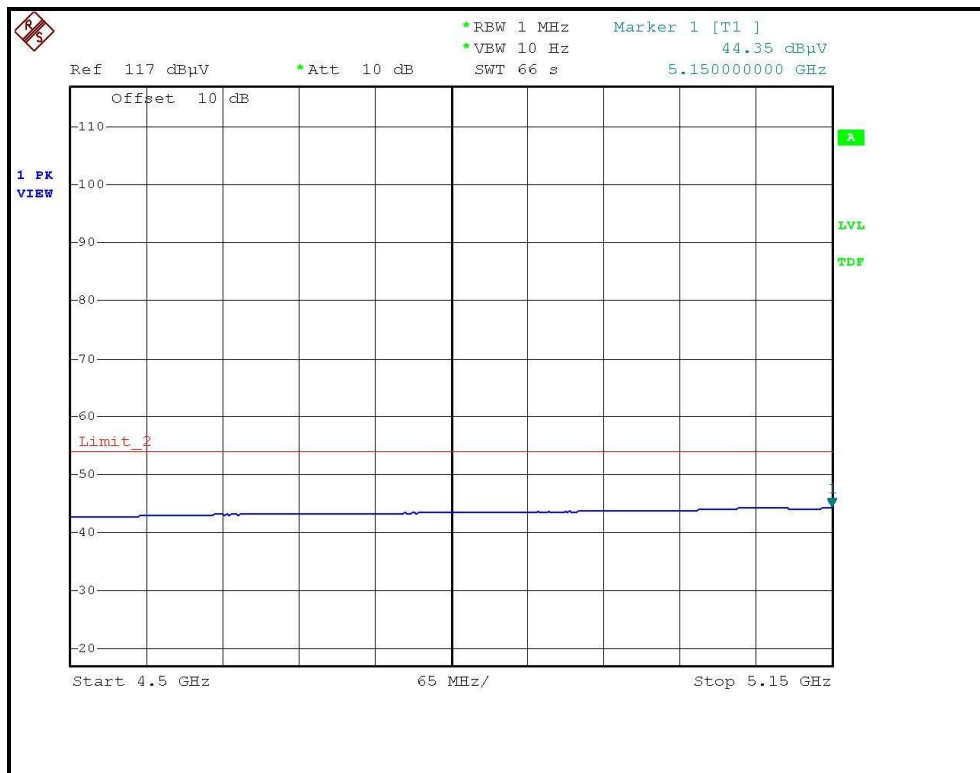
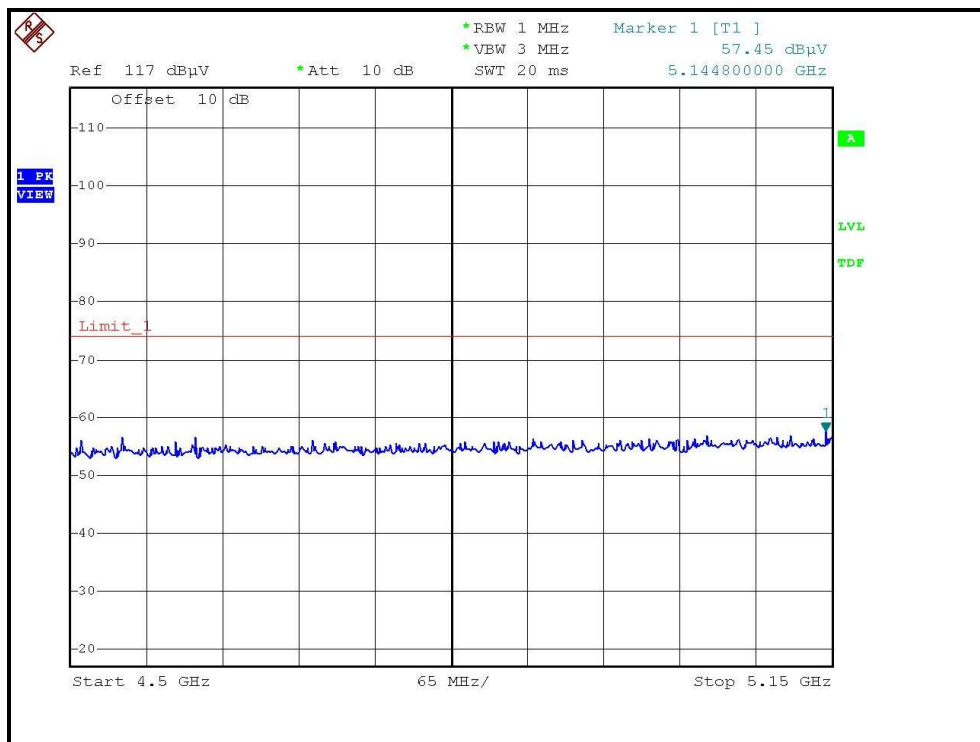
#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

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	*5240.00	116.20 PK			1.49 V	316	79.85	36.35
2	*5240.00	105.50 AV			1.49 V	316	69.15	36.35
3	#5350.00	59.40 PK	74.00	-14.60	1.41 V	316	22.92	36.48
4	#5350.00	46.20 AV	54.00	-7.80	1.41 V	316	9.72	36.48
5	10480.00	58.70 PK	88.30	-29.60	1.58 V	352	12.59	46.11
6	10480.00	45.10 AV	68.30	-23.20	1.58 V	352	-1.01	46.11

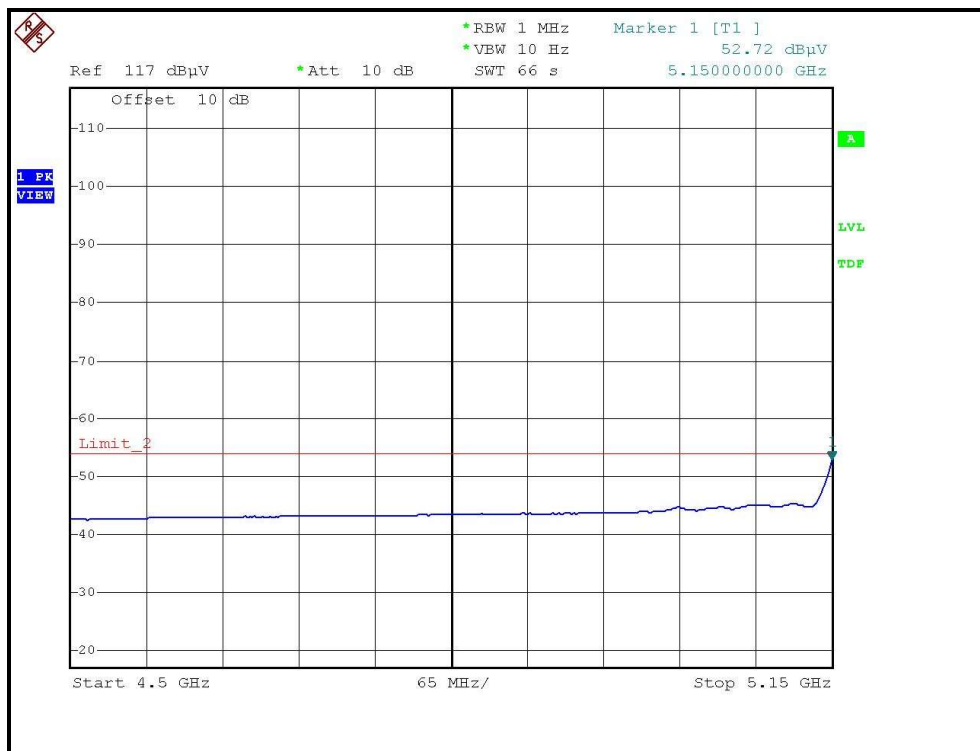
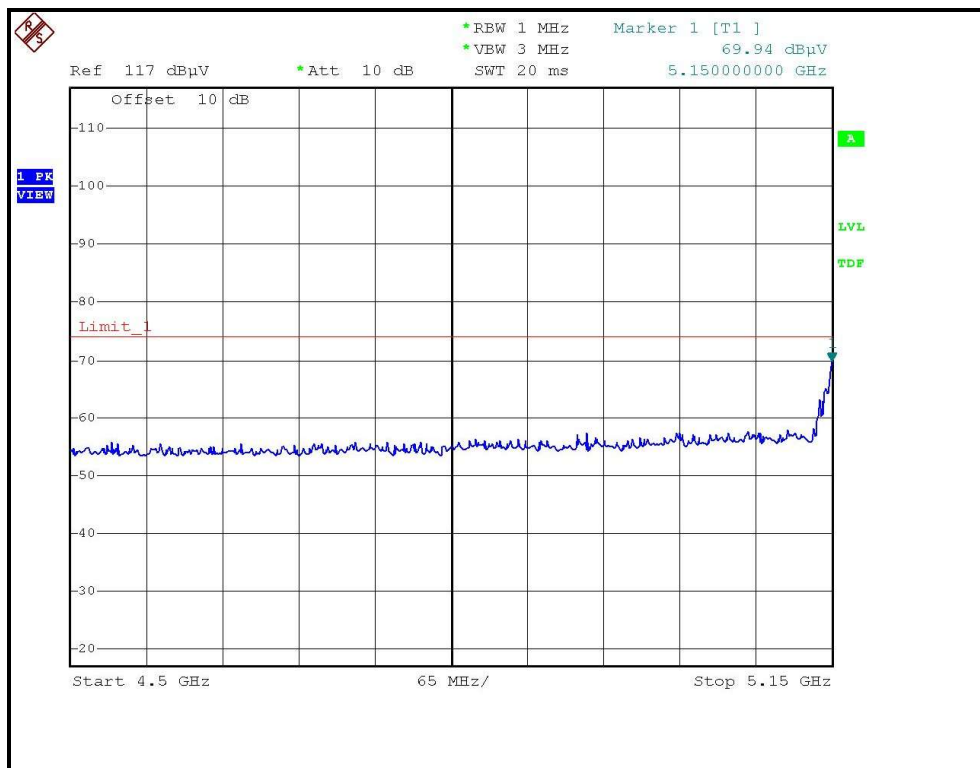
- NOTE:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value
  5. "\*" : Fundamental frequency
  6. "#"The radiated frequency falling in the restricted band.



RESTRICTED BANDEDGE (802.11a MODE, CH1, HORIZONTAL )

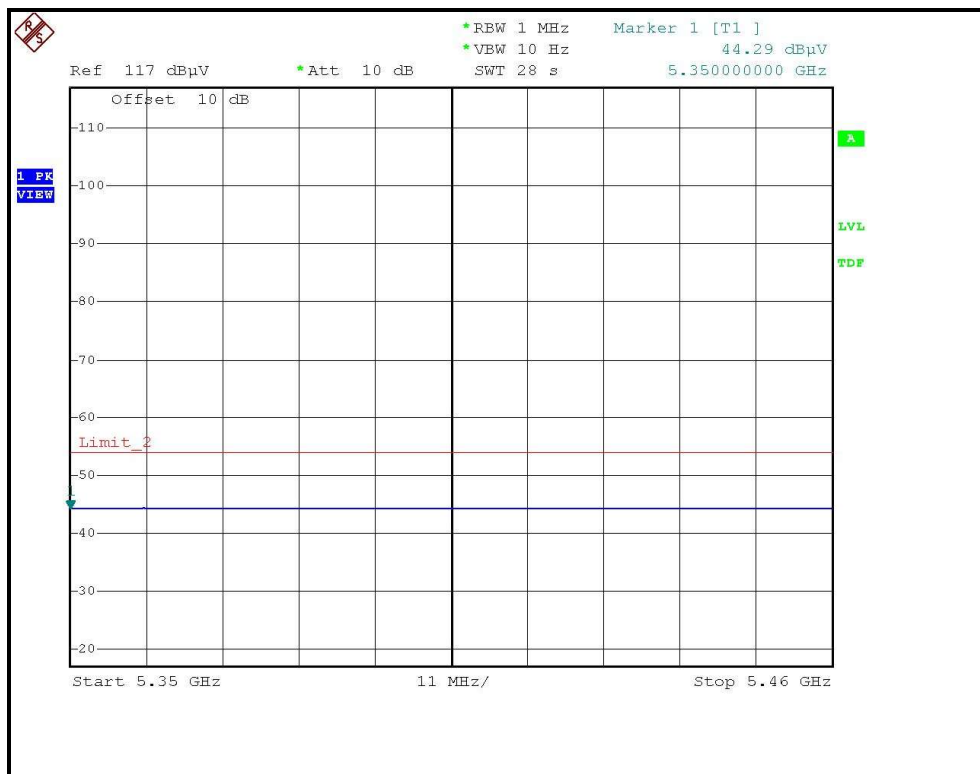
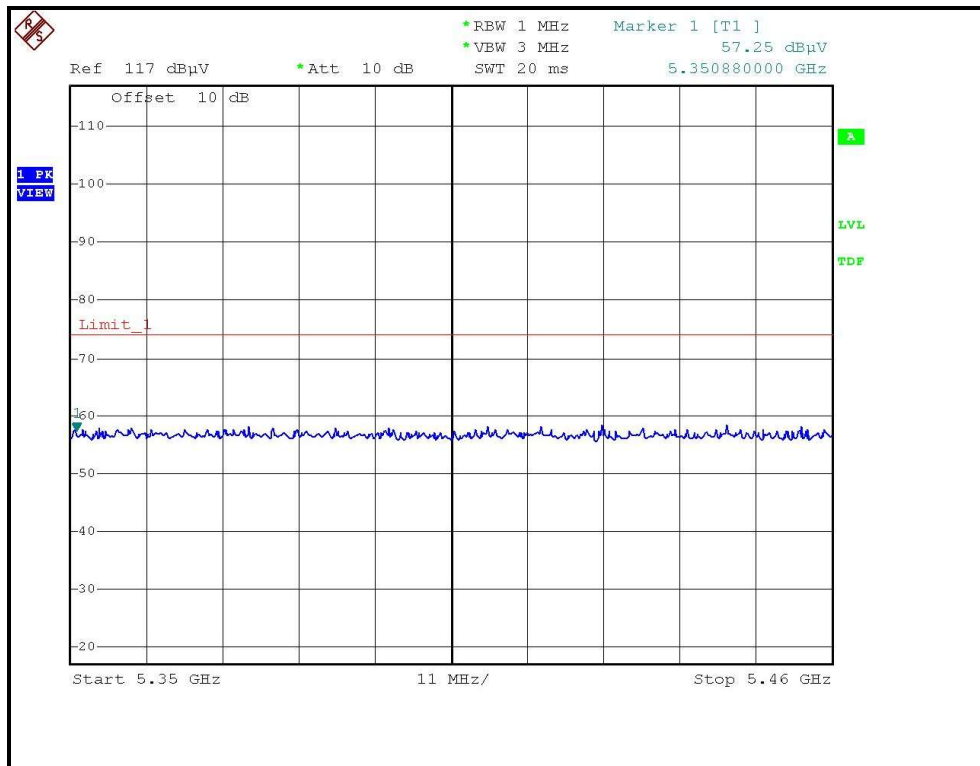


RESTRICTED BANDEDGE (802.11a MODE, CH1, VERTICAL )

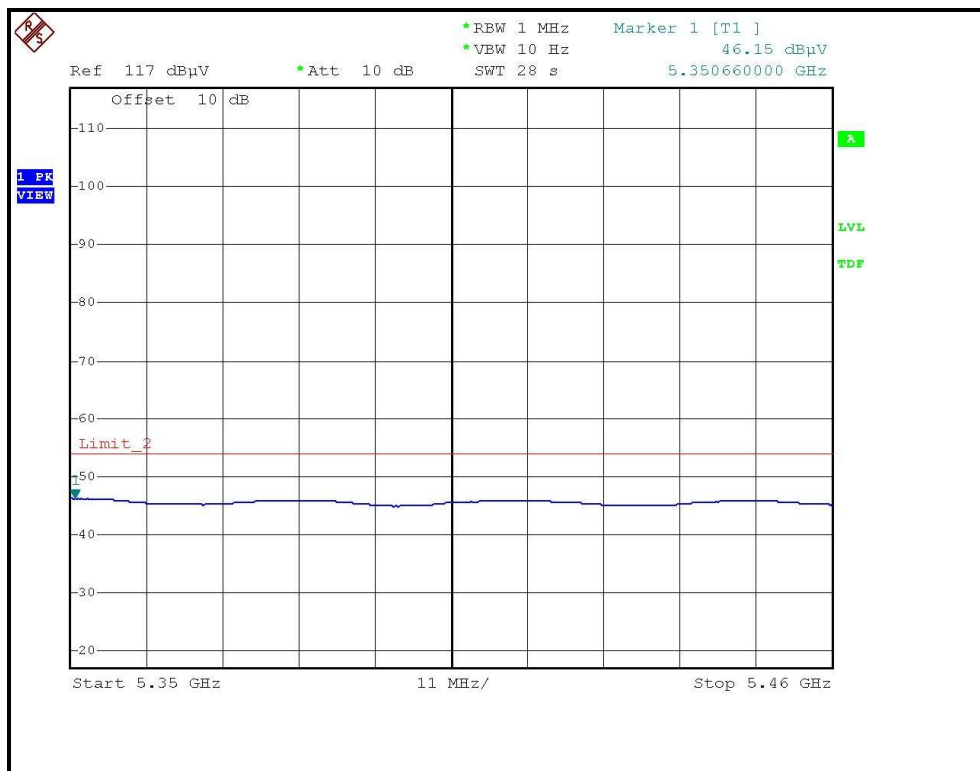
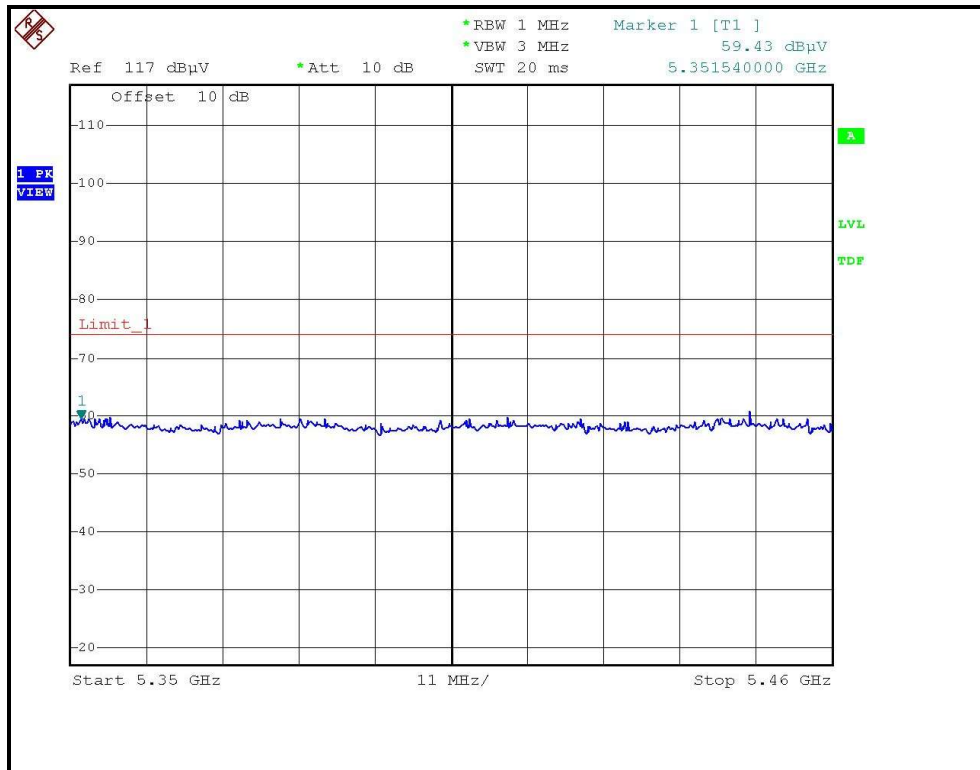




### RESTRICTED BANDEDGE (802.11a MODE, CH4, HORIZONTAL )



### RESTRICTED BANDEDGE (802.11a MODE, CH4, VERTICAL )



### 802.11a OFDM modulation – Turbo mode

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix Huang

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

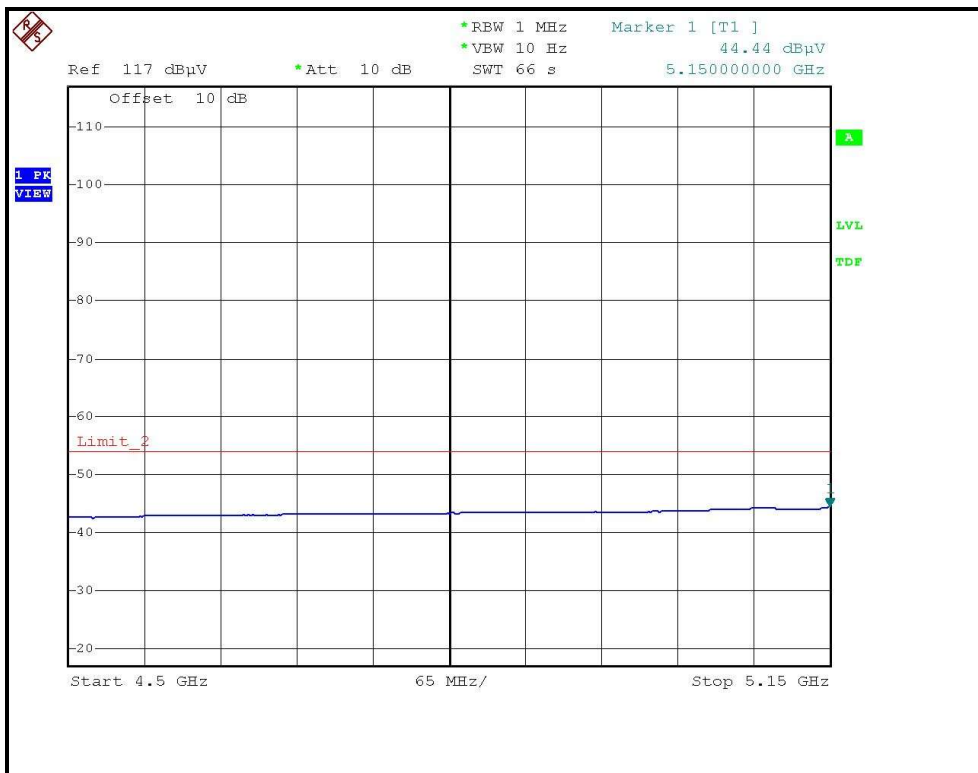
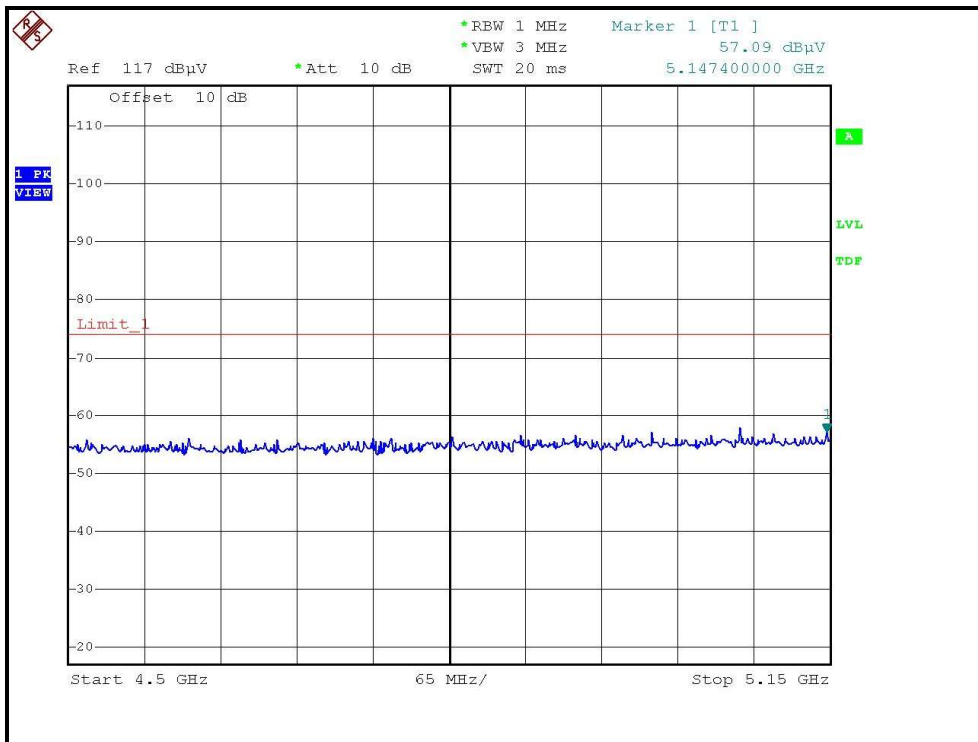
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	57.10 PK	74.00	-16.90	2.09 H	306	20.86	36.24
2	#5150.00	44.40 AV	54.00	-9.60	2.09 H	306	8.16	36.24
3	*5210.00	93.60 PK			2.07 H	308	57.29	36.31
4	*5210.00	83.50 AV			2.07 H	308	47.19	36.31
5	10420.00	57.00 PK	88.30	-31.30	1.68 H	248	11.00	46.00
6	10420.00	44.80 AV	68.30	-23.50	1.68 H	248	-1.20	46.00

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

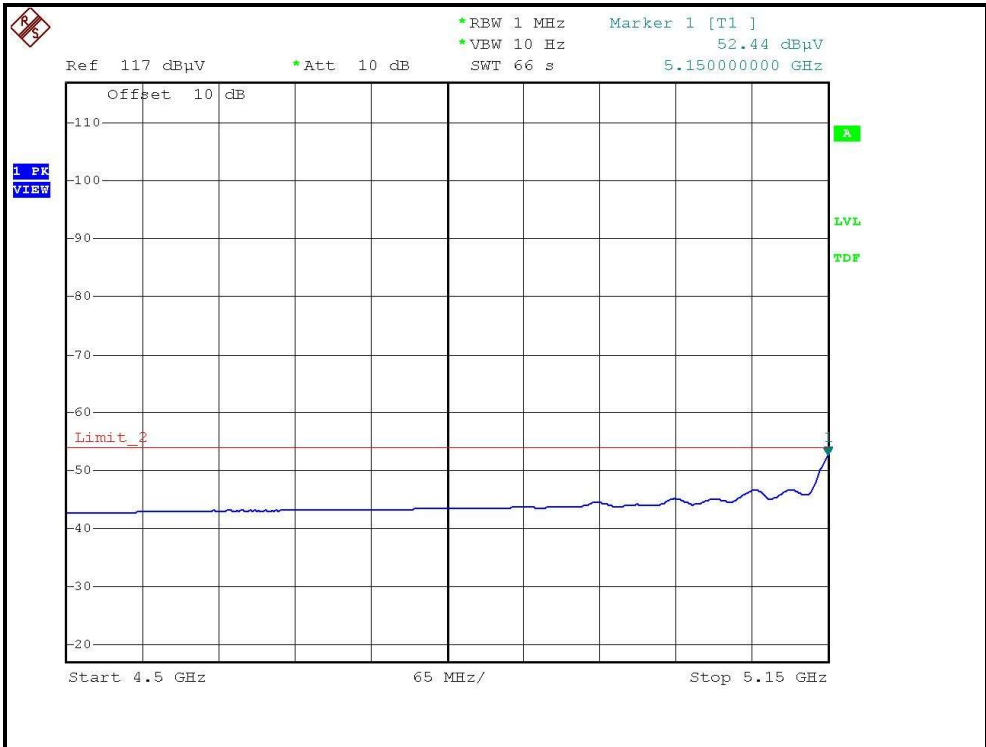
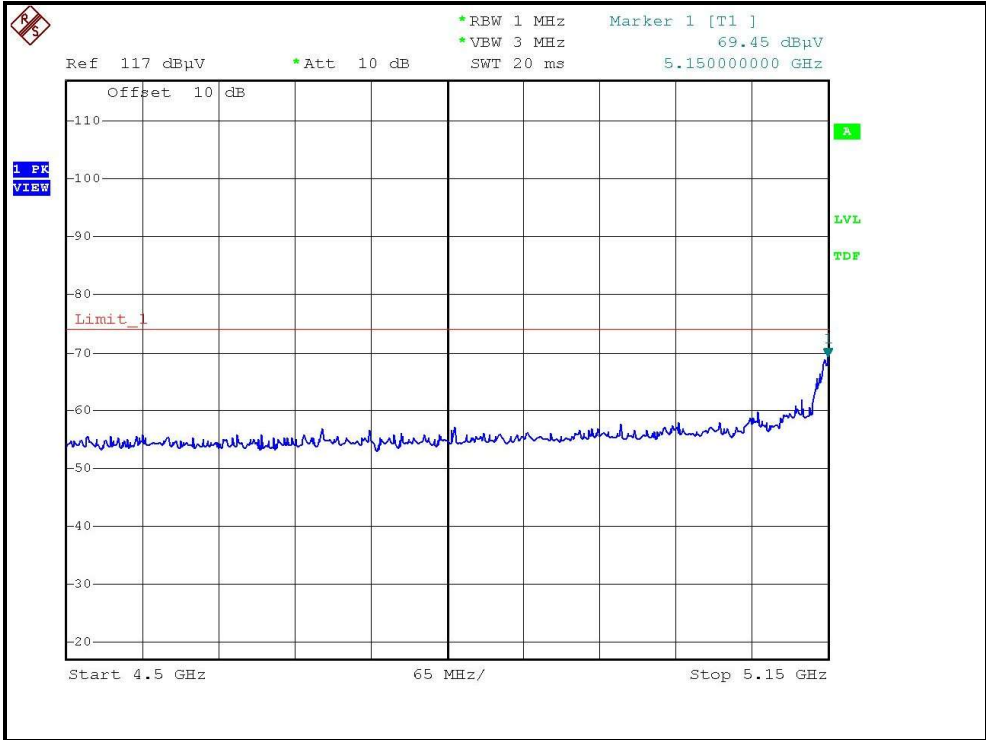
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	69.80 PK	74.00	-4.20	1.47 V	320	33.56	36.24
2	#5150.00	52.70 AV	54.00	-1.30	1.47 V	320	16.46	36.24
3	*5210.00	109.60 PK			1.52 V	290	73.29	36.31
4	*5210.00	100.50 AV			1.52 V	290	64.19	36.31
5	10420.00	58.80 PK	88.30	-29.50	1.59 V	304	12.80	46.00
6	10420.00	45.20 AV	68.30	-23.10	1.59 V	304	-0.80	46.00

- 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.

RESTRICTED BANDEDGE (802.11a MODE, CH1, HORIZONTAL )



### RESTRICTED BANDEDGE (802.11a MODE, CH1, VERTICAL )



#### 4.2.9 TEST RESULTS (ANTENNA B)

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

<b>TEST MODE</b>	With adapter	<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>	21deg. C, 68%RH, 961hPa	<b>TESTED BY</b>	Sky Liao

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	110.88	32.30 QP	43.50	-11.20	1.04 H	350	21.53	10.77
2	200.01	27.30 QP	43.50	-16.20	1.04 H	240	15.70	11.60
3	300.00	30.10 QP	46.00	-15.90	1.00 H	116	13.27	16.83
4	500.00	36.60 QP	46.00	-9.40	1.48 H	258	14.84	21.76
5	600.00	30.70 QP	46.00	-15.30	1.12 H	336	6.22	24.48
6	800.00	38.20 QP	46.00	-7.80	1.00 H	222	10.64	27.56
7	900.00	36.40 QP	46.00	-9.60	1.02 H	228	7.55	28.85

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	39.66	34.10 QP	40.00	-5.90	1.00 V	264	19.92	14.18
2	108.83	35.00 QP	43.50	-8.50	1.00 V	48	24.46	10.54
3	200.00	26.20 QP	43.50	-17.30	1.00 V	280	14.60	11.60
4	359.80	34.20 QP	46.00	-11.80	1.00 V	169	16.50	17.70
5	500.00	35.90 QP	46.00	-10.10	1.08 V	225	14.14	21.76
6	599.99	29.80 QP	46.00	-16.20	1.14 V	202	5.32	24.48
7	800.00	38.50 QP	46.00	-7.50	1.39 V	297	10.94	27.56
8	899.99	36.00 QP	46.00	-10.00	1.25 V	348	7.15	28.85

- 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 – Normal mode

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix 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	#5150.00	57.93 PK	74.00	-16.07	1.45 H	268	21.69	36.24
2	#5150.00	45.50 AV	54.00	-8.50	1.45 H	268	9.26	36.24
3	*5180.00	100.10 PK			1.30 H	329	63.82	36.28
4	*5180.00	89.90 AV			1.30 H	329	53.62	36.28
5	10360.00	56.90 PK	88.30	-31.40	1.59 H	125	11.00	45.90
6	10360.00	43.50 AV	68.30	-24.80	1.59 H	125	-2.40	45.90

#### 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	#5150.00	73.20 PK	74.00	-0.80	1.25 V	266	36.96	36.24
<b>2</b>	<b>#5150.00</b>	<b>53.50 AV</b>	<b>54.00</b>	<b>-0.50</b>	<b>1.25 V</b>	<b>266</b>	<b>17.26</b>	<b>36.24</b>
3	*5180.00	114.80 PK			1.26 V	259	78.52	36.28
4	*5180.00	103.50 AV			1.26 V	259	67.22	36.28
5	10360.00	57.20 PK	88.30	-31.10	1.34 V	139	11.30	45.90
6	10360.00	44.10 AV	68.30	-24.20	1.34 V	139	-1.80	45.90

- 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.

<b>CHANNEL</b>	Channel 4	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix Huang

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

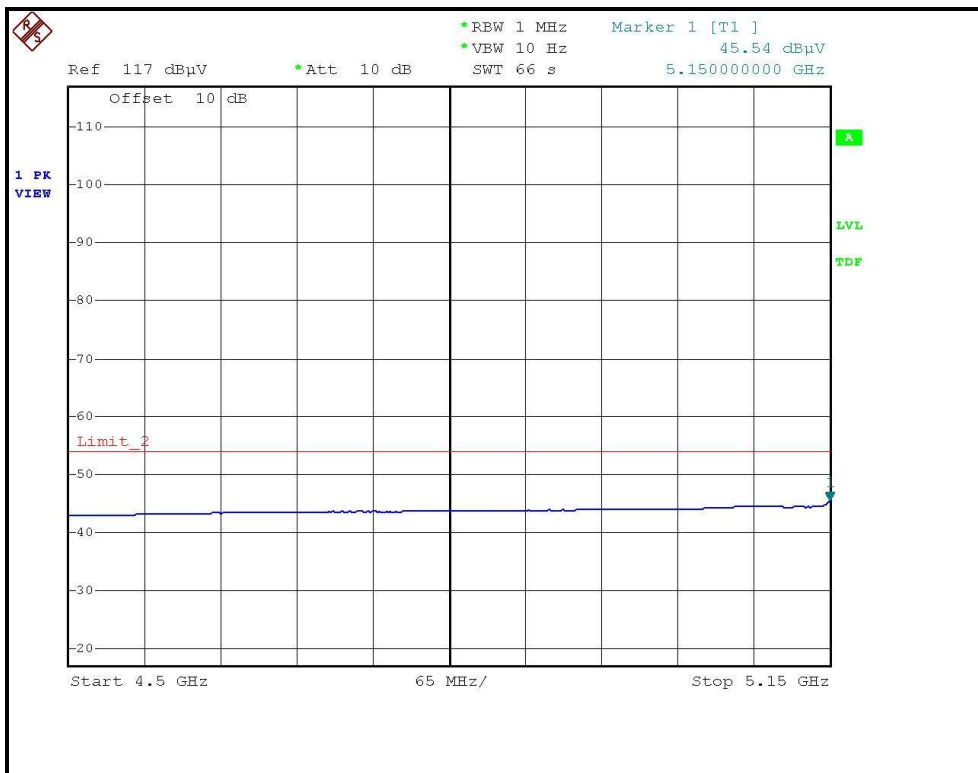
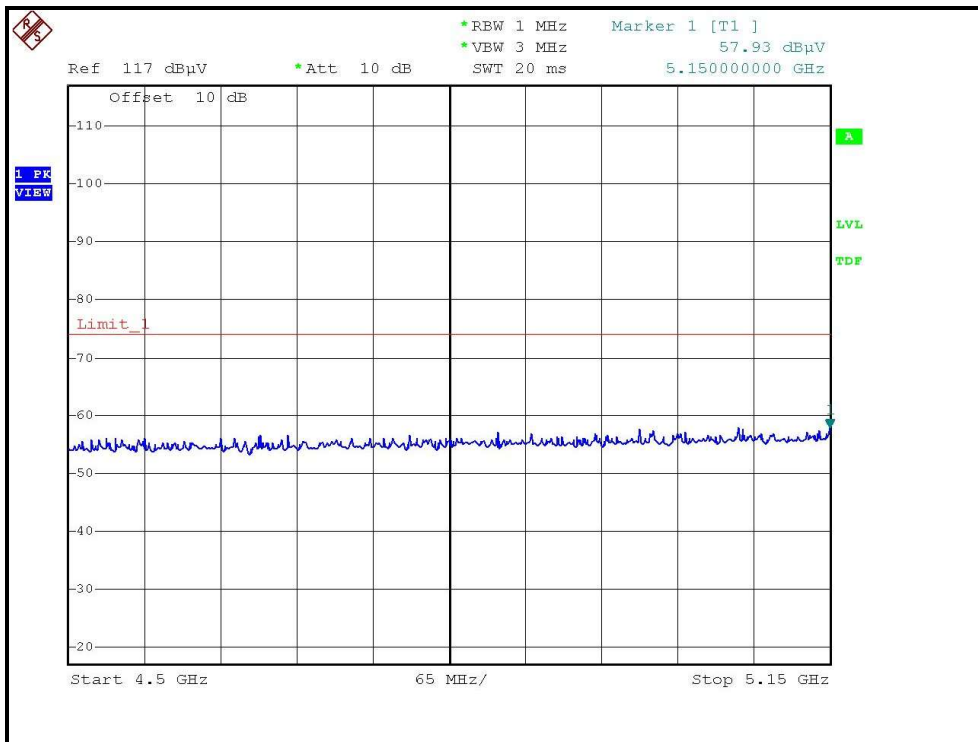
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	117.80 PK			1.16 H	69	81.45	36.35
2	*5240.00	107.30 AV			1.16 H	69	70.95	36.35
3	#5350.00	61.80 PK	74.00	-12.20	1.12 H	70	25.32	36.48
4	#5350.00	46.70 AV	54.00	-7.30	1.12 H	70	10.22	36.48
5	10480.00	58.10 PK	88.30	-30.20	1.44 H	339	11.99	46.11
6	10480.00	44.60 AV	68.30	-23.70	1.44 H	339	-1.51	46.11

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

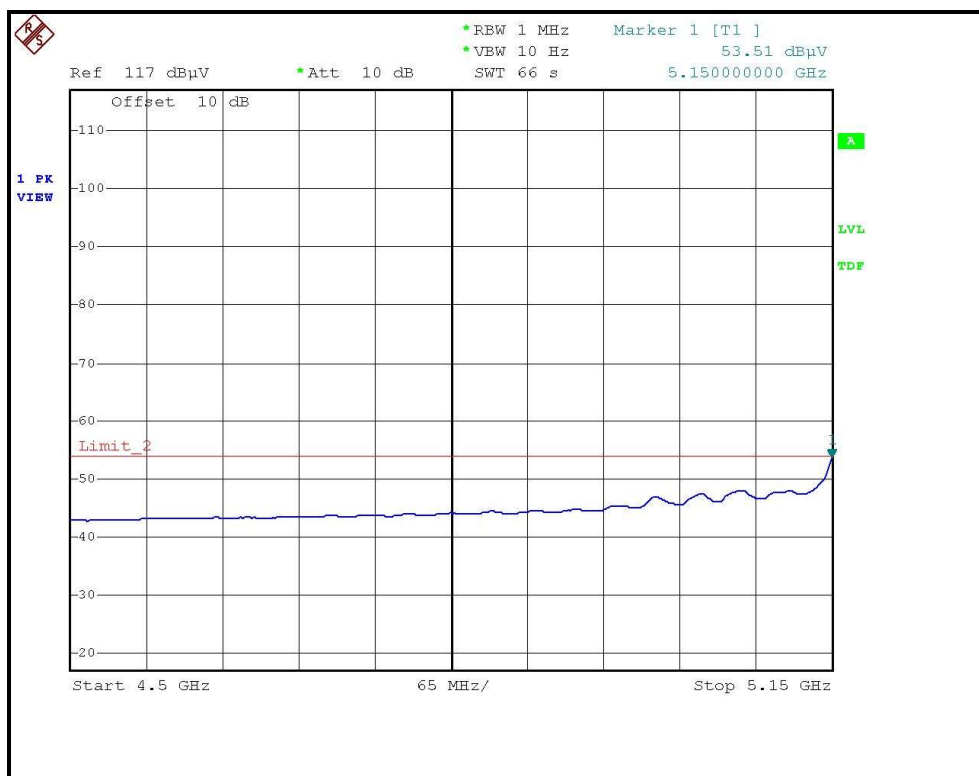
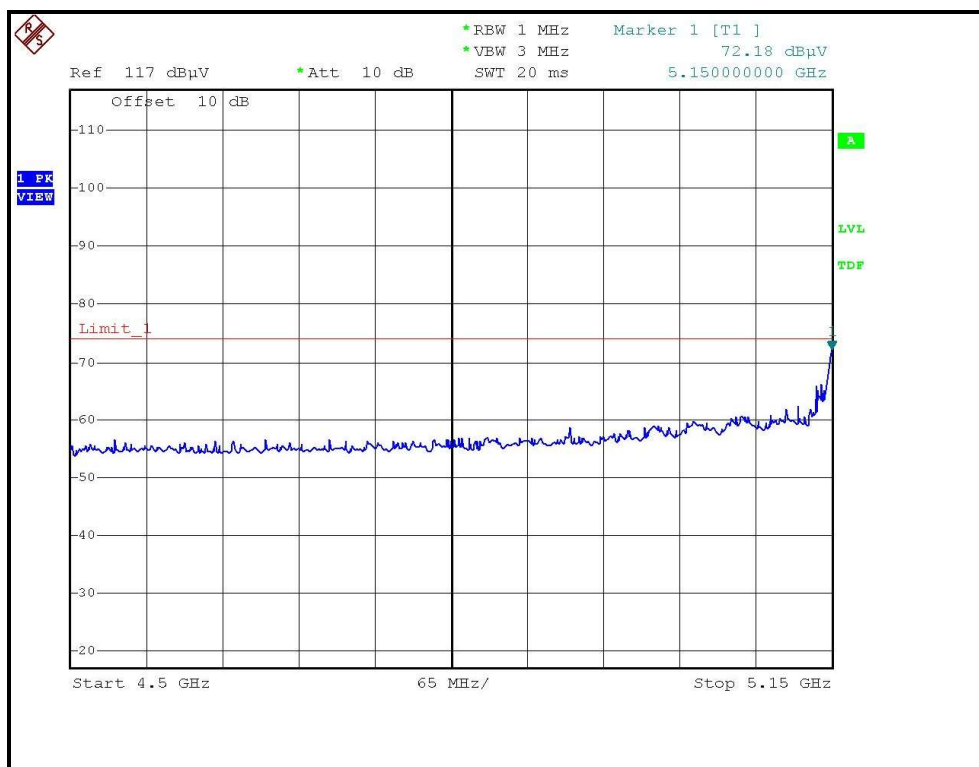
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	117.80 PK			1.16 V	69	81.45	36.35
2	*5240.00	107.30 AV			1.16 V	69	70.95	36.35
3	#5350.00	61.80 PK	74.00	-12.20	1.12 V	70	25.32	36.48
4	#5350.00	46.70 AV	54.00	-7.30	1.12 V	70	10.22	36.48
5	10480.00	58.10 PK	88.30	-30.20	1.44 V	339	11.99	46.11
6	10480.00	44.60 AV	68.30	-23.70	1.44 V	339	-1.51	46.11

- 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.

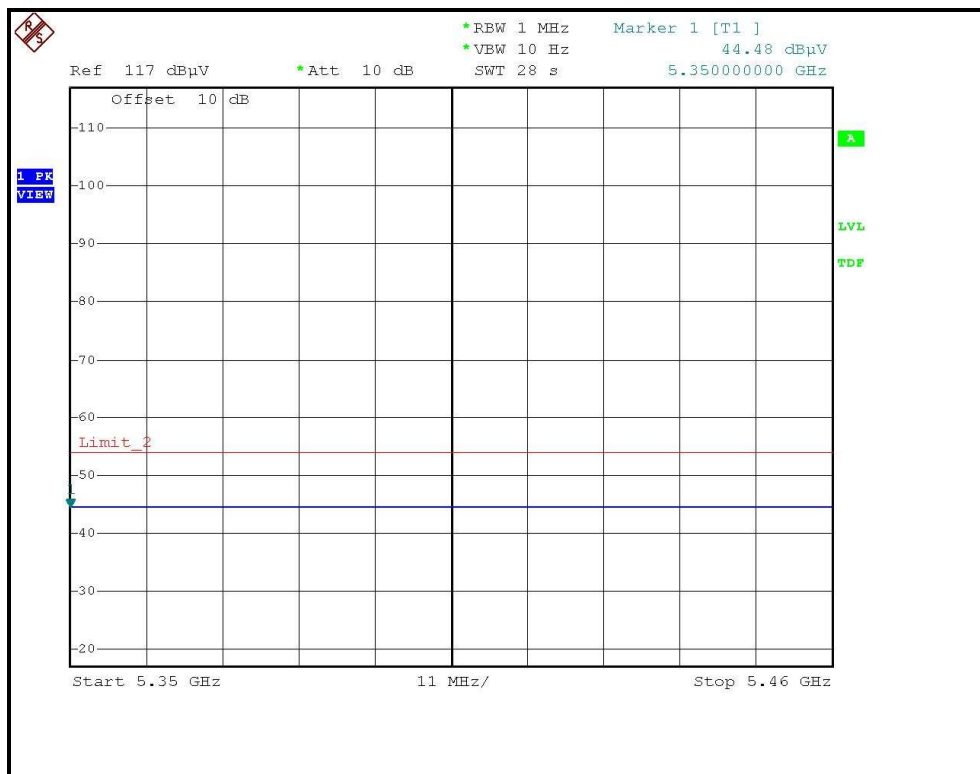
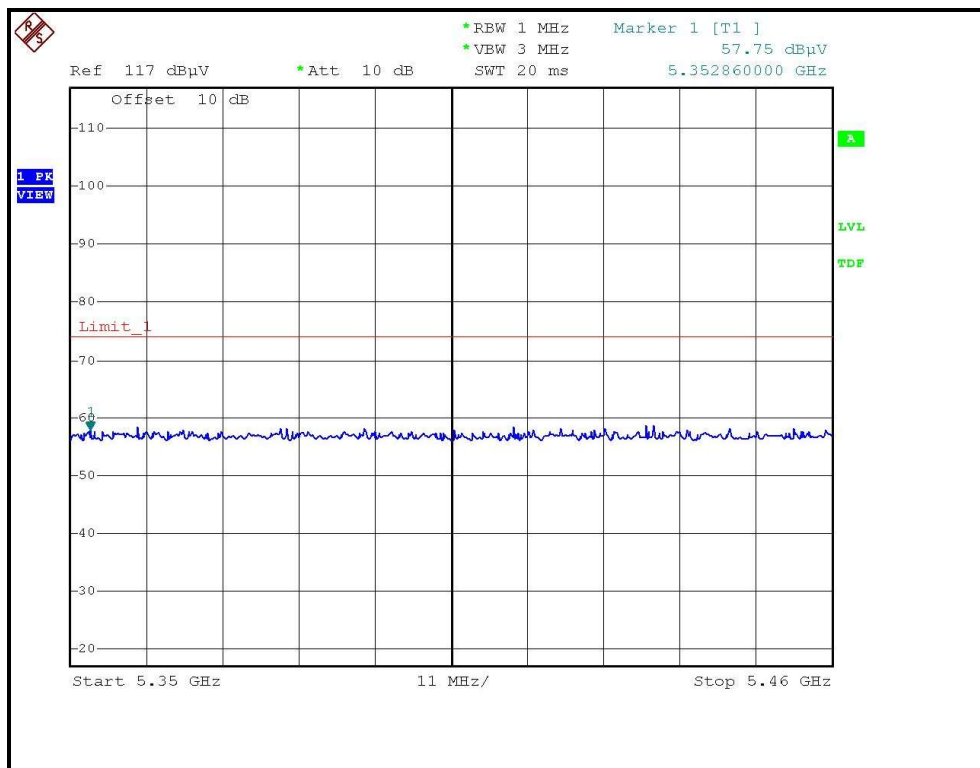
RESTRICTED BANDEDGE (802.11a MODE, CH1, HORIZONTAL )



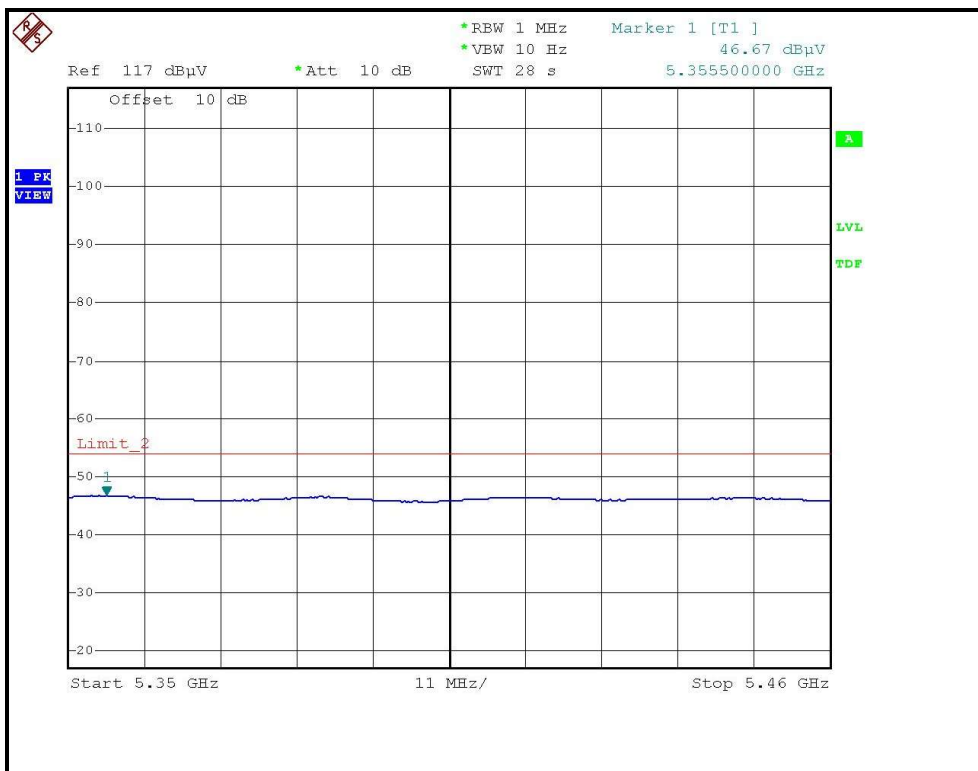
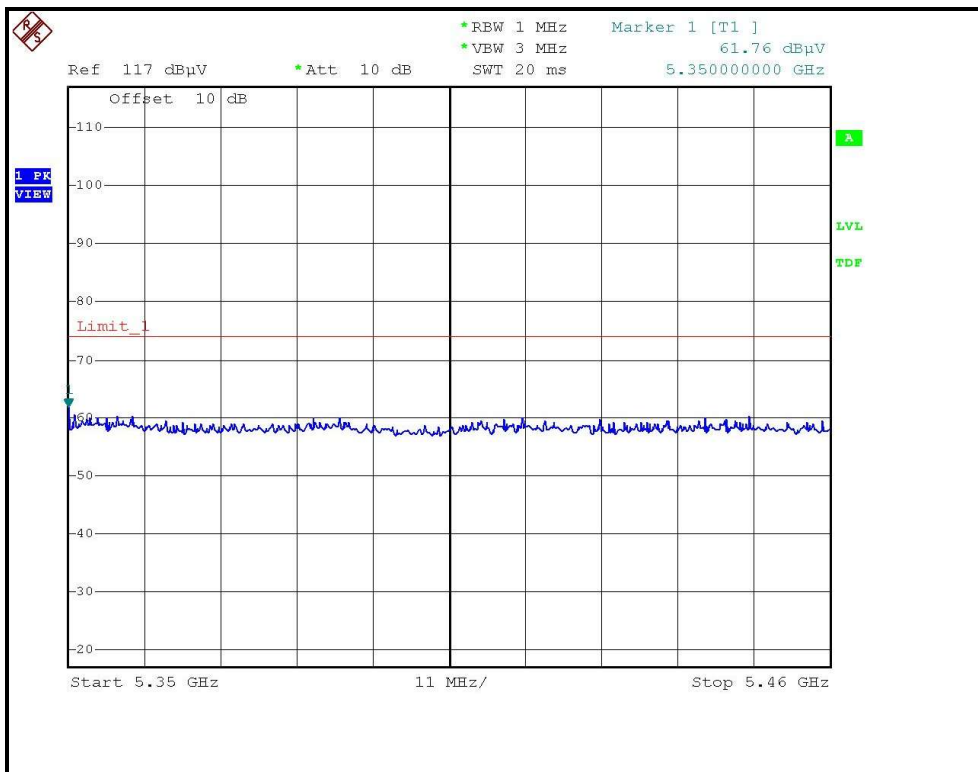
RESTRICTED BANDEDGE (802.11a MODE, CH1, VERTICAL )



RESTRICTED BANDEDGE (802.11a MODE, CH4, HORIZONTAL )



RESTRICTED BANDEDGE (802.11a MODE, CH4, VERTICAL )



### 802.11a OFDM modulation – Turbo mode

<b>CHANNEL</b>	Channel 1	<b>FREQUENCY RANGE</b>	1 ~ 40 GHz
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	29deg. C, 65%RH, 961hPa	<b>TESTED BY</b>	Phoenix Huang

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

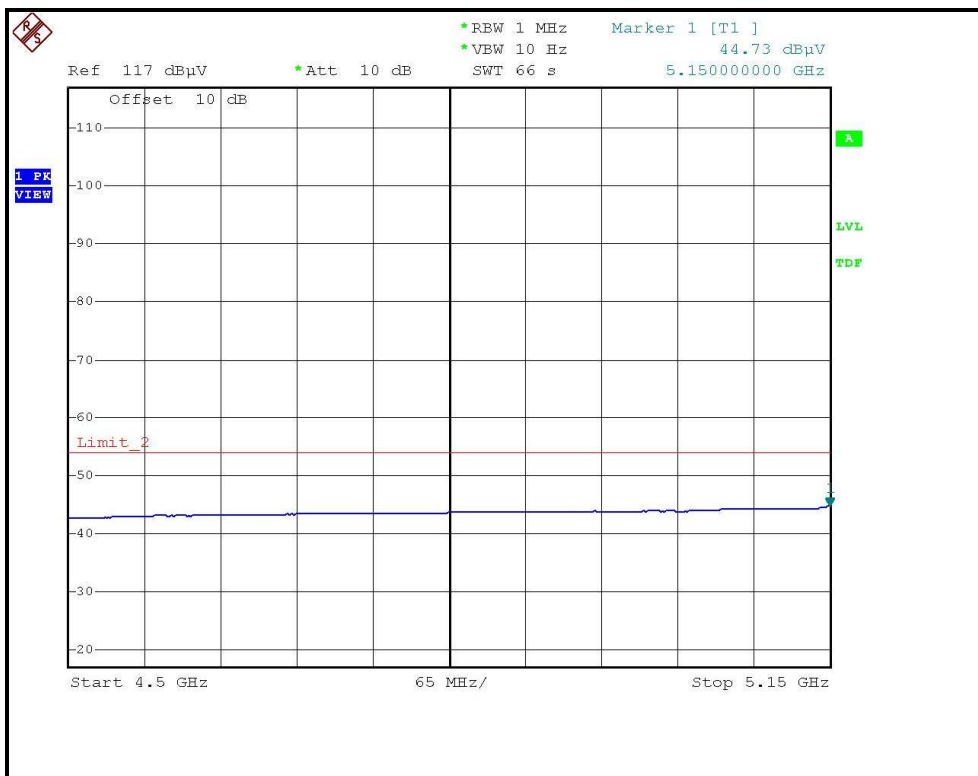
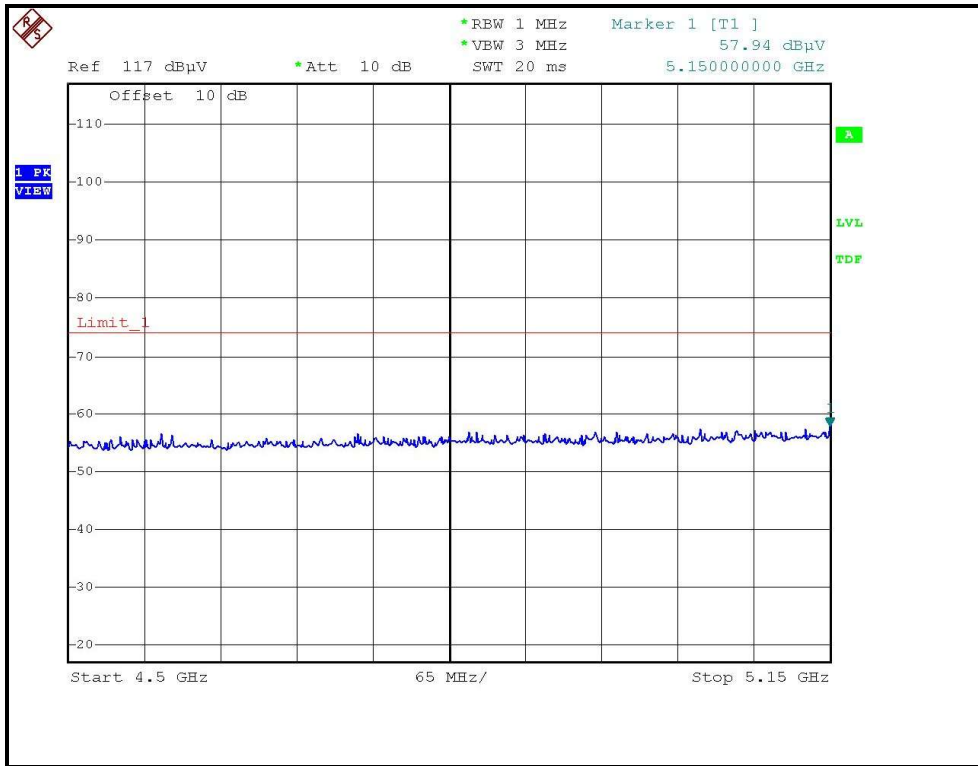
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5150.00	57.90 PK	74.00	-16.10	1.22 H	267	21.66	36.24
2	#5150.00	44.70 AV	54.00	-9.30	1.22 H	267	8.46	36.24
3	*5210.00	98.20 PK			1.29 H	327	61.89	36.31
4	*5210.00	88.10 AV			1.29 H	327	51.79	36.31
5	10420.00	55.30 PK	88.30	-33.00	1.41 H	80	9.30	46.00
6	10420.00	43.90 AV	68.30	-24.40	1.41 H	80	-2.10	46.00

#### 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	#5150.00	71.20 PK	74.00	-2.80	1.18 V	90	34.96	36.24
2	#5150.00	53.40 AV	54.00	-0.60	1.18 V	90	17.16	36.24
3	*5210.00	112.40 PK			1.27 V	264	76.09	36.31
4	*5210.00	101.70 AV			1.27 V	264	65.39	36.31
5	10420.00	56.60 PK	88.30	-31.70	1.39 V	272	10.60	46.00
6	10420.00	44.20 AV	68.30	-24.10	1.39 V	272	-1.80	46.00

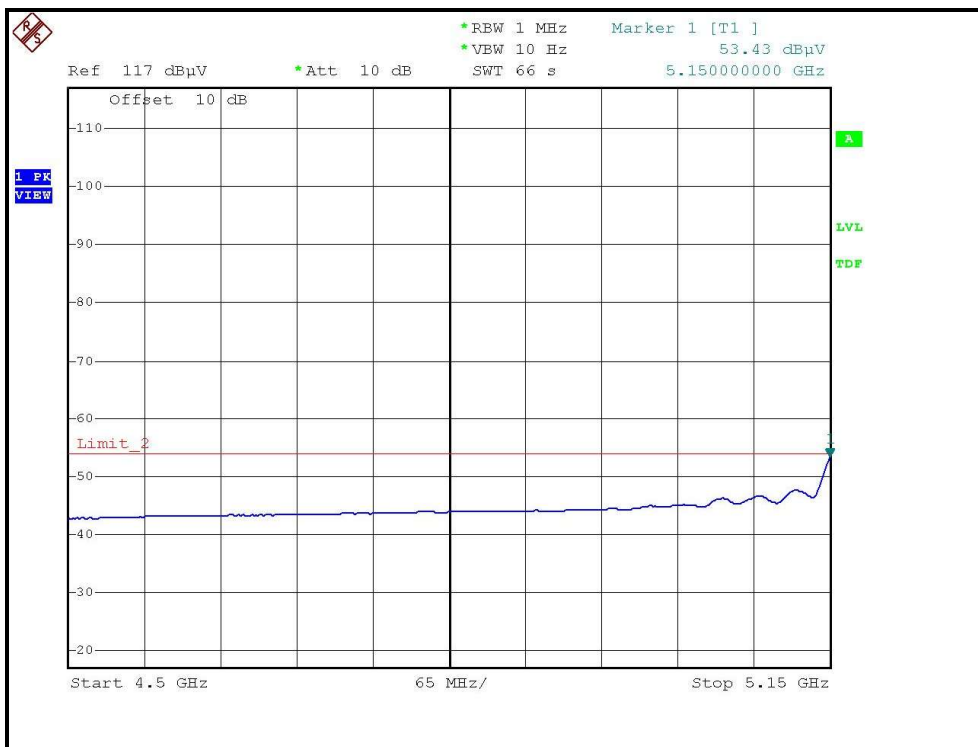
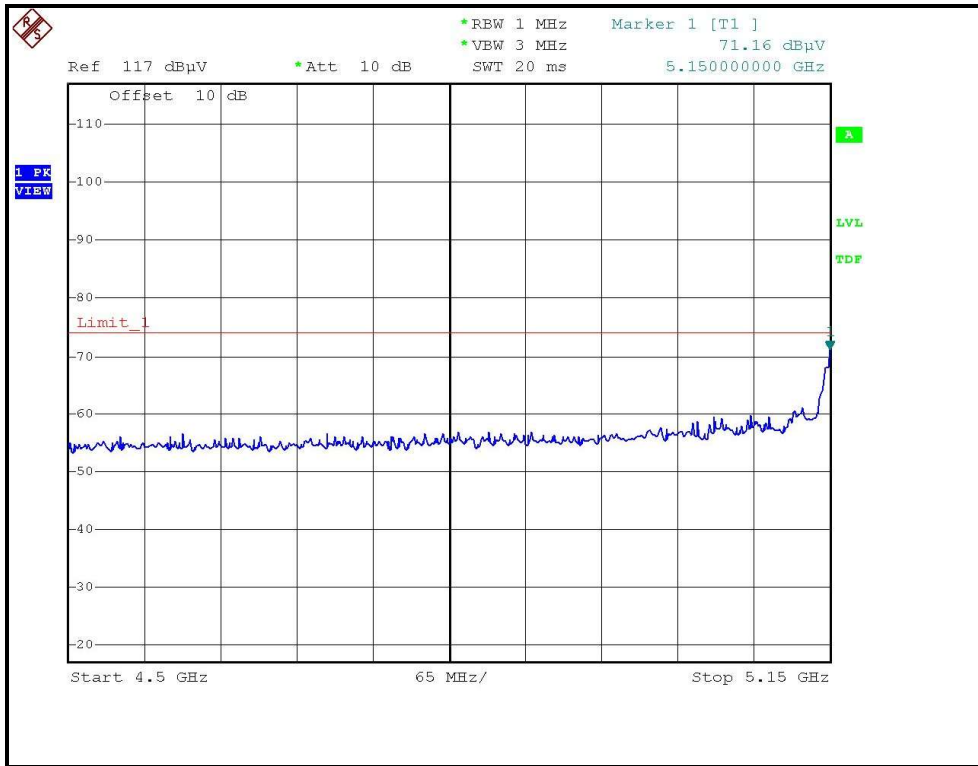
- NOTE:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value
  5. "\*" : Fundamental frequency
  6. "#" The radiated frequency falling in the restricted band.

RESTRICTED BANDEDGE (802.11a MODE, CH1, HORIZONTAL )





RESTRICTED BANDEDGE (802.11a MODE, CH1, VERTICAL )



### 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
ADVANTEST SPECTRUM ANALYZER	U3772	160100280	April. 10.2008

**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

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 300kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

**NOTE:**

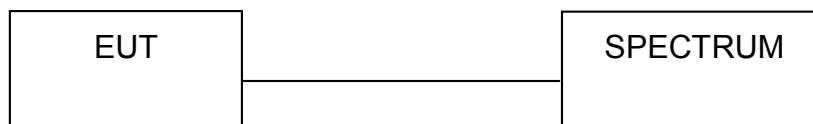
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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 (ANTENNA A)

#### 802.11a OFDM modulation-Normal mode

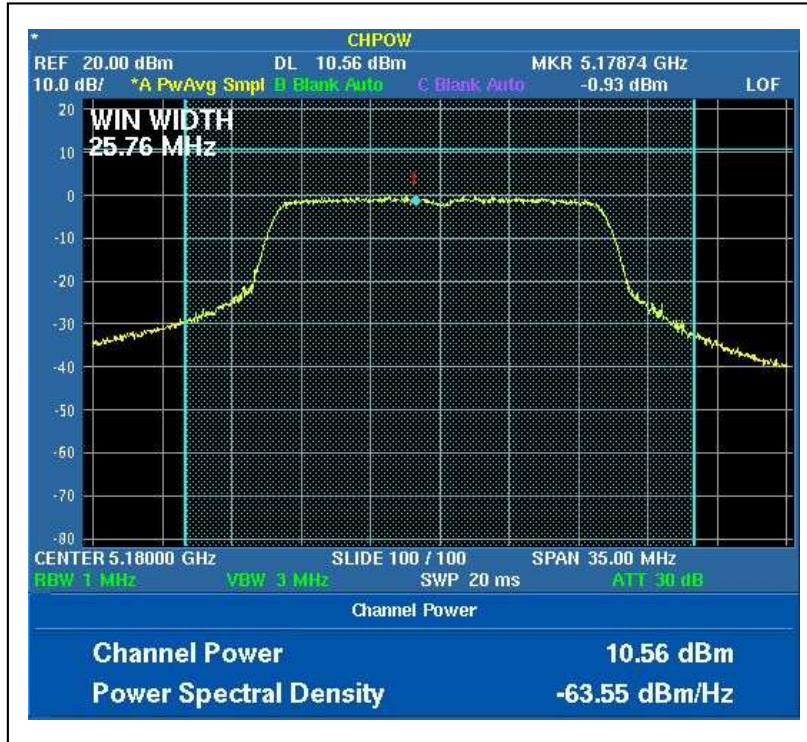
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 60%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

Antenna A (Gain : 6 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	11.376	10.56	17	25.76	PASS
4	5240	24.378	13.87	17	26.57	PASS

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

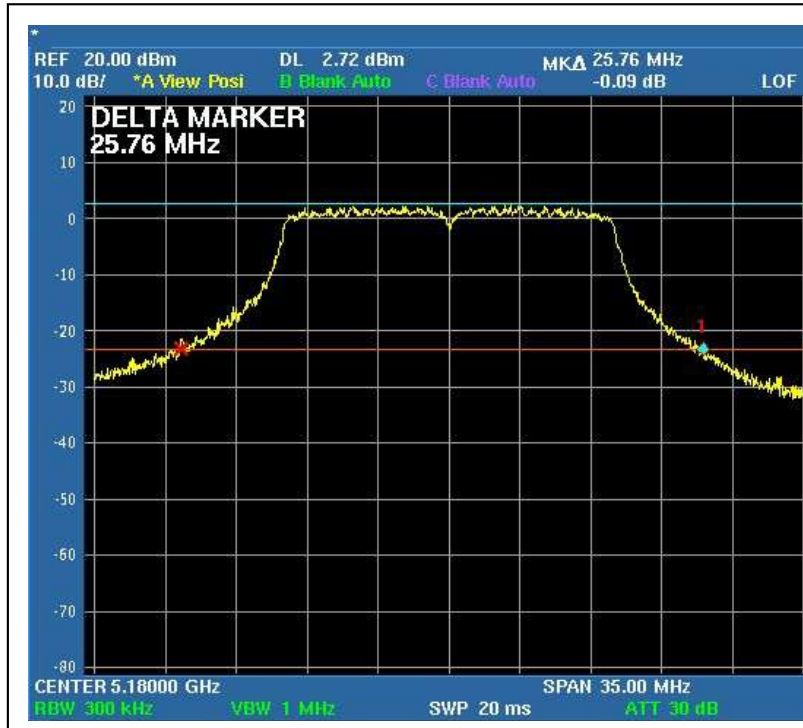
Peak Power Output:  
CH1



CH4



26dB Occupied Bandwidth:  
CH1



CH4





### 802.11a OFDM modulation-Turbo mode

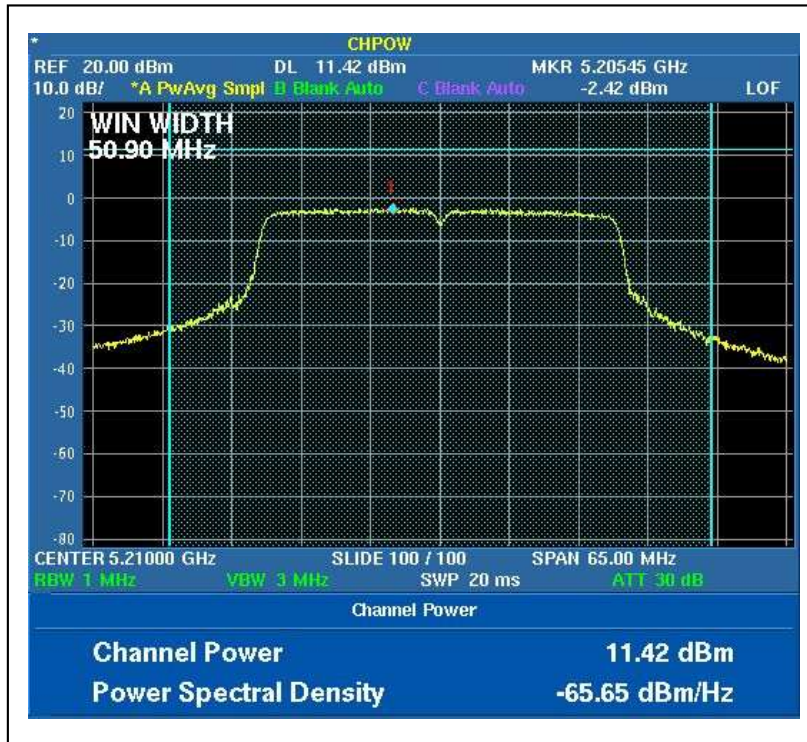
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 60%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

Antenna A (Gain : 6 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	13.868	11.42	17	50.9	PASS

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

Peak Power Output:  
CH1





26dB Occupied Bandwidth:  
CH1





#### 4.3.8 TEST RESULTS (ANTENNA B)

##### 802.11a OFDM modulation-Normal mode

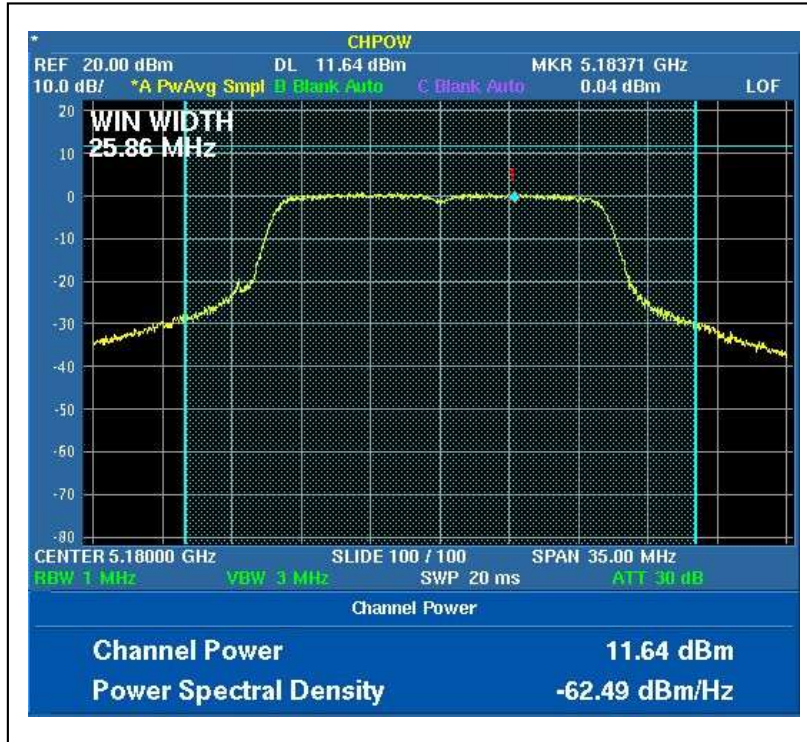
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 60%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

Antenna A (Gain : 4.5 dBi)

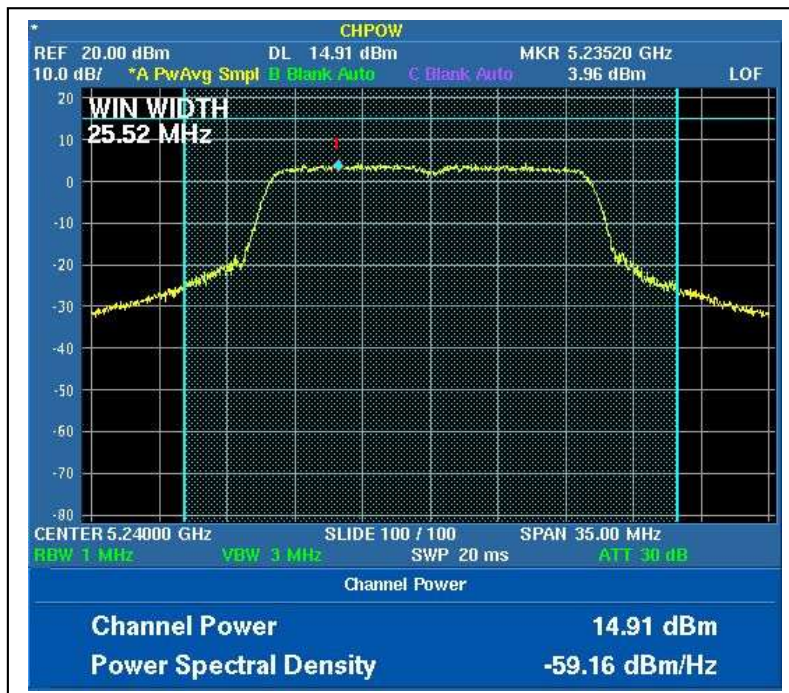
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	14.588	11.64	17	25.86	PASS
4	5240	30.974	14.91	17	25.52	PASS

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

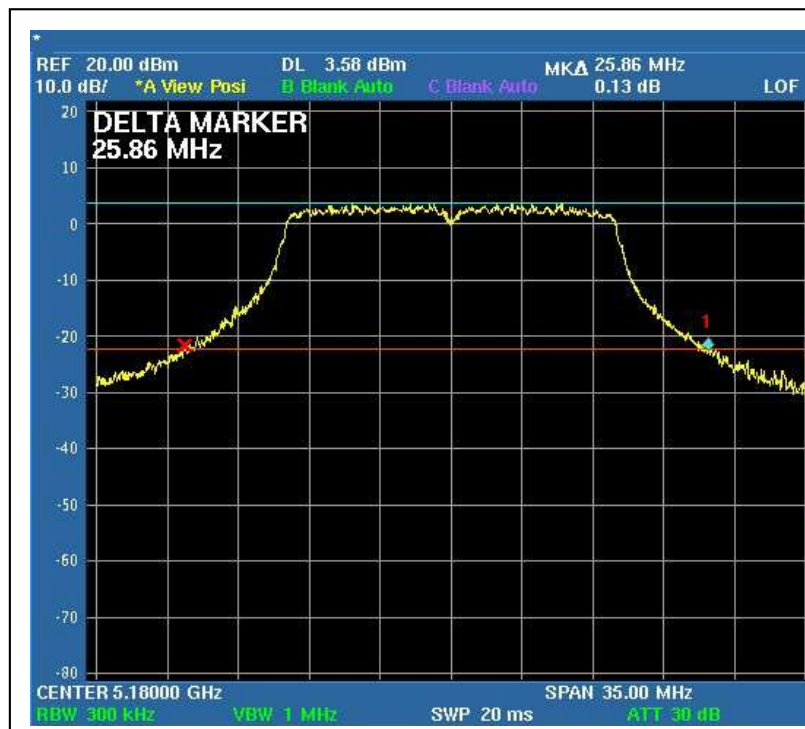
Peak Power Output:  
CH1



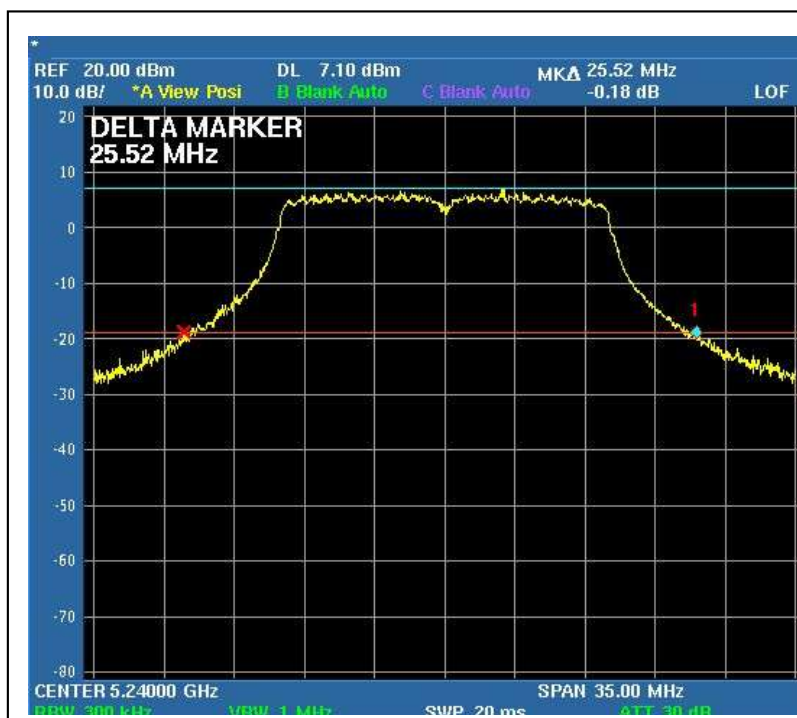
CH4



26dB Occupied Bandwidth:  
CH1



CH4





### 802.11a OFDM modulation-Turbo mode

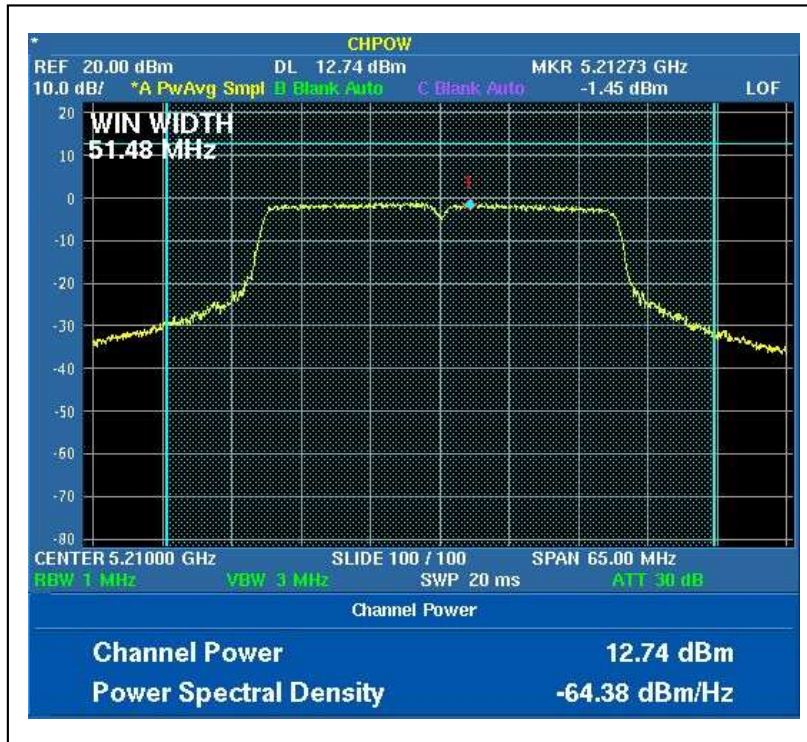
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 60%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

Antenna A (Gain : 4.5 dBi)

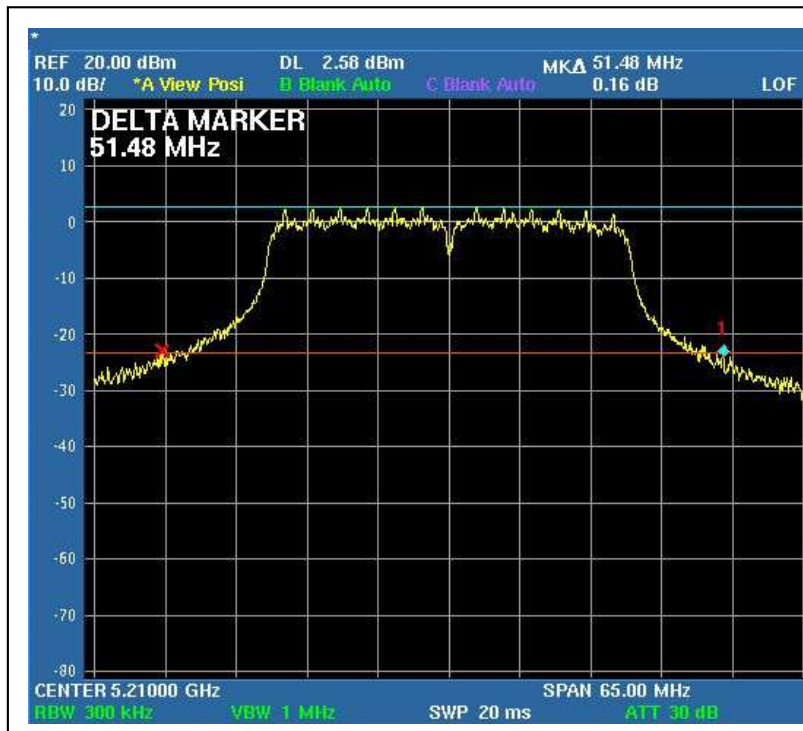
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	18.793	12.74	17	51.48	PASS

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

Peak Power Output:  
CH1



26dB Occupied Bandwidth:  
CH1



#### 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
ADVANTEST SPECTRUM ANALYZER	U3772	160100280	April. 10.2008

**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.



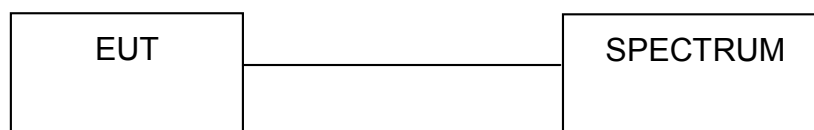
#### 4.4.3 TEST PROCEDURE

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.



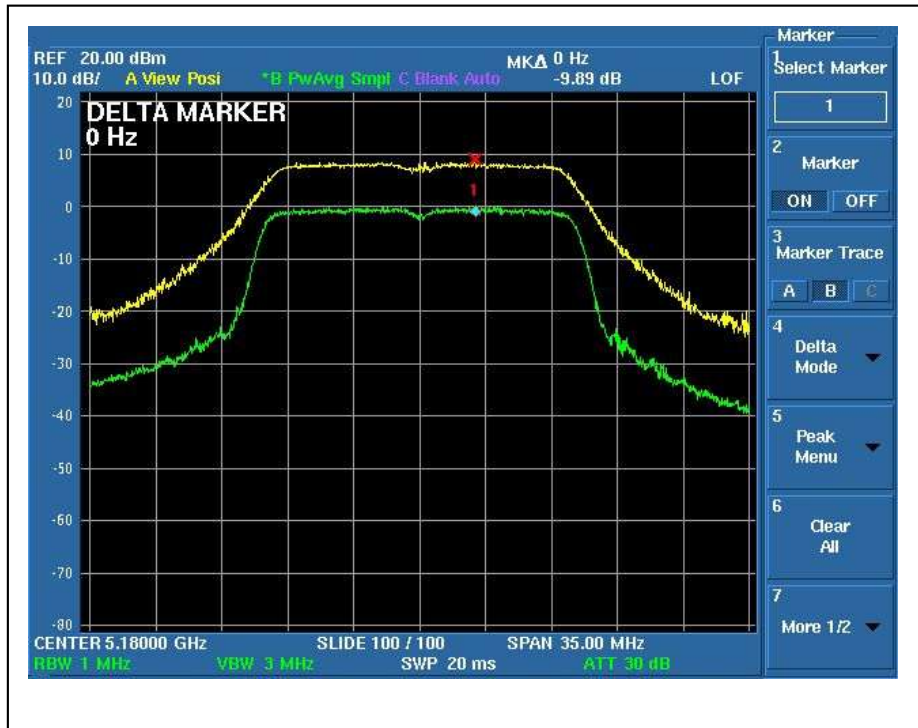
#### 4.4.7 TEST RESULTS (ANTENNA A)

##### 802.11a OFDM modulation - Normal mode

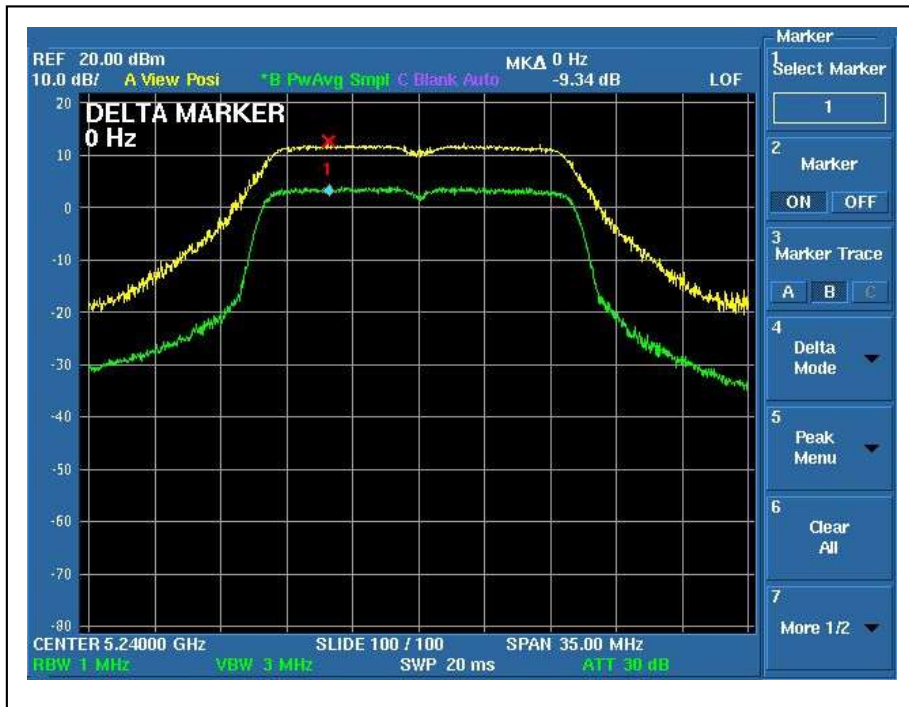
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg.C, 53%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

<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	9.89	13	PASS
4	5240	9.34	13	PASS

CH1



CH4

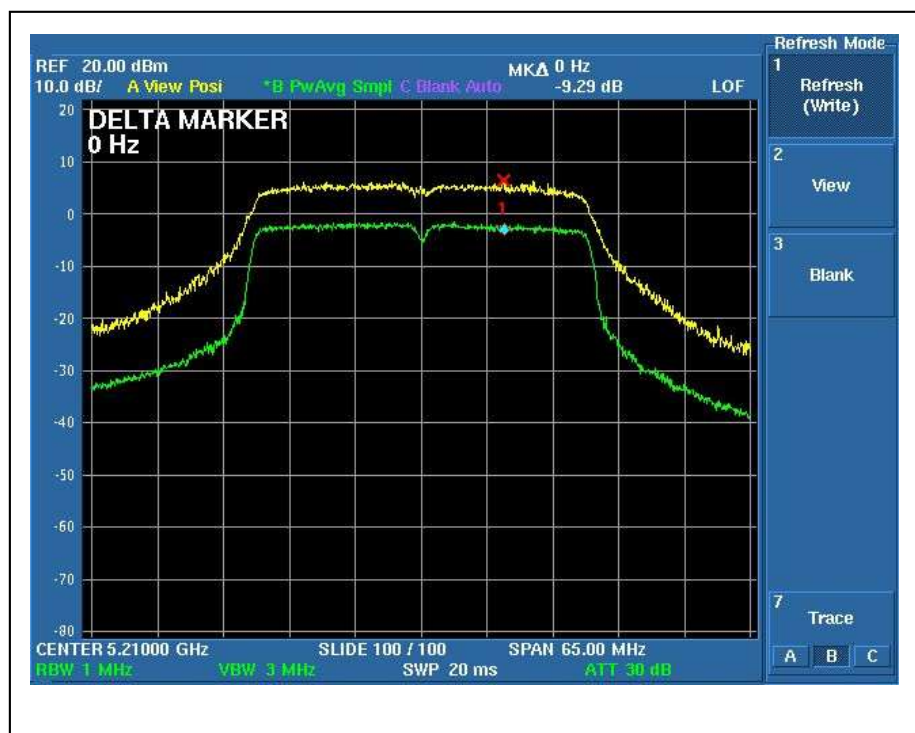


### 802.11a OFDM modulation -Turbo mode

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg.C, 53%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	9.29	13	PASS

CH1





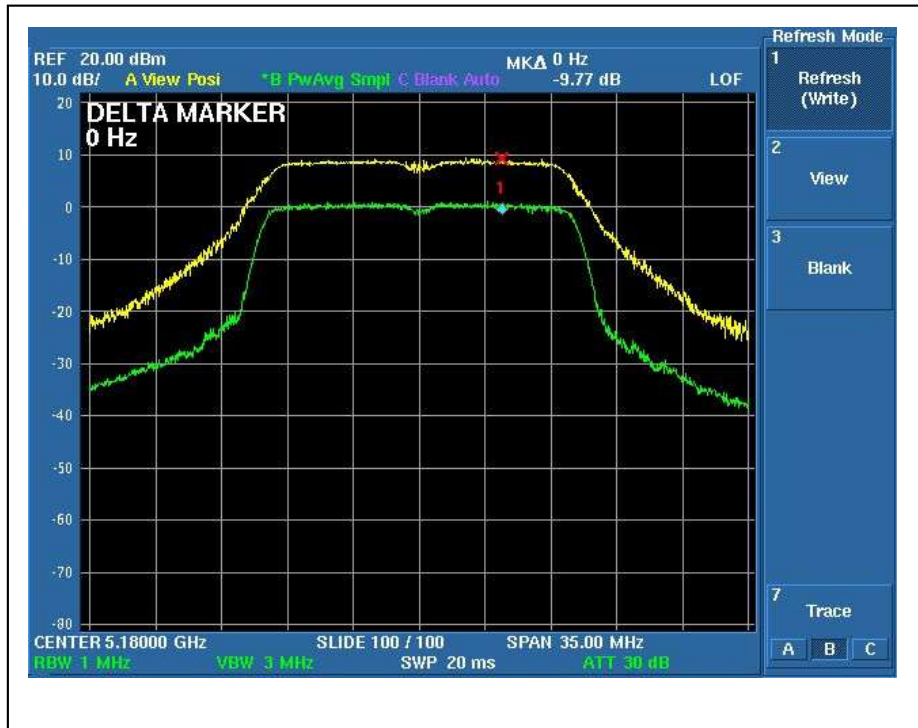
#### 4.4.8 TEST RESULTS (ANTENNA B)

##### 802.11a OFDM modulation - Normal mode

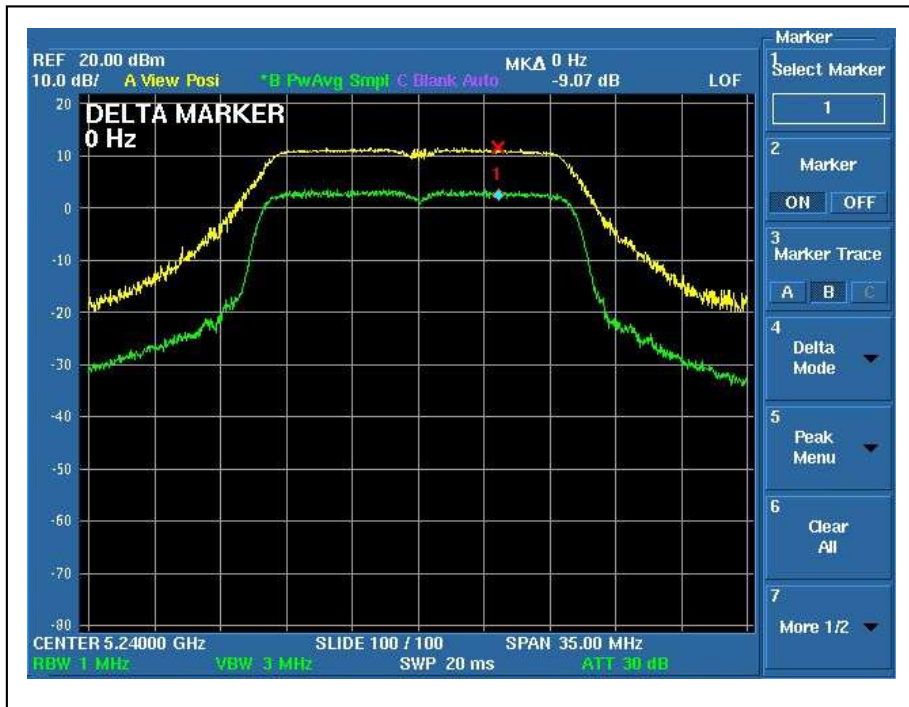
<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg.C, 53%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

<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	9.77	13	PASS
4	5240	9.07	13	PASS

CH1



CH4



### 802.11a OFDM modulation -Turbo mode

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg.C, 53%RH, 961hPa
<b>TESTED BY</b>	Rex Huang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	8.85	13	PASS

CH1

