FCC TEST REPORT

REPORT NO.: RF930309H03
MODEL NO.: LA-5033
RECEIVED: Mar. 09, 2003
TESTED: Mar. 17 to 25, 2004

APPLICANT: SYMBOL TECHNOLOGIES, INC.

ADDRESS: HOLTSVILLE N.Y., 11742, USA

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen,
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0536
ILAC MRA

Lab Code: 200376-0

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1. CERTIFICATION

PRODUCT :	Symbol Wireless Networker 802.11a/g PCI Adapter
BRAND NAME :	SYMBOL Technologies
MODEL NO. :	LA-5033
APPLICANT :	SYMBOL TECHNOLOGIES, INC.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), Subpart E (Section 15.407), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample (Model: LA-5033) of the designation has been tested in our facility from Mar. 17 to 25, 2004. The test record data evaluation and Equipment under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

PREPARED BY: Amanda Chu , **DATE:** *Mar. 30, 2004*

(Amanda Chu)

APPROVED BY: , **DATE:** *Mar. 30, 2004*

(Eric Lin, Manager)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –20.85dBuV at 1.744MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –2.0dBuV at 2390.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

APPLIED STANDARD: 47 CFR Part 15, Subpart E			
Standard Section	**Test Type**	**Result**	**REMARK**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –19.38dBuV at 1.741MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz – 40000 MHz	PASS	Meet the requirement of limit Minimum passing margin is –4.8dBuV at 11490.00MHz
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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Symbol Wireless Networker 802.11a/g PCI Adapter
MODEL NO.	LA-5033
POWER SUPPLY	5VDC from host equipment
MODULATION	DSSS, OFDM
TRANSFER RATE	802.11b and draft 802.11g: 1/2/5.5/6/9/11/12/18/24/36/48/54Mbps 802.11a:6 to 54Mbps
FREQUENCY RANGE	802.11b and draft 802.11g: 2412MHz ~ 2472MHz 802.11a: 5.15~5.35GHz and 5.725~5.825GHz
NUMBER OF CHANNEL	802.11b and draft 802.11g: 11 802.11a: 12 for Normal mode
CHANNEL SPACING	802.11b and draft 802.11g: 5MHz 802.11a: 20MHz for Normal mode
OUTPUT POWER	802.11b: 17.79dBm / draft 802.11g: 14.63dBm 802.11a: 21.48dBm
DATA CABLE	NA
ANTENNA TYPE	Integral Dipole antenna with 5ft cable
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. Dual-band, the EUT communicates with Wireless-A (802.11a), Wireless-B, (802.11b), and Wireless-G (draft 802.11g) wireless networks.

2. The antenna cable connector (MMCX) was fixed in a soldered shielded case that can not be removed by user

3. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

For 802.11b: Eleven channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

NOTE:

1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.
3. Transfer rate, 11Mbps with CCK technique and 6Mbps with OFDM technique, the worst case, were chosen for final test.
4. Test result A is for CCK technique and test result B is for OFDM technique which presented in Section 4.

For 802.11a: Twelve channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	7	5300 MHz
2	5200 MHz	8	5320 MHz
3	5220 MHz	9	5745MHz
4	5240 MHz	10	5765MHz
5	5260 MHz	11	5785MHz
6	5280 MHz	12	5805MHz

NOTE:

1. The EUT was tested in normal mode (channel bandwidth of approximately 20 MHz).
2. “Normal Mode” allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
3. Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Symbol Wireless Networker 802.11a/g PCI Adapter According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C. (15.247),
Subpart E (15.407). ANSI C63.4 : 1992

All tests 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 47CFR Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

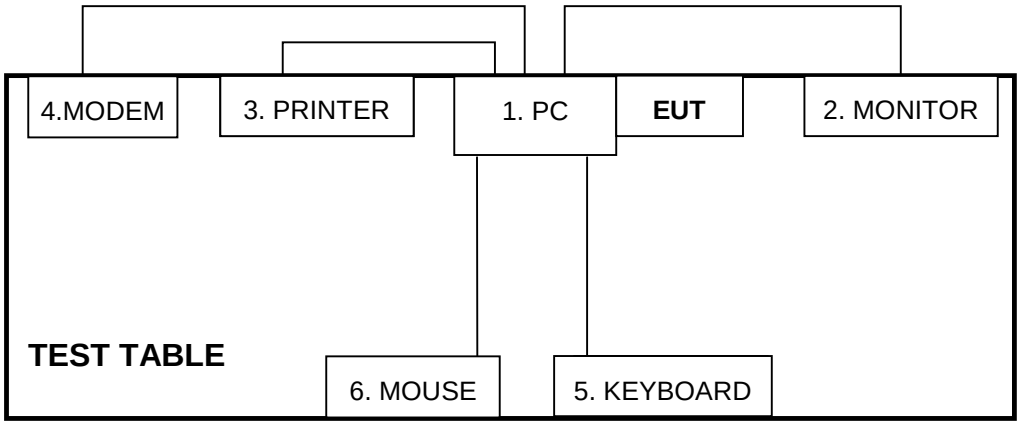
3.4 DESCRIPTION OF SUPPORT UNITS

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	Personal Computer	DELL	4600	00043-517-542-482	FCC DoC
2	LCD MONITOR	ADI	CM100	026058T10200528	FCC DoC
3	PRINTER	HP	C2642A	MY7961C1FQ	B94C2642X
4	MODEM	ACEEX	1414	0206026773	IFAXDM1414
5	KEYBOARD	BTC	KB-5200T	F24800403	E5XKB5122WTH0110
6	MOUSE	BTC	M851	G00347024430	NA

No.	Signal cable description
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core.
3	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o Core.
4	1.0 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core
5	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o Core.
6	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o Core.

Note: 1. All power cords of the above support units are unshielded (1.8m).



NOTE: 1. Please refer to the photos of test configuration in Item 5 also.

4. TEST TYPES AND RESULTS (FOR PART 802.11b)

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 04, 2004
ROHDE & SCHWARZ LISN (for EUT)	ESHS-Z5	848773/004	Nov. 04, 2004
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 27, 2004
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 03, 2004
Terminator(for KYORITSU)	50	3	Apr. 11, 2004
Software	Cond-V2e	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ADT Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

4.1.3 TEST PROCEDURES

a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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.

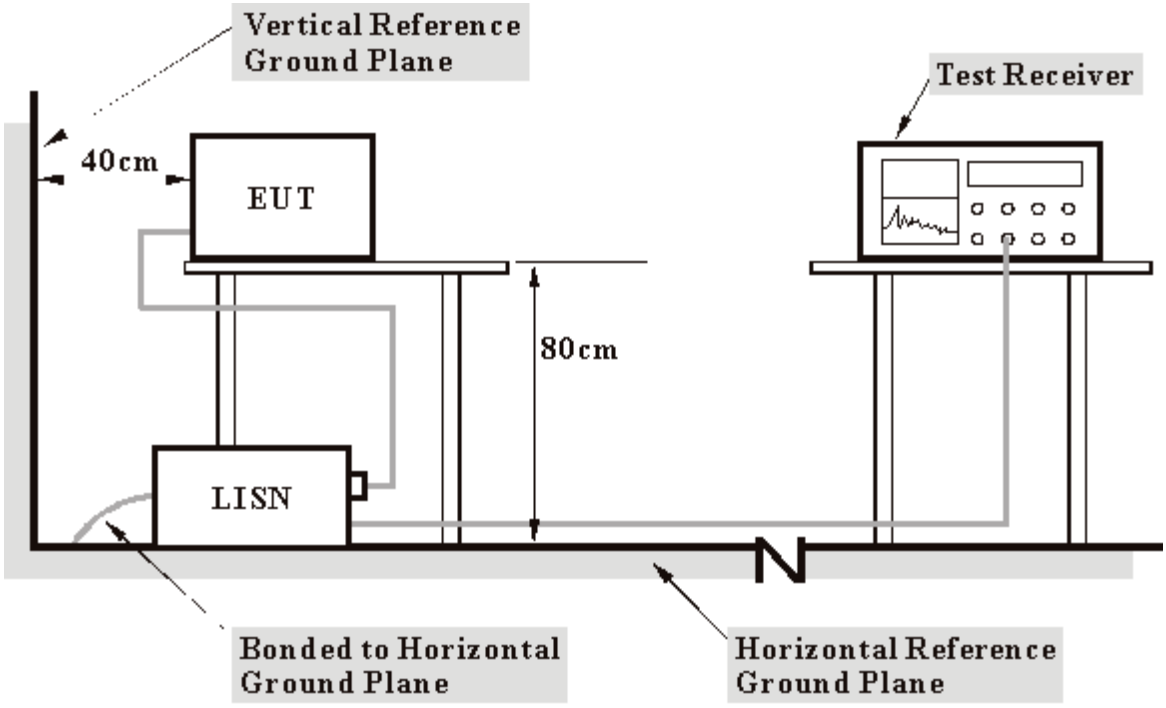
b. Both lines of the power mains connected to the EUT/HOST were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

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) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

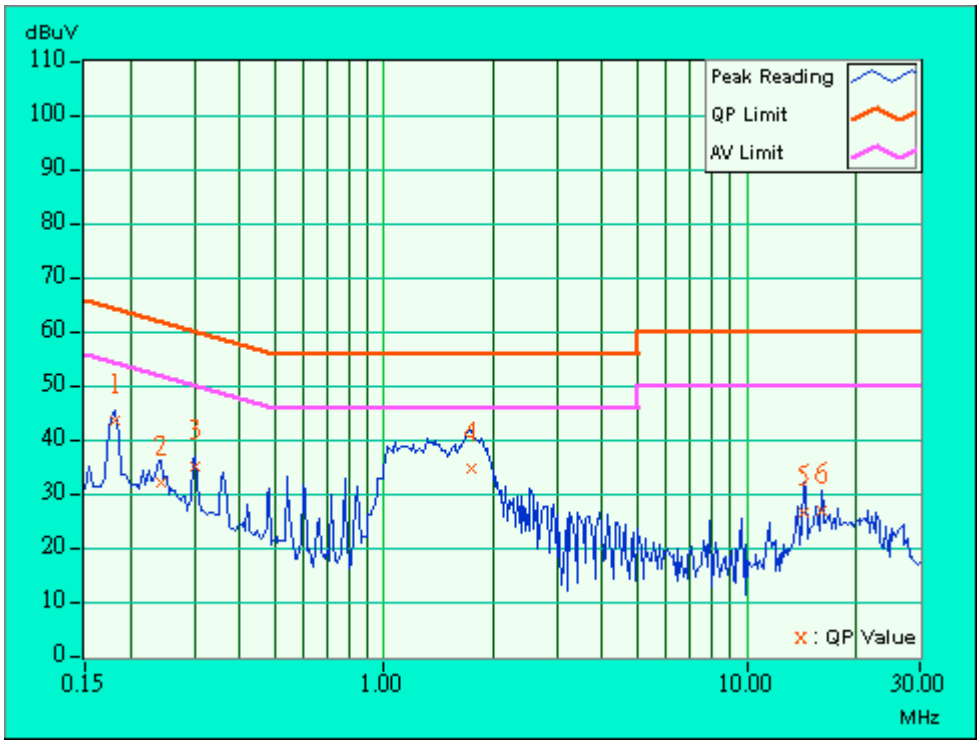
a. Install the EUT into support unit 1 (PC) which placed on a testing table.
b. The support unit 1 (PC) ran a test program to enable EUT under transmission condition continuously at specific channel frequency.
c. PC sends "H" messages to modem.
d. PC sends "H" messages to printer, and the printer prints them on paper.

4.1.7 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter		
MODEL	LA-5033		
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 58%RH, 980 hPa	**TESTED BY**	Eric Lee

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.20	42.54	-	42.74	-	64.43	54.43	-21.69	-
2	0.244	0.20	31.09	-	31.29	-	61.97	51.97	-30.68	-
3	0.302	0.20	34.00	-	34.20	-	60.18	50.18	-25.98	-
4	1.740	0.30	33.82	-	34.12	-	56.00	46.00	-21.88	-
5	14.336	1.06	25.53	-	26.59	-	60.00	50.00	-33.41	-
6	16.094	1.10	25.97	-	27.07	-	60.00	50.00	-32.93	-

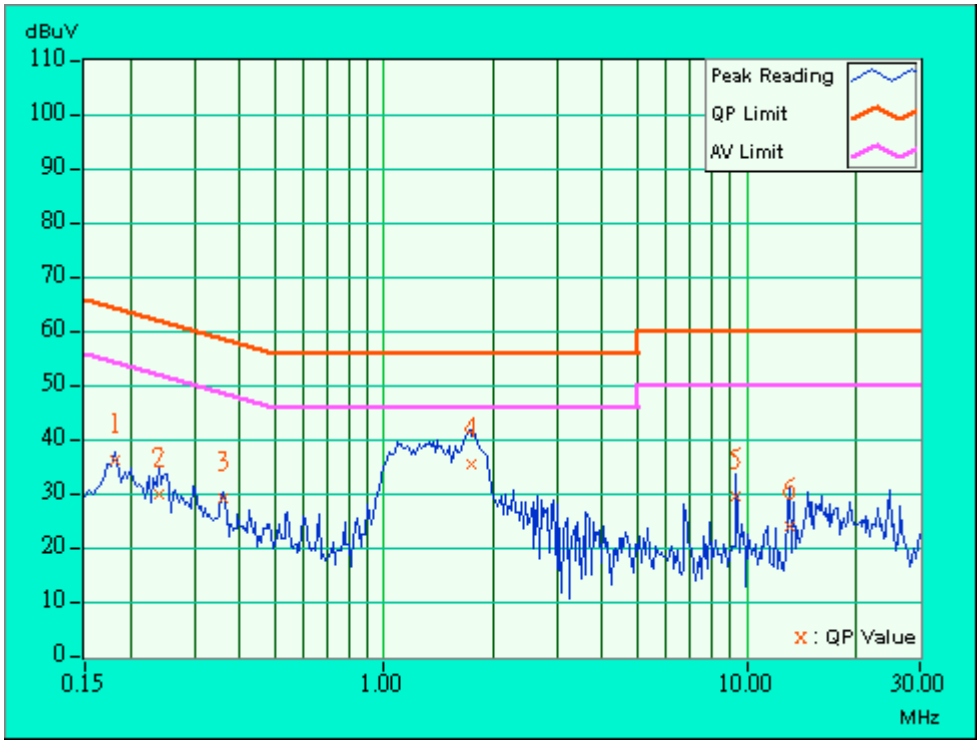
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	Symbol Wireless Networker 802.11a/g PCI Adapter		
MODEL	LA-5033		
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 58%RH, 980 hPa	**TESTED BY**	Eric Lee

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.20	35.48	-	35.68	-	64.43	54.43	-28.75	-
2	0.240	0.20	29.20	-	29.40	-	62.10	52.10	-32.70	-
3	0.361	0.20	28.53	-	28.73	-	58.71	48.71	-29.98	-
4	**1.744**	**0.30**	**34.85**	**-**	**35.15**	**-**	**56.00**	**46.00**	**-20.85**	**-**
5	9.363	0.67	28.77	-	29.44	-	60.00	50.00	-30.56	-
6	13.164	0.89	23.00	-	23.89	-	60.00	50.00	-36.11	-

NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction Factor = Insertion loss + Cable loss
(6) Margin value = Emission level - Limit 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 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3467U00646	Jun. 29, 2004
*ADVANTEST Spectrum Analyzer	R3271A	85060311	Jun. 16, 2004
CHASE RF Pre_Amplifier	CPA9232	1056	May 12, 2004
*HP Pre_Amplifier	8449B	3008A01922	Oct. 13, 2004
*ROHDE & SCHWARZ Test Receiver	ESVS 30	841977/002	Sep. 17, 2004
*CHASE Broadband Antenna	CBL6112B	2798	Apr. 16, 2004
*Schwarzbeck Horn_Antenna	BBHA9120-D1	D123	Sep. 24, 2004
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170192	Feb. 16, 2005
SCHWARZBECK Tunable Dipole Antenna	UHAP	897	Mar. 07, 2005
SCHWARZBECK Tunable Dipole Antenna	VHAP	880	Mar. 07, 2005
*RF Switches	MP59B	1-5161-28698	Jul. 31, 2004
*RF Cable(CHASE)	CH A9525	Cable_OB_01	Jul. 31, 2004
*Software	AS60P8	NA	NA
*CHANCE MOST Antenna Tower	AT-100	CM-A007	NA
*CHANCE MOST Turn Table	TC-008	CM-T007	NA
*CORCOM AC Filter	MRI2030	024/019	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Tunable Dipole Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. B.
5. The VCCI Site Registration No. is R-847.
6. The FCC Site Registration No. is 92753.
7. The CANADA Site Registration No. is IC 4824-2.

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. 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 10 dB 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 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

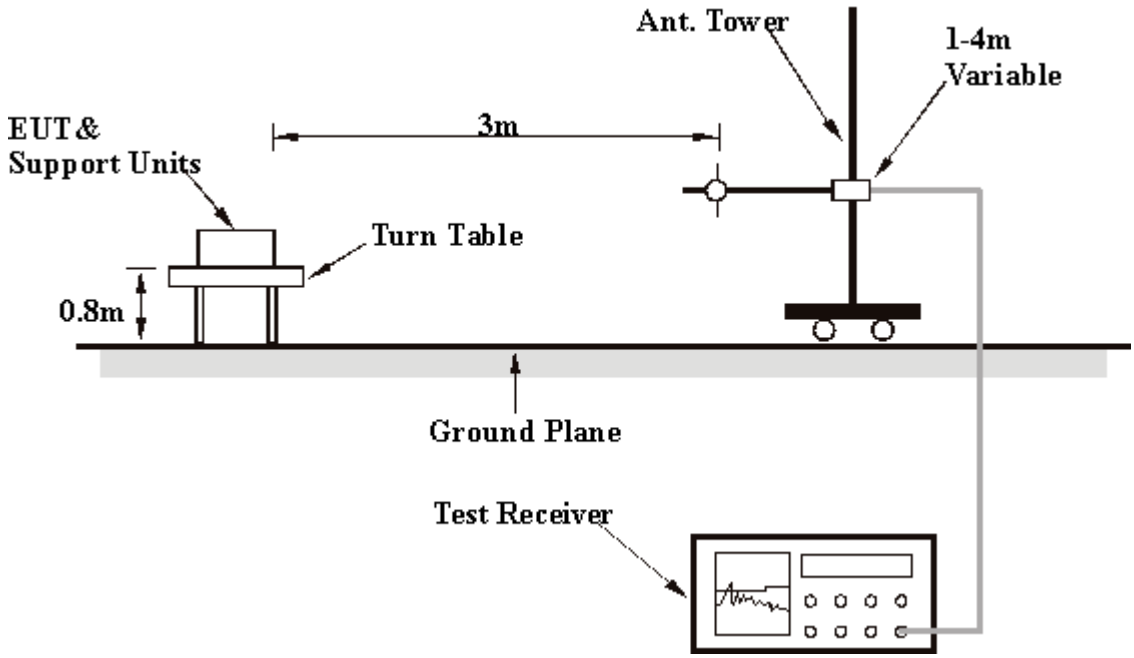
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 11	**FREQUENCY RANGE**	30~1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Eric Lee

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	166.38	36.10 QP	43.50	-7.40	1.73 H	317	25.20	10.90
2	233.00	38.60 QP	46.00	-7.40	1.22 H	207	27.00	11.60
3	299.50	32.00 QP	46.00	-14.00	1.10 H	220	16.30	15.70
4	320.00	34.00 QP	46.00	-12.00	1.00 H	207	17.70	16.30
5	400.00	33.50 QP	46.00	-12.50	1.00 H	211	15.30	18.20
6	480.00	29.90 QP	46.00	-16.10	1.02 H	209	9.30	20.60
7	720.08	34.40 QP	46.00	-11.60	1.32 H	263	9.20	25.20
8	766.11	29.70 QP	46.00	-16.30	2.04 H	4	2.90	26.80
9	768.09	38.20 QP	46.00	-7.80	1.21 H	234	11.50	26.70
10	810.01	32.30 QP	46.00	-13.70	1.33 H	235	5.80	26.50
11	864.10	38.10 QP	46.00	-7.90	1.22 H	228	10.50	27.60
12	912.11	34.10 QP	46.00	-11.90	1.00 H	78	6.30	27.80

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	166.37	31.20 QP	43.50	-12.30	1.10 V	278	20.30	10.90
2	232.80	32.40 QP	46.00	-13.60	1.09 V	241	20.80	11.60
3	280.00	25.20 QP	46.00	-20.80	1.08 V	216	10.60	14.60
4	400.00	27.90 QP	46.00	-18.10	1.07 V	352	9.70	18.20
5	480.00	28.90 QP	46.00	-17.10	1.04 V	263	8.30	20.60
6	720.08	32.50 QP	46.00	-13.50	1.00 V	289	7.30	25.20
7	768.09	37.00 QP	46.00	-9.00	1.03 V	208	10.30	26.70
8	810.02	32.00 QP	46.00	-14.00	1.04 V	212	5.50	26.50
9	864.10	35.40 QP	46.00	-10.60	1.09 V	164	7.80	27.60
10	912.11	35.50 QP	46.00	-10.50	1.23 V	20	7.70	27.80

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.

TEST RESULTS (A)- DSSS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 1	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

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	2390.00	42.60 PK	74.00	-31.40	1.65 H	38	12.80	29.80
2	*2412.00	96.30 PK			1.69 H	41	66.40	29.90
2	*2412.00	89.80 AV			1.69 H	41	59.90	29.90
3	4824.00	45.10 PK	74.00	-28.90	1.59 H	72	8.90	36.20
4	7236.00	49.40 PK	74.00	-24.60	1.53 H	61	7.70	41.70
5	9648.00	52.20 PK	74.00	-21.80	1.47 H	51	7.30	44.90
5	9648.00	41.30 AV	54.00	-12.70	1.47 H	51	-3.60	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.10 PK	74.00	-14.90	1.70 V	53	29.30	29.80
1	**2390.00**	**52.00 AV**	**54.00**	**-2.00**	**1.70 V**	**53**	**22.20**	**29.80**
2	*2412.00	112.70 PK			1.69 V	62	82.80	29.90
2	*2412.00	105.70 AV			1.69 V	62	75.80	29.90
3	4824.00	44.10 PK	74.00	-29.90	1.53 V	77	7.90	36.20
4	7236.00	49.10 PK	74.00	-24.90	1.43 V	98	7.40	41.70
5	9648.00	52.10 PK	74.00	-21.90	1.47 V	83	7.20	44.90
5	9648.00	40.60 AV	54.00	-13.40	1.47 V	83	-4.30	44.90

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 6	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

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	*2437.00	100.40 PK			1.10 H	146	70.40	30.00
1	*2437.00	93.40 AV			1.10 H	146	63.40	30.00
2	4874.00	43.90 PK	74.00	-30.10	1.01 H	328	7.50	36.50
3	7311.00	49.70 PK	74.00	-24.30	1.03 H	228	8.00	41.80
4	9748.00	52.30 PK	74.00	-21.70	1.02 H	0	7.70	44.60
4	9748.00	40.90 AV	54.00	-13.10	1.02 H	0	-3.70	44.60

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	*2437.00	111.60 PK			1.05 V	136	81.60	30.00
1	*2437.00	104.40 AV			1.05 V	136	74.40	30.00
2	4874.00	44.90 PK	74.00	-29.10	1.10 V	109	8.40	36.50
3	7311.00	49.50 PK	74.00	-24.50	1.05 V	338	7.80	41.80
4	9748.00	52.60 PK	74.00	-21.40	1.10 V	128	7.90	44.60
4	9748.00	41.00 AV	54.00	-13.00	1.10 V	128	-3.60	44.60

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 11	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

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	*2462.00	97.90 PK			1.00 H	299	67.80	30.10
1	*2462.00	90.70 AV			1.00 H	299	60.60	30.10
2	2483.50	44.30 PK	74.00	-29.70	1.04 H	312	14.10	30.10
3	4924.00	44.40 PK	74.00	-29.60	1.03 H	214	7.70	36.70
4	7386.00	49.90 PK	74.00	-24.10	1.05 H	148	8.10	41.80
5	9848.00	52.60 PK	74.00	-21.40	1.02 H	95	8.30	44.40
5	9848.00	41.00 AV	54.00	-13.00	1.02 H	95	-3.30	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

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	*2462.00	111.00 PK			1.03 V	166	80.90	30.10
1	*2462.00	103.80 AV			1.03 V	166	73.70	30.10
2	2483.50	57.40 PK	74.00	-16.60	1.00 V	157	27.20	30.10
2	2483.50	50.10 AV	54.00	-3.90	1.00 V	157	20.00	30.10
3	4924.00	44.60 PK	74.00	-29.40	1.01 V	173	7.90	36.70
4	7386.00	48.90 PK	74.00	-25.10	1.07 V	173	7.10	41.80
5	9848.00	52.90 PK	74.00	-21.10	1.46 V	102	8.50	44.40
5	9848.00	41.20 AV	54.00	-12.80	1.46 V	102	-3.10	44.40

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

TEST RESULTS (B)- OFDM

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 1	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

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	2390.00	43.60 PK	74.00	-30.40	1.32 H	215	13.80	29.80
2	*2412.00	92.20 PK			1.36 H	221	62.30	29.90
2	*2412.00	84.30 AV			1.36 H	221	54.40	29.90
3	4824.00	44.20 PK	74.00	-29.80	1.31 H	209	8.00	36.20
4	7236.00	49.00 PK	74.00	-25.00	1.25 H	252	7.40	41.70
5	9648.00	52.60 PK	74.00	-21.40	1.27 H	230	7.70	44.90
5	9648.00	41.10 AV	54.00	-12.90	1.27 H	230	-3.80	44.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.90 PK	74.00	-17.10	1.07 V	138	27.10	29.80
1	2390.00	49.20 AV	54.00	-4.80	1.07 V	138	19.40	29.80
2	*2412.00	105.50 PK			1.10 V	132	75.60	29.90
2	*2412.00	97.80 AV			1.10 V	132	67.90	29.90
3	4824.00	44.30 PK	74.00	-29.70	1.02 V	37	8.10	36.20
4	7236.00	49.40 PK	74.00	-24.60	1.02 V	37	7.80	41.70
5	9648.00	51.90 PK	74.00	-22.10	1.02 V	77	7.00	44.90
5	9648.00	40.90 AV	54.00	-13.10	1.02 V	77	-4.00	44.90

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 6	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

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	*2437.00	92.50 PK			1.11 H	146	62.50	30.00
1	*2437.00	84.90 AV			1.11 H	146	54.90	30.00
2	4874.00	44.60 PK	74.00	-29.40	1.16 H	0	8.10	36.50
3	7311.00	49.00 PK	74.00	-25.00	1.17 H	75	7.20	41.80
4	9748.00	54.00 PK	74.00	-20.00	1.19 H	232	9.40	44.60
4	9748.00	41.80 AV	54.00	-12.20	1.19 H	232	-2.90	44.60

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	*2437.00	103.90 PK			1.07 V	130	73.90	30.00
1	*2437.00	96.10 AV			1.07 V	130	66.10	30.00
2	4874.00	45.30 PK	74.00	-28.70	1.11 V	105	8.80	36.50
3	7311.00	49.50 PK	74.00	-24.50	1.12 V	308	7.80	41.80
4	9748.00	52.40 PK	74.00	-21.60	1.12 V	359	7.80	44.60
4	9748.00	41.70 AV	54.00	-12.30	1.12 V	359	-2.90	44.60

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Channel 11	**FREQUENCY RANGE**	1000MHz~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 980 hPa	**TESTED BY**	Tony Chen

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

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	*2462.00	91.00 PK			1.09 H	148	61.00	30.10
1	*2462.00	83.50 AV			1.09 H	148	53.40	30.10
2	2483.50	42.80 PK	74.00	-31.20	1.10 H	152	12.70	30.10
3	4924.00	43.60 PK	74.00	-30.40	1.05 H	126	6.90	36.70
4	7386.00	49.70 PK	74.00	-24.30	1.06 H	138	7.80	41.80
5	9848.00	50.30 PK	74.00	-23.70	1.07 H	0	6.00	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

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	*2462.00	104.60 PK			1.05 V	169	74.50	30.10
1	*2462.00	96.90 AV			1.05 V	169	66.80	30.10
2	2483.50	56.30 PK	74.00	-17.70	1.08 V	173	26.20	30.10
2	2483.50	48.60 AV	54.00	-5.40	1.08 V	173	18.50	30.10
3	4924.00	44.30 PK	74.00	-29.70	1.08 V	124	7.70	36.70
4	7386.00	50.00 PK	74.00	-24.00	1.07 V	1	8.20	41.80
5	9848.00	52.40 PK	74.00	-21.60	1.04 V	136	8.10	44.40
5	9848.00	41.20 AV	54.00	-12.80	1.04 V	136	-3.10	44.40

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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. The limit value is defined as per 15.247
6. " * " : Fundamental frequency

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP

4.3.6 EUT OPERATING CONDITIONS

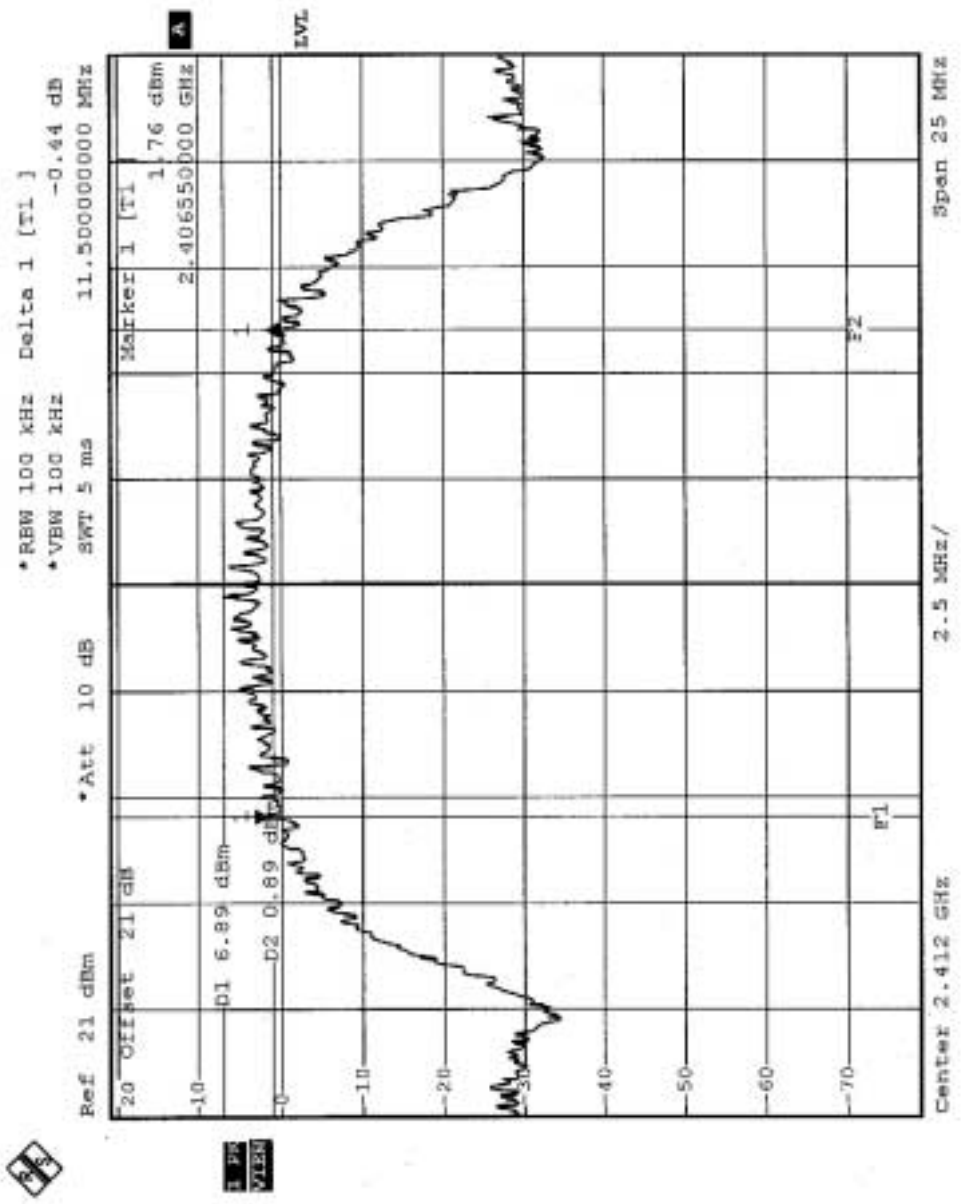
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (A)

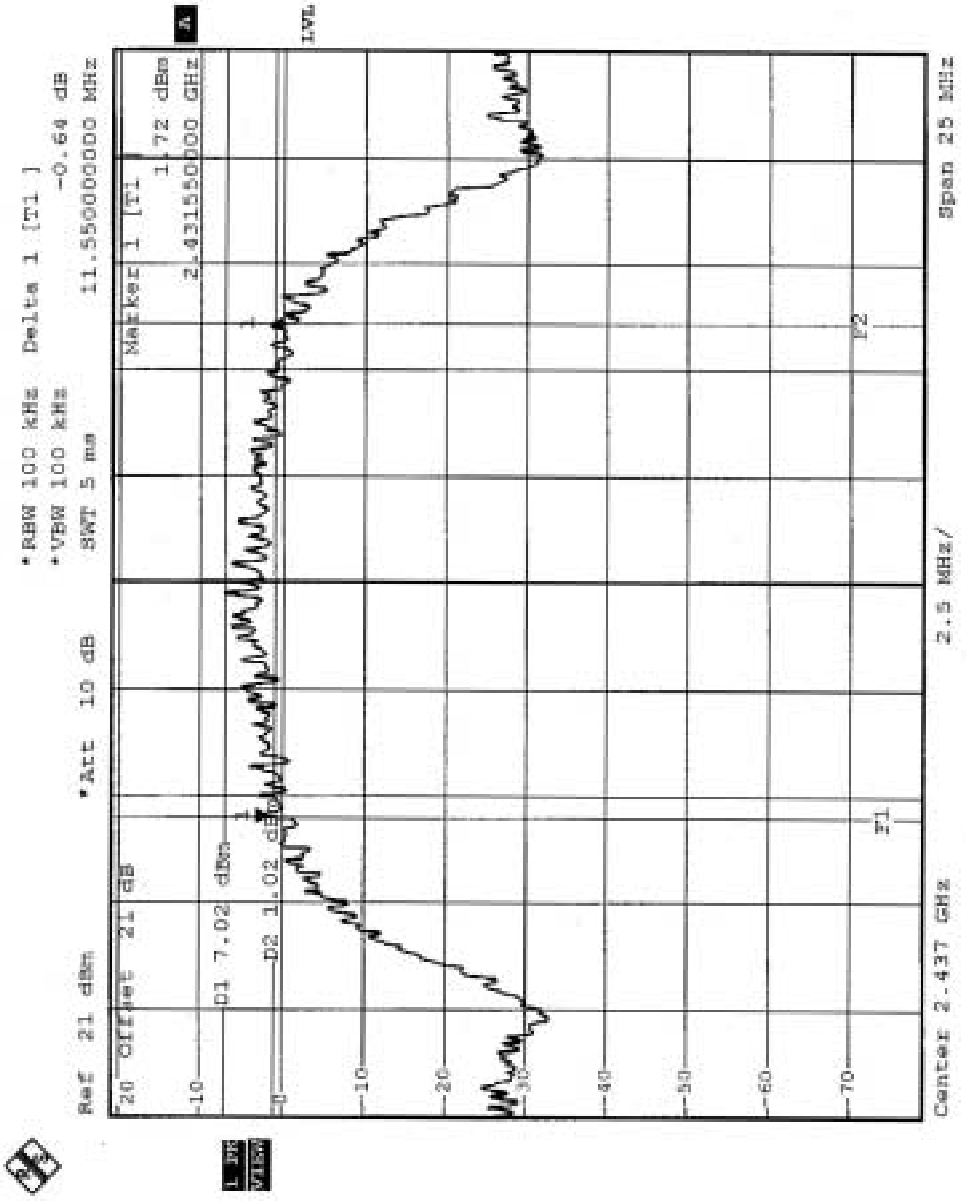
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	27deg. C, 58%RH 980 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.5	0.5	PASS
6	2437	11.55	0.5	PASS
11	2462	11.5	0.5	PASS

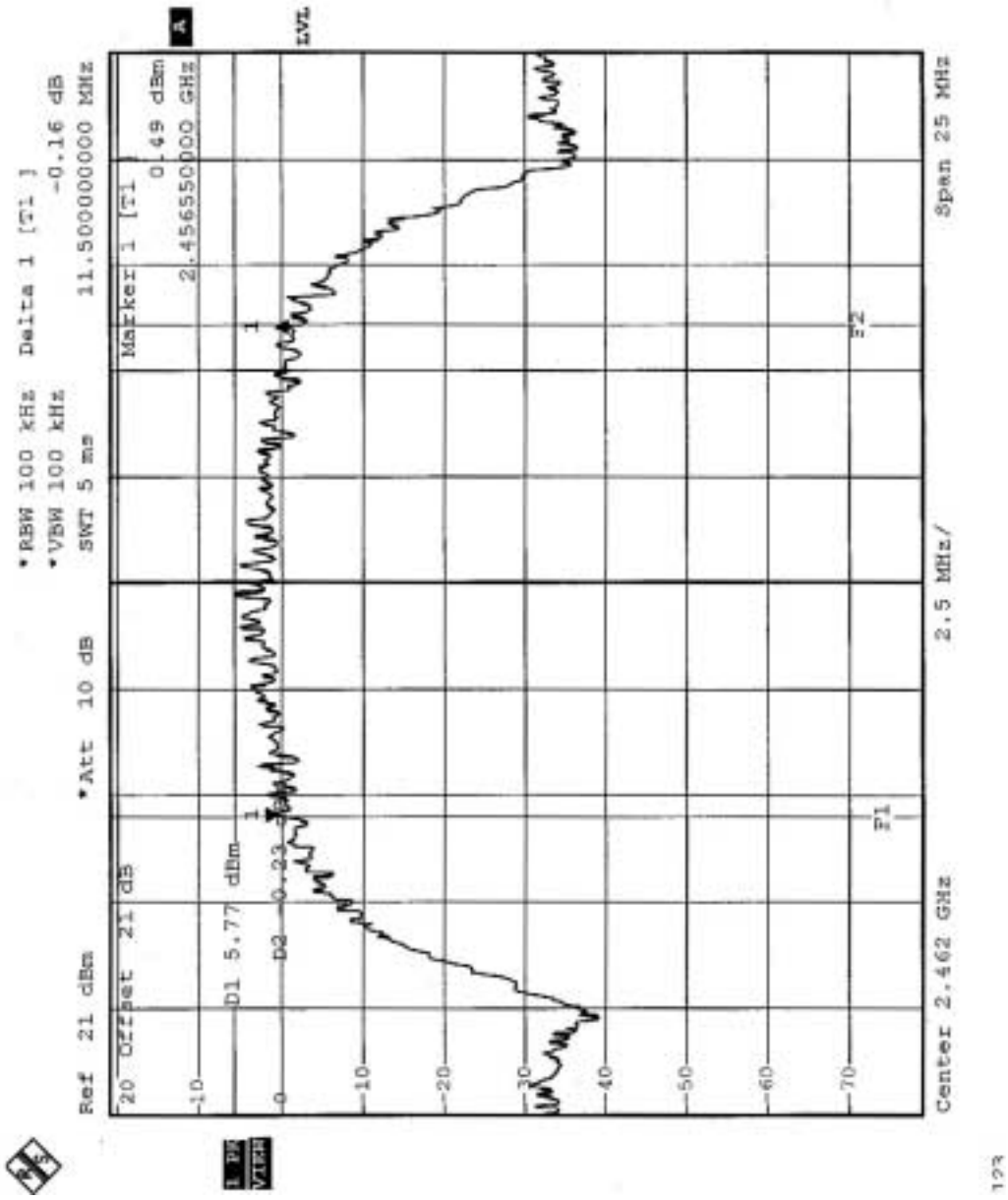
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Att 10 dB
Offset 21 dB
Ref 21 dBm
Delta 1 [T1]
-0.44 dB
11.50000000 MHz
Marker 1 [T1
1.76 dBm
2.40655000 GHz
D1 6.89 dBm
D2 0.89 dB
Center 2.412 GHz
2.5 MHz/
Span 25 MHz
F1
F2
LVL

CH6


*RBW 100 kHz Delta 1 [T1]
*VBW 100 kHz -0.64 dB
SWT 5 ms 11.55000000 MHz
Ref 21 dBm *Att 10 dB
Offset 21 dB
Marker 1 [T1]
1.72 dBm
2.43155000 GHz
D1 7.02 dBm
D2 1.02 dBm
LVL
F1
F2
Center 2.437 GHz 2.5 MHz/ Span 25 MHz

CH11

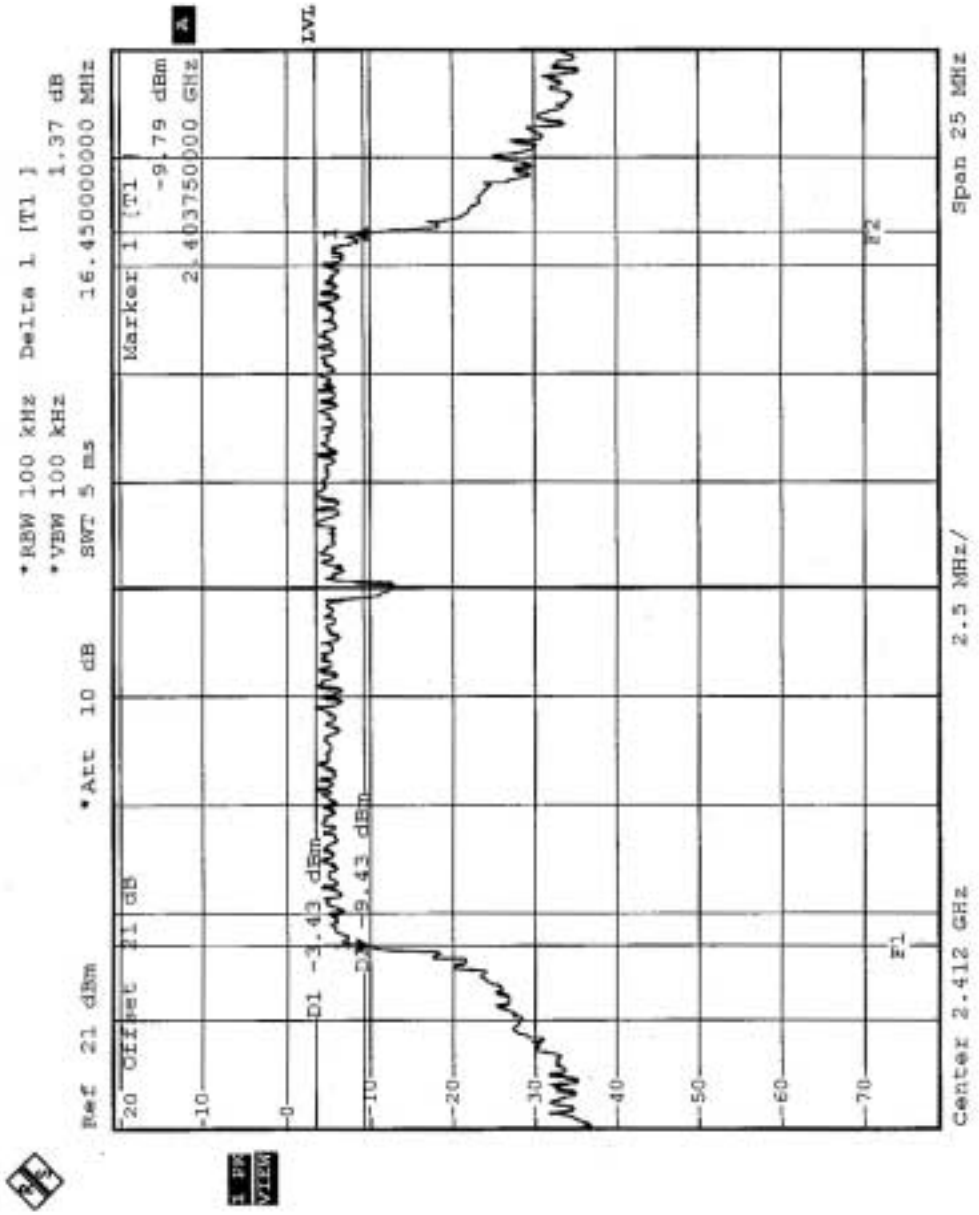

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.16 dB
11.500000000 MHz
Marker 1 [T1
0.49 dBm
2.456550000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
D1 5.77 dBm
D2 -0.23
Center 2.462 GHz
2.5 MHz/
Span 25 MHz
F1
F2

4.3.8 TEST RESULTS (B)

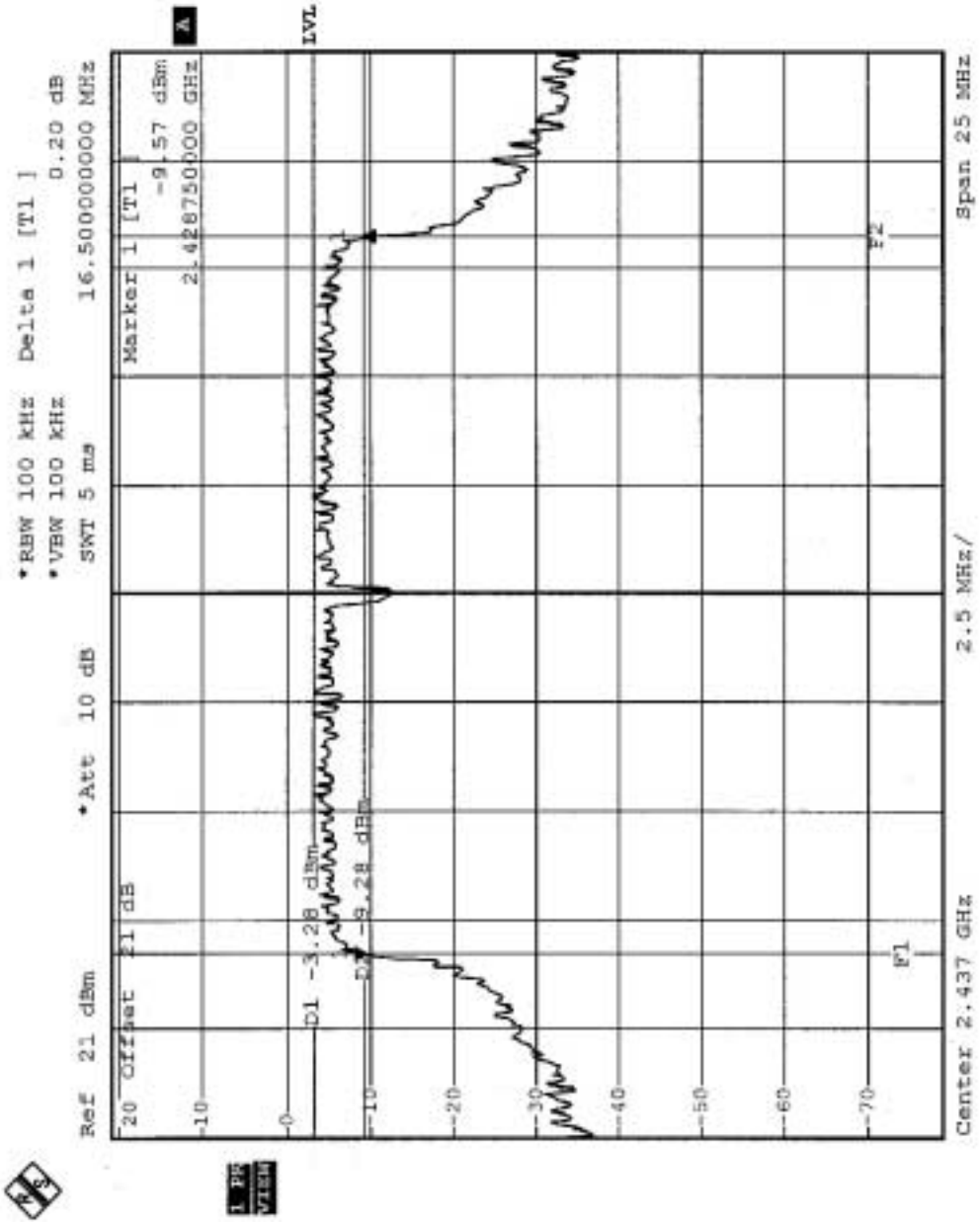
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	27deg. C, 58%RH 980 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.45	0.5	PASS
6	2437	16.5	0.5	PASS
11	2462	16.5	0.5	PASS

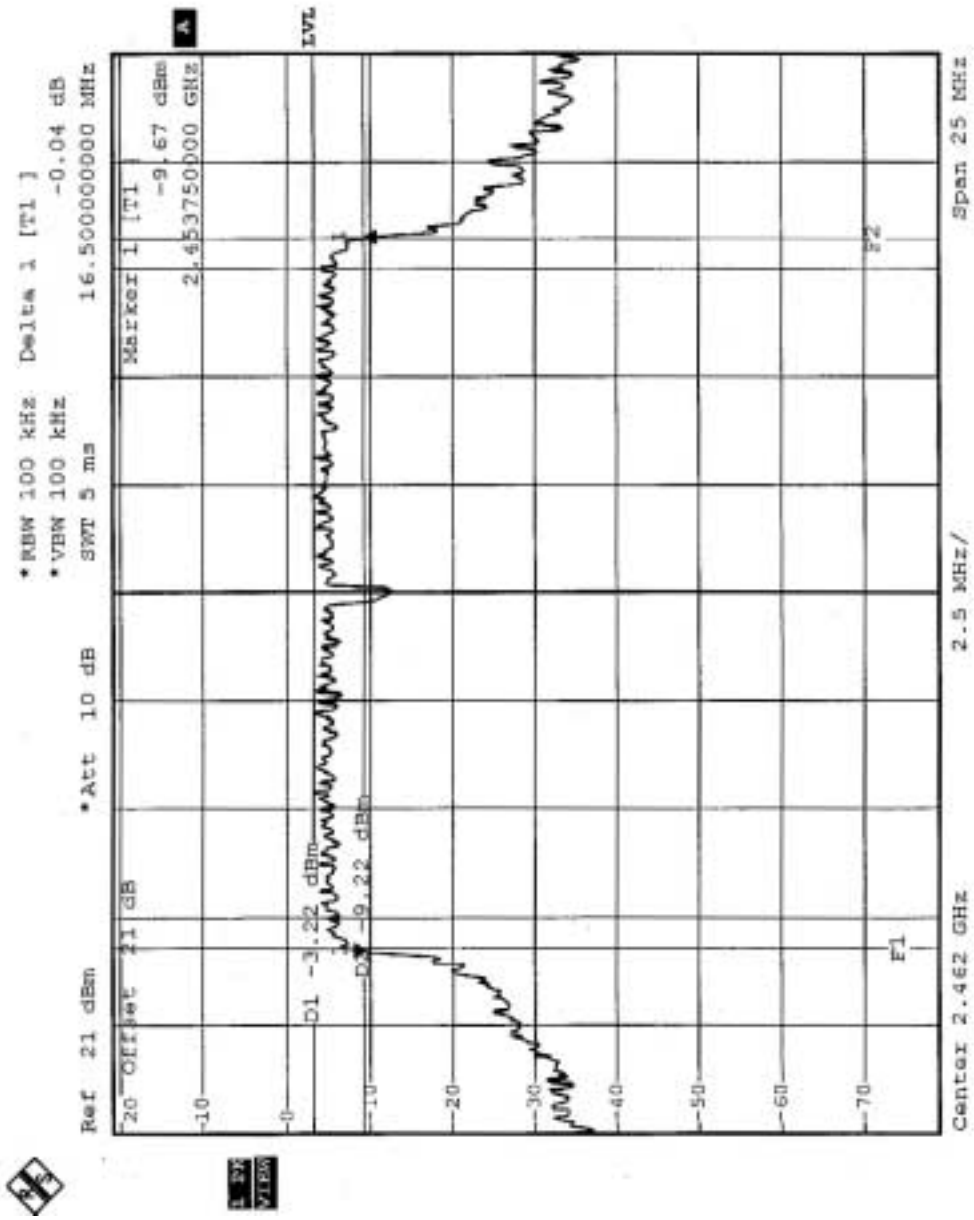
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Att 10 dB
Ref 21 dBm
Offset 11 dB
Delta 1 [T1]
1.37 dB
16.450000000 MHz
Marker 1 [T1]
-9.79 dBm
2.40375000 GHz
D1 -3.43 dBm
D2 -9.43 dBm
Center 2.412 GHz
2.5 MHz/
Span 25 MHz

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Att 10 dB
Offset 21 dB
Ref 21 dBm
Delta 1 [T1]
0.20 dB
16.500000000 MHz
Marker 1 [T1]
-9.57 dBm
2.428750000 GHz
D1 -3.28 dBm
D2 -9.28 dBm
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz
LVL

CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Delta 1 [T1]
-0.04 dB
16.500000000 MHz
Marker 1 [T1
-9.67 dBm
2.453750000 GHz
D1 -3.22 dBm
D2 -9.22 dBm
F1
F2
Center 2.462 GHz
2.5 MHz/
Span 25 MHz
LVL

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

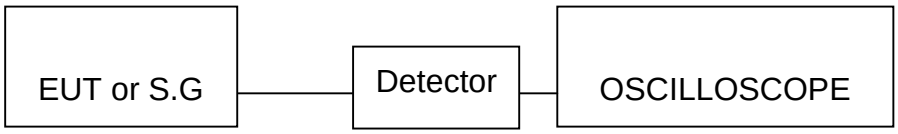
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B027241	Jun. 29, 2004
NARDA DETECTOR	4503A	FSCM99899	NA

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 PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the peak response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same peak reading on oscilloscope. Record the power level.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.6 TEST RESULTS (A)

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 76%RH 980 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	17.79	30	PASS
6	2437	17.72	30	PASS
11	2462	17.59	30	PASS

4.4.7 TEST RESULTS (B)

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 76%RH 980 hPa
TESTED BY	Tony Chen		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.46	30	PASS
6	2437	14.63	30	PASS
11	2462	14.51	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

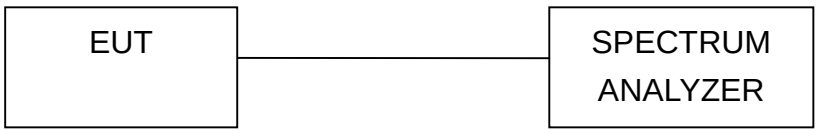
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3 kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

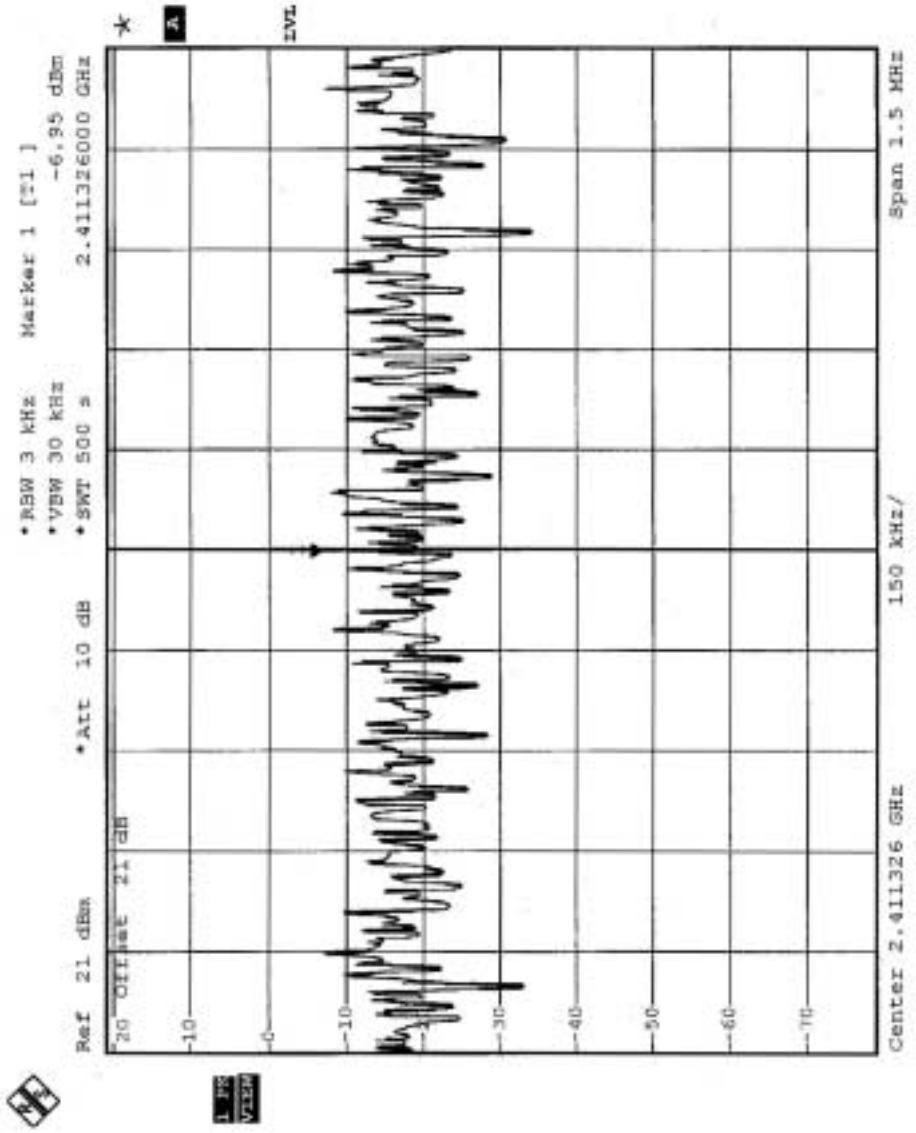
Same as Item 4.3.6

4.5.7 TEST RESULTS(A)

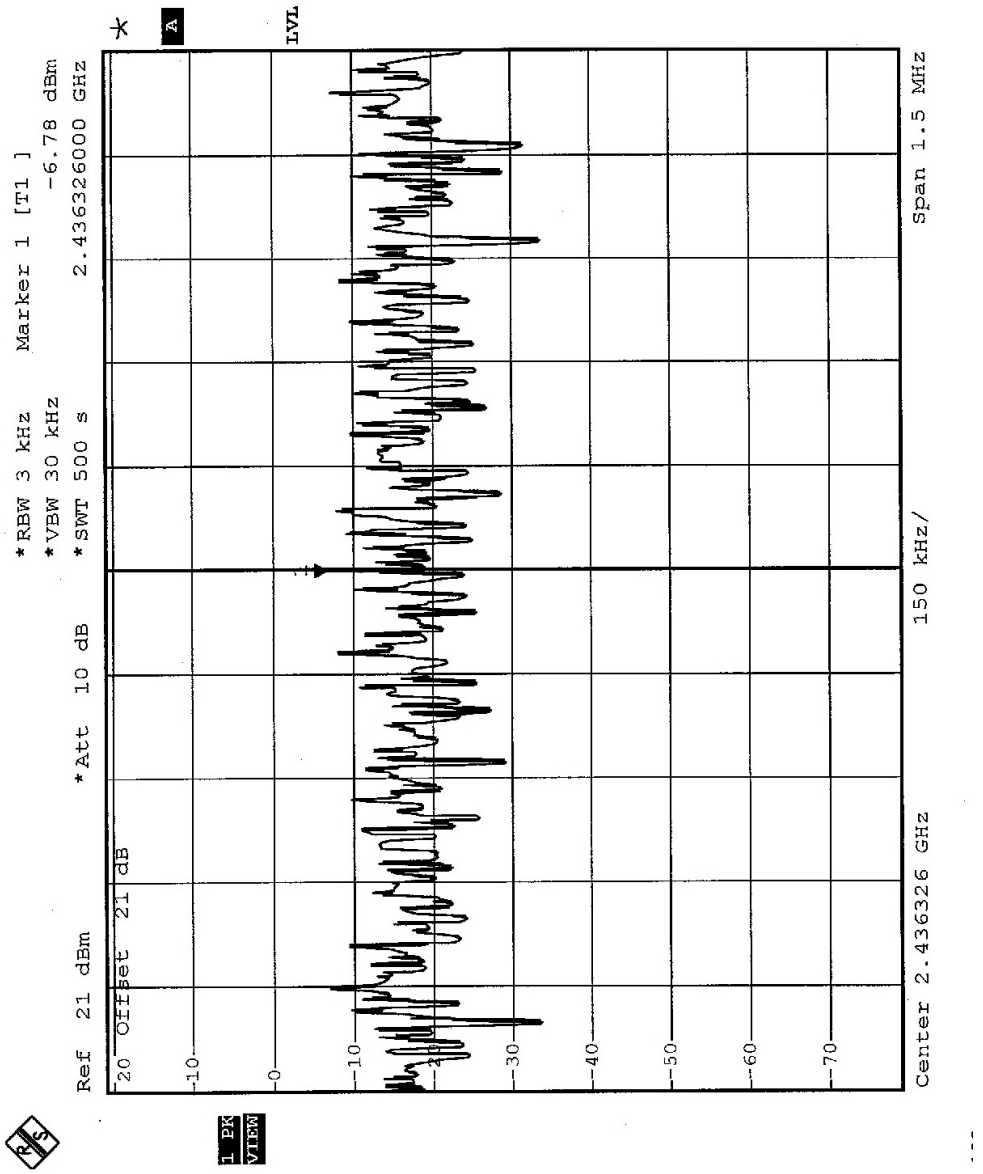
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 76RH, 980 hPa
TESTED BY	Tony Chen		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-6.95	8	PASS
6	2437	-6.78	8	PASS
11	2462	-7.89	8	PASS

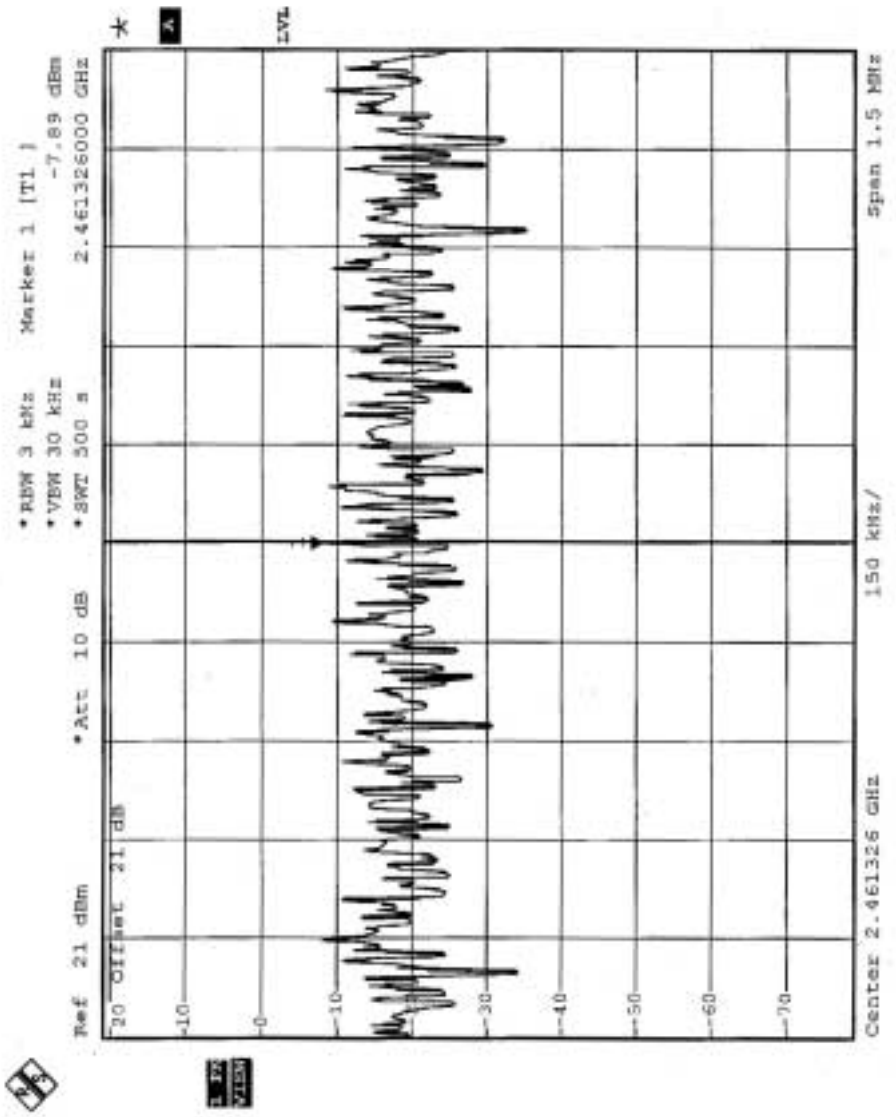
CH1


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*SWT 500 s
*VBW 30 kHz
*RBW 3 kHz
Marker 1 [T1]
-6.95 dBm
2.411326000 GHz
Center 2.411326 GHz
150 kHz/
Span 1.5 MHz
VIEW
MAXH

CH6


Marker 1 [T1]
-6.78 dBm
2.43632600 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 10 dB
Ref 21 dBm
Offset 21 dB
Center 2.436326 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

CH11

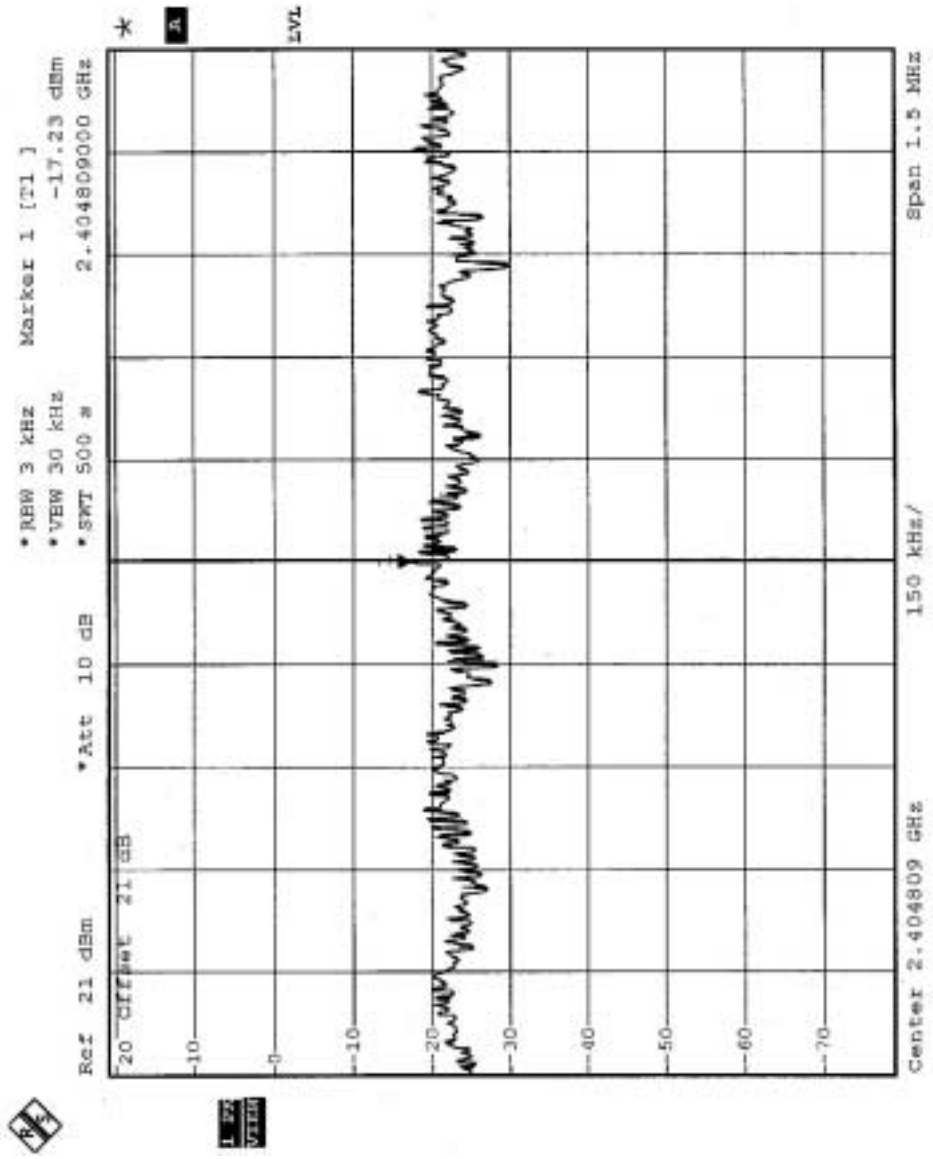

RBW 3 kHz
VBW 30 kHz
SWT 300 s
Marker 1 [T1]
-7.89 dBm
2.461326000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
Span 1.5 MHz
150 kHz/
Center 2.461326 GHz

4.5.8 TEST RESULTS(B)

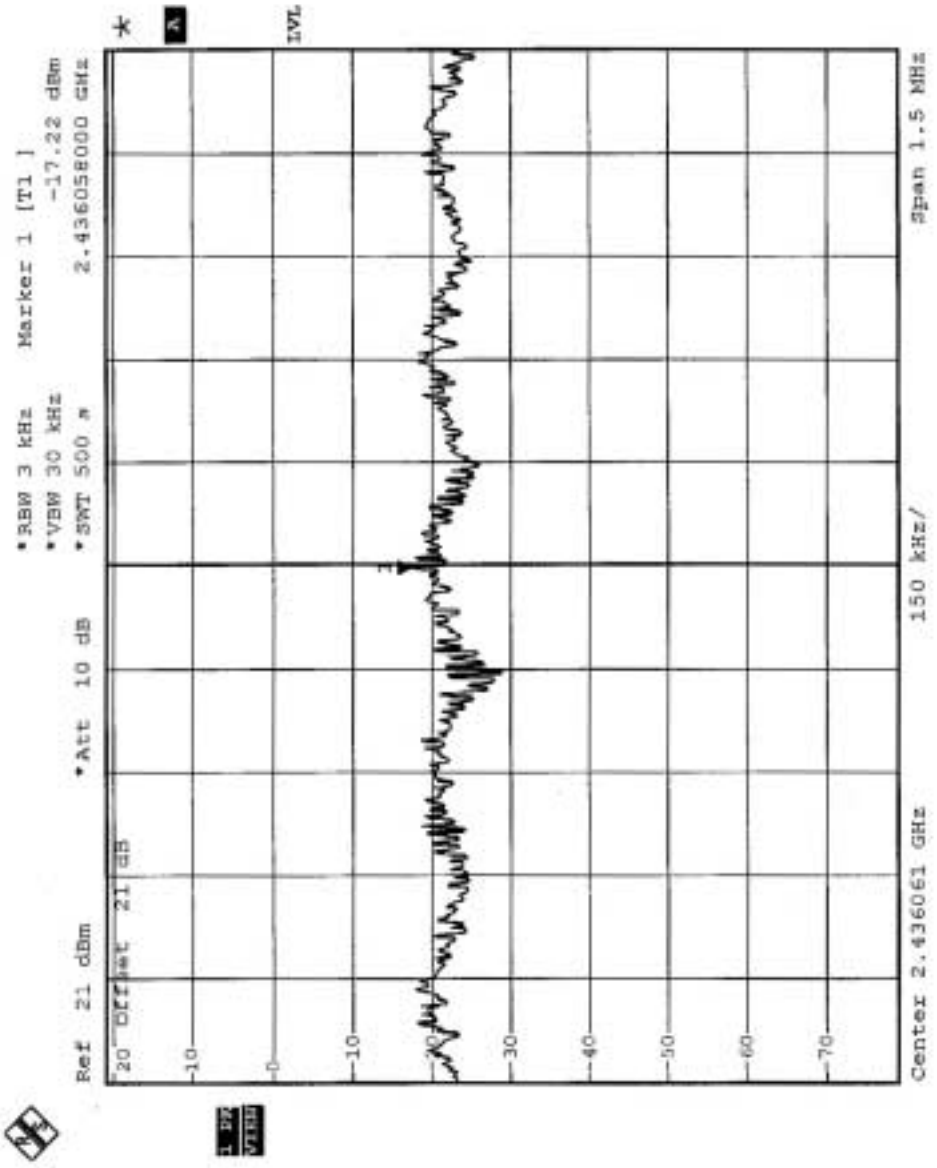
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 76RH, 980 hPa
TESTED BY	Tony Chen		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-17.23	8	PASS
6	2437	-17.22	8	PASS
11	2462	-17.3	8	PASS

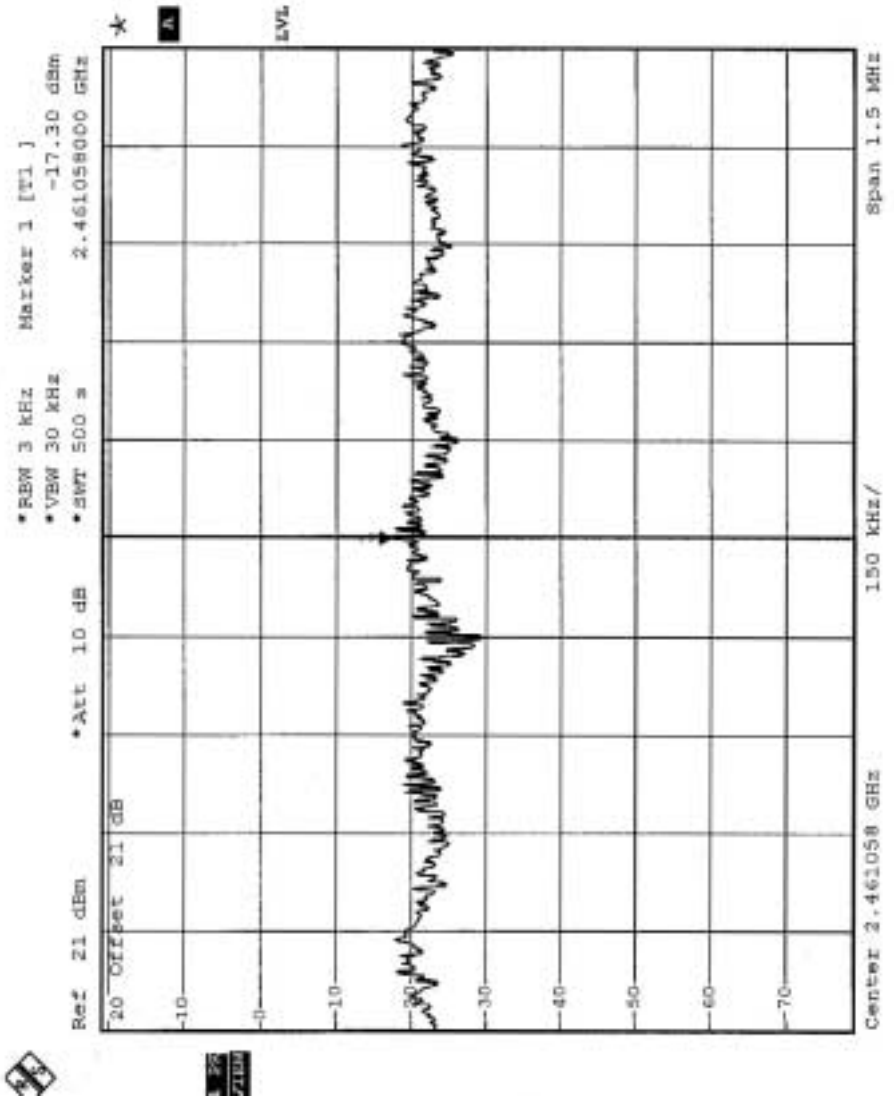
CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 ms
Marker 1 [T1]
-17.23 dBm
2.404809000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
Center 2.404809 GHz
150 kHz/
Span 1.5 MHz

CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 ms
Att 10 dB
Offset 21 dB
Ref 21 dBm
Marker 1 [T1]
-17.22 dBm
2.43605000 GHz
Center 2.436061 GHz
150 kHz/
Span 1.5 MHz
VIEW
MAXH

CH11


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*VBW 30 kHz
*SWT 500 s
*RBW 3 kHz
Marker 1 [T1]
-17.30 dBm
2.46105800 GHz
Center 2.461058 GHz
150 kHz/
Span 1.5 MHz

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.6.3 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 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

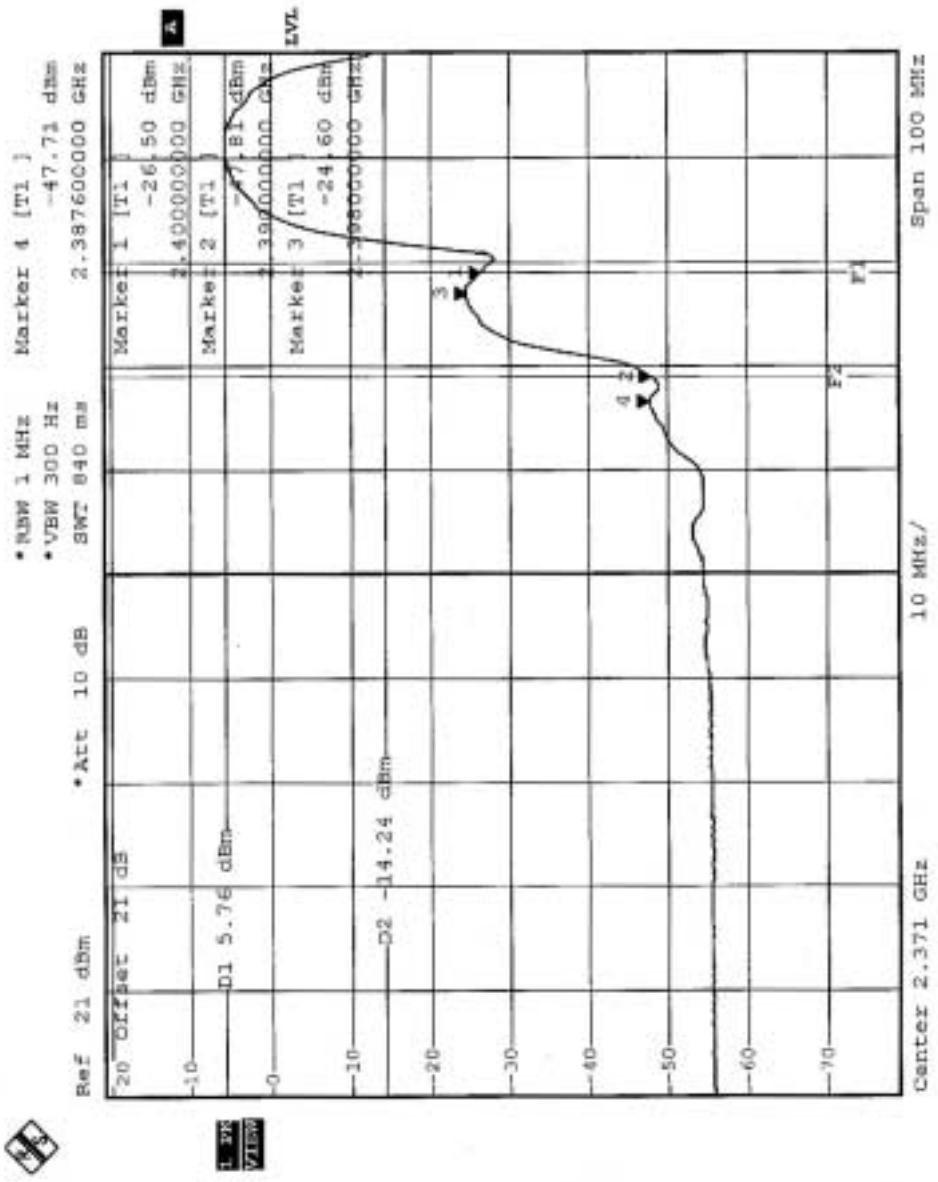
4.6.6 TEST RESULTS (A)

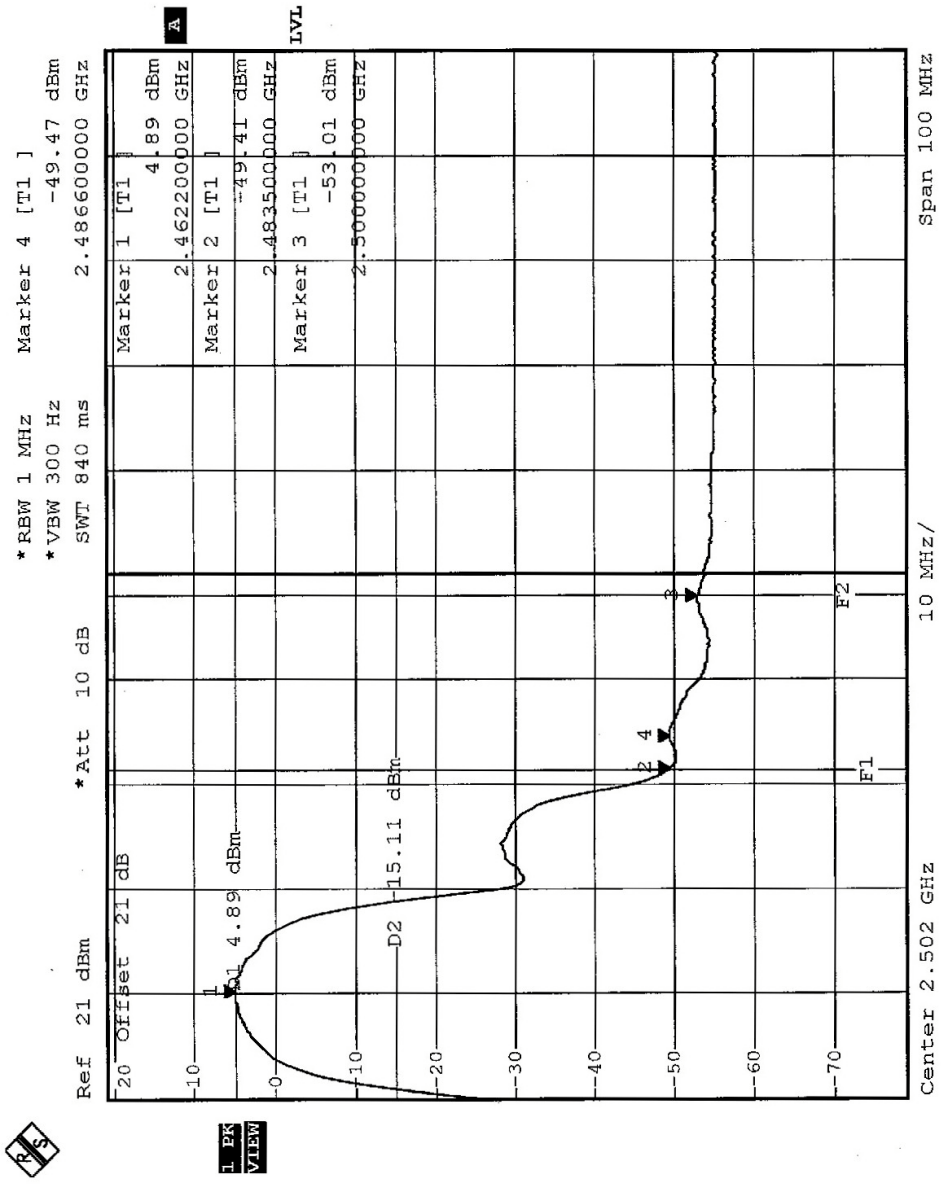
The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

NOTE (1): The band edge emission plot on the following first page shows 53.57dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 105.7dBuV/m, so the maximum field strength in restrict band is 105.7-53.57=52.13dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 54.3 dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 103.8dBuV/m, so the maximum field strength in restrict band is 103.8-54.3=49.5dBuV/m which is under 54 dBuV/m limit.


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
D1 5.76 dBm
D2 -14.24 dBm
Marker 4 [T1]
-47.71 dBm
2.387600000 GHz
Marker 1 [T1]
-26.50 dBm
2.400000000 GHz
Marker 2 [T1]
-27.81 dBm
2.390000000 GHz
Marker 3 [T1]
-24.60 dBm
2.398000000 GHz
Center 2.371 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-49.47 dBm
2.486600000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
Marker 1 [T1]
4.89 dBm
2.462200000 GHz
Marker 2 [T1]
-49.41 dBm
2.483500000 GHz
Marker 3 [T1]
-53.01 dBm
2.500000000 GHz
LVL
A
D1 4.89 dBm
D2 -15.11 dBm
F1
F2
1 PK VIEW
Center 2.502 GHz
10 MHz/
Span 100 MHz

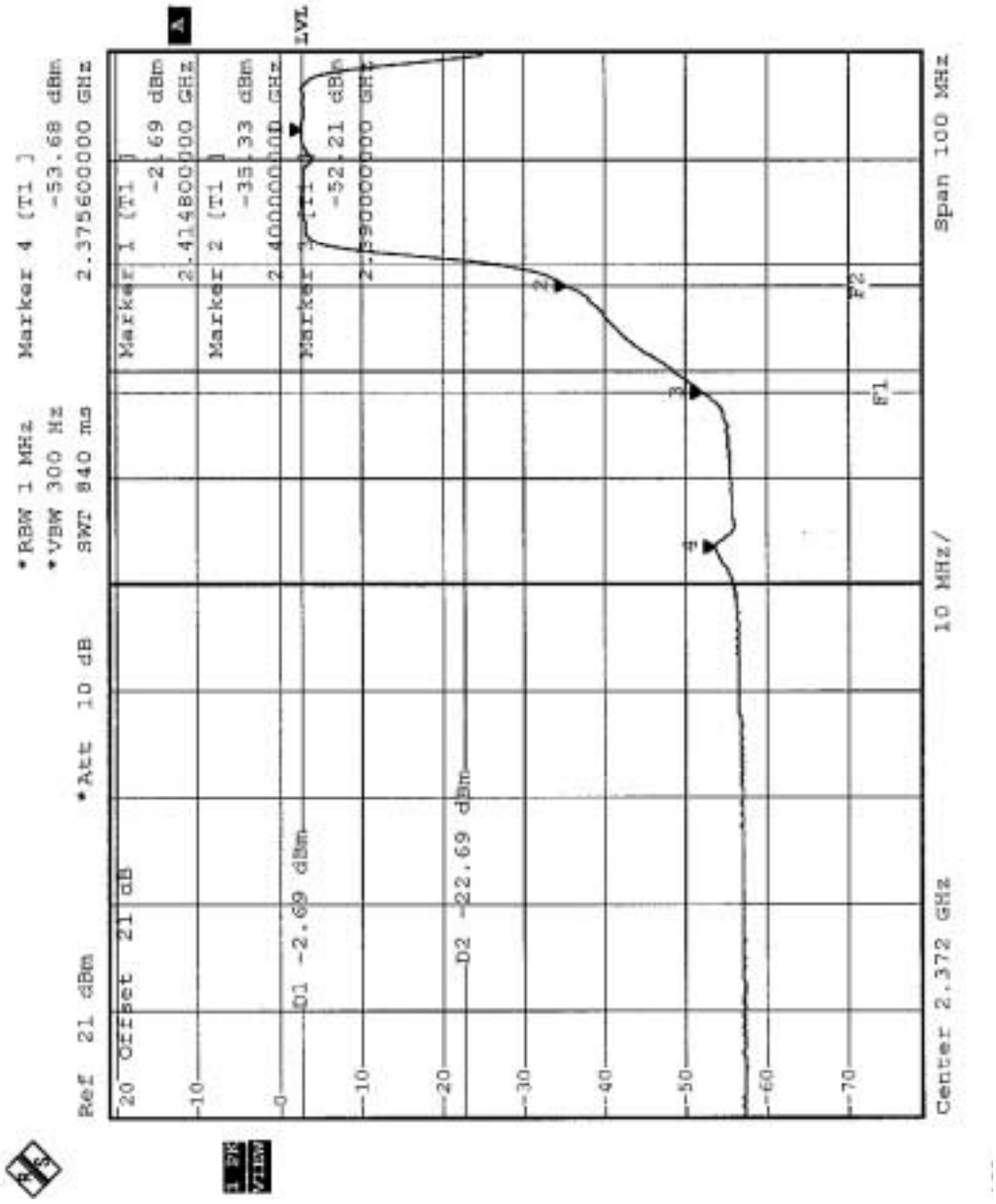
4.6.7 TEST RESULTS (B)

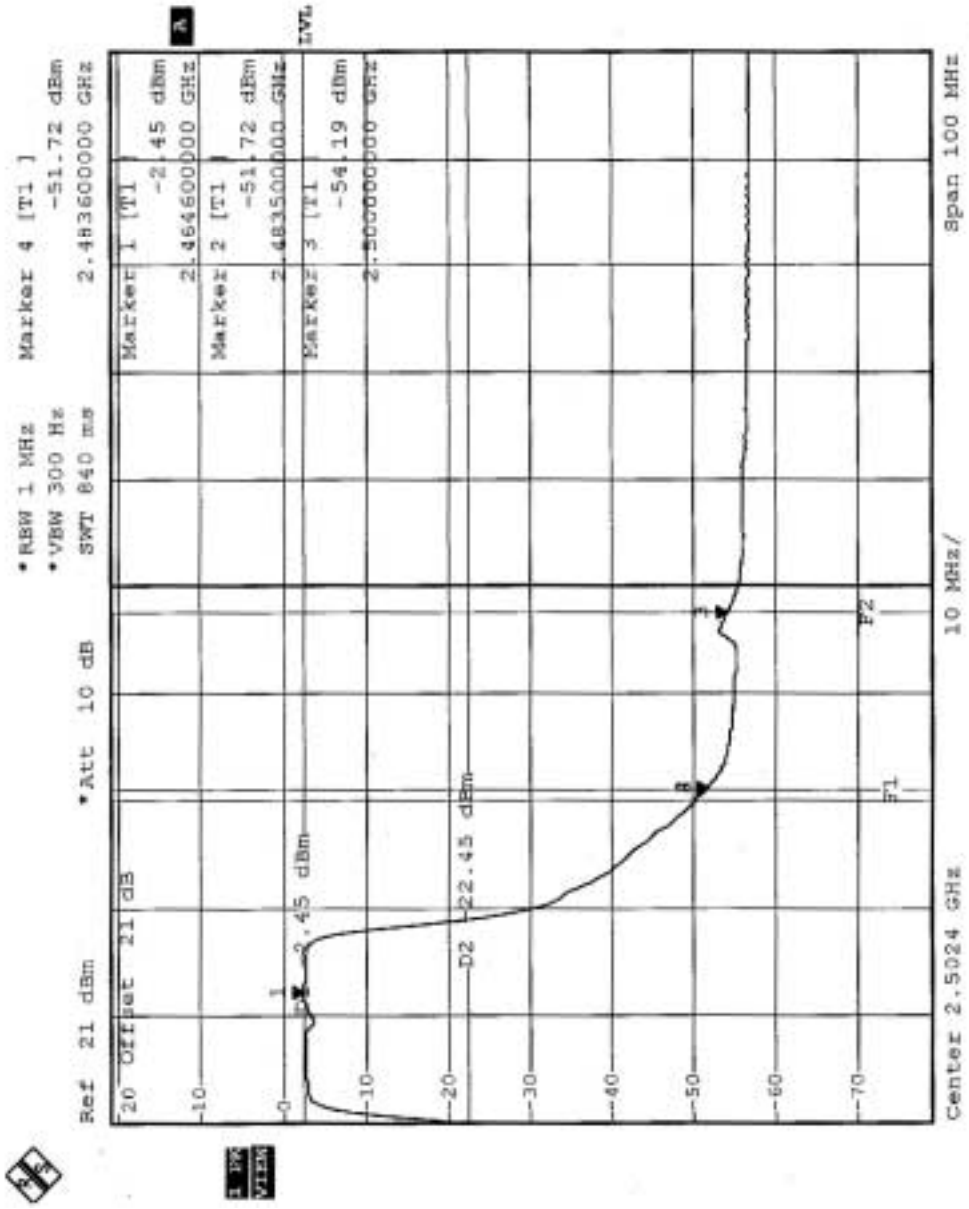
The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

NOTE (1): The band edge emission plot on the following first page shows 49.52dB delta between carrier maximum power and local maximum emission in restrict band (2.390GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 97.8dBuV/m, so the maximum field strength in restrict band is 97.8-49.52=48.28dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 49.27 dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2 is 96.9dBuV/m, so the maximum field strength in restrict band is 96.9-49.27=47.63 dBuV/m which is under 54 dBuV/m limit.


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Att 10 dB
Offset 21 dB
Ref 21 dBm
Marker 4 [T1]
-53.68 dBm
2.375600000 GHz
Marker 1 [T1]
-2.69 dBm
2.414800000 GHz
Marker 2 [T1]
-35.33 dBm
2.400000000 GHz
Marker 3 [T1]
-52.21 dBm
2.390000000 GHz
D1 -2.69 dBm
D2 -22.69 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
F1
F2
LVL


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-51.72 dBm
2.48360000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
Marker 1 [T1]
-2.45 dBm
2.46460000 GHz
Marker 2 [T1]
-51.72 dBm
2.48350000 GHz
Marker 3 [T1]
-54.19 dBm
2.50000000 GHz
2.45 dBm
22.45 dBm
D2
F1
F2
Center 2.5024 GHz
10 MHz/
Span 100 MHz

4.7 ANTENNA REQUIREMENT

4.7.1 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 15.247 (b), 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.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Integral Dipole antenna with 5ft cable without connector. The maximum Gain of the antenna is 0dBi.

5. TEST TYPES AND RESULTS (FOR PART 802.11a)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 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.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 4, 2004
ROHDE & SCHWARZ LISN (for EUT)	ESHS-Z5	848773/004	Nov. 04, 2004
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 27, 2004
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 03, 2004
Terminator(for KYORITSU)	50	3	Apr. 11, 2004
Software	Cond-V2e	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.
3. The test was performed in ADT Shielded Room No. A.
3. The VCCI Con A Registration No. is C-817.

5.1.3 TEST PROCEDURES

a. The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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.

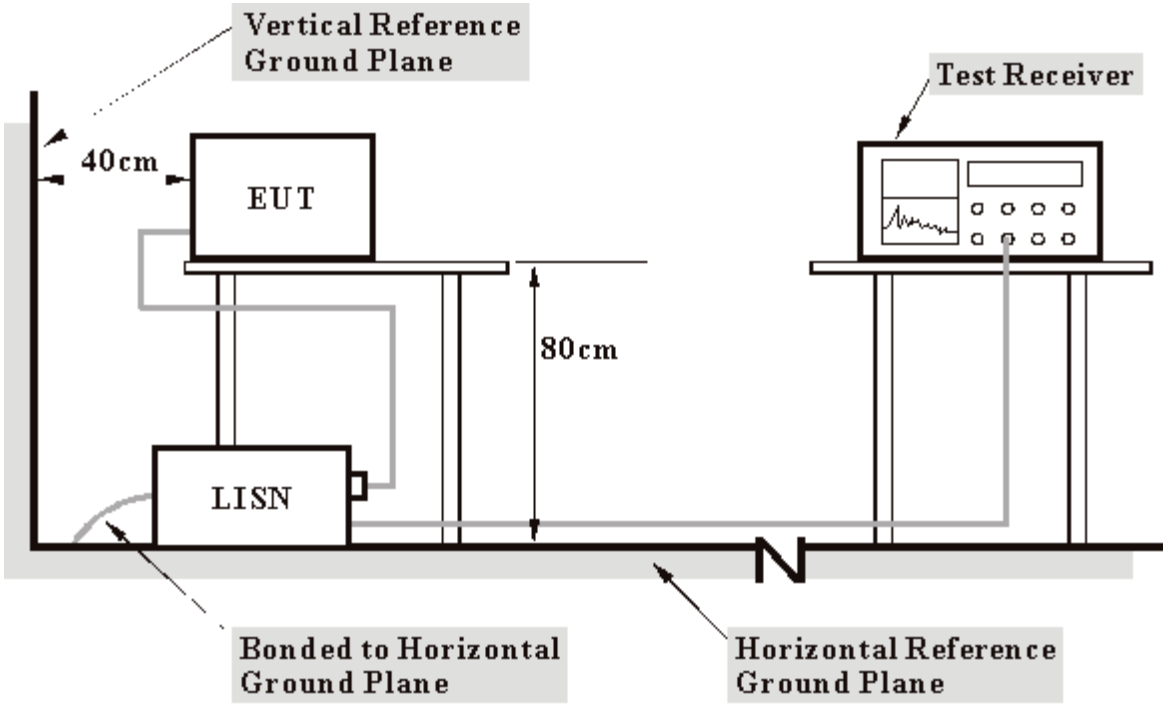
b. Both lines of the power mains connected to the EUT/HOST were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.1.6 EUT OPERATING CONDITIONS

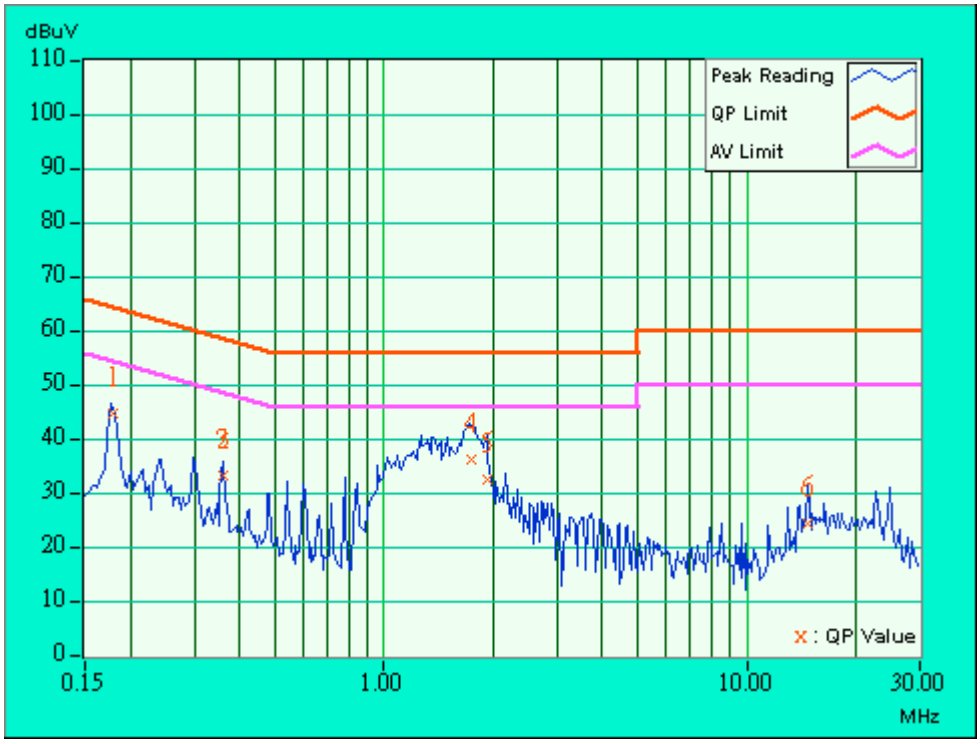
Same as 4.1.6.

5.1.7 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter		
MODEL	LA-5033	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 50%RH 980 hPa	**TESTED BY**	Eric Lee

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.179	0.20	43.70	-	43.90	-	64.52	54.52	-20.62	-
2	0.361	0.20	32.31	-	32.51	-	58.71	48.71	-26.20	-
3	0.361	0.20	32.29	-	32.49	-	58.71	48.71	-26.22	-
4	1.744	0.30	35.09	-	35.39	-	56.00	46.00	-20.61	-
5	1.923	0.30	31.44	-	31.74	-	56.00	46.00	-24.26	-
6	14.718	1.08	23.30	-	24.38	-	60.00	50.00	-35.62	-

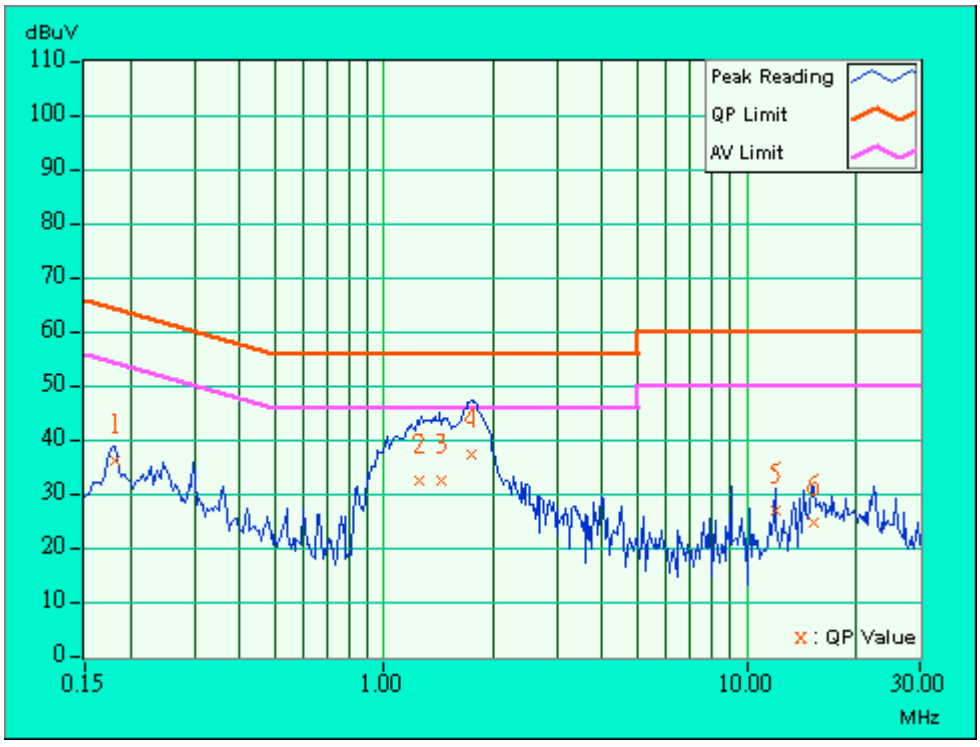
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	Symbol Wireless Networker 802.11a/g PCI Adapter		
MODEL	LA-5033	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 50%RH 980 hPa	**TESTED BY**	Eric Lee

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.20	35.46	-	35.66	-	64.43	54.43	-28.77	-
2	1.258	0.30	31.66	-	31.96	-	56.00	46.00	-24.04	-
3	1.439	0.30	31.76	-	32.06	-	56.00	46.00	-23.94	-
4	**1.741**	**0.30**	**36.32**	**-**	**36.62**	**-**	**56.00**	**46.00**	**-19.38**	**-**
5	11.996	0.82	26.05	-	26.87	-	60.00	50.00	-33.13	-
6	15.285	1.00	23.70	-	24.70	-	60.00	50.00	-35.30	-

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



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 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.

5.2.2 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

$$E=\frac{1000000\sqrt{30P}}{3} \quad \mu V/m, \quad \text{where P is the eirp (Watts)}$$

5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3467U00646	Jun. 29, 2004
*ADVANTEST Spectrum Analyzer	R3271A	85060311	Jun. 16, 2004
CHASE RF Pre_Amplifier	CPA9232	1056	May 12, 2004
*HP Pre_Amplifier	8449B	3008A01922	Oct. 13, 2004
*ROHDE & SCHWARZ Test Receiver	ESVS 30	841977/002	Sep. 17, 2004
*CHASE Broadband Antenna	CBL6112B	2798	Apr. 16, 2004
*Schwarzbeck Horn_Antenna	BBHA9120-D1	D123	Sep. 24, 2004
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170192	Feb. 16, 2005
SCHWARZBECK Tunable Dipole Antenna	UHAP	897	Mar. 07, 2005
SCHWARZBECK Tunable Dipole Antenna	VHAP	880	Mar. 07, 2005
*RF Switches	MP59B	1-5161-28698	Jul. 31, 2004
*RF Cable(CHASE)	CH A9525	Cable_OB_01	Jul. 31, 2004
*Software	AS60P8	NA	NA
*CHANCE MOST Antenna Tower	AT-100	CM-A007	NA
*CHANCE MOST Turn Table	TC-008	CM-T007	NA
*CORCOM AC Filter	MRI2030	024/019	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Tunable Dipole Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.
2. * = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. B.
5. The VCCI Site Registration No. is R-847.
6. The FCC Site Registration No. is 92753.
7. The CANADA Site Registration No. is IC 4824-2.

5.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. 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.

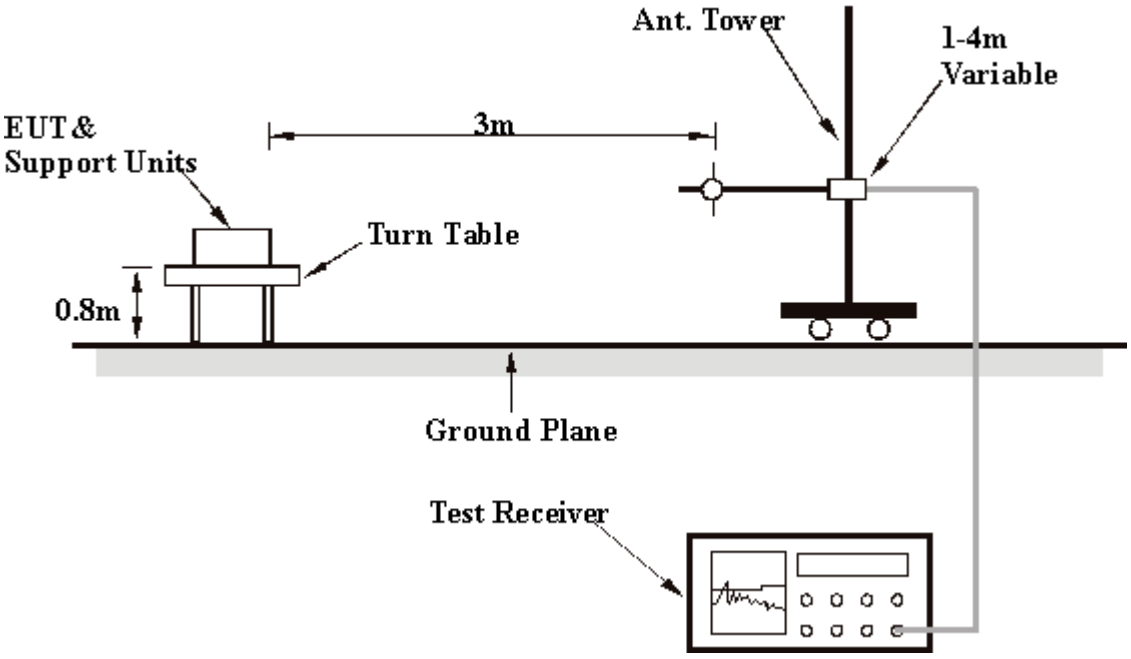
NOTE:

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 and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation

5.2.6 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6.

5.2.8 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
FREQUENCY RANGE	30 ~ 1000MHz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 66%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	166.38	36.10 QP	43.50	-7.40	1.73 H	317	25.20	10.90
2	233.00	38.60 QP	46.00	-7.40	1.22 H	207	27.00	11.60
3	299.50	32.00 QP	46.00	-14.00	1.10 H	220	16.30	15.70
4	320.00	34.00 QP	46.00	-12.00	1.00 H	207	17.70	16.30
5	400.00	33.50 QP	46.00	-12.50	1.00 H	211	15.30	18.20
6	480.00	29.90 QP	46.00	-16.10	1.02 H	209	9.30	20.60
7	720.08	34.40 QP	46.00	-11.60	1.32 H	263	9.20	25.20
8	766.11	29.70 QP	46.00	-16.30	2.04 H	4	2.90	26.80
9	768.09	38.20 QP	46.00	-7.80	1.21 H	234	11.50	26.70
10	810.01	32.30 QP	46.00	-13.70	1.33 H	235	5.80	26.50
11	864.10	38.10 QP	46.00	-7.90	1.22 H	228	10.50	27.60
12	912.11	34.10 QP	46.00	-11.90	1.00 H	78	6.30	27.80

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	166.37	31.20 QP	43.50	-12.30	1.10 V	278	20.30	10.90
2	232.80	32.40 QP	46.00	-13.60	1.09 V	241	20.80	11.60
3	280.00	25.20 QP	46.00	-20.80	1.08 V	216	10.60	14.60
4	400.00	27.90 QP	46.00	-18.10	1.07 V	352	9.70	18.20
5	480.00	28.90 QP	46.00	-17.10	1.04 V	263	8.30	20.60
6	720.08	32.50 QP	46.00	-13.50	1.00 V	289	7.30	25.20
7	768.09	37.00 QP	46.00	-9.00	1.03 V	208	10.30	26.70
8	810.02	32.00 QP	46.00	-14.00	1.04 V	212	5.50	26.50
9	864.10	35.40 QP	46.00	-10.60	1.09 V	164	7.80	27.60
10	912.11	35.50 QP	46.00	-10.50	1.23 V	20	7.70	27.80

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
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.

5.2.9 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	1
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	2025.00	41.50 PK	68.30	-26.80	1.06 H	148	12.70	28.80
2	#3606.00	47.40 PK	74.00	-26.60	1.25 H	68	14.20	33.20
3	#5150.00	40.80 PK	74.00	-33.20	1.37 H	221	3.80	37.00
4	*5180.00	92.20 PK			1.36 H	216	55.20	37.00
4	*5180.00	83.00 AV			1.36 H	216	46.00	37.00
5	10360.00	53.40 PK	68.30	-14.90	1.08 H	360	8.70	44.70
6	#15540.00	56.90 PK	74.00	-17.10	1.21 H	219	8.30	48.60
6	#15540.00	46.90 AV	54.00	-7.10	1.21 H	219	-1.70	48.60

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	2025.00	46.20 PK	68.30	-22.10	1.23 V	5	17.40	28.80
2	#3606.00	48.20 PK	74.00	-25.80	1.20 V	201	15.00	33.20
3	#5150.00	47.60 PK	74.00	-26.40	1.20 V	19	10.60	37.00
4	*5180.00	102.40 PK			1.21 V	14	65.40	37.00
4	*5180.00	93.90 AV			1.21 V	14	56.90	37.00
5	10360.00	53.70 PK	68.30	-14.60	1.29 V	114	9.00	44.70
6	#15540.00	58.30 PK	74.00	-15.70	1.18 V	33	9.70	48.60
6	#15540.00	47.40 AV	54.00	-6.60	1.18 V	33	-1.20	48.60

NOTE:

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

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	4
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	92.40 PK			1.22 H	67	55.40	37.00
1	*5240.00	84.40 AV			1.22 H	67	47.40	37.00
2	10480.00	53.00 PK	68.30	-15.30	1.20 H	55	8.00	45.00
3	#15720.00	54.20 PK	74.00	-19.80	1.15 H	39	6.20	48.00
3	#15720.00	43.60 AV	54.00	-10.40	1.15 H	39	-4.40	48.00

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	103.70 PK			1.22 V	65	66.70	37.00
1	*5240.00	95.50 AV			1.22 V	65	58.50	37.00
2	10480.00	54.30 PK	68.30	-14.00	1.21 V	59	9.30	45.00
3	#15720.00	55.30 PK	74.00	-18.70	1.17 V	73	7.30	48.00
3	#15720.00	43.70 AV	54.00	-10.30	1.17 V	73	-4.30	48.00

NOTE:

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

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	5
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	91.10 PK			1.22 H	68	54.10	37.00
1	*5260.00	83.20 AV			1.22 H	68	46.20	37.00
2	10520.00	53.30 PK	68.30	-15.00	1.24 H	158	8.10	45.20
3	#15780.00	55.80 PK	74.00	-18.20	1.24 H	156	7.90	47.90
3	#15780.00	44.80 AV	54.00	-9.20	1.24 H	156	-3.10	47.90

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT3 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	102.60 PK			1.21 V	64	65.60	37.00
1	*5260.00	94.70 AV			1.21 V	64	57.70	37.00
2	10520.00	53.50 PK	68.30	-14.80	1.22 V	315	8.30	45.20
3	#15780.00	56.20 PK	74.00	-17.80	1.20 V	176	8.30	47.90
3	#15780.00	44.80 AV	54.00	-9.20	1.20 V	176	-3.10	47.90

NOTE:

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

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	8
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	2025.00	41.20 PK	68.30	-27.10	1.01 H	244	12.40	28.80
2	#3606.00	49.40 PK	74.00	-24.60	1.30 H	351	16.20	33.20
3	*5320.00	93.60 PK			1.38 H	213	56.60	37.00
3	*5320.00	85.00 AV			1.38 H	213	48.00	37.00
4	#5350.00	42.40 PK	74.00	-31.60	1.39 H	200	5.40	37.00
5	#10640.00	53.70 PK	74.00	-20.30	1.25 H	334	7.40	46.30
5	#10640.00	44.70 AV	54.00	-9.30	1.25 H	334	-1.60	46.30
6	#15960.00	55.10 PK	74.00	-18.90	1.05 H	25	7.80	47.30
6	#15960.00	46.30 AV	54.00	-7.70	1.05 H	25	-1.00	47.30

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	2025.00	46.30 PK	68.30	-22.00	1.15 V	337	17.50	28.80
2	#3606.00	47.10 PK	74.00	-26.90	1.07 V	336	13.90	33.20
3	*5320.00	105.90 PK			1.30 V	360	68.90	37.00
3	*5320.00	97.00 AV			1.30 V	360	60.00	37.00
4	#5350.00	54.60 PK	74.00	-19.40	1.35 V	355	17.60	37.00
4	#5350.00	46.20 AV	54.00	-7.80	1.35 V	355	9.20	37.00
5	#10640.00	53.40 PK	74.00	-20.60	1.35 V	353	7.10	46.30
5	#10640.00	43.40 AV	54.00	-10.60	1.35 V	353	-2.90	46.30
6	#15960.00	56.50 PK	74.00	-17.50	1.15 V	337	9.20	47.30
6	#15960.00	46.30 AV	54.00	-7.70	1.15 V	337	-1.00	47.30

NOTE:

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

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	9
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	5715.00	46.30 PK	68.30	-22.00	1.52 H	187	8.80	37.50
2	5725.00	52.60 PK	78.30	-25.70	1.52 H	198	15.10	37.50
3	*5745.00	94.10 PK			1.05 H	259	56.50	37.60
3	*5745.00	85.90 AV			1.05 H	259	48.30	37.60
4	#11490.00	58.40 PK	74.00	-15.60	1.43 H	255	7.10	51.30
4	**#11490.00**	**49.20 AV**	**54.00**	**-4.80**	**1.43 H**	**255**	**-2.10**	**51.30**
5	17235.00	60.20 PK	68.30	-8.10	1.40 H	193	8.50	51.70

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	5715.00	52.70 PK	68.30	-15.60	1.34 V	2	15.20	37.50
2	5725.00	64.50 PK	78.30	-13.80	1.35 V	0	27.00	37.50
3	*5745.00	104.40 PK			1.41 V	0	66.80	37.60
3	*5745.00	96.10 AV			1.41 V	0	58.50	37.60
4	#11490.00	59.00 PK	74.00	-15.00	1.39 V	89	7.70	51.30
4	#11490.00	47.90 AV	54.00	-6.10	1.39 V	89	-3.40	51.30
5	17235.00	61.30 PK	68.30	-7.00	1.32 V	140	9.60	51.70

NOTE:

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

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal Mode	**CHANNEL**	12
FREQUENCY RANGE	1000MHz~40000MHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 76%RH, 980 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
TESTED BY	Tony Chen		

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	*5805.00	91.70 PK			1.34 H	209	54.00	37.70
1	*5805.00	84.50 AV			1.34 H	209	46.80	37.70
2	5825.00	51.10 PK	78.30	-27.20	1.35 H	201	13.40	37.70
3	5835.00	45.10 PK	68.30	-23.20	1.36 H	222	7.40	37.70
4	#11610.00	58.00 PK	74.00	-16.00	1.22 H	301	7.00	51.00
4	#11610.00	48.70 AV	54.00	-5.30	1.22 H	301	-2.30	51.00
5	17415.00	62.10 PK	68.30	-6.20	1.02 H	25	8.50	53.60

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	*5805.00	102.50 PK			1.57 V	38	64.80	37.70
1	*5805.00	94.50 AV			1.57 V	38	56.80	37.70
2	5825.00	63.20 PK	78.30	-15.10	1.53 V	358	25.50	37.70
3	5835.00	51.10 PK	68.30	-17.20	1.53 V	357	13.40	37.70
4	#11610.00	59.10 PK	74.00	-14.90	1.35 V	38	8.10	51.00
4	#11610.00	48.40 AV	54.00	-5.60	1.35 V	38	-2.60	51.00
5	17415.00	62.70 PK	68.30	-5.60	1.25 V	330	9.10	53.60

NOTE:

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

5.3 PEAK TRANSMIT POWER MEASUREMENT

5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35 GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825 GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

Note: Where B is the 26dB emission bandwidth in MHz.

5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

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

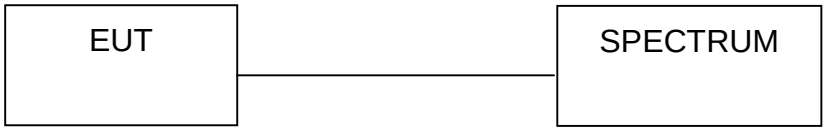
5.3.3 TEST PROCEDURE

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 30kHz.
4. Using the spectrum analyzer's channel power measurement function to measure the output power.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

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

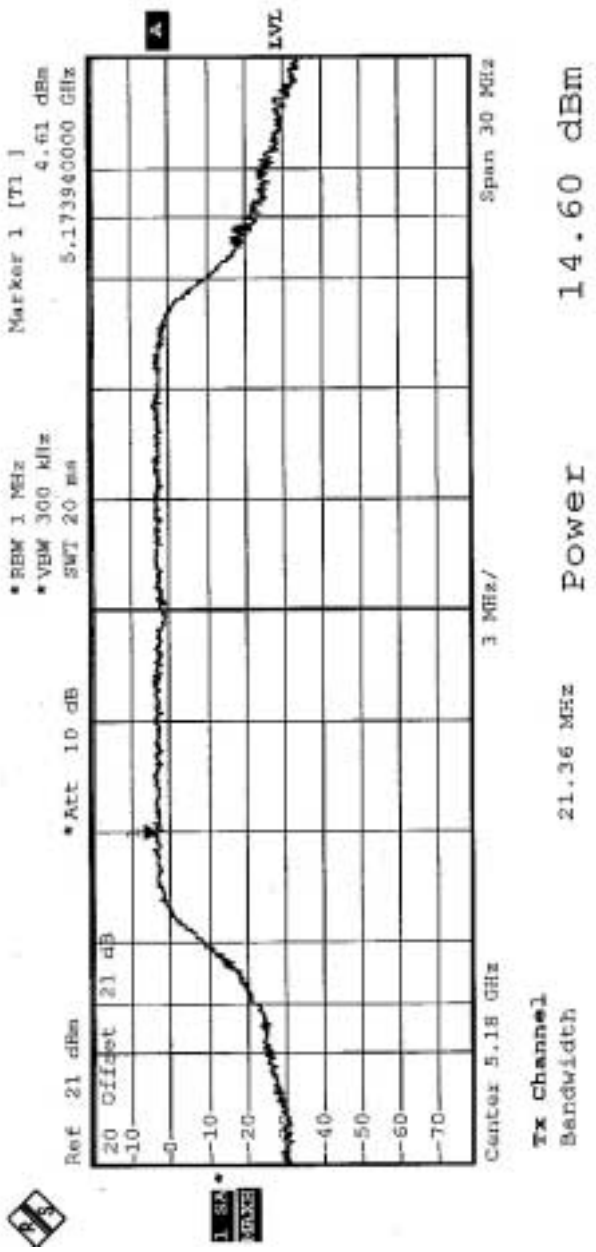
5.3.7 TEST RESULTS

EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24eg. C, 76RH, 980 hPa	**TESTED BY**	Tony Chen

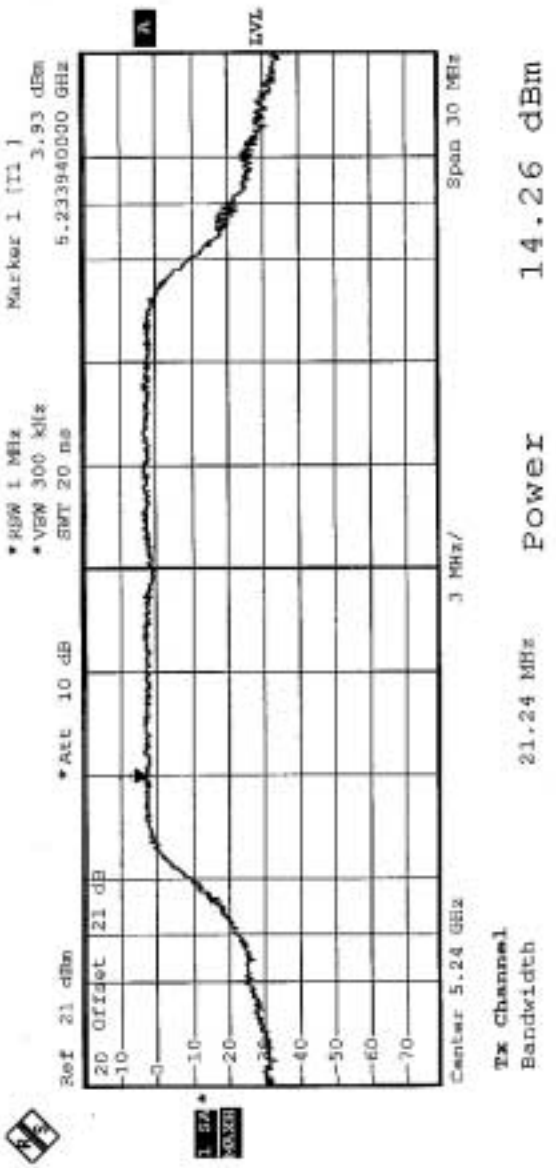
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	14.60	17.00	21.36	PASS
4	5240	14.26	17.00	21.24	PASS
5	5260	14.09	24.00	21.18	PASS
8	5320	14.71	24.00	21.48	PASS
9	5745	14.84	30.00	21.48	PASS
12	5805	14.66	30.00	21.48	PASS

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

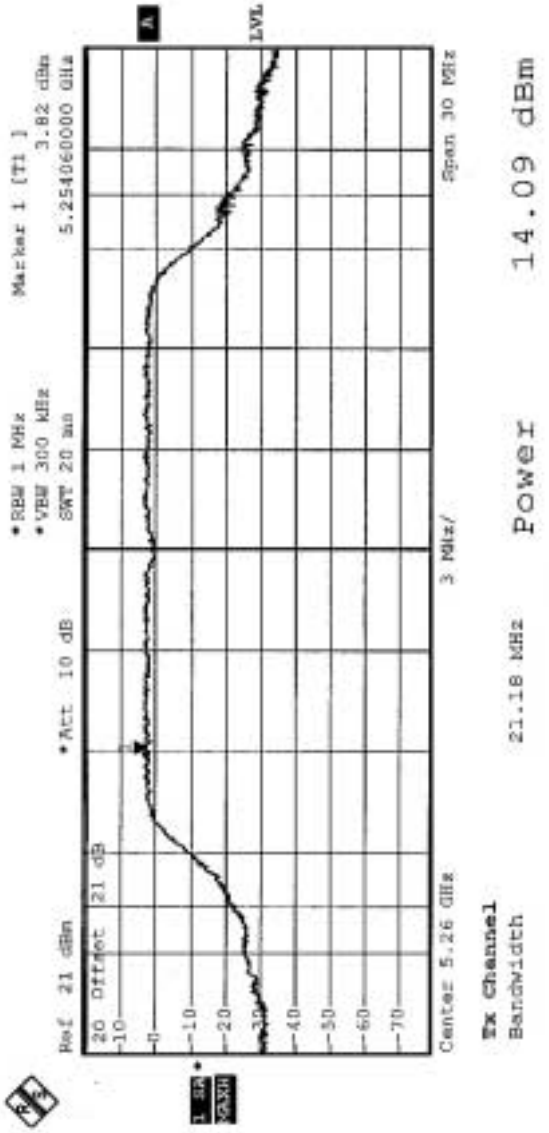
CHANNEL 1


Marker 1 [T1]
4.61 dBm
5.173960000 GHz
RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
20 Offset 21 dB
Center 5.18 GHz
3 MHz/
Span 30 MHz
Tx channel
Bandwidth
21.36 MHz
Power
14.60 dBm

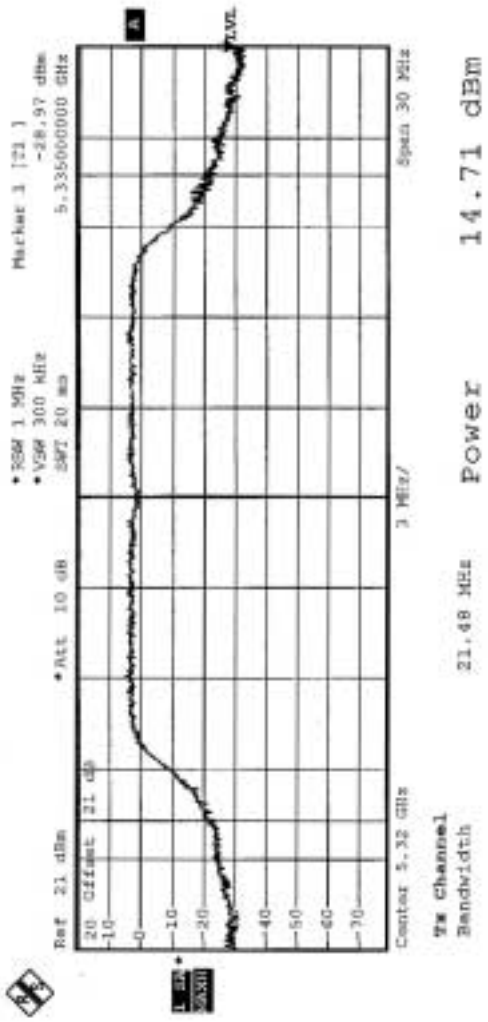
CHANNEL 4


Ref 21 dBm
Offset 21 dB
Att 10 dB
RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
3.93 dBm
5.233940000 GHz
Center 5.24 GHz
3 MHz/
Span 30 MHz
Tx Channel
Bandwidth
21.24 MHz
Power
14.26 dBm

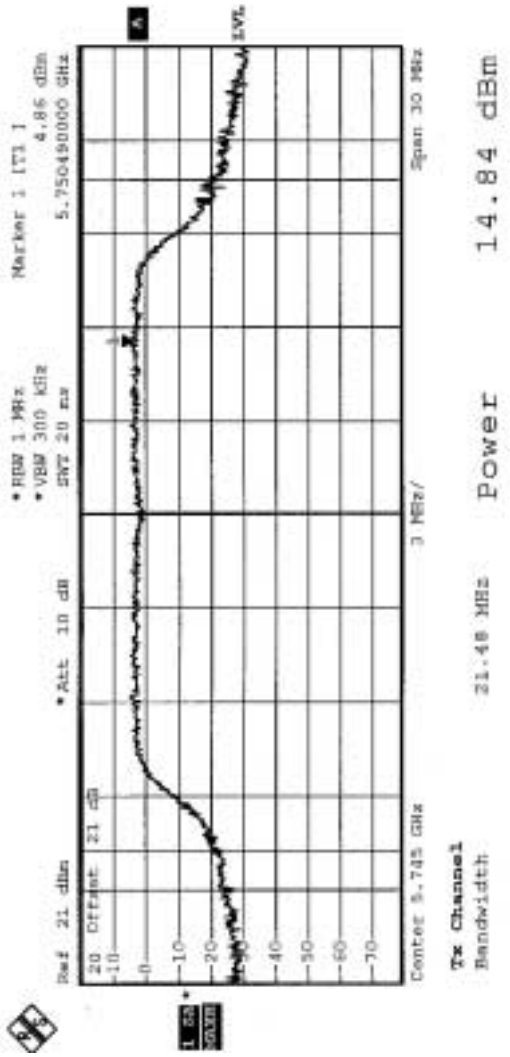
CHANNEL 5


Ref 21 dBm
20 Offset 21 dB
10
0
-10
-20
-30
-40
-50
-60
-70
Center 5.26 GHz
3 MHz/
Span 30 MHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 10 dB
Marker 1 [T1]
3.82 dBm
5.254060000 GHz
LVL
Tx Channel
Bandwidth
21.18 MHz
Power
14.09 dBm

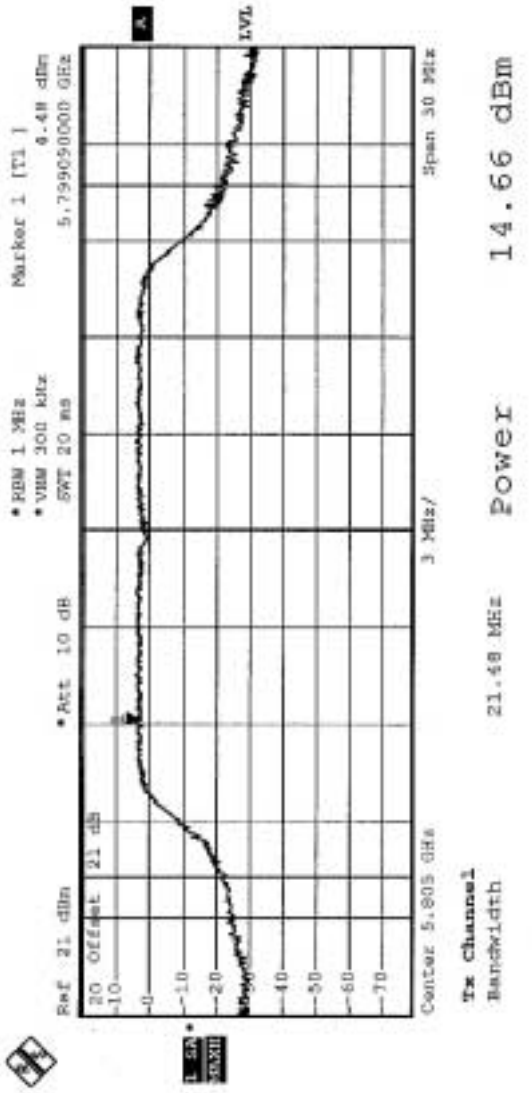
CHANNEL 8


Ref 21 dBm
Offset 21 dB
Att 10 dB
RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
-28.97 dBm
5.335000000 GHz
Center 5.32 GHz
3 MHz/
Span 30 MHz
Tx Channel
Bandwidth
21.48 MHz
Power
14.71 dBm

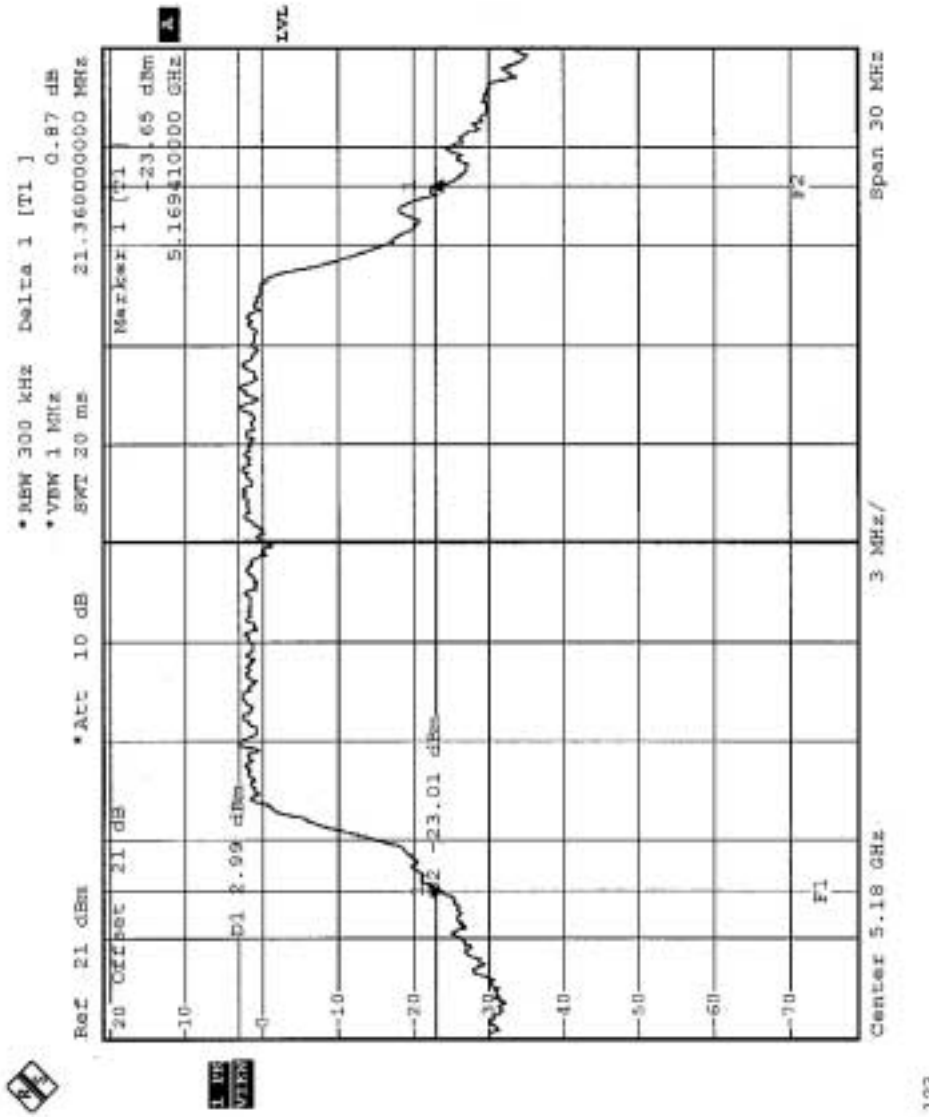
CHANNEL 9


Marker 1 [T1]
4.86 dBm
5.750490000 GHz
RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Center 5.745 GHz
3 MHz/
Span 30 MHz
Tx Channel
Bandwidth
21.40 MHz
Power
14.84 dBm

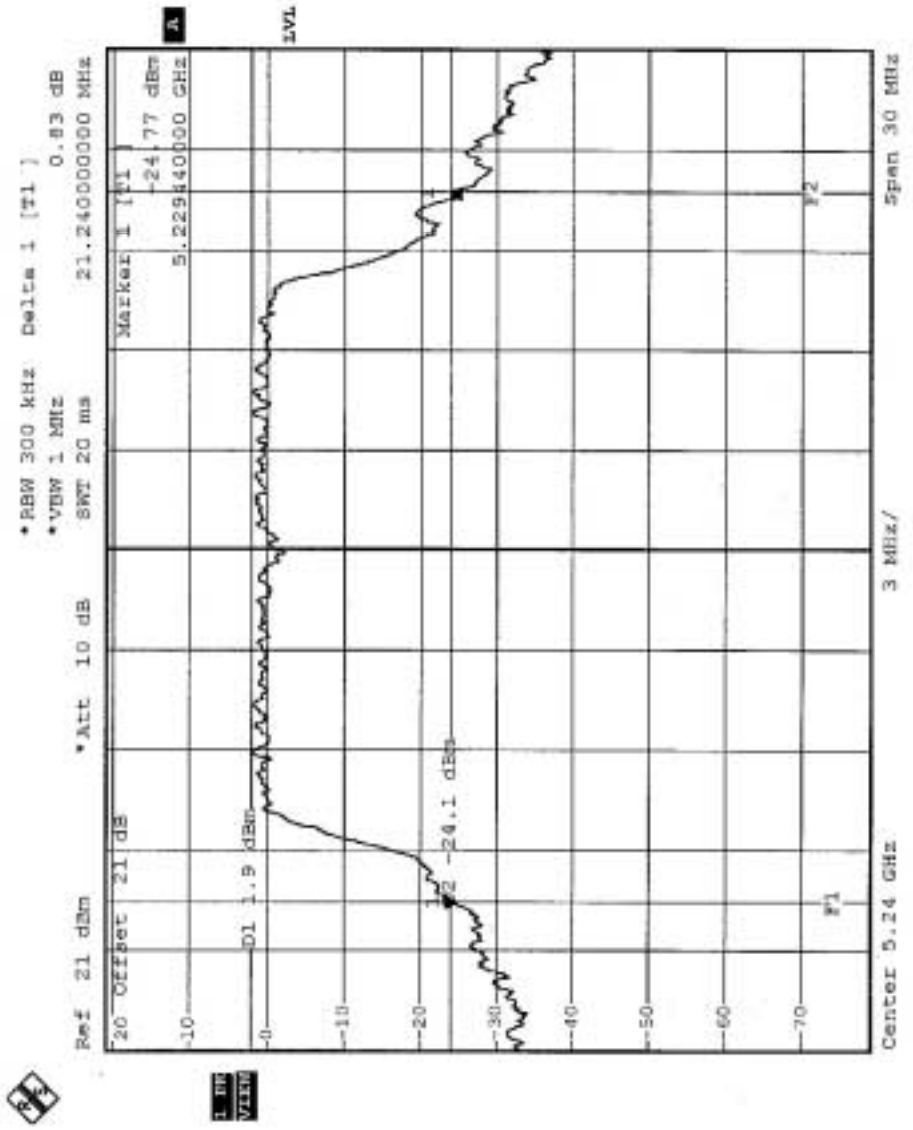
CHANNEL 12


Marker 1 [T1]
-0.48 dBm
5.799050000 GHz
RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Center 5.805 GHz
3 MHz/
Span 30 MHz
Tx Channel
Bandwidth
21.48 MHz
Power
14.66 dBm

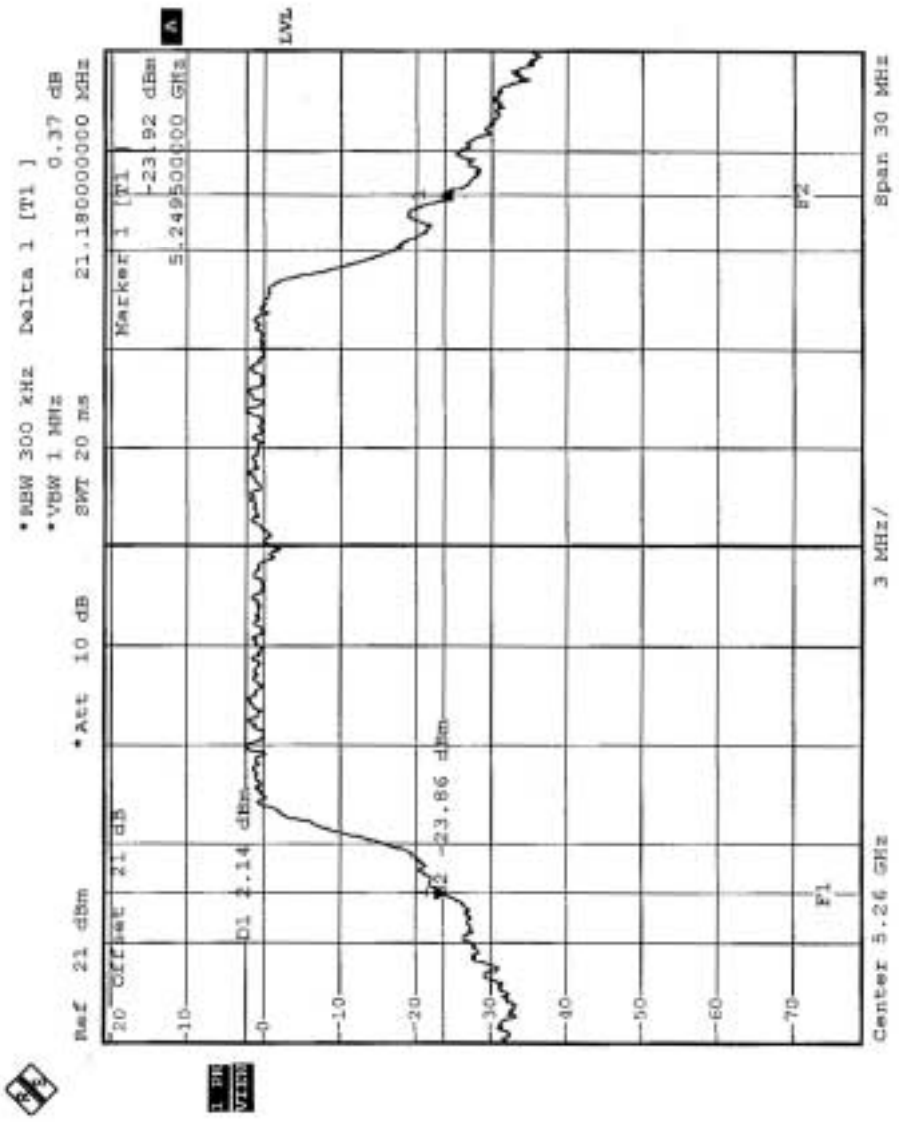
CHANNEL 1


RBW 300 kHz
VBW 1 MHz
SWT 30 ms
Delta 1 [T1]
0.87 dB
21.36000000 MHz
Marker 1 [T1]
-23.65 dBm
5.16941000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 2.99 dBm
D2 -23.01 dBm
Center 5.18 GHz
3 MHz/
Span 30 MHz

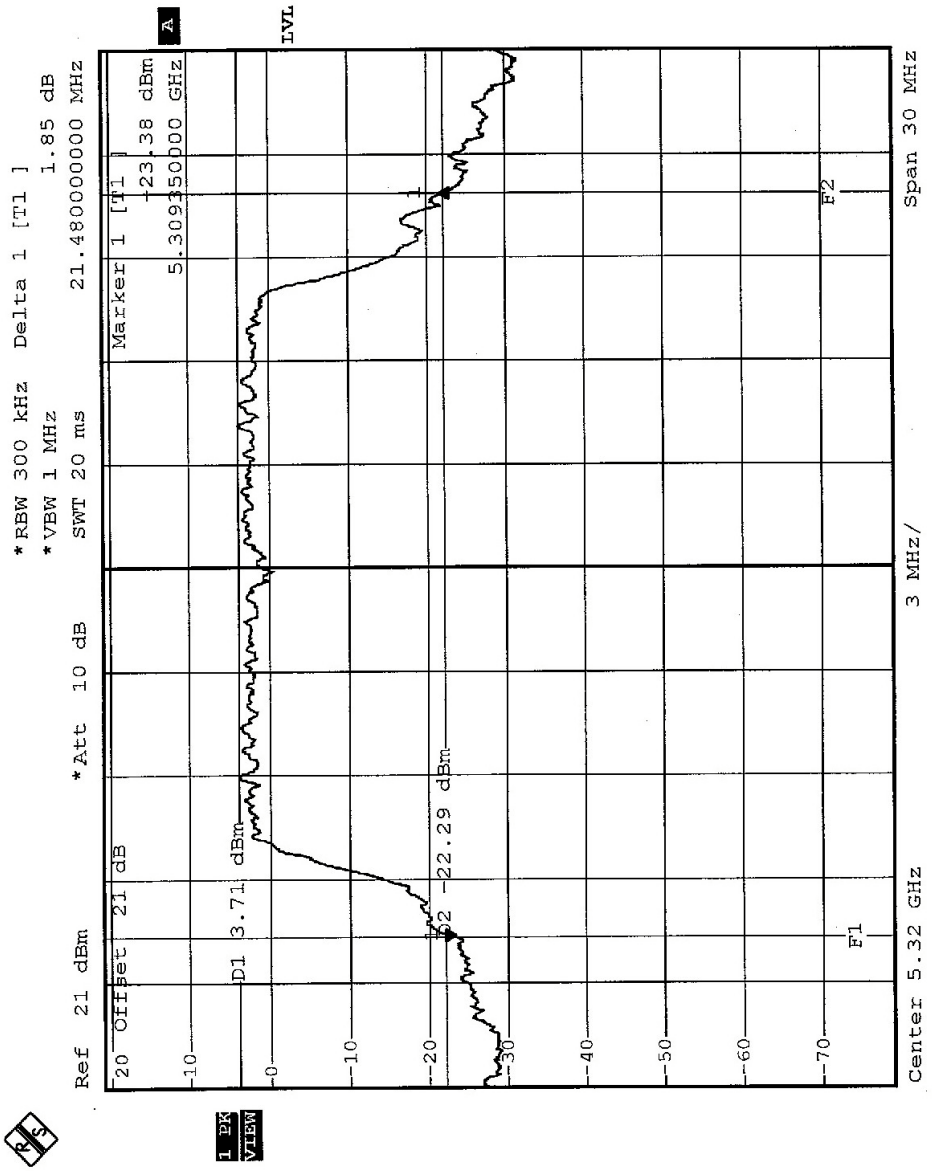
CHANNEL 4


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
0.83 dB
21.240000000 MHz
Marker 1 [T1]
-24.77 dBm
5.229440000 GHz
D1 1.9 dBm
D2 -24.1 dBm
Center 5.24 GHz
3 MHz/
Span 30 MHz

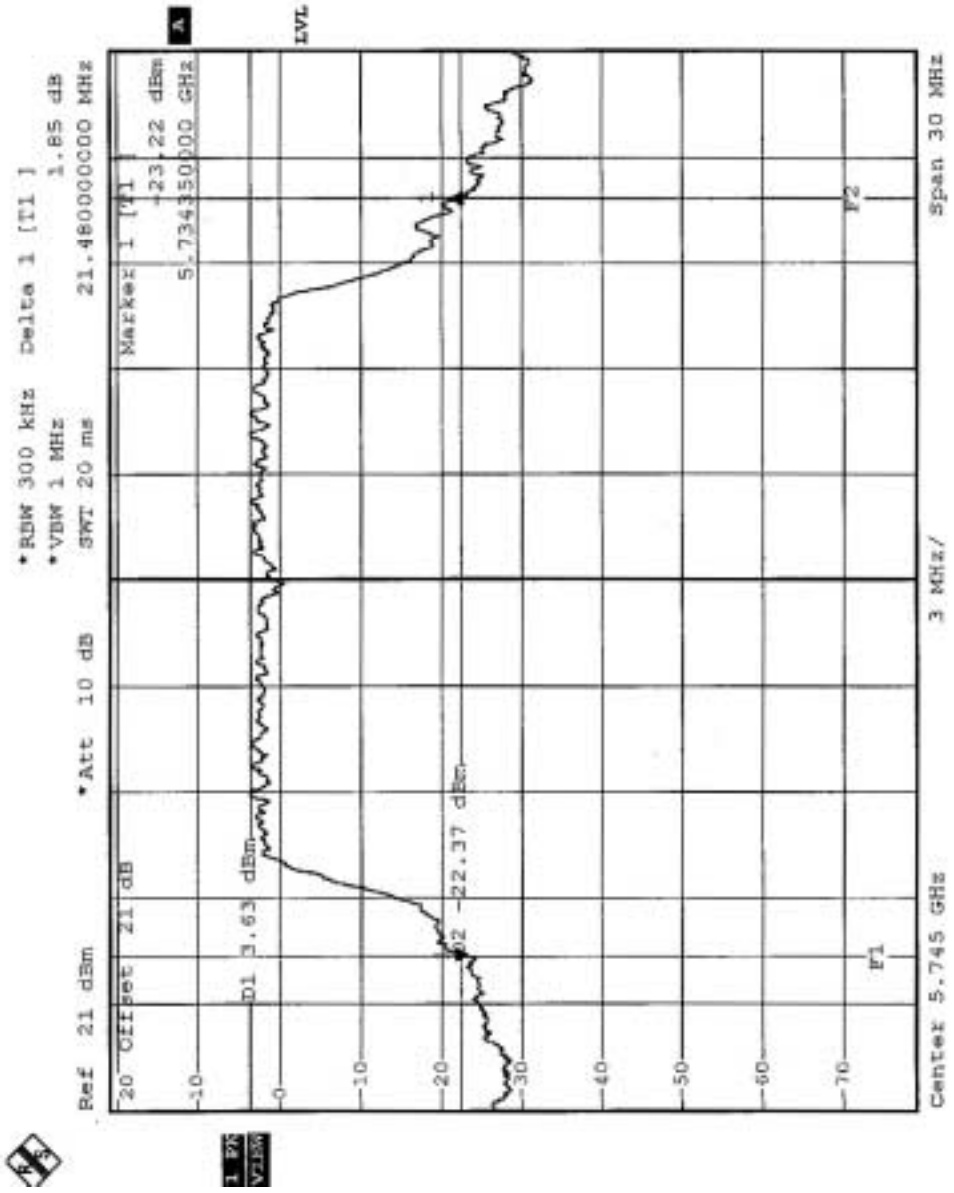
CHANNEL 5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Delta 1 [T1]
0.37 dB
21.180000000 MHz
Marker 1 [T1
-23.92 dBm
5.249500000 GHz
D1 2.14 dBm
-23.86 dBm
Center 5.26 GHz
3 MHz/
Span 30 MHz

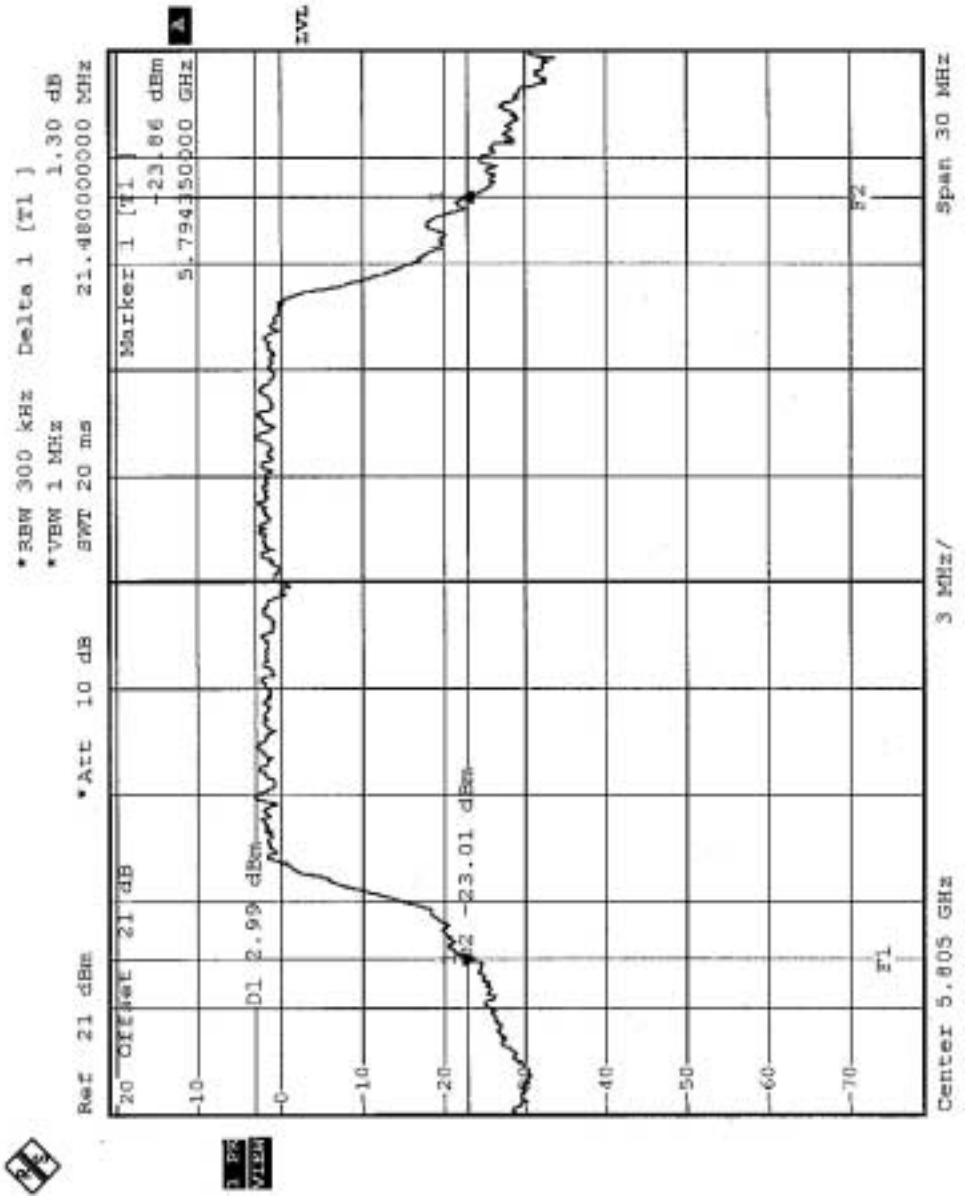
CHANNEL 8


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
1.85 dB
21.480000000 MHz
Marker 1 [T1]
-23.38 dBm
5.309350000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 3.71 dBm
D2 -22.29 dBm
F1
F2
Center 5.32 GHz
3 MHz/
Span 30 MHz
1 PK
VIEW
LVL
A

CHANNEL9


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
1.85 dB
21.48000000 MHz
Marker 1 [T1]
-23.22 dBm
5.734350000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
D1 3.63 dBm
D2 -22.37 dBm
Center 5.745 GHz
3 MHz/
Span 30 MHz
LVL
F1
F2

CHANNEL 12


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Delta 1 [T1]
1.30 dB
21.480000000 MHz
Marker 1 [T1]
-23.86 dBm
5.794150000 GHz
D1 2.99 dBm
-23.01 dBm
Center 5.805 GHz
3 MHz/
Span 30 MHz

5.4 PEAK POWER EXCURSION MEASUREMENT

5.4.1 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

5.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

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

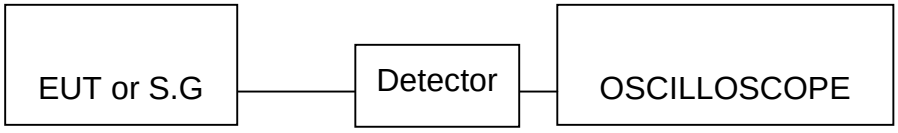
5.4.3 TEST PROCEDURE

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=30KHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

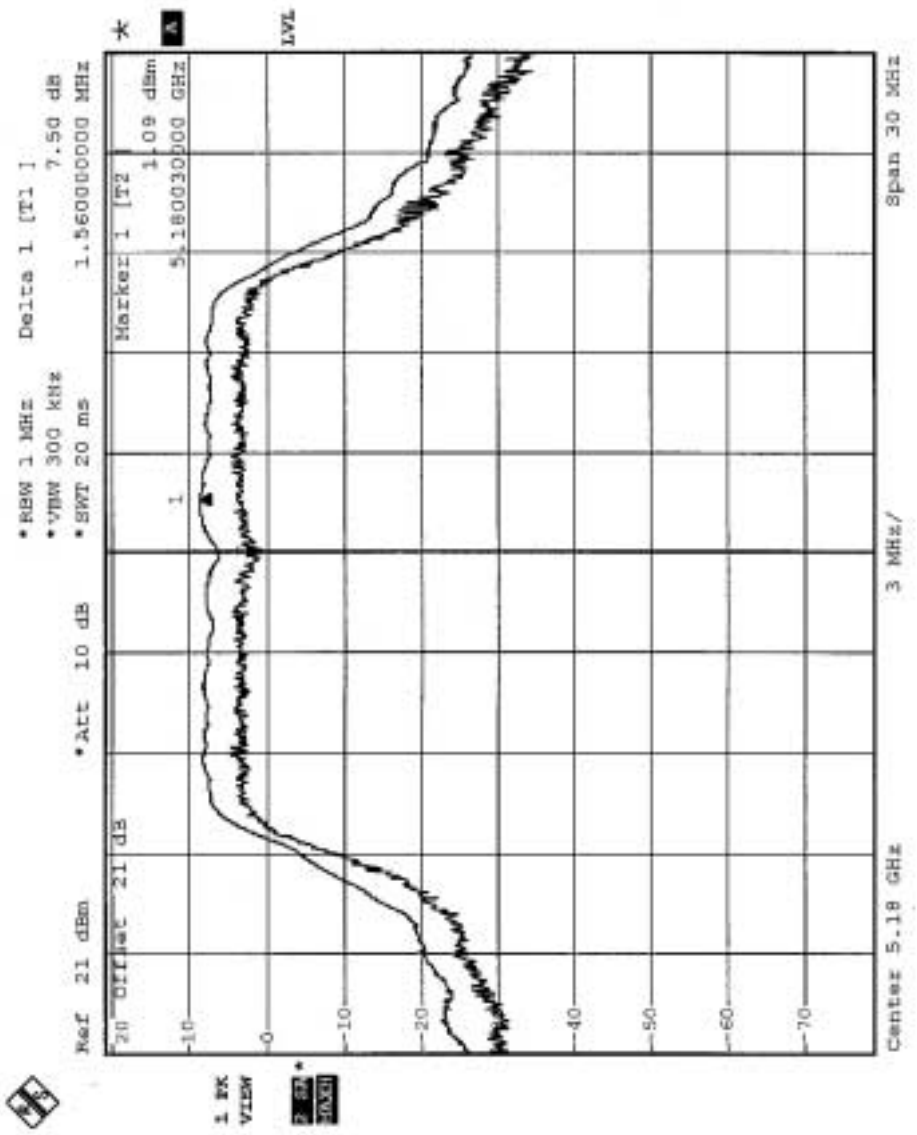
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.4.7 TEST RESULTS

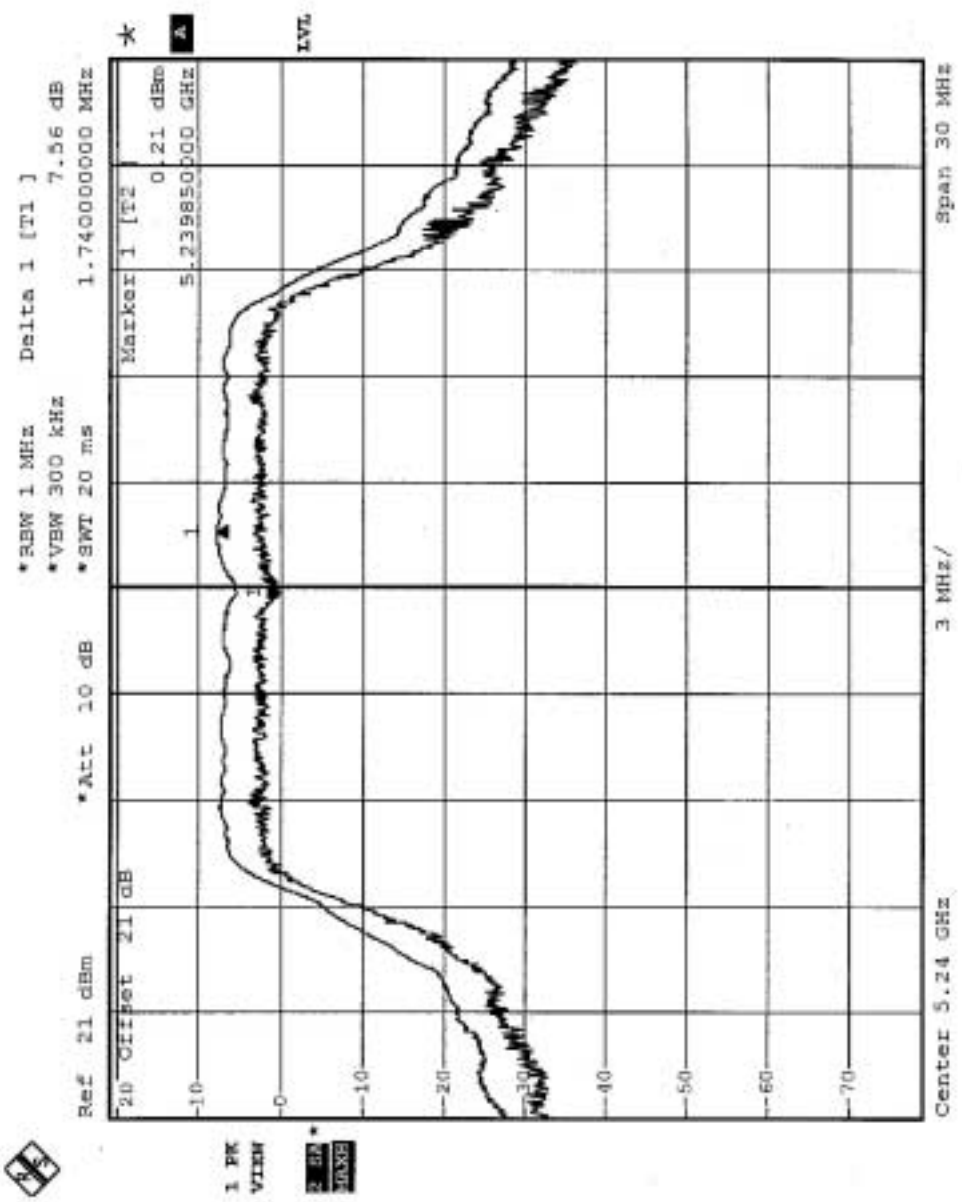
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24eg. C, 76RH, 980 hPa	**TESTED BY**	Tony Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.50	13	PASS
4	5240	7.56	13	PASS
5	5260	7.19	13	PASS
8	5320	7.06	13	PASS
9	5745	6.58	13	PASS
12	5805	6.63	13	PASS

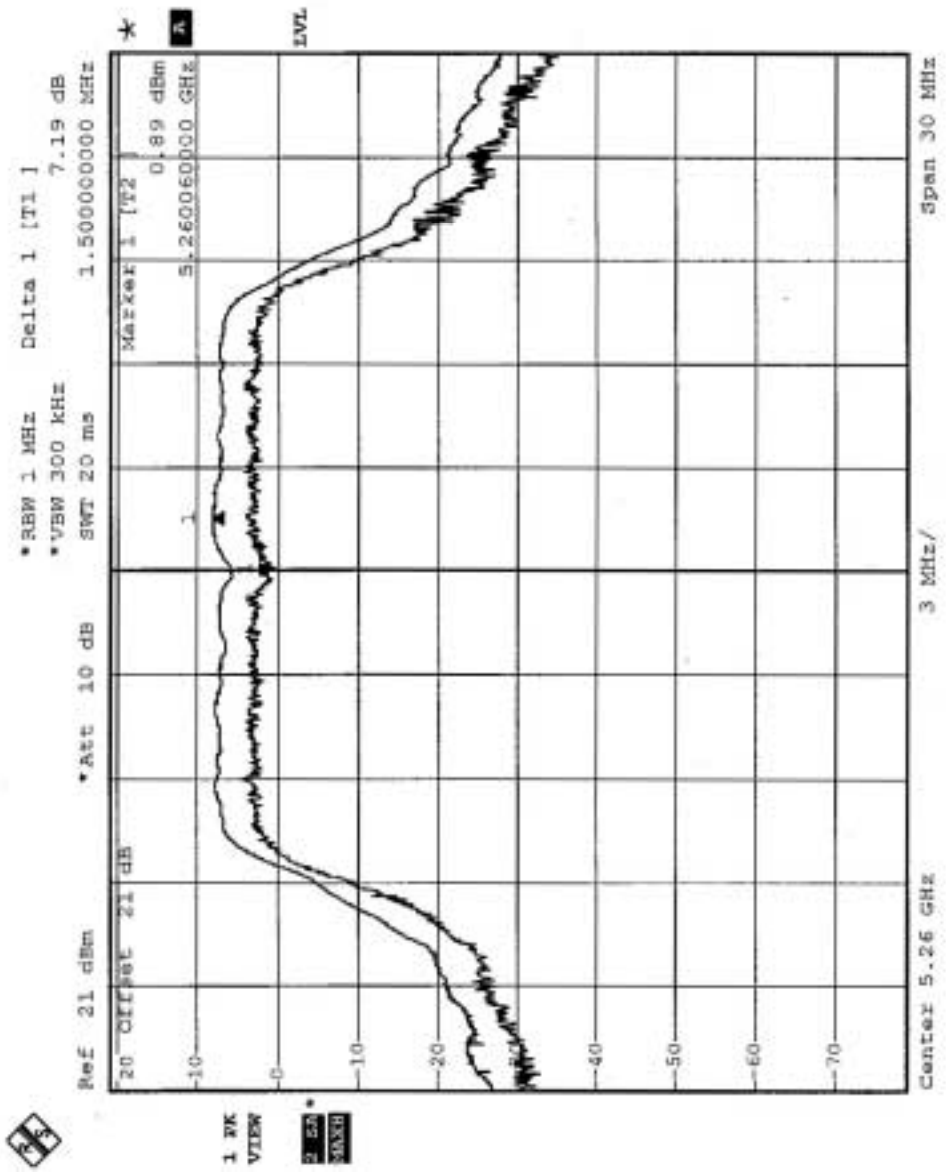
CHANNEL 1


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.50 dB
1.560000000 MHz
Marker 1 [T2
1.09 dBm
5.180300000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
LVL
Center 5.18 GHz
3 MHz/
Span 30 MHz
1 PK
VIEW
MAXH

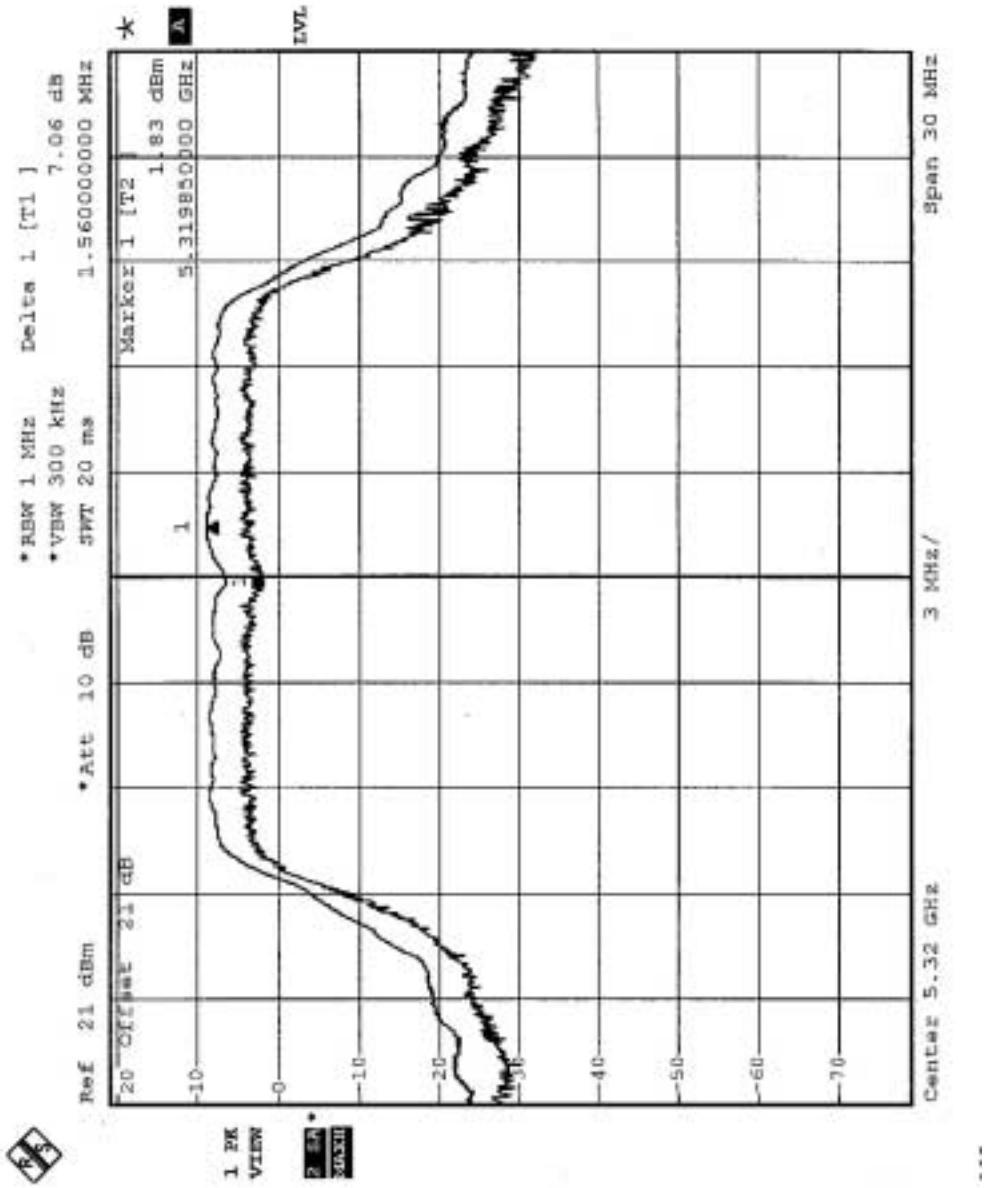
CHANNEL 4


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.56 dB
1.74000000 MHz
Marker 1 [T2
0.21 dBm
5.23985000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Center 5.24 GHz
3 MHz/
Span 30 MHz
1 PK
VIEW
LVL

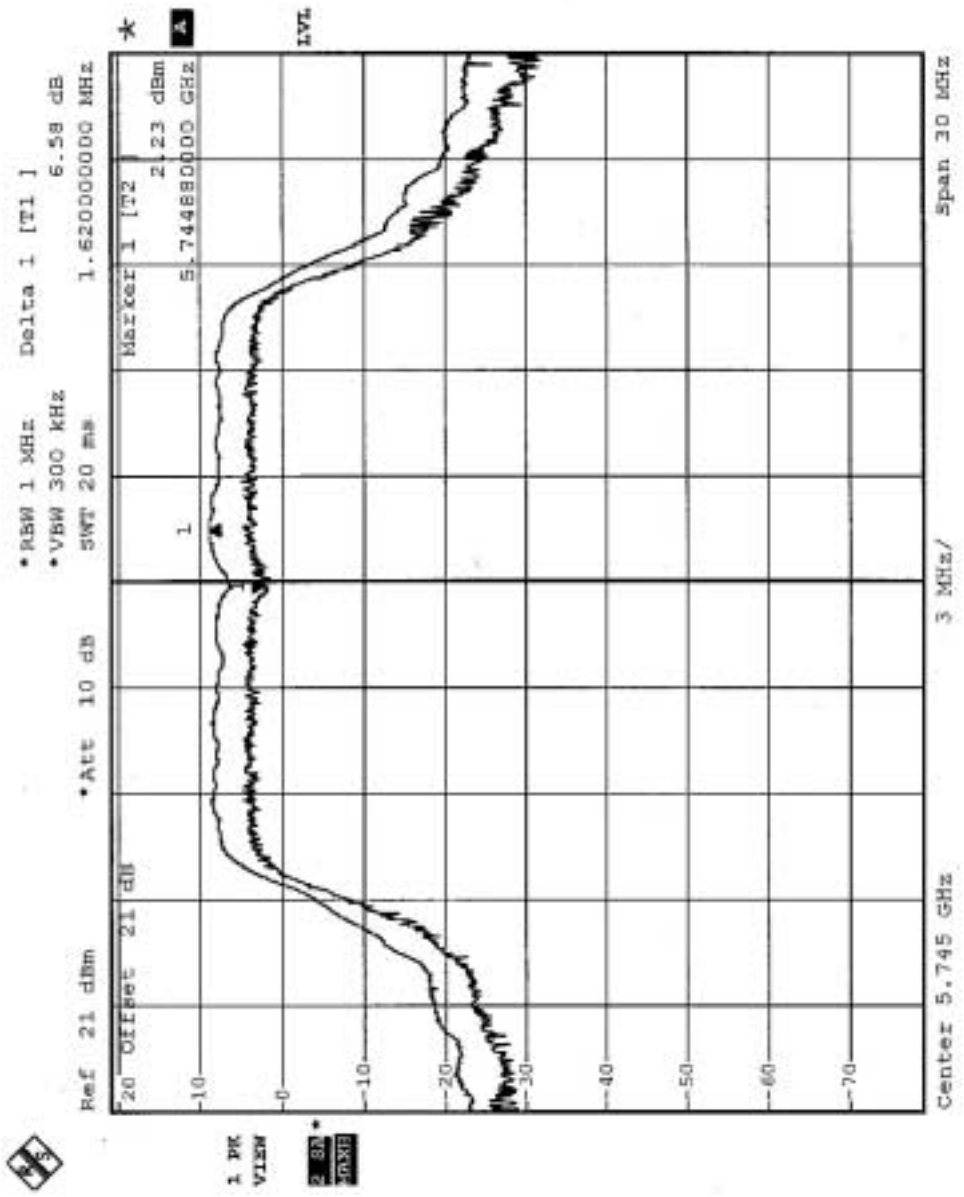
CHANNEL 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.19 dB
1.50000000 MHz
Marker 1 [T2]
0.89 dBm
5.26060000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Center 5.26 GHz
3 MHz/
Span 30 MHz
1 VIEW
2 MAXH

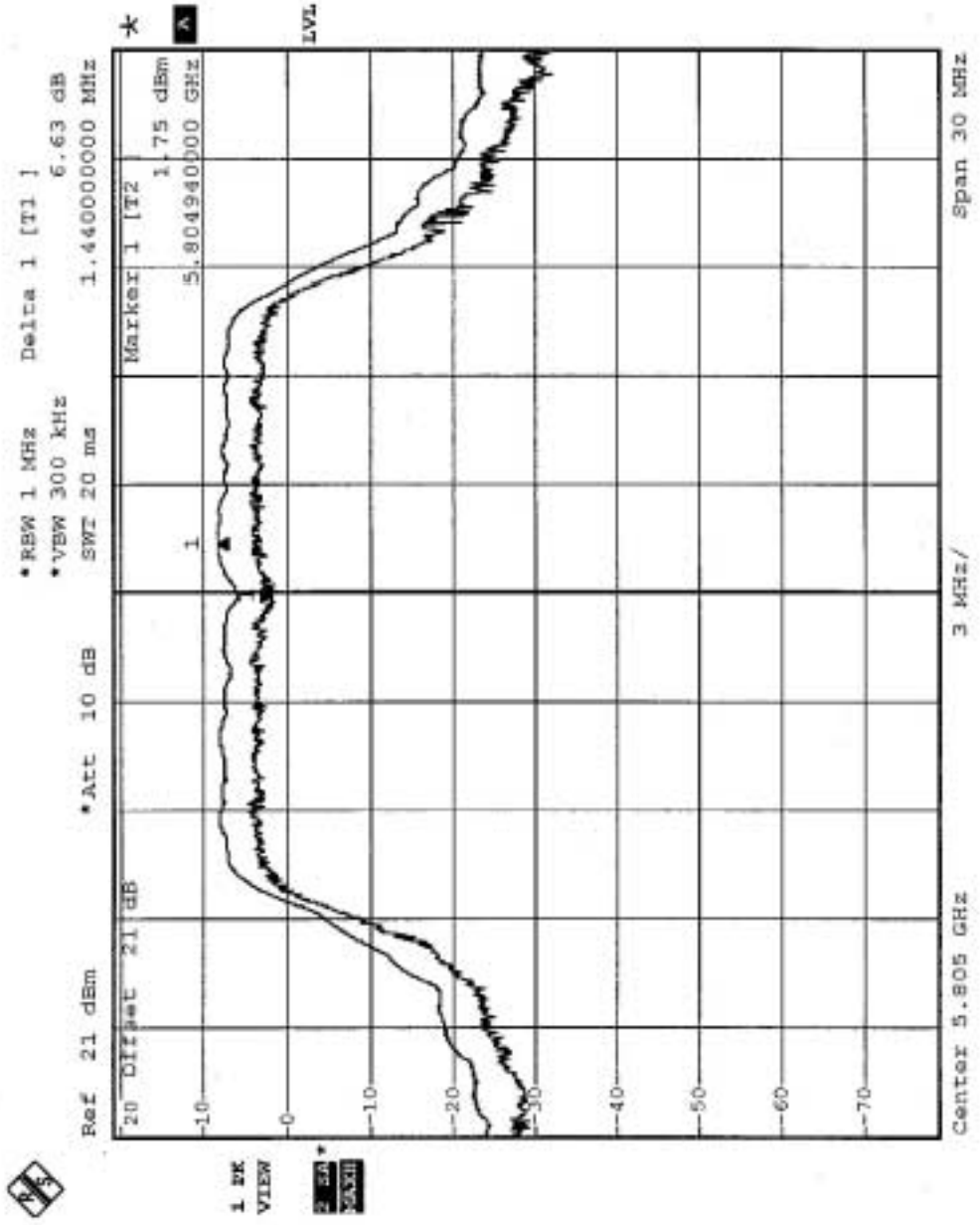
CHANNEL 8


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Att 10 dB
Ref 21 dBm
Offset 21 dB
Delta 1 [T1]
7.06 dB
1.56000000 MHz
Marker 1 [T2
1.83 dBm
5.31985000 GHz
Center 5.32 GHz
Span 30 MHz
3 MHz/
1 PK
VIEW
LVL

CHANNEL 9


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
6.58 dB
1.62000000 MHz
Att 10 dB
Marker 1 [T2
2.23 dBm
5.74488000 GHz
Ref 21 dBm
Offset 21 dB
Center 5.745 GHz
Span 30 MHz
3 MHz/
1 PK
MAXH
2 AP
MAXH

CHANNEL 12


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
6.63 dB
1.44000000 MHz
Marker 1 [T2
1.75 dBm
5.80494000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Center 5.805 GHz
3 MHz/
Span 30 MHz
1 PK
VIEW
2 AVG
MAXH

5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

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

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

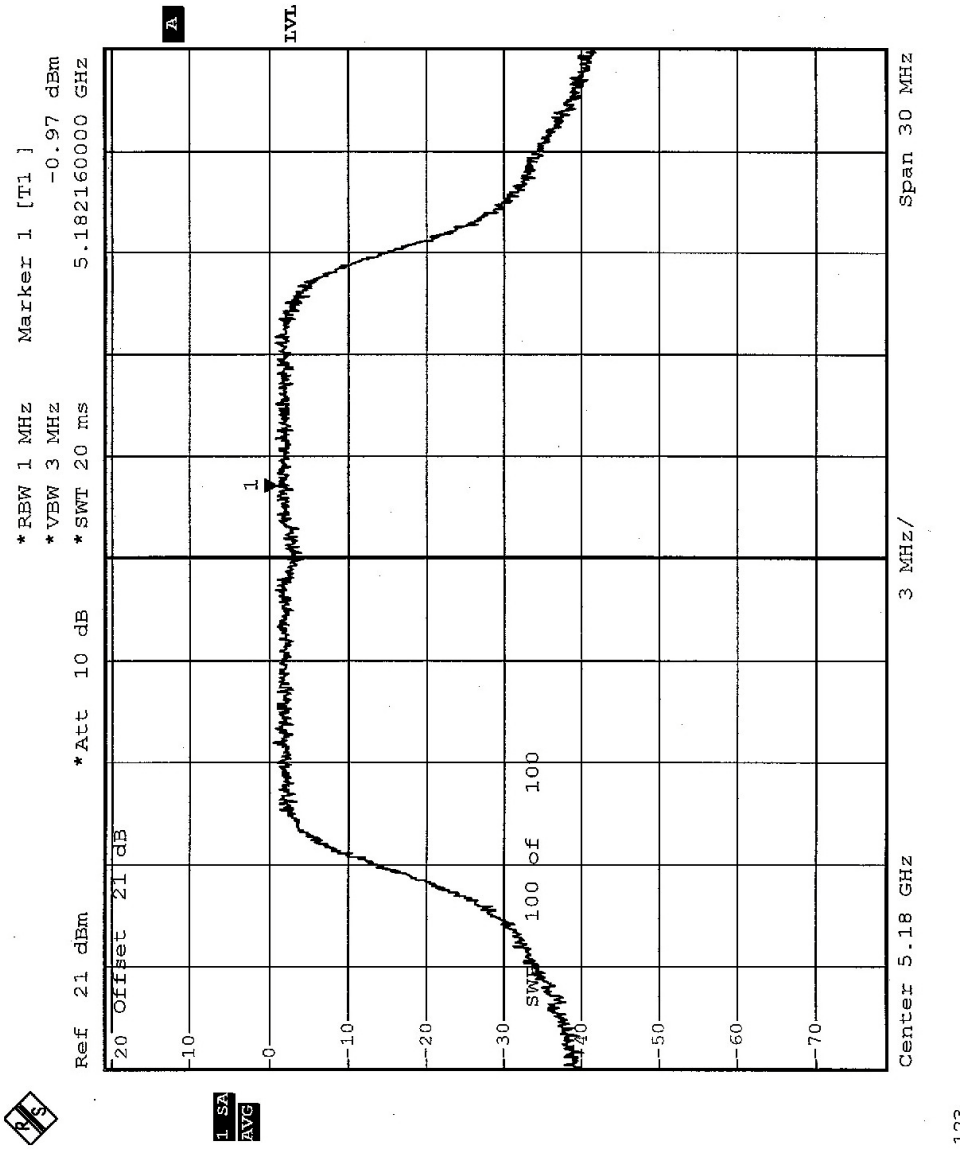
Same as 5.3.6

5.5.7 TEST RESULTS

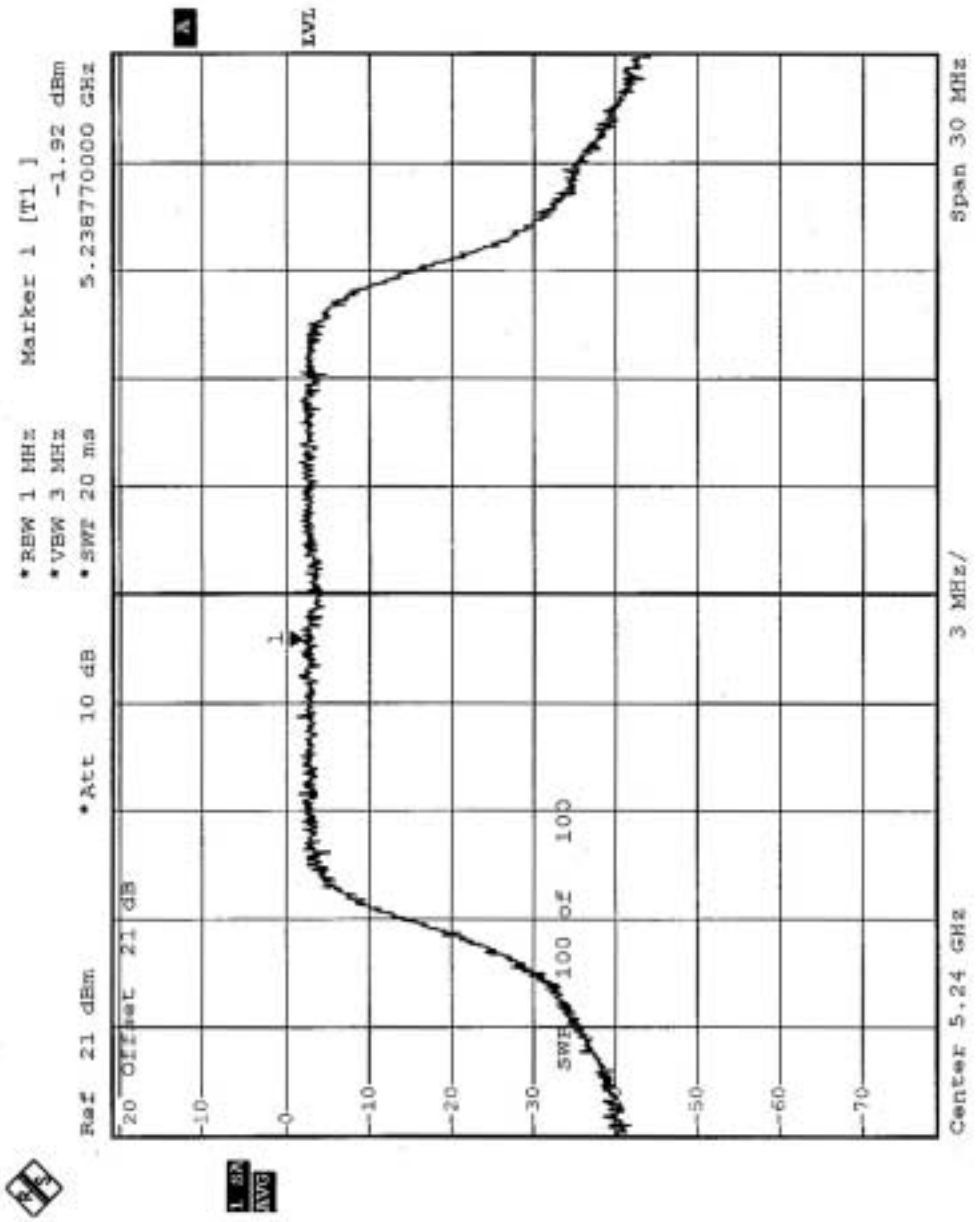
EUT	Symbol Wireless Networker 802.11a/g PCI Adapter	**MODEL**	LA-5033
MODE	Normal	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	28eg. C, 56RH, 980 hPa	**TESTED BY**	Tony Chen

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.97	4	PASS
4	5240	-1.92	4	PASS
5	5260	-1.25	11	PASS
8	5320	-0.42	11	PASS
9	5745	-0.12	17	PASS
12	5805	-0.27	17	PASS

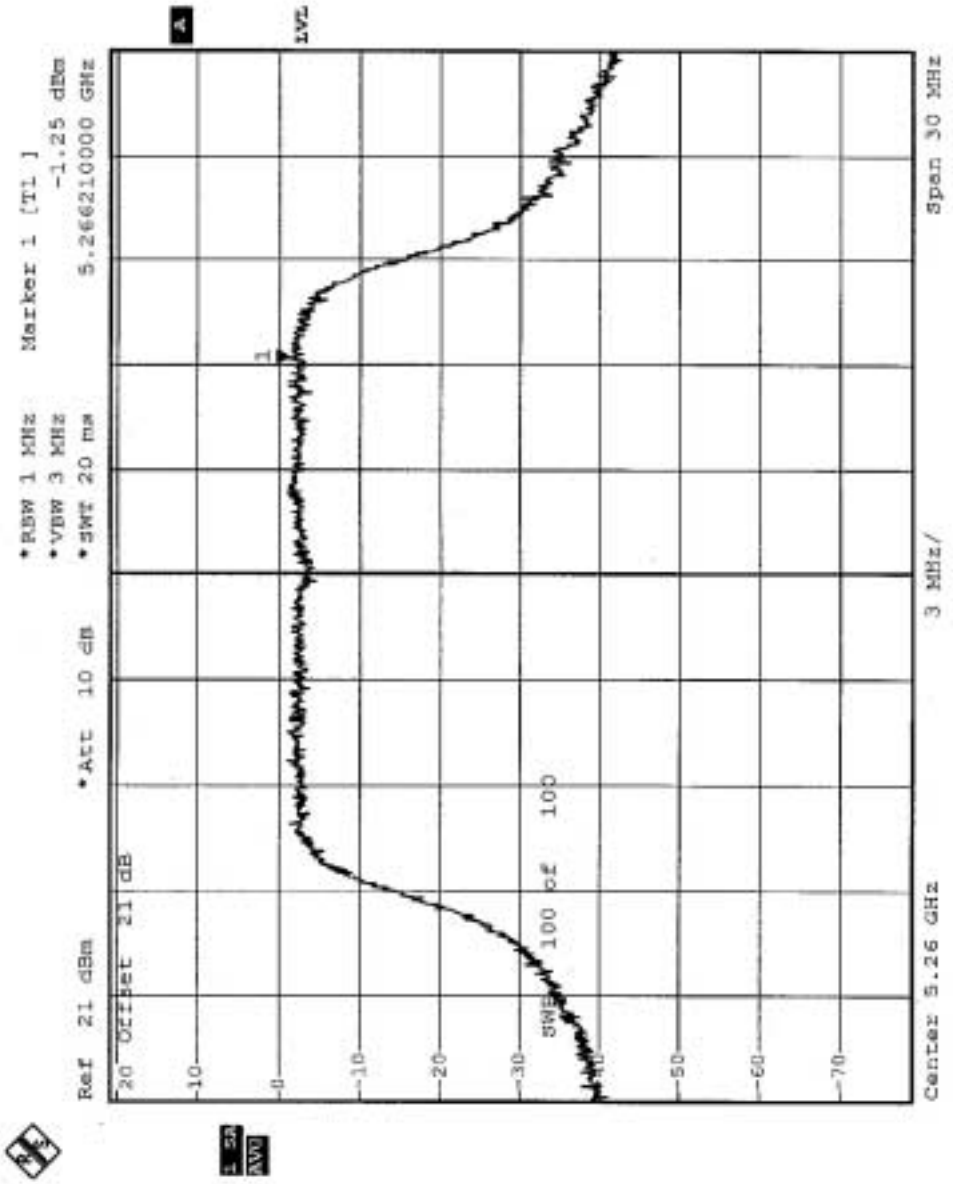
CHANNEL 1


A
1VL
Marker 1 [T1]
-0.97 dBm
5.182160000 GHz
*RBW 1 MHz
*VBW 3 MHz
*SWT 20 ms
*Att 10 dB
Ref 21 dBm
Offset 21 dB
Span 30 MHz
3 MHz/
Center 5.18 GHz
SWP 100 of 100
1 SA
AVG

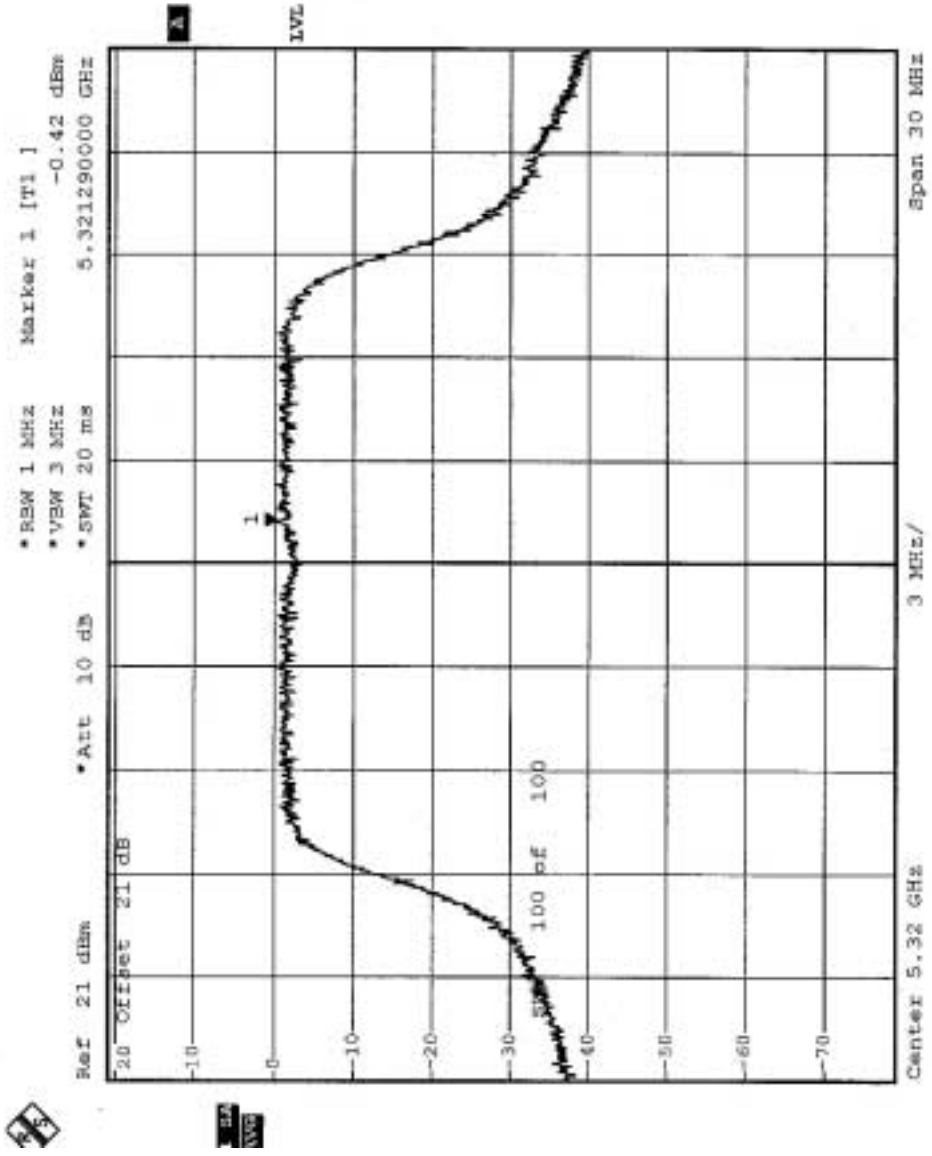
CHANNEL 4


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*SWT 20 ms
*VBW 3 MHz
*RBW 1 MHz
Marker 1 [T1]
-1.92 dBm
5.23877000 GHz
Center 5.24 GHz
3 MHz/
Span 30 MHz
SWT 100 pt 100
LVL
1 SA
AVG

CHANNEL 5

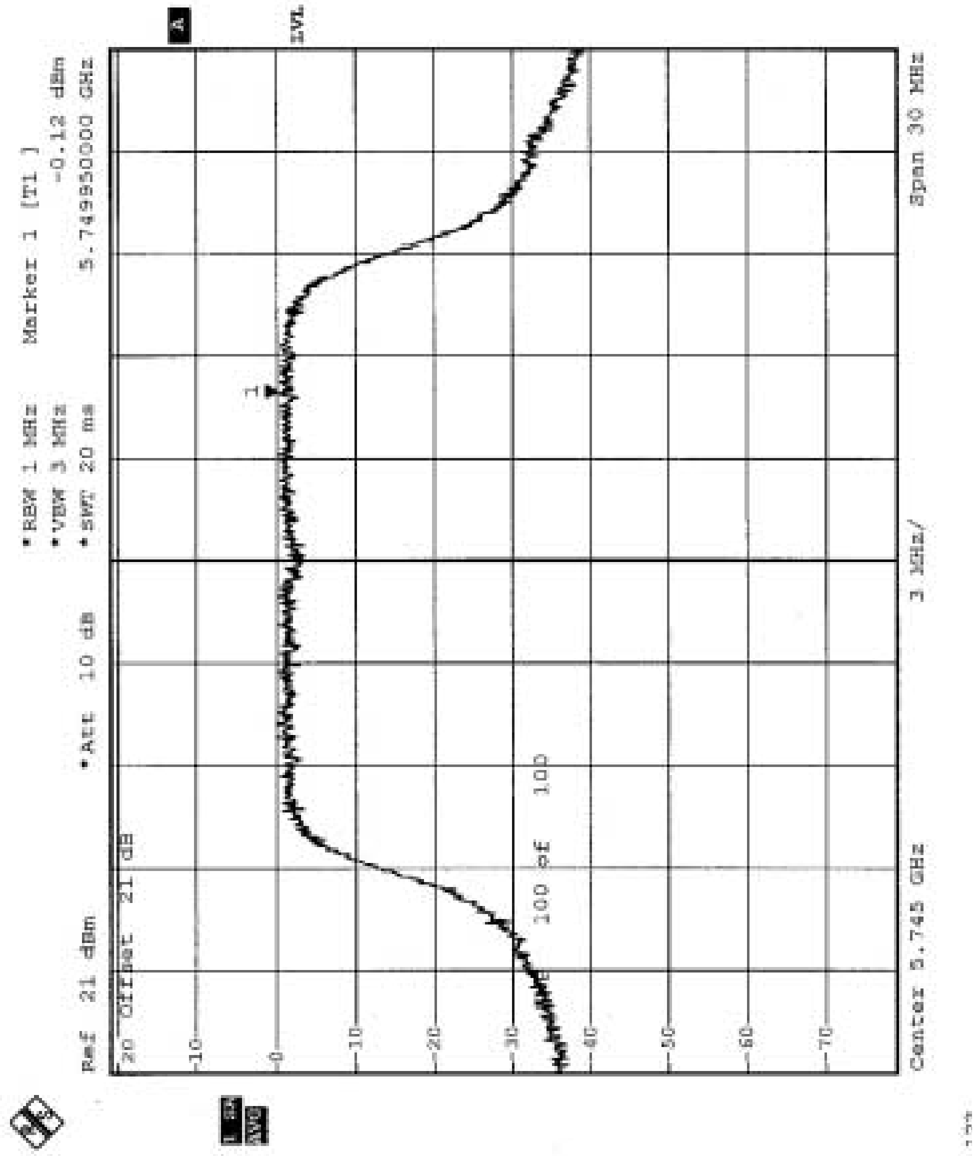

Ref 21 dBm
Offset 21 dB
*Att 10 dB
*VBW 3 MHz
*RBW 1 MHz
*SWT 20 ms
Marker 1 [T1]
-1.25 dBm
5.266210000 GHz
SWP 100 of 100
Center 5.26 GHz
3 MHz/
Span 30 MHz
1VIEW
A

CHANNEL 8

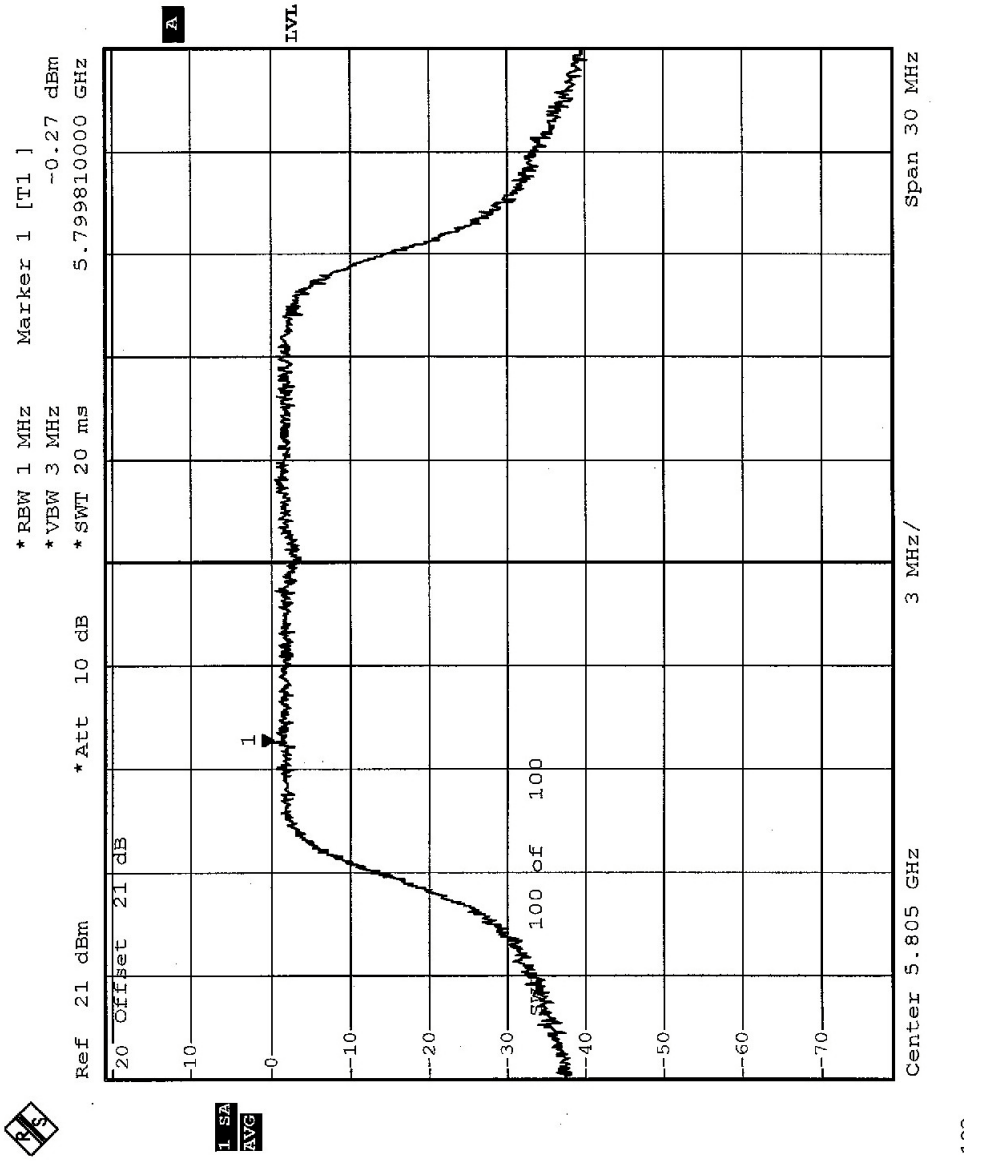

Ref 21 dBm
Offset 21 dB
Att 10 dB
RBW 1 MHz
VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-0.42 dBm
5.321290000 GHz
1
100 pF 100
Center 5.32 GHz
3 MHz/
Span 30 MHz
LVL

FCC ID: H9PLA5033

CHANNEL 9



CHANNEL 12


A
LVL
Marker 1 [T1]
-0.27 dBm
5.799810000 GHz
*RBW 1 MHz
*VBW 3 MHz
*SWT 20 ms
*Att 10 dB
Ref 21 dBm
Offset 21 dB
Span 30 MHz
3 MHz/
Center 5.805 GHz
100 of 100
1 SA
AVG

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
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

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

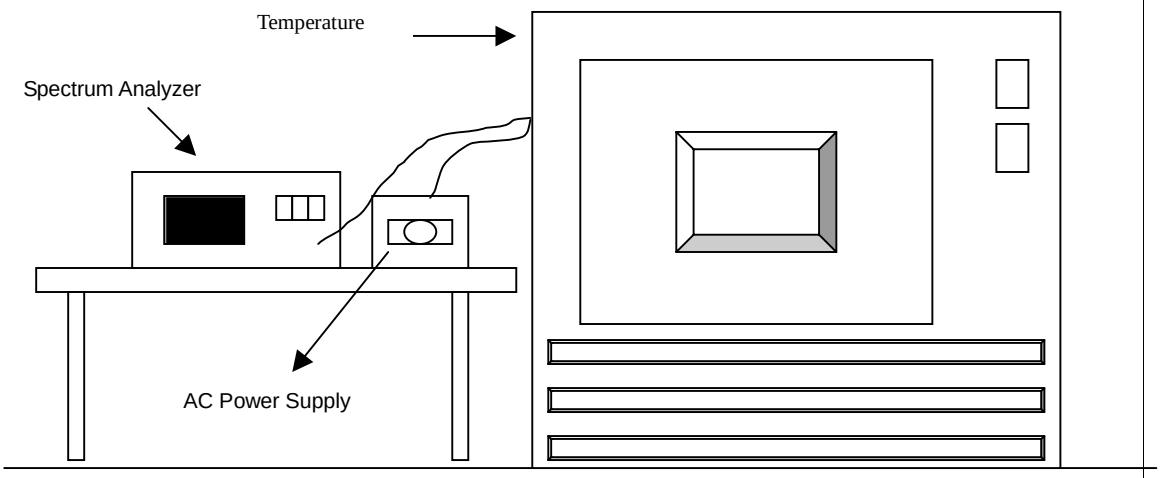
5.6.3 TEST PROCEDURE

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

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : ± 0.02%			
Temp. (℃)	Power supply (VAC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5320.0364	0.000684	5320.0367	0.000690	5320.0368	0.000692
	110	5320.0364	0.000684	5320.0366	0.000688	5320.0368	0.000692
	93.5	5320.0366	0.000688	5320.0364	0.000684	5320.0368	0.000692
40	126.5	5319.9881	0.000224	5319.9976	0.000045	5319.9973	0.000051
	110	5319.9882	0.000222	5319.9976	0.000045	5319.9975	0.000047
	93.5	5319.9981	0.000036	5319.9979	0.000039	5319.9972	0.000053
30	126.5	5319.9922	0.000147	5319.9919	0.000152	5319.9917	0.000156
	110	5319.9922	0.000147	5319.9921	0.000148	5319.9918	0.000154
	93.5	5319.9922	0.000147	5319.9919	0.000152	5319.9916	0.000158
20	126.5	5320.0071	0.000133	5320.0068	0.000128	5320.0065	0.000122
	110	5320.0072	0.000135	5320.0072	0.000135	5320.0069	0.000130
	93.5	5320.0071	0.000133	5320.0068	0.000128	5320.0065	0.000122
10	126.5	5320.0124	0.000233	5320.0122	0.000229	5320.0119	0.000224
	110	5320.0124	0.000233	5320.0122	0.000229	5320.0121	0.000227
	93.5	5320.0124	0.000233	5320.0121	0.000227	5320.0118	0.000222
0	126.5	5320.023	0.000432	5320.0180	0.000338	5320.0180	0.000338
	110	5320.023	0.000432	5320.0210	0.000395	5320.0190	0.000357
	93.5	5320.021	0.000395	5320.0180	0.000338	5320.0180	0.000338
-10	126.5	5320.0306	0.000575	5320.0290	0.000545	5320.0270	0.000508
	110	5320.0304	0.000571	5320.0310	0.000583	5320.0290	0.000545
	93.5	5320.0304	0.000571	5320.0280	0.000526	5320.0270	0.000508
-20	126.5	5320.0300	0.000564	5320.0250	0.000470	5320.0210	0.000395
	110	5320.0300	0.000564	5320.0280	0.000526	5320.0240	0.000451
	93.5	5320.0300	0.000564	5320.0240	0.000451	5320.0220	0.000414
-30	126.5	5320.0116	0.000218	5320.0111	0.000209	5320.0108	0.000203
	110	5320.0116	0.000218	5320.0113	0.000212	5320.0111	0.000209
	93.5	5320.0116	0.000218	5320.0111	0.000209	5320.0108	0.000203

5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May. 06, 2004

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose 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.

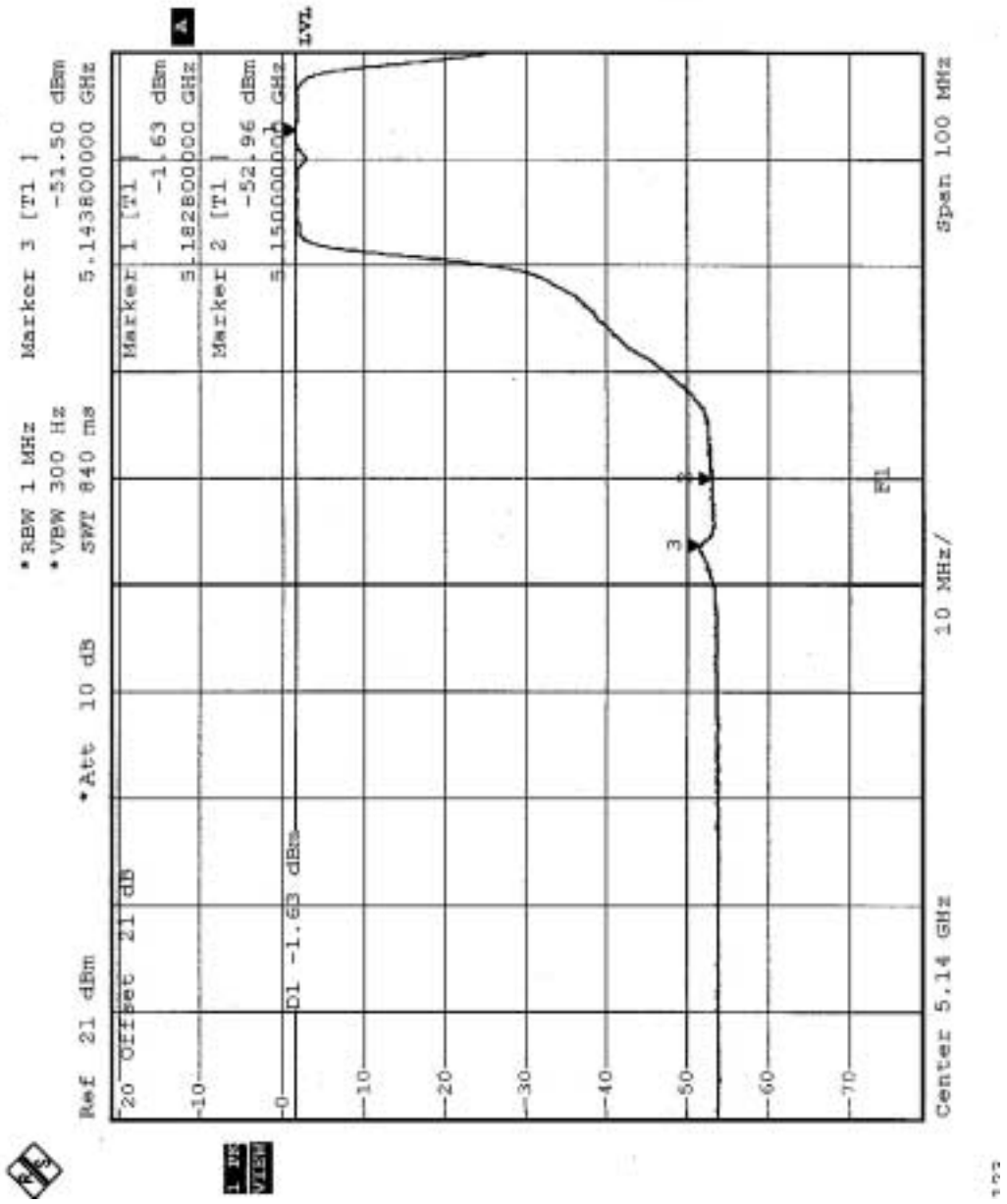
5.7.4 TEST RESULTS

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 filed 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 2 pages.

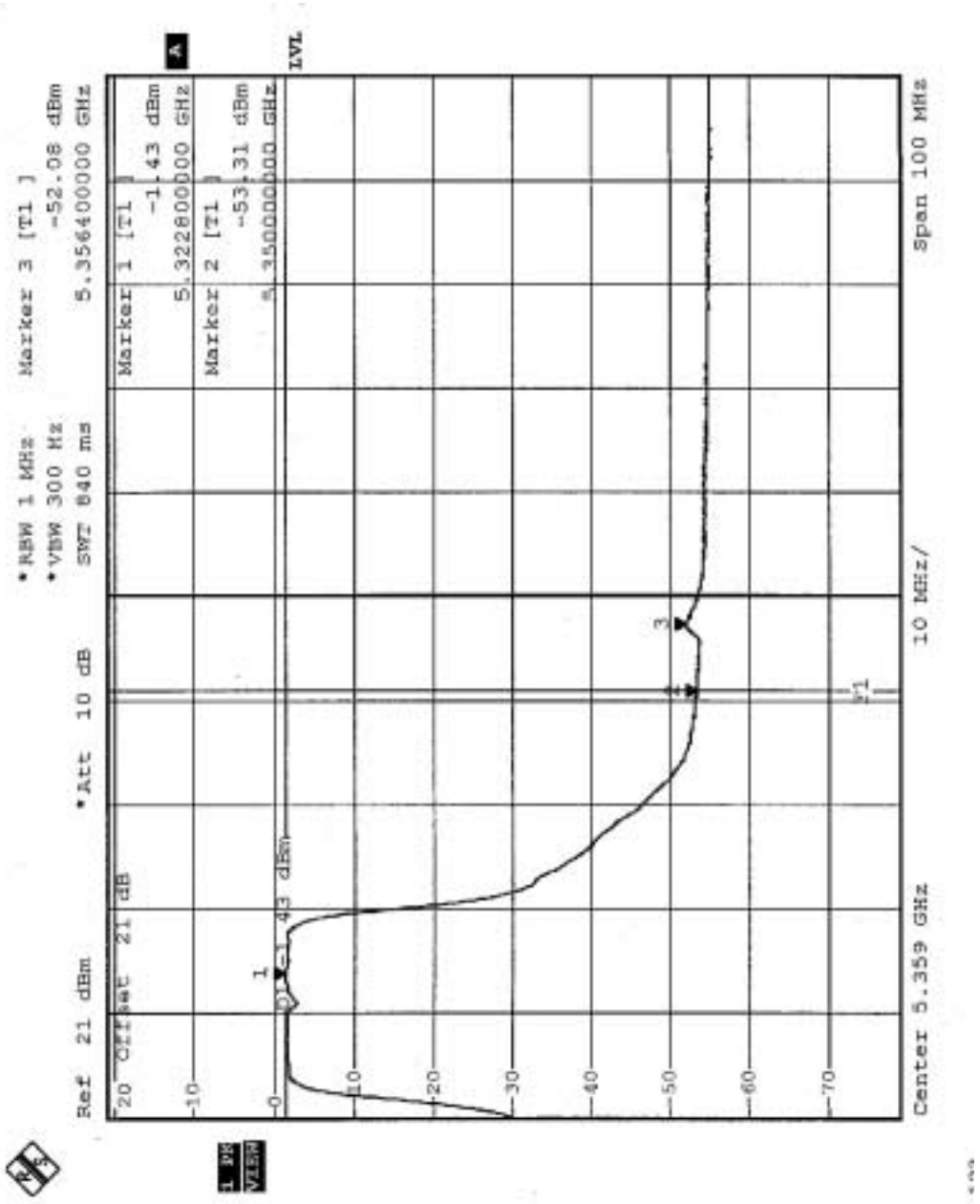
Normal Mode: Channel 1 (5180 MHz)

The band edge emission plot on the following page shows 51.33dBc (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 93.9dBuV/m, so the maximum field strength in restrict band is 93.9-51.33=42.57dBuV/m which is under 54dBuV/m limit.



Normal Mode: Channel 8 (5320 MHz)

The band edge emission plot on the following page shows 51.88dBc (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 97.0dBuV/m, so the maximum field strength in restrict band is 97.0-51.88=45.12dBuV/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 Integral Dipole antenna with 5ft cable without connector. The maximum Gain of the antenna is 0dBi.

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