

# FCC TEST REPORT (15.407)

**REPORT NO.:** RF960123A03  
**MODEL NO.:** SG22 series  
(Refer to item 3.1 for the more details)  
**RECEIVED:** Jan. 24, 2007  
**TESTED:** Feb. 08 ~ Feb. 09, 2007  
**ISSUED:** Apr. 04, 2007

**APPLICANT:** TWINHEAD INTERNATIONAL CORP.

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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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No. 2177-01



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## 1. CERTIFICATION

**PRODUCT:** 12.1" Tablet PC

**MODEL:** SG22 series (Refer to item 3.1 for the more details)

**BRAND:** Sahara (Refer to item 3.1 for the more details)

**APPLICANT:** TWINHEAD INTERNATIONAL CORP.

**TEST SAMPLE:** ENGINEERING SAMPLE

**TESTED:** Feb. 08 ~ Feb. 09, 2007

**STANDARDS:** **FCC Part 15, Subpart E (Section 15.407)**  
ANSI C63.4-2003

The above equipment (Model: SG22 series) 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** : Peggy Chen , **DATE:** Apr. 04, 2007  
Peggy Chen

**TECHNICAL ACCEPTANCE** : Long Chen , **DATE:** Apr. 04, 2007  
Responsible for RF Long Chen

**APPROVED BY** : Gary Chang , **DATE:** Apr. 04, 2007  
Gary Chang / Supervisor

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	Test Type	Result	Remark
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -17.97dB at 0.201MHz
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 -2.68dB at 5350.00MHz
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:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.62 dB
	200MHz ~ 1000MHz	3.64 dB
	1GHz ~ 18GHz	2.26 dB
	18GHz ~ 40GHz	1.94 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>	12.1" Tablet PC
<b>MODEL NO.</b>	SG22 series (Refer to Note for the more details)
<b>FCC ID</b>	FKGTKI400ABGSG22
<b>POWER SUPPLY</b>	20Vdc from AC Adapter
<b>MODULATION TYPE</b>	Wireless LAN: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM Bluetooth: GFSK, $\pi/4$ -DQPSK, 8DPSK for FHSS
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM, FHSS
<b>TRANSFER RATE</b>	Wireless LAN: 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 Bluetooth: 1/2/3Mbps
<b>FREQUENCY RANGE</b>	Wireless LAN: 802.11b & 802.11g: 2.412 ~ 2.462GHz 802.11a: 5.150 ~ 5.350GHz , 5.745 ~ 5.825GHz Bluetooth: 2.402 ~ 2.480GHz
<b>NUMBER OF CHANNEL</b>	Wireless LAN: 802.11b & 802.11g: 11 802.11a: 13 Bluetooth: 79
<b>CHANNEL SPACING</b>	Wireless LAN: 802.11b & 802.11g: 5MHz 802.11a: 20MHz Bluetooth: 1MHz
<b>OUTPUT POWER</b>	Wireless LAN: 100.231mW for 802.11b 63.826mW for 802.11g 40.738mW for 5.180 ~ 5.350GHz 50.816mW for 5.745 ~ 5.825GHz Bluetooth: 1.570mW
<b>ANTENNA TYPE</b>	Wireless LAN: PIFA antenna with 0.62dBi gain for 802.11b/g PIFA antenna with 1.83dBi gain for 802.11a (5.15-5.35GHz) PIFA antenna with 2.63dBi gain for 802.11a (5.785-5.85GHz) Bluetooth: PIFA antenna with -1.36dBi gain
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	Refer to user's manual
<b>ASSOCIATED DEVICES</b>	Adapter

**NOTE:**

1. The models as below are identical to each other except for their model designation and brand name due to marketing requirement.

Brand	Model No.
Sahara	SG22 series
Paceblade	SlimBook 200 series
Slate DT	SDT001 series

2. This report covers 802.11a (frequency: 5150 ~ 5350MHz band) only.
3. The EUT is a Tablet PC with wireless LAN and bluetooth functions.
4. The EUT was operated with following adapter:

<b>BRAND:</b>	LISHIN
<b>MODEL:</b>	0335A2065
<b>INPUT:</b>	100-240Vac, 50-60Hz, 1.7A
<b>OUTPUT:</b>	20Vdc, 3.25A, 65W
<b>POWER LINE:</b>	AC 1.80m non-shielded cable without core DC 1.80m non-shielded cable with one core

5. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
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.

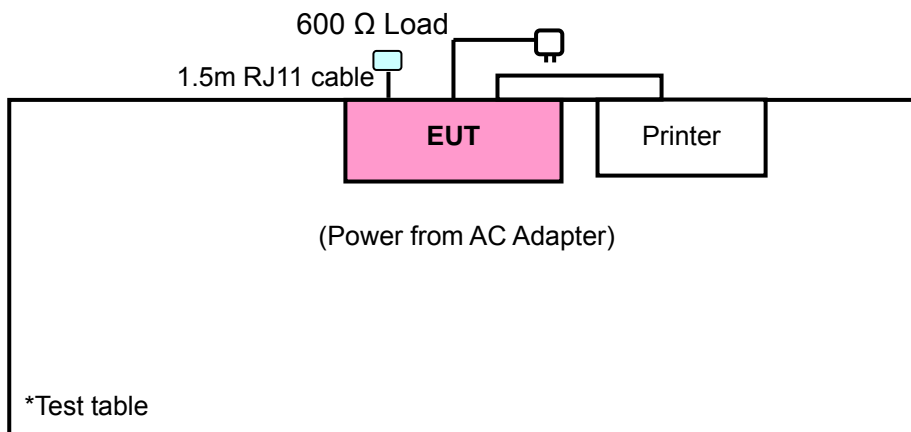
### 3.2 DESCRIPTION OF TEST MODES

Operated in 5180 ~ 5320MHz

8 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	
-	√	√	√	√	-

Where **PLC**: Power Line Conducted Emission

**RE<1G**: 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	5	OFDM	BPSK	6

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

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, 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	5	OFDM	BPSK	6

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

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

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11a	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 a RF Product. 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	PRINTER	HP	hp-1015	Q2462A -CNFG149502	FCC DoC Approved
2	600Ω Load	NA	NA	NA	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8 m shielded cable without core
2	1.5 m RJ11 non-shielded cable

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



## 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 ROHDE & SCHWARZ	ESCS30	100288	Sep. 25, 2007
RF signal cable Woken	5D-FB	Cable-HYCO3-01	Jan. 06, 2008
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Jan. 08, 2008
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Jan. 16, 2008
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 2.
  3. The VCCI Site Registration No. is C-2047.

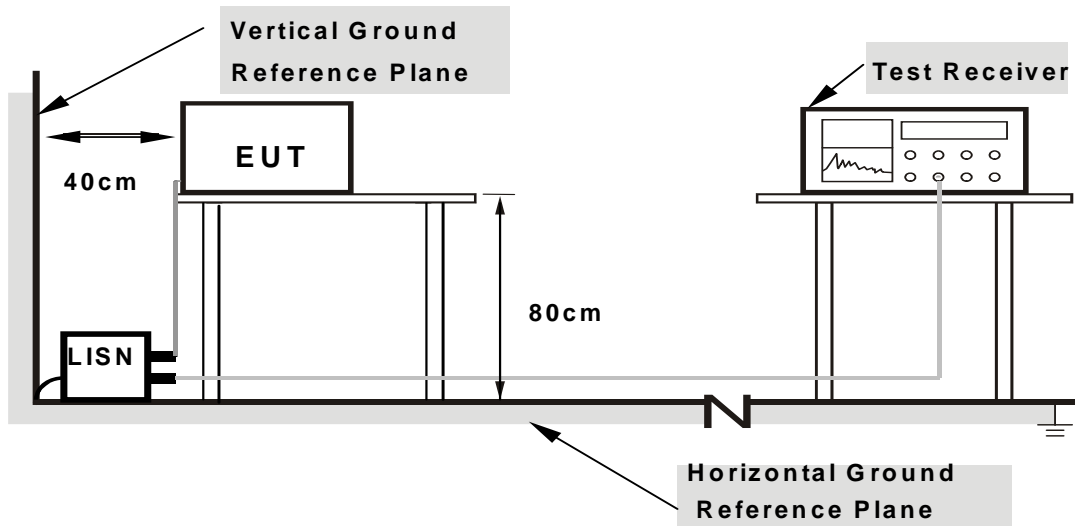
#### 4.1.3 TEST PROCEDURES

- 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) 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 a testing table.
- b. The EUT ran a test program (provided by manufacturer) to enable all functions under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the EUT in full functions.

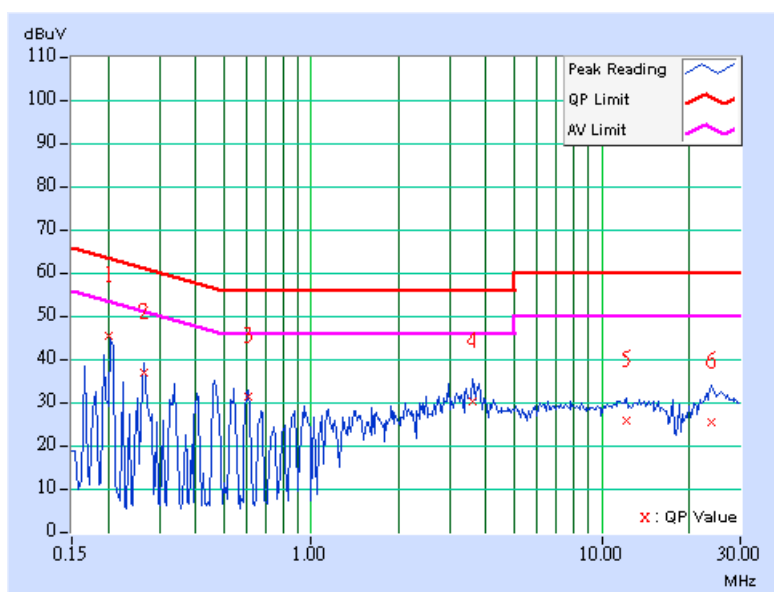
#### 4.1.7 TEST RESULTS

##### Conducted Worst-Case Data

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 1
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Dean Wang

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	0.201	0.10	44.61	-	44.71	-	63.58
2	0.267	0.10	36.25	-	36.35	-	61.20	51.20	-24.85	-
3	0.603	0.10	30.55	-	30.65	-	56.00	46.00	-25.35	-
4	3.582	0.27	29.74	-	30.01	-	56.00	46.00	-25.99	-
5	12.223	0.40	25.27	-	25.67	-	60.00	50.00	-34.33	-
6	23.922	0.77	24.97	-	25.74	-	60.00	50.00	-34.26	-

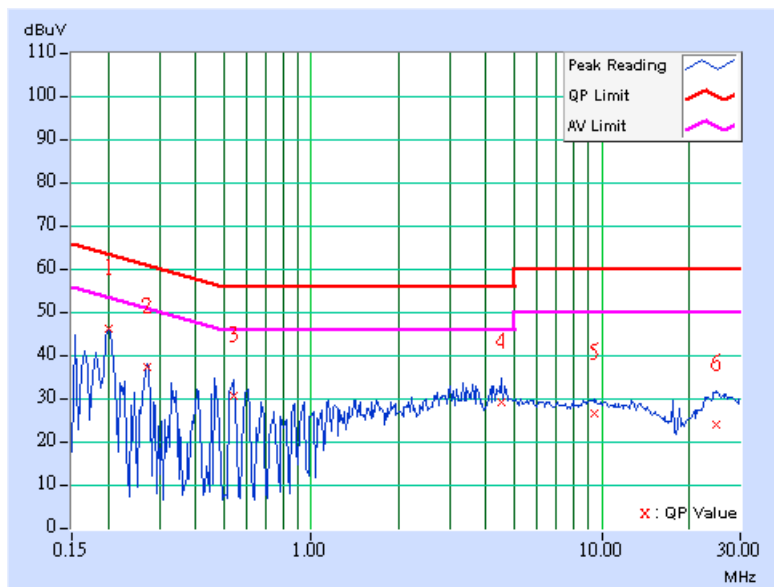
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	PHASE	Line 2
MODULATION TYPE	BPSK	6dB BANDWIDTH	9 kHz
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Dean Wang

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	0.201	0.10	45.51	-	45.61	-	63.58	53.58	-17.97	-
2	0.271	0.10	36.55	-	36.65	-	61.08	51.08	-24.43	-
3	0.541	0.13	30.09	-	30.22	-	56.00	46.00	-25.78	-
4	4.503	0.29	28.39	-	28.68	-	56.00	46.00	-27.32	-
5	9.492	0.42	26.10	-	26.52	-	60.00	50.00	-33.48	-
6	24.938	0.72	23.27	-	23.99	-	60.00	50.00	-36.01	-

- 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	ESIB7	100188	Dec. 17, 2007
Spectrum Analyzer ROHDE & SCHWARZ	FSEK 30	100049	Aug. 21, 2007
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Jan. 04, 2008
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-408	Jan. 18, 2008
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170147	Jan. 16, 2008
Preamplifier Agilent	8449B	3008A01961	Oct. 15, 2007
Preamplifier Agilent	8447D	2944A10629	Oct. 16, 2007
RF signal cable HUBER+SUHNER	SUCOFLEX 106	25648/6	Dec. 19, 2007
RF signal cable HUBER+SUHNER	SUCOFLEX 104	251643/4	Dec. 11, 2007
Software ADT.	ADT_Radiated_V7.6	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	NA
Amplifier	8449B	3008A01961	Oct. 15, 2007

- 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 IC Site Registration No. is IC3789B-2.

#### 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.

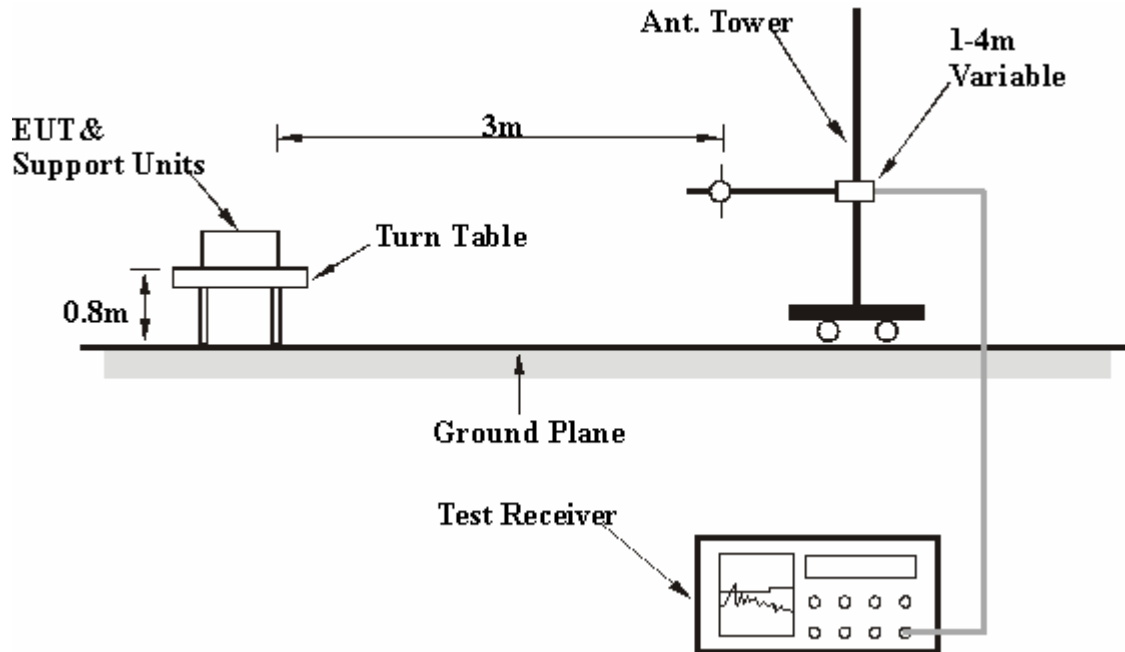
**NOTE:**

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 video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 1kHz 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 attached file (Test Setup Photo).

#### 4.2.7 EUT OPERATING CONDITION

Same as 4.1.6

## 4.2.8 TEST RESULTS

### Below 1GHz Worst-Case Data

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Quasi-Peak
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Match Tsui

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	57.12	27.28 QP	40.00	-12.72	1.00 H	11	14.20	13.08
2	96.01	34.54 QP	43.50	-8.96	2.50 H	11	24.73	9.81
3	129.06	28.56 QP	43.50	-14.94	2.00 H	11	15.69	12.86
4	191.28	30.32 QP	43.50	-13.18	1.50 H	11	18.82	11.49
5	202.94	32.41 QP	43.50	-11.09	1.50 H	11	21.34	11.08
6	239.88	32.50 QP	46.00	-13.50	1.50 H	341	19.69	12.81
7	263.21	32.07 QP	46.00	-13.93	1.00 H	320	18.36	13.71
8	325.43	33.61 QP	46.00	-12.39	1.00 H	17	17.90	15.70
9	358.48	39.86 QP	46.00	-6.14	1.00 H	11	23.20	16.65
10	395.43	34.50 QP	46.00	-11.50	2.00 H	11	16.82	17.68
11	663.74	32.48 QP	46.00	-13.52	2.00 H	32	8.50	23.98
12	879.55	34.98 QP	46.00	-11.02	2.00 H	350	7.16	27.82
13	951.49	31.85 QP	46.00	-14.15	2.00 H	353	3.11	28.74

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	57.12	28.83 QP	40.00	-11.17	1.50 V	11	15.75	13.08
2	96.01	28.74 QP	43.50	-14.76	1.00 V	152	18.93	9.81
3	354.60	34.02 QP	46.00	-11.98	1.50 V	53	17.47	16.54
4	362.37	32.89 QP	46.00	-13.11	1.50 V	53	16.13	16.76
5	784.28	31.95 QP	46.00	-14.05	2.00 V	11	5.84	26.11
6	879.55	36.89 QP	46.00	-9.11	1.50 V	104	9.06	27.82
7	935.94	31.09 QP	46.00	-14.91	1.00 V	11	2.52	28.57
8	951.49	32.81 QP	46.00	-13.19	2.00 V	320	4.07	28.74

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Match Tsui

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	56.96 PK	74.00	-17.04	1.16 H	350	19.26	37.70
2	#5150.00	46.69 AV	54.00	-7.31	1.16 H	350	8.99	37.70
3	*5180.00	108.77 PK			1.16 H	350	71.02	37.75
4	*5180.00	98.50 AV			1.16 H	350	60.75	37.75
5	10360.00	58.73 PK	68.30	-9.57	1.00 H	10	9.41	49.32
6	10360.00	46.97 AV	54.00	-7.03	1.00 H	10	-2.35	49.32

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	47.63 PK	74.00	-26.37	1.42 V	21	9.93	37.70
2	#5150.00	37.37 AV	54.00	-16.63	1.42 V	21	-0.33	37.70
3	*5180.00	99.44 PK			1.42 V	21	61.69	37.75
4	*5180.00	89.18 AV			1.42 V	21	51.43	37.75
5	10360.00	58.18 PK	68.30	-10.12	1.00 V	360	8.86	49.32
6	10360.00	45.76 AV	54.00	-8.24	1.00 V	360	-3.56	49.32

- 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.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Match Tsui

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	109.20 PK			1.20 H	344	71.30	37.90
2	*5240.00	98.86 AV			1.20 H	344	60.96	37.90
3	10480.00	59.20 PK	68.30	-9.10	1.07 H	359	9.64	49.56
4	10480.00	47.17 AV	54.00	-6.83	1.07 H	359	-2.39	49.56

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	100.07 PK			1.39 V	355	62.17	37.90
2	*5240.00	90.34 AV			1.39 V	355	52.44	37.90
3	#10480.00	58.30 PK	68.30	-10.00	1.07 V	360	8.74	49.56
4	#10480.00	45.87 AV	54.00	-8.13	1.07 V	360	-3.69	49.56

- 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

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 5	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Match Tsui

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	*5260.00	109.10 PK			1.11 H	17	71.13	37.97
2	*5260.00	98.68 AV			1.11 H	17	60.71	37.97
3	10520.00	59.20 PK	68.30	-9.10	1.00 H	355	9.59	49.61
4	10520.00	47.09 AV	54.00	-6.91	1.00 H	355	-2.52	49.61

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	*5260.00	99.89 PK			1.39 V	356	61.92	37.97
2	*5260.00	89.68 AV			1.39 V	356	51.71	37.97
3	10520.00	58.07 PK	68.30	-10.23	1.00 V	0	8.46	49.61
4	10520.00	45.47 AV	54.00	-8.53	1.00 V	0	-4.14	49.61

- 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



EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 8	FREQUENCY RANGE	1 ~ 40 GHz
MODULATION TYPE	BPSK	DETECTOR FUNCTION	Peak(PK) Average (AV)
TRANSFER RATE	6Mbps	ENVIRONMENTAL CONDITIONS	22deg. C, 60%RH, 991hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	TESTED BY	Match Tsui

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	*5320.00	110.30 PK			1.02 H	340	72.21	38.09
2	*5320.00	99.99 AV			1.02 H	340	61.90	38.09
3	5350.00	61.69 PK	68.30	-6.61	1.02 H	340	23.59	38.09
4	<b>5350.00</b>	<b>51.32 AV</b>	<b>54.00</b>	<b>-2.68</b>	<b>1.02 H</b>	<b>340</b>	<b>13.23</b>	<b>38.09</b>
5	#10640.00	58.48 PK	74.00	-15.52	1.00 H	0	8.71	49.77
6	#10640.00	47.24 AV	54.00	-6.76	1.00 H	0	-2.53	49.77

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	*5320.00	100.03 PK			1.06 V	8	61.94	38.09
2	*5320.00	90.63 AV			1.06 V	8	52.54	38.09
3	5350.00	51.36 PK	68.30	-16.94	1.06 V	8	13.27	38.09
4	5350.00	41.96 AV	54.00	-12.04	1.06 V	8	3.87	38.09
5	#10640.00	58.10 PK	74.00	-15.90	1.00 V	356	8.33	49.77
6	#10640.00	46.11 AV	54.00	-7.89	1.00 V	356	-3.66	49.77

- 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
SPECTRUM ANALYZER	FSP40	100040	Jun. 07, 2007

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

**NOTE:**

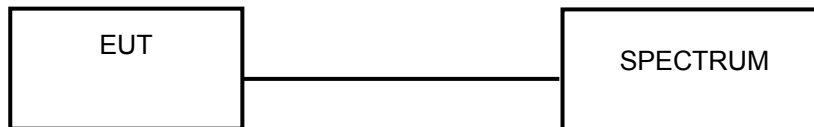
The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

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

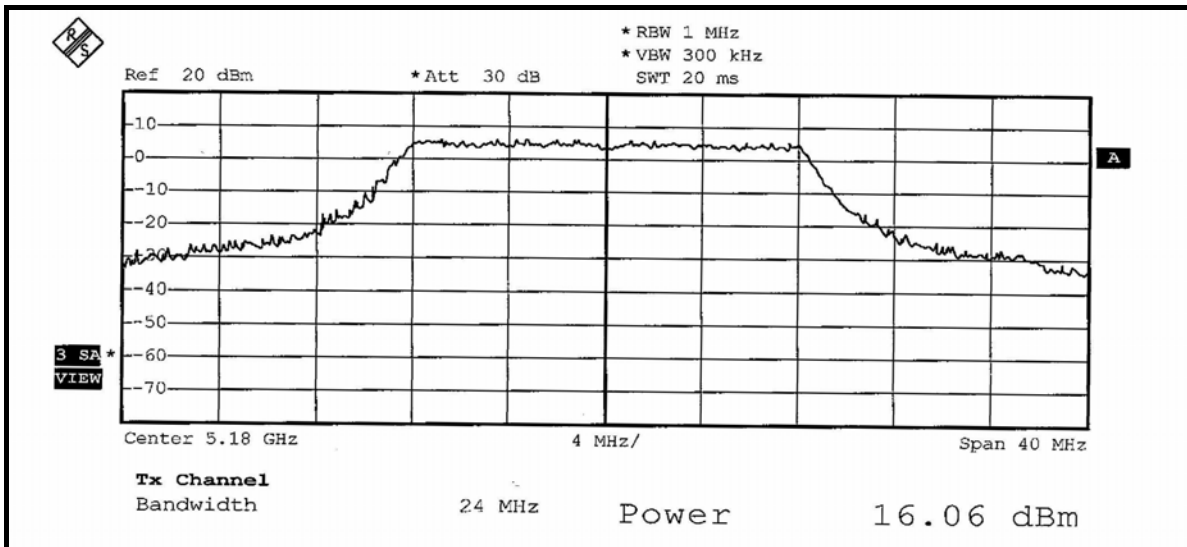
#### 802.11a OFDM Modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 65%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

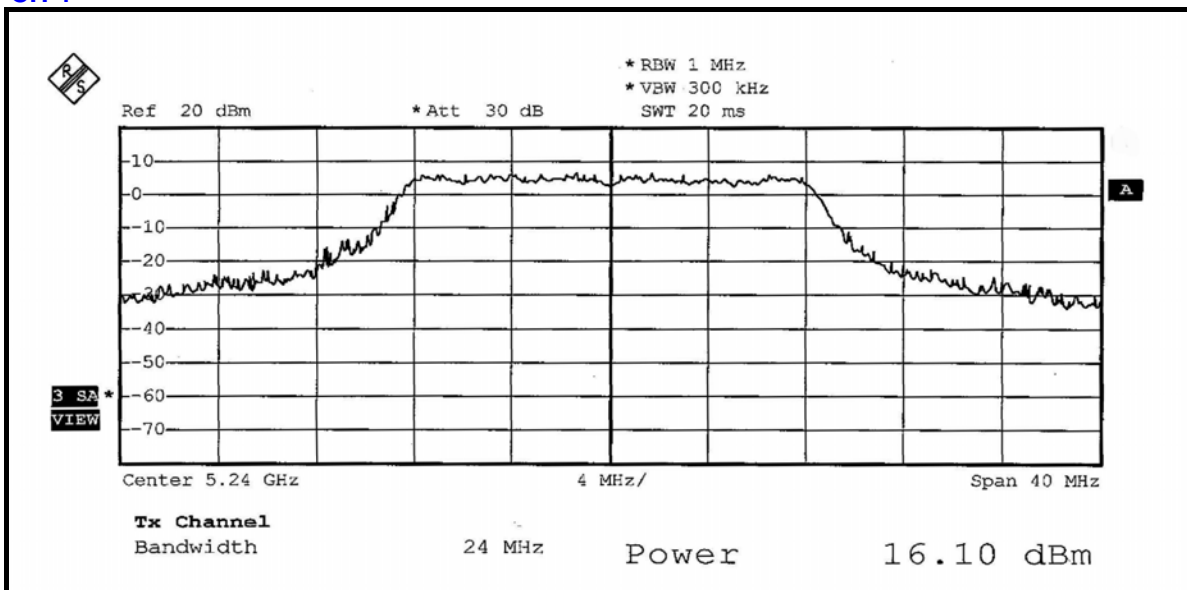
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	40.365	16.06	17.00	23.44	PASS
4	5240	40.738	16.10	17.00	23.28	PASS
5	5260	40.272	16.05	24.00	23.36	PASS
8	5320	40.365	16.06	24.00	23.44	PASS

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

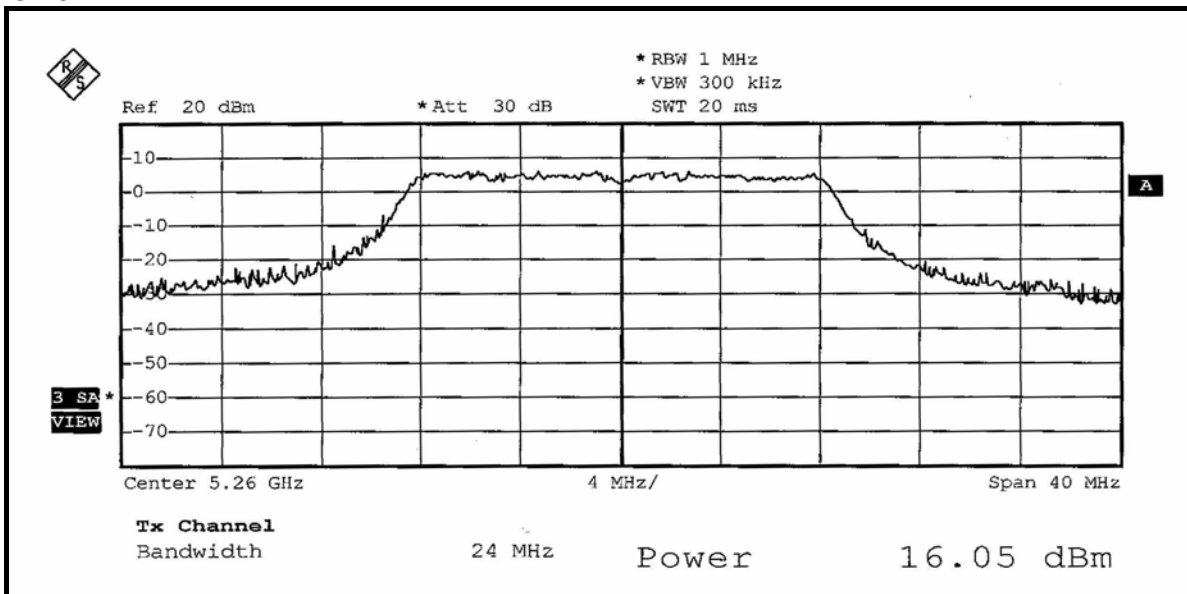
Peak Power Output:  
CH 1



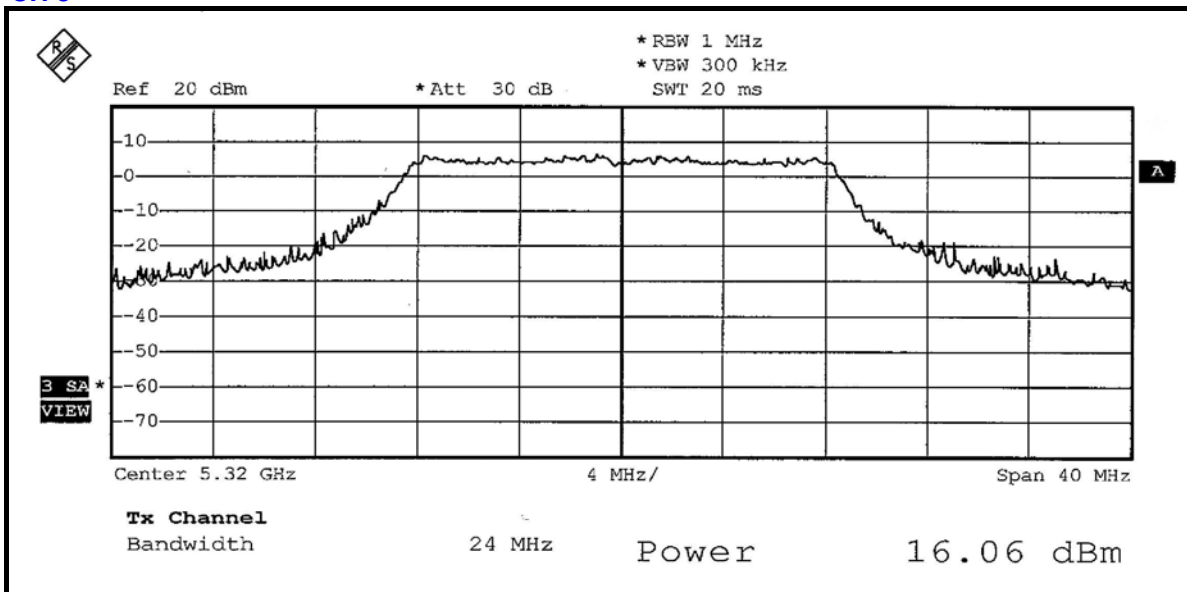
CH 4



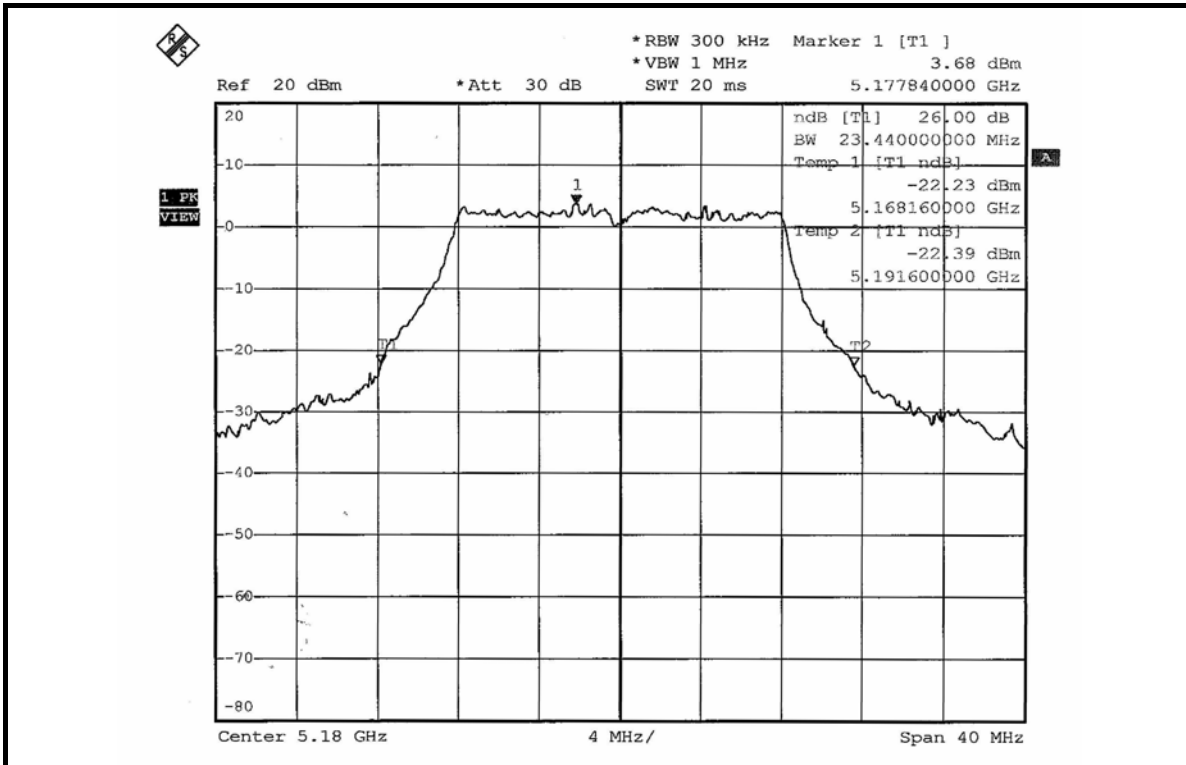
### CH 5



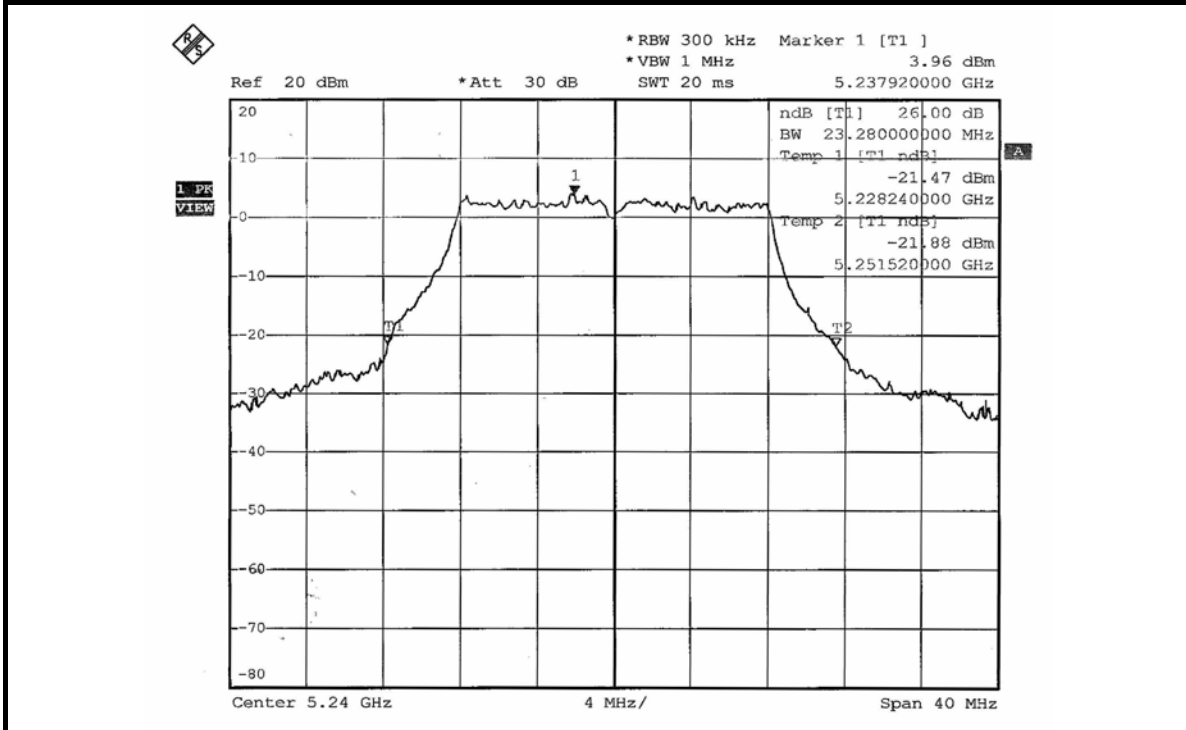
### CH 8



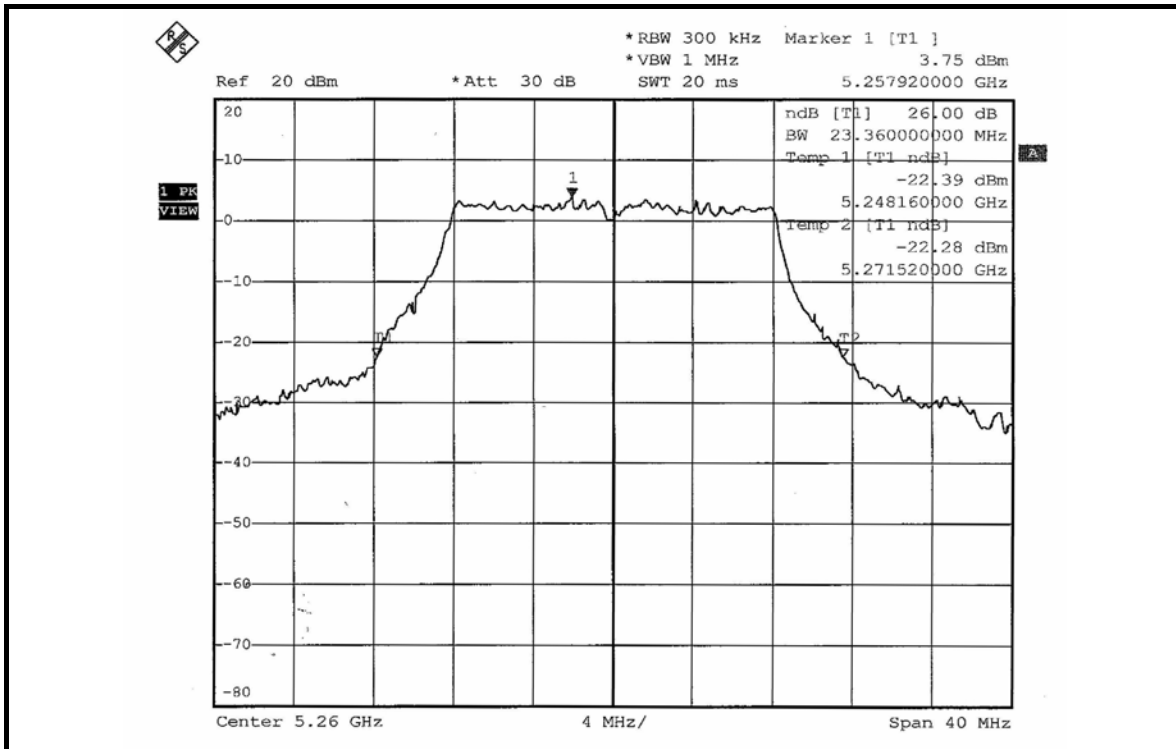
26dB Occupied Bandwidth:  
CH 1



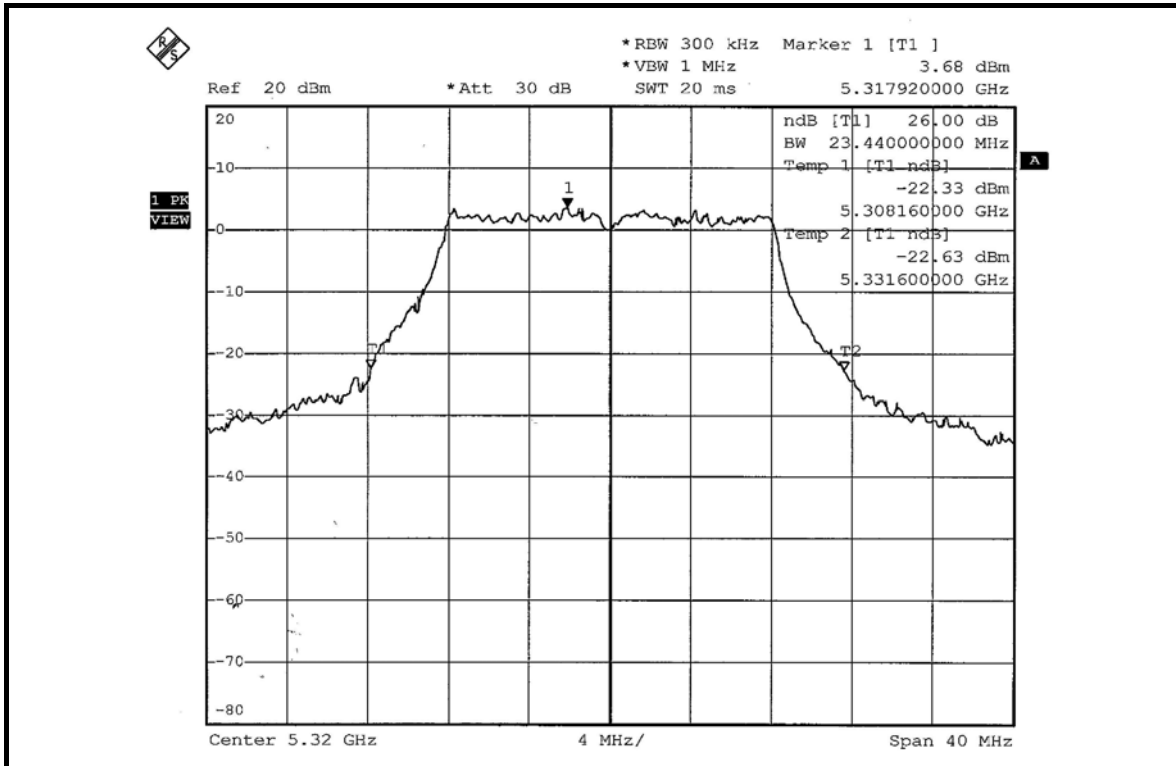
CH 4



CH 5



CH 8







#### 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	FSP40	100040	Jun. 07, 2007

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

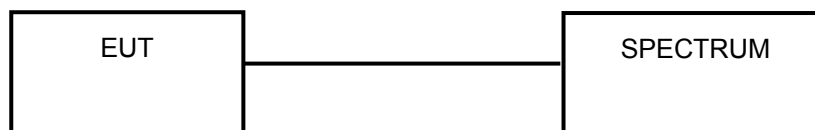
#### 4.4.3 TEST PROCEDURE

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

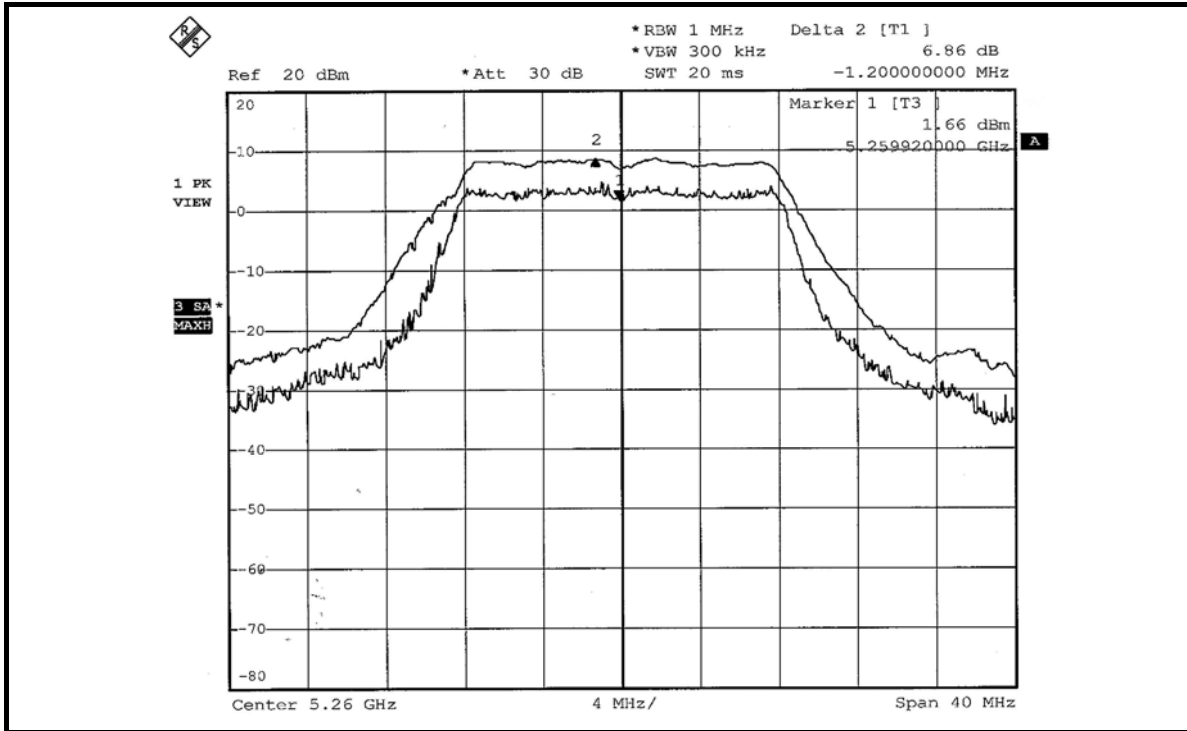
##### 802.11a OFDM modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 65%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

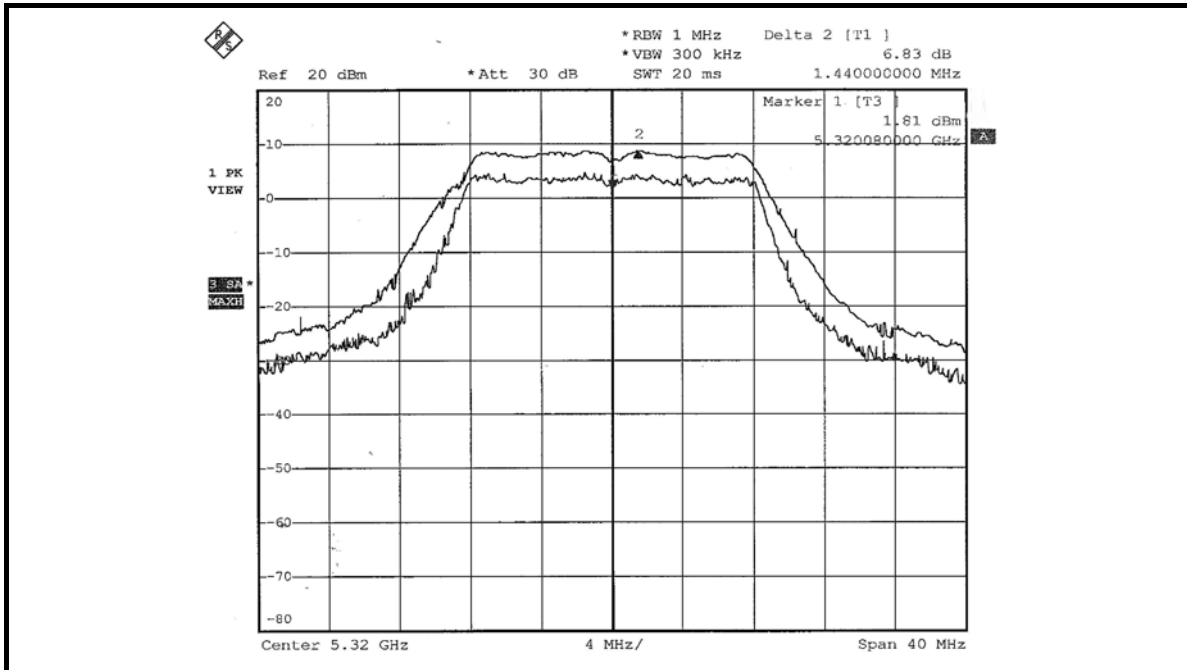
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER EXCURSION (dB)</b>	<b>PEAK to AVERAGE EXCURSION LIMIT (dB)</b>	<b>PASS/FAIL</b>
1	5180	6.88	13	PASS
4	5240	6.69	13	PASS
5	5260	6.86	13	PASS
8	5320	6.83	13	PASS



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	FSP40	100040	Jun. 07, 2007

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

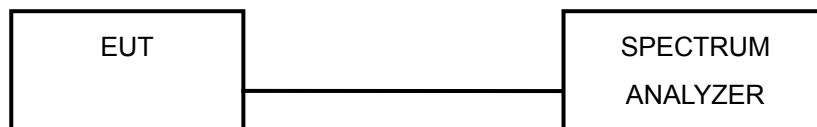
#### 4.5.3 TEST PROCEDURES

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

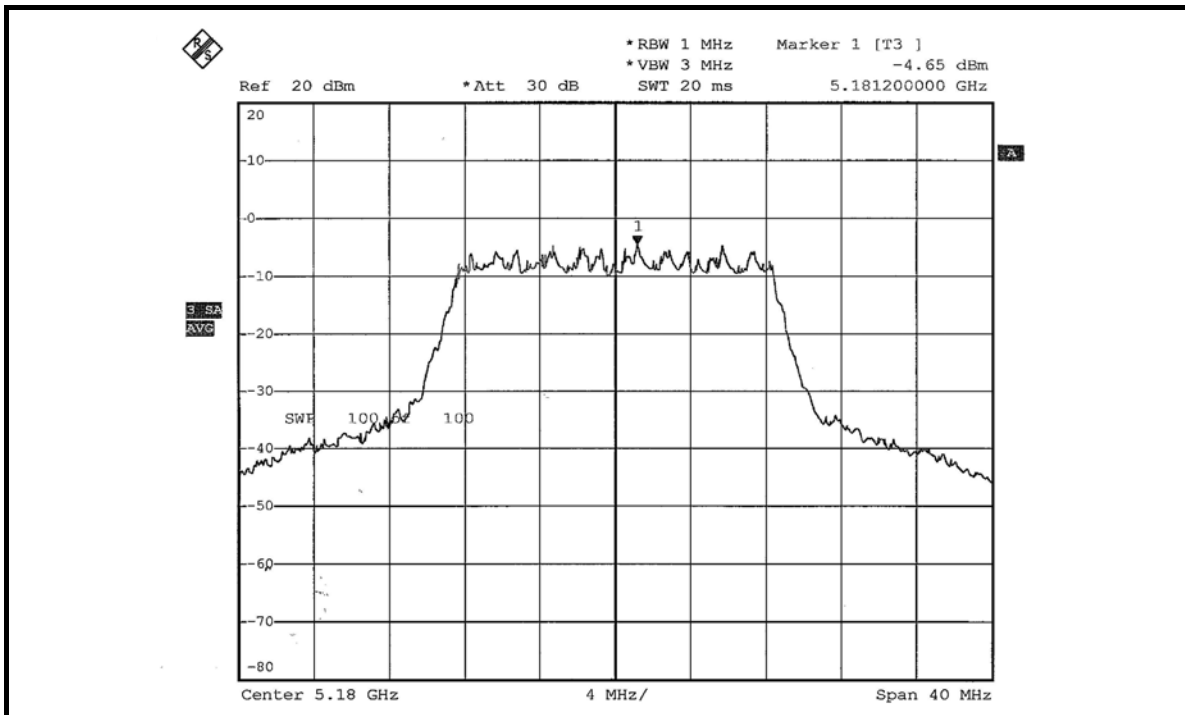
### 802.11a OFDM modulation

<b>MODULATION TYPE</b>	BPSK	<b>TRANSFER RATE</b>	6Mbps
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	25deg.C, 65%RH, 991hPa
<b>TESTED BY</b>	Long Chen		

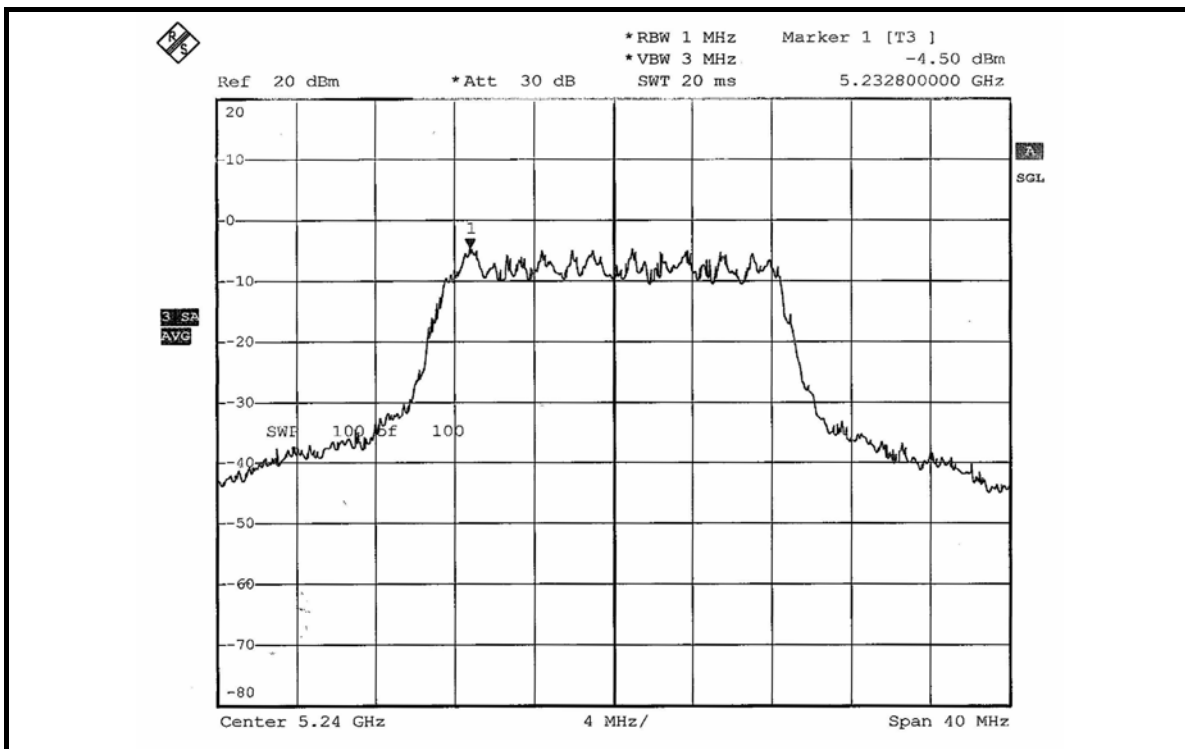
<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 1MHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	5180	-4.65	4	PASS
4	5240	-4.50	4	PASS
5	5260	-4.31	11	PASS
8	5320	-4.47	11	PASS



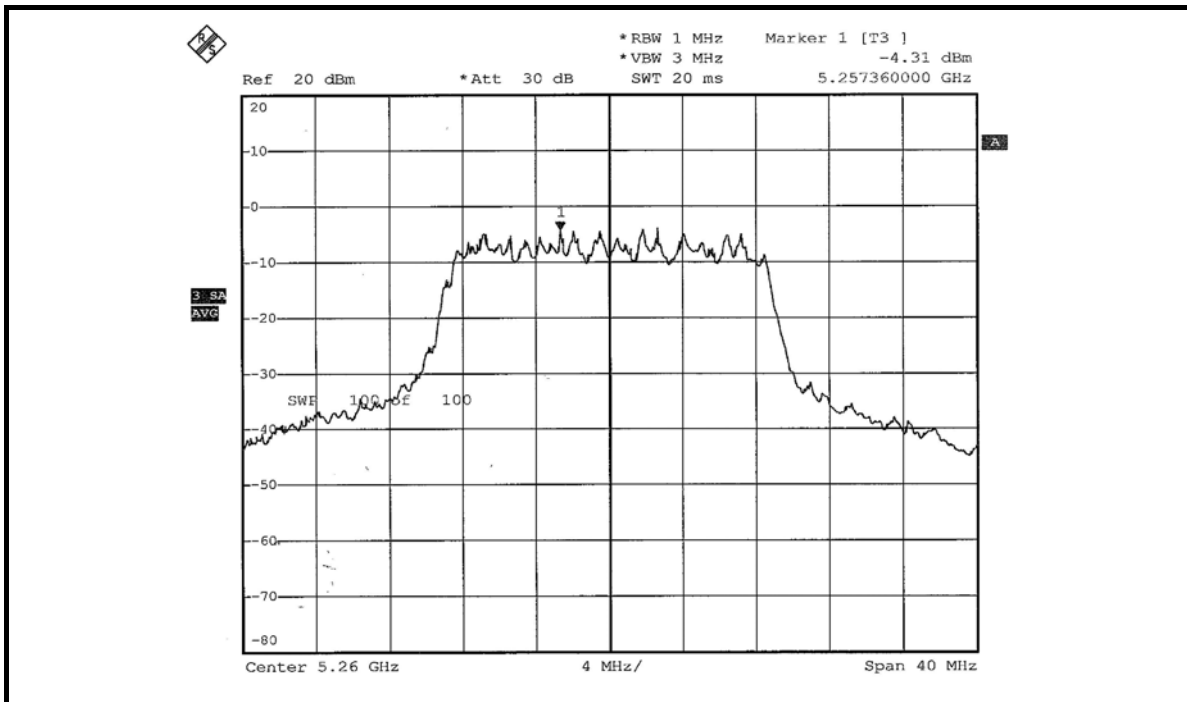
CH 1



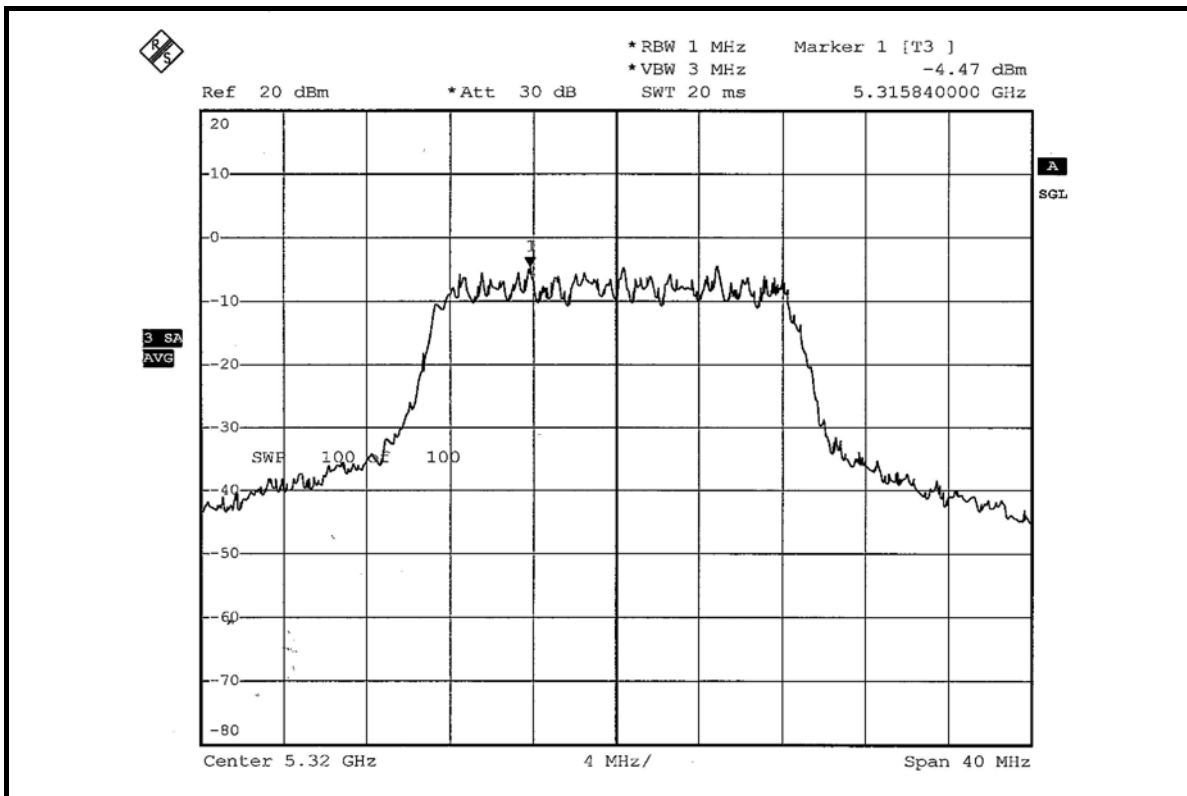
CH 4



### 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
SPECTRUM ANALYZER	FSP40	100040	Jun. 07, 2007
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	Jul. 10, 2007

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

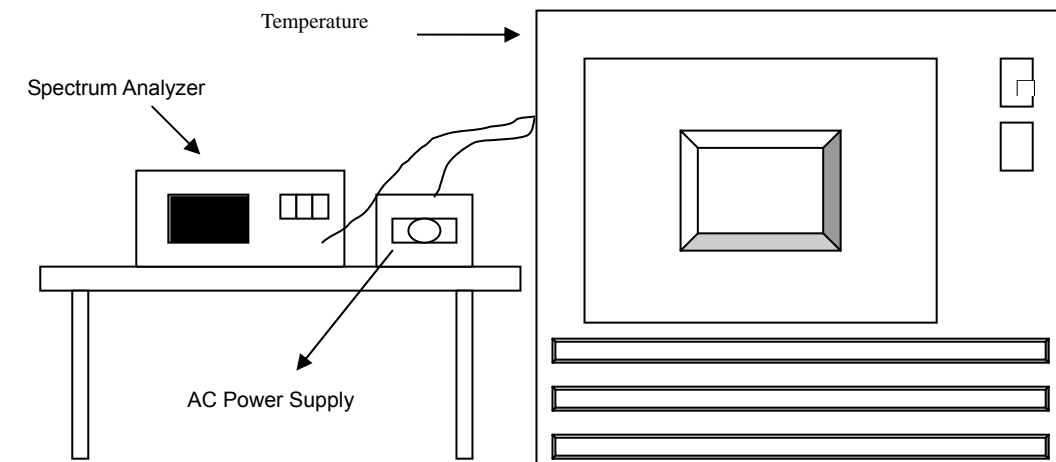
### 4.6.3 TEST PROCEDURE

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 4.1.6

#### 4.6.7 TEST RESULTS

Operating frequency: 5320MHz						Limit : ± 0.01%			
Temp. (°C)	Power supply (Vac)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5320.0485	0.0009117	5320.0473	0.0008891	5320.0478	0.0008985	5320.0471	0.0008853
	110.0	5320.0476	0.0008947	5320.0471	0.0008853	5320.0472	0.0008872	5320.0476	0.0008947
	93.5	5320.0468	0.0008797	5320.0462	0.0008684	5320.0475	0.0008929	5320.0469	0.0008816
40	126.5	5320.0465	0.0008741	5320.0459	0.0008628	5320.0461	0.0008665	5320.0462	0.0008684
	110.0	5320.0467	0.0008778	5320.0457	0.0008590	5320.0466	0.0008759	5320.0465	0.0008741
	93.5	5320.0457	0.0008590	5320.0451	0.0008477	5320.0462	0.0008684	5320.0458	0.0008609
30	126.5	5320.0453	0.0008509	5320.0447	0.0008396	5320.0458	0.0008605	5320.0456	0.0008578
	110.0	5320.0448	0.0008417	5320.0442	0.0008313	5320.0455	0.0008545	5320.0453	0.0008521
	93.5	5320.0443	0.0008326	5320.0438	0.0008230	5320.0451	0.0008485	5320.0450	0.0008465
20	126.5	5320.0438	0.0008235	5320.0433	0.0008146	5320.0448	0.0008425	5320.0447	0.0008409
	110.0	5320.0433	0.0008144	5320.0429	0.0008063	5320.0445	0.0008365	5320.0444	0.0008352
	93.5	5320.0428	0.0008052	5320.0425	0.0007980	5320.0442	0.0008305	5320.0441	0.0008296
10	126.5	5320.0424	0.0007961	5320.0420	0.0007897	5320.0439	0.0008244	5320.0438	0.0008239
	110.0	5320.0419	0.0007870	5320.0416	0.0007813	5320.0435	0.0008184	5320.0435	0.0008183
	93.5	5320.0414	0.0007778	5320.0411	0.0007730	5320.0432	0.0008124	5320.0432	0.0008127
0	126.5	5320.0409	0.0007687	5320.0407	0.0007647	5320.0429	0.0008064	5320.0429	0.0008070
	110.0	5320.0404	0.0007596	5320.0402	0.0007564	5320.0426	0.0008004	5320.0426	0.0008014
	93.5	5320.0399	0.0007504	5320.0398	0.0007480	5320.0423	0.0007944	5320.0423	0.0007957
-10	126.5	5320.0394	0.0007413	5320.0394	0.0007397	5320.0419	0.0007883	5320.0420	0.0007901
	110.0	5320.0390	0.0007322	5320.0389	0.0007314	5320.0416	0.0007823	5320.0417	0.0007845
	93.5	5320.0385	0.0007231	5320.0385	0.0007231	5320.0413	0.0007763	5320.0414	0.0007788
-20	126.5	5320.0380	0.0007139	5320.0380	0.0007147	5320.0410	0.0007703	5320.0411	0.0007732
	110.0	5320.0375	0.0007048	5320.0376	0.0007064	5320.0407	0.0007643	5320.0408	0.0007675
	93.5	5320.0370	0.0006957	5320.0371	0.0006981	5320.0403	0.0007583	5320.0405	0.0007619
-30	126.5	5320.0365	0.0006865	5320.0367	0.0006898	5320.0400	0.0007523	5320.0402	0.0007563
	110.0	5320.0360	0.0006774	5320.0363	0.0006814	5320.0397	0.0007462	5320.0399	0.0007506
	93.5	5320.0356	0.0006683	5320.0358	0.0006731	5320.0394	0.0007402	5320.0396	0.0007450



## 4.7 BAND EDGES MEASUREMENT

### 4.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSP40	100040	Jun. 07, 2007

**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 loss 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 field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=1MHz, VBW=3MHz; Average RBW=1MHz, VBW=1kHz) are attached on the following pages.

#### Channel 1 (5180MHz)

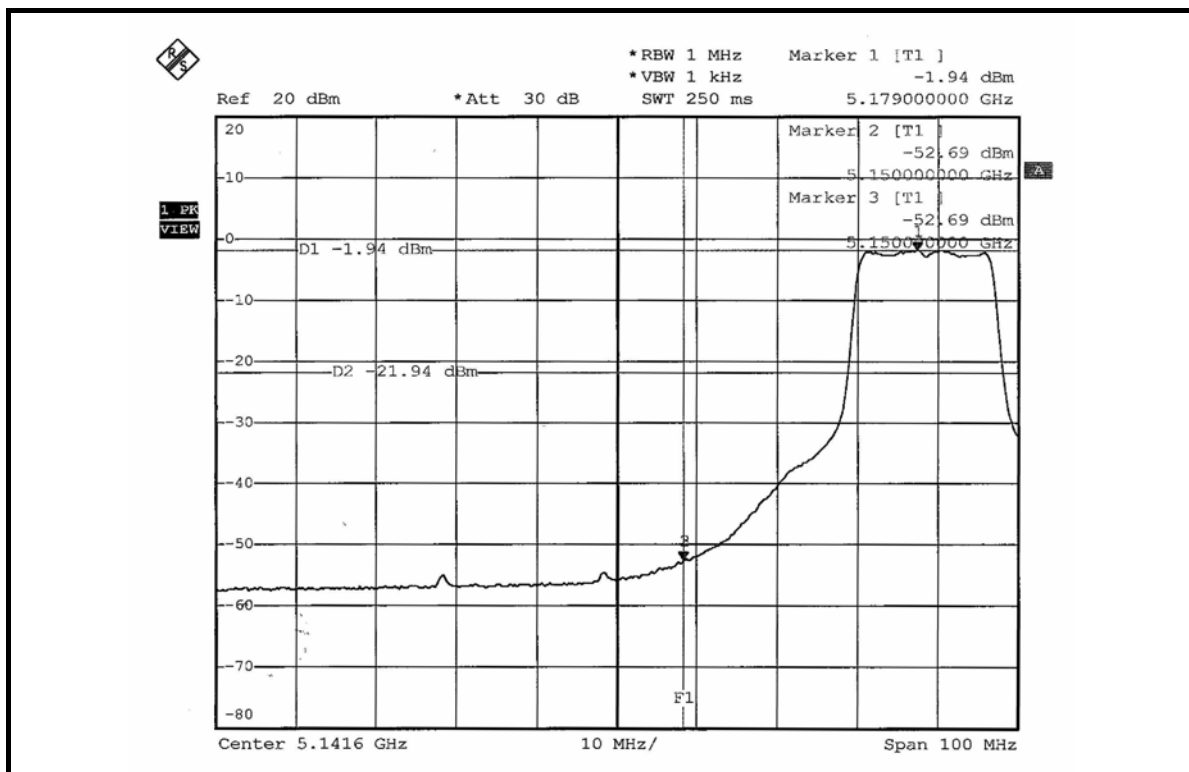
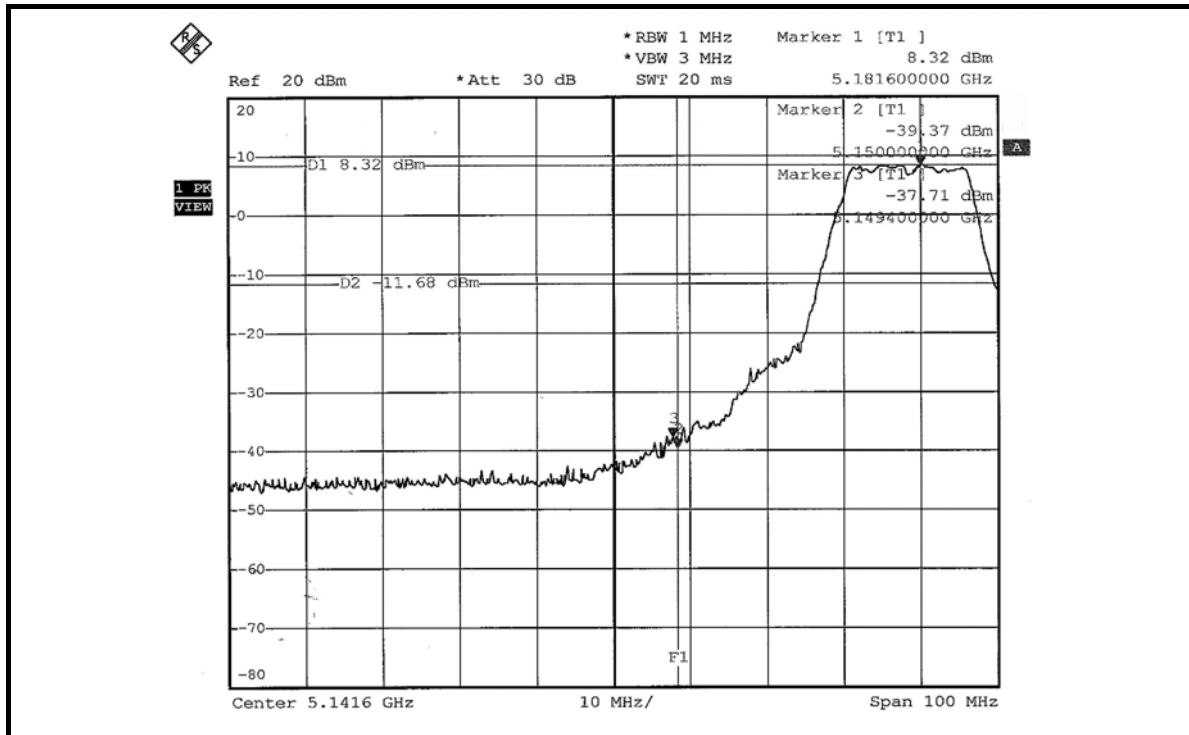
The band edge emission plot on the next page shows 46.03dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 108.77dBuV/m (Peak), so the maximum field strength in restrict band is  $108.77-46.03=62.74$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next page shows 50.75dBc 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 98.50dBuV/m (Average), so the maximum field strength in restrict band is  $98.50-50.75=47.75$ dBuV/m which is under 54dBuV/m limit.

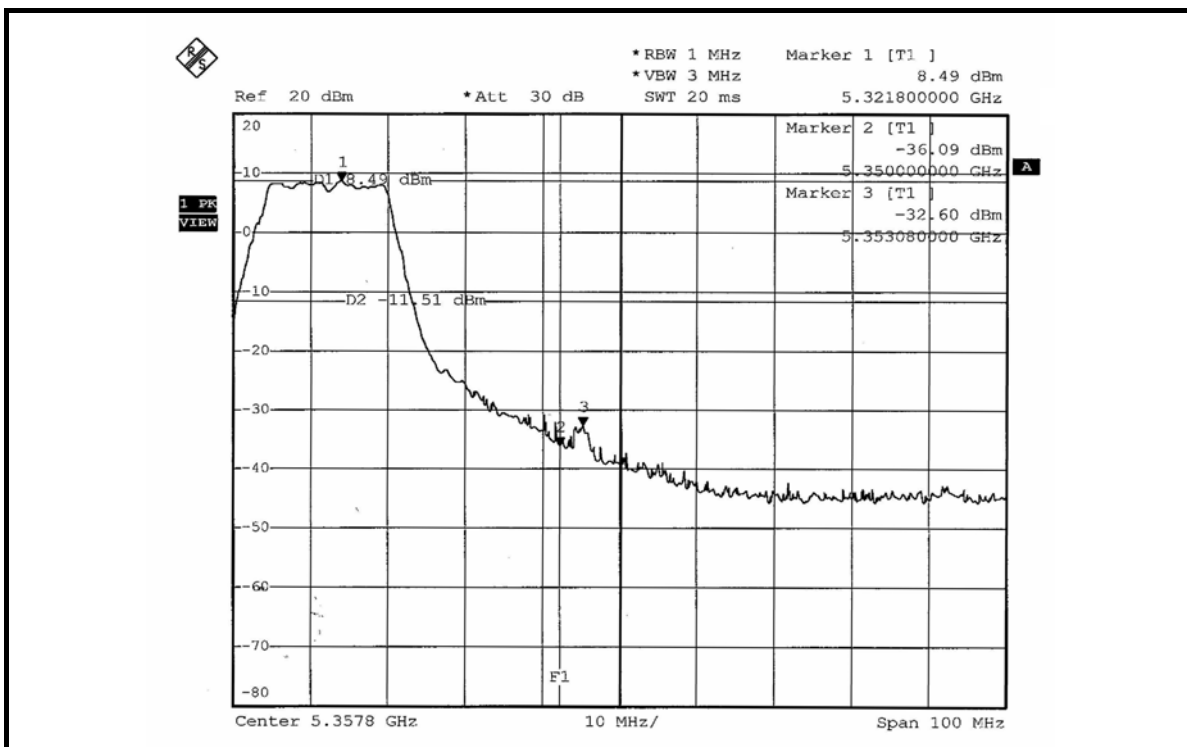
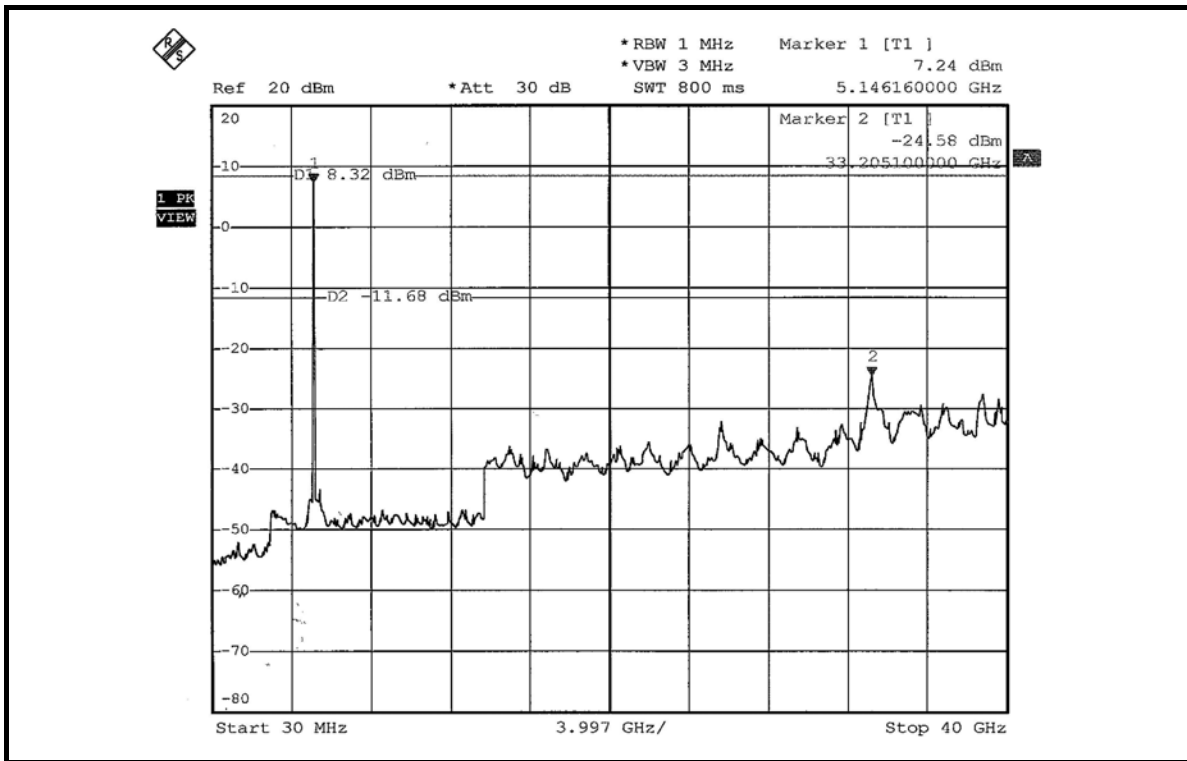
#### Channel 8 (5320MHz)

The band edge emission plot on the next second page shows 41.09dBc 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 110.30dBuV/m (Peak), so the maximum field strength in restrict band is  $110.30-41.09=69.21$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the next third page shows 48.37dBc 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 99.99dBuV/m (Average), so the maximum field strength in restrict band is  $99.99-48.37=51.62$ dBuV/m which is under 54dBuV/m limit.









## **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 antenna used in this product is PIFA antenna with UFL connector. The maximum Gain of the antenna is 2.63dBi.



## **5. PHOTOGRAPHS OF THE TEST CONFIGURATION**

Please refer to the attached file (Test Setup Photo).



## 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, 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, NCC
<b>Netherlands</b>	Telefication
<b>Singapore</b>	PSB , GOST-ASIA(MOU)
<b>Russia</b>	CERTIS(MOU)

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

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

**Linko EMC/RF Lab:**

Tel: 886-2-26052180  
Fax: 886-2-26051924

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343  
Fax: 886-3-5935342

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

Tel: 886-3-3183232  
Fax: 886-3-3185050

**Linko RF Lab.**

Tel: 886-3-3270910  
Fax: 886-3-3270892

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

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



## **APPENDIX-A**

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

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