

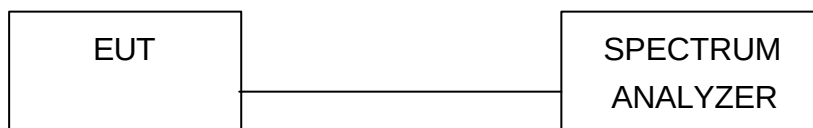
5.5.3 TEST PROCEDURES

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

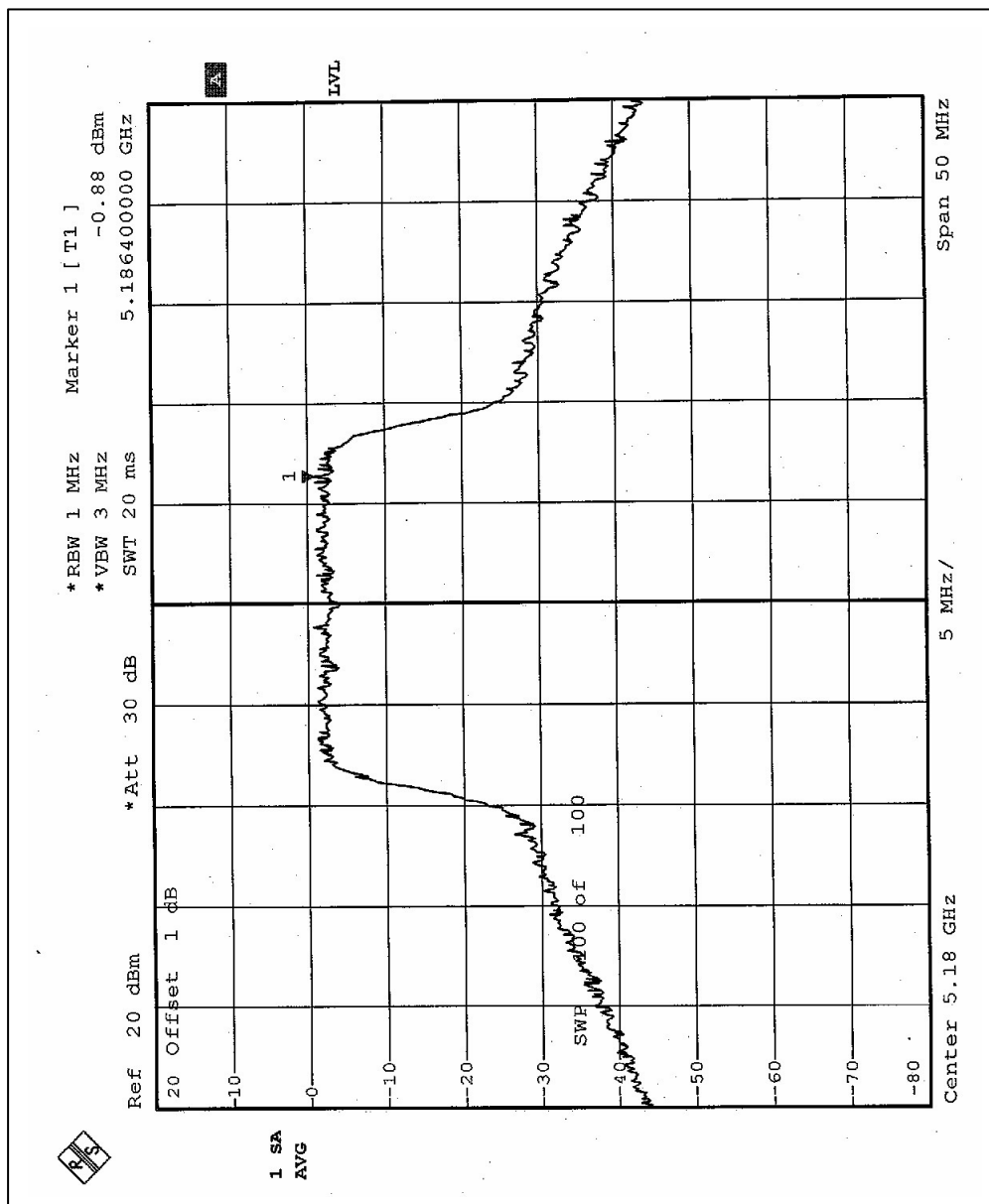


5.5.7 TEST RESULTS

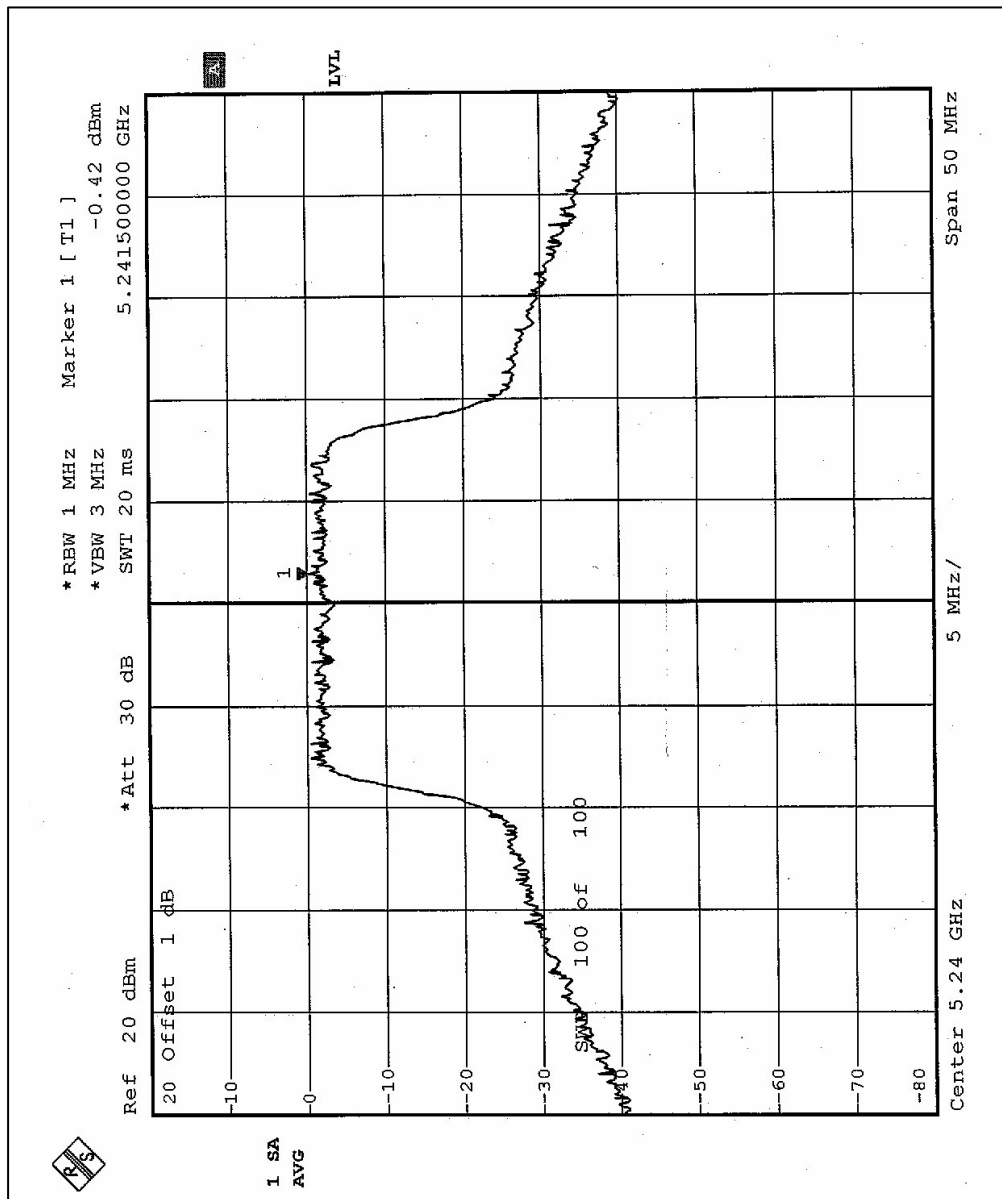
EUT	Broadband ProSafe Dual-Band Wireless VPN Firewall	MODEL	FWAG114
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25eg. C, 66RH, 976 hPa	TESTED BY	Hank Chung

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.88	4	PASS
4	5240	-0.42	4	PASS
5	5260	0.37	11	PASS
8	5320	1.57	11	PASS
9	5745	2.03	17	PASS
12	5805	1.81	17	PASS

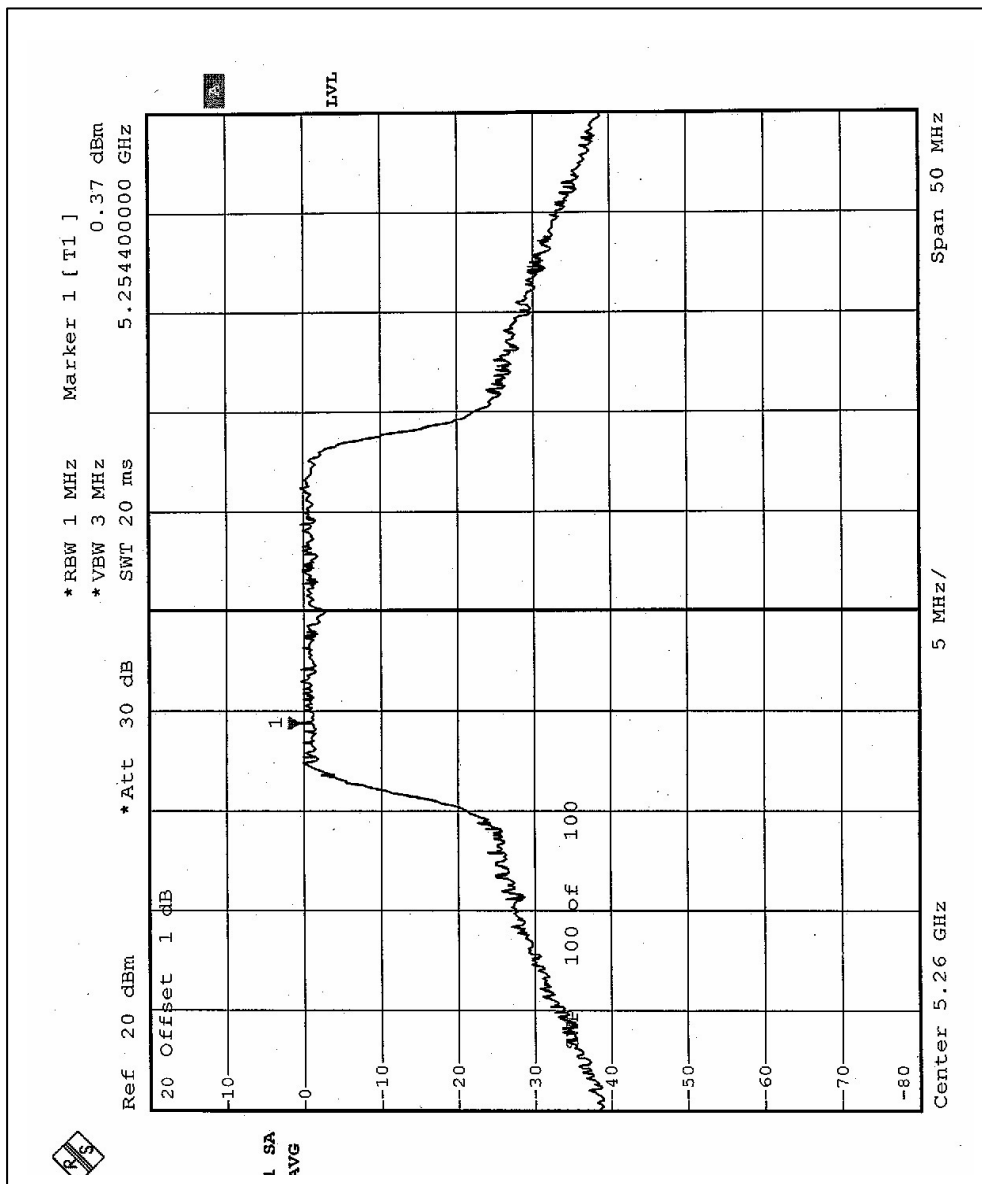
CHANNEL 1



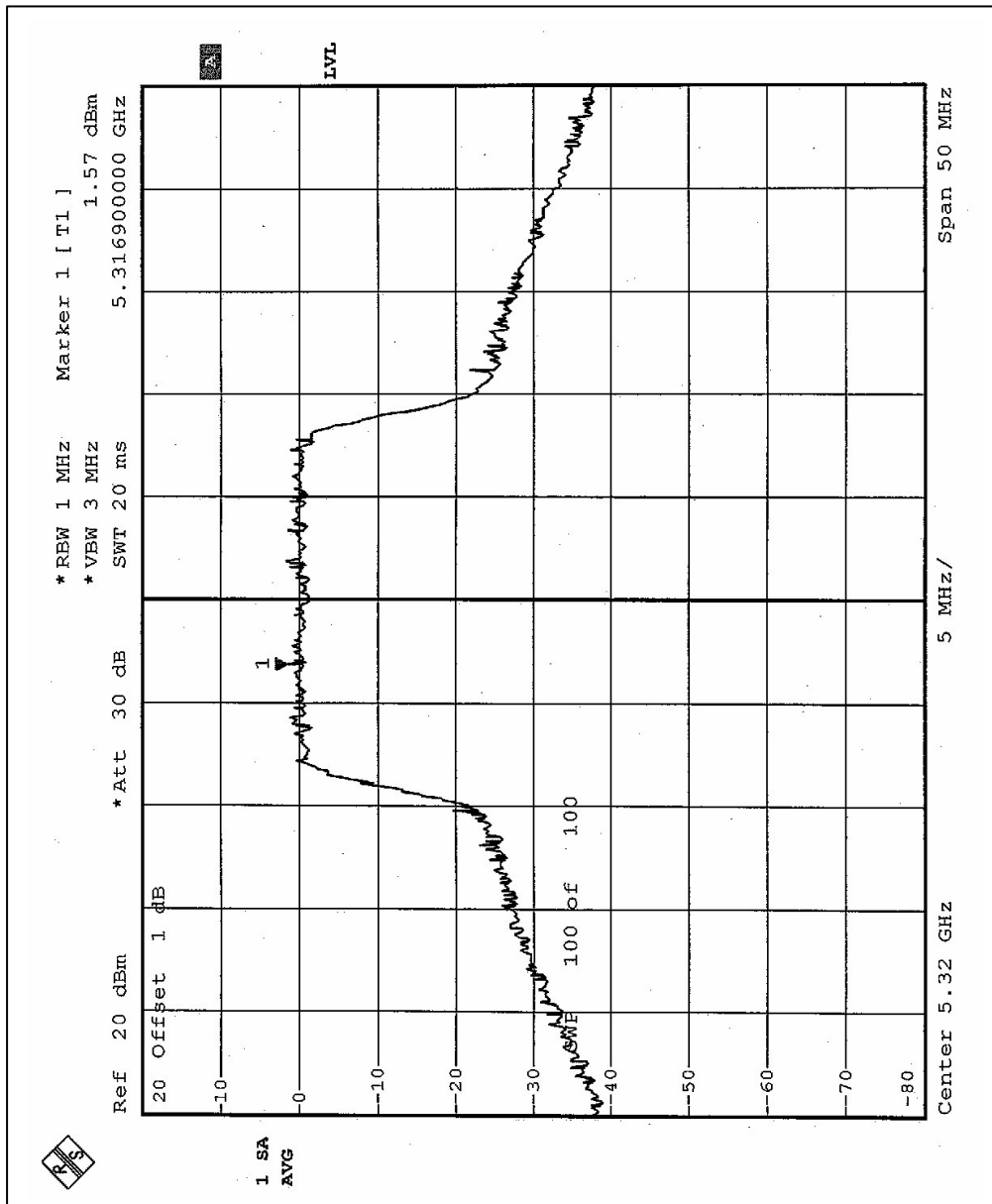
CHANNEL 4



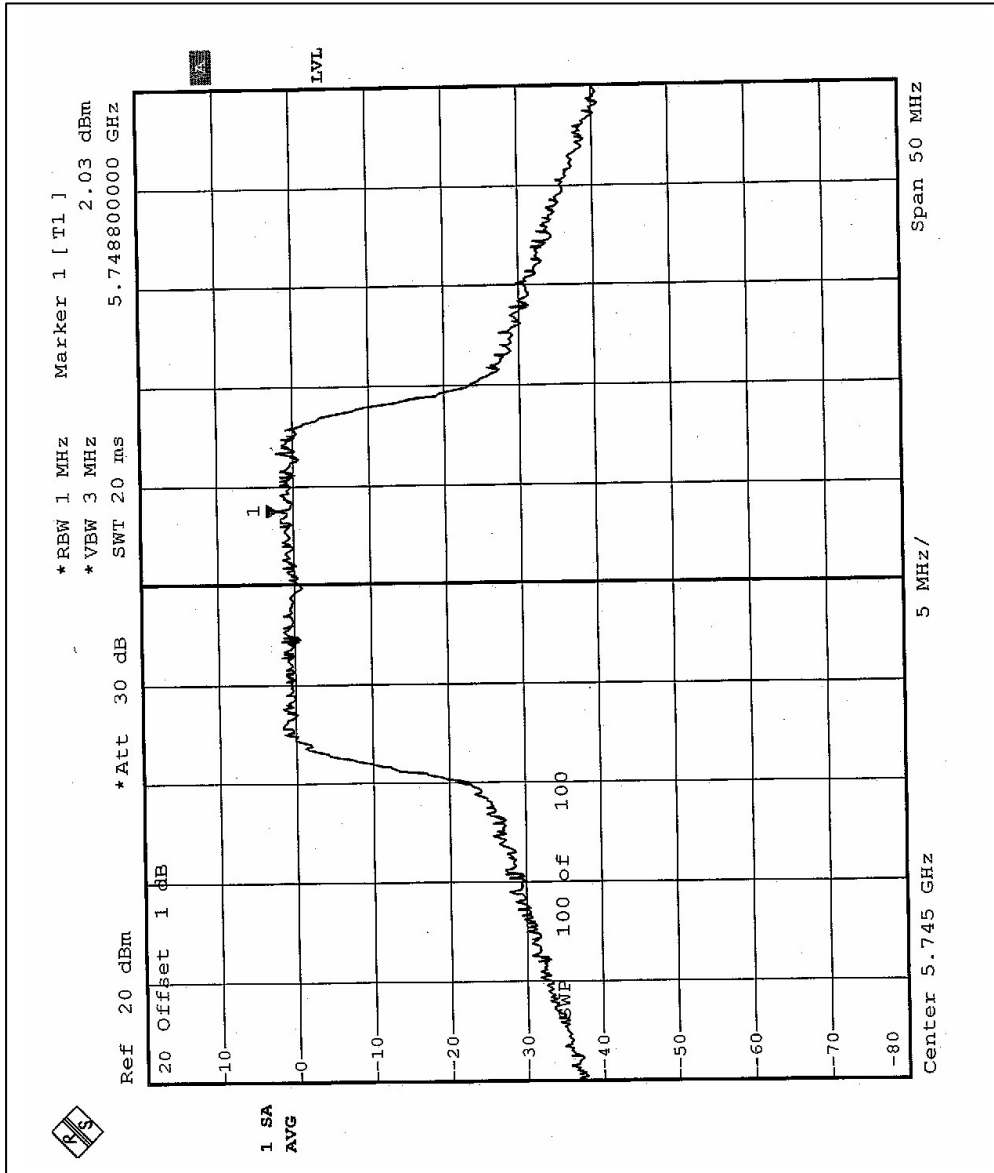
CHANNEL 5



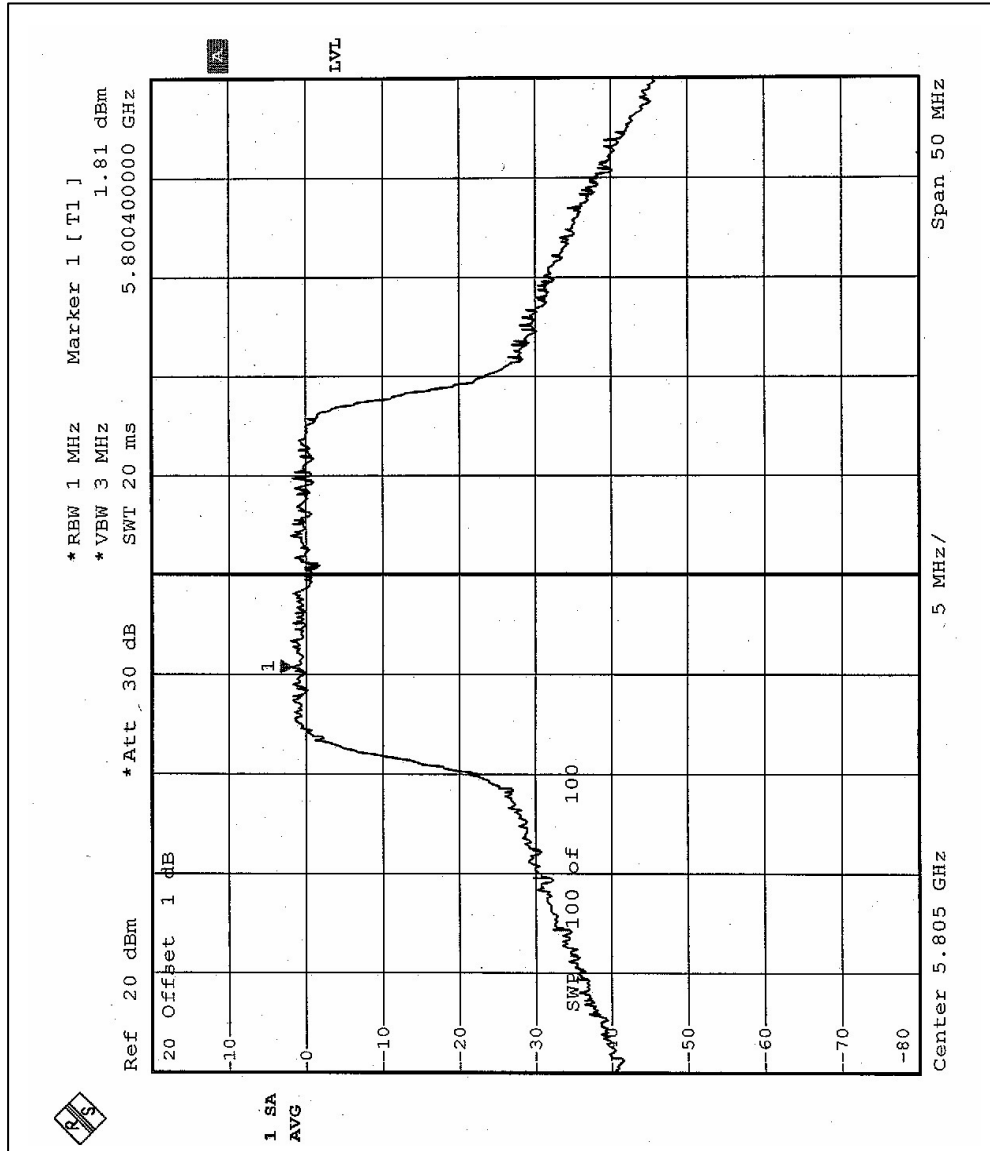
CHANNEL 8



CHANNEL 9



CHANNEL 12

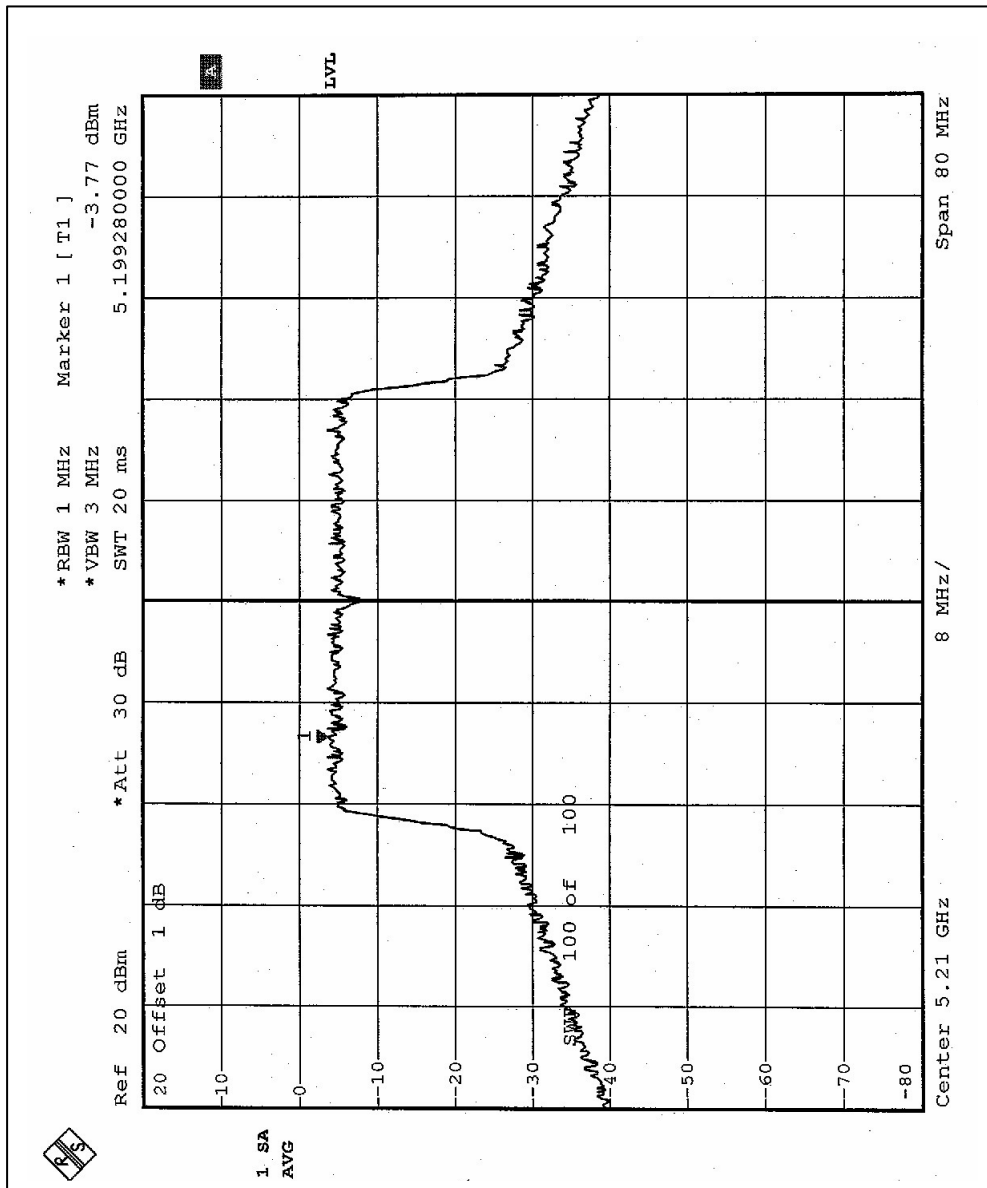




EUT	Broadband ProSafe Dual-Band Wireless VPN Firewall	MODEL	FWAG114
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25eg. C, 66RH, 976 hPa	TESTED BY	Hank Chung

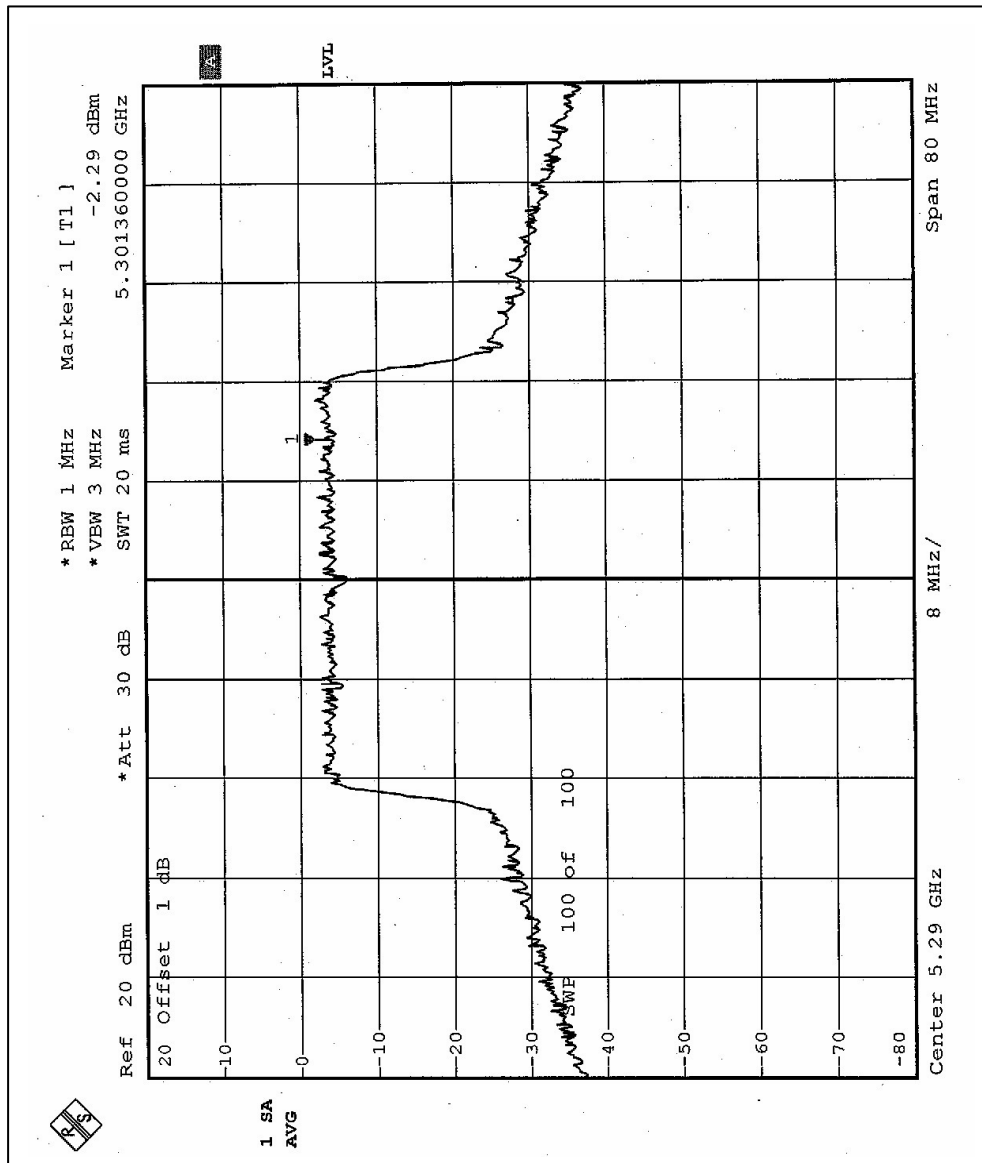
CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-3.77	4	PASS
2	5250	-3.37	4	PASS
3	5290	-2.29	11	PASS
4	5760	-8.02	17	PASS
5	5800	-7.27	17	PASS

CHANNEL 1



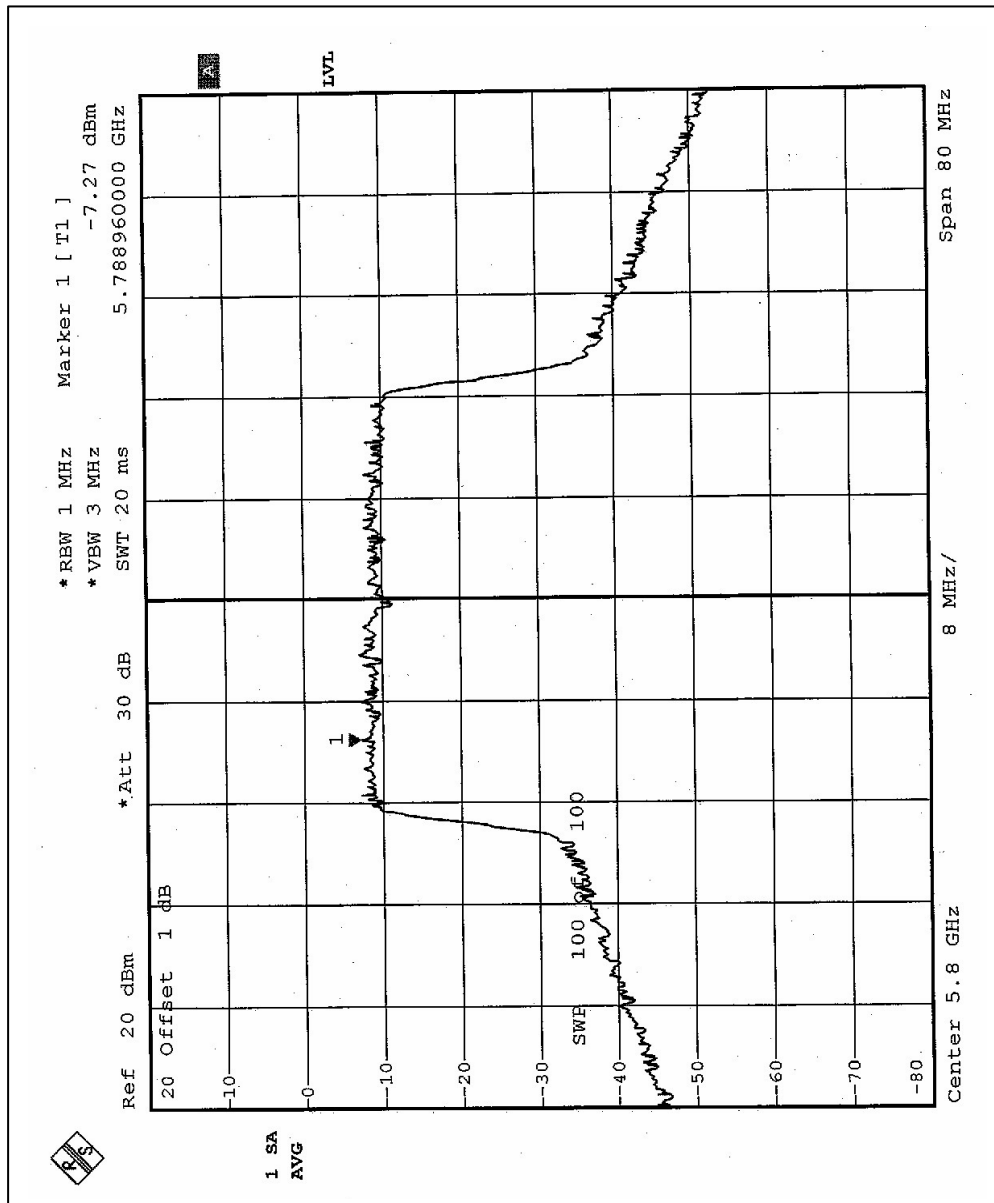
*RBW 1 MHz
 *VBW 3 MHz
 *Att 30 dB
 Ref 20 dBm
 20 Offset 1 dB
 1 SA
 AVG
 Marker 1 [T1]
 -3.37 dBm
 5.24520000 GHz
 LVL
 Center 5.25 GHz
 Span 8 MHz

CHANNEL 3



*RBW 1 MHz
 *VBW 3 MHz
 *Att 30 dB
 Ref 20 dBm
 20 Offset 1 dB
 1 SA
 AVG
 Marker 1 [T1]
 -8.02 dBm
 5.75152000 GHz
 Span 80 MHz
 Center 5.76 GHz
 8 MHz/

CHANNEL 5





5.6 FREQUENCY STABILITY

5.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.02\%$ 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
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.

5.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal AC 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

[illegible]

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : $\pm 0.02\%$			
Temp. (°C)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5319.9993	-0.000013%	5319.9995	-0.000009%	5319.9997	-0.000006%
	110.0	5319.9992	-0.000015%	5319.9994	-0.000011%	5319.9996	-0.000008%
	93.5	5319.9992	-0.000015%	5319.9995	-0.000009%	5319.9996	-0.000008%
40	126.5	5319.9949	-0.000096%	5319.995	-0.000094%	5319.9951	-0.000092%
	110.0	5319.9948	-0.000098%	5319.9949	-0.000096%	5319.9950	-0.000094%
	93.5	5319.9949	-0.000096%	5319.995	-0.000094%	5319.9952	-0.000090%
30	126.5	5319.9973	-0.000051%	5319.9975	-0.000047%	5319.9976	-0.000045%
	110.0	5319.9972	-0.000053%	5319.9973	-0.000051%	5319.9976	-0.000045%
	93.5	5319.9972	-0.000053%	5319.9974	-0.000049%	5319.9974	-0.000049%
20	126.5	5320.0012	0.000023%	5320.0013	0.000024%	5320.0016	0.000030%
	110.0	5320.0012	0.000023%	5320.0013	0.000024%	5320.0015	0.000028%
	93.5	5320.0012	0.000023%	5320.0014	0.000026%	5320.0015	0.000028%
10	126.5	5320.0077	0.000145%	5320.0077	0.000145%	5320.0081	0.000152%
	110.0	5320.0076	0.000143%	5320.0077	0.000145%	5320.0079	0.000148%
	93.5	5320.0078	0.000147%	5320.0079	0.000148%	5320.0081	0.000152%
0	126.5	5320.0117	0.000220%	5320.0118	0.000222%	5320.0122	0.000229%
	110.0	5320.0116	0.000218%	5320.0117	0.000220%	5320.0120	0.000226%
	93.5	5320.0116	0.000218%	5320.0117	0.000220%	5320.0120	0.000226%
-10	126.5	5320.017	0.000320%	5320.0170	0.000320%	5320.0210	0.000395%
	110.0	5320.016	0.000301%	5320.0180	0.000338%	5320.0210	0.000395%
	93.5	5320.018	0.000338%	5320.0180	0.000338%	5320.0220	0.000414%
-20	126.5	5320.0165	0.000310%	5320.0166	0.000312%	5320.0169	0.000318%
	110.0	5320.0164	0.000308%	5320.0165	0.000310%	5320.0168	0.000316%
	93.5	5320.0165	0.000310%	5320.0166	0.000312%	5320.0168	0.000316%
-30	126.5	5320.0013	0.000024%	5320.0014	0.000026%	5320.0016	0.000030%
	110.0	5320.0012	0.000023%	5320.0013	0.000024%	5320.0015	0.000028%
	93.5	5320.0014	0.000026%	5320.0015	0.000028%	5320.0017	0.000032%

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 loss cable. Set RBW of spectrum analyzer to 1MHz and VBW of spectrum analyzer to 300Hz with suitable frequency span including 100 MHz 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.



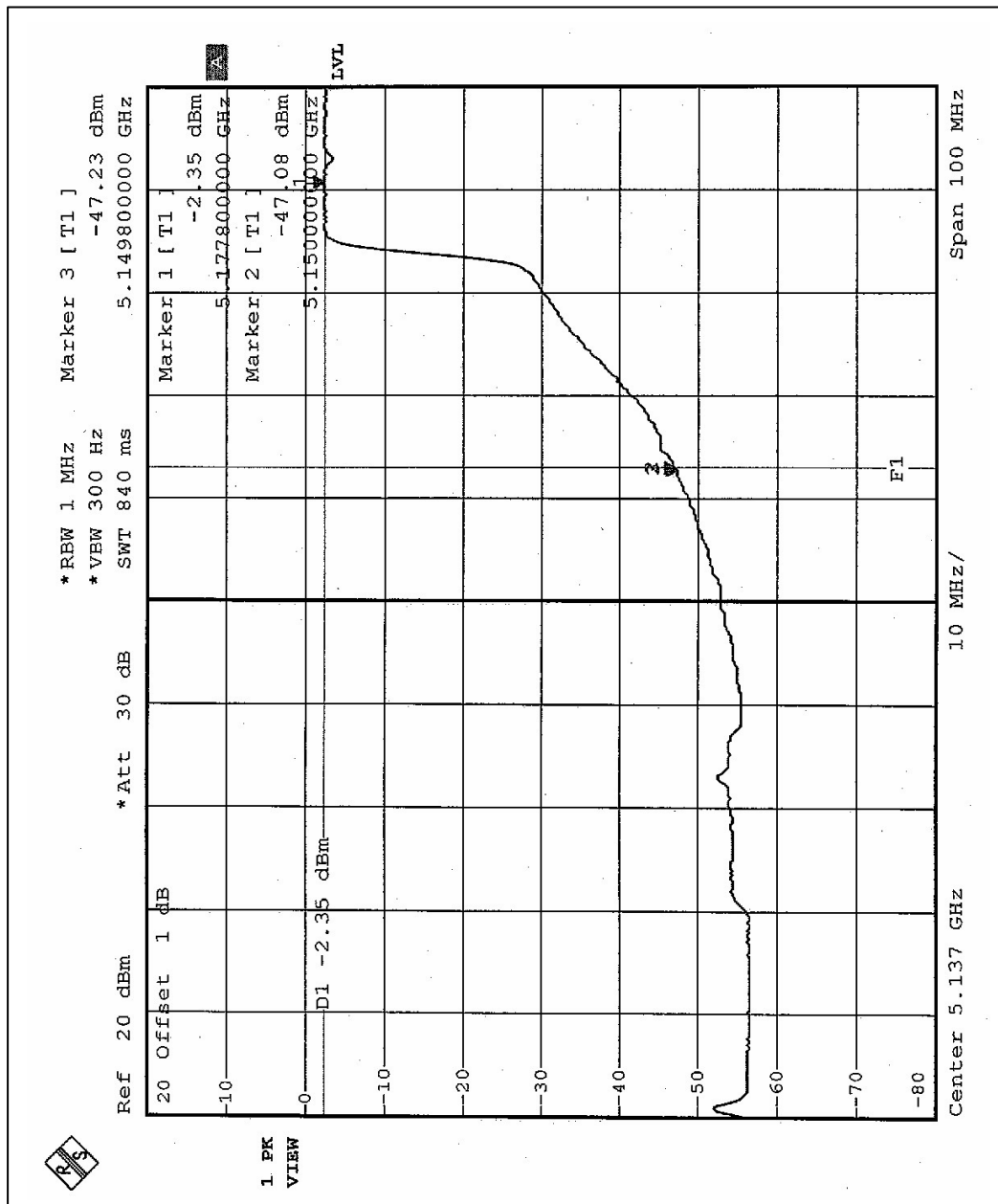
5.7.4 TEST RESULTS

For signals in the restricted bands above and below the 5.15 to 5.35 GHz 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 (Average RBW=1MHz, VBW=300Hz) are attached on the following 8 pages.

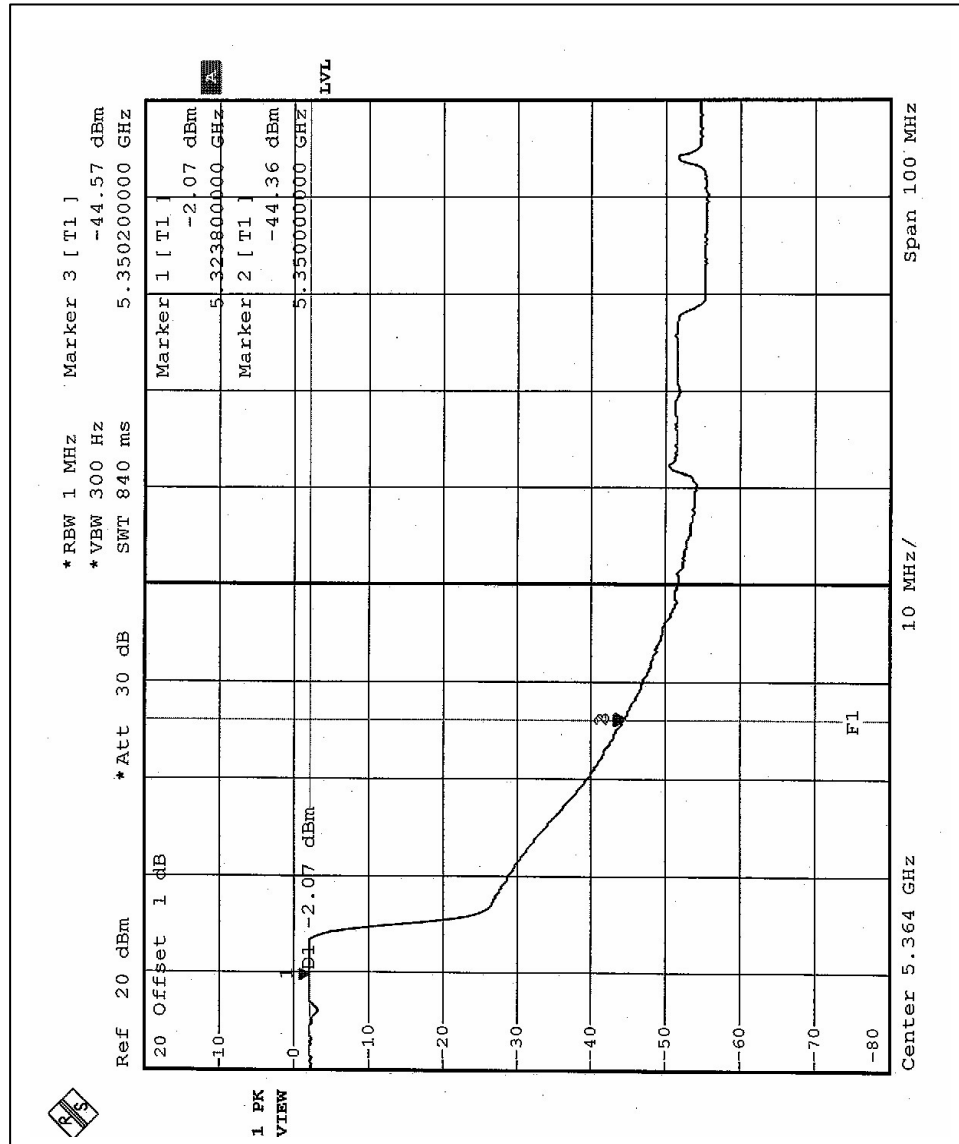
Normal Mode: Channel 1 (5180 MHz)

The band edge emission plot on the following page shows 44.73dBc (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 96.5dBuV/m, so the maximum field strength in restrict band is $96.5 - 44.73 = 51.77$ dBuV/m which is under 54dBuV/m limit.



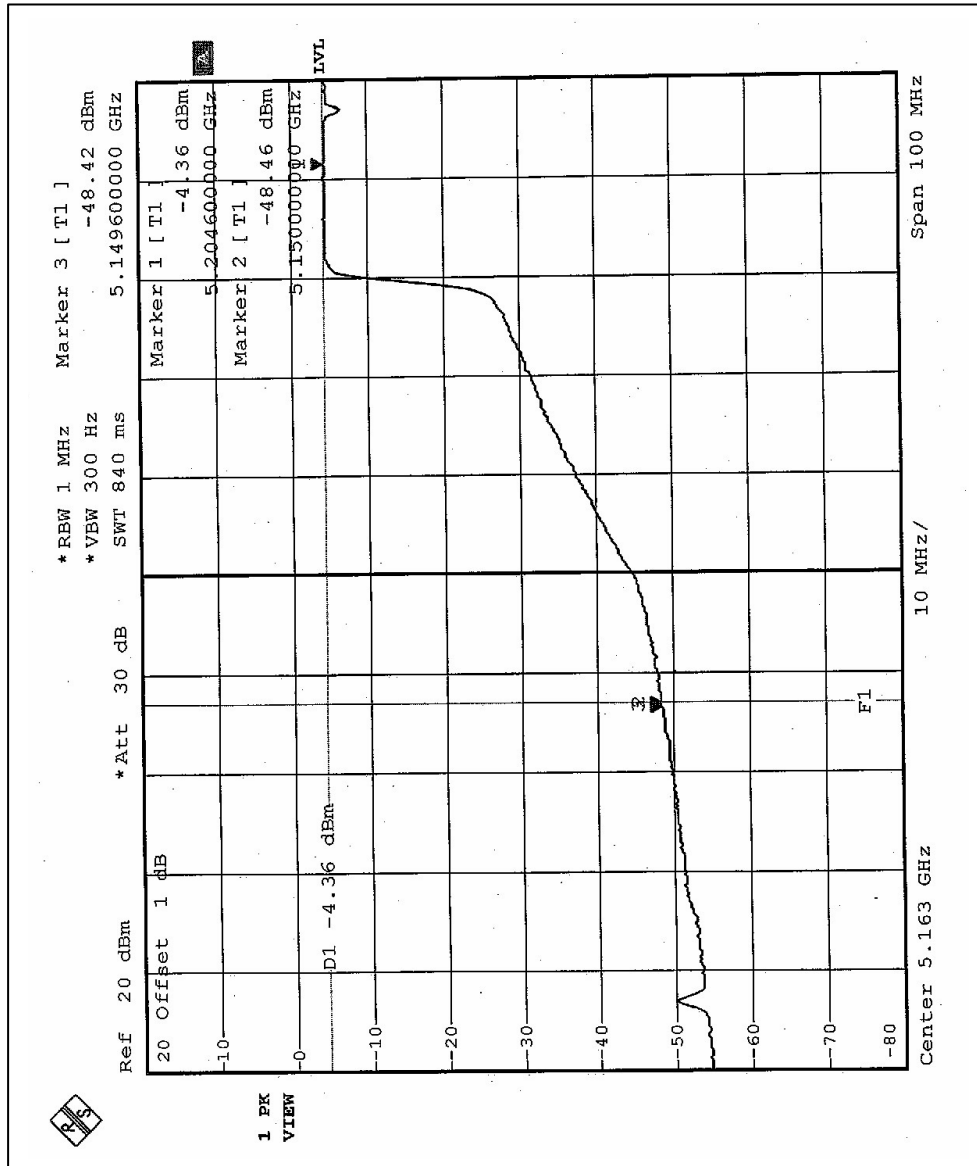
Normal Mode: Channel 8 (5320 MHz)

The band edge emission plot on the following page shows 42.29dBc (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 95.5dBuV/m, so the maximum field strength in restrict band is $95.5 - 42.29 = 53.21$ dBuV/m which is under 54dBuV/m limit.



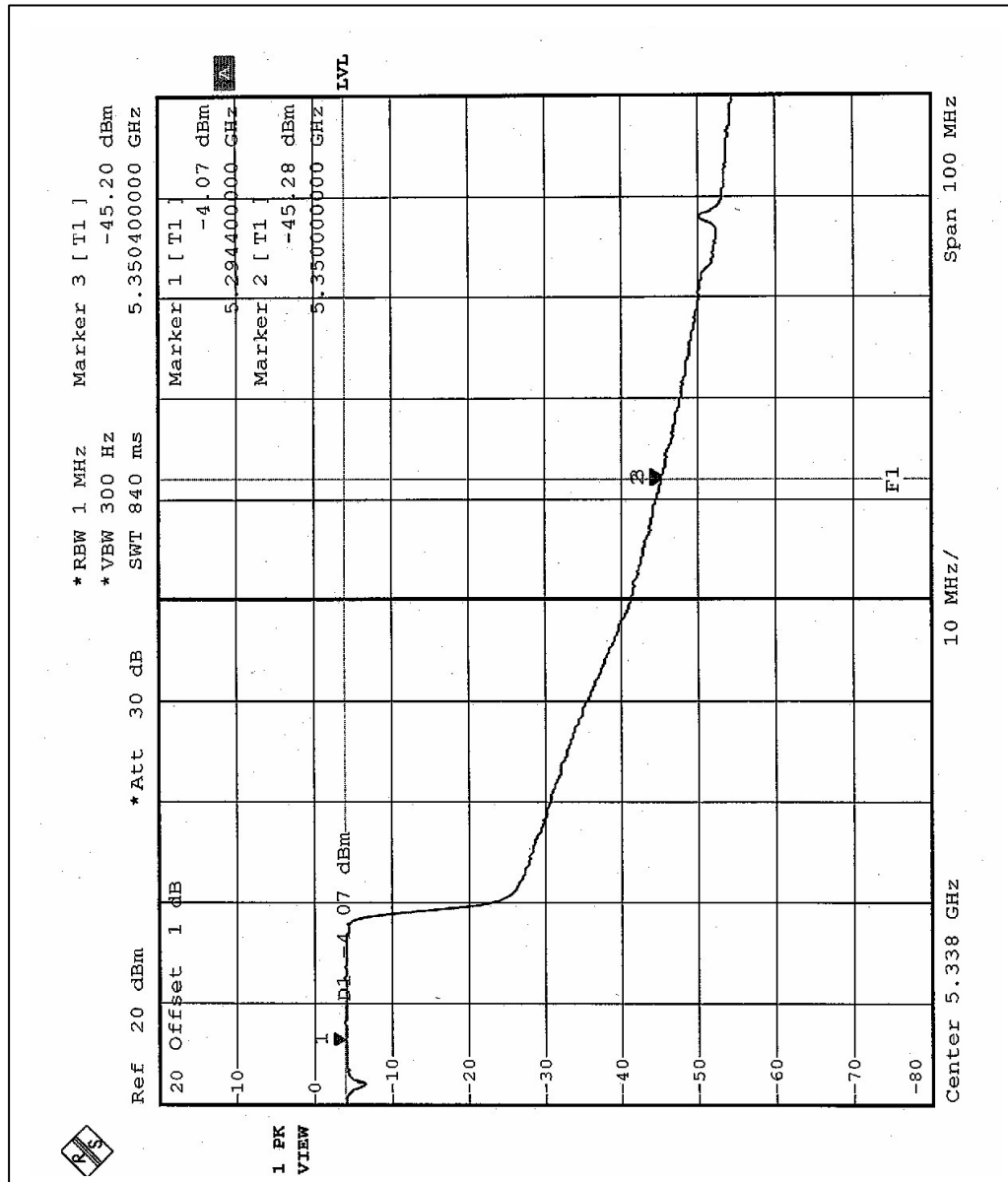
Turbo Mode: Channel 1 (5210 MHz)

The band edge emission plot on the following page shows 44.06dBc (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(turbo mode) is 96.2dBuV/m, so the maximum field strength in restrict band is $96.2 - 44.06 = 52.14$ dBuV/m which is under 54dBuV/m limit.



Turbo Mode: Channel 3 (5290 MHz)

The band edge emission plot on the following page shows 41.13dBc (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(turbo mode) is 93.5dBuV/m, so the maximum field strength in restrict band is $93.5 - 41.13 = 52.37$ dBuV/m which is under 54dBuV/m limit.





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

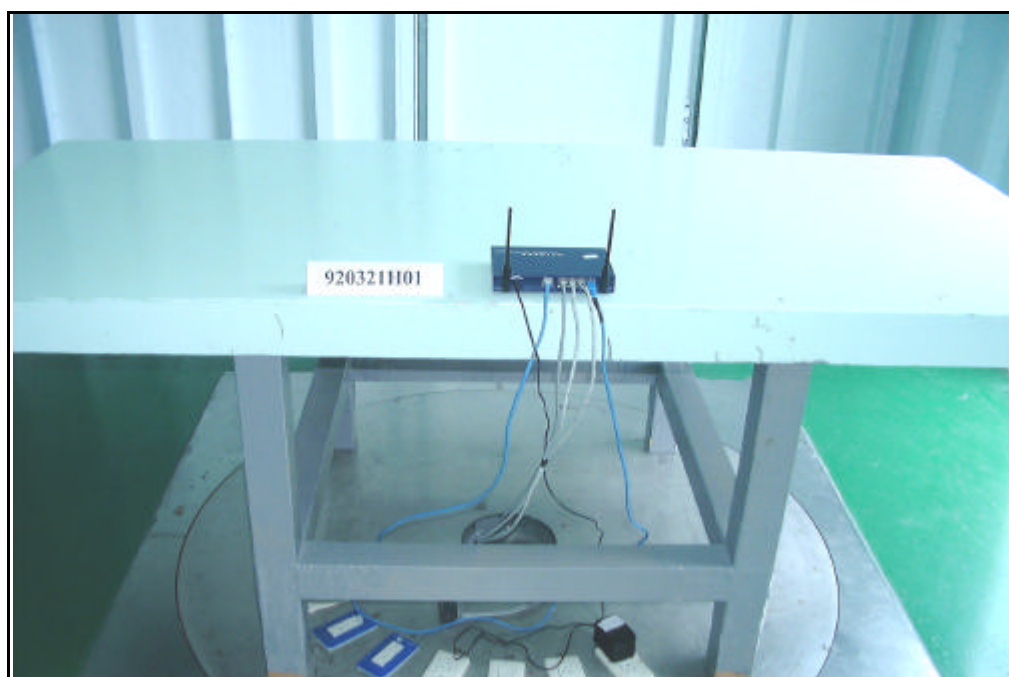
The antenna used in this product is Dipole antenna with MMCX connector. The maximum Gain of the antenna is 5.5dBi (5.15GHz – 5.35GHz). The maximum Gain of the antenna is 5.0dBi (5.725GHz – 5.825GHz).

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:

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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.