



FCC TEST REPORT

REPORT NO.: RF911005R01

MODEL NO.: WRT51AB

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TESTED: Sept. 4 ~ Nov. 4, 2002

APPLICANT: The Linksys Group, Inc.

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0528
ILAC MRA



Lab Code: 200102-0



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1 CERTIFICATION

PRODUCT : Dual-Band Wireless A+B Broadband Router
BRAND NAME : Linksys
MODEL NO. : WRT51AB
APPLICANT : The Linksys Group, Inc.
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407) and Subpart B,
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Sept. 24 ~ Nov. 4, 2002. 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.

CHECKED BY : Emily Lu , DATE : Nov. 5, 2002
Emily Lu

APPROVED BY : Ellis Wu for DATE : Nov. 5, 2002
Dr. Alan Lane, 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 -11.91dBuV at 1.711MHz
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 -3.5dBuV at 625.00MHz
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 and Subpart B

Standard Section	Test Type	Result	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -11.50dBuV at 1.701MHz
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 -2.10dBuV at 10640.00MHz
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	Dual-Band Wireless A+B Broadband Router
MODEL NO.	WRT51AB
POWER SUPPLY	5VDC from power adapter
MODULATION	802.11b: DSSS 802.11a: OFDM
TRANSFER RATE	802.11b: 1 / 2 / 5.5 / 11Mbps 802.11a: 6 to 54Mbps (Turbo mode: up to 72Mbps *see note 1)
FREQUENCY RANGE	802.11b: 2412MHz ~ 2462MHz 802.11a: 5.15GHz ~ 5.35GHz (*see note 2)
NUMBER OF CHANNEL	802.11b: 11 802.11a: 8 for Normal mode / 3 for Turbo mode
CHANNEL SPACING	802.11b: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
OUTPUT POWER	802.11b: 12.50dBm 802.11a: 15.22dBm
DATA CABLE	NA
ANTENNA TYPE	Dipole antenna
I/O PORTS	LAN Port, WAN Port
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was powered by the following AC adapter:

BRAND :	Linksys
MODEL :	MS15-050250-A1D
INPUT :	100-240Vac 50/60Hz 0.5A
OUTPUT :	5Vdc 2.5A

2. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b technology.
3. This EUT is capable of providing data rates up to 72Mbps in turbo mode.
4. 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.

For 802.11a: Eight 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		
4	5240 MHz		
5	5260 MHz		
6	5280 MHz		

Five channels are provided to this EUT for Turbo Mode.

Channel	Frequency	Channel	Frequency
1	5210 MHz	2	5250 MHz
3	5290 MHz		

NOTE:

1. The EUT was transmitting at full power on the specified channel with a duty cycle of 99% (maximum allowed). The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
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. "Turbo Mode" allows data rates of up to 72Mbps. At data rates higher than 12Mbps the PA gain is reduced to improve signal fidelity. The device was, therefore, tested in turbo mode at the data rate that produced the highest output power for turbo mode (12Mbps).
4. Channel 1, 4, 5 and 8 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. Channel 1 ~ 3 were chosen for final test of turbo mode.



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Dual-Band Wireless A+B Broadband Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC CFR 47 Part 15, Subpart C. (15.247),
Subpart E (15.407) and Subpart B.**

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 FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP01L	TW-09C748-12800-19O-B220	FCC DoC APPROVED
2	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC APPROVED
3	MODEM	ACEEX	1414	980020504	IFAXDM1414
4	NOTEBOOK PC	DELL	PPX	99125	FCC DoC APPROVED
5	FAST ETHERNET PC CARD	D-Link	DFE-680TXD	RE1A044413	MQ4FE2K5MX
6	10/100 LAN PC CARD	3COM	3CCFE575CT-D	6ZE1316B4E	FCC DoC APPROVED

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	NA
5	NA
6	NA

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



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 (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	834115/016	Mar. 3, 2003
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ESH3-Z5	847265/023	Jan. 10, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Dec. 10, 2002
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Dec. 10, 2002
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	July 10, 2003
Software	Cond-V2L	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C03.01	July 11, 2003
Terminator (For EMCO LISN)	NA	E1-01-300	Feb. 20, 2003
Terminator (For EMCO LISN)	NA	E1-01-301	Feb. 20, 2003
Shielded Room	Site 3	ADT-C03	NA
VCCI Site Registration No.	Site 3	C-274	NA

- 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.
 3. “*”: These equipment are used for conducted telecom port test only (if tested).
 4. The test was performed in ADT Open Site No. 3.



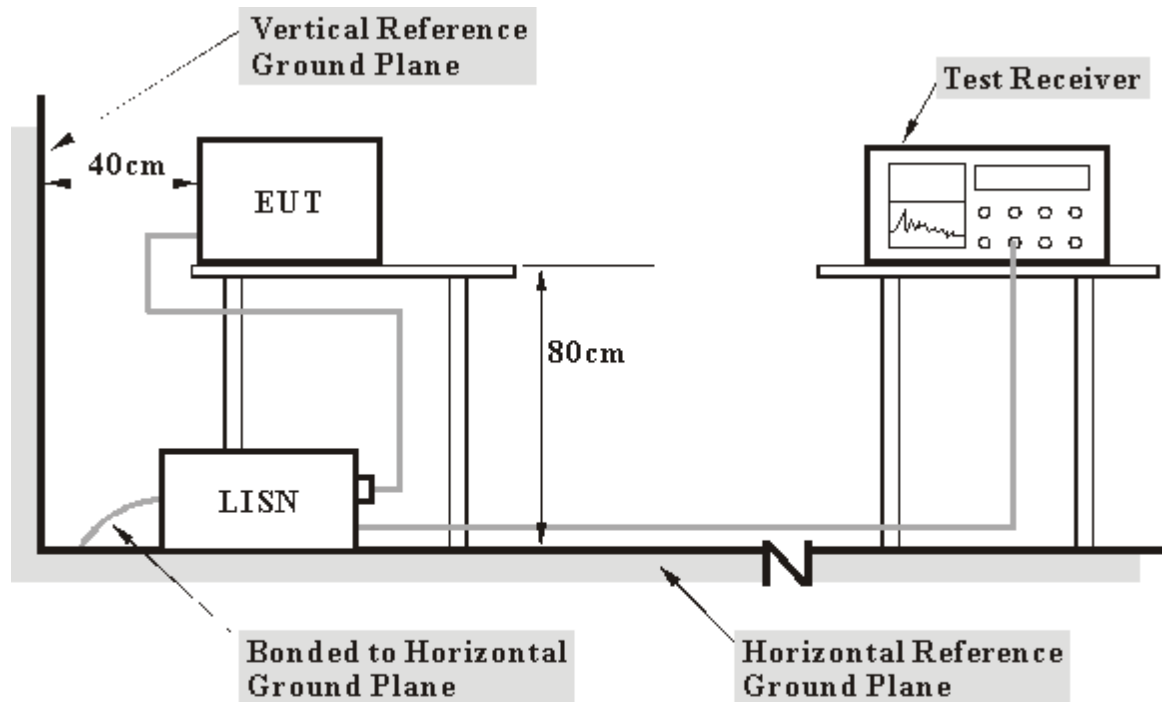
4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 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. Placed the EUT on the testing table.
- b. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ 45 cable.
- d. The communication partner sent data to EUT by command "PIN".

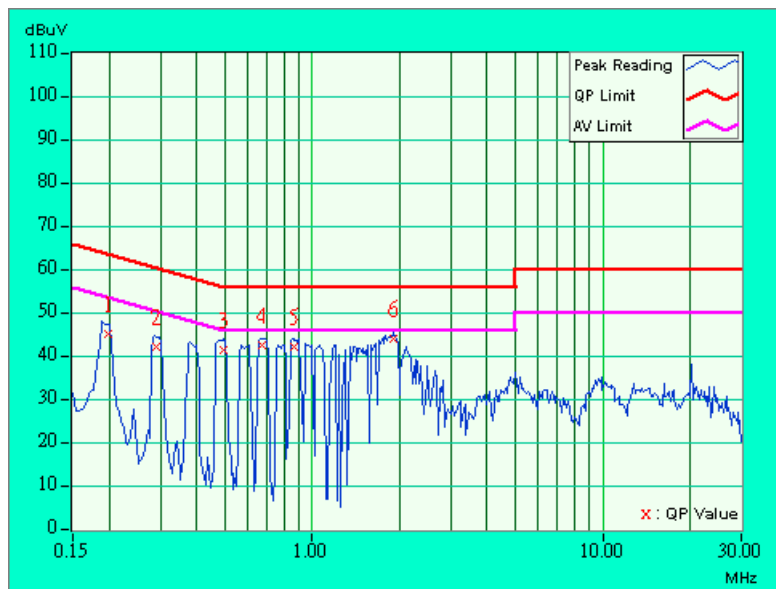


4.1.7 TEST RESULTS

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.198	0.10	44.98	-	45.08	-	63.70	53.70	-18.62	-
2	0.291	0.10	42.10	-	42.20	-	60.51	50.51	-18.31	-
3	0.494	0.12	41.13	-	41.25	-	56.10	46.10	-14.86	-
4	0.673	0.15	42.30	-	42.45	-	56.00	46.00	-13.55	-
5	0.861	0.18	41.75	-	41.93	-	56.00	46.00	-14.07	-
6	1.898	0.29	43.73	-	44.02	-	56.00	46.00	-11.98	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

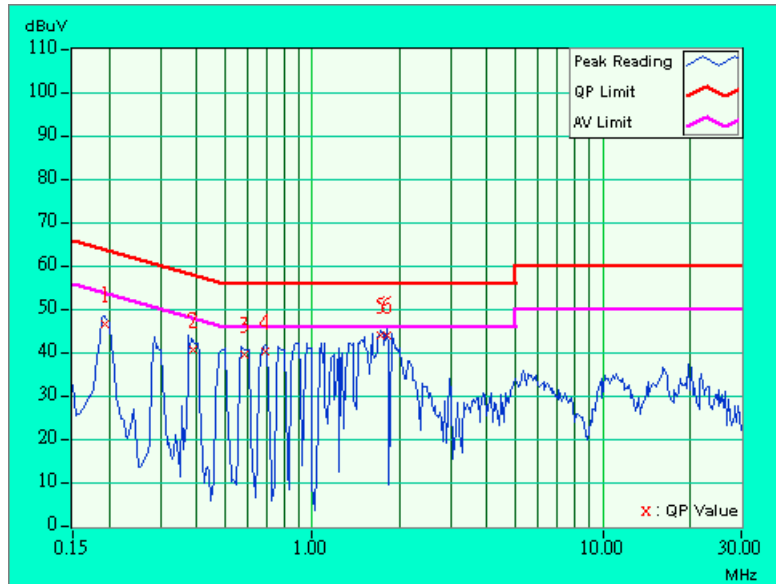




EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.193	0.10	46.41	-	46.51	-	63.91	53.91	-17.40	-
2	0.387	0.10	40.48	-	40.58	-	58.13	48.13	-17.55	-
3	0.584	0.13	39.30	-	39.43	-	56.00	46.00	-16.57	-
4	0.685	0.15	40.25	-	40.40	-	56.00	46.00	-15.60	-
5	1.711	0.27	43.82	-	44.09	-	56.00	46.00	-11.91	-
6	1.805	0.28	43.69	-	43.97	-	56.00	46.00	-12.03	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

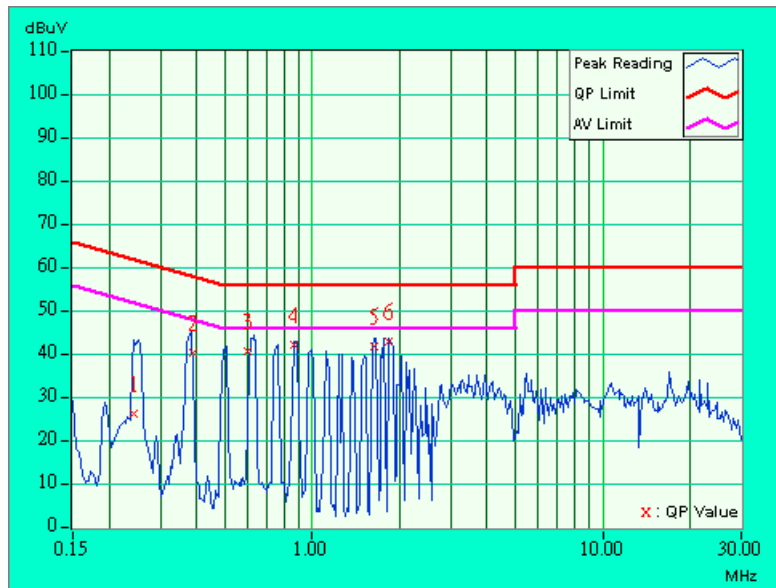




EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.243	0.10	26.00	-	25.54	-	62.00	52.00	-36.46	-
2	0.391	0.10	40.03	-	40.13	-	58.05	48.05	-17.92	-
3	0.600	0.13	40.52	-	40.65	-	56.00	46.00	-15.35	-
4	0.861	0.18	41.89	-	42.07	-	56.00	46.00	-13.93	-
5	1.625	0.26	41.69	-	41.95	-	56.00	46.00	-14.05	-
6	1.840	0.28	42.56	-	42.84	-	56.00	46.00	-13.16	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

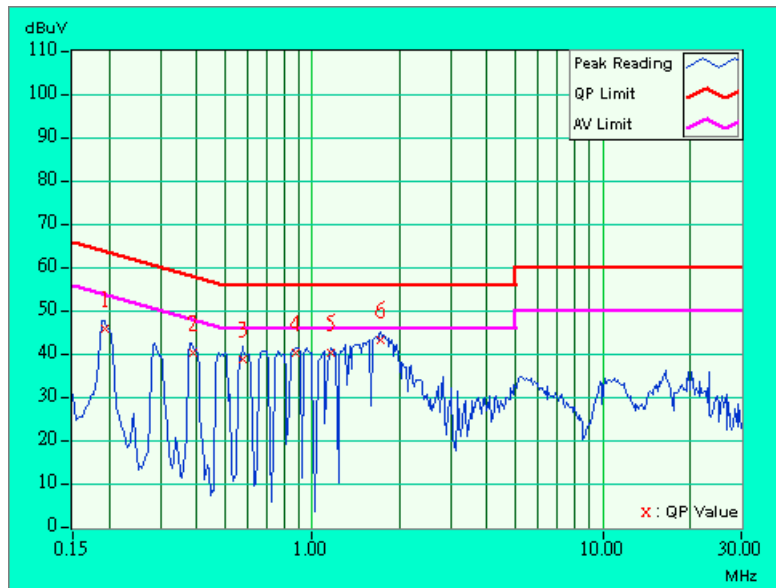




EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.193	0.10	45.61	-	45.71	-	63.91	53.91	-18.20	-
2	0.388	0.10	39.95	-	40.05	-	58.10	48.10	-18.05	-
3	0.576	0.13	38.50	-	38.63	-	56.00	46.00	-17.37	-
4	0.880	0.18	40.16	-	40.34	-	56.00	46.00	-15.66	-
5	1.156	0.22	40.05	-	40.27	-	56.00	46.00	-15.73	-
6	1.719	0.27	42.90	-	43.17	-	56.00	46.00	-12.83	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

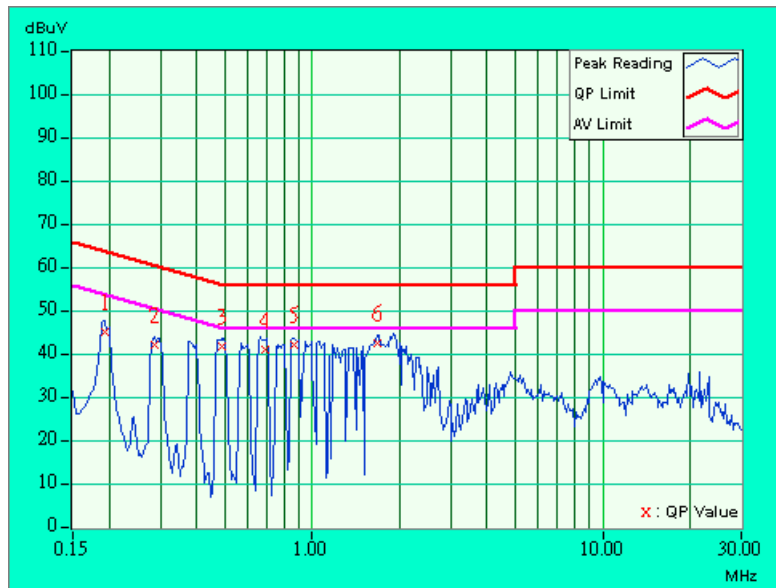




EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.193	0.10	44.94	-	45.04	-	63.91	53.91	-18.87	-
2	0.287	0.10	41.83	-	41.93	-	60.62	50.62	-18.69	-
3	0.486	0.11	41.60	-	41.71	-	56.24	46.24	-14.52	-
4	0.685	0.15	40.71	-	40.86	-	56.00	46.00	-15.14	-
5	0.867	0.18	42.09	-	42.27	-	56.00	46.00	-13.73	-
6	1.676	0.27	42.51	-	42.78	-	56.00	46.00	-13.22	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

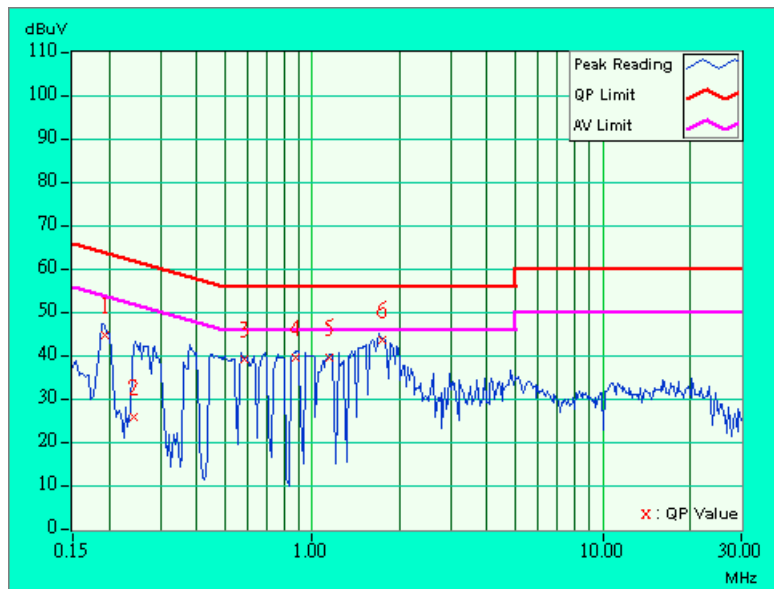




EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24 deg. C, 63 %RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.194	0.10	44.42	-	44.52	-	63.86	53.86	-19.34	-
2	0.243	0.10	25.81	-	25.91	-	62.00	52.00	-36.09	-
3	0.588	0.13	38.85	-	38.98	-	56.00	46.00	-17.02	-
4	0.873	0.18	39.31	-	39.49	-	56.00	46.00	-16.51	-
5	1.145	0.21	39.20	-	39.41	-	56.00	46.00	-16.59	-
6	1.737	0.27	43.38	-	43.65	-	56.00	46.00	-12.35	-

- Remarks:
1. "**": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Apr. 29, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 06, 2002
* HP Preamplifier	8449B	3008A01292	Aug. 7, 2003
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 27, 2003
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2002
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 2, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jul. 3, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 9, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D4	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 25, 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 12, 2003
Open Field Test Site	Site 5	ADT-R05	Jul. 19, 2003
VCCI Site Registration No.	Site 5	R-1039	NA

- NOTE:** 1. The measurement uncertainty is less than +/- 3.0dB, 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.
3. "*" = These equipment are used for the final measurement.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The test was performed in ADT Open Site No. 5.



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.

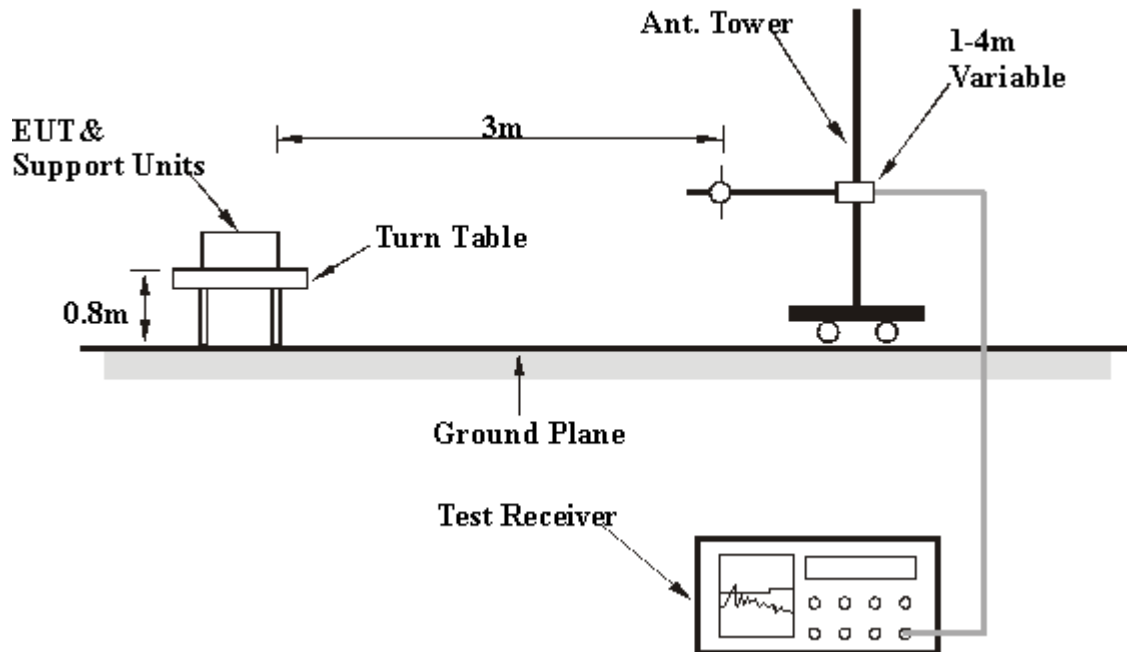
NOTE:

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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	200.00	30.0 QP	43.50	-13.50	1.58H	192	19.62	8.98	1.40	0.00	-10.38
2	225.00	22.0 QP	46.00	-24.00	1.72H	144	10.25	10.41	1.35	0.00	-11.75
3	250.00	35.0 QP	46.00	-11.00	1.08H	240	21.69	12.02	1.29	0.00	-13.31
4	275.00	30.5 QP	46.00	-15.50	1.20H	262	16.54	12.59	1.37	0.00	-13.96
5	300.00	35.6 QP	46.00	-10.40	1.24H	271	20.97	13.18	1.45	0.00	-14.63
6	300.00	37.0 QP	46.00	-9.00	1.07H	277	22.37	13.18	1.45	0.00	-14.63
7	350.00	34.0 QP	46.00	-12.00	1.07H	355	18.34	14.21	1.45	0.00	-15.66
8	375.00	33.7 QP	46.00	-12.30	1.05H	1	17.07	15.13	1.50	0.00	-16.63
9	400.00	35.0 QP	46.00	-11.00	1.17H	289	17.34	16.11	1.55	0.00	-17.66
10	500.00	31.0 QP	46.00	-15.00	1.11H	315	11.99	17.26	1.75	0.00	-19.01
11	600.00	35.6 QP	46.00	-10.40	1.65H	291	15.06	18.61	1.93	0.00	-20.54
12	625.00	42.5 QP	46.00	-3.50	1.62H	259	21.62	18.91	1.97	0.00	-20.88
13	700.00	40.0 QP	46.00	-6.00	1.33H	76	18.66	19.31	2.03	0.00	-21.35
14	725.00	35.0 QP	46.00	-11.00	1.08H	27	13.13	19.76	2.11	0.00	-21.87
15	775.00	36.9 QP	46.00	-9.10	1.27H	150	14.24	20.43	2.23	0.00	-22.66
16	800.00	35.0 QP	46.00	-11.00	1.59H	214	12.02	20.69	2.29	0.00	-22.98
17	825.00	36.0 QP	46.00	-10.00	1.00H	274	13.09	20.58	2.33	0.00	-22.91
18	850.00	35.0 QP	46.00	-11.00	1.06H	269	12.16	20.48	2.36	0.00	-22.84
19	875.00	38.0 QP	46.00	-8.00	1.00H	337	14.97	20.63	2.40	0.00	-23.03
20	900.00	39.0 QP	46.00	-7.00	1.00H	337	15.76	20.80	2.44	0.00	-23.24
21	950.00	38.4 QP	46.00	-7.60	1.09H	314	14.74	21.20	2.46	0.00	-23.66

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)	
1	200.00	30.0 QP	43.50	-13.50	1.28V	295	19.62	8.98	1.40	0.00	-10.38	
2	225.00	32.0 QP	46.00	-14.00	1.34V	185	20.25	10.41	1.35	0.00	-11.75	
3	250.00	38.5 QP	46.00	-7.50	1.00V	104	25.19	12.02	1.29	0.00	-13.32	
4	275.00	32.5 QP	46.00	-13.50	1.00V	117	18.54	12.59	1.37	0.00	-13.96	
5	325.00	35.0 QP	46.00	-11.00	2.24V	109	19.83	13.72	1.45	0.00	-15.17	
6	400.00	34.2 QP	46.00	-11.80	1.36V	273	16.54	16.11	1.55	0.00	-17.66	
7	500.00	36.0 QP	46.00	-10.00	1.03V	310	16.99	17.26	1.75	0.00	-19.01	
8	600.00	33.0 QP	46.00	-13.00	1.03V	2	12.46	18.61	1.93	0.00	-20.54	
9	625.00	35.0 QP	46.00	-11.00	1.05V	6	14.12	18.91	1.97	0.00	-20.88	
10	640.00	33.0 QP	46.00	-13.00	1.38V	277	11.88	19.12	2.00	0.00	-21.12	
11	700.00	38.0 QP	46.00	-8.00	1.59V	290	16.66	19.31	2.03	0.00	-21.34	
12	750.00	33.4 QP	46.00	-12.60	1.00V	171	11.04	20.18	2.18	0.00	-22.36	
13	775.00	31.0 QP	46.00	-15.00	1.34V	214	8.34	20.43	2.23	0.00	-22.67	
14	800.00	36.0 QP	46.00	-10.00	1.32V	210	13.02	20.69	2.29	0.00	-22.98	
15	850.00	33.0 QP	46.00	-13.00	1.35V	283	10.16	20.48	2.36	0.00	-22.84	
16	900.00	37.0 QP	46.00	-9.00	1.22V	283	13.76	20.80	2.44	0.00	-23.24	

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2372.00	41.2 PK	74.00	-32.80	1.48H	356	48.00	27.52	2.40	36.73	6.80
2	*2414.00	91.3 AV			1.06H	4	97.80	27.67	2.53	36.72	6.53
3	*2414.00	96.6 PK			1.06H	4	103.10	27.67	2.53	36.72	6.53
4	4824.00	44.2 PK	74.00	-29.80	1.35H	289	45.40	31.52	4.01	36.70	1.18

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2371.00	44.4 PK	74.00	-29.60	1.32V	174	51.20	27.52	2.40	36.73	6.80
2	*2412.00	108.0 PK			1.00V	16	114.50	27.67	2.53	36.72	6.53
3	*2412.00	101.0 AV			1.00V	16	107.50	27.67	2.53	36.72	6.53
4	4824.00	44.8 PK	74.00	-29.20	1.48V	265	46.00	31.52	4.01	36.70	1.18

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*2437.00	95.6 PK			1.37H	41	101.80	27.81	2.66	36.71	6.24
2	*2437.00	91.0 AV			1.37H	41	97.20	27.81	2.66	36.71	6.24
3	4874.00	44.1 PK	74.00	-29.90	1.16H	3	45.20	31.59	4.03	36.70	1.08

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*2437.00	101.2 AV			1.00V	2	107.40	27.81	2.66	36.71	6.24
2	*2437.00	107.0 PK			1.00V	2	113.20	27.81	2.66	36.71	6.24
3	4874.00	43.7 PK	74.00	-30.30	1.31V	193	44.80	31.59	4.03	36.70	1.08

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*2463.00	91.2 AV			1.25H	346	97.45	27.81	2.66	36.71	6.24
2	*2463.00	96.0 PK			1.25H	346	102.20	27.81	2.66	36.71	6.24
3	2493.00	41.0 PK	74.00	-33.00	1.55H	6	47.00	27.96	2.78	36.70	5.96
4	4924.00	43.7 PK	74.00	-30.30	1.42H	326	44.70	31.66	4.06	36.70	0.99

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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	*2463.00	102.8 AV			1.23V	20	109.00	27.81	2.66	36.71	6.24
2	*2463.00	106.8 PK			1.23V	20	113.00	27.81	2.66	36.71	6.24
3	2495.00	45.0 PK	74.00	-29.00	1.16V	3	51.00	27.96	2.78	36.70	5.96
4	4924.00	44.0 PK	74.00	-30.00	1.11V	357	45.00	31.66	4.06	36.70	0.99

- NOTE:**
1. Emission level= Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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.

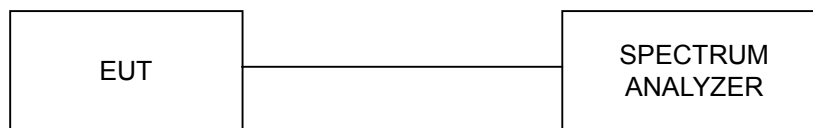
4.3.3 TEST PROCEDURE

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.



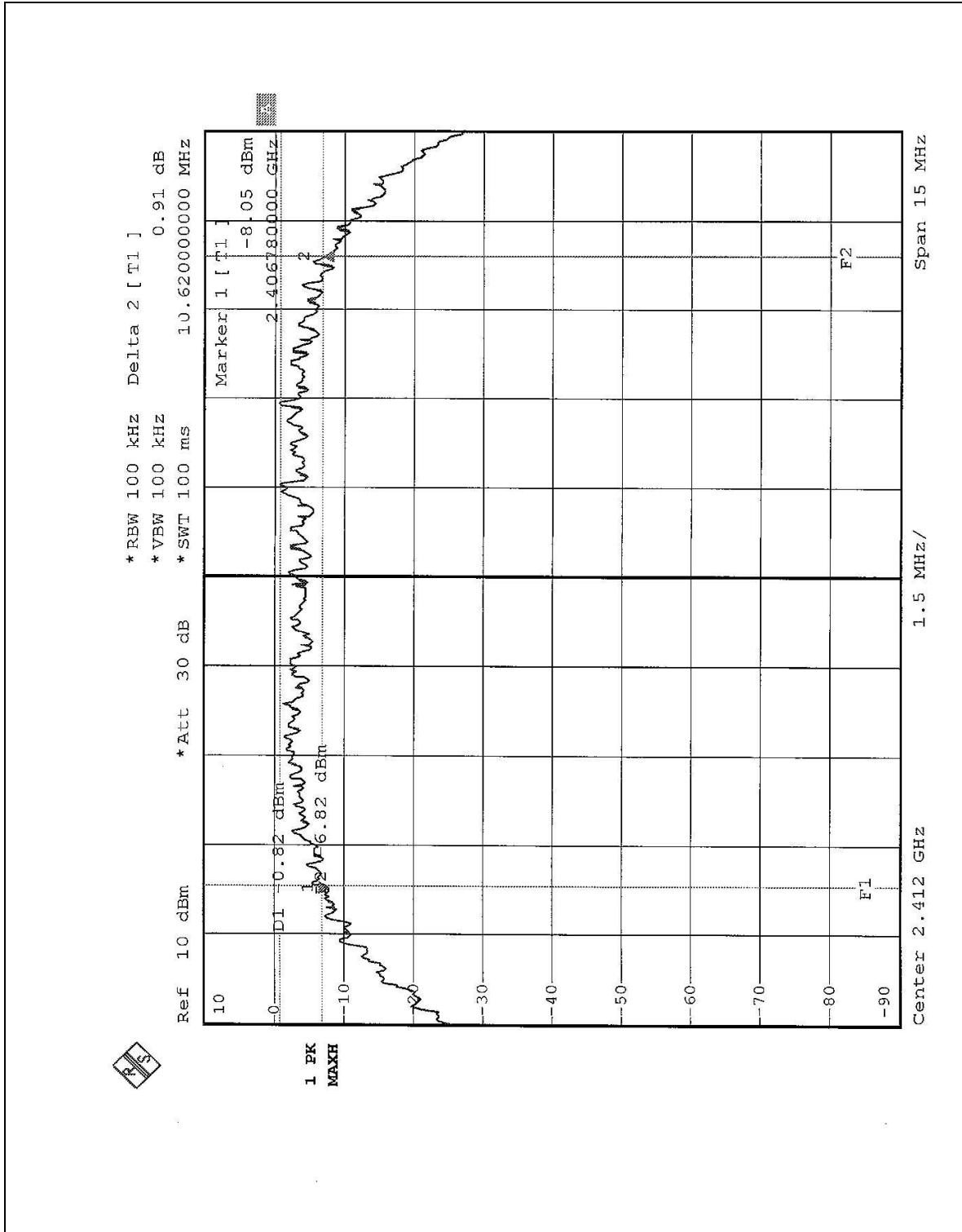
4.3.7 TEST RESULTS

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	27deg. C, 63%RH, 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.62	0.5	PASS
6	2437	10.62	0.5	PASS
11	2462	10.56	0.5	PASS

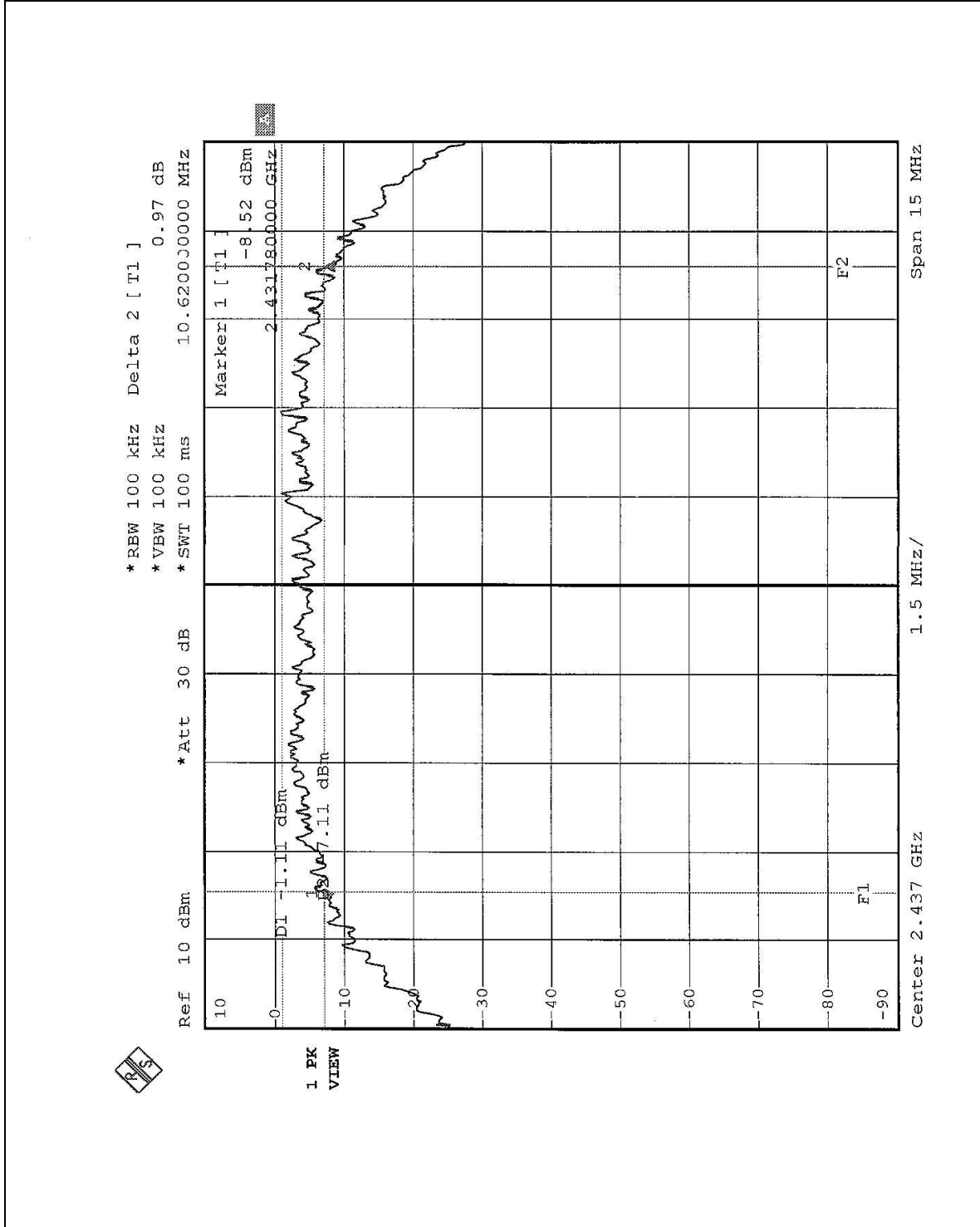


CH1



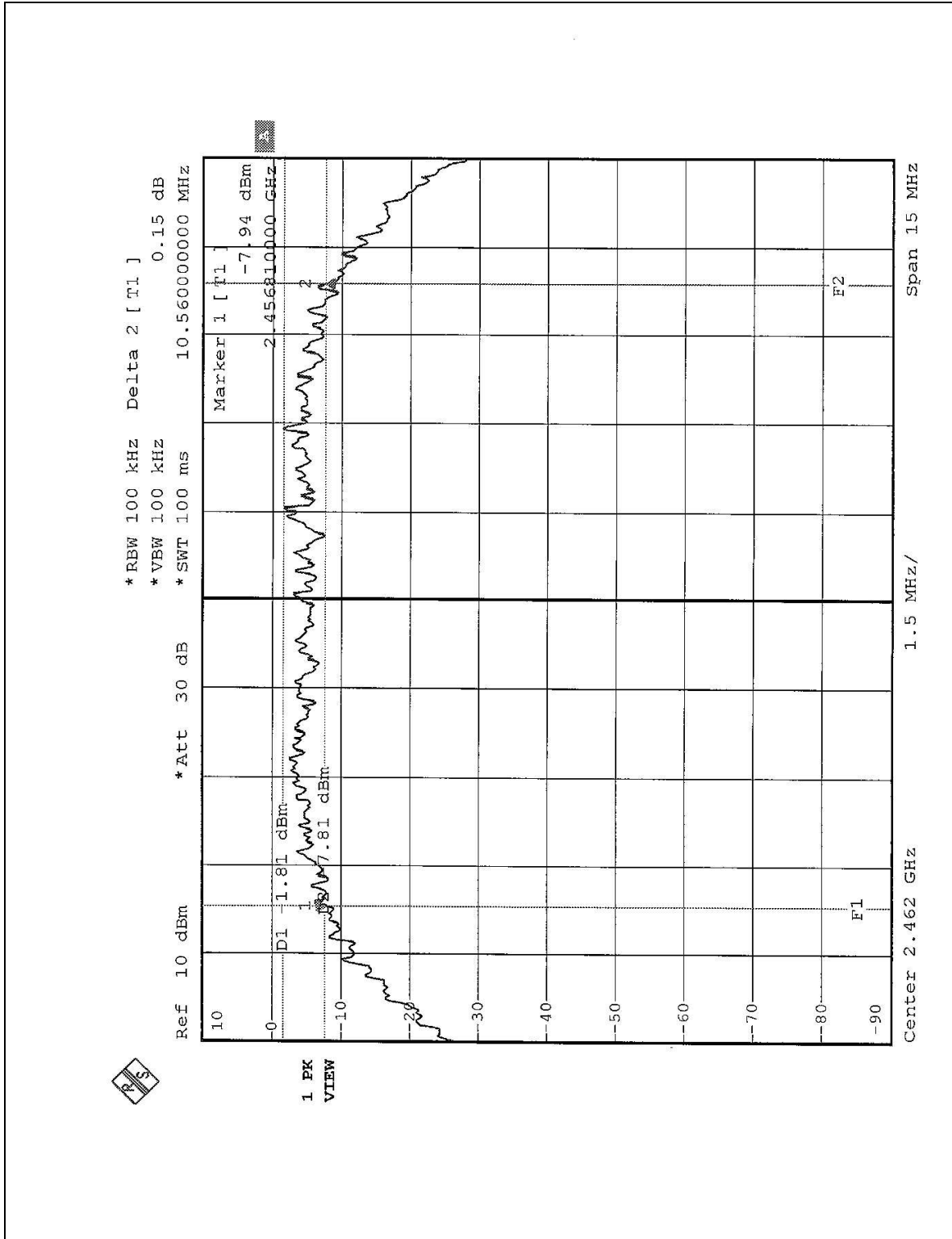


CH6





CH11





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
SINGLE CHANNEL POWER METER	NRVS	100026	Feb. 23, 2003
PEAK POWER SENSOR	NRV-Z32	100013	Feb. 23, 2003

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.



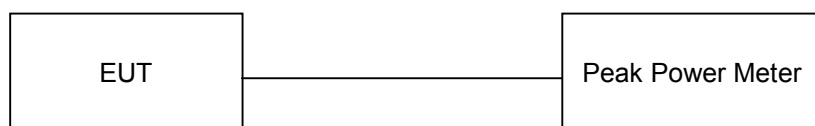
4.4.3 TEST PROCEDURES

The transmitter output was connected to the peak power meter.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



4.4.7 TEST RESULTS

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	27deg.C, 63%RH, 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	12.50	30	PASS
6	2437	12.20	30	PASS
11	2462	11.60	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
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2002

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

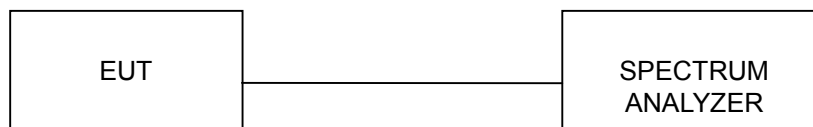
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

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



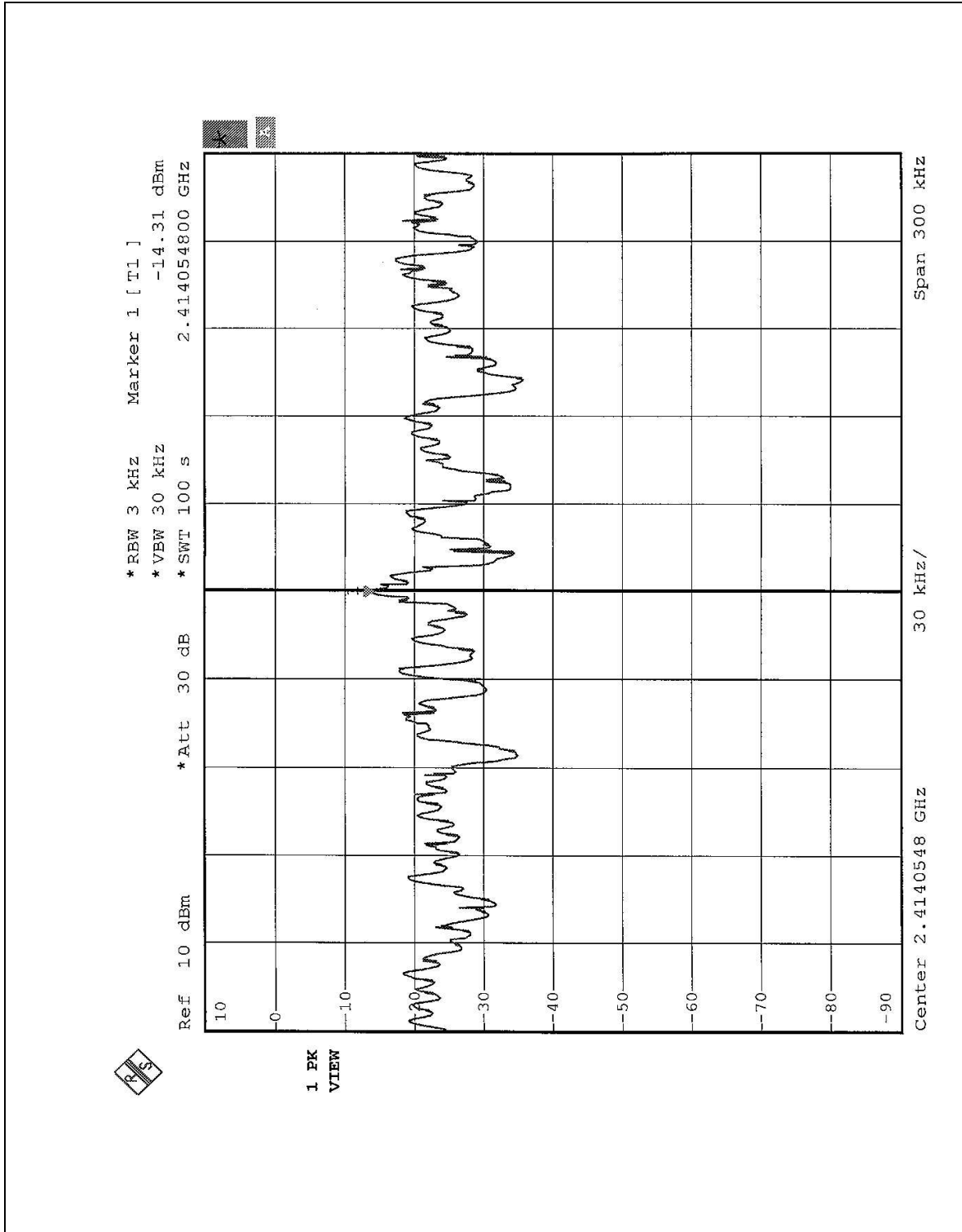
4.5.7 TEST RESULTS

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	26deg. C, 63%RH, 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-14.31	8	PASS
6	2437	-15.66	8	PASS
11	2462	-15.34	8	PASS

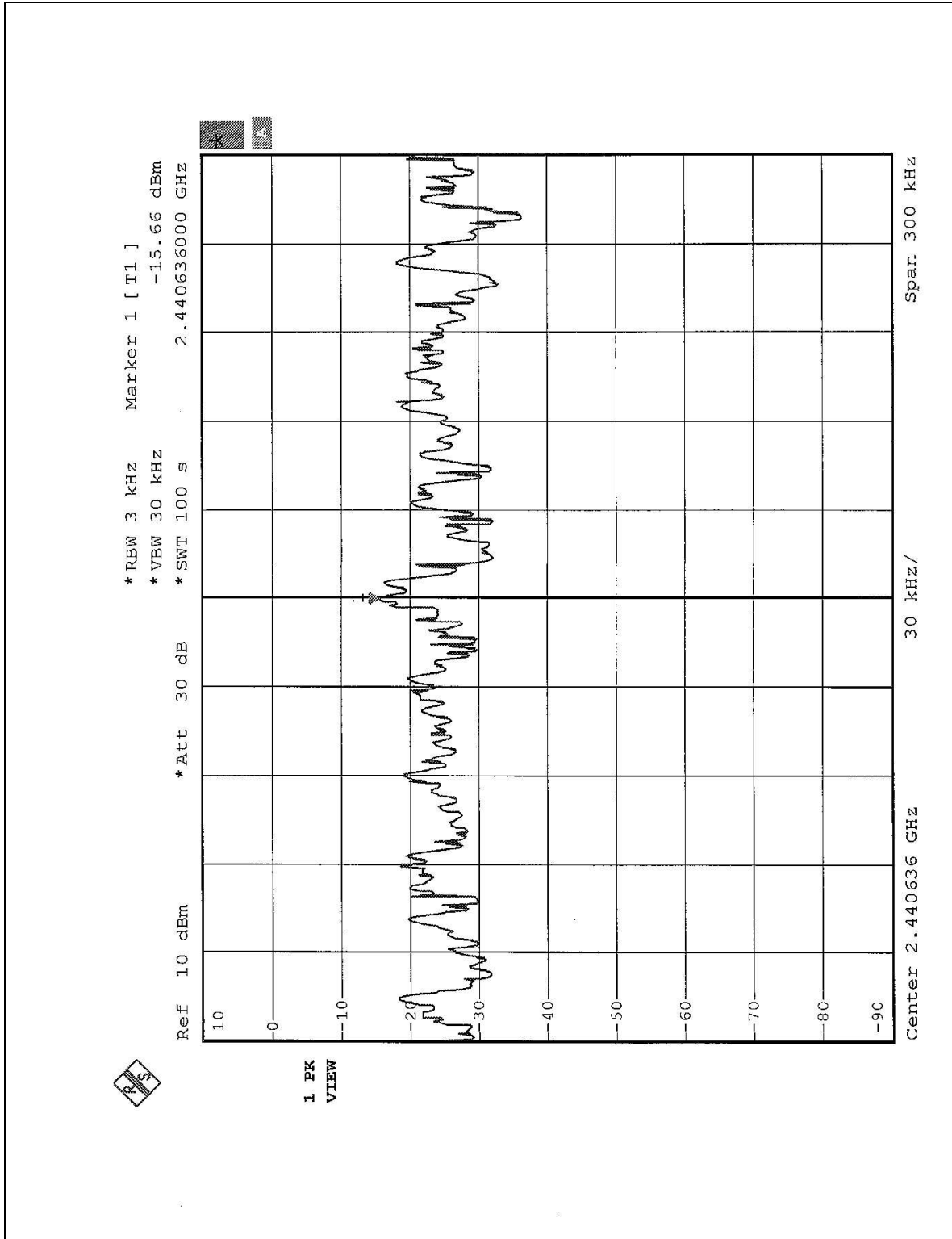


CH1



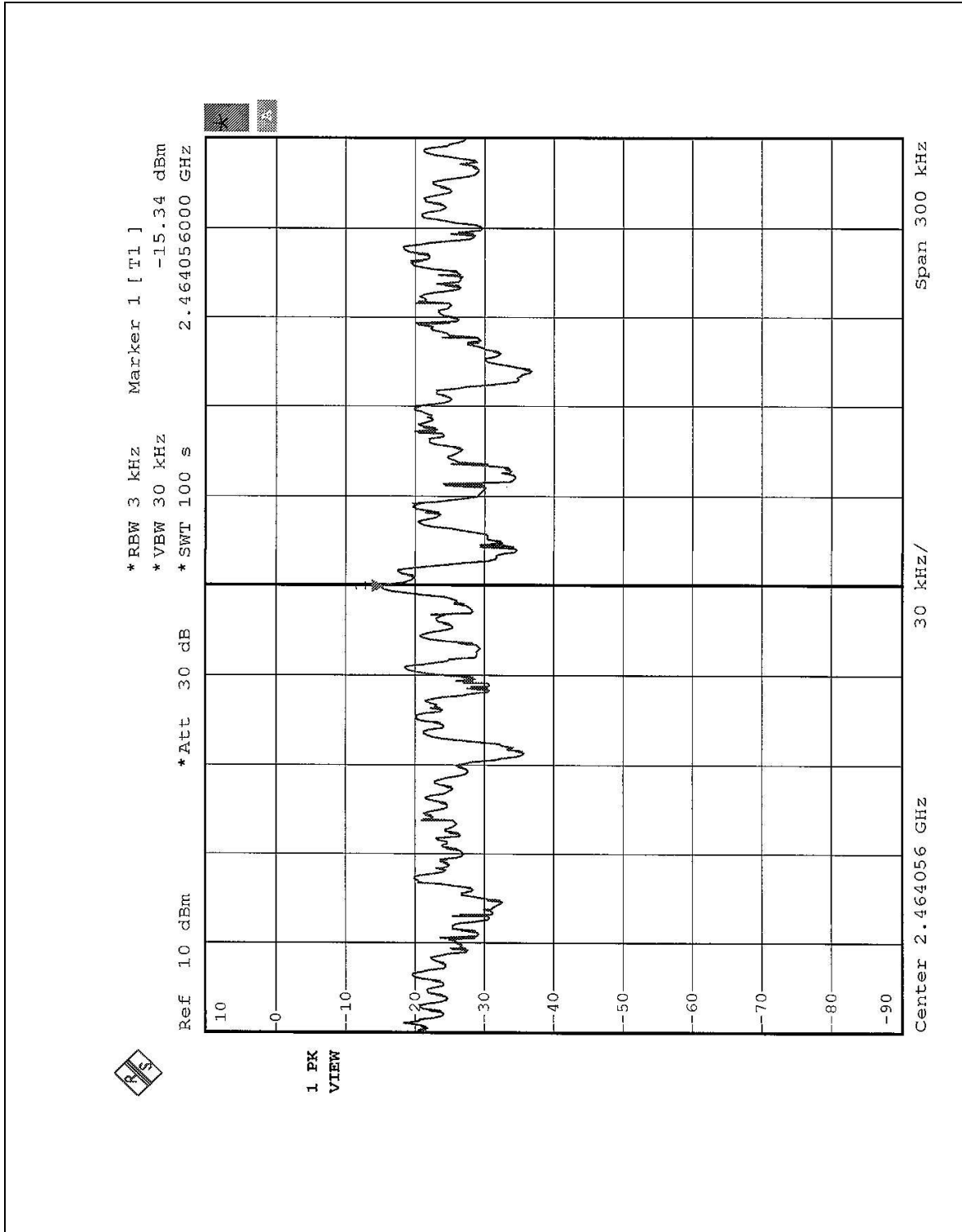


CH6





CH11





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
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:

1. The measurement uncertainty is less than $\pm 2.6\text{dB}$, 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



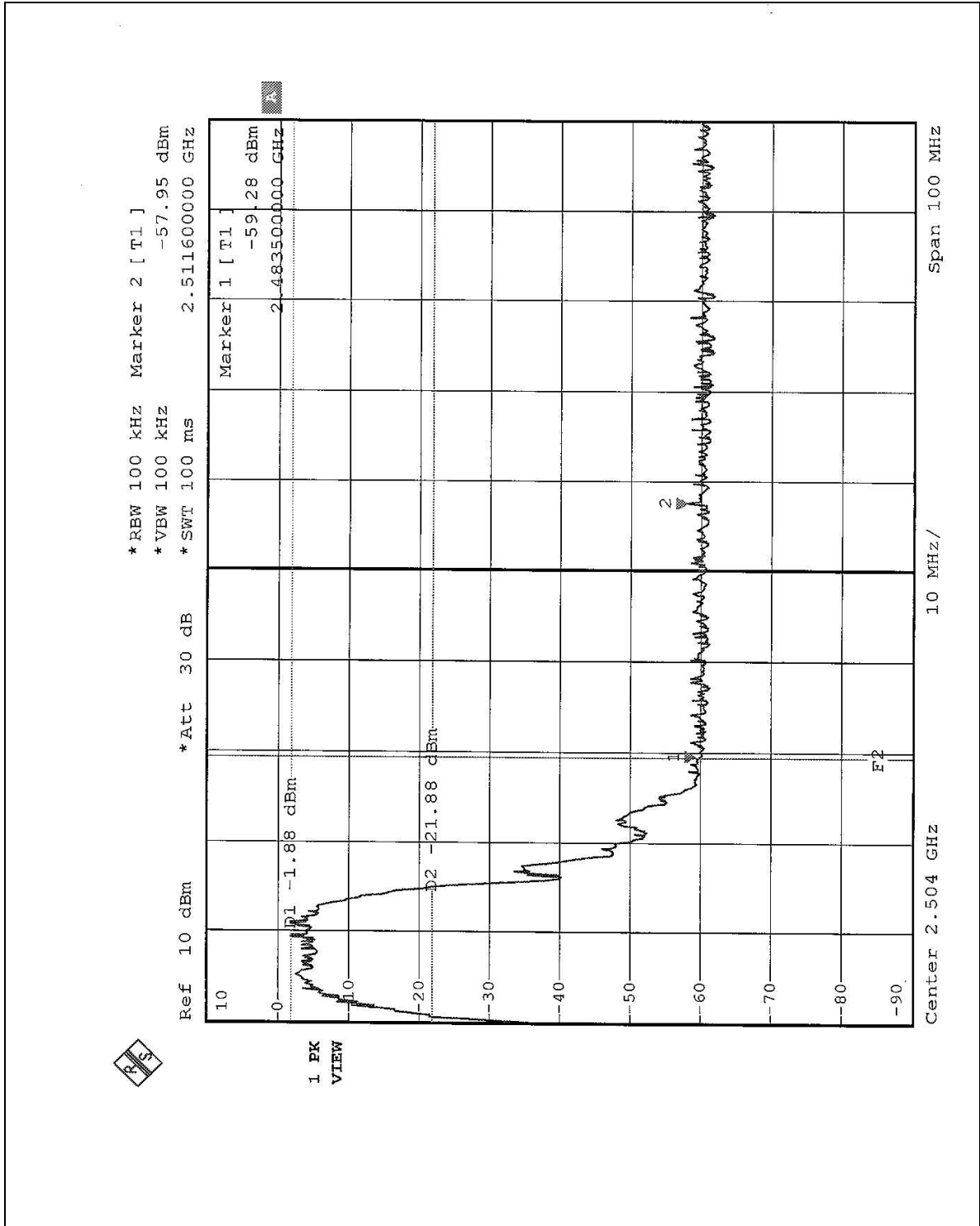
4.6.5 EUT OPERATING CONDITION

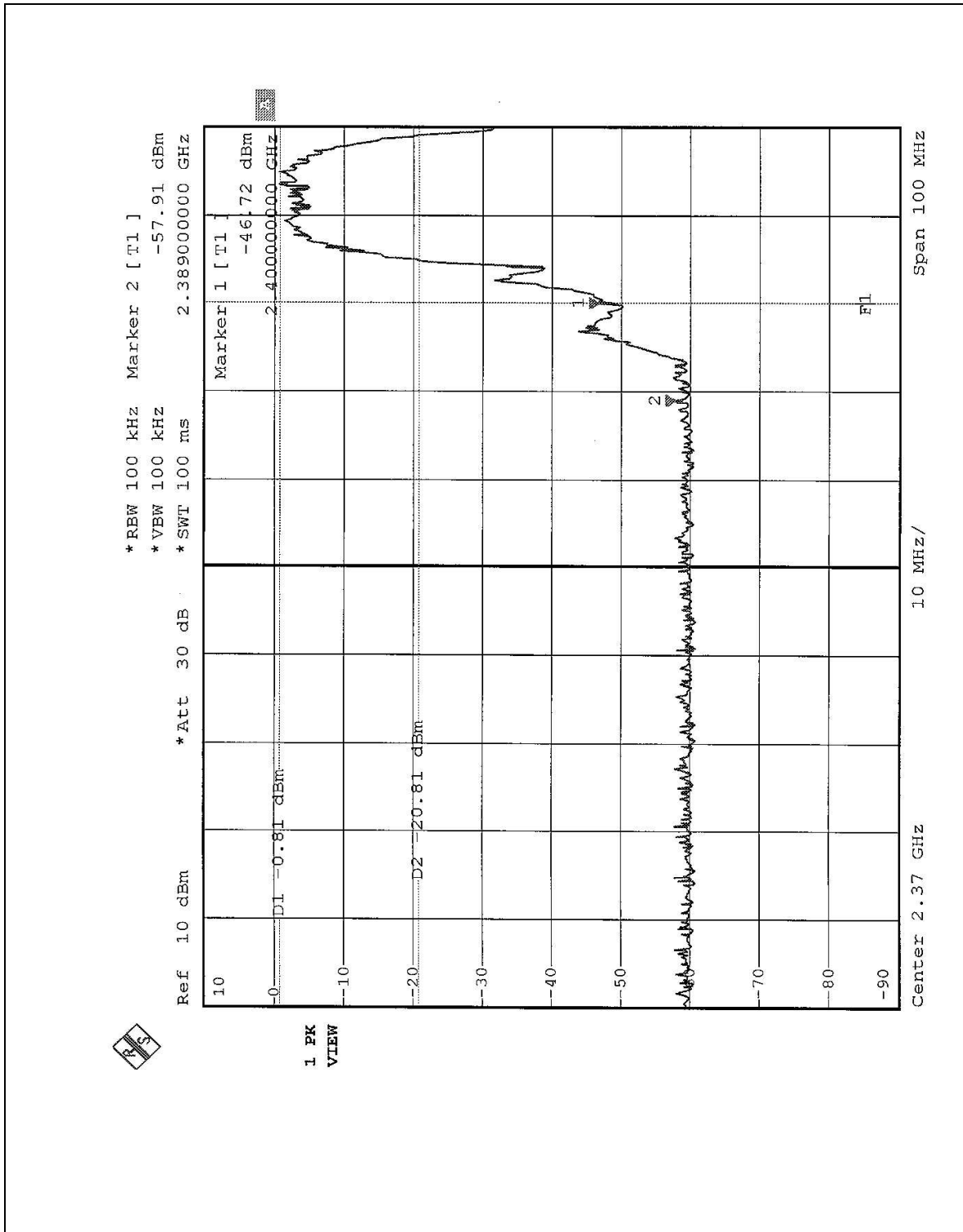
Same as Item 4.3.6

4.6.6 TEST RESULTS

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

NOTE: The band edge emission plot on the following 2 pages shows 57.4dB/ 57.1dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz / 2.3890GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 (Page 29) is 102.8dBuV/m, so the maximum field strength in restrict band is $102.8 - 57.4 = 45.4$ dBuV/m which is under 54dBuV/m limit.







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 Dipole antenna without connector. The maximum Gain of the antenna is 1dBi only.



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 (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	834115/016	Mar. 3, 2003
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ESH3-Z5	847265/023	Jan. 10, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Dec. 10, 2002
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Dec. 10, 2002
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	July 10, 2003
Software	Cond-V2L	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C03.01	July 11, 2003
Terminator (For EMCO LISN)	NA	E1-01-300	Feb. 20, 2003
Terminator (For EMCO LISN)	NA	E1-01-301	Feb. 20, 2003
Shielded Room	Site 3	ADT-C03	NA
VCCI Site Registration No.	Site 3	C-274	NA

- 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.
 3. “*”: These equipment are used for conducted telecom port test only (if tested).
 4. The test was performed in ADT Open Site No. 3.



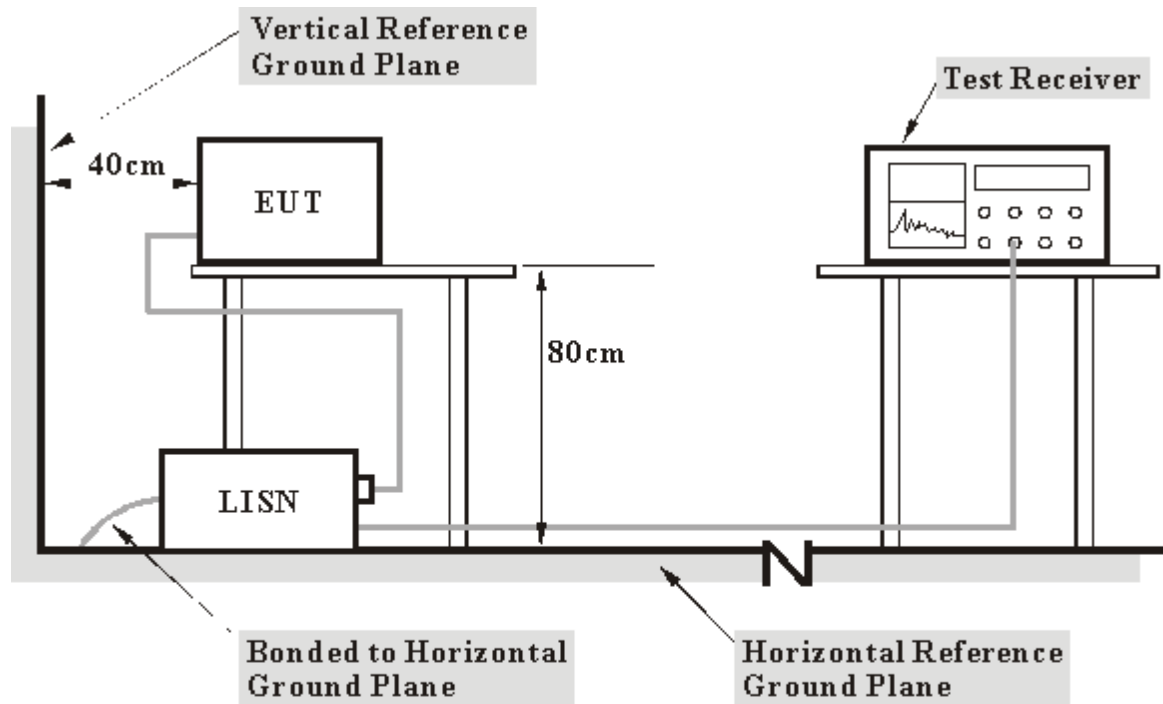
5.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 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.



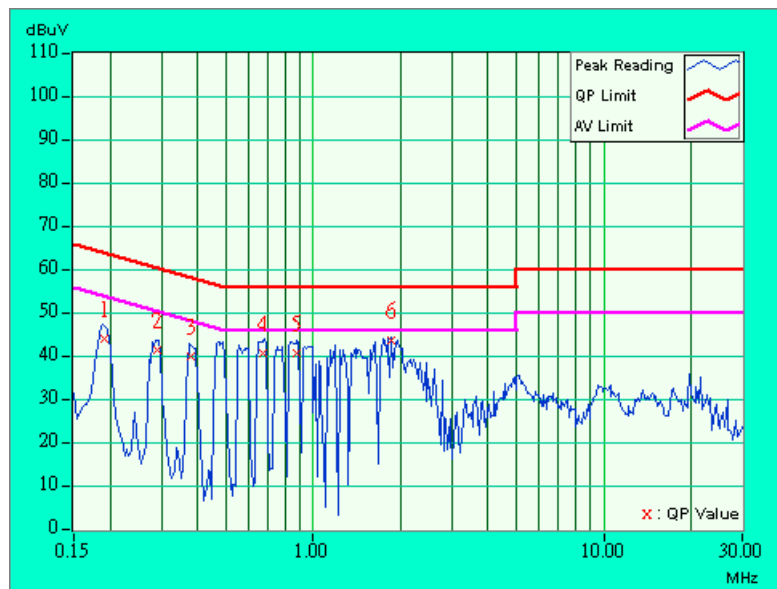
5.1.7 TEST RESULTS (TRANSMITTING)

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.192	0.10	43.75	-	43.85	-	63.97	53.97	-20.12	-
2	0.291	0.10	41.17	-	41.27	-	60.51	50.51	-19.24	-
3	0.380	0.10	39.56	-	39.66	-	58.27	48.27	-18.61	-
4	0.673	0.15	40.45	-	40.60	-	56.00	46.00	-15.40	-
5	0.873	0.18	40.40	-	40.58	-	56.00	46.00	-15.42	-
6	1.859	0.29	43.47	-	43.76	-	56.00	46.00	-12.24	-

NOTE:

1. QP. and AV. are abbreviations of quasi-peak and average individually.
2. "-": NA
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Emission Level = Reading Value + Correction Factor.



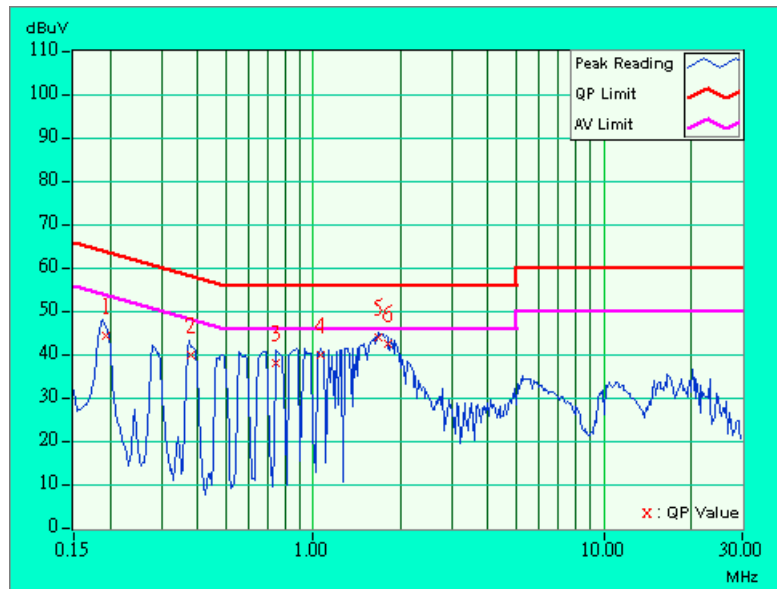


EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.10	44.10	-	44.20	-	63.92	53.92	-19.72	-
2	0.378	0.10	39.76	-	39.86	-	58.33	48.33	-18.47	-
3	0.744	0.16	37.97	-	38.13	-	56.00	46.00	-17.87	-
4	1.059	0.21	39.67	-	39.88	-	56.00	46.00	-16.12	-
5	1.668	0.27	43.82	-	44.09	-	56.00	46.00	-11.91	-
6	1.809	0.28	42.24	-	42.52	-	56.00	46.00	-13.48	-

NOTE:

1. QP. and AV. are abbreviations of quasi-peak and average individually.
2. "-": NA
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Emission Level = Reading Value + Correction Factor.





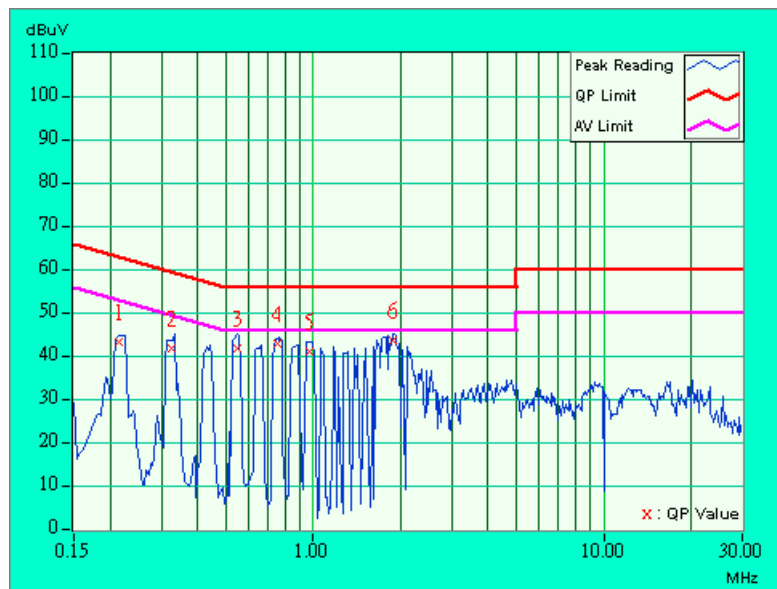
5.1.8 TEST RESULTS (RECEIVING)

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.215	0.10	42.92	-	43.02	-	63.00	53.00	-19.98	-
2	0.325	0.10	41.59	-	41.69	-	59.59	49.59	-17.90	-
3	0.548	0.12	41.73	-	41.85	-	56.00	46.00	-14.15	-
4	0.752	0.16	42.75	-	42.91	-	56.00	46.00	-13.09	-
5	0.974	0.20	40.84	-	41.04	-	56.00	46.00	-14.96	-
6	1.871	0.29	43.43	-	43.72	-	56.00	46.00	-12.28	-

NOTE:

1. QP. and AV. are abbreviations of quasi-peak and average individually.
2. "-": NA
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Emission Level = Reading Value + Correction Factor.



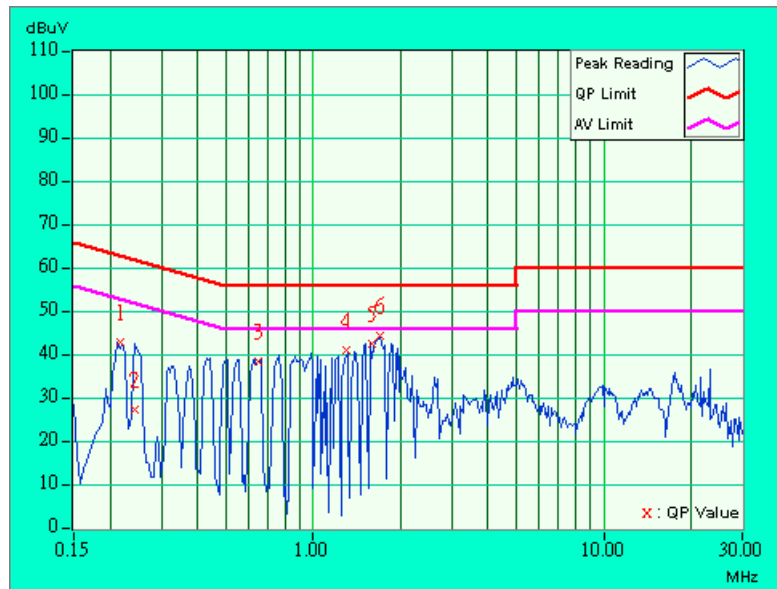


EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg. C, 62%RH, 1005 hPa	TESTED BY: Cody Chang	

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	0.218	0.10	42.86	-	42.96	-	62.91	52.91	-19.95	-
2	0.244	0.10	27.00	-	27.10	-	61.97	51.97	-34.87	-
3	0.647	0.14	38.28	-	38.42	-	56.00	46.00	-17.58	-
4	1.293	0.23	40.86	-	41.09	-	56.00	46.00	-14.91	-
5	1.599	0.26	42.22	-	42.48	-	56.00	46.00	-13.52	-
6	1.701	0.27	44.23	-	44.50	-	56.00	46.00	-11.50	-

NOTE:

1. QP. and AV. are abbreviations of quasi-peak and average individually.
2. "-": NA
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Emission Level = Reading Value + Correction Factor.





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 (dB μ V/m) *note 3
5150~5250	-27	68.3
5250~5350	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

NOTE:

1. For frequencies 10MHz or greater above or below the band edge.
2. All emissions within the frequency range from the band edge to 10MHz above or below the band edge.
3. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength

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



5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Apr. 29, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 06, 2002
* HP Preamplifier	8449B	3008A01292	Aug. 7, 2003
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 27, 2003
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2002
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 2, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jul. 3, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 9, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D4	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 25, 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 12, 2003
Open Field Test Site	Site 5	ADT-R05	Jul. 19, 2003
VCCI Site Registration No.	Site 5	R-1039	NA

- NOTE:**
1. The measurement uncertainty is less than +/- 3.0dB, 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.
 3. "*" = These equipment are used for the final measurement.
 4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 5. The test was performed in ADT Open Site No. 5.



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.

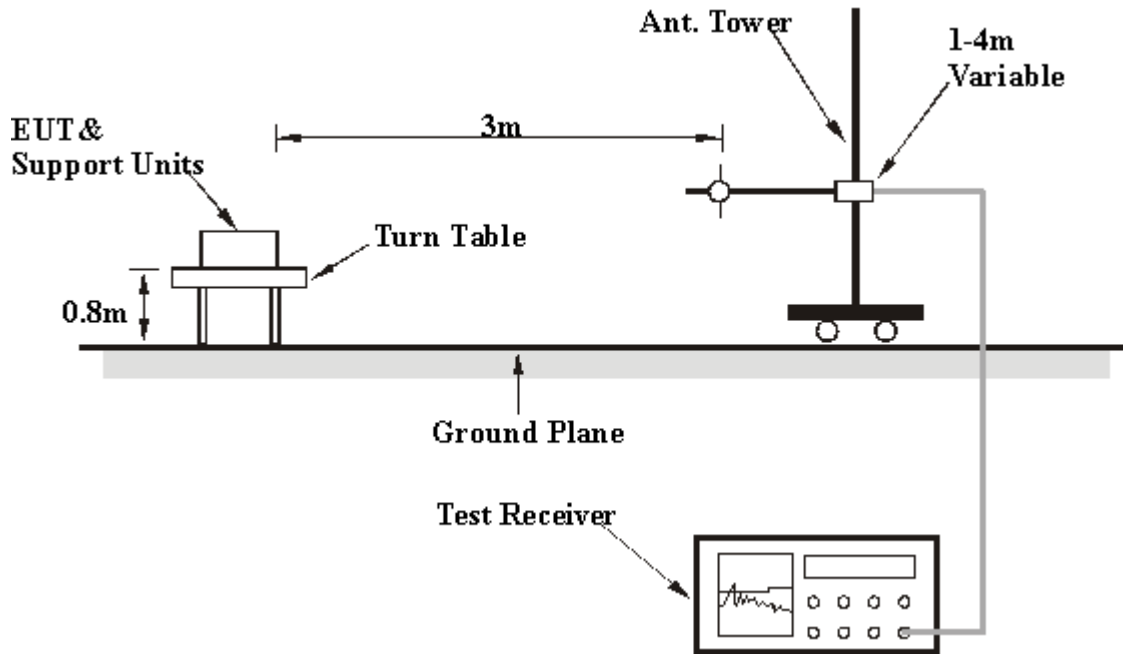
NOTE:

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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
FREQUENCY RANGE	30-1000 MHz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	200.00	30.0 QP	43.50	-13.50	1.58H	192	19.62	8.98	1.40	0.00	-10.38
2	225.00	22.0 QP	46.00	-24.00	1.72H	144	10.25	10.41	1.35	0.00	-11.75
3	250.00	35.0 QP	46.00	-11.00	1.08H	240	21.69	12.02	1.29	0.00	-13.31
4	275.00	30.5 QP	46.00	-15.50	1.20H	262	16.54	12.59	1.37	0.00	-13.96
5	300.00	35.6 QP	46.00	-10.40	1.24H	271	20.97	13.18	1.45	0.00	-14.63
6	300.00	37.0 QP	46.00	-9.00	1.07H	277	22.37	13.18	1.45	0.00	-14.63
7	350.00	34.0 QP	46.00	-12.00	1.07H	355	18.34	14.21	1.45	0.00	-15.66
8	375.00	33.7 QP	46.00	-12.30	1.05H	1	17.07	15.13	1.50	0.00	-16.63
9	400.00	35.0 QP	46.00	-11.00	1.17H	289	17.34	16.11	1.55	0.00	-17.66
10	500.00	31.0 QP	46.00	-15.00	1.11H	315	11.99	17.26	1.75	0.00	-19.01
11	600.00	35.6 QP	46.00	-10.40	1.65H	291	15.06	18.61	1.93	0.00	-20.54
12	625.00	42.5 QP	46.00	-3.50	1.62H	259	21.62	18.91	1.97	0.00	-20.88
13	700.00	40.0 QP	46.00	-6.00	1.33H	76	18.66	19.31	2.03	0.00	-21.35
14	725.00	35.0 QP	46.00	-11.00	1.08H	27	13.13	19.76	2.11	0.00	-21.87
15	775.00	36.9 QP	46.00	-9.10	1.27H	150	14.24	20.43	2.23	0.00	-22.66
16	800.00	35.0 QP	46.00	-11.00	1.59H	214	12.02	20.69	2.29	0.00	-22.98
17	825.00	36.0 QP	46.00	-10.00	1.00H	274	13.09	20.58	2.33	0.00	-22.91
18	850.00	35.0 QP	46.00	-11.00	1.06H	269	12.16	20.48	2.36	0.00	-22.84
19	875.00	38.0 QP	46.00	-8.00	1.00H	337	14.97	20.63	2.40	0.00	-23.03
20	900.00	39.0 QP	46.00	-7.00	1.00H	337	15.76	20.80	2.44	0.00	-23.24
21	950.00	38.4 QP	46.00	-7.60	1.09H	314	14.74	21.20	2.46	0.00	-23.66

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
FREQUENCY RANGE	30-1000 MHz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	200.00	30.0 QP	43.50	-13.50	1.28V	295	19.62	8.98	1.40	0.00	-10.38
2	225.00	32.0 QP	46.00	-14.00	1.34V	185	20.25	10.41	1.35	0.00	-11.75
3	250.00	38.5 QP	46.00	-7.50	1.00V	104	25.19	12.02	1.29	0.00	-13.32
4	275.00	32.5 QP	46.00	-13.50	1.00V	117	18.54	12.59	1.37	0.00	-13.96
5	325.00	35.0 QP	46.00	-11.00	2.24V	109	19.83	13.72	1.45	0.00	-15.17
6	400.00	34.2 QP	46.00	-11.80	1.36V	273	16.54	16.11	1.55	0.00	-17.66
7	500.00	36.0 QP	46.00	-10.00	1.03V	310	16.99	17.26	1.75	0.00	-19.01
8	600.00	33.0 QP	46.00	-13.00	1.03V	2	12.46	18.61	1.93	0.00	-20.54
9	625.00	35.0 QP	46.00	-11.00	1.05V	6	14.12	18.91	1.97	0.00	-20.88
10	640.00	33.0 QP	46.00	-13.00	1.38V	277	11.88	19.12	2.00	0.00	-21.12
11	700.00	38.0 QP	46.00	-8.00	1.59V	290	16.66	19.31	2.03	0.00	-21.34
12	750.00	33.4 QP	46.00	-12.60	1.00V	171	11.04	20.18	2.18	0.00	-22.36
13	775.00	31.0 QP	46.00	-15.00	1.34V	214	8.34	20.43	2.23	0.00	-22.67
14	800.00	36.0 QP	46.00	-10.00	1.32V	210	13.02	20.69	2.29	0.00	-22.98
15	850.00	33.0 QP	46.00	-13.00	1.35V	283	10.16	20.48	2.36	0.00	-22.84
16	900.00	37.0 QP	46.00	-9.00	1.22V	283	13.76	20.80	2.44	0.00	-23.24

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.



5.2.9 TEST RESULTS (TRANSMITTING)

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)	Remark
1	5150.00	44.2 PK	74.00	-29.80	1.67H	357	45.00	31.87	3.95	36.63	0.82	NOTE 6
2	*5180.00	80.2 PK			1.60H	350	81.00	31.87	3.95	36.63	0.83	
3	*5180.00	69.0 AV			1.60H	350	69.80	31.87	3.95	36.63	0.83	
4	10360.00	55.8 PK	68.30	-12.50	1.07H	358	47.40	39.16	6.69	37.42	-8.43	

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)	Remark
1	5150.00	46.2 PK	74.00	-27.80	1.14V	14	47.00	31.87	3.95	36.63	0.82	NOTE 6
2	*5180.00	88.2 PK			1.19V	20	89.00	31.87	3.95	36.63	0.83	
3	*5180.00	78.1 AV			1.19V	20	78.95	31.87	3.95	36.63	0.83	
4	10360.00	55.4 PK	68.30	-12.90	1.34V	3	47.00	39.16	6.69	37.42	-8.43	

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5240.00	69.5 AV			1.51H	3	70.30	31.90	3.86	36.60	0.84
2	*5240.00	82.2 PK			1.51H	3	83.00	31.90	3.86	36.60	0.84
3	10480.00	55.2 PK	68.30	-13.10	1.47H	170	46.00	39.36	7.14	37.32	-9.19

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5240.00	90.7 PK			1.05V	18	91.50	31.90	3.86	36.60	0.84
2	*5240.00	82.2 AV			1.05V	18	83.00	31.90	3.86	36.60	0.84
3	10480.00	56.2 PK	68.30	-12.10	1.27V	1	47.00	39.36	7.14	37.32	-9.19

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	5
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5260.00	81.8 PK			1.25H	291	82.66	31.90	3.86	36.60	0.84
2	*5260.00	73.0 AV			1.25H	291	73.80	31.90	3.86	36.60	0.84
3	10517.00	56.2 PK	68.30	-12.10	1.03H	3	46.80	39.43	7.22	37.28	-9.36

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5260.00	90.2 PK			1.44V	53	91.00	31.90	3.86	36.60	0.84
2	*5260.00	82.6 AV			1.44V	53	83.40	31.90	3.86	36.60	0.84
3	10518.00	56.4 PK	68.30	-11.90	1.47V	39	47.00	39.43	7.22	37.28	-9.36

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	8
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)	Remark
1	*5320.00	84.1 PK			1.20H	356	85.00	31.93	3.77	36.57	0.86	
2	*5320.00	72.1 AV			1.20H	356	73.00	31.93	3.77	36.57	0.86	
3	5360.00	48.1 PK	74.00	-25.90	1.17H	341	49.00	31.95	3.73	36.55	0.87	NOTE 6
4	10640.00	51.6 PK	74.00	-22.40	1.07H	2	42.00	39.61	7.22	37.18	-9.65	NOTE 6
5	15960.00	42.8 AV	54.00	-11.20	1.21H	3	35.00	37.72	7.52	37.46	-7.78	NOTE 6
6	15960.00	55.8 PK	74.00	-18.20	1.21H	3	48.00	37.72	7.52	37.46	-7.79	NOTE 6

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)	Remark
1	*5320.00	89.5 PK			1.13V	105	90.40	31.93	3.77	36.57	0.86	
2	*5320.00	80.1 AV			1.13V	105	81.00	31.93	3.77	36.57	0.86	
3	5360.00	45.1 PK	74.00	-28.90	1.10V	99	46.00	31.95	3.73	36.55	0.87	NOTE 6
4	10640.00	51.9 AV	54.00	-2.10	1.17V	91	42.30	39.61	7.22	37.18	-9.64	NOTE 6
5	10640.00	58.6 PK	74.00	-15.40	1.17V	91	49.00	39.61	7.22	37.18	-9.64	NOTE 6

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
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	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5210.00	80.2 PK			1.43H	3	81.00	31.88	3.90	36.62	0.83
2	*5210.00	69.4 AV			1.43H	3	70.20	31.88	3.90	36.62	0.83
3	10420.00	56.4 PK	68.30	-11.90	1.37H	9	47.50	39.30	6.99	37.35	-8.95

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5210.00	77.8 AV			1.08V	357	78.60	31.88	3.90	36.62	0.83
2	*5210.00	89.2 PK			1.08V	357	90.00	31.88	3.90	36.62	0.83
3	10420.00	54.9 PK	68.30	-13.40	1.25V	28	46.00	39.30	6.99	37.35	-8.94

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	2
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5246.00	90.2 PK			1.53H	4	91.00	31.90	3.86	36.60	0.84
2	*5246.00	69.2 AV			1.53H	4	70.00	31.90	3.86	36.60	0.84
3	10500.00	54.4 PK	68.30	-13.90	1.47H	308	45.00	39.43	7.22	37.28	-9.36

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5246.00	89.2 PK			1.06V	363	90.00	31.90	3.86	36.60	0.84
2	*5246.00	78.1 AV			1.06V	363	78.90	31.90	3.86	36.60	0.84
3	10497.00	55.2 PK	68.30	-13.10	1.10V	363	46.00	39.36	7.14	37.32	-9.19

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	3
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5286.00	68.8 AV			1.65H	363	69.60	31.92	3.82	36.58	0.85
2	*5286.00	79.0 PK			1.65H	363	79.80	31.92	3.82	36.58	0.85
3	10580.00	56.5 PK	68.30	-11.80	1.25H	28	47.00	39.49	7.22	37.25	-9.46

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	*5285.00	87.2 PK			1.08V	26	88.00	31.92	3.82	36.58	0.85
2	*5285.00	79.2 AV			1.08V	26	80.00	31.92	3.82	36.58	0.85
3	10580.00	58.2 PK	68.30	-10.10	1.02V	22	48.70	39.49	7.22	37.25	-9.46

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



5.2.10 TEST RESULTS (RECEIVING)

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	43.6 PK	74.00	-30.40	1.40H	321	55.00	24.88	1.82	38.11	11.40
2	1327.00	44.0 PK	74.00	-30.00	1.07H	3	54.00	25.48	2.02	37.45	9.95.
3	4146.00	44.6 PK	74.00	-29.40	1.05H	123	47.00	30.50	3.66	36.56	2.39

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	50.6 PK	74.00	-23.40	1.05V	161	62.00	24.88	1.82	38.11	11.40
2	3018.00	52.3 PK	74.00	-21.70	1.08V	209	57.20	28.70	3.32	36.90	4.89
3	4220.00	46.7 PK	74.00	-27.30	1.09V	110	49.00	30.62	3.70	36.59	2.27

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	46.6 PK	74.00	-27.40	1.41H	89	58.00	24.88	1.82	38.11	11.40
2	2552.00	42.3 PK	74.00	-31.70	1.80H	259	48.00	28.10	2.89	36.73	5.74
3	4192.00	45.2 PK	74.00	-28.80	1.50H	279	47.50	30.56	3.68	36.58	2.33

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1123.00	50.0 PK	74.00	-24.00	1.00V	341	61.00	25.05	1.88	37.92	10.99
2	4193.00	43.7 PK	74.00	-30.30	1.06V	311	46.00	30.56	3.68	36.58	2.33

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	5
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	43.6 PK	74.00	-30.40	1.40H	2	55.00	24.88	1.82	38.11	11.40
2	4208.00	42.9 PK	74.00	-31.10	1.27H	3	45.20	30.56	3.68	36.58	2.33

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	50.6 PK	74.00	-23.40	1.08V	25	62.00	24.88	1.82	38.11	11.40
2	4208.00	42.7 PK	74.00	-31.30	1.15V	353	45.00	30.56	3.68	36.58	2.33
3	4220.00	43.7 PK	74.00	-30.30	1.12V	2	46.00	30.62	3.70	36.59	2.27

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal Mode	CHANNEL	8
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	44.6 PK	74.00	-29.40	1.37H	4	56.00	24.88	1.82	38.11	11.40
2	4256.00	42.3 PK	74.00	-31.70	1.38H	249	44.50	30.68	3.71	36.61	2.21

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	49.6 PK	74.00	-24.40	1.00V	337	61.00	24.88	1.82	38.11	11.40
2	4256.00	42.8 PK	74.00	-31.20	1.24V	63	45.00	30.68	3.71	36.61	2.21

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	1
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	40.6 PK	74.00	-33.40	1.42H	9	52.00	24.88	1.82	38.11	11.40
2	4168.00	42.4 PK	74.00	-31.60	1.08H	104	44.70	30.56	3.68	36.58	2.33

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	49.4 PK	74.00	-24.60	1.00V	3	60.80	24.88	1.82	38.11	11.40
2	4168.00	42.7 PK	74.00	-31.30	1.27V	279	45.00	30.56	3.68	36.58	2.33
3	4216.00	41.9 PK	74.00	-32.10	1.31V	110	44.20	30.62	3.70	36.59	2.27

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	2
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	39.6 PK	74.00	-34.40	1.55H	20	51.00	24.88	1.82	38.11	11.40
2	4202.00	41.5 PK	74.00	-32.50	1.40H	24	43.80	30.56	3.68	36.58	2.33

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	48.1 PK	74.00	-25.90	1.50V	45	59.50	24.88	1.82	38.11	11.40
2	4202.00	44.5 PK	74.00	-29.50	1.56V	363	46.80	30.56	3.68	36.58	2.33

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency



EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo Mode	CHANNEL	3
FREQUENCY RANGE	Above 1000 MHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 1050 hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Gary Chang		

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	41.6 PK	74.00	-32.40	1.41H	6	53.00	24.88	1.82	38.11	11.40
2	4232.00	42.7 PK	74.00	-31.30	1.27H	16	45.00	30.62	3.70	36.59	2.27

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	1060.00	48.3 PK	74.00	-25.70	1.36V	249	59.70	24.88	1.82	38.11	11.40
2	4232.00	44.4 PK	74.00	-29.60	1.36V	6	46.70	30.62	3.70	36.59	2.27

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency

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 26 dB emission bandwidth in MHz.

5.3.2 TEST INSTRUMENTS

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

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.

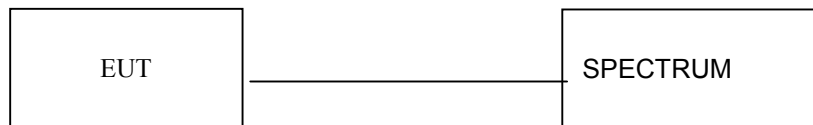
5.3.3 TEST PROCEDURE

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 100kHz.
4. Using the spectrum analyzer's band 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

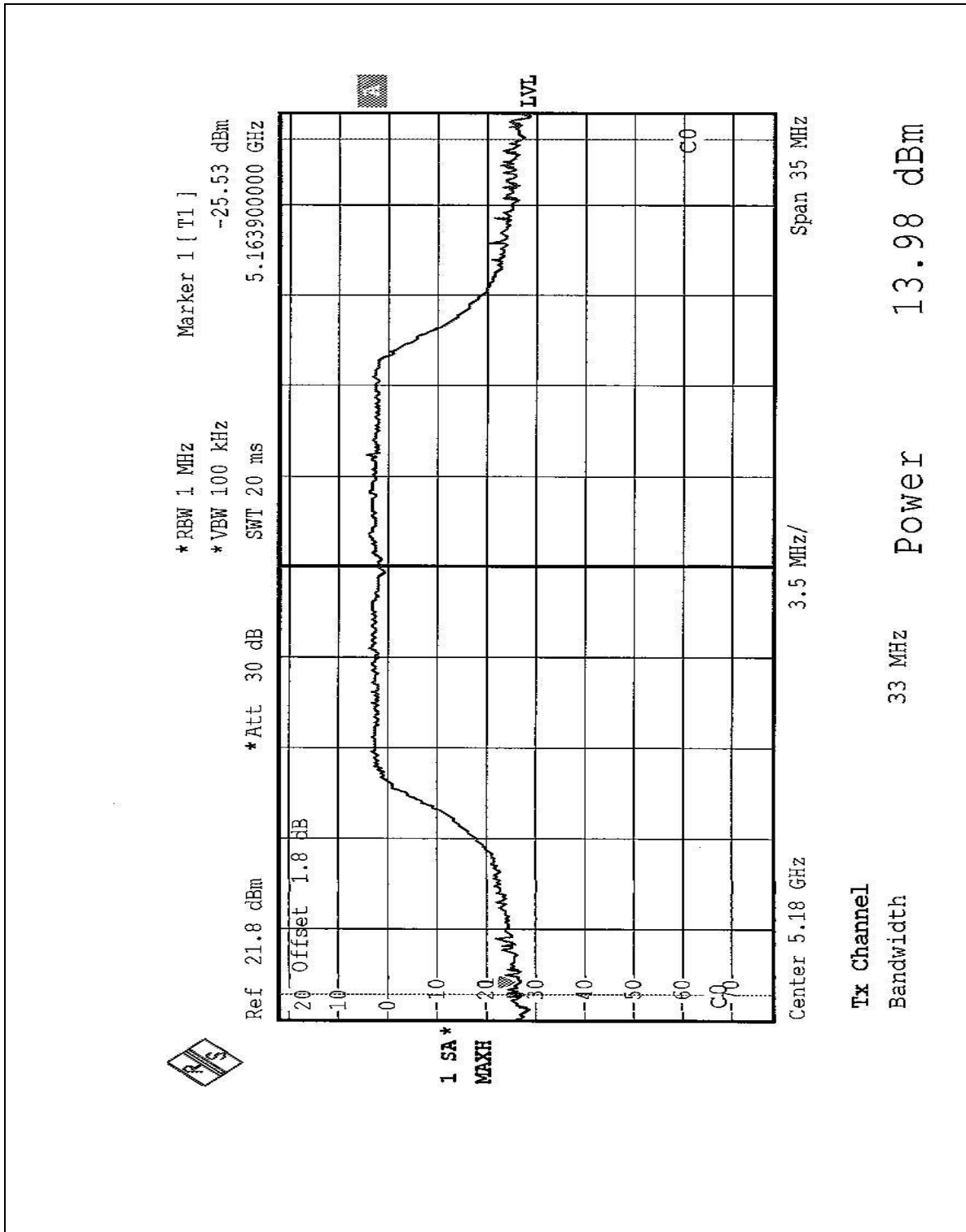
EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005 hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	13.98	17.00	33.12	PASS
4	5240	13.03	17.00	33.12	PASS
5	5260	15.22	24.00	35.12	PASS
8	5320	13.25	24.00	32.96	PASS

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

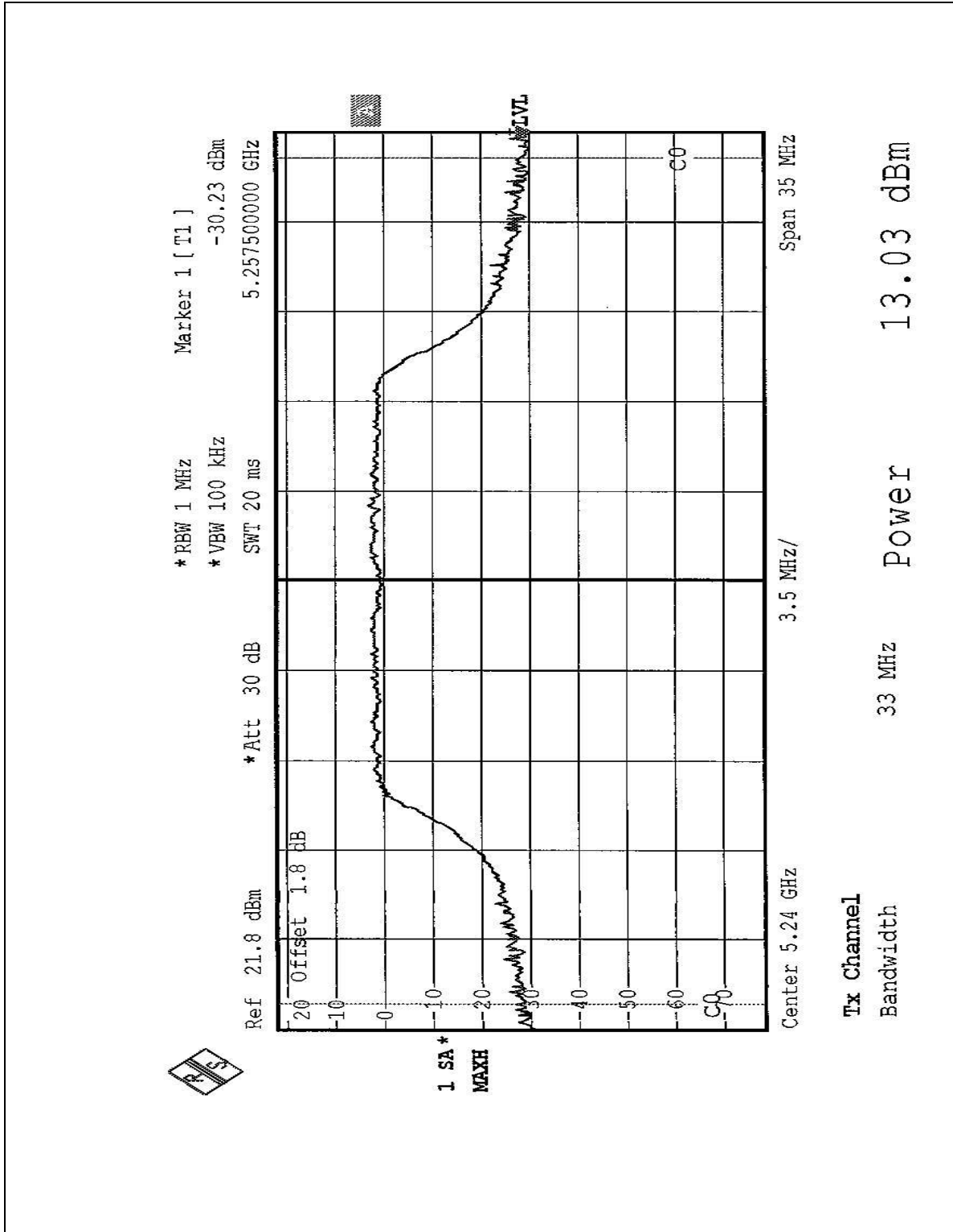


CHANNEL 1



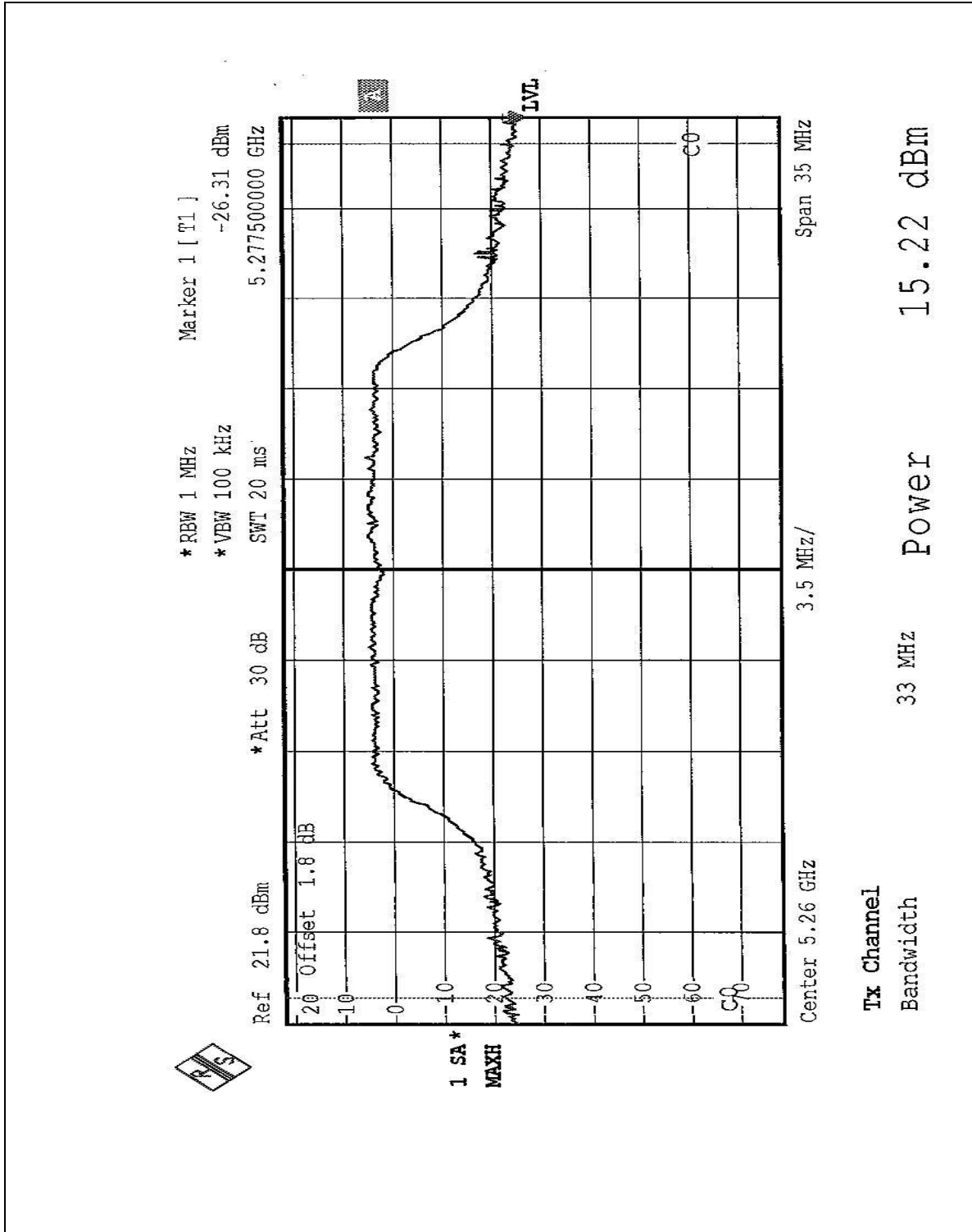


CHANNEL 4



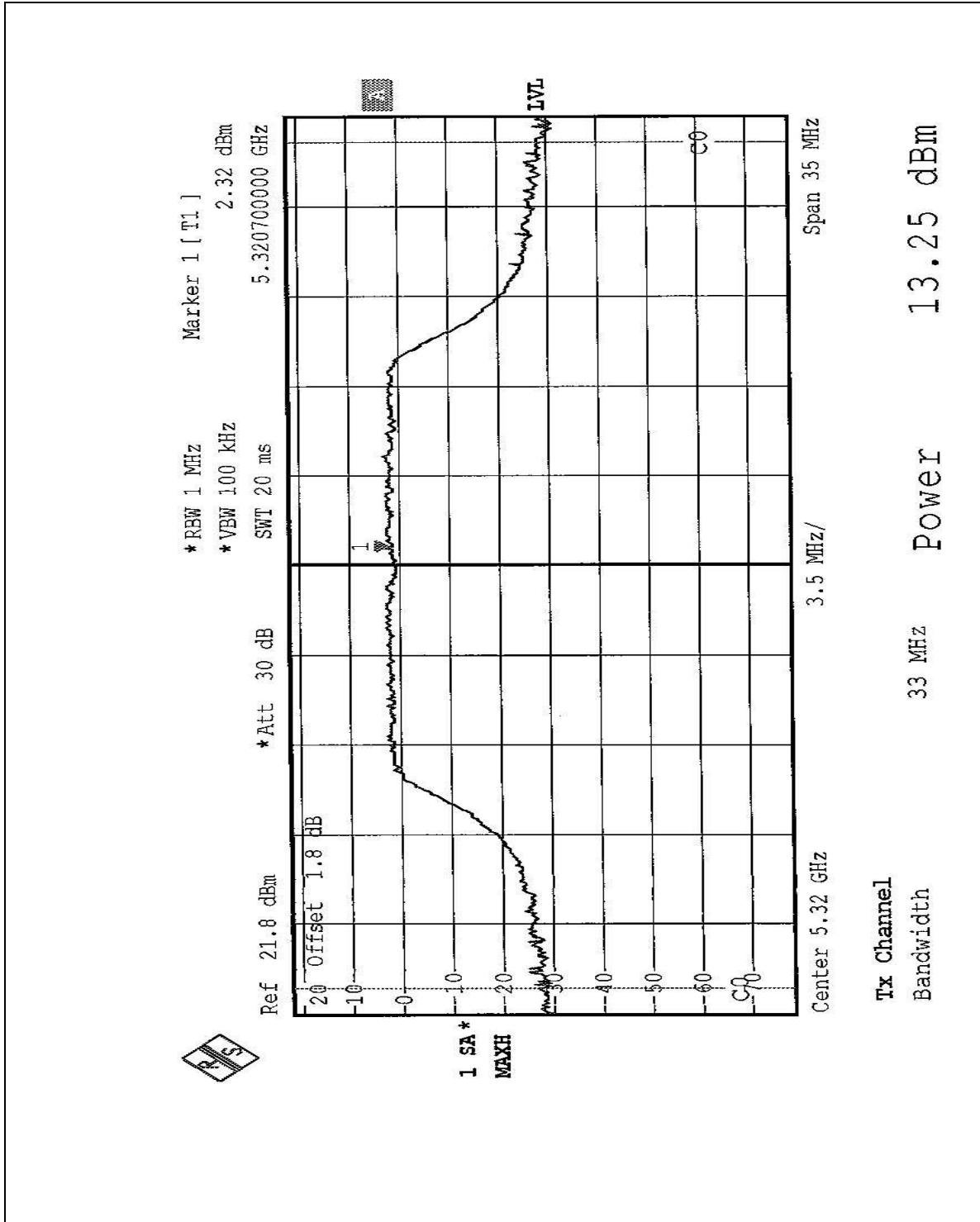


CHANNEL 5



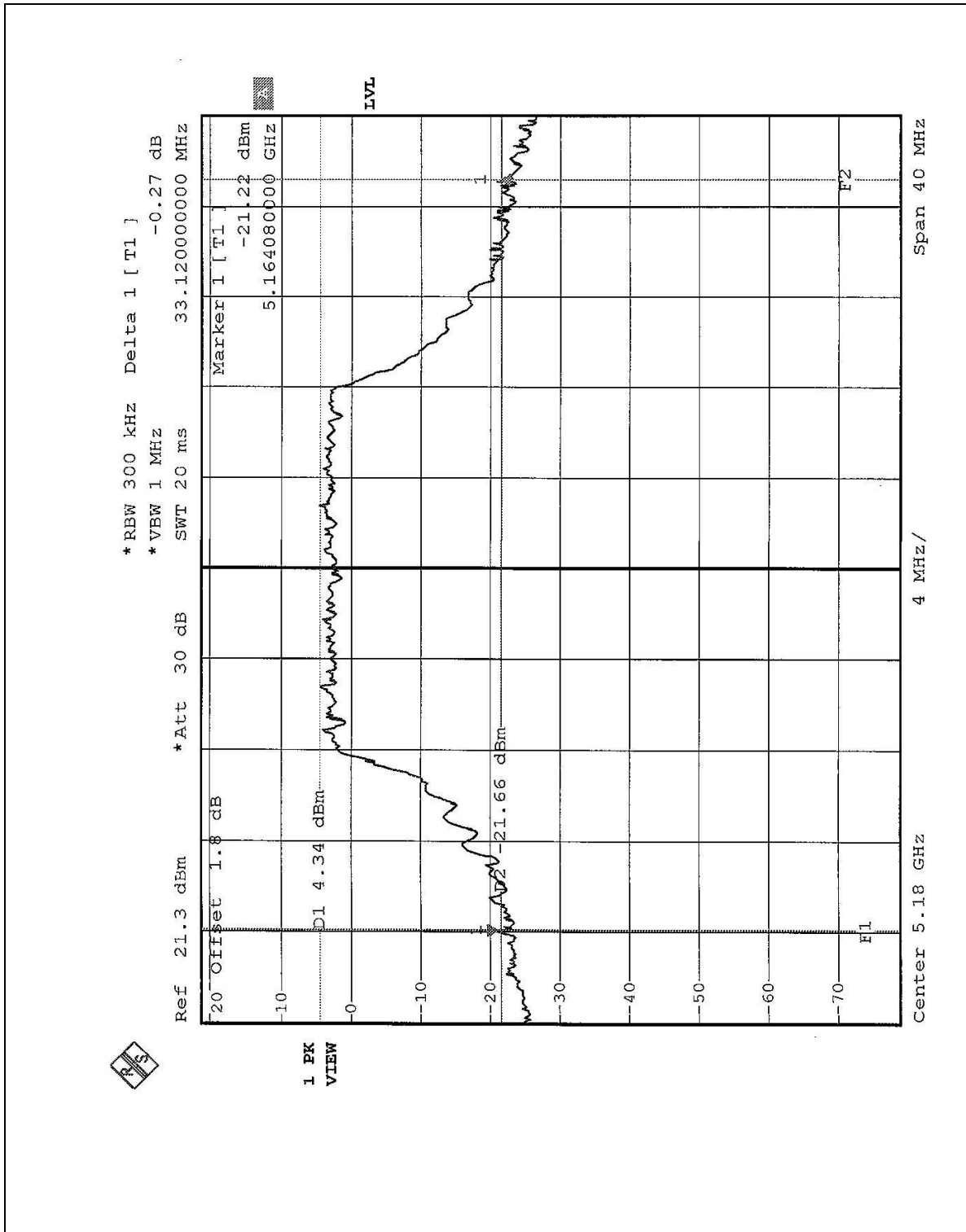


CHANNEL 8



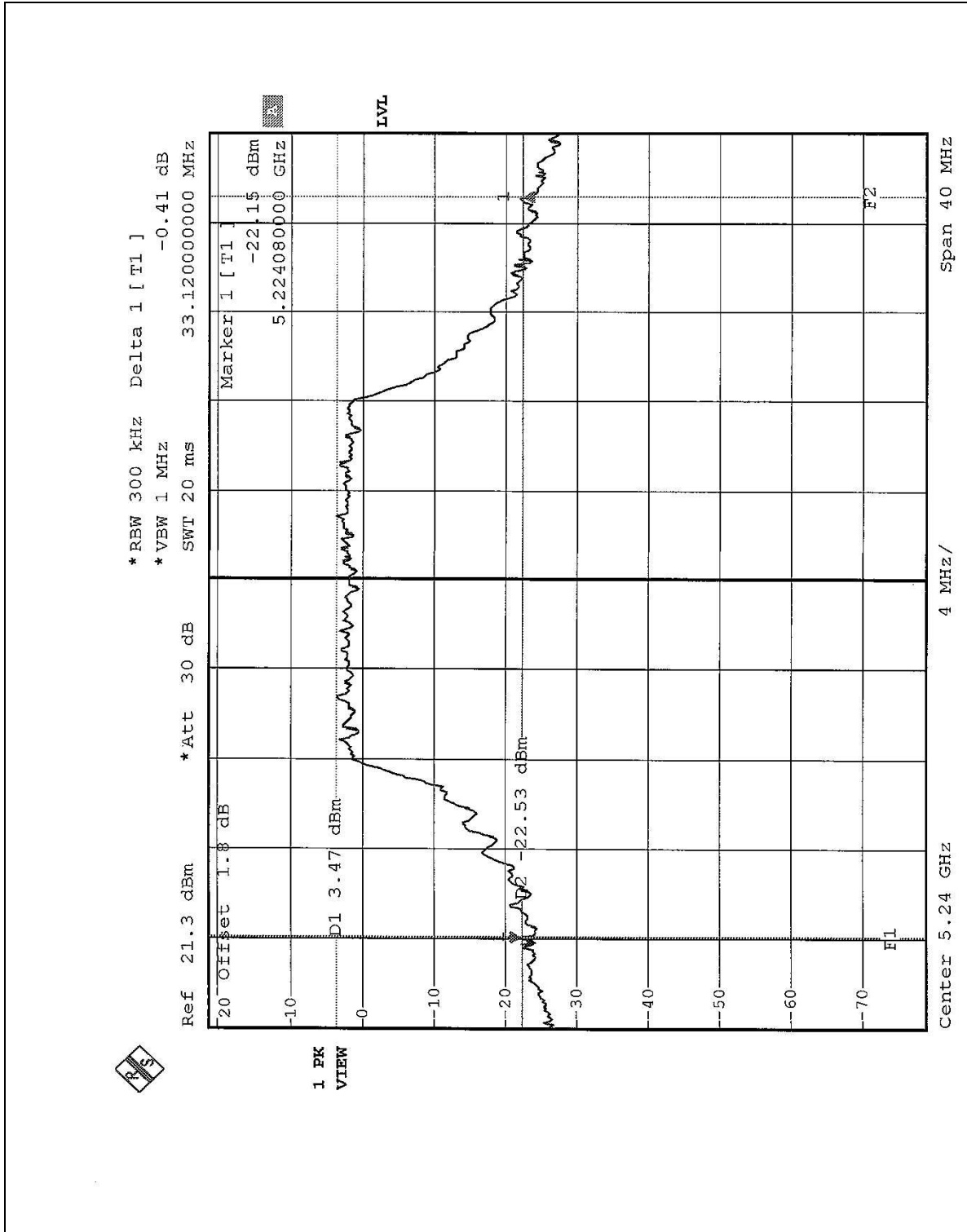


CHANNEL 1



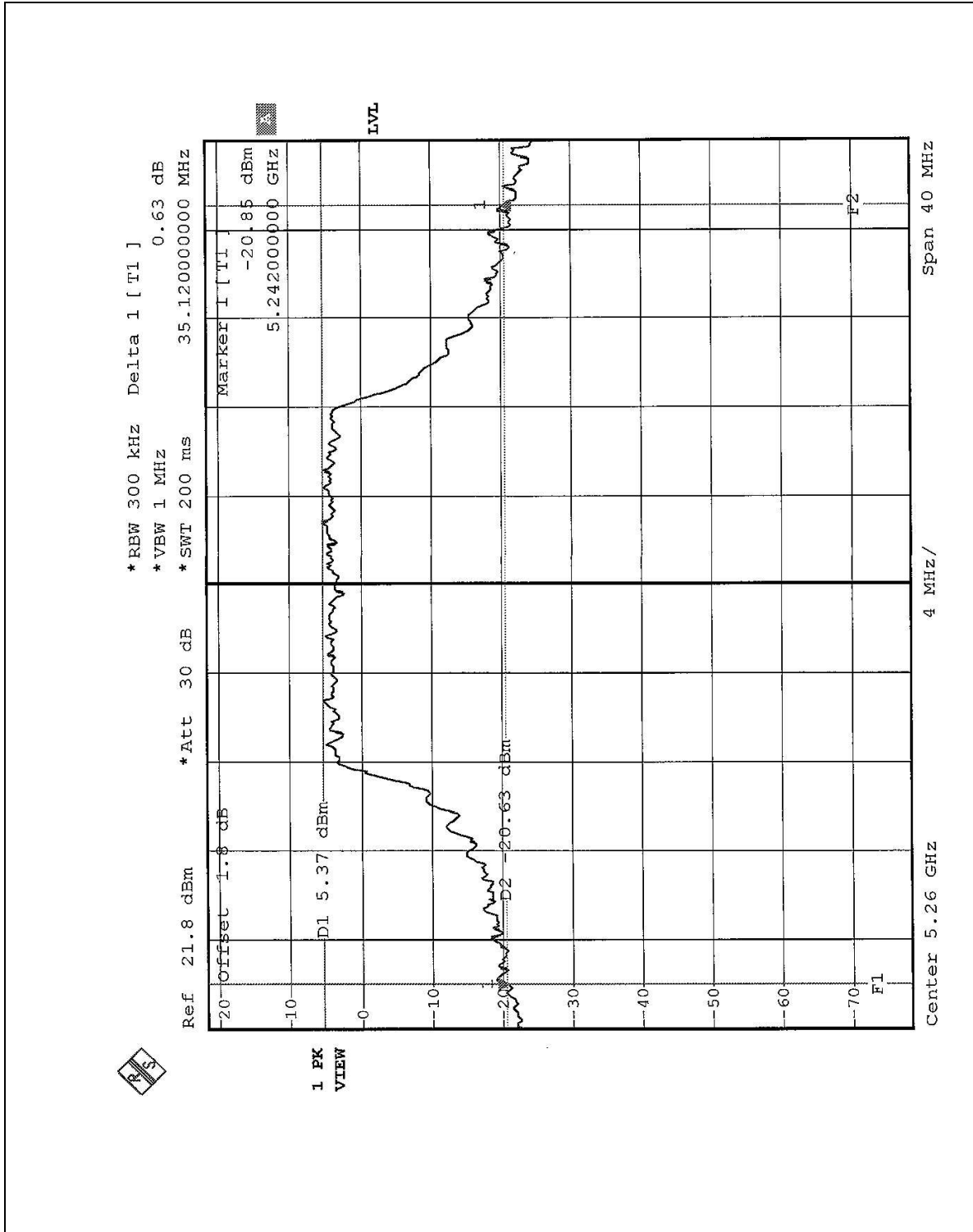


CHANNEL 4



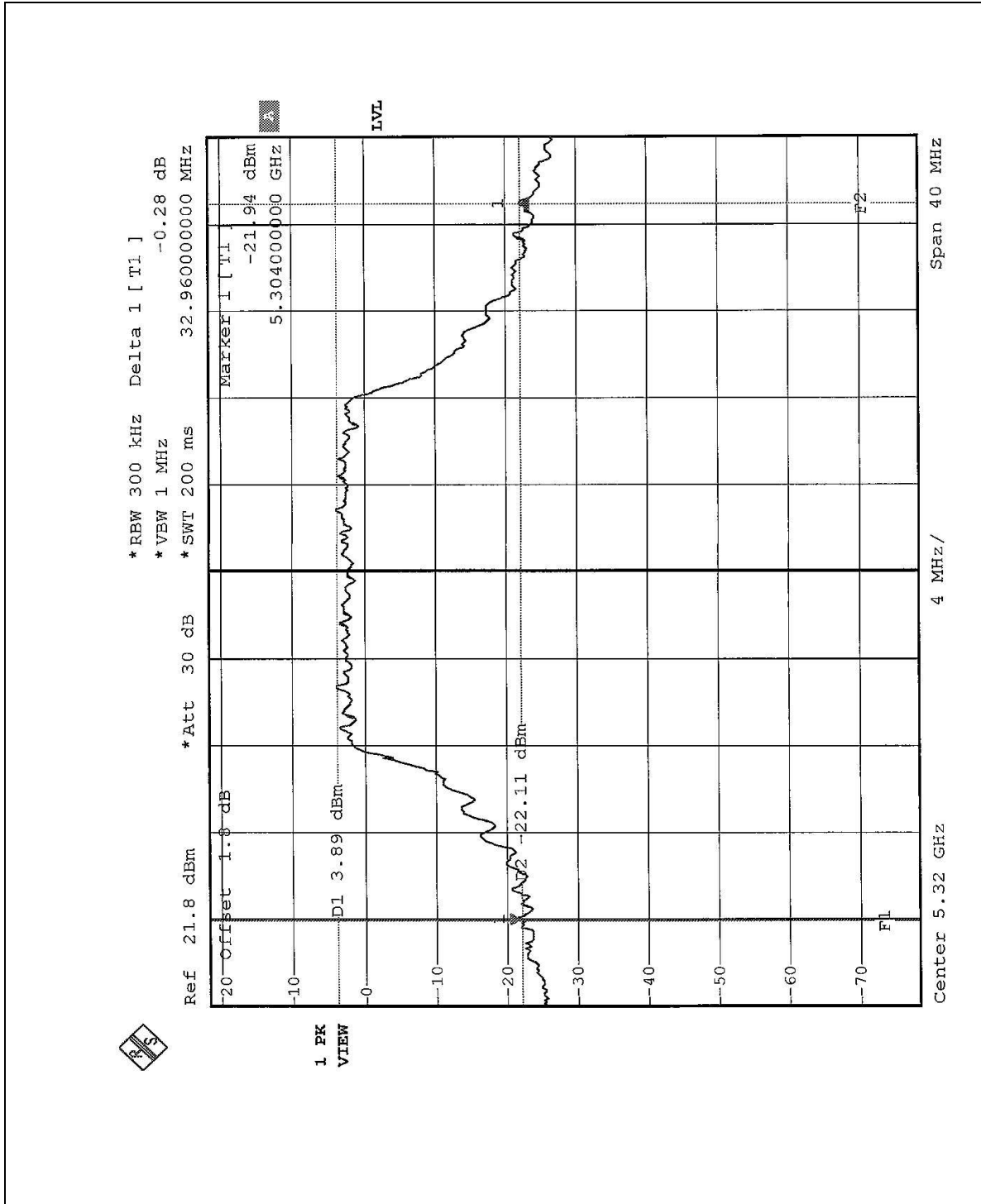


CHANNEL 5





CHANNEL 8





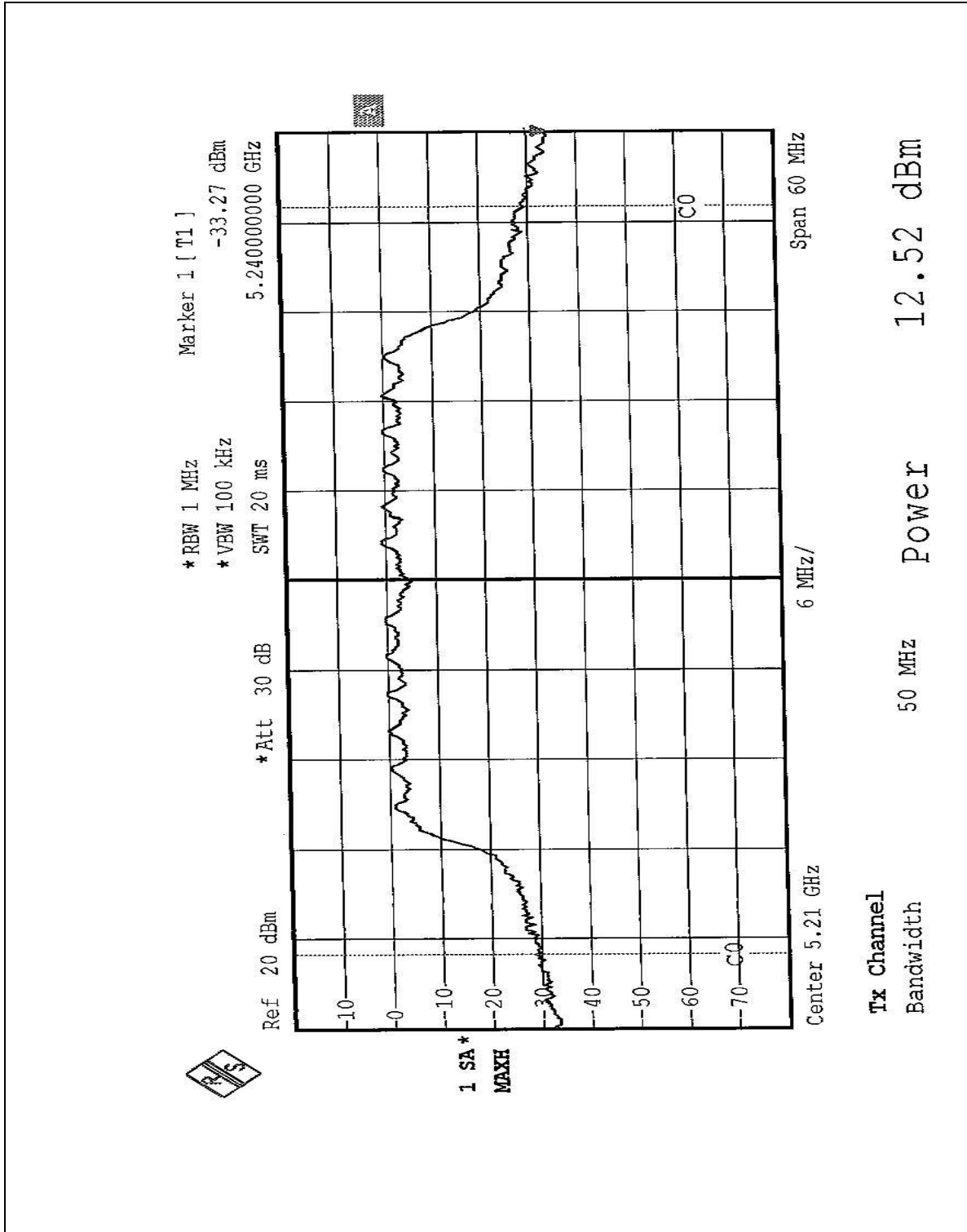
EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 64%RH, 1005 hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	12.52	17.00	49.44	PASS
2	5250	11.80	17.00	49.32	PASS
3	5290	10.96	24.00	48.00	PASS

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

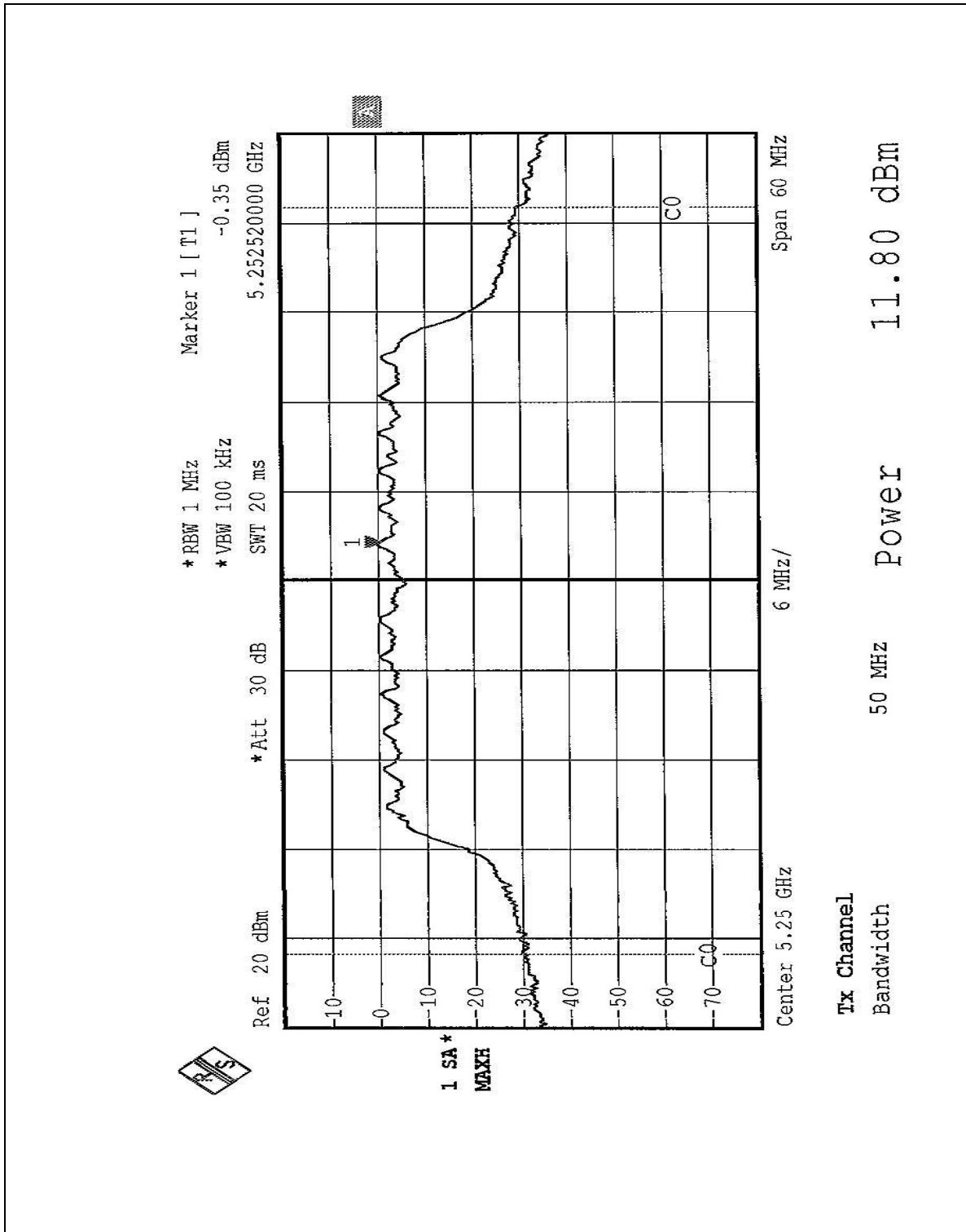


CHANNEL 1



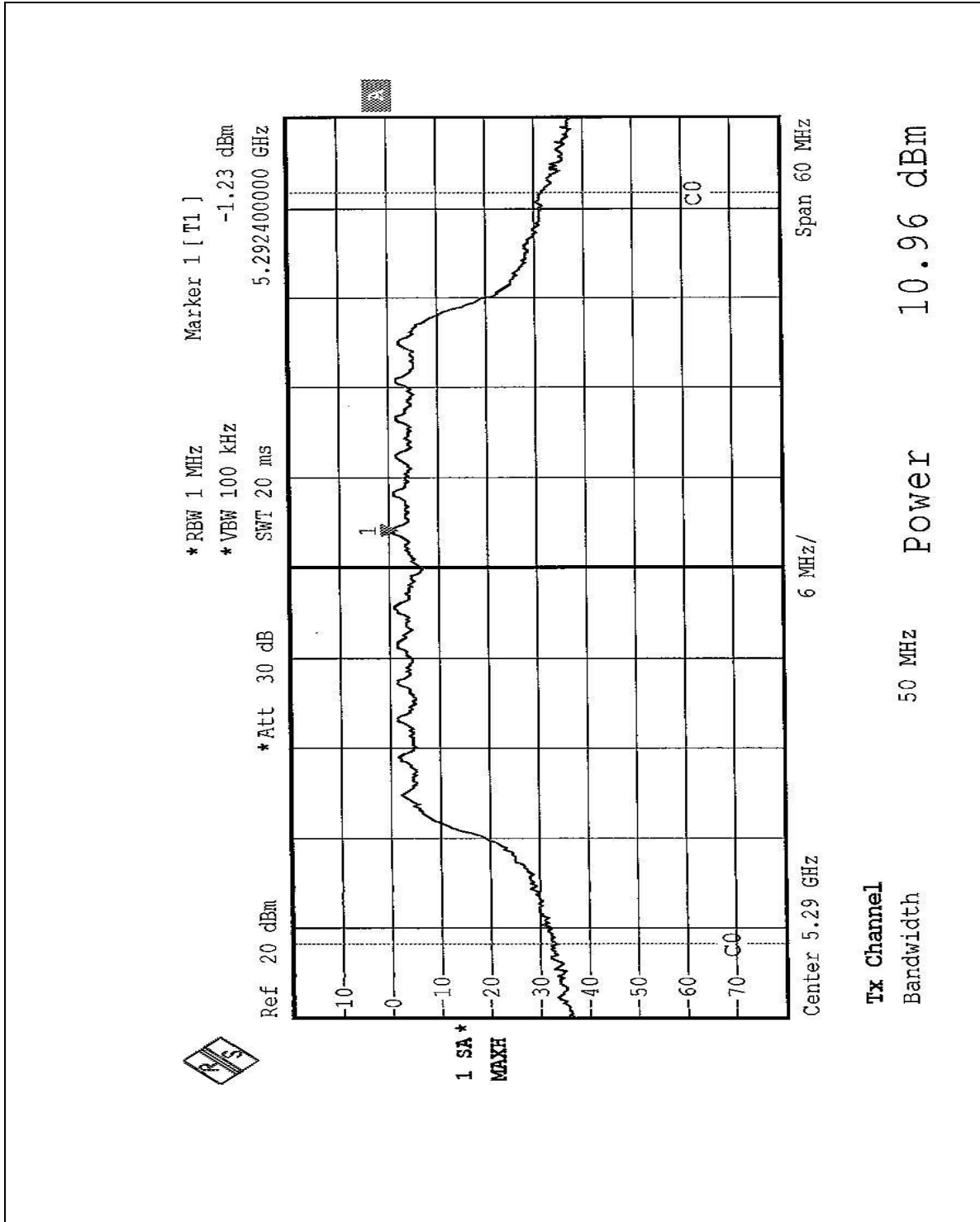


CHANNEL 2



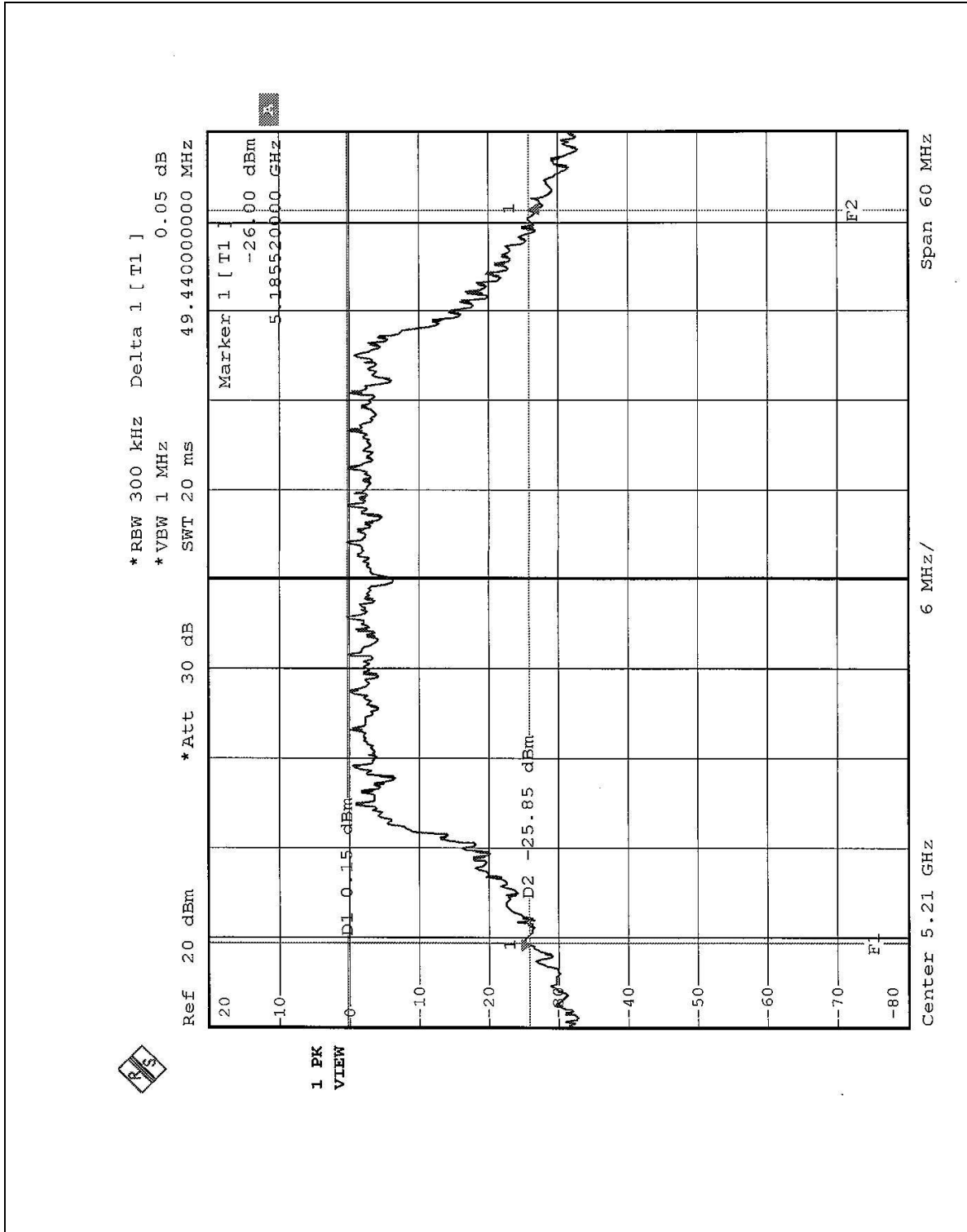


CHANNEL 3



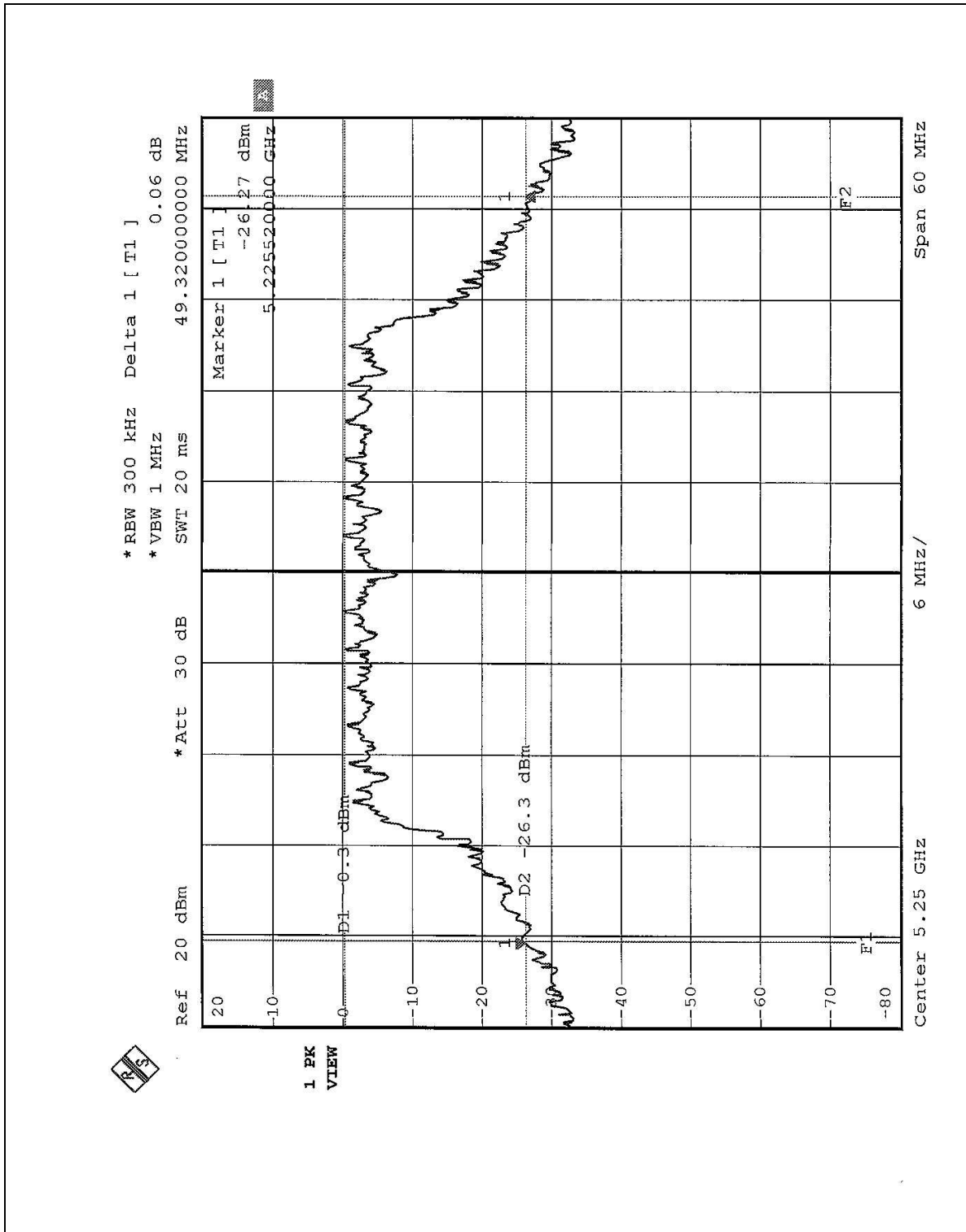


CHANNEL 1



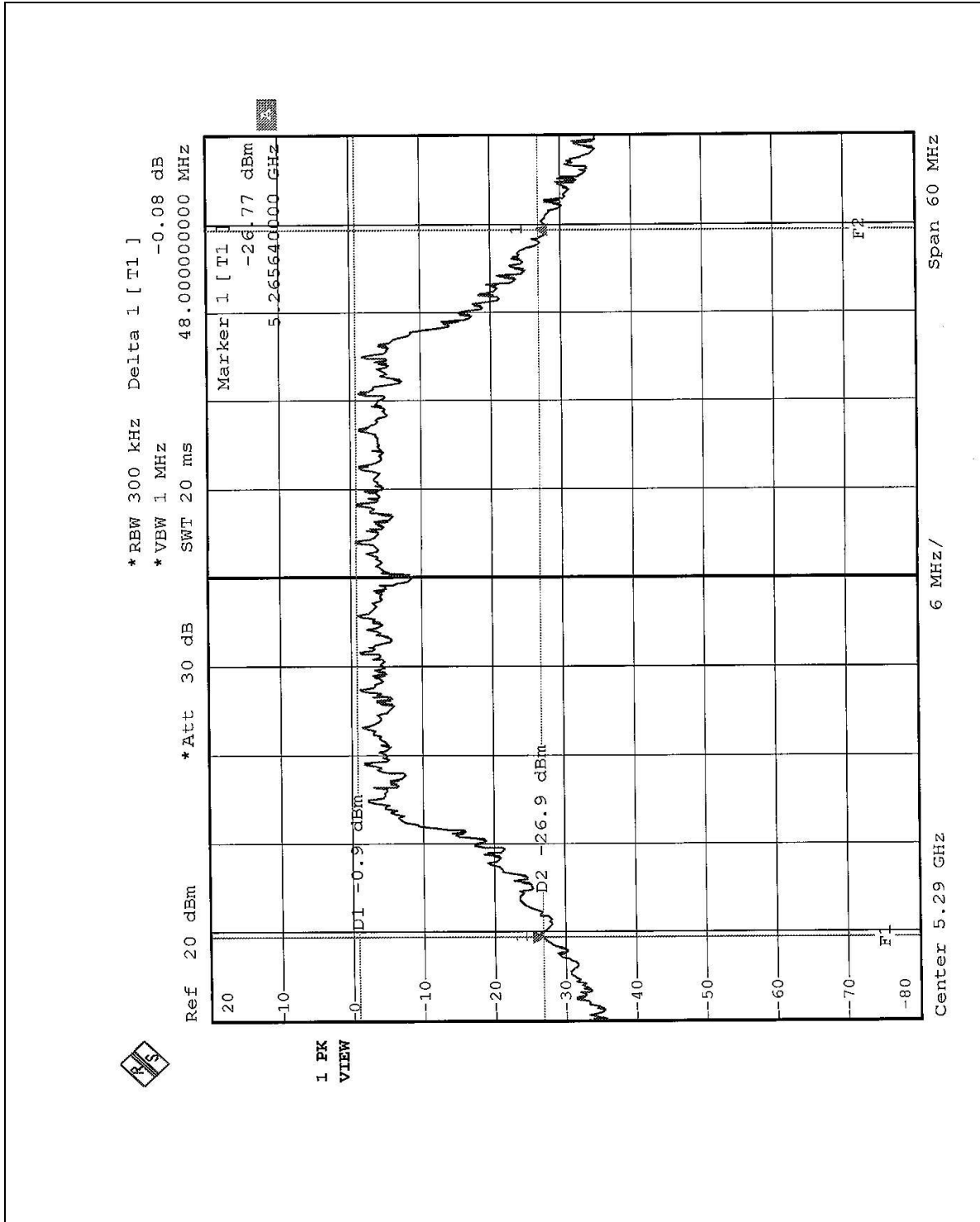


CHANNEL 2





CHANNEL 3





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
ROHDE&SCHWARZ SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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.

5.4.3 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=100KHz).
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.



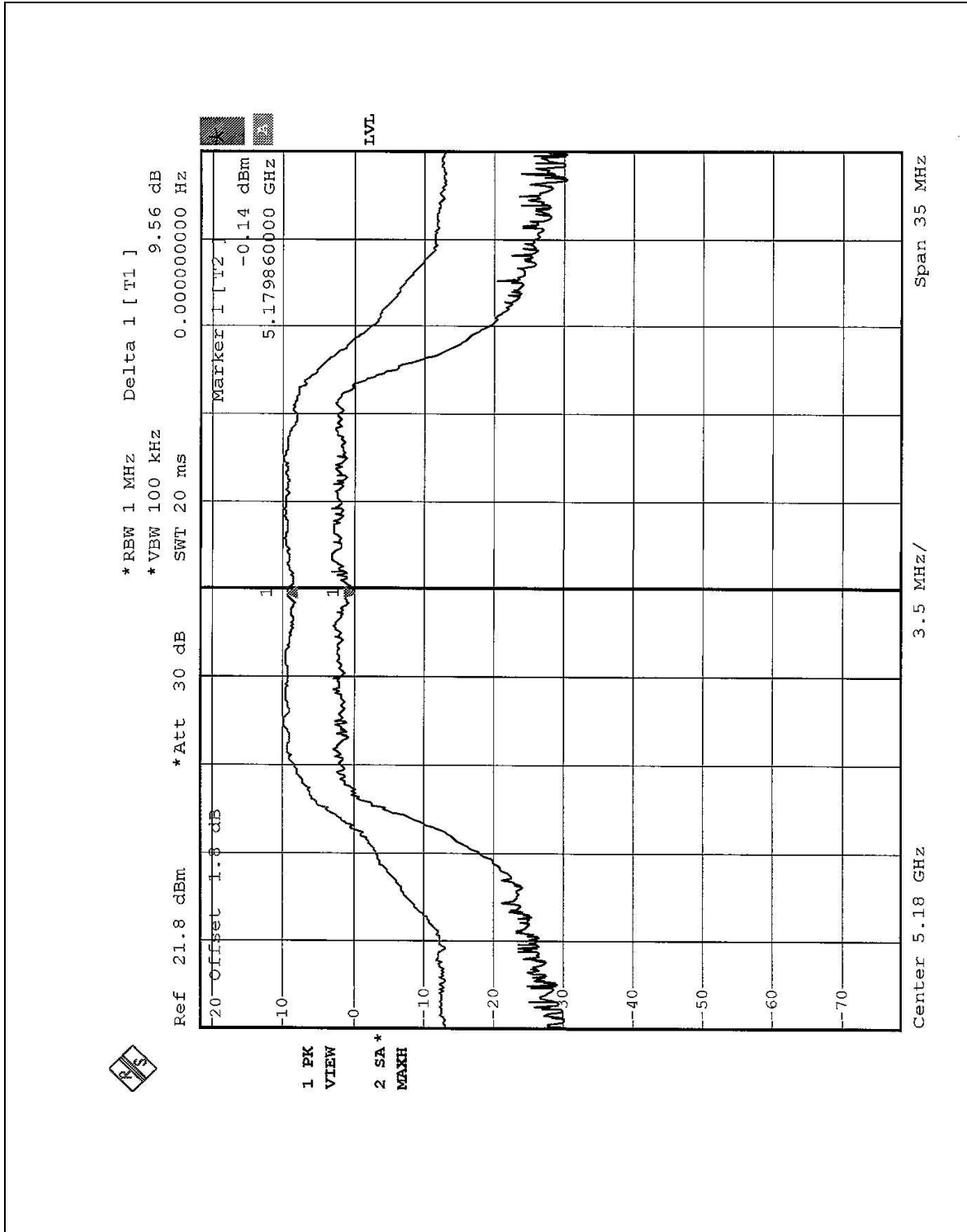
5.4.7 TEST RESULTS

EUT	Dual-Band Wireless A+B Broadband Router	MODEL	WRT51AB
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 64%RH, 1005 hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	9.56	13	PASS
4	5240	8.85	13	PASS
5	5260	8.01	13	PASS
8	5320	9.09	13	PASS



CHANNEL 1





CHANNEL 4

