### 5.5.3 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.

### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.5.5 TEST SETUP

### 5.5.6 EUT OPERATING CONDITIONS

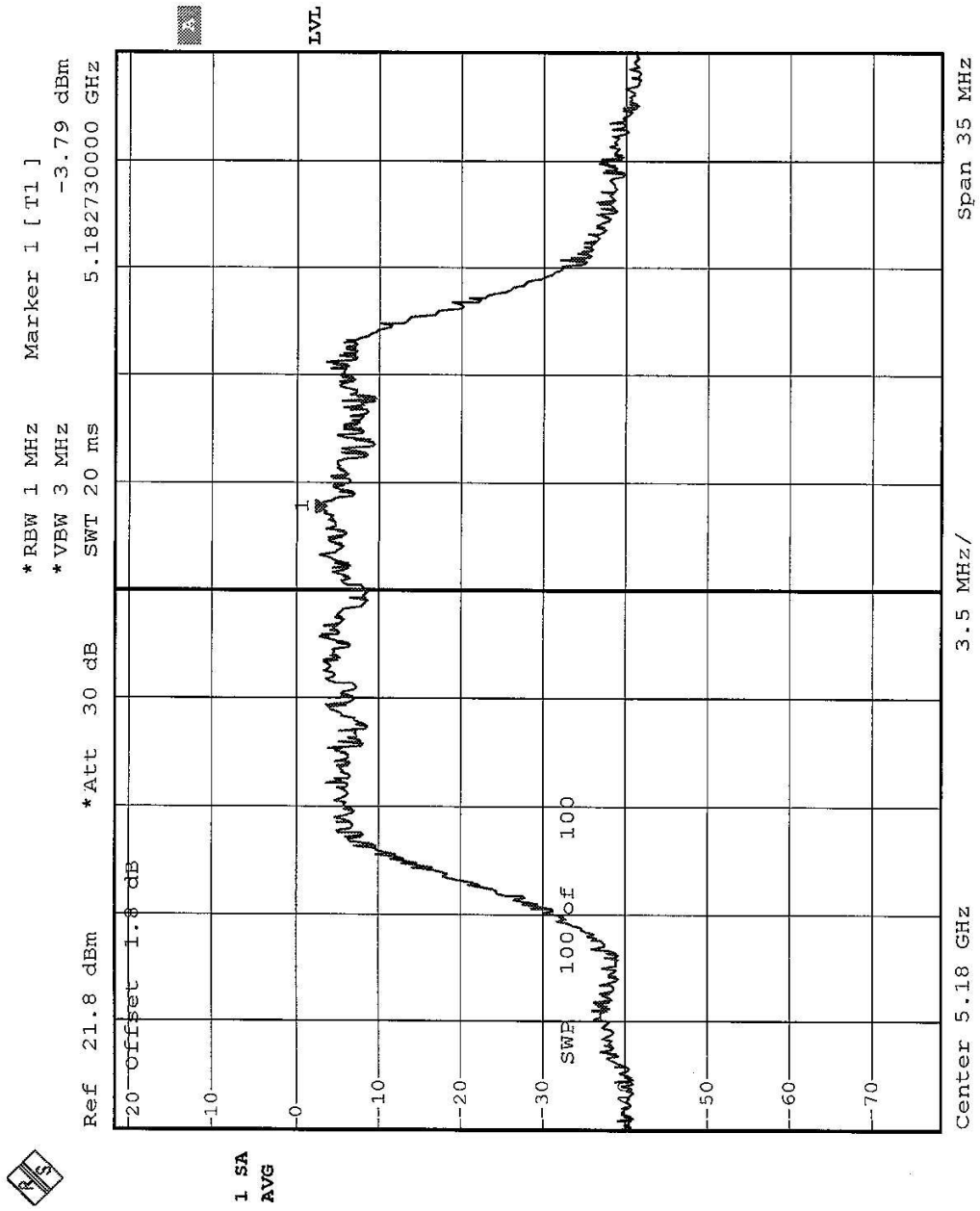
Same as 5.3.6

### 5.5.7 TEST RESULTS

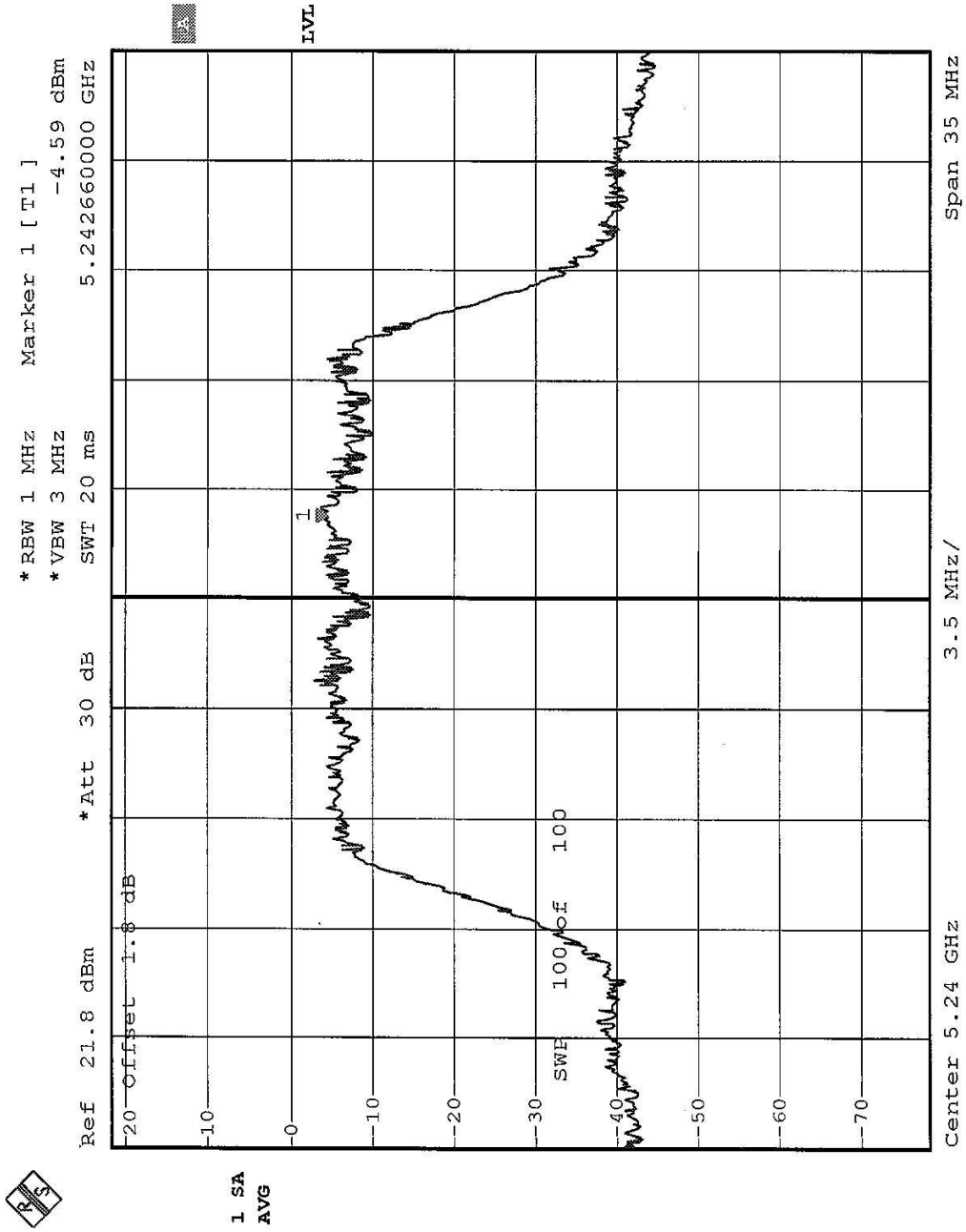
| | | | |
|---|---|---|---|
| **EUT** | Dual-Band Wireless A+G Access Point | **MODEL** | WAP55AG |
| **MODE** | Normal | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 64%RH, 1005hPa | **TESTED BY** | Steven Lu |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 1 MHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5180 | -3.79 | 4 | PASS |
| 4 | 5240 | -4.59 | 4 | PASS |
| 5 | 5260 | -1.80 | 11 | PASS |
| 8 | 5320 | -2.78 | 11 | PASS |

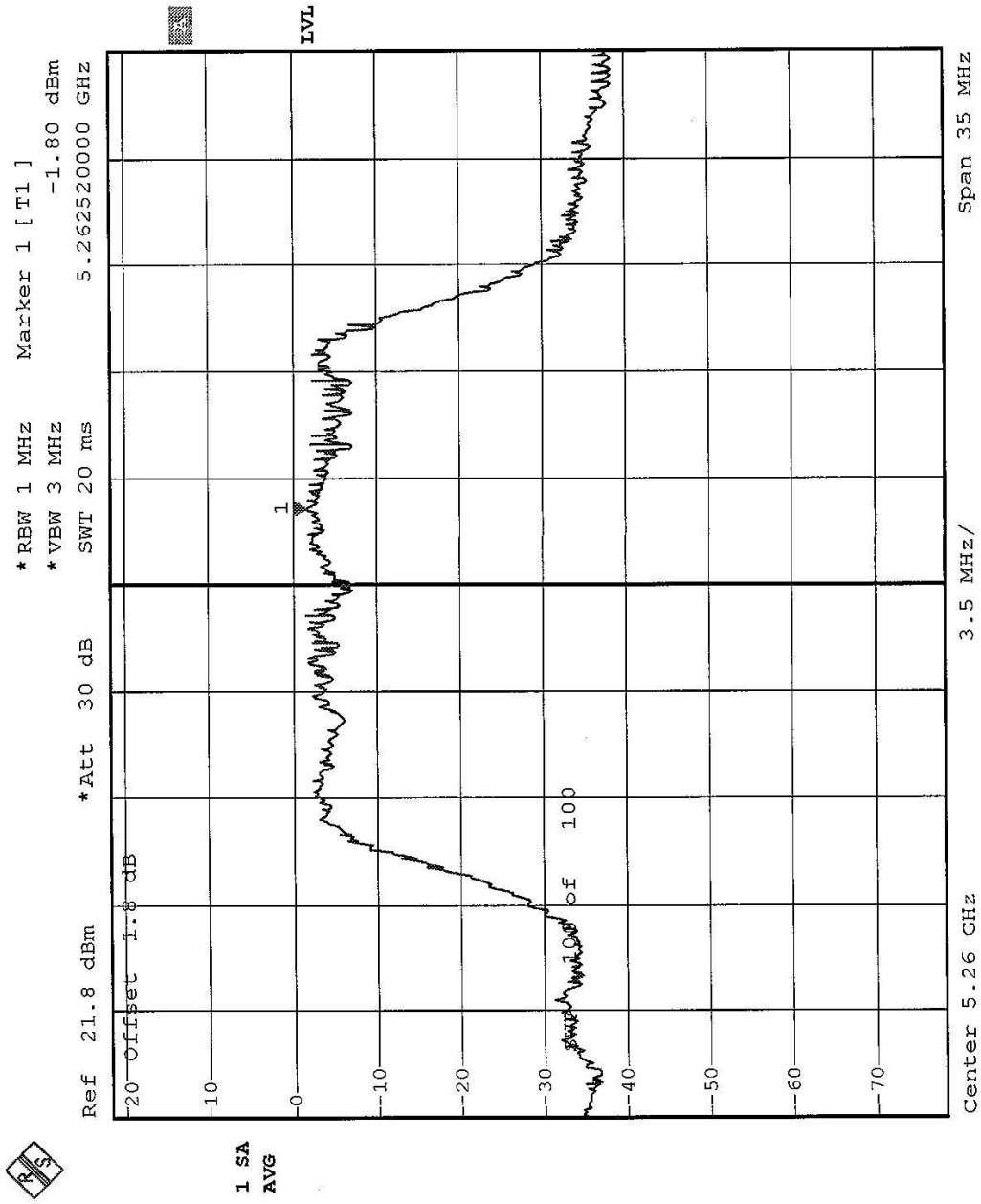
CHANNEL 1


Ref 21.8 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-3.79 dBm
5.182730000 GHz
Offset 1.8 dB
1 SA
AVG
LVL
SWP 100 of 100
Center 5.18 GHz
3.5 MHz/
Span 35 MHz

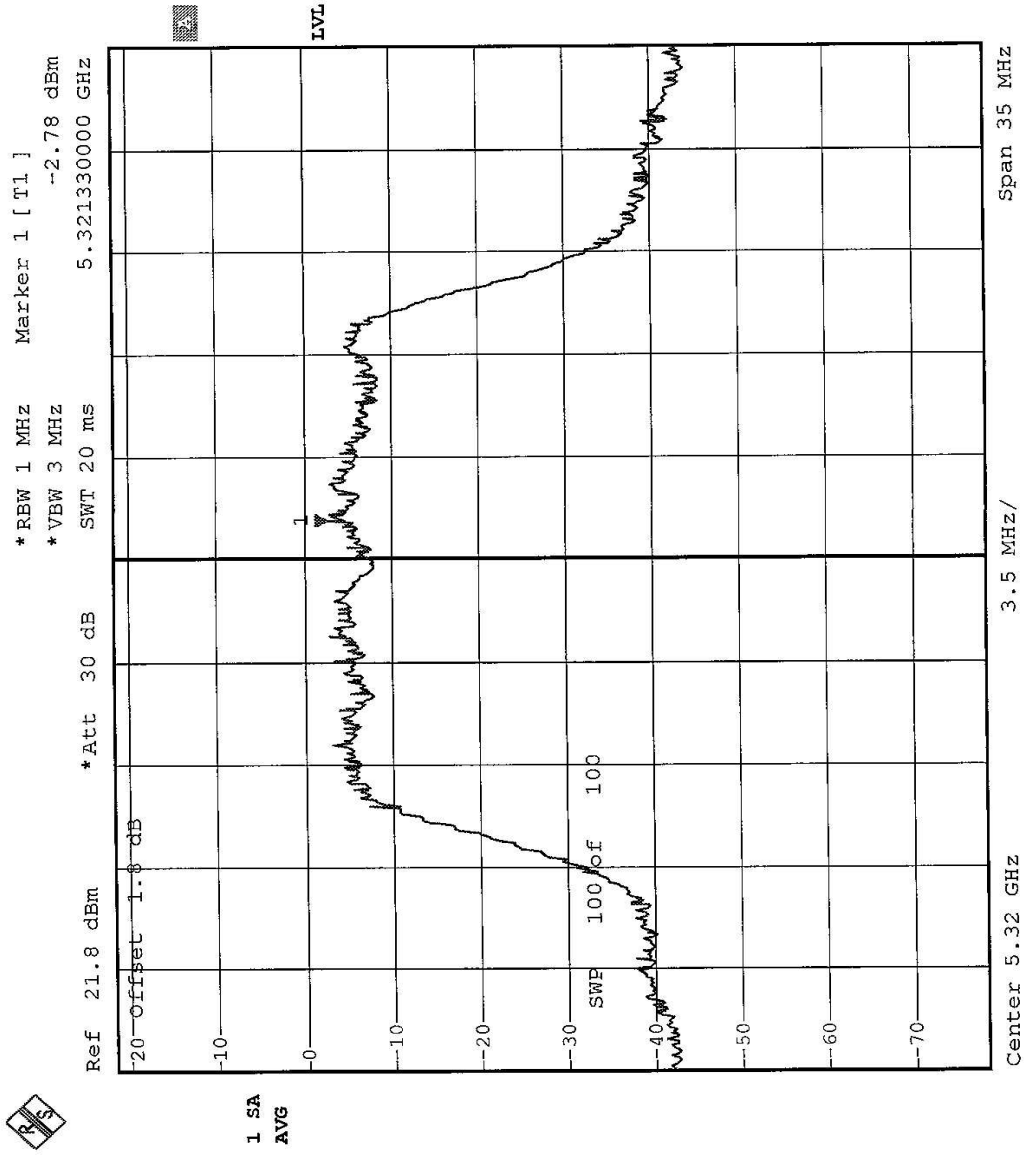
CHANNEL 4


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-4.59 dBm
5.242660000 GHz
1 SA
AVG
LVL
SWP 100 of 100
Center 5.24 GHz
3.5 MHz/
Span 35 MHz

CHANNEL 5


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-1.80 dBm
5.26252000 GHz
1 SA
AVG
LVL
Center 5.26 GHz
3.5 MHz/
Span 35 MHz

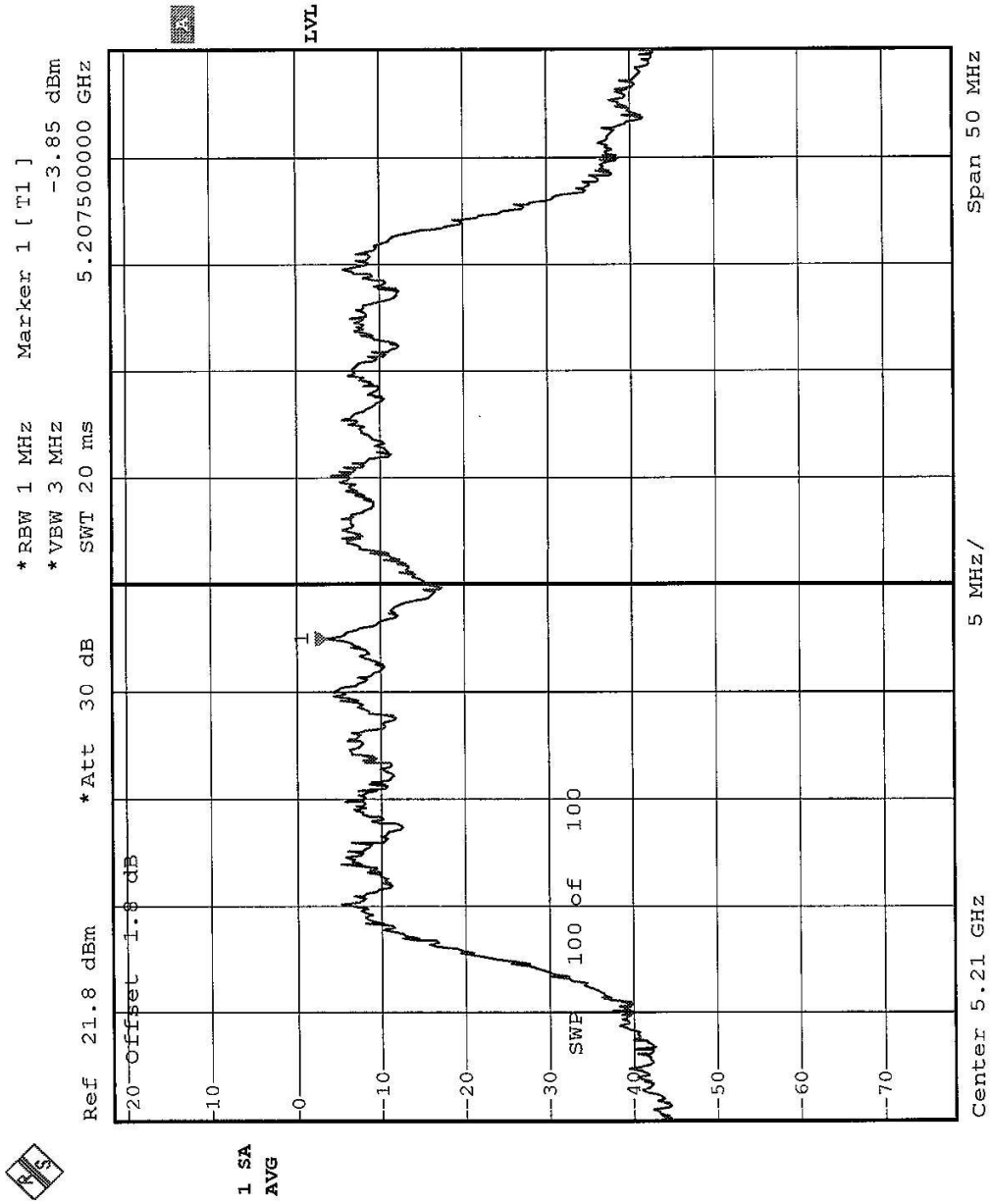
CHANNEL 8


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-2.78 dBm
5.321330000 GHz
1 SA
AVG
LVL
SWP 100 of 100
Center 5.32 GHz
3.5 MHz/
Span 35 MHz

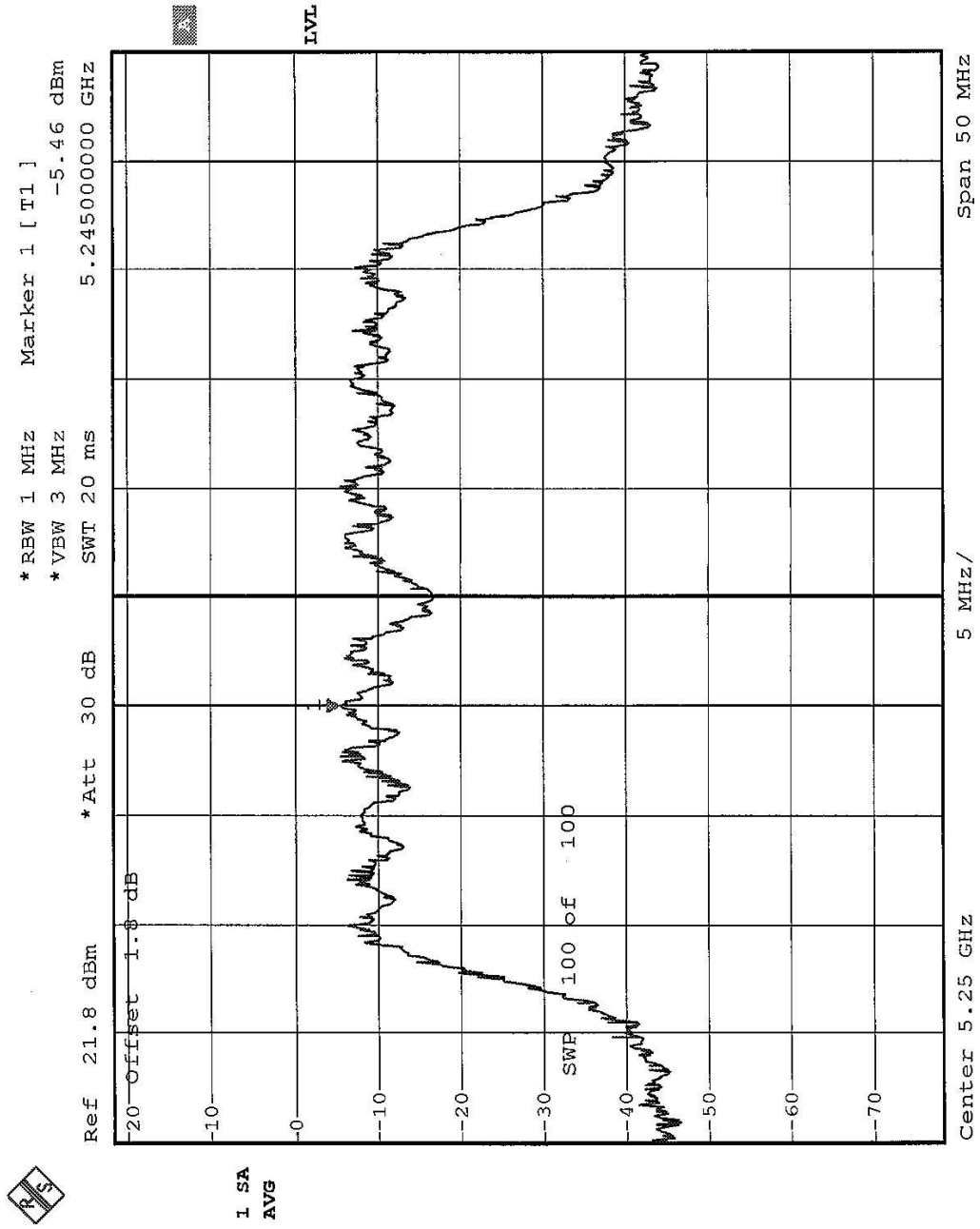
| | | | |
|---|---|---|---|
| **EUT** | Dual-Band Wireless A+G Access Point | **MODEL** | WAP55AG |
| **MODE** | Turbo | **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 65%RH, 1005hPa | **TESTED BY** | Steven Lu |

| CHANNEL NUMBER | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 1 MHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS/FAIL |
|---|---|---|---|---|
| 1 | 5210 | -3.85 | 4 | PASS |
| 2 | 5250 | -5.46 | 4 | PASS |
| 3 | 5290 | -6.65 | 11 | PASS |

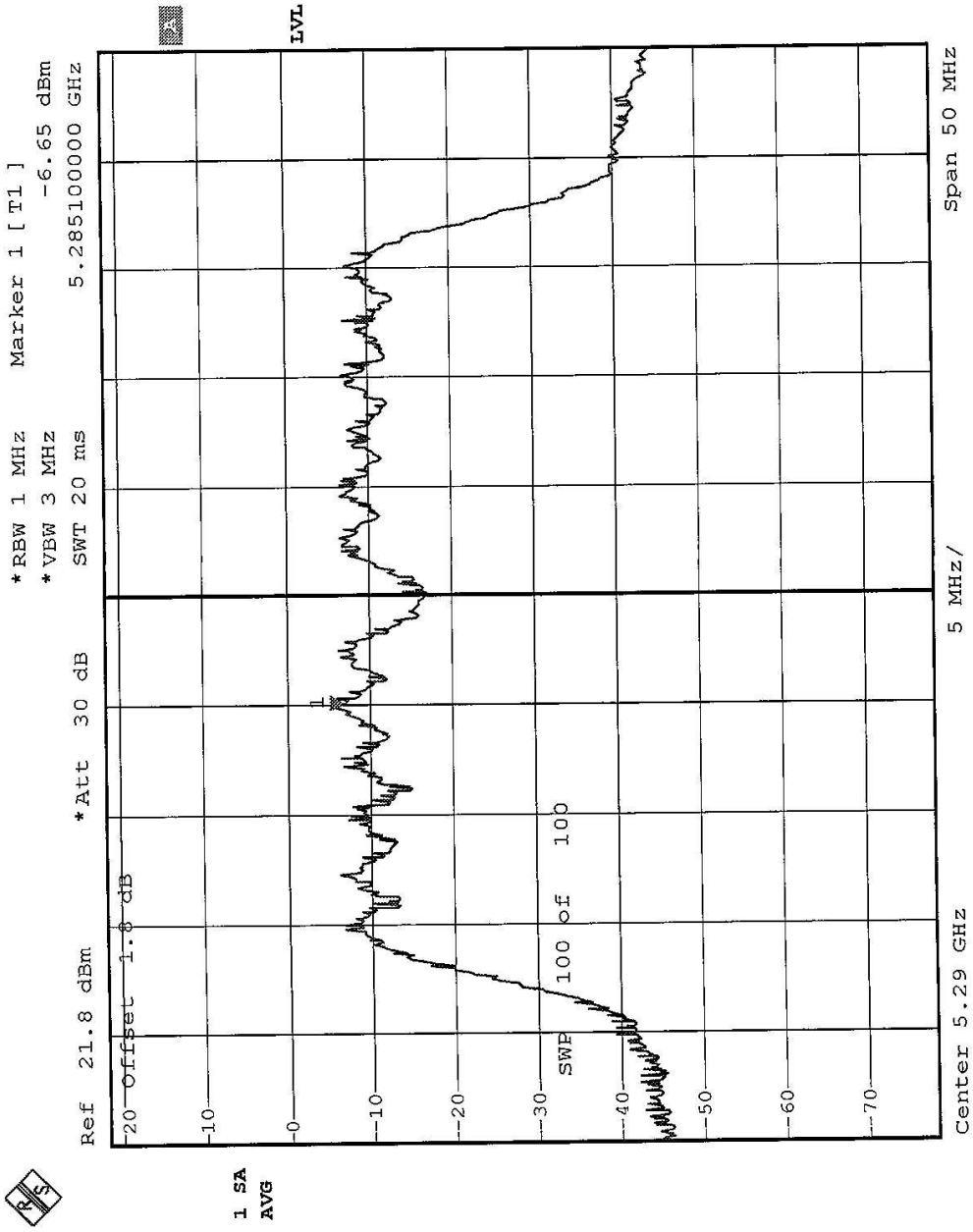
CHANNEL 1


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-3.85 dBm
5.20750000 GHz
1 SA
AVG
LVL
SWP 100 of 100
Center 5.21 GHz
5 MHz/
Span 50 MHz

CHANNEL 2


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-5.46 dBm
5.24500000 GHz
1 SA
AVG
IVL
SWP 100 of 100
Center 5.25 GHz
5 MHz/
Span 50 MHz

CHANNEL 3


Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1 ]
-6.65 dBm
5.285100000 GHz
1 SA
AVG
LVL
SWP 100 of 100
Center 5.29 GHz
5 MHz/
Span 50 MHz

## 5.6 FREQUENCY STABILITY

### 5.6.1 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.

### 5.6.2 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| ANRITSU SPECTRUM ANALYZER | MS2667C | M10281 | Mar. 14, 2003 |
| WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER | TH-4S-C | W901030 | Jun. 24, 2003 |

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

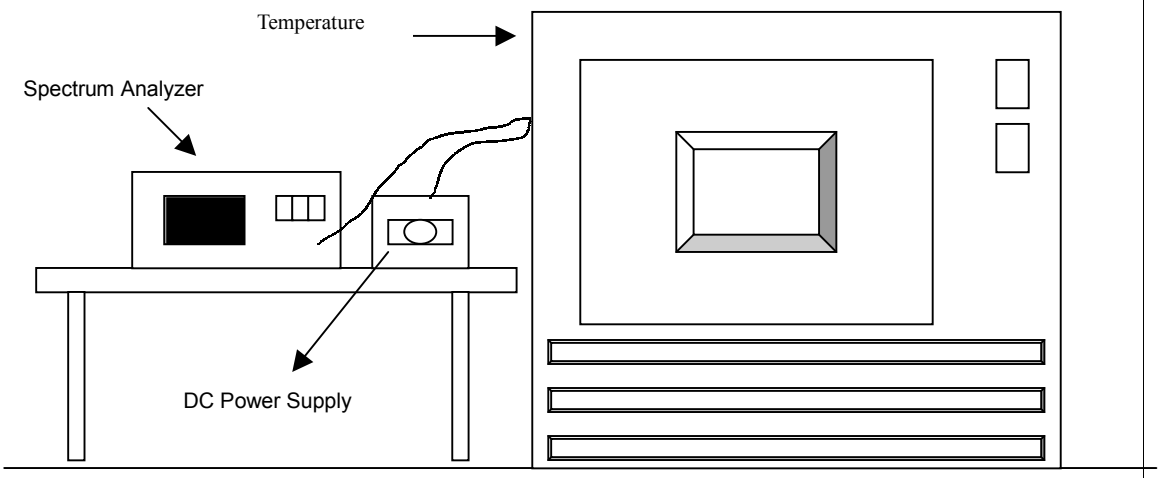
### 5.6.3 TEST PROCEDURE

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.

### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.6.5 TEST SETUP




## 5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

## 5.6.7 TEST RESULTS

| Operating frequency: 5180MHz | | | | | | Limit : ± 0.02% | |
|---|---|---|---|---|---|---|---|
| Temp. (℃) | Power supply (VDC) | 2 minute | | 5 minute | | 10 minute | |
| | | (MHz) | (%) | (MHz) | (%) | (MHz) | (%) |
| 50 | 126.5 | 5179.9962 | -0.0000734 | 5179.9964 | -0.0000695 | 5179.9962 | -0.0000734 |
| | 110.0 | 5179.9964 | -0.0000695 | 5179.9962 | -0.0000734 | 5179.9962 | -0.0000734 |
| | 93.5 | 5179.9962 | -0.0000734 | 5179.9962 | -0.0000734 | 5179.9962 | -0.0000734 |
| 40 | 126.5 | 5179.9782 | -0.0004208 | 5179.9782 | -0.0004208 | 5179.9780 | -0.0004247 |
| | 110.0 | 5179.9782 | -0.0004208 | 5179.9780 | -0.0004247 | 5179.9782 | -0.0004208 |
| | 93.5 | 5179.9780 | -0.0004247 | 5179.9782 | -0.0004208 | 5179.9782 | -0.0004208 |
| 30 | 126.5 | 5179.9694 | -0.0005907 | 5179.9692 | -0.0005946 | 5179.9696 | -0.0005869 |
| | 110.0 | 5179.9692 | -0.0005946 | 5179.9694 | -0.0005907 | 5179.9694 | -0.0005907 |
| | 93.5 | 5179.9694 | -0.0005907 | 5179.9692 | -0.0005946 | 5179.9696 | -0.0005869 |
| 20 | 126.5 | 5179.9704 | -0.0005714 | 5179.9704 | -0.0005714 | 5179.9706 | -0.0005676 |
| | 110.0 | 5179.9706 | -0.0005676 | 5179.9704 | -0.0005714 | 5179.9706 | -0.0005676 |
| | 93.5 | 5179.9708 | -0.0005637 | 5179.9706 | -0.0005676 | 5179.9706 | -0.0005676 |
| 10 | 126.5 | 5179.9738 | -0.0005058 | 5179.9740 | -0.0005019 | 5179.9740 | -0.0005019 |
| | 110.0 | 5179.9738 | -0.0005058 | 5179.9740 | -0.0005019 | 5179.9740 | -0.0005019 |
| | 93.5 | 5179.9740 | -0.0005019 | 5179.9740 | -0.0005019 | 5179.9740 | -0.0005019 |
| 0 | 126.5 | 5179.9798 | -0.0003900 | 5179.9800 | -0.0003861 | 5179.9798 | -0.0003900 |
| | 110.0 | 5179.9798 | -0.0003900 | 5179.9798 | -0.0003900 | 5179.9798 | -0.0003900 |
| | 93.5 | 5179.9800 | -0.0003861 | 5179.9800 | -0.0003861 | 5179.9798 | -0.0003900 |
| -10 | 126.5 | 5179.9832 | -0.0003243 | 5179.9834 | -0.0003205 | 5179.9834 | -0.0003205 |
| | 110.0 | 5179.9832 | -0.0003243 | 5179.9834 | -0.0003205 | 5179.9834 | -0.0003205 |
| | 93.5 | 5179.9832 | -0.0003243 | 5179.9834 | -0.0003205 | 5179.9834 | -0.0003205 |
| -20 | 126.5 | 5179.9864 | -0.0002625 | 5179.9864 | -0.0002625 | 5179.9864 | -0.0002625 |
| | 110.0 | 5179.9864 | -0.0002625 | 5179.9864 | -0.0002625 | 5179.9862 | -0.0002664 |
| | 93.5 | 5179.9864 | -0.0002625 | 5179.9864 | -0.0002625 | 5179.9864 | -0.0002625 |
| -30 | 126.5 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 |
| | 110.0 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 |
| | 93.5 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 | 5179.9888 | -0.0002162 |

## 5.7 BAND EDGES MEASUREMENT

### 5.7.1 TEST INSTRUMENTS

| Description & Manufacturer | Model No. | Serial No. | Calibrated Until |
|---|---|---|---|
| SPECTRUM ANALYZER | FSEK30 | 100049 | July 24, 2003 |

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

### 5.7.2 TEST PROCEDURE

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

### 5.7.3 EUT OPERATING CONDITION

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

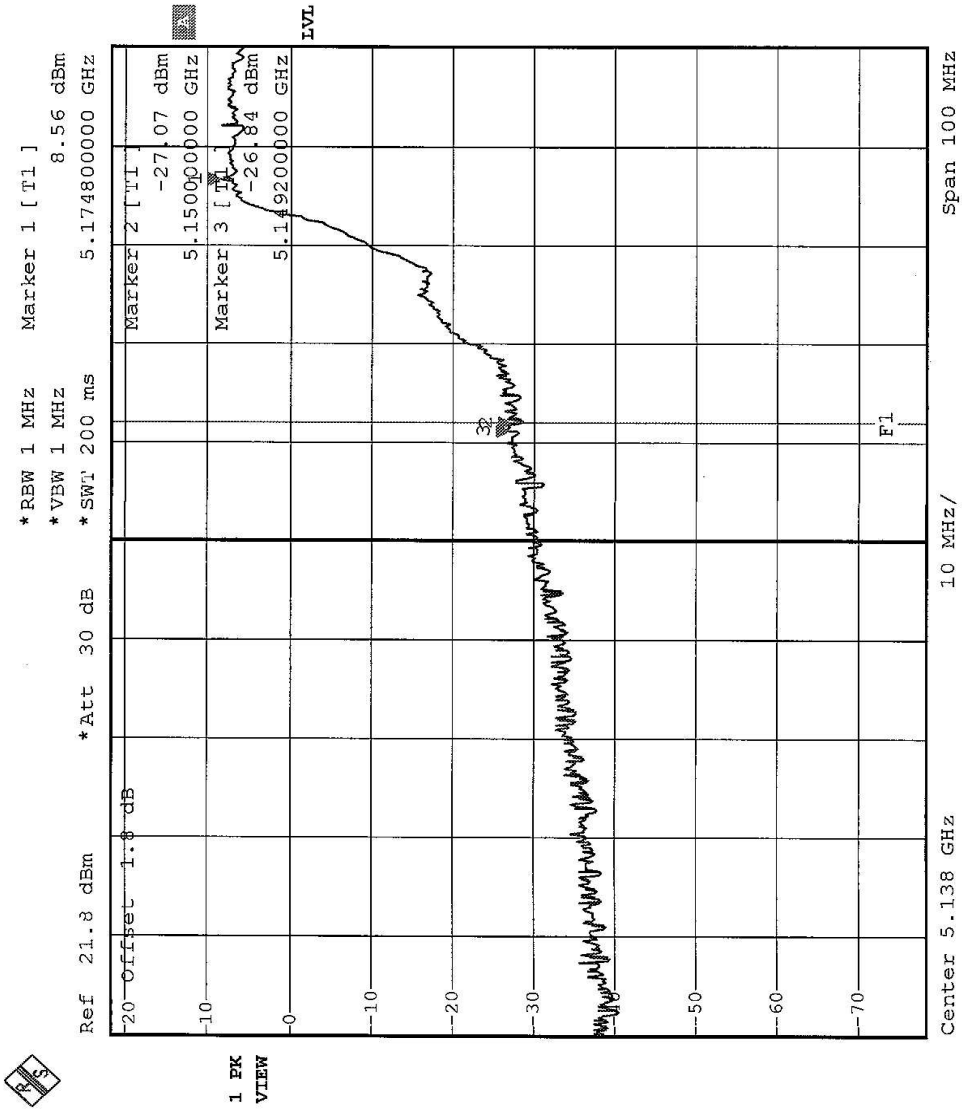
### 5.7.4 TEST RESULTS

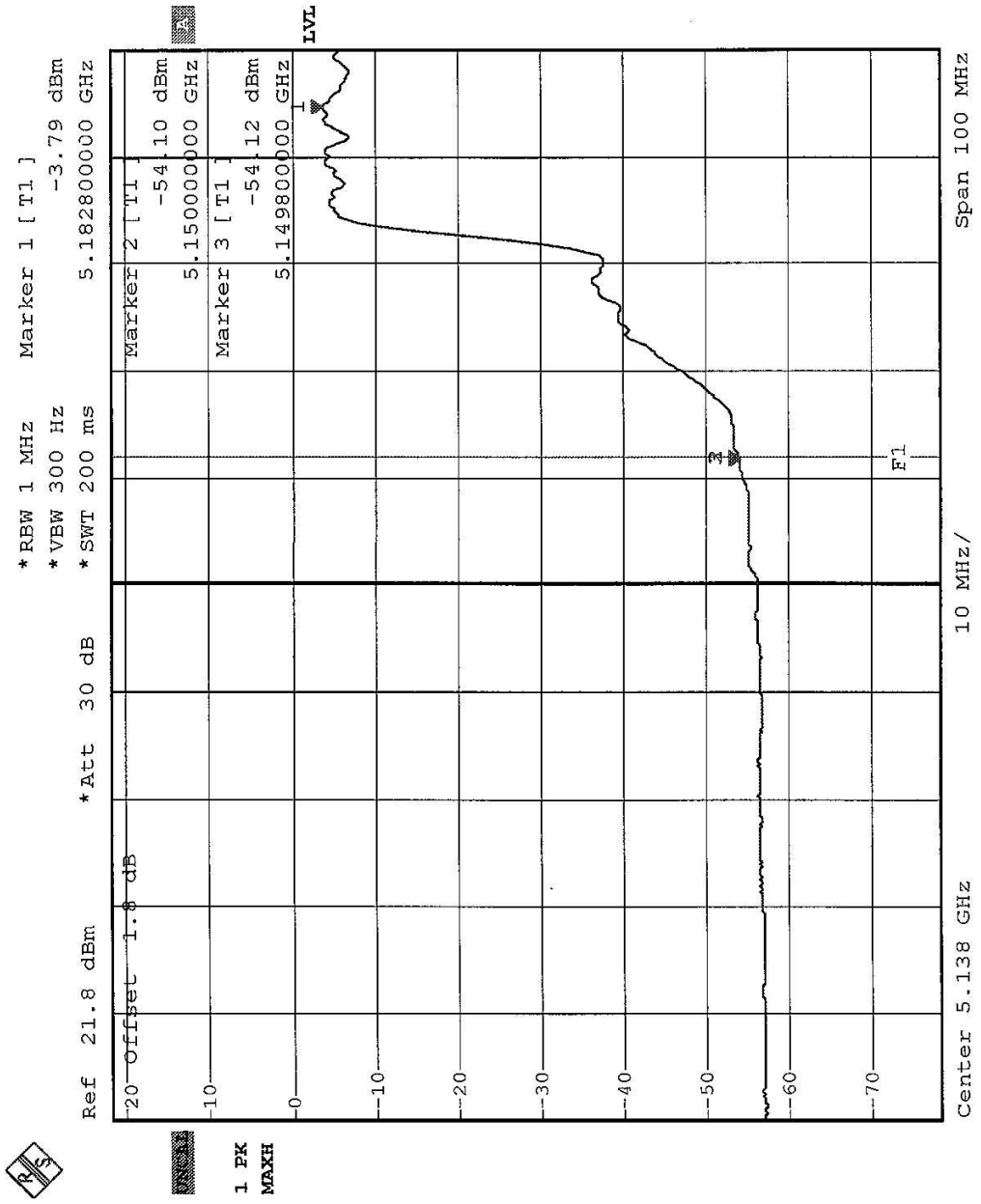
For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal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

The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=300Hz) are attached on the following 8 pages.

Normal Mode: Channel 1 (5180 MHz)

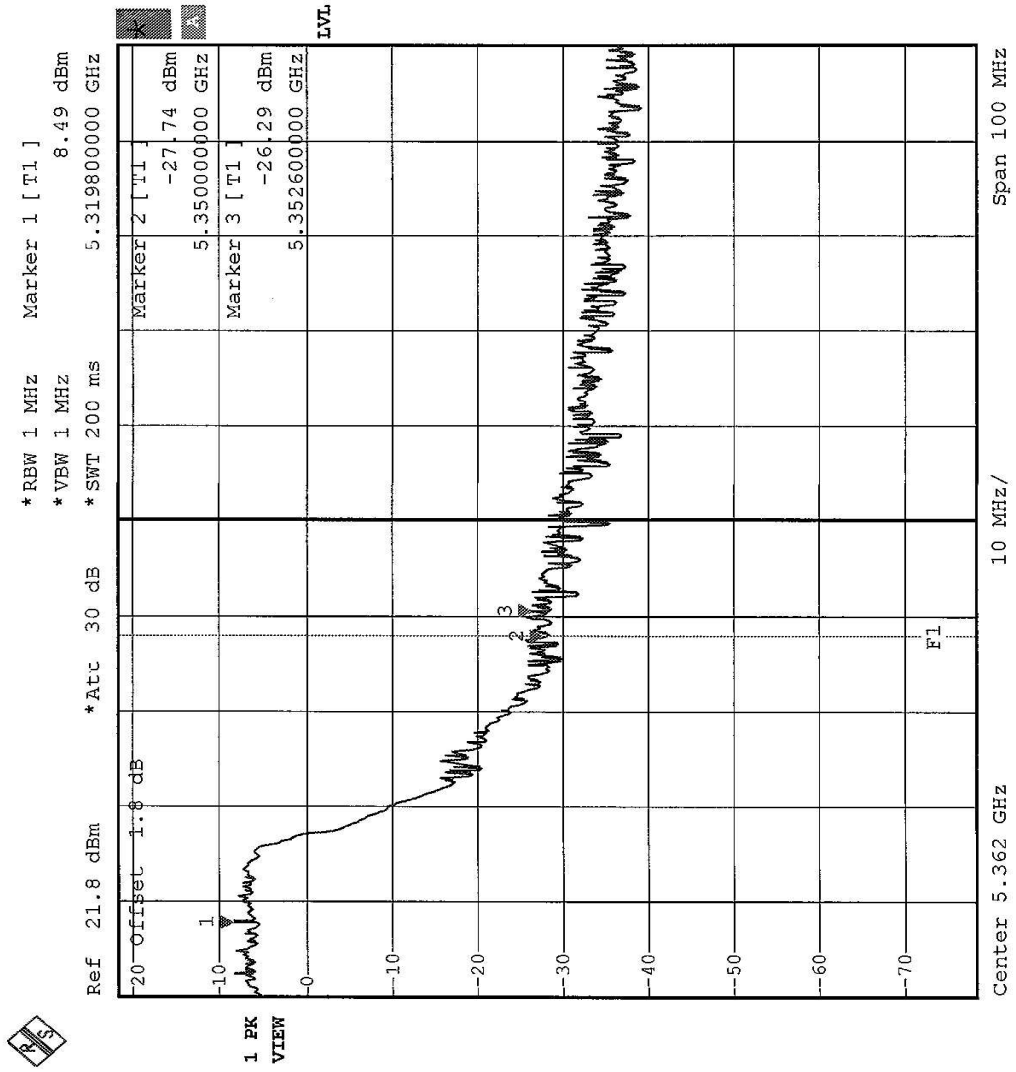
The band edge emission plot on the following 2 pages shows 35.4dBc (Peak) / 50.31dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 91.2dBuV/m, so the maximum field strength in restrict band is 91.2-50.31=40.89dBuV/m which is under 54dBuV/m limit.

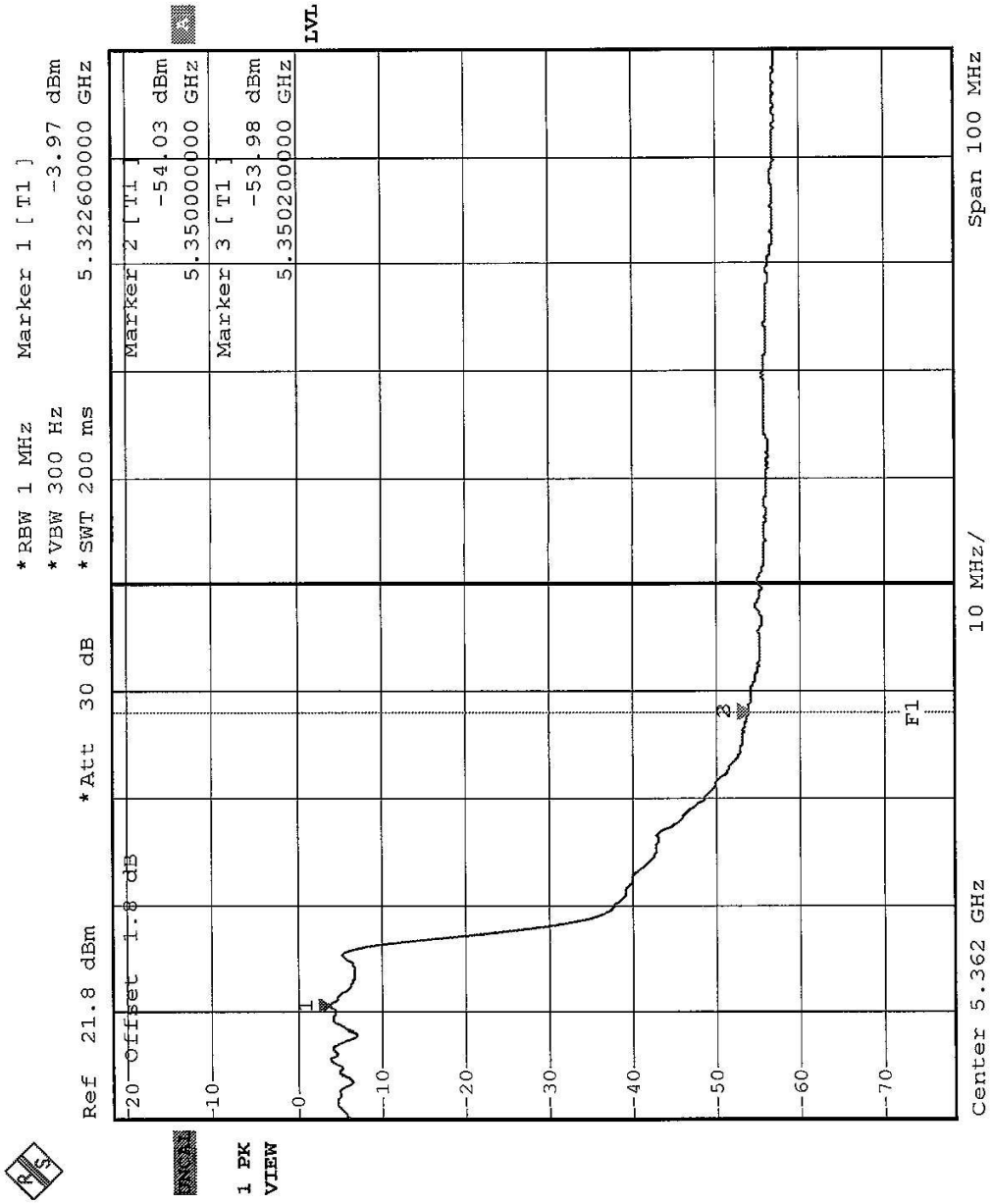



Ref 21.8 dBm
Att 30 dB
RBW 1 MHz
VBW 300 Hz
SWT 200 ms
Marker 1 [T1 ]
-3.79 dBm
5.182800000 GHz
Marker 2 [T1 ]
-54.10 dBm
5.150000000 GHz
Marker 3 [T1 ]
-54.12 dBm
5.149800000 GHz
1 PK
MAXH
LVL
Center 5.138 GHz
10 MHz/
Span 100 MHz

Normal Mode: Channel 8 (5320 MHz)

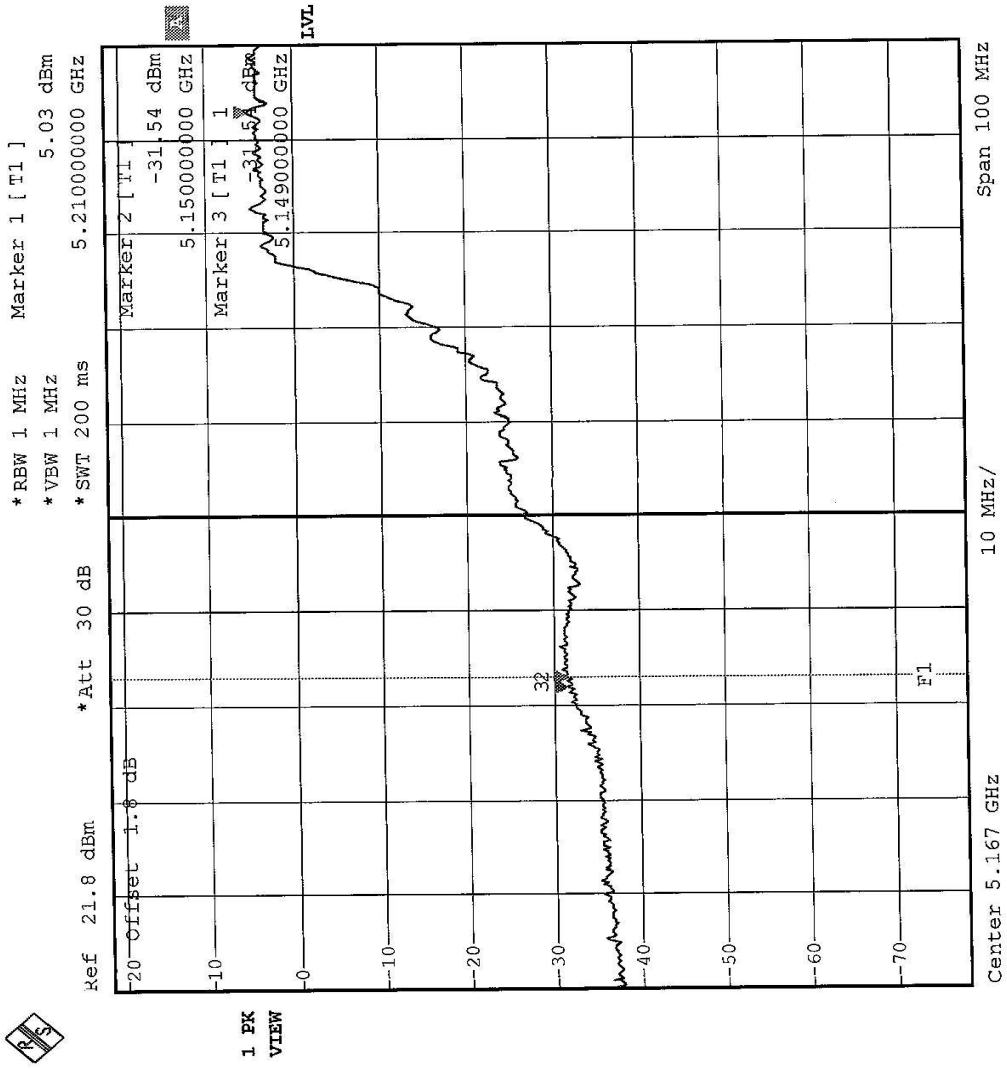
The band edge emission plot on the following 2 pages shows 34.78dBc (Peak) / 50.01dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 (normal mode) is 91.1dBuV/m, so the maximum field strength in restrict band is 91.1-50.01=41.09dBuV/m which is under 54dBuV/m limit.

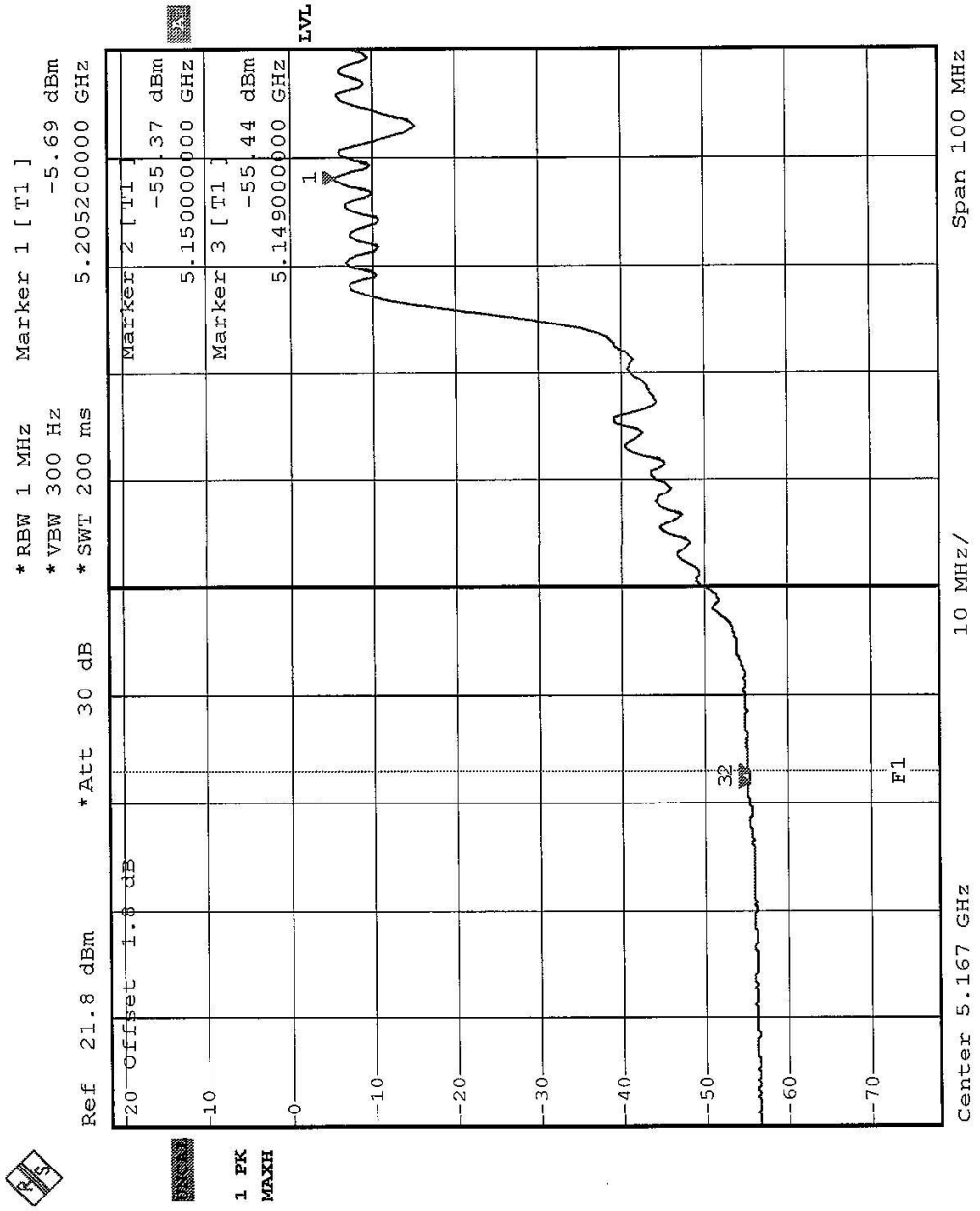



Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
*SWT 200 ms
Marker 1 [T1 ]
-3.97 dBm
5.322600000 GHz
Marker 2 [T1 ]
-54.03 dBm
5.350000000 GHz
Marker 3 [T1 ]
-53.98 dBm
5.350200000 GHz
LVL
1 PK
VIEW
Center 5.362 GHz
10 MHz/
Span 100 MHz
F1

Turbo Mode: Channel 1 (5210 MHz)

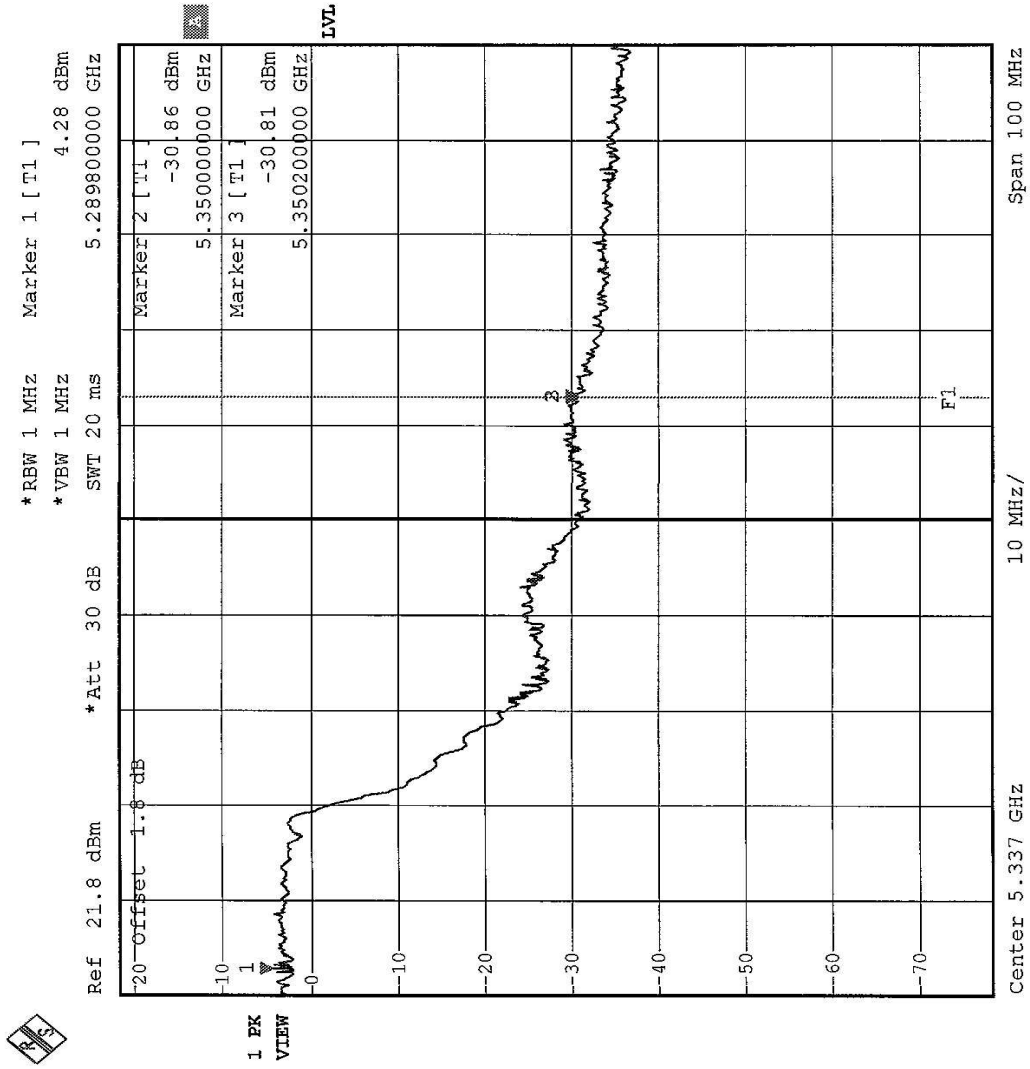
The band edge emission plot on the following 2 pages shows 36.57dBc (Peak) / 49.68dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 90.2dBuV/m, so the maximum field strength in restrict band is 90.2-49.68=40.52dBuV/m which is under 54dBuV/m limit.

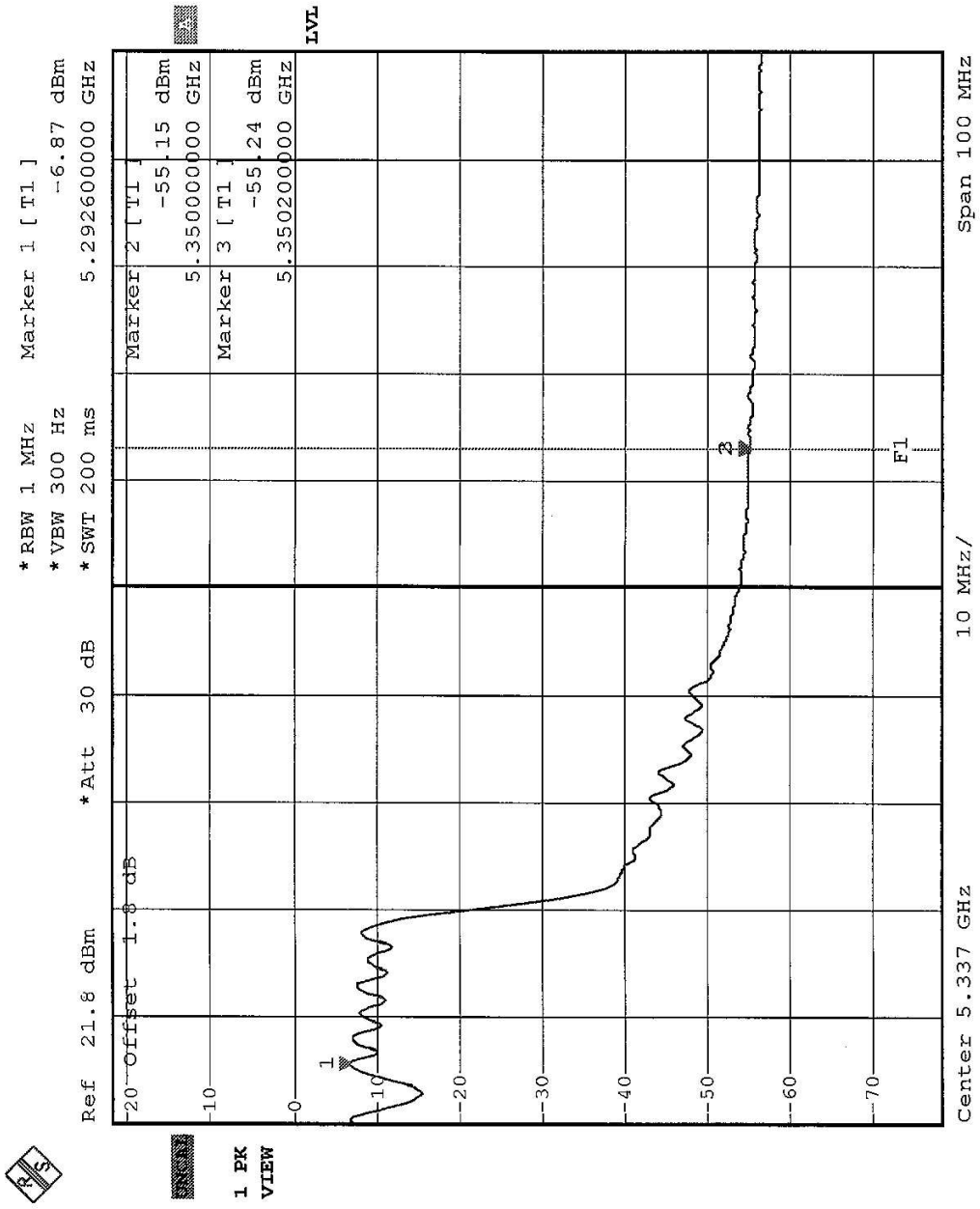



Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
*SWT 200 ms
Marker 1 [T1 ]
-5.69 dBm
5.205200000 GHz
Marker 2 [T1 ]
-55.37 dBm
5.150000000 GHz
Marker 3 [T1 ]
-55.44 dBm
5.149000000 GHz
1 PK
MAXH
LVL
Center 5.167 GHz
10 MHz/
Span 100 MHz

Turbo Mode: Channel 3 (5290 MHz)

The band edge emission plot on the following 2 pages shows 35.09dBc (Peak) / 48.28dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 (normal mode) is 90.6dBuV/m, so the maximum field strength in restrict band is 90.6-48.28=42.32dBuV/m which is under 54dBuV/m limit.




Ref 21.8 dBm
Offset 1.8 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
*SWT 200 ms
Marker 1 [T1 ]
-6.87 dBm
5.292600000 GHz
Marker 2 [T1 ]
-55.15 dBm
5.350000000 GHz
Marker 3 [T1 ]
-55.24 dBm
5.350200000 GHz
1 PK
VIEW
LVL
Center 5.337 GHz
10 MHz/
Span 100 MHz

## 5.8 ANTENNA REQUIREMENT

### 5.8.1 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.

### 5.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole Antenna without antenna connector. The maximum Gain of the antenna is 1dBi only.

# 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST

# 7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

| | |
|---|---|
| **USA** | FCC, NVLAP, UL |
| **Germany** | TUV Rheinland |
| **Japan** | VCCI |
| **New Zealand** | MoC |
| **Norway** | NEMKO |
| **R.O.C.** | BSMI, DGT, CNLA |

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.

If you have any comments, please feel free to contact us at the following:

**Lin Kou EMC Lab**:
Tel: 886-2-26052180
Fax: 886-2-26052943

**Hsin Chu EMC Lab**:
Tel: 886-35-935343
Fax: 886-35-935342

**Lin Kou Safety Lab**:
Tel: 886-2-26093195
Fax: 886-2-26093184

**Lin Kou RF&Telecom Lab**
Tel: 886-3-3270910
Fax: 886-3-3270892

**Email**: service@mail.adt.com.tw
**Web Site**: www.adt.com.tw

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