

4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

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

4.4.2 TEST INSTRUMENTS

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

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

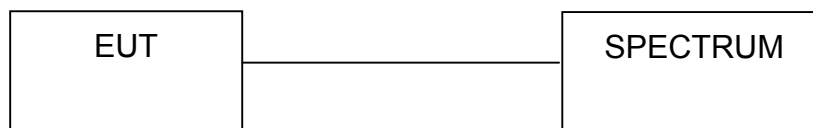
4.4.3 TEST PROCEDURE

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

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



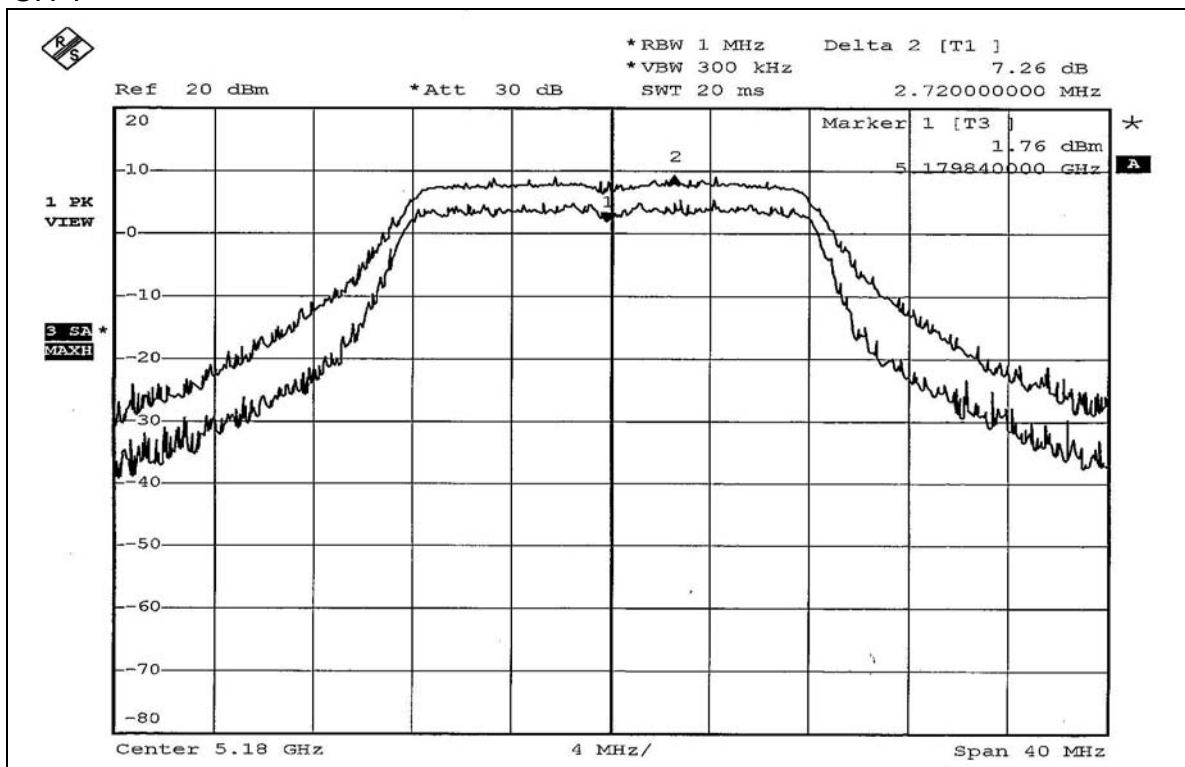
4.4.7 TEST RESULTS

802.11a OFDM modulation

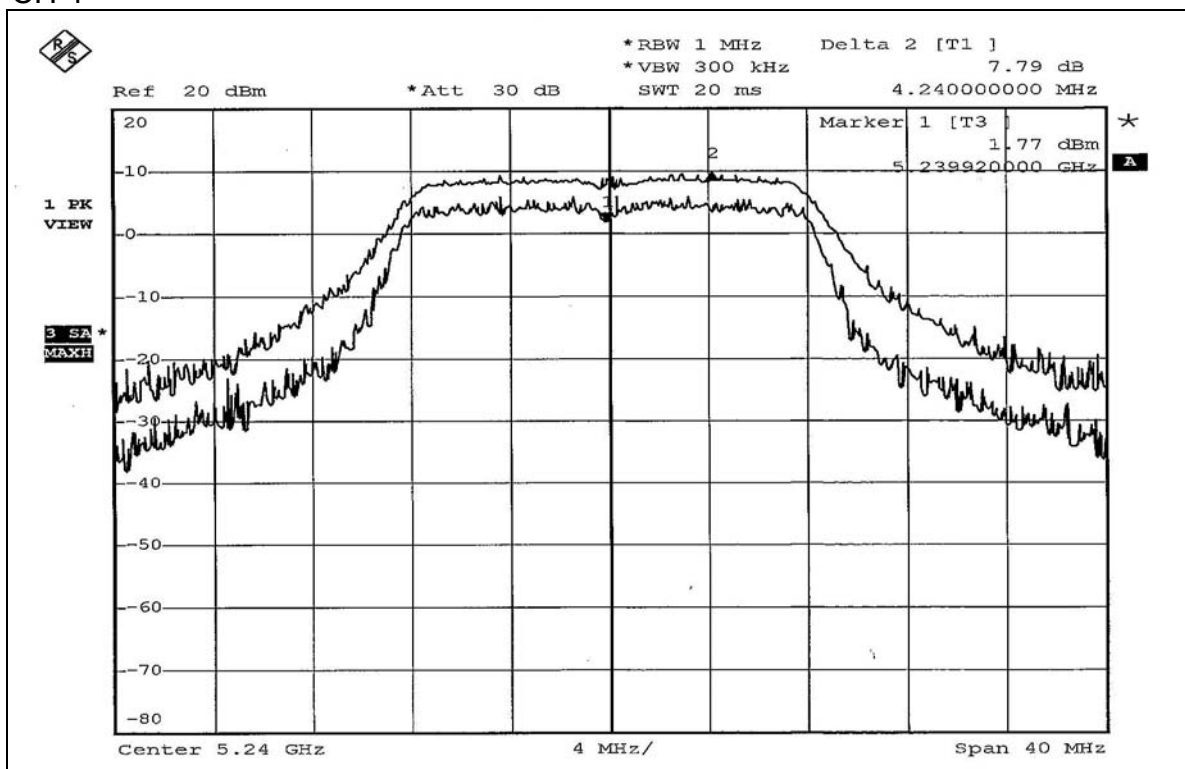
EUT	11a/b/g Wireless PCI Adapter	MODEL	SL-3055
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 52%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.26	13	PASS
4	5240	7.79	13	PASS
5	5260	7.97	13	PASS
8	5320	6.54	13	PASS

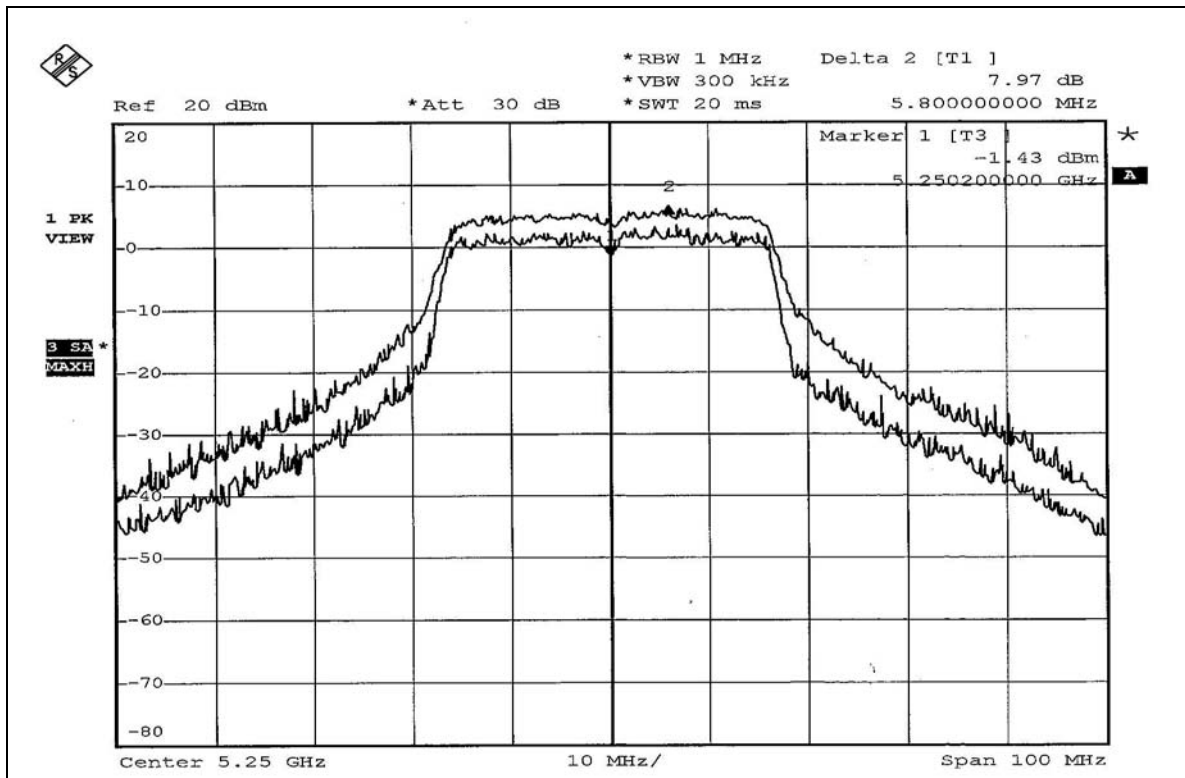
CH 1



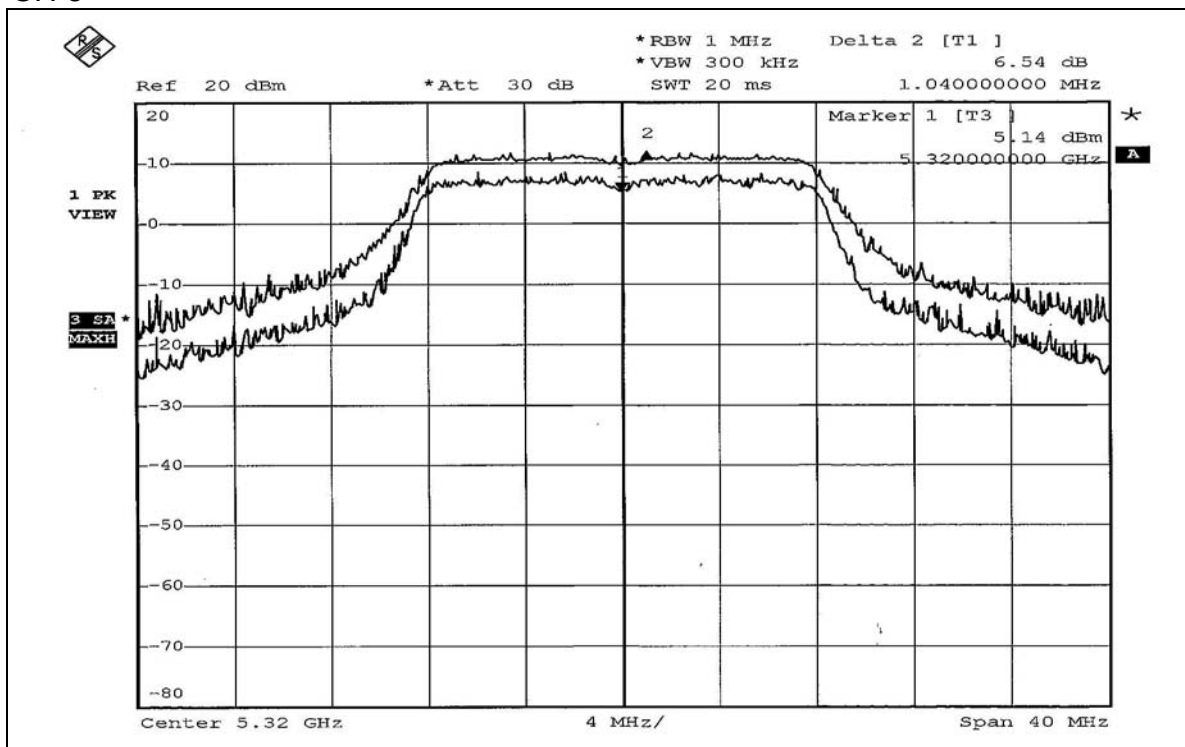
CH 4



CH 5



CH 8

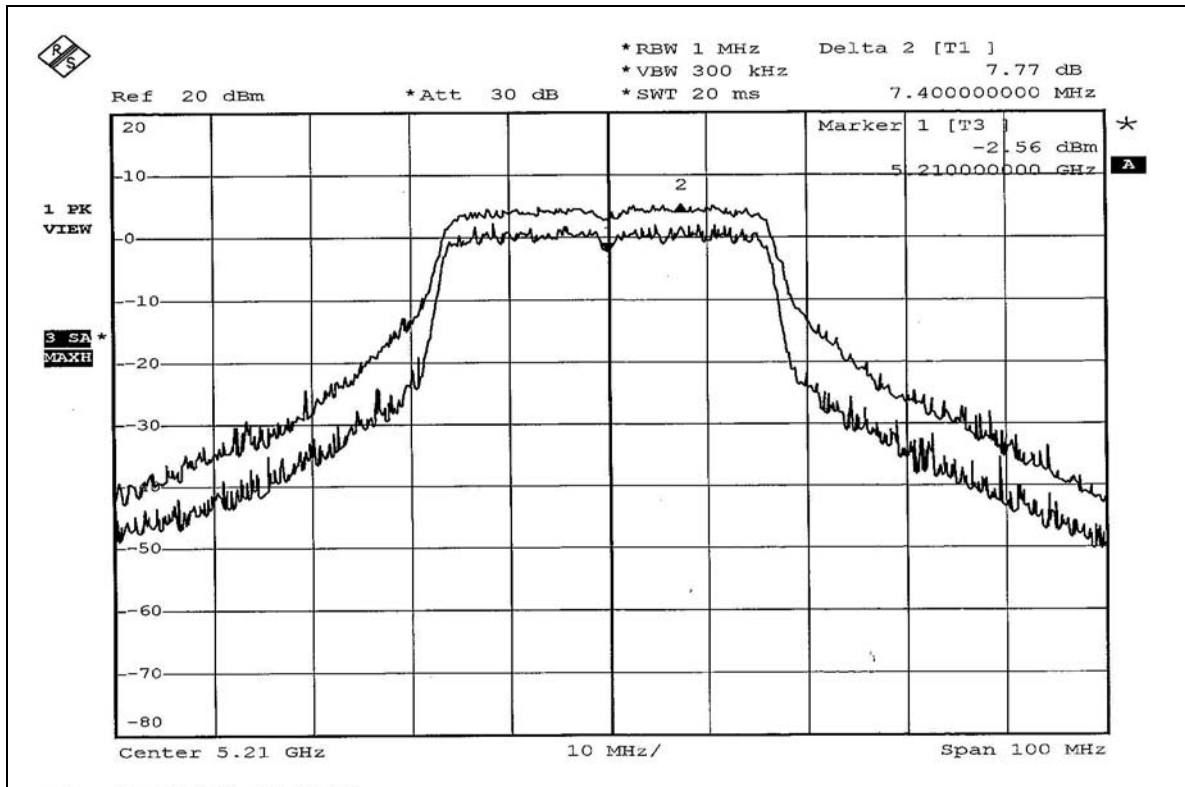


**802.11a Turbo OFDM modulation**

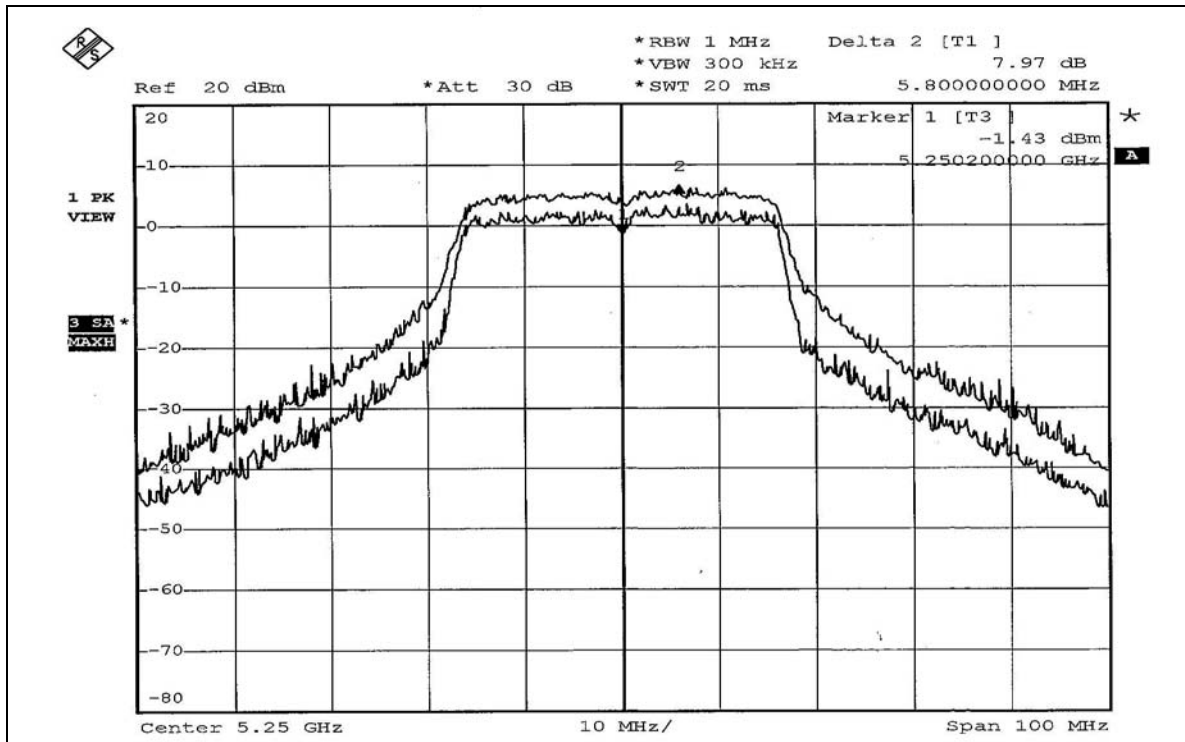
EUT	11a/b/g Wireless PCI Adapter	MODEL	SL-3055
MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 52%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	7.77	13	PASS
2	5250	7.97	13	PASS
3	5290	7.67	13	PASS

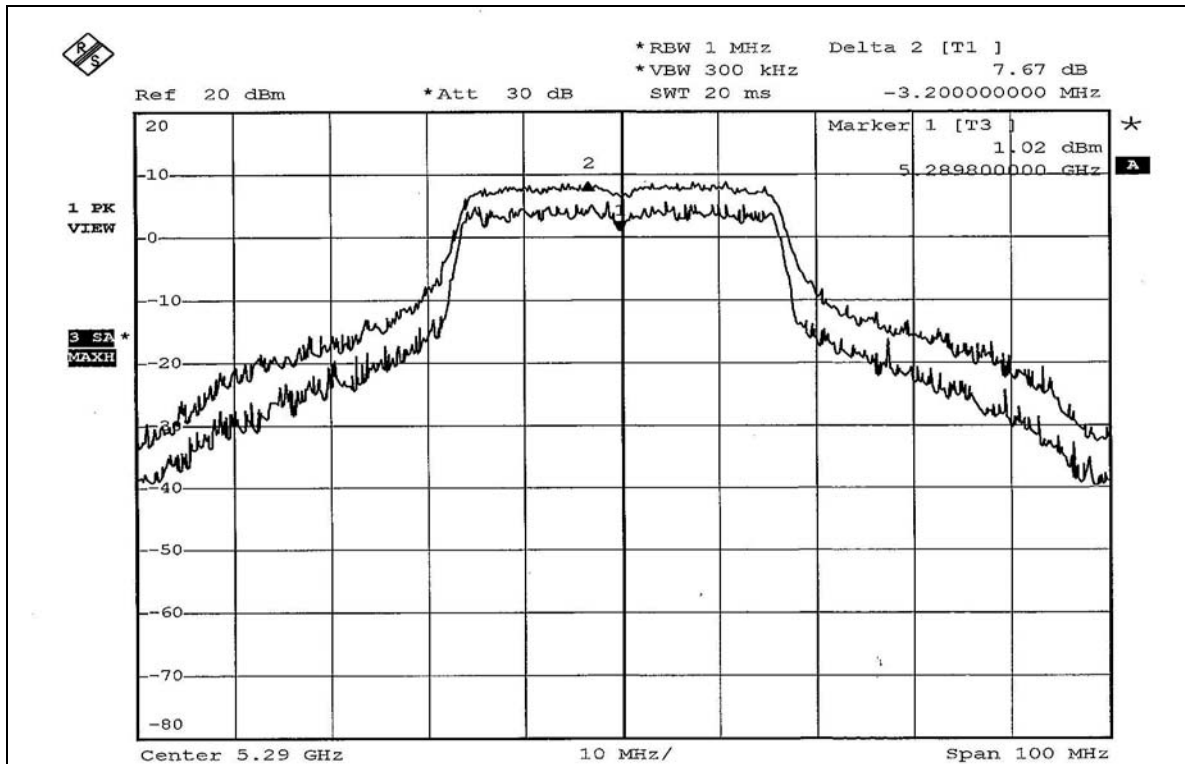
CH 1



CH 2



CH 3



4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST INSTRUMENTS

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

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

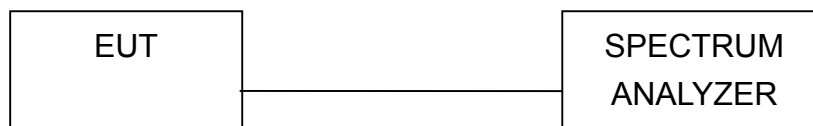
4.5.3 TEST PROCEDURES

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6

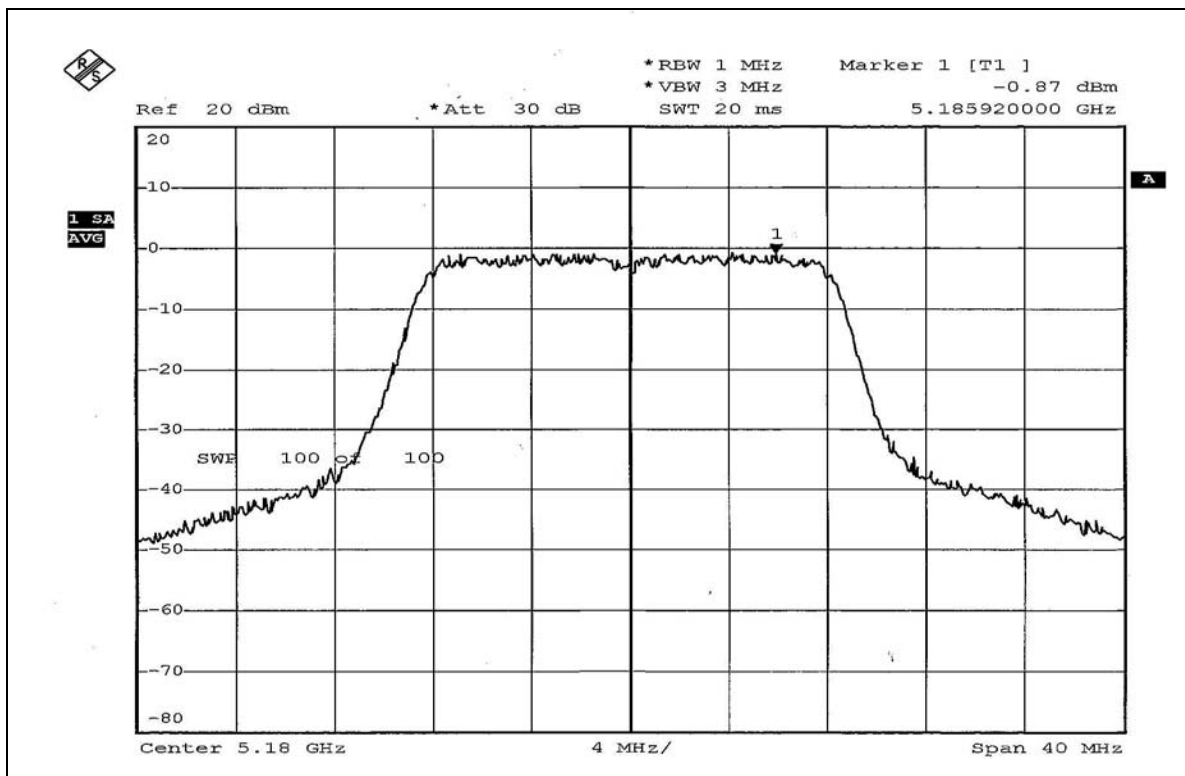
4.5.7 TEST RESULTS

802.11a OFDM modulation

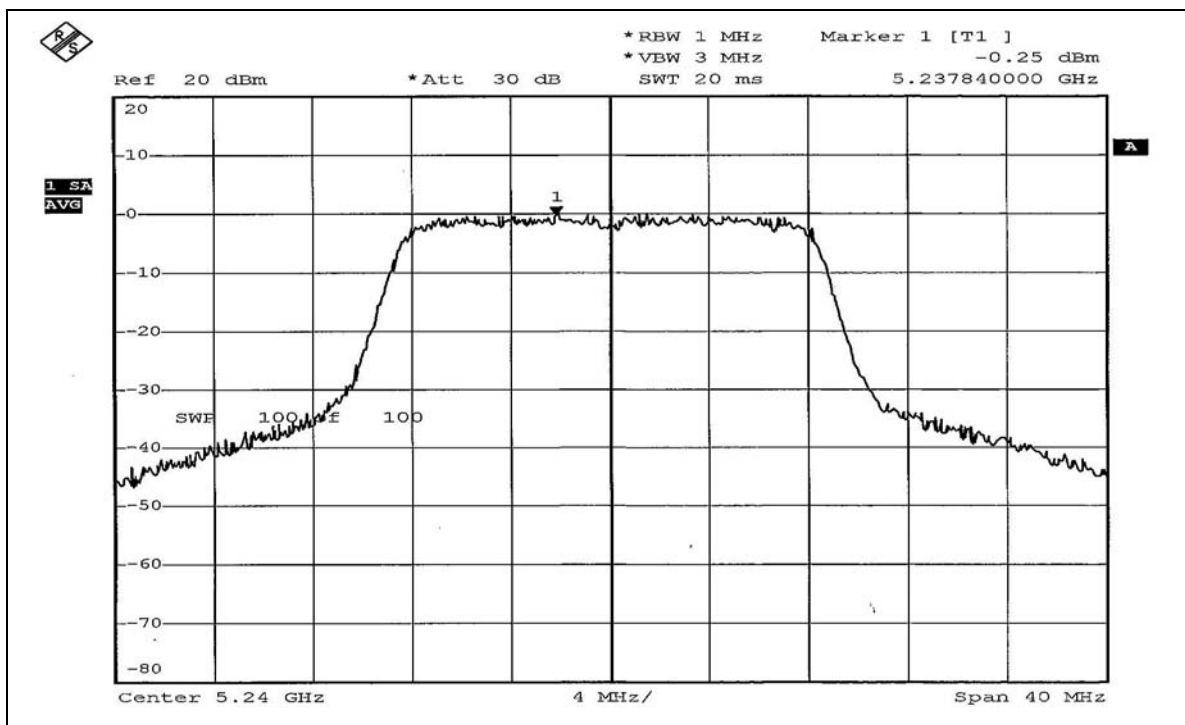
EUT	11a/b/g Wireless PCI Adapter	MODEL	SL-3055
MODULATION TYPE	BPSK	TRANSFER RATE	6Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 52%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.87	4	PASS
4	5240	-0.25	4	PASS
5	5260	2.46	11	PASS
8	5320	2.34	11	PASS

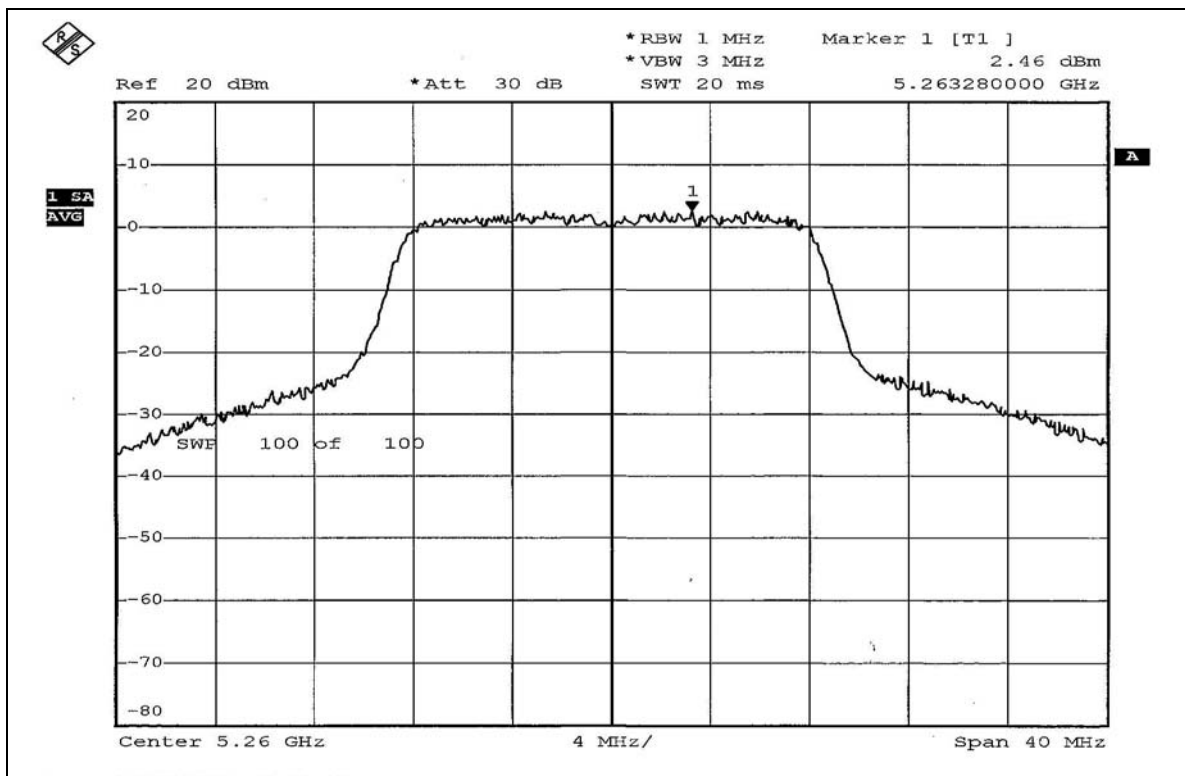
CH 1



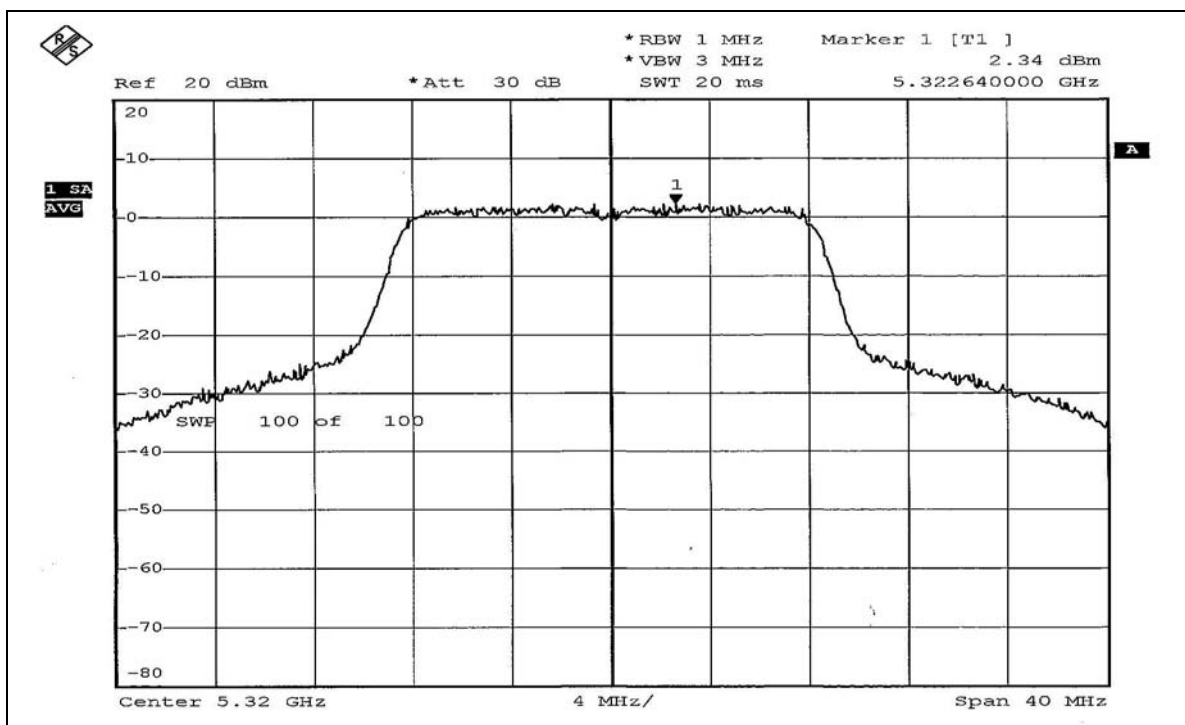
CH 4



CH 5



CH 8

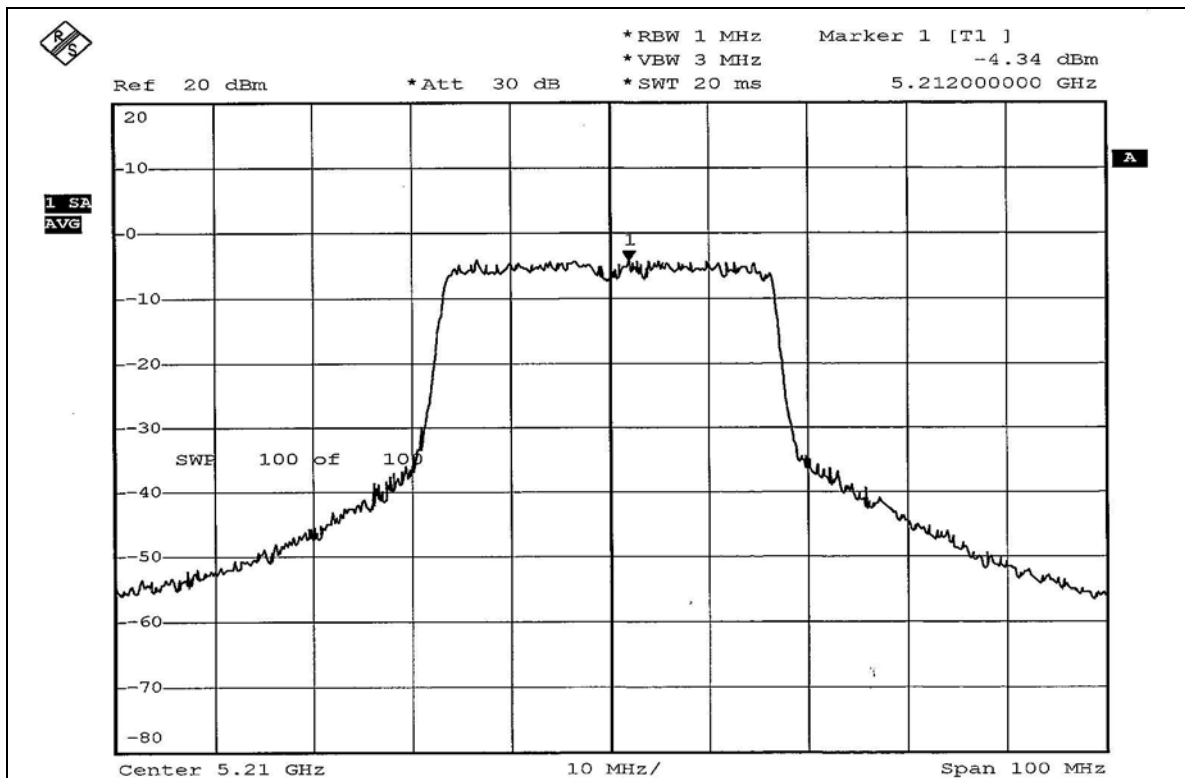


**802.11a Turbo OFDM modulation**

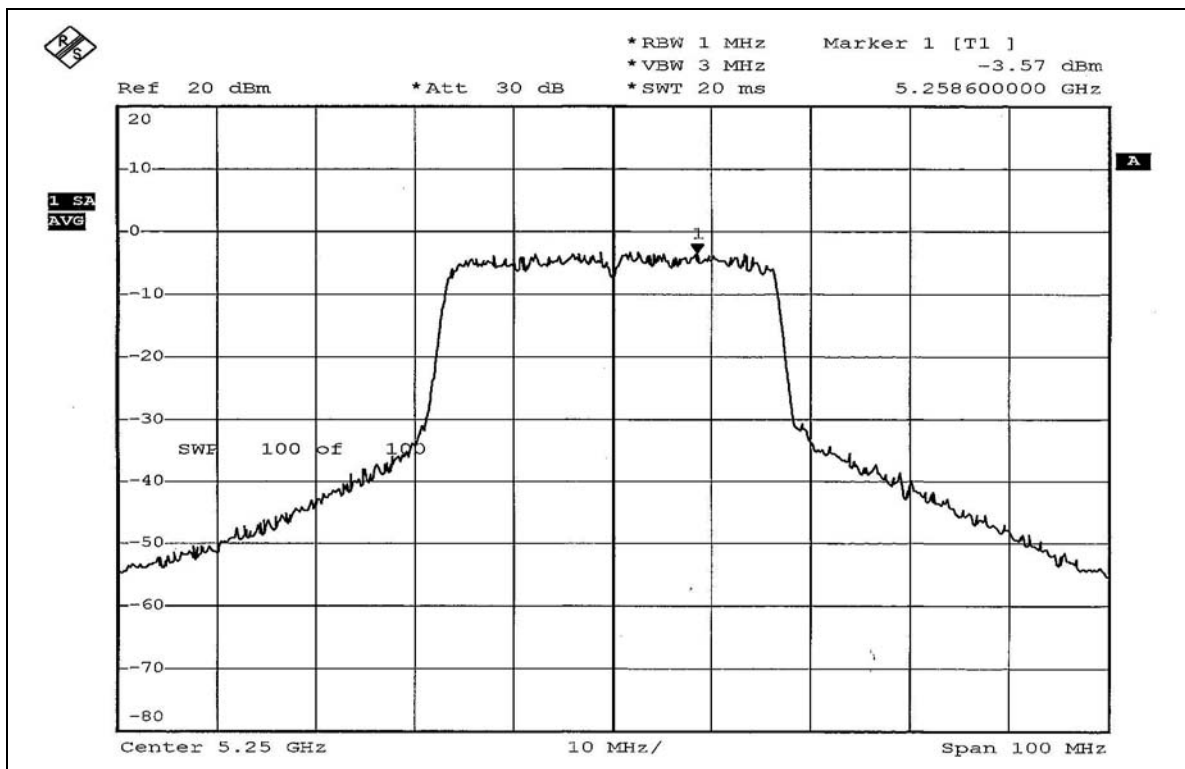
EUT	11a/b/g Wireless PCI Adapter	MODEL	SL-3055
MODULATION TYPE	BPSK	TRANSFER RATE	12Mbps
INPUT POWER (SYSTEM)	120Vac, 60 Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 52%RH, 991hPa
TESTED BY	Gary Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-4.34	4	PASS
2	5250	-3.57	11	PASS
3	5290	-0.60	11	PASS

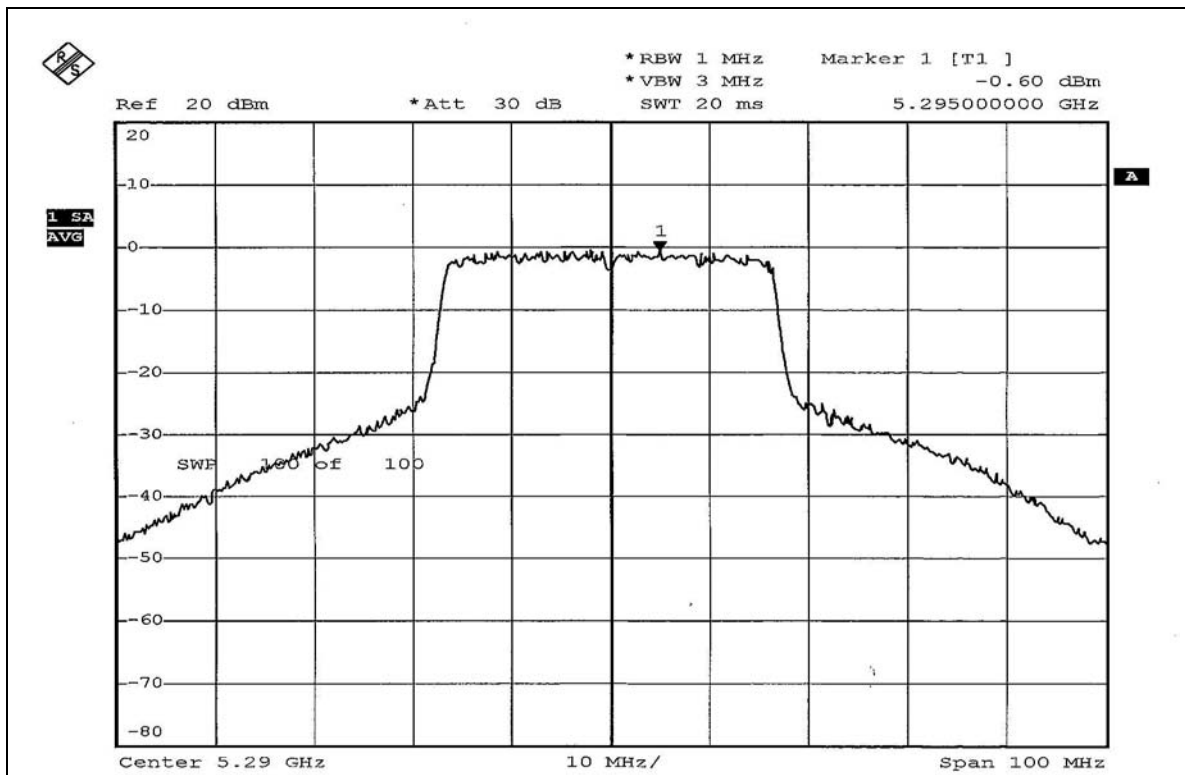
CH 1



CH 2



CH 3



4.6 FREQUENCY STABILITY

4.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Aug. 12, 2005
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Aug. 12, 2005

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

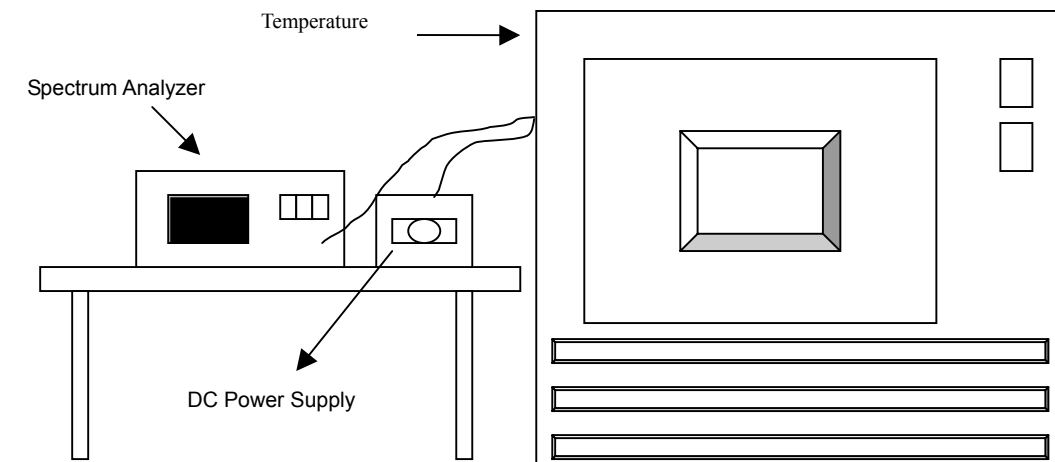
4.6.3 TEST PROCEDURE

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.7 TEST RESULTS

Operating frequency: 5320MHz						Limit : $\pm 0.015\%$			
Temp. (°C)	Power supply (Vac)	0 minute		2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	138	5320.0471	0.0008853	5320.0470	0.0008835	5320.0474	0.0008910	5320.0467	0.0008778
	120	5320.0479	0.0009004	5320.0473	0.0008891	5320.0468	0.0008797	5320.0466	0.0008759
	102	5320.0473	0.0008891	5320.0471	0.0008853	5320.0465	0.0008741	5320.0470	0.0008835
40	138	5320.0425	0.0007989	5320.0427	0.0008026	5320.0425	0.0007989	5320.0418	0.0007857
	120	5320.0423	0.0007951	5320.0426	0.0008008	5320.0420	0.0007895	5320.0421	0.0007914
	102	5320.0426	0.0008008	5320.0420	0.0007895	5320.0418	0.0007857	5320.0423	0.0007951
30	138	5320.0357	0.0006711	5320.0348	0.0006541	5320.0354	0.0006654	5320.0351	0.0006598
	120	5320.0361	0.0006786	5320.0350	0.0006579	5320.0357	0.0006711	5320.0350	0.0006579
	102	5320.0360	0.0006767	5320.0357	0.0006711	5320.3580	0.0067293	5320.0348	0.0006541
20	138	5320.0201	0.0003778	5320.0208	0.0003910	5320.0213	0.0004004	5320.0217	0.0004079
	120	5320.0218	0.0004098	5320.0210	0.0003947	5320.0215	0.0004041	5320.0225	0.0004229
	102	5320.0217	0.0004079	5320.0215	0.0004041	5320.0216	0.0004060	5320.0224	0.0004211
10	138	5320.0185	0.0003477	5320.0185	0.0003477	5320.0188	0.0003534	5320.0176	0.0003308
	120	5320.0187	0.0003515	5320.0182	0.0003421	5320.0186	0.0003496	5320.0177	0.0003327
	102	5320.0183	0.0003440	5320.0184	0.0003459	5320.0184	0.0003459	5320.0174	0.0003271
0	138	5320.0164	0.0003083	5320.0158	0.0002970	5320.0156	0.0002932	5320.0151	0.0002838
	120	5320.0160	0.0003008	5320.0157	0.0002951	5320.0154	0.0002895	5320.0148	0.0002782
	102	5320.0163	0.0003064	5320.0154	0.0002895	5320.0149	0.0002801	5320.0147	0.0002763
-10	138	5320.0085	0.0001598	5320.0080	0.0001504	5320.0075	0.0001410	5320.0074	0.0001391
	120	5320.0084	0.0001579	5320.0081	0.0001523	5320.0073	0.0001372	5320.0072	0.0001353
	102	5320.0084	0.0001579	5320.0078	0.0001466	5320.0071	0.0001335	5320.0076	0.0001429
-20	138	5319.9840	-0.0003008	5319.9845	-0.0002914	5319.9842	-0.0002970	5319.9847	-0.0002876
	120	5319.9851	-0.0002801	5319.9844	-0.0002932	5319.9840	-0.0003008	5319.9850	-0.0002820
	102	5319.9848	-0.0002857	5319.9843	-0.0002951	5319.9847	-0.0002876	5319.9852	-0.0002782
-30	138	5319.9735	-0.0004981	5319.9739	-0.0004906	5319.9743	-0.0004831	5319.9742	-0.0004850
	120	5319.9734	-0.0005000	5319.9742	-0.0004850	5319.9740	-0.0004887	5319.9745	-0.0004793
	102	5319.9738	-0.0004925	5319.9745	-0.0004793	5319.9741	-0.0004868	5319.9746	-0.0004774

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

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

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

4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low 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 were 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=VBW=1MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following pages.

**802.11a OFDM modulation****Antenna 1:**

Channel 1 (5180MHz)

The band edge emission plot on page 78 shows 47.89dBc 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 111.71dBuV/m (Peak), so the maximum field strength in restrict band is $111.71 - 47.89 = 63.82$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 78 shows 52.60dBc 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 102.39dBuV/m (Average), so the maximum field strength in restrict band is $102.39 - 52.60 = 49.79$ dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320MHz)

The band edge emission plot on page 79 shows 44.24dBc 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 114.57dBuV/m (Peak), so the maximum field strength in restrict band is $114.57 - 44.24 = 70.33$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 80 shows 51.54dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 104.41dBuV/m (Average), so the maximum field strength in restrict band is $104.41 - 51.54 = 52.87$ dBuV/m which is under 54dBuV/m limit.

**Antenna 2:****Channel 1 (5180MHz)**

The band edge emission plot on page 78 shows 47.89dBc 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 111.52dBuV/m (Peak), so the maximum field strength in restrict band is $111.52 - 47.89 = 63.63$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 78 shows 52.60dBc 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 102.58dBuV/m (Average), so the maximum field strength in restrict band is $102.58 - 52.60 = 49.98$ dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320MHz)

The band edge emission plot on page 79 shows 44.24dBc 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 112.61dBuV/m (Peak), so the maximum field strength in restrict band is $112.61 - 44.24 = 68.37$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 80 shows 51.54dBc 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 102.89dBuV/m (Average), so the maximum field strength in restrict band is $102.89 - 51.54 = 51.35$ dBuV/m which is under 54dBuV/m limit.

802.11a Turbo OFDM modulation**Antenna 1:****Channel 1 (5210MHz)**

The band edge emission plot on page 81 shows 48.50dBc 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 110.65dBuV/m (Peak), so the maximum field strength in restrict band is $110.65 - 48.50 = 62.15$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on page 81 shows 53.08dBc 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 100.65dBuV/m (Average), so the maximum field strength in restrict band is $100.65 - 53.08 = 47.57$ dBuV/m which is under 54dBuV/m limit.

Channel 3 (5290MHz)

The band edge emission plot on the pages 82 shows 43.06dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 112.61dBuV/m (Peak), so the maximum field strength in restrict band is $112.61 - 43.06 = 69.55$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot on the pages 83 shows 49.84dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 102.89dBuV/m (Average), so the maximum field strength in restrict band is $102.89 - 49.84 = 53.05$ dBuV/m which is under 54dBuV/m limit.

**Antenna 2:****Channel 1 (5210MHz)**

The band edge emission plot on page 81 shows 48.50dBc 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 107.48dBuV/m (Peak), so the maximum field strength in restrict band is $107.48 - 48.50 = 58.98$ dBuV/m which is under 74dBuV/m limit.

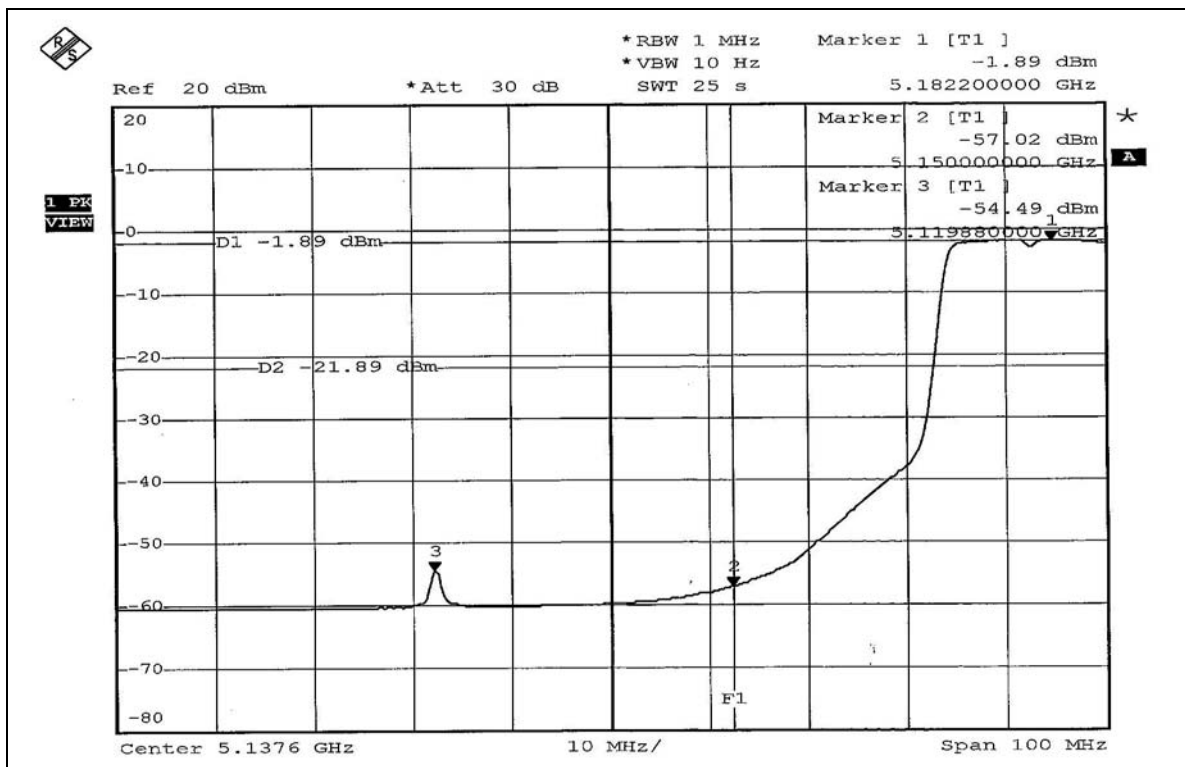
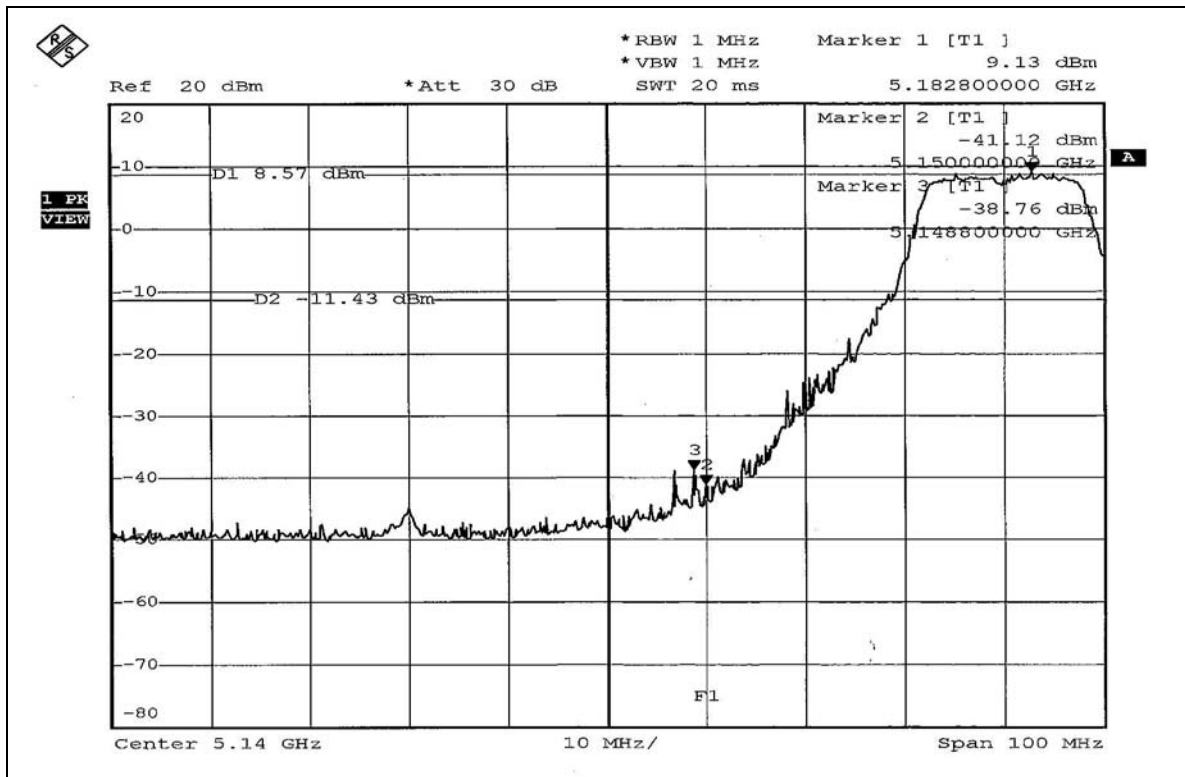
The band edge emission plot on page 81 shows 53.08dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 96.98dBuV/m (Average), so the maximum field strength in restrict band is $96.98 - 53.08 = 43.90$ dBuV/m which is under 54dBuV/m limit.

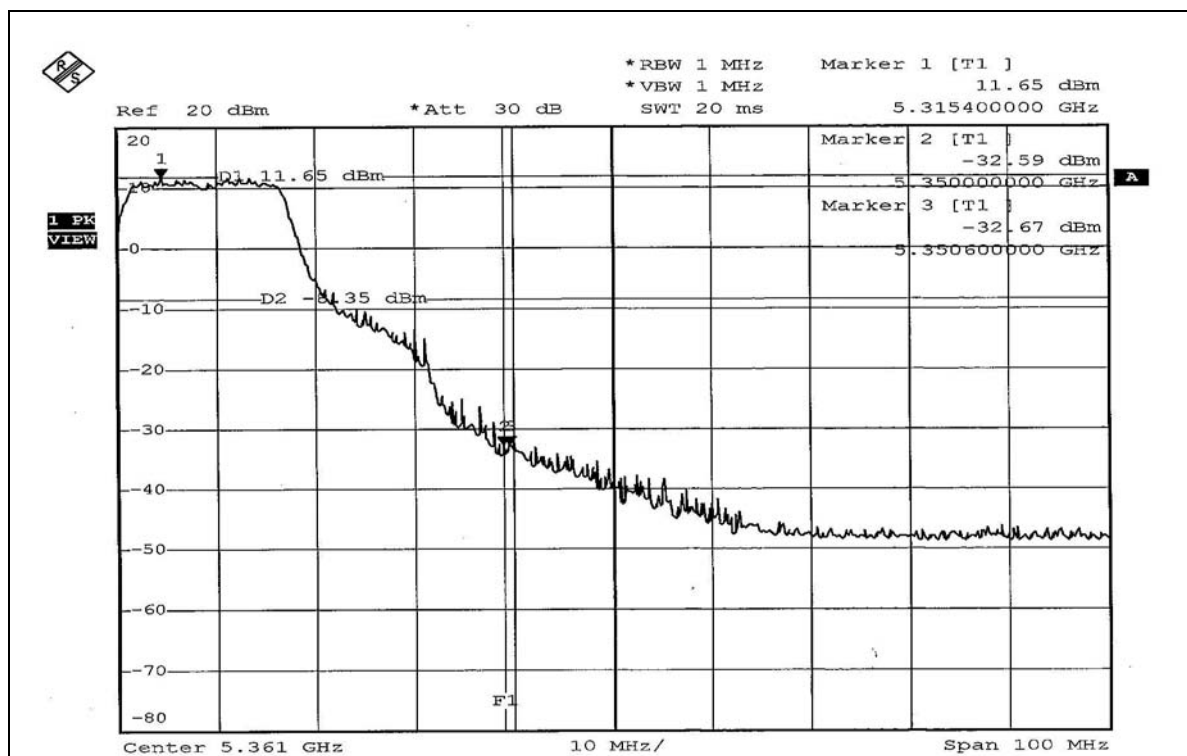
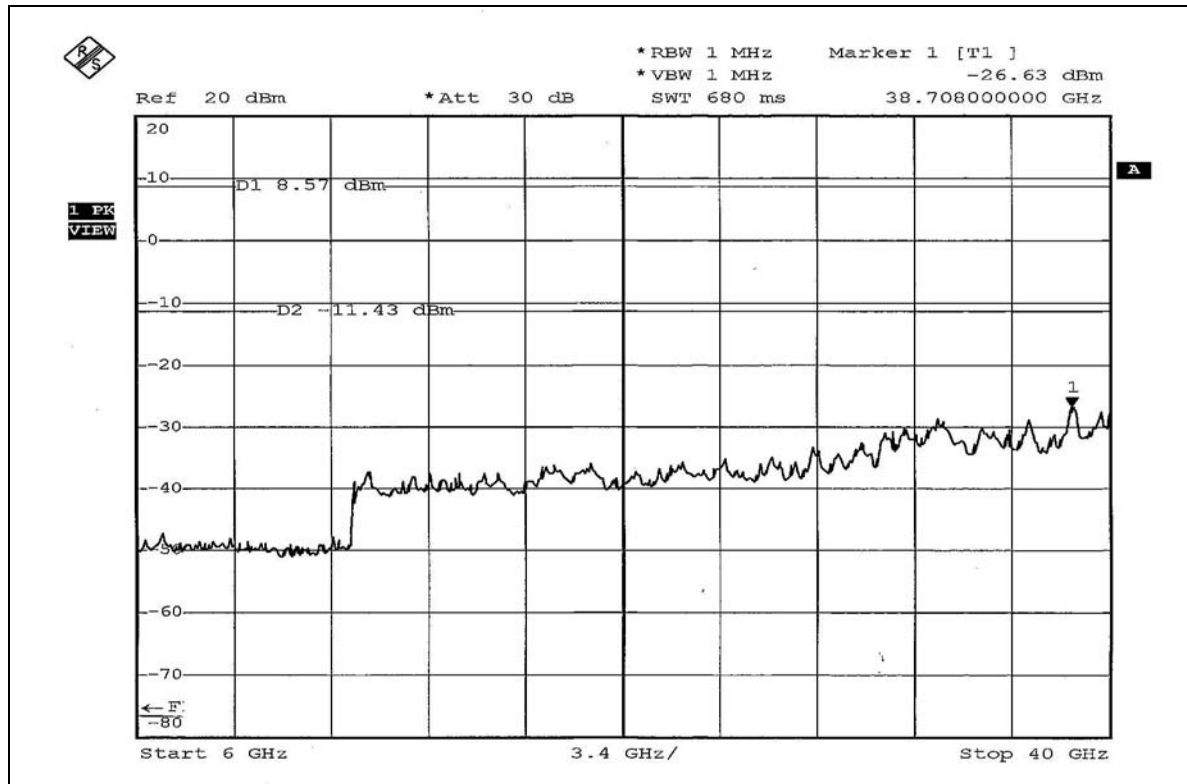
Channel 3 (5290MHz)

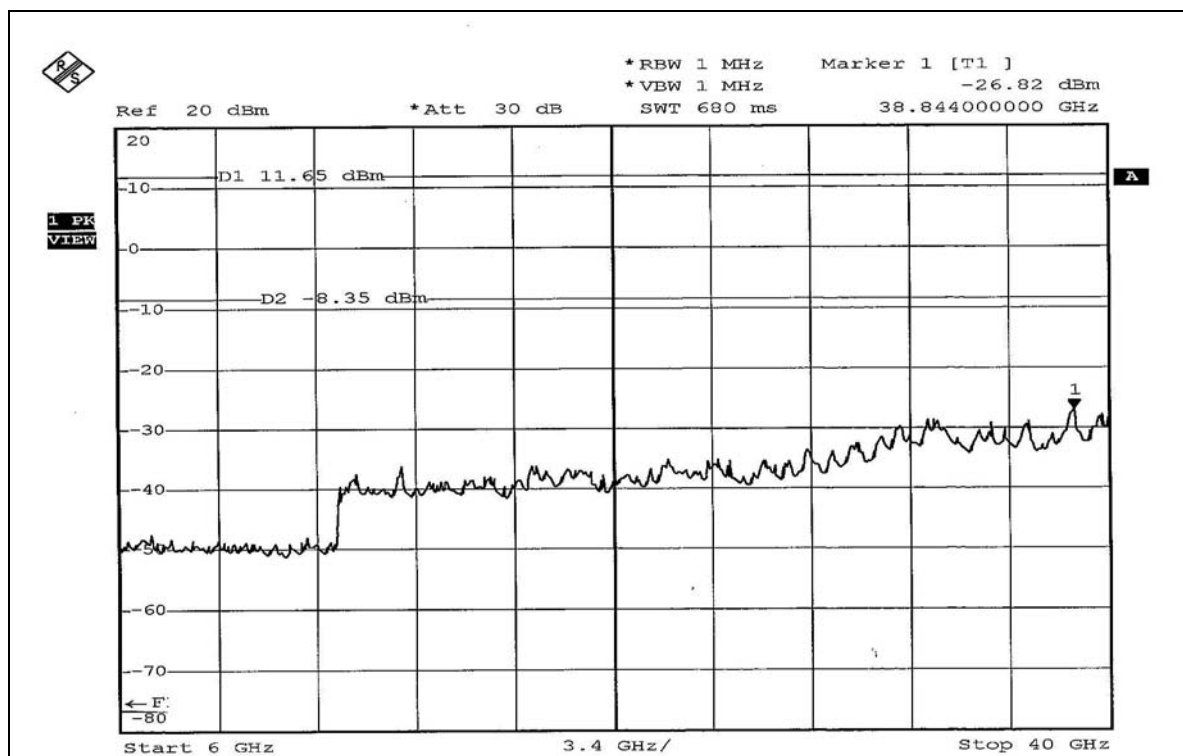
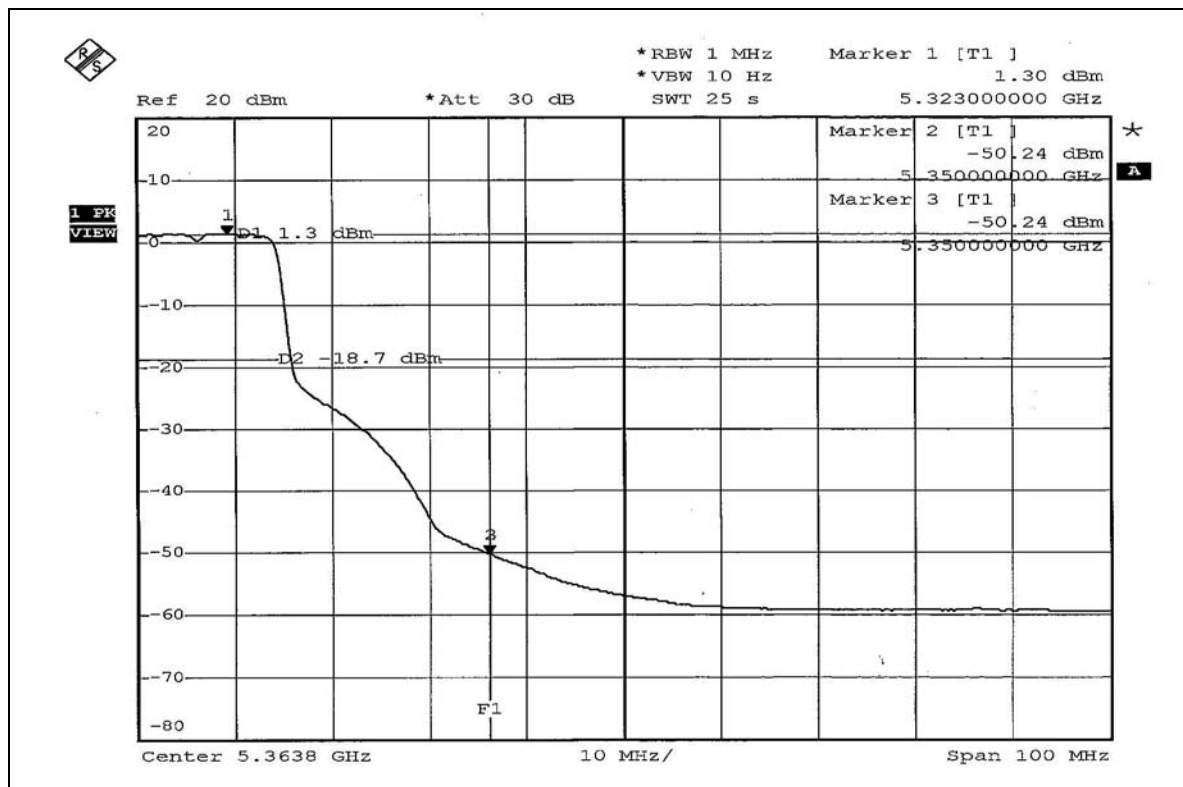
The band edge emission plot on the pages 82 shows 43.06dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 109.60dBuV/m (Peak), so the maximum field strength in restrict band is $109.60 - 43.06 = 66.54$ dBuV/m which is under 74dBuV/m limit.

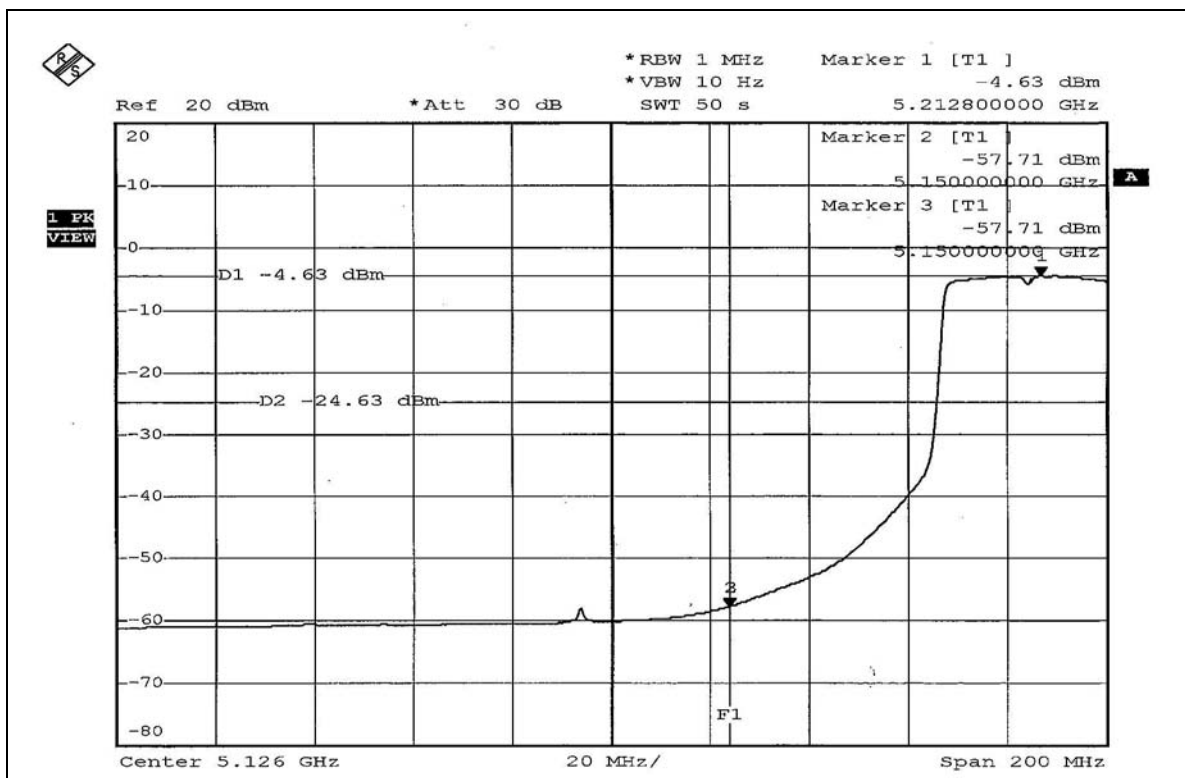
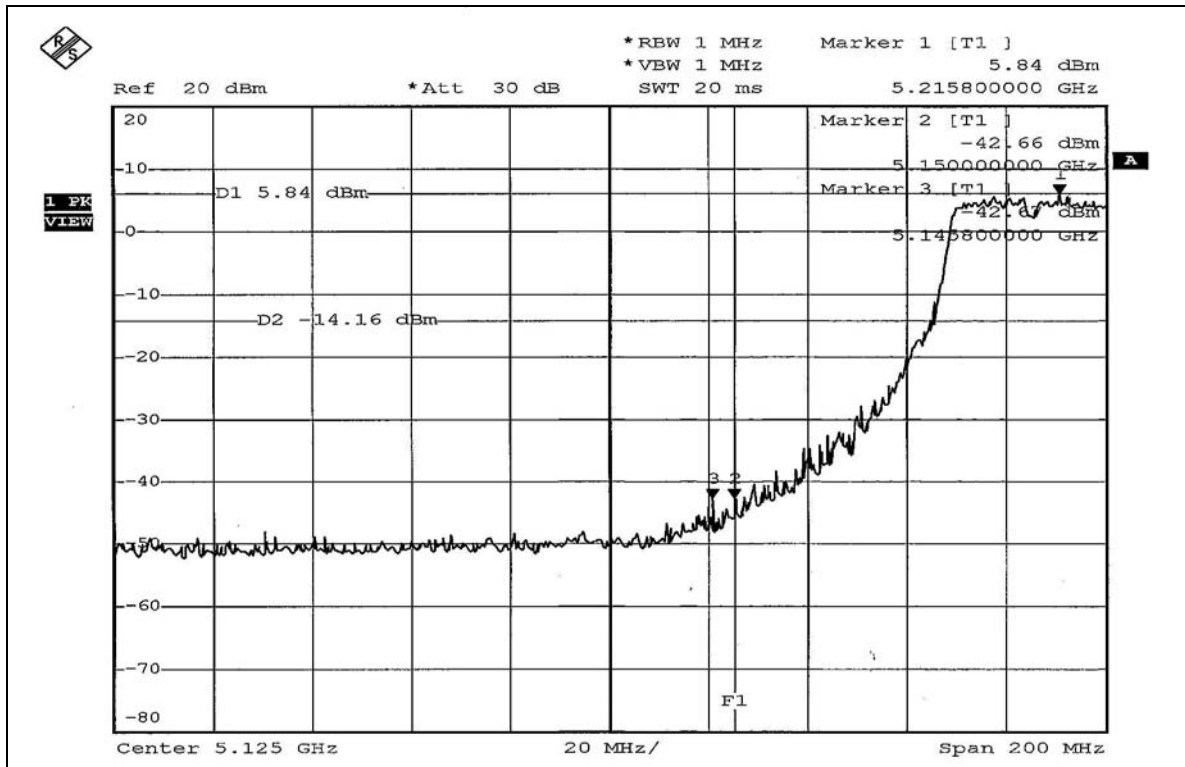
The band edge emission plot on the pages 83 shows 49.84dBc between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 99.91dBuV/m (Average), so the maximum field strength in restrict band is $99.91 - 49.84 = 50.07$ dBuV/m which is under 54dBuV/m limit.

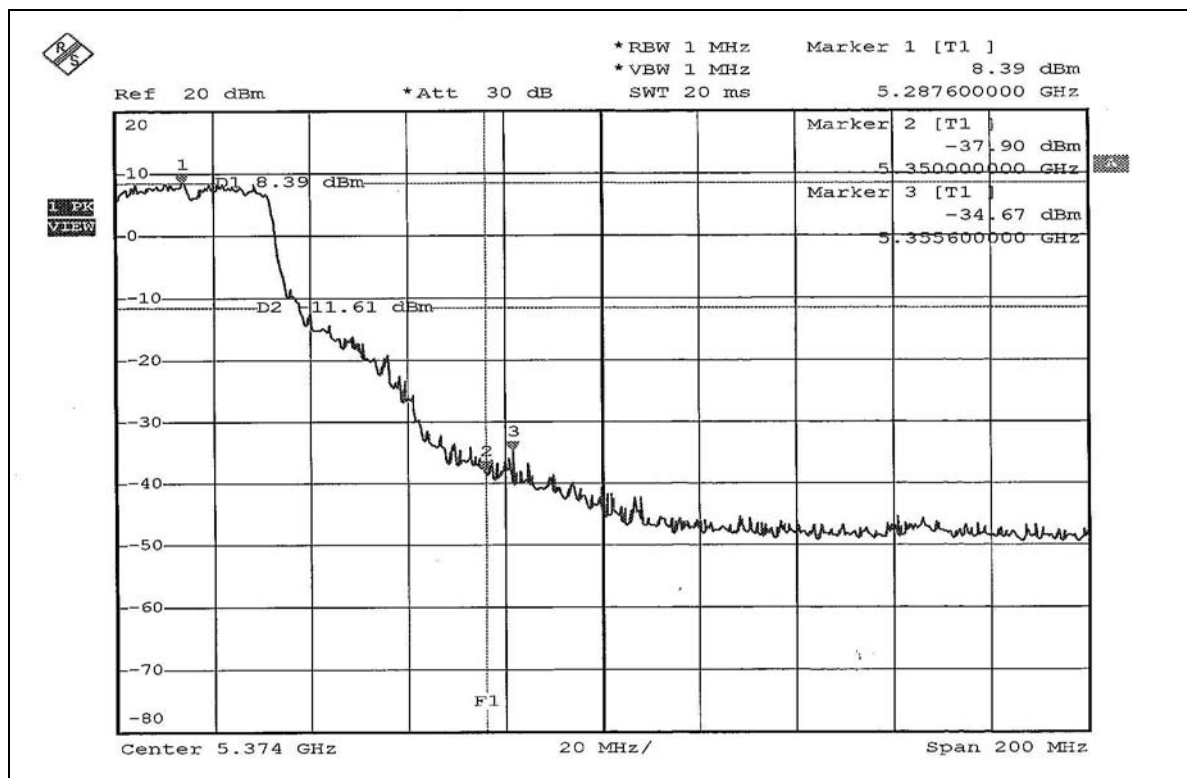
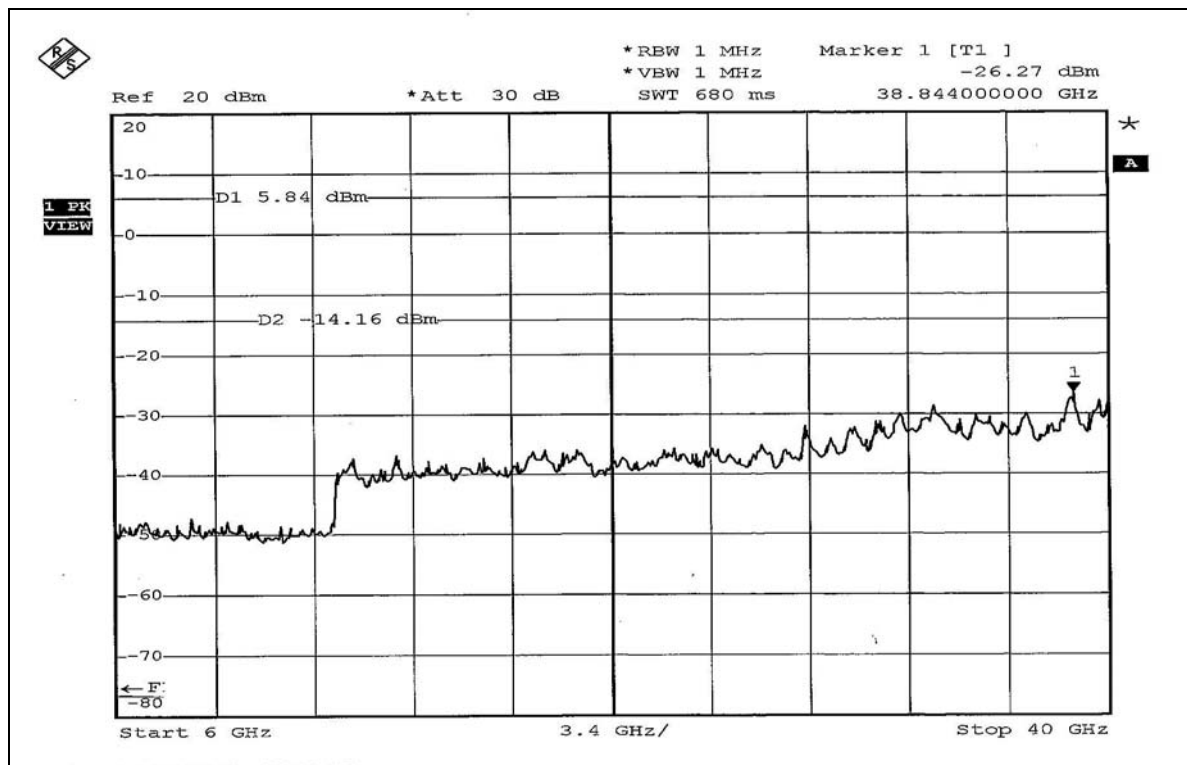
802.11a OFDM modulation

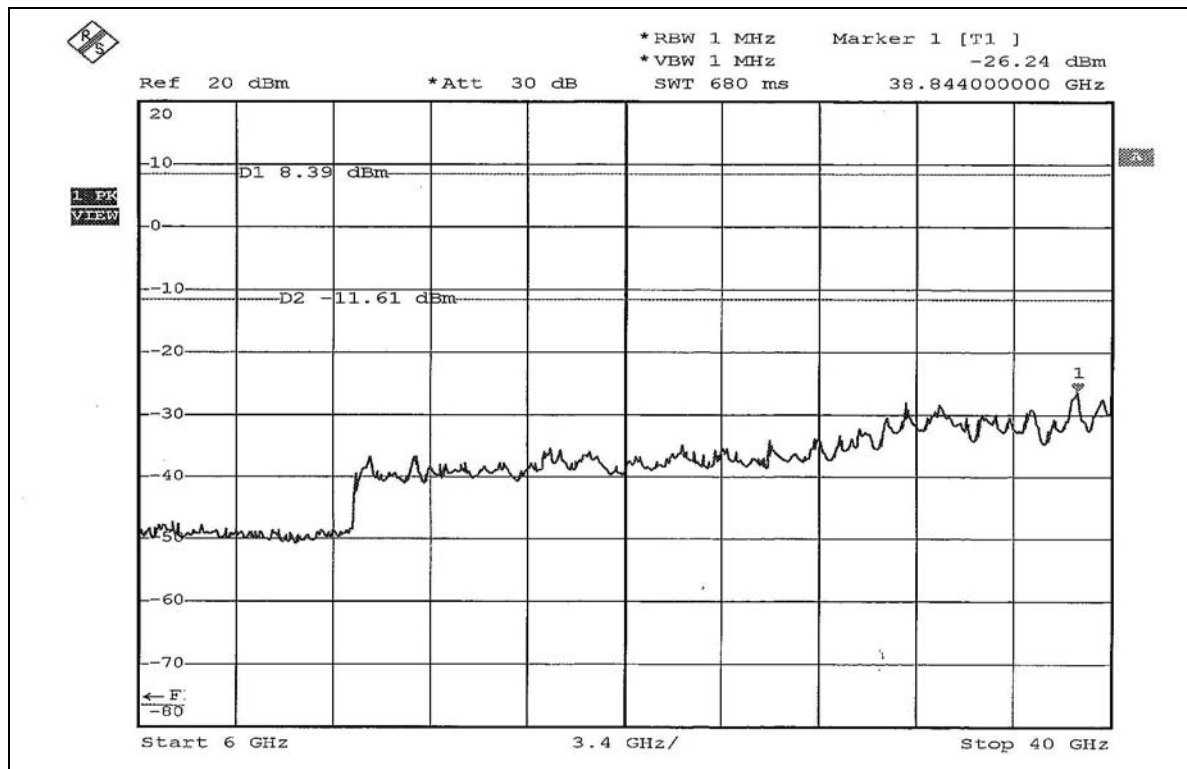
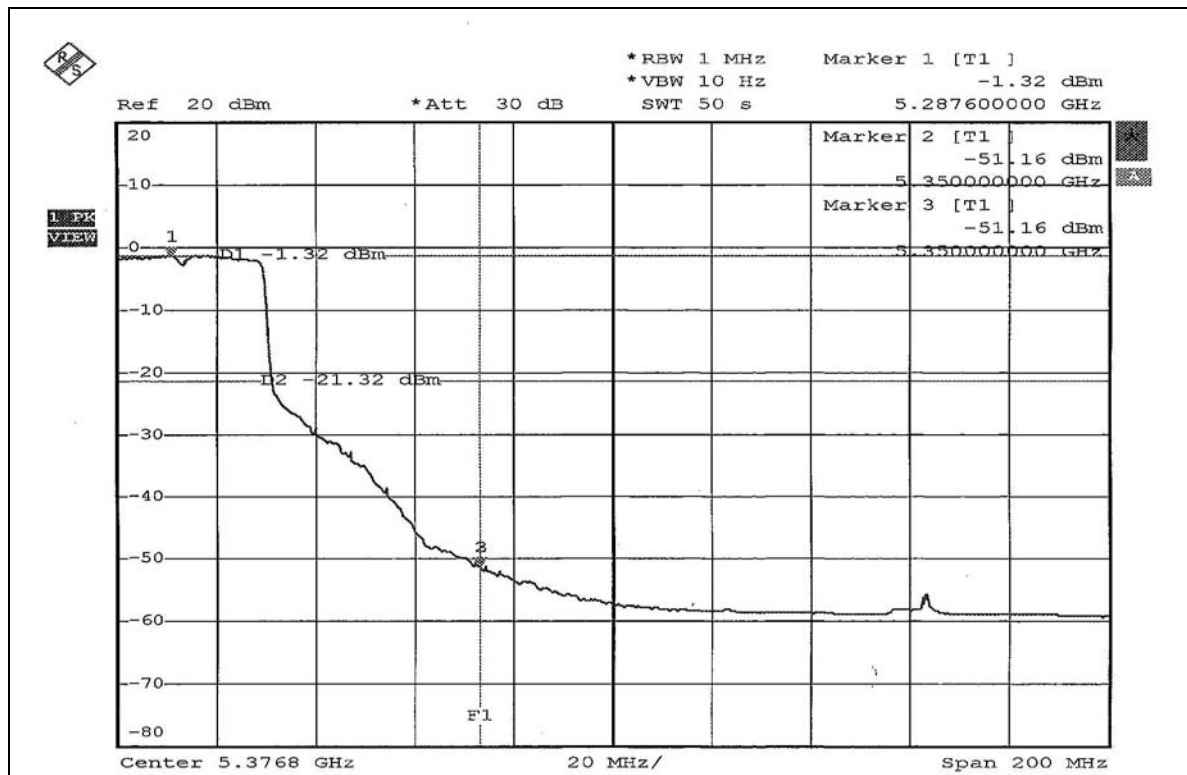






802.11a Turbo OFDM modulation







4.8 ANTENNA REQUIREMENT

4.8.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

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

4.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna with Reverse SMA connector. The maximum Gain of the antenna is 2.5dBi.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

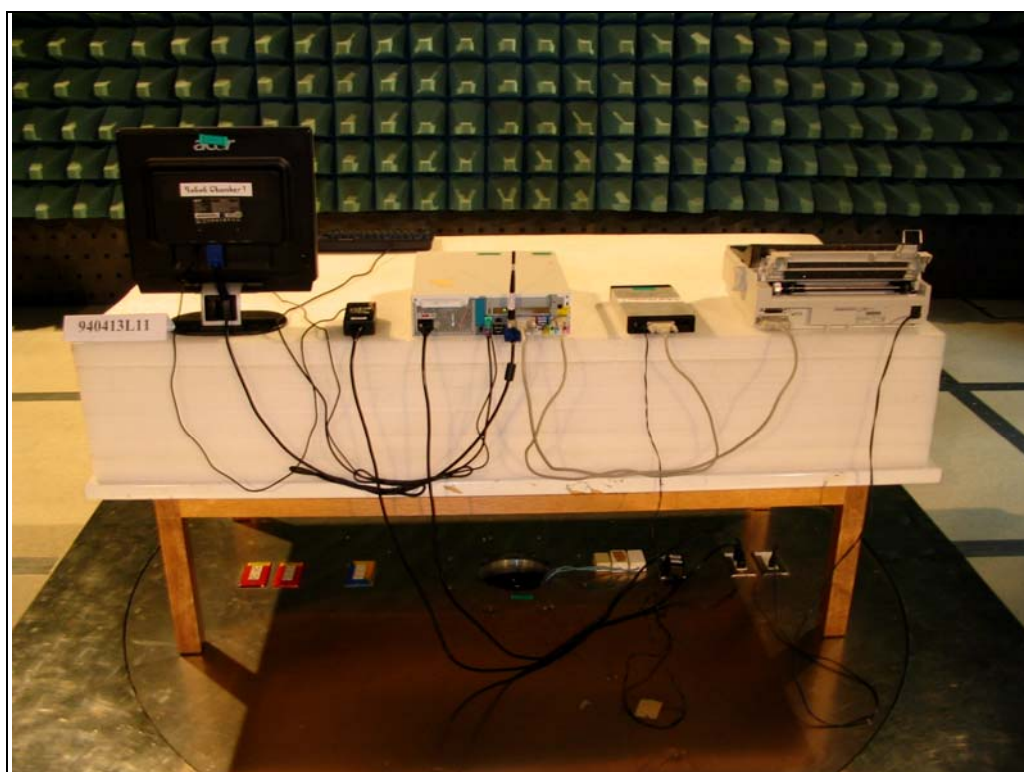
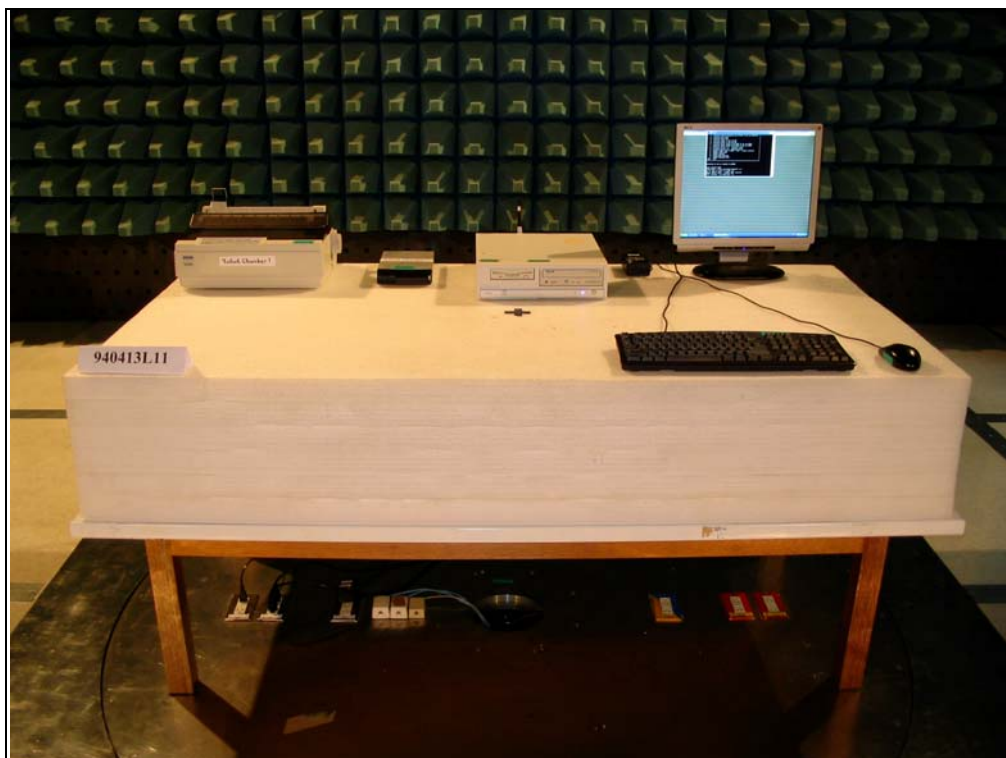
Test Mode A



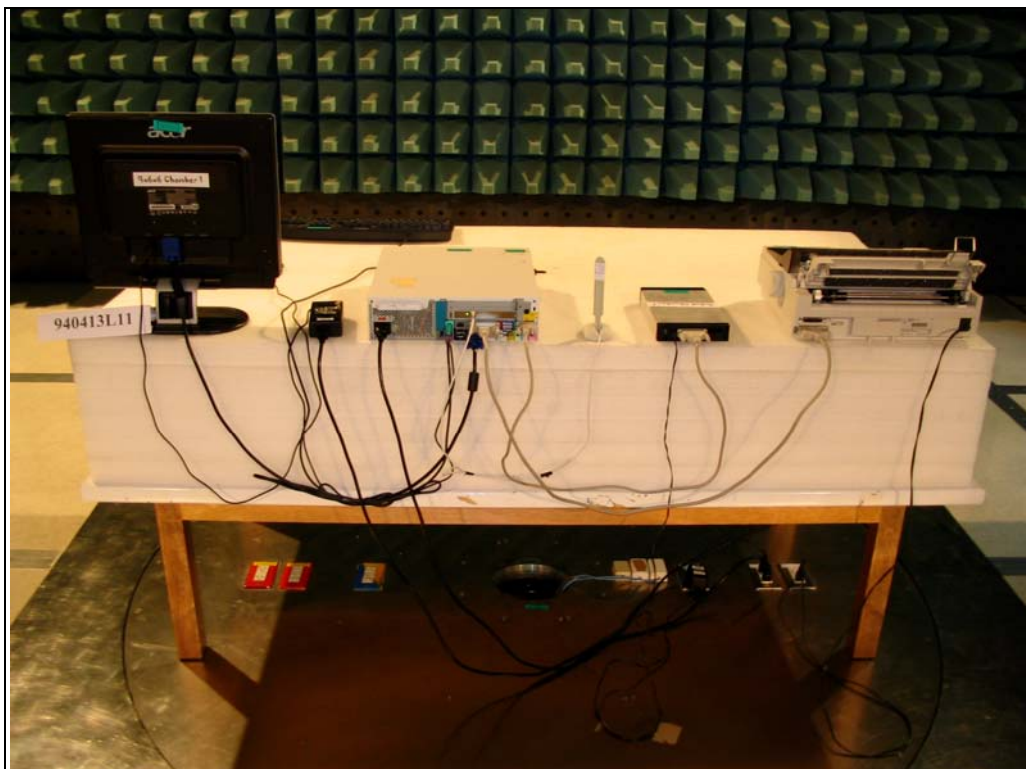
Test Mode B



RADIATED EMISSION TEST Test Mode A



Test Mode B





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:

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	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. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:

Tel: 886-3-5935343

Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Telecom Lab:

Tel: 886-3-3183232

Fax: 886-3-3185050

Linko RF Lab.

Tel: 886-3-3270910

Fax: 886-3-3270892

Web Site: www.adt.com.tw

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