



# FCC TEST REPORT

**REPORT NO.:** RF920811R03  
**MODEL NO.:** WMP55AG v1.1  
**RECEIVED:** Aug. 04, 2003  
**TESTED:** Aug. 04 ~ Aug. 12, 2003

**APPLICANT:** Cisco-Linksys, LLC

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**ISSUED BY:** Advance Data Technology Corporation

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0528  
ILAC MRA



Lab Code: 200102-0



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## 1. CERTIFICATION

**PRODUCT :** Dual-Band A+G Wireless Network PCI Adapter v1.1  
**BRAND NAME :** Linksys  
**MODEL NO. :** WMP55AG v1.1  
**TEST ITEM:** Engineering Sample  
**APPLICANT :** Cisco-Linksys, LLC  
**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 of the designation has been tested in our facility from Aug. 4 ~ Aug. 12, 2003. 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:** Rennie Wang, **DATE:** October 3, 2003  
Rennie Wang  
**APPROVED BY:** Ellis Wu, **DATE:** October 3, 2003  
Ellis Wu, Manager



## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: 47 CFR Part 15, Subpart C</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>REMARK</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -18.61dB at 0.181MHz
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 -2.00dB 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



<b>APPLIED STANDARD: 47 CFR Part 15, Subpart E</b>			
<b>Standard Section</b>	<b>Test Type</b>	<b>Result</b>	<b>REMARK</b>
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -18.51dB at 0.181MHz
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit Minimum passing margin is -3.65dB at 5150.00MHz
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

<b>PRODUCT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1
<b>MODEL NO.</b>	WMP55AG v1.1
<b>POWER SUPPLY</b>	5VDC from host equipment
<b>MODULATION TYPE</b>	BPSK, QPSK, CCK, 64QAM, 16QAM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>FREQUENCY RANGE</b>	802.11b and 802.11g: 2412~2462MHz 802.11a: 5.15~5.35GHz and 5.725~5.825GHz
<b>NUMBER OF CHANNEL</b>	802.11b and 802.11g: 11 802.11a: 12 for Normal mode / 5 for Turbo mode
<b>CHANNEL SPACING</b>	802.11b and 802.11g: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
<b>OUTPUT POWER</b>	802.11b and 802.11g: 17.48dBm 802.11a: 18.42dBm
<b>DATA CABLE</b>	NA
<b>ANTENNA TYPE</b>	Dipole antenna
<b>ANTENNA GAIN</b>	1dBi for 2.4GHz band 3dBi for 5GHz band
<b>I/O PORTS</b>	NA
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:**

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. This EUT is capable of providing data rates up to 108Mbps in turbo mode.
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 and 802.11g: 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 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. Data rate 11Mbps with CCK technique and 6Mbps with OFDM technique, the worst case, were chosen for final test.

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	5745 MHz
4	5240 MHz	10	5765 MHz
5	5260 MHz	11	5785 MHz
6	5280 MHz	12	5805 MHz

Five channels are provided to this EUT for Turbo Mode.

Channel	Frequency	Channel	Frequency
1	5210 MHz	4	5760 MHz
2	5250 MHz	5	5800 MHz
3	5290 MHz		

**NOTE:**

1. 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 108Mbps. 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, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. Channel 1 ~ 5 were chosen for final test of turbo mode.



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a Dual-Band A+G Wireless Network PCI Adapter v1.1. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 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 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	PERSONAL COMPUTER	HP	DTPC 27	SG21103584	FCC DoC Approved
2	MONITOR	HP	D2846A	JP90512318	FCC DoC Approved
3	PS/2 KEYBOARD	BTC	5200T	F24800256	E5XKB5122WTH01 10
4	PS/2 MOUSE	BTC	M851	N/A	E5XMSM860
5	PRINTER	EPSON	LQ-300+	DCGY017054	FCC DoC Approved
6	MODEM	ACEEX	1414	980020520	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core.
3	1.6 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
4	1.5 m Non shielded wire, terminated with PS/2 connector via drain wire, w/o core.
5	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
6	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.

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



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

### 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	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	ESCS 30	838251/021	Jan. 20, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Dec. 18, 2003
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 29 2003
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29 2003
Software	Cond-V2M3	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	May 01, 2004
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010770	Mar. 24, 2004
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Apr. 06, 2004

- 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. “\*”: These equipment are used for conducted telecom port test only (if tested).
  3. The test was performed in ADT Shielded Room No. 10.
  4. The VCCI Site Registration No. is C-1312.



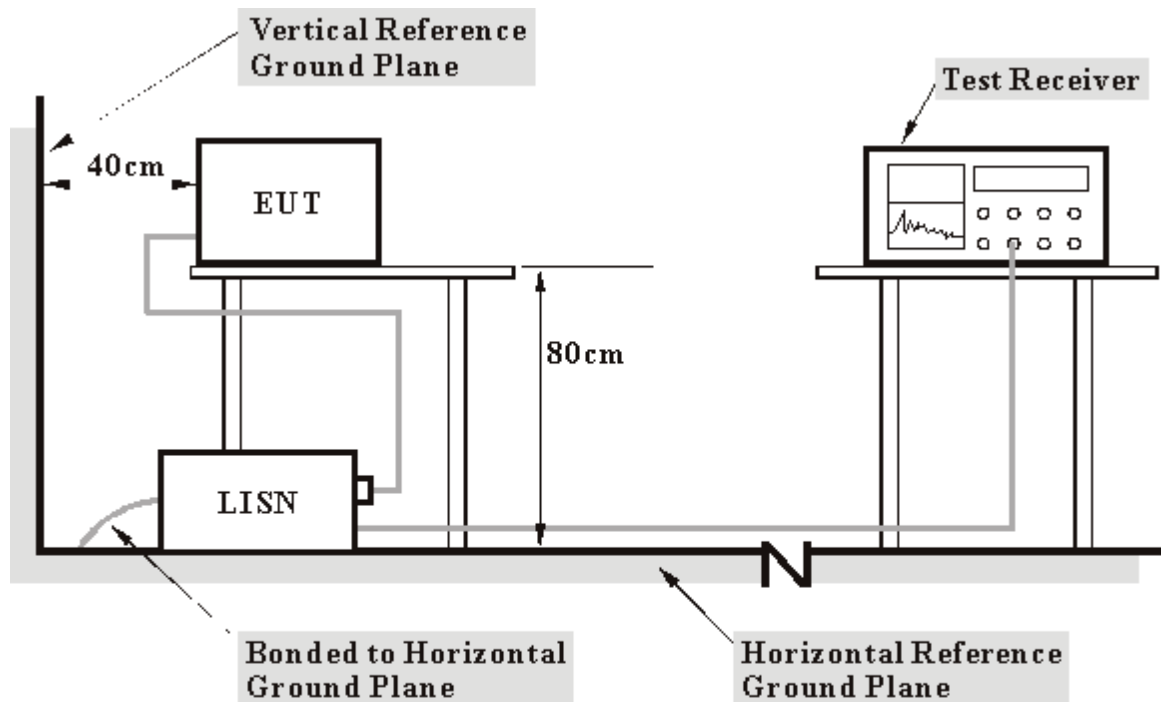
#### 4.1.3 TEST PROCEDURES

- 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 150kHz to 30MHz 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. Plug the EUT into the computer system placed on a testing table.
- b. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The computer system sent "H" messages to its screen.
- d. The computer system sent "H" messages to modem.
- e. The computer system sent "H" messages to printer, and the printer prints them on paper.

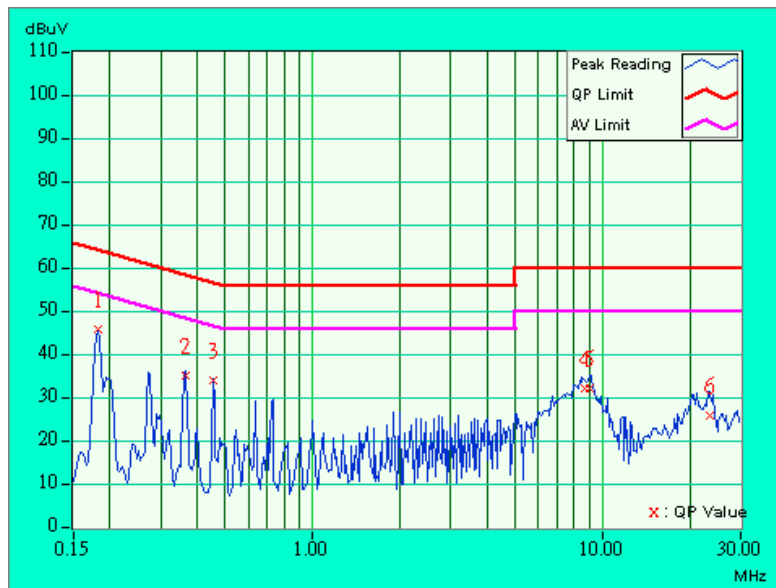


4.1.7 TEST RESULTS

<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.181	0.06	44.93	-	44.99	-	64.43
2	0.365	0.06	34.37	-	34.43	-	58.62	48.62	-24.19	-
3	0.455	0.07	33.42	-	33.49	-	56.79	46.79	-23.30	-
4	8.719	0.37	31.38	-	31.75	-	60.00	50.00	-28.25	-
5	9.082	0.38	31.51	-	31.89	-	60.00	50.00	-28.11	-
6	23.434	0.81	25.21	-	26.02	-	60.00	50.00	-33.98	-

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

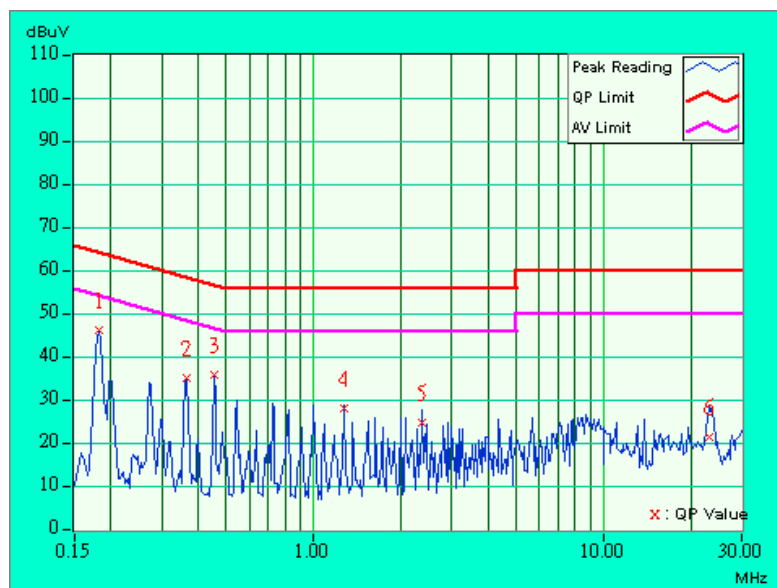




<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.181	0.05	45.77	-	45.82	-	64.43
2	0.365	0.05	34.57	-	34.62	-	58.62	48.62	-24.00	-
3	0.455	0.06	35.12	-	35.18	-	56.79	46.79	-21.61	-
4	1.270	0.17	27.60	-	27.77	-	56.00	46.00	-28.23	-
5	2.359	0.18	24.11	-	24.29	-	56.00	46.00	-31.71	-
6	23.285	0.65	20.86	-	21.51	-	60.00	50.00	-38.49	-

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



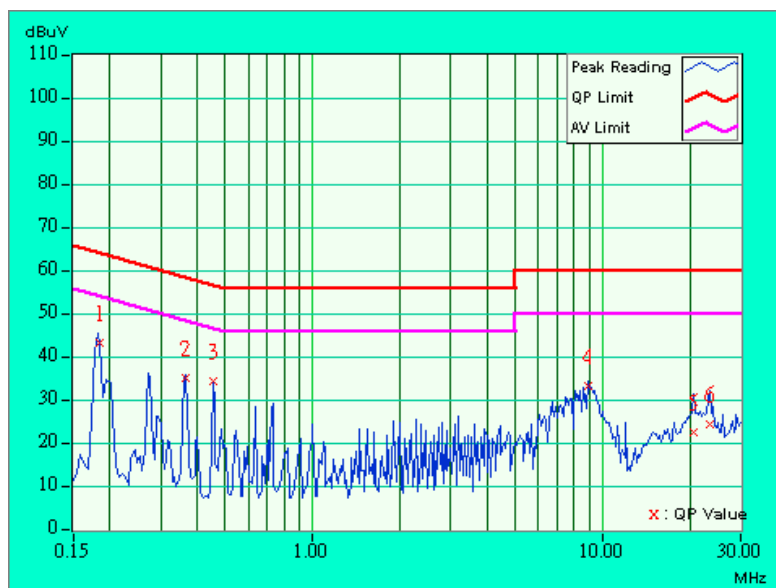




<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.185	0.06	42.52	-	42.58	-	64.25	54.25	-21.67
2	0.365	0.06	34.53	-	34.59	-	58.62	48.62	-24.03	-
3	0.455	0.07	33.54	-	33.61	-	56.79	46.79	-23.18	-
4	8.902	0.38	32.38	-	32.76	-	60.00	50.00	-27.24	-
5	20.609	0.67	21.75	-	22.42	-	60.00	50.00	-37.58	-
6	23.426	0.81	23.46	-	24.27	-	60.00	50.00	-35.73	-

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

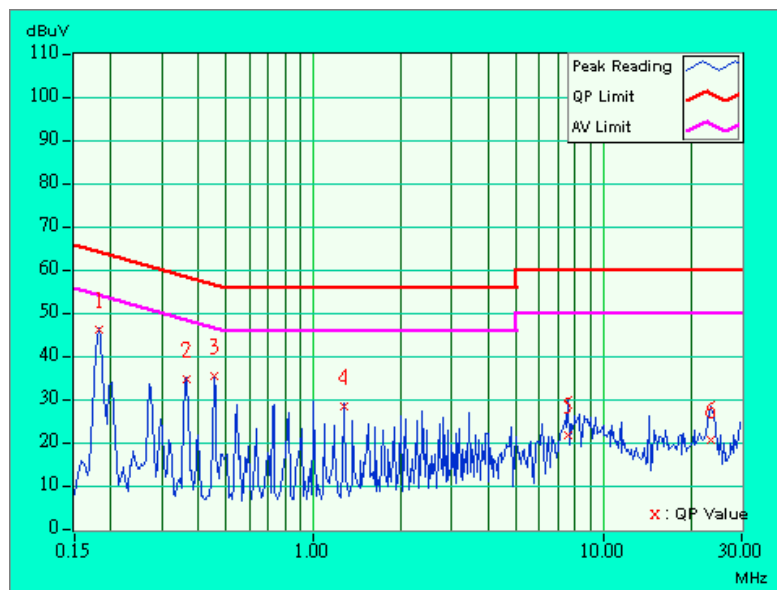




<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.181	0.05	45.48	-	45.53	-	64.43
2	0.365	0.05	34.33	-	34.38	-	58.62	48.62	-24.24	-
3	0.455	0.06	34.74	-	34.80	-	56.79	46.79	-21.99	-
4	1.270	0.17	27.73	-	27.90	-	56.00	46.00	-28.10	-
5	7.535	0.31	21.35	-	21.66	-	60.00	50.00	-38.34	-
6	23.617	0.67	20.14	-	20.81	-	60.00	50.00	-39.19	-

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

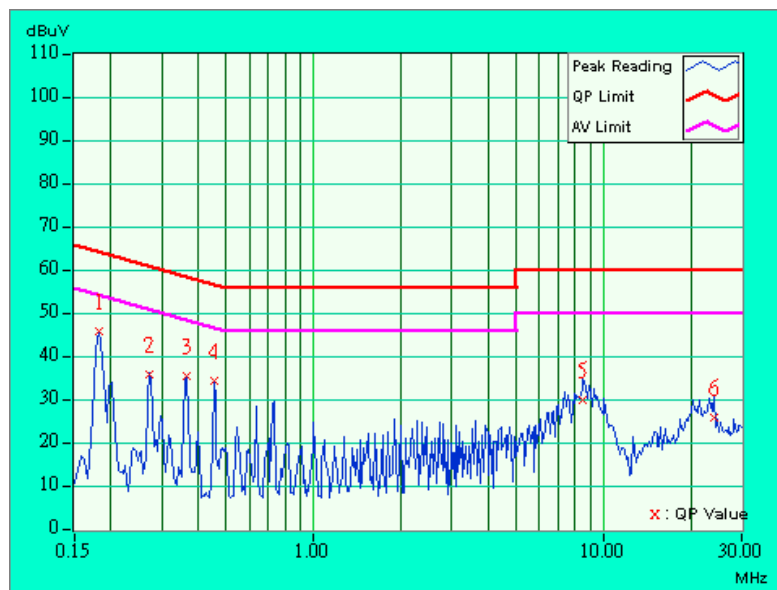




<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.181	0.06	45.13	-	45.19	-	64.43
2	0.271	0.06	34.91	-	34.97	-	61.08	51.08	-26.11	-
3	0.365	0.06	34.83	-	34.89	-	58.62	48.62	-23.73	-
4	0.455	0.07	33.73	-	33.80	-	56.79	46.79	-22.99	-
5	8.535	0.37	29.07	-	29.44	-	60.00	50.00	-30.56	-
6	24.148	0.85	25.20	-	26.05	-	60.00	50.00	-33.95	-

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

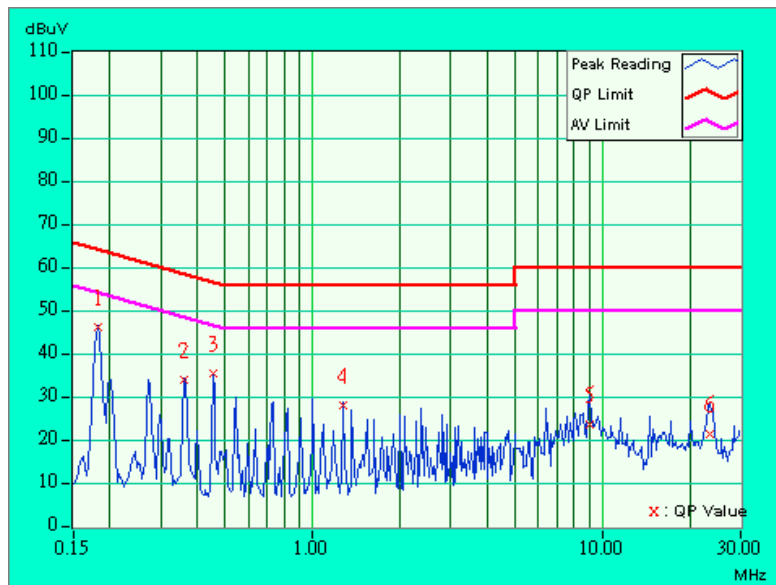




<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa	<b>TESTED BY:</b> Hardaway Lee	

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	0.181	0.05	45.60	-	45.65	-	64.43	54.43	-18.78
2	0.361	0.05	33.51	-	33.56	-	58.71	48.71	-25.15	-
3	0.455	0.06	34.97	-	35.03	-	56.79	46.79	-21.76	-
4	1.273	0.17	27.57	-	27.74	-	56.00	46.00	-28.26	-
5	8.988	0.36	22.87	-	23.23	-	60.00	50.00	-36.77	-
6	23.387	0.66	20.80	-	21.46	-	60.00	50.00	-38.54	-

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  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	Jun. 10, 2004
* HP Preamplifier	8447D	2944A08485	May 01, 2004
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 13, 2004
ROHDE & SCHWARZ TEST RECEIVER	ESI7	838496/016	Feb. 23, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 13, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	July 26, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jun. 30, 2004
* EMCO Horn Antenna	3115	9312-4192	Mar. 23, 2004
* EMCO Turn Table	1060	1115	NA
* CHANCE Tower	CM-AT40	CM-A010	NA
* Software	ADT_Radiated_V5.14	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 05, 2004
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jan. 05, 2004

**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. "\*" = 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. 5.
5. The VCCI Site Registration No. is R-1039.



#### 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.

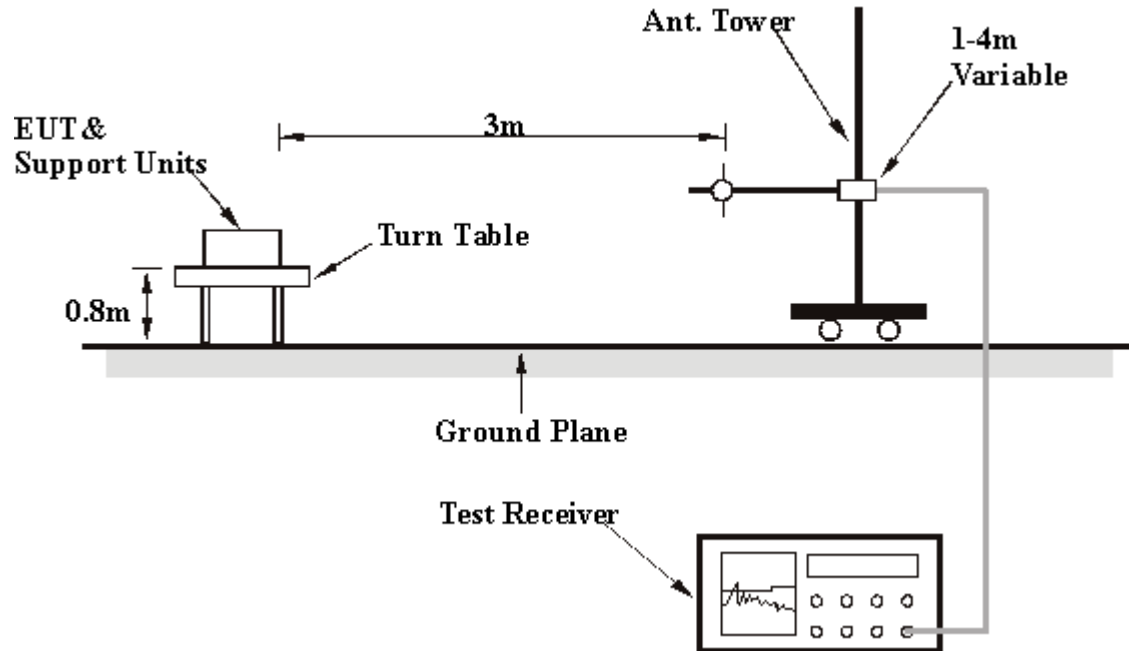
**NOTE:**

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

<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>MODULATION TYPE</b>	CCK & OFDM	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway 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	59.99	28.90 QP	40.00	-11.10	2.24 H	224	20.20	8.70
2	72.01	27.80 QP	40.00	-12.20	2.00 H	120	20.70	7.00
3	131.97	30.10 QP	43.50	-13.40	1.62 H	153	17.60	12.50
4	166.12	29.90 QP	43.50	-13.60	2.03 H	135	19.20	10.60
5	191.97	26.10 QP	43.50	-17.40	1.00 H	137	15.50	10.60
6	215.83	28.90 QP	43.50	-14.60	1.79 H	96	17.30	11.70
7	228.03	29.60 QP	46.00	-16.40	1.76 H	176	17.30	12.40
8	498.32	40.20 QP	46.00	-5.80	1.00 H	14	20.10	20.10
9	625.08	38.20 QP	46.00	-7.80	1.83 H	111	15.90	22.40
10	720.37	40.00 QP	46.00	-6.00	1.10 H	107	16.80	23.20
11	996.61	40.80 QP	54.00	-13.20	1.59 H	138	15.60	25.10

- 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.



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>MODULATION TYPE</b>	CCK & OFDM	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

#### 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	74.96	30.40 QP	40.00	-9.60	1.00 V	117	22.90	7.50
2	131.97	34.40 QP	43.50	-9.10	1.17 V	147	21.90	12.50
3	191.98	29.10 QP	43.50	-14.40	1.74 V	154	18.50	10.60
4	250.02	28.80 QP	46.00	-17.20	1.96 V	180	15.20	13.60
5	275.95	29.90 QP	46.00	-16.10	1.63 V	52	14.70	15.30
6	498.32	41.40 QP	46.00	-4.60	1.16 V	123	21.30	20.10
7	625.04	40.50 QP	46.00	-5.50	2.62 V	0	18.10	22.40
8	669.26	34.70 QP	46.00	-11.30	2.39 V	205	12.20	22.50
9	720.38	38.80 QP	46.00	-7.20	1.52 V	4	15.60	23.20

- 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.



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	CCK	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	56.2 PK	74.00	-17.80	1.00 H	200	26.60	29.60
1	2390.00	49.1 AV	54.00	-4.90	1.00 H	200	19.50	29.60
2	*2412.00	110.90 PK			1.00 H	200	81.30	29.70
2	*2412.00	103.80 AV			1.00 H	200	74.10	29.70
3	4824.00	49.60 PK	74.00	-24.40	1.32 H	151	14.30	35.30

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	51.90 AV	54.00	-2.10	2.22 V	113	22.30	29.60
2	2390.00	59.20 PK	74.00	-14.80	2.22 V	113	29.60	29.60
3	*2412.00	113.90 PK			2.22 V	113	84.20	29.70
3	*2412.00	106.60 AV			2.22 V	113	76.90	29.70
4	4824.00	53.40 PK	74.00	-20.60	1.32 V	151	18.20	35.30
4	4824.00	38.60 AV	54.00	-15.40	1.32 V	151	3.30	35.30

- 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



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 6	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	CCK	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	110.90 PK			1.06 H	83	81.20	29.70
1	*2437.00	99.90 AV			1.06 H	83	70.20	29.70
2	4874.00	49.90 PK	74.00	-24.10	1.20 H	189	14.40	35.50

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	112.80 PK			1.15 V	196	83.10	29.70
1	*2437.00	102.20 AV			1.15 V	196	72.50	29.70
2	4874.00	53.50 PK	74.00	-20.50	1.16 V	224	18.10	35.50
2	4874.00	39.90 AV	54.00	-14.10	1.16 V	224	4.40	35.50

- 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



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	CCK	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	110.00 PK			1.28 H	83	80.20	29.80
1	2462.00	102.30 AV			1.28 H	83	72.40	29.80
2	2483.50	53.50 PK	74.00	-20.50	1.28 H	83	23.60	29.90
2	2483.50	45.80 AV	54.00	-8.20	1.28 H	83	15.90	29.90
3	4924.00	49.20 PK	74.00	-24.80	1.00 H	33	13.50	35.70

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	112.40 PK			1.19 V	62	82.60	29.80
1	*2462.00	105.30 AV			1.19 V	62	75.40	29.80
2	2483.50	55.90 PK	74.00	-18.10	1.19 V	62	26.00	29.90
2	2483.50	48.80 AV	54.00	-5.20	1.19 V	62	18.90	29.90
3	4924.00	52.10 PK	74.00	-21.90	2.10 V	162	16.40	35.70
3	4924.00	36.80 AV	54.00	-17.20	2.10 V	162	1.10	35.70

- 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



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	OFDM	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	63.10PK	74.00	-10.90	1.28 H	165	33.50	29.60
1	2390.00	52.00 AV	54.00	-2.00	1.28 H	165	22.40	29.60
2	*2412.00	108.50 PK			1.28 H	165	78.80	29.70
2	*2412.00	98.00 AV			1.28 H	165	68.30	29.70
3	4824.00	44.80 PK	74.00	-29.20	1.28 H	165	9.50	35.30

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	62.90 PK	74.00	-11.10	1.15 V	196	33.30	29.60
1	2390.00	51.80 AV	54.00	-2.20	1.15 V	196	22.20	29.60
2	*2412.00	108.90 PK			1.15 V	196	79.20	29.70
2	*2412.00	97.80 AV			1.15 V	196	68.10	29.70
3	4824.00	49.60 PK	74.00	-24.40	1.85 V	165	14.40	35.30

- 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



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 6	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	OFDM	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	107.90 PK			1.17 H	255	78.20	29.70
1	*2437.00	97.40 AV			1.17 H	255	67.70	29.70
2	4874.00	45.80 PK	74.00	-28.20	1.47 H	255	10.30	35.50

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	107.10 PK			1.20 V	102	77.40	29.70
1	*2437.00	97.50 AV			1.20 V	102	67.80	29.70
2	4874.00	48.20 PK	74.00	-25.80	1.15 V	55	12.70	35.50

- 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



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>MODULATION TYPE</b>	OFDM	<b>ENVIRONMENTAL CONDITIONS</b>	30deg. C, 60%RH, 991hPa
<b>TESTED BY</b>	Hardaway Lee		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
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	103.50 PK			1.13 H	102	73.70	29.80
1	*2462.00	94.30 AV			1.13 H	102	64.50	29.80
2	2483.50	56.60 PK	74.00	-17.40	1.13 H	102	26.70	29.90
2	2483.50	47.40 AV	54.00	-6.60	1.13 H	102	17.50	29.90
3	4924.00	46.30 PK	74.00	-27.70	1.54 H	102	10.60	35.70

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	104.50 PK			1.36 V	99	74.70	29.80
1	*2462.00	95.20 AV			1.36 V	99	65.40	29.80
2	2483.50	57.60 PK	74.00	-16.40	1.36 V	99	27.70	29.90
2	2483.50	48.30 AV	54.00	-5.70	1.36 V	99	18.40	29.90
3	4924.00	47.00 PK	74.00	-27.00	1.02 V	102	11.30	35.70

- 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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

**NOTE:** 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 6dB.

### 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.



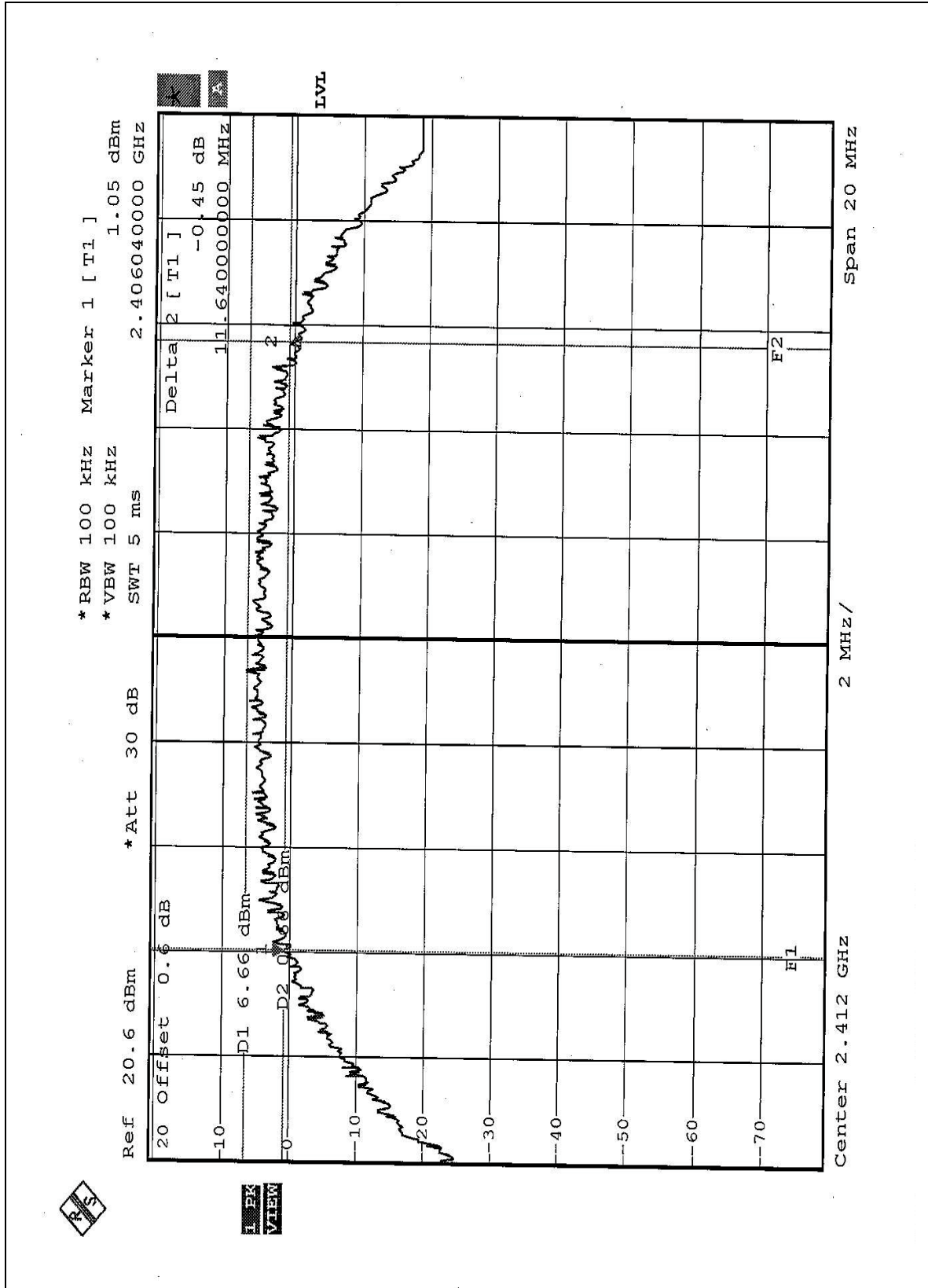
## 4.3.7 TEST RESULTS

<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	CCK	<b>TESTED BY</b>	Ansen Lei

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	11.64	0.5	PASS
6	2437	11.32	0.5	PASS
11	2462	12.16	0.5	PASS

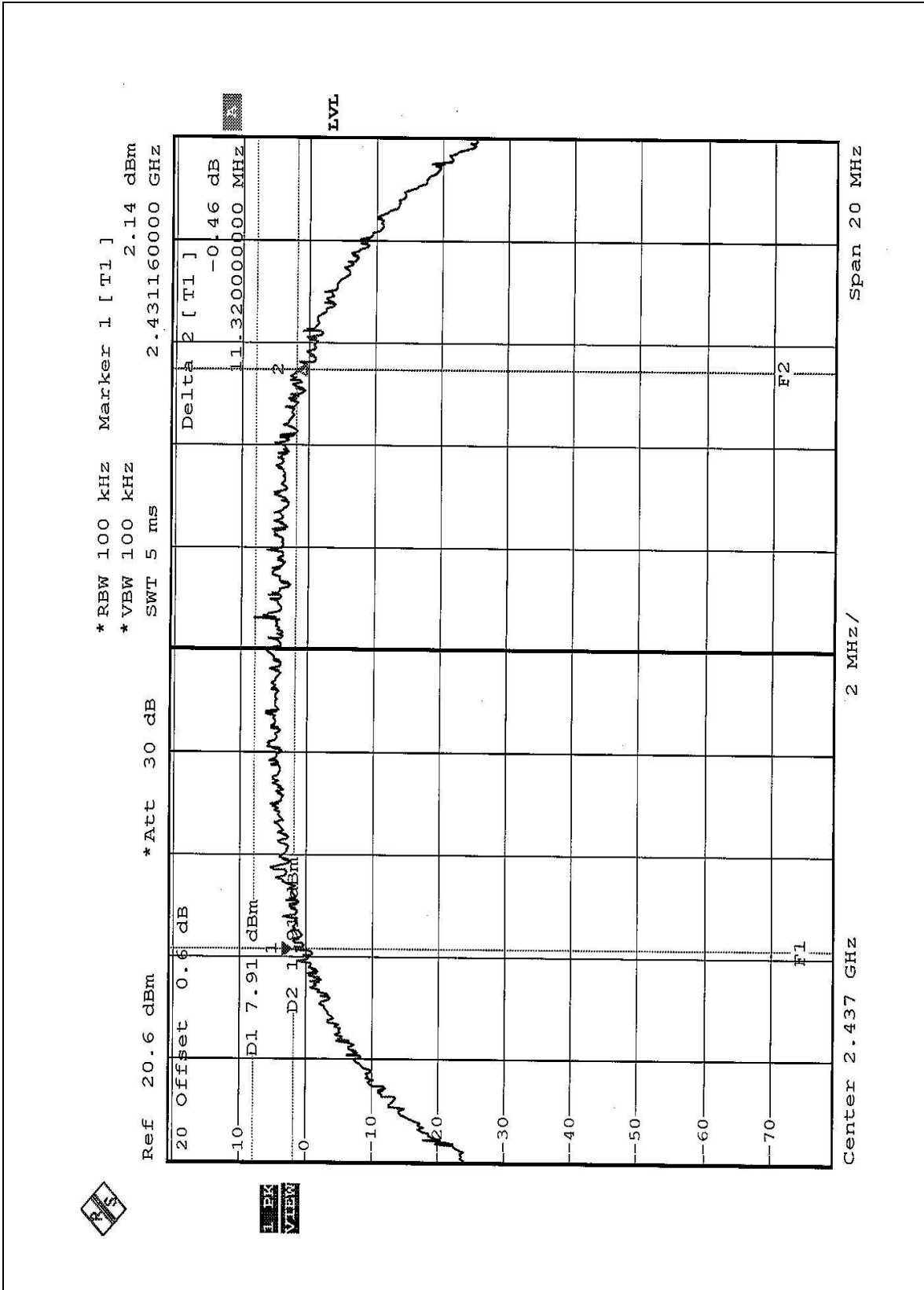


CH1



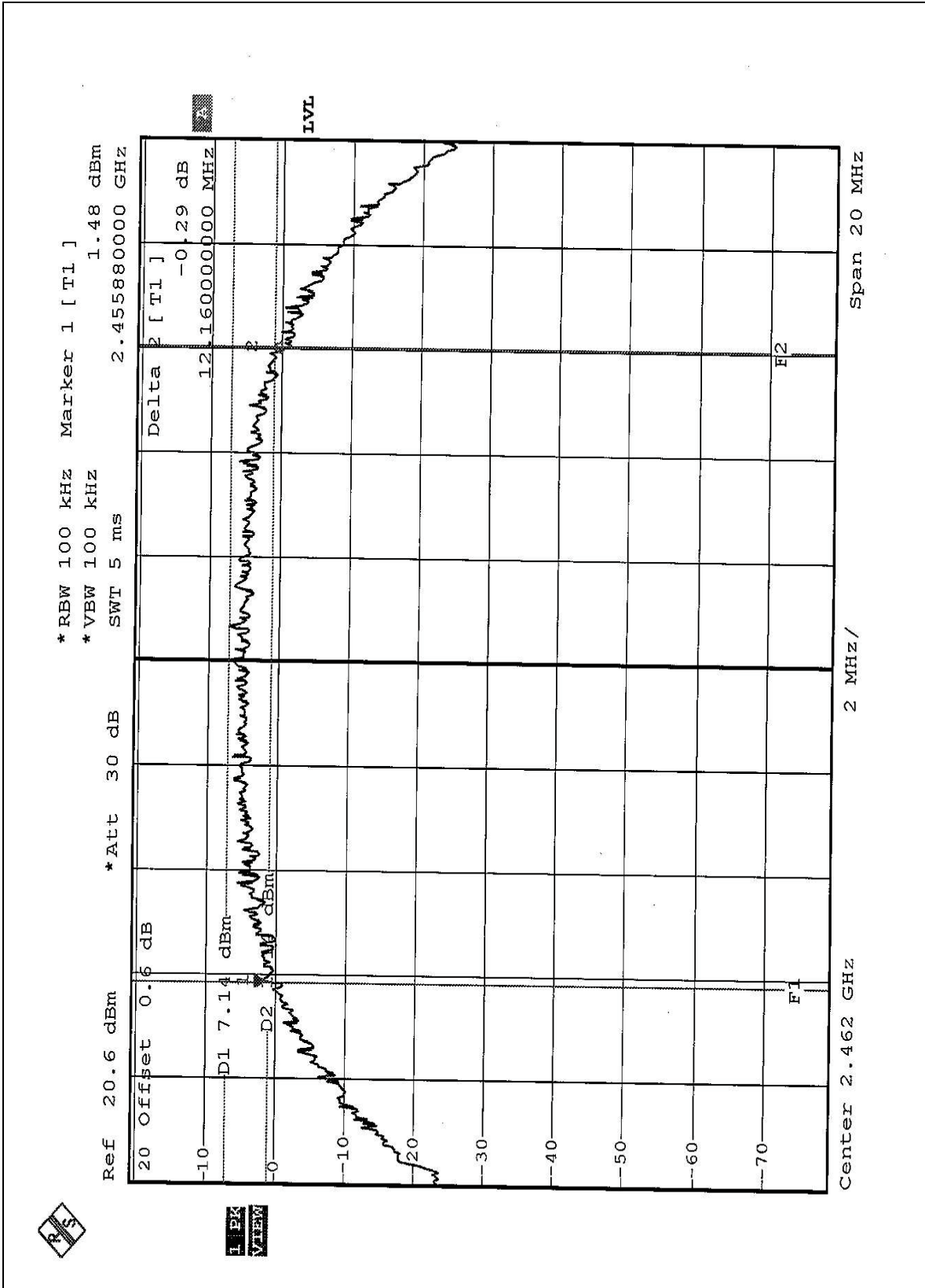


CH6





CH11



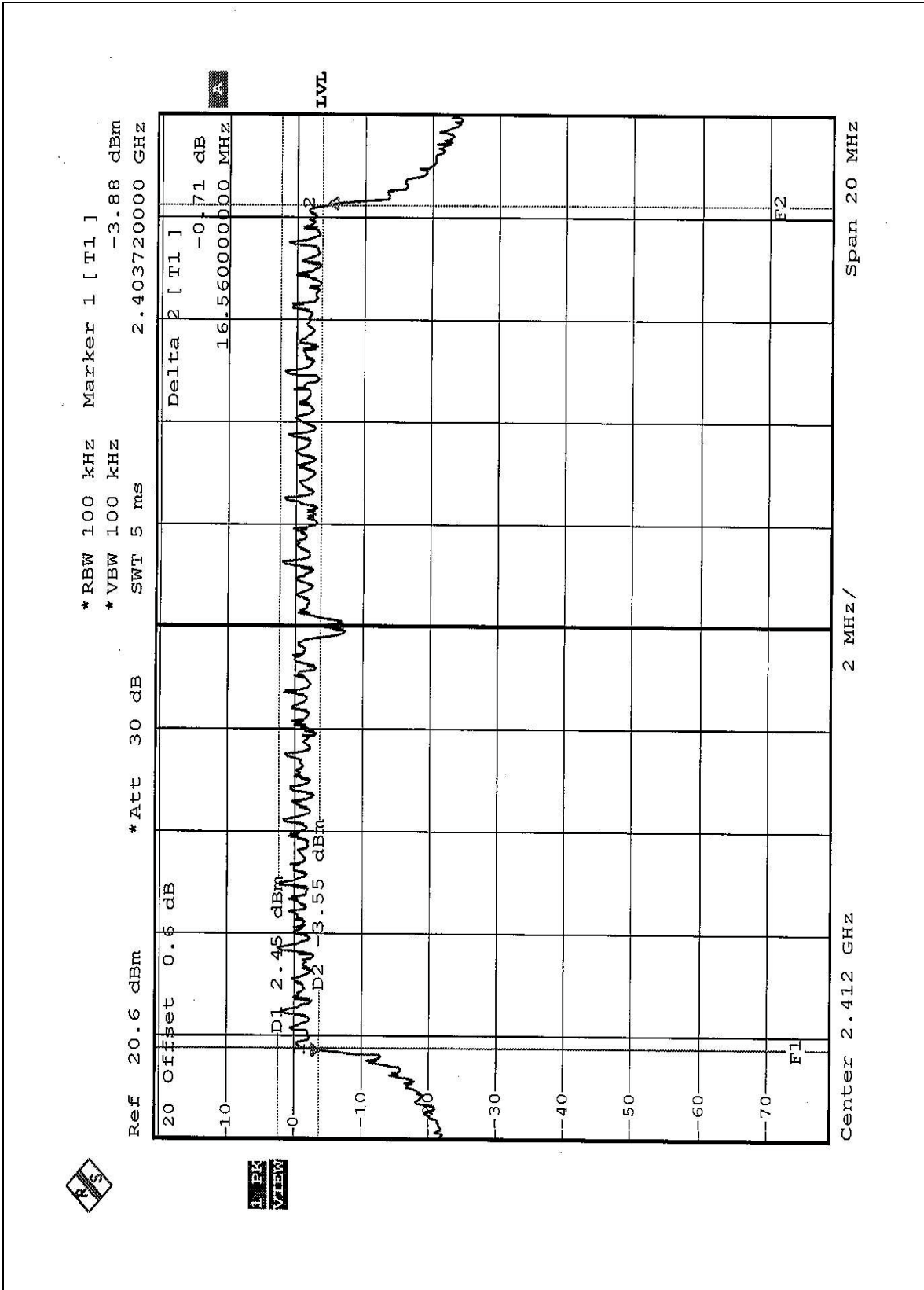


<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	OFDM	<b>TESTED BY</b>	Ansen Lei

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	16.56	0.5	PASS
6	2437	16.56	0.5	PASS
11	2462	16.52	0.5	PASS



CH1

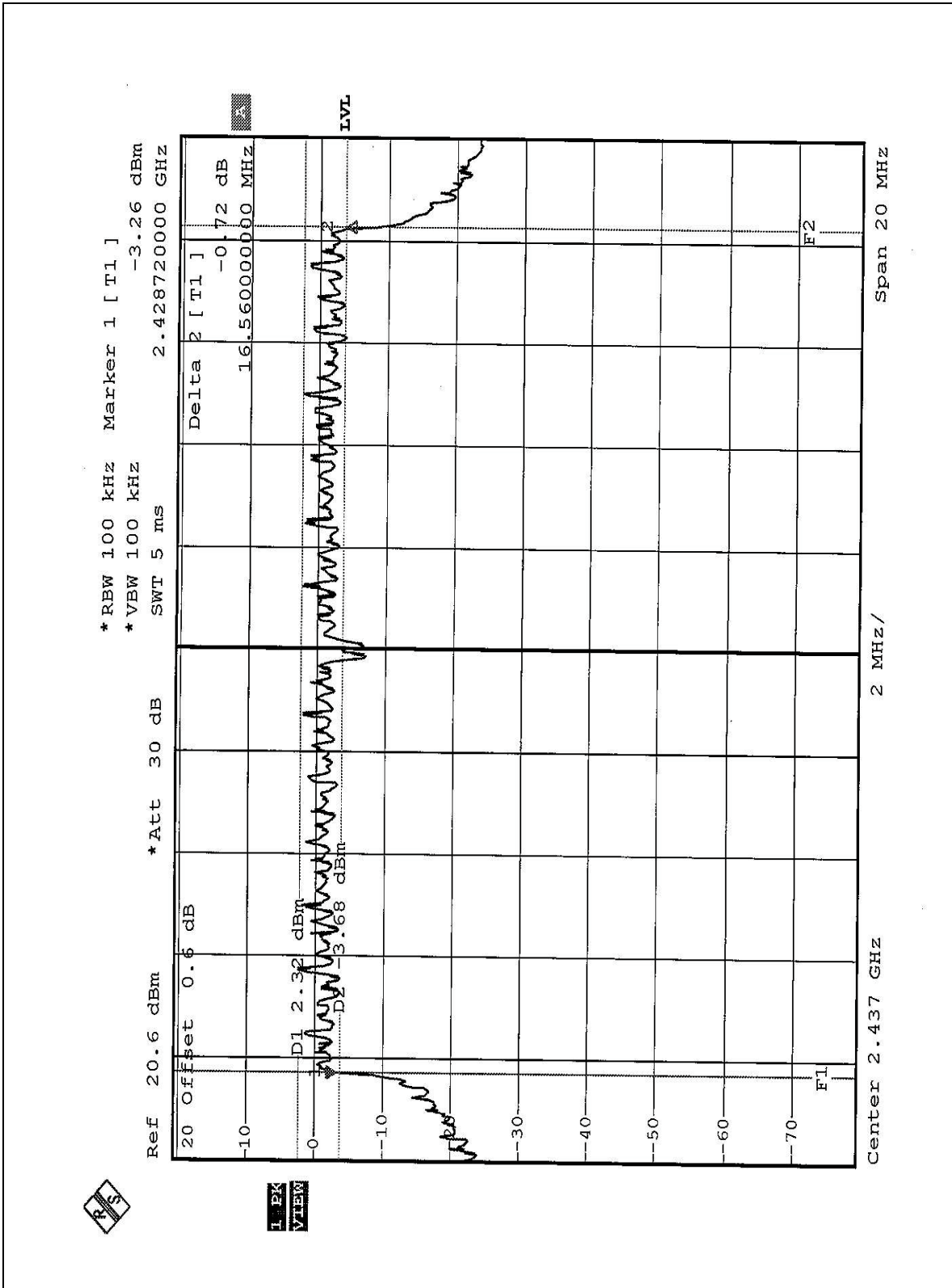


1 PK VIEW



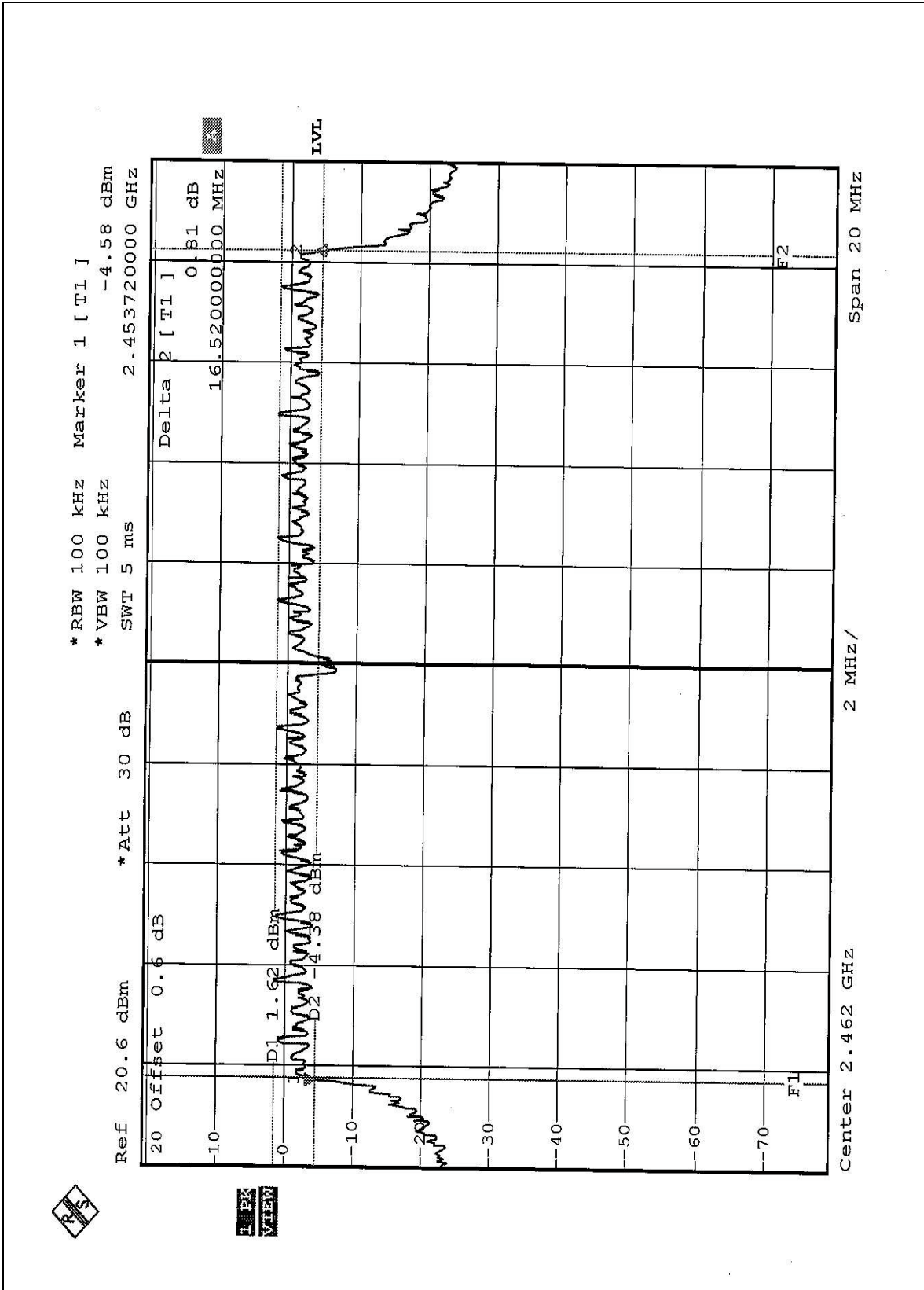


CH6





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
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Mar. 05, 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.



#### 4.4.1 TEST PROCEDURES

- 1.A detector was used on the output port of the EUT. An oscilloscope was used to read the 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 reading on oscilloscope. Record the power level.

#### 4.4.2 DEVIATION FROM TEST STANDARD

No deviation

#### 4.4.3 TEST SETUP



#### 4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6



## 4.4.3 TEST RESULTS

<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	CCK	<b>TESTED BY</b>	Ansen Lei

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	17.48	30	PASS
6	2437	17.16	30	PASS
11	2462	17.03	30	PASS



<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	OFDM	<b>TESTED BY</b>	Ansen Lei

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	16.72	30	PASS
6	2437	16.57	30	PASS
11	2462	16.53	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	Aug. 12, 2004

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

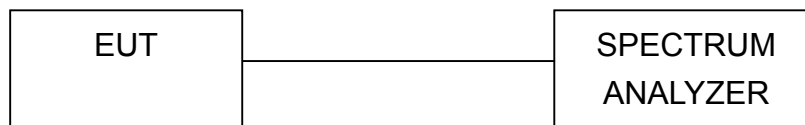
#### 4.5.3 TEST PROCEDURE

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 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz 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





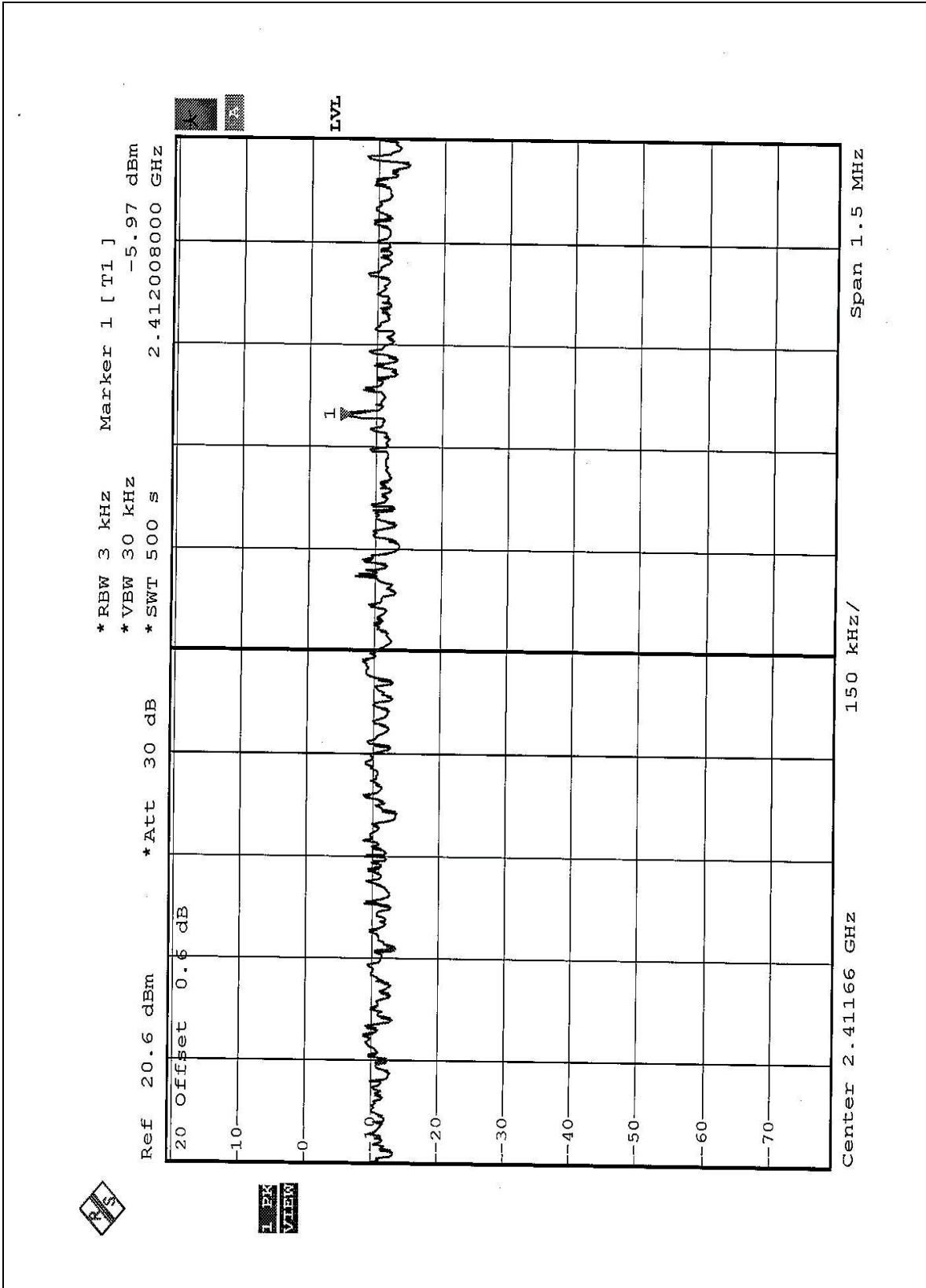
## 4.5.7 TEST RESULTS

<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	CCK	<b>TESTED BY</b>	Ansen Lei

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-5.97	8	PASS
6	2437	-5.56	8	PASS
11	2462	-5.10	8	PASS

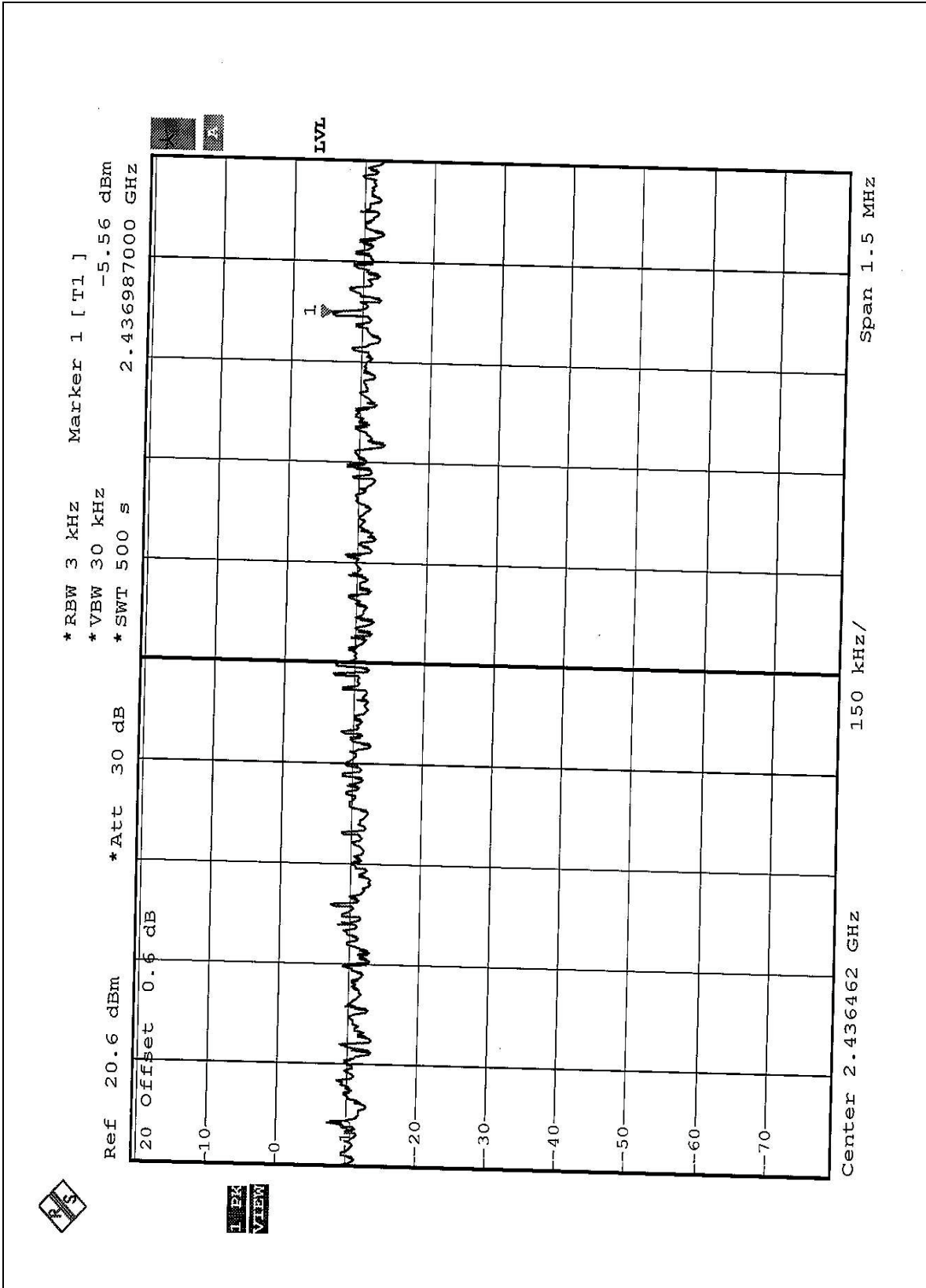


CH1



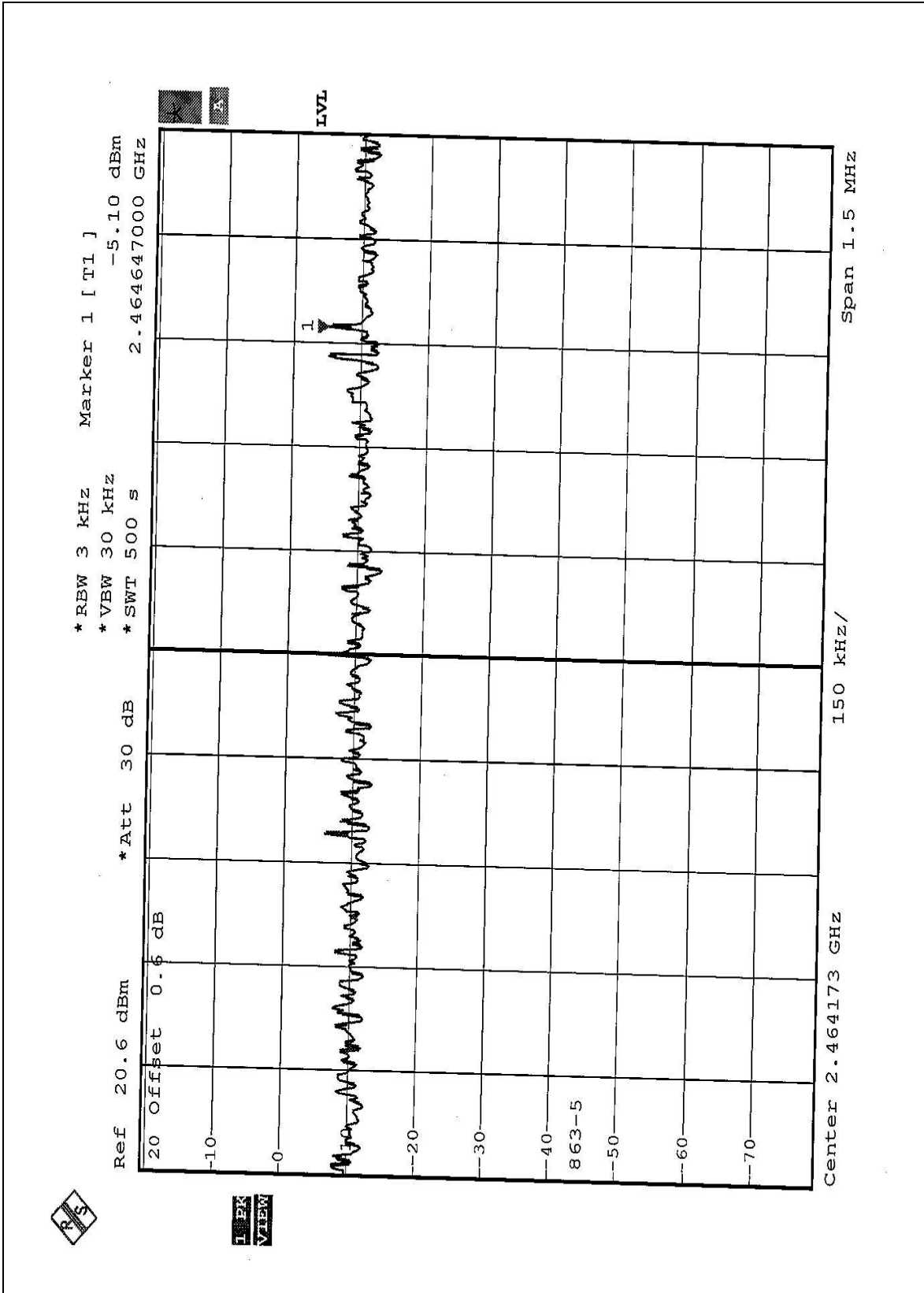


CH6





CH11



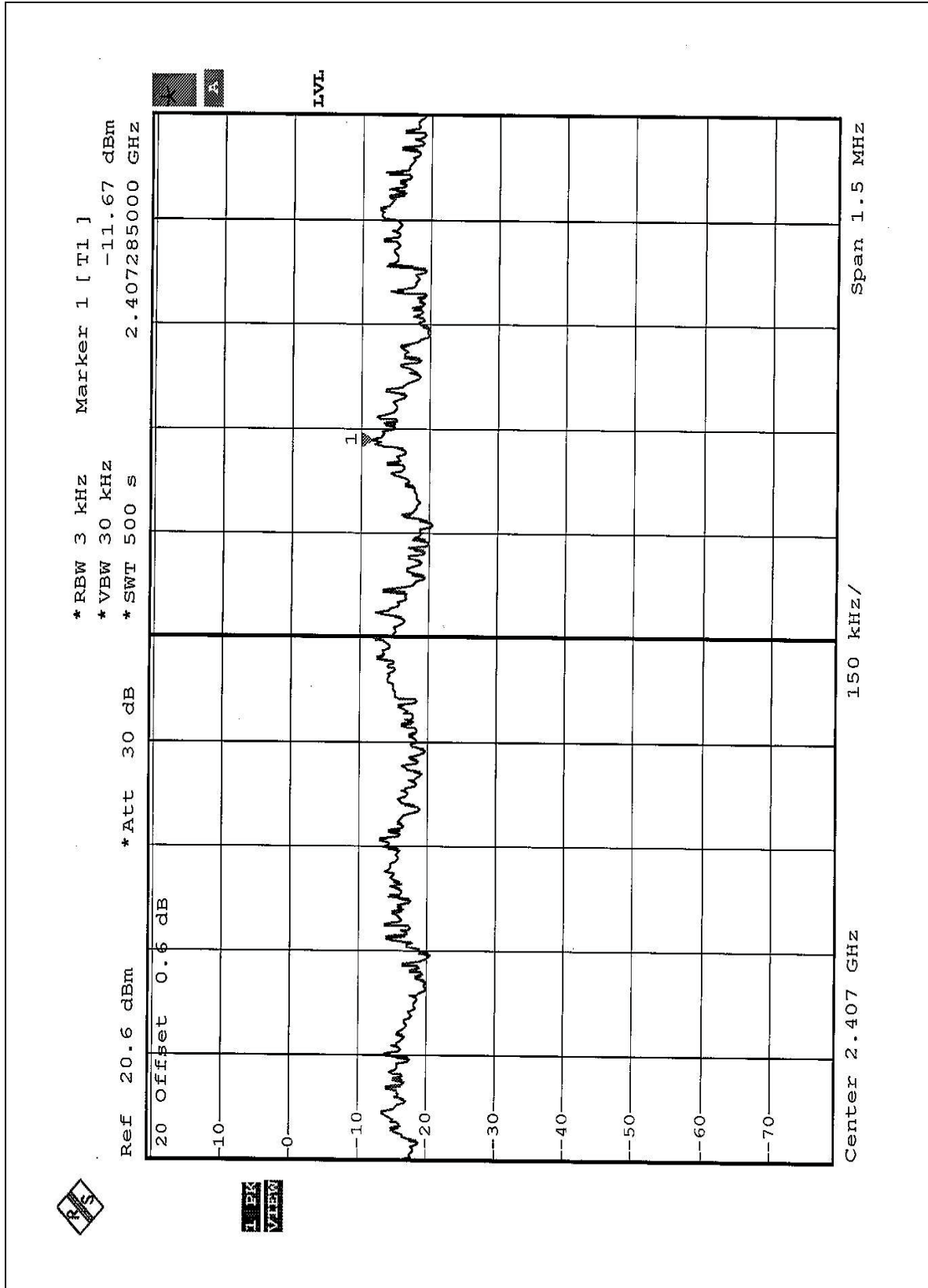


<b>EUT</b>	Dual-Band A+G Wireless Network PCI Adapter v1.1	<b>MODEL</b>	WMP55AG v1.1
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 62%RH, 991hPa
<b>MODULATION TYPE</b>	OFDM	<b>TESTED BY</b>	Hardaway Lee

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3kHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-11.67	8	PASS
6	2437	-11.45	8	PASS
11	2462	-11.43	8	PASS

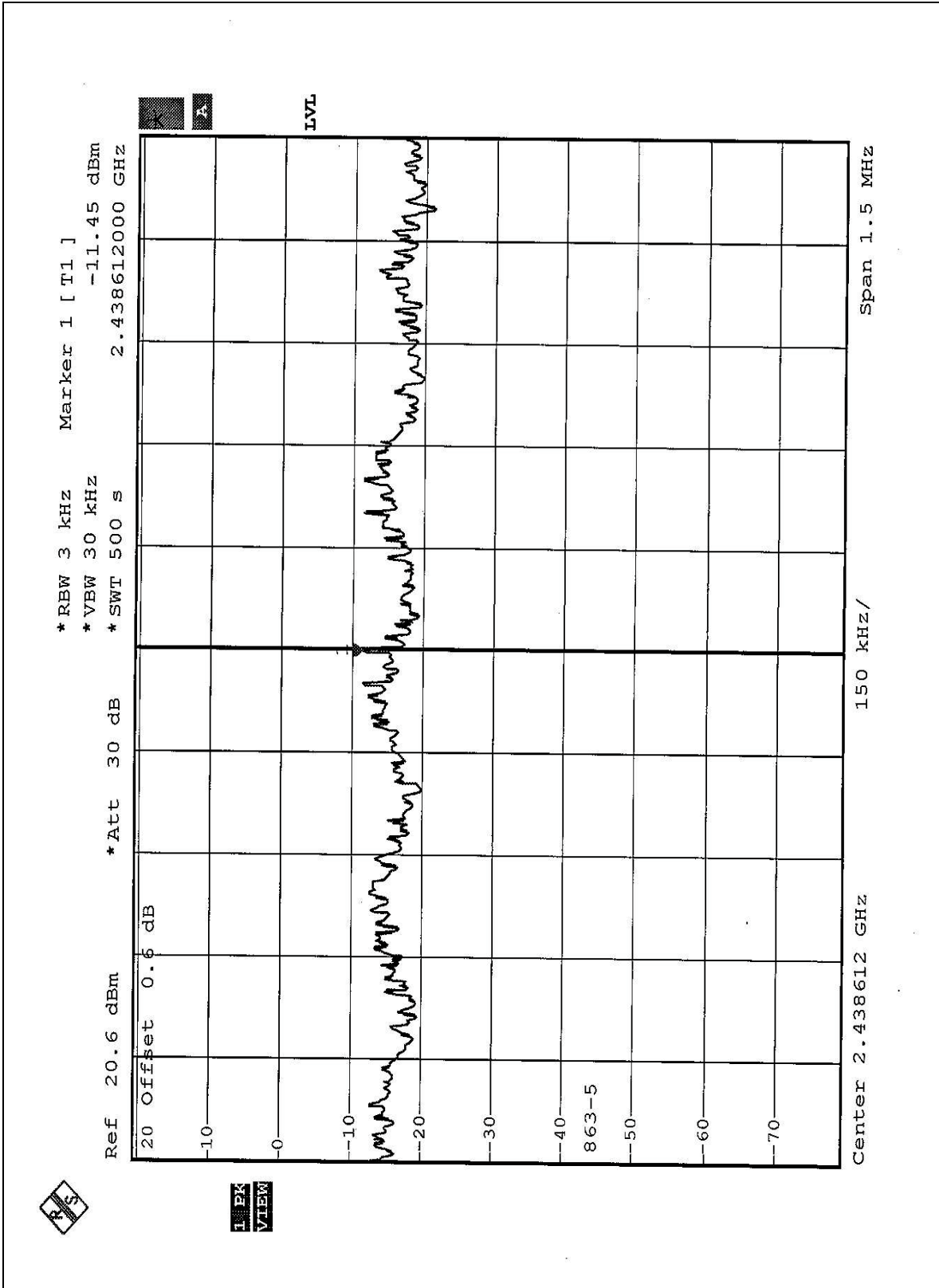


CH1



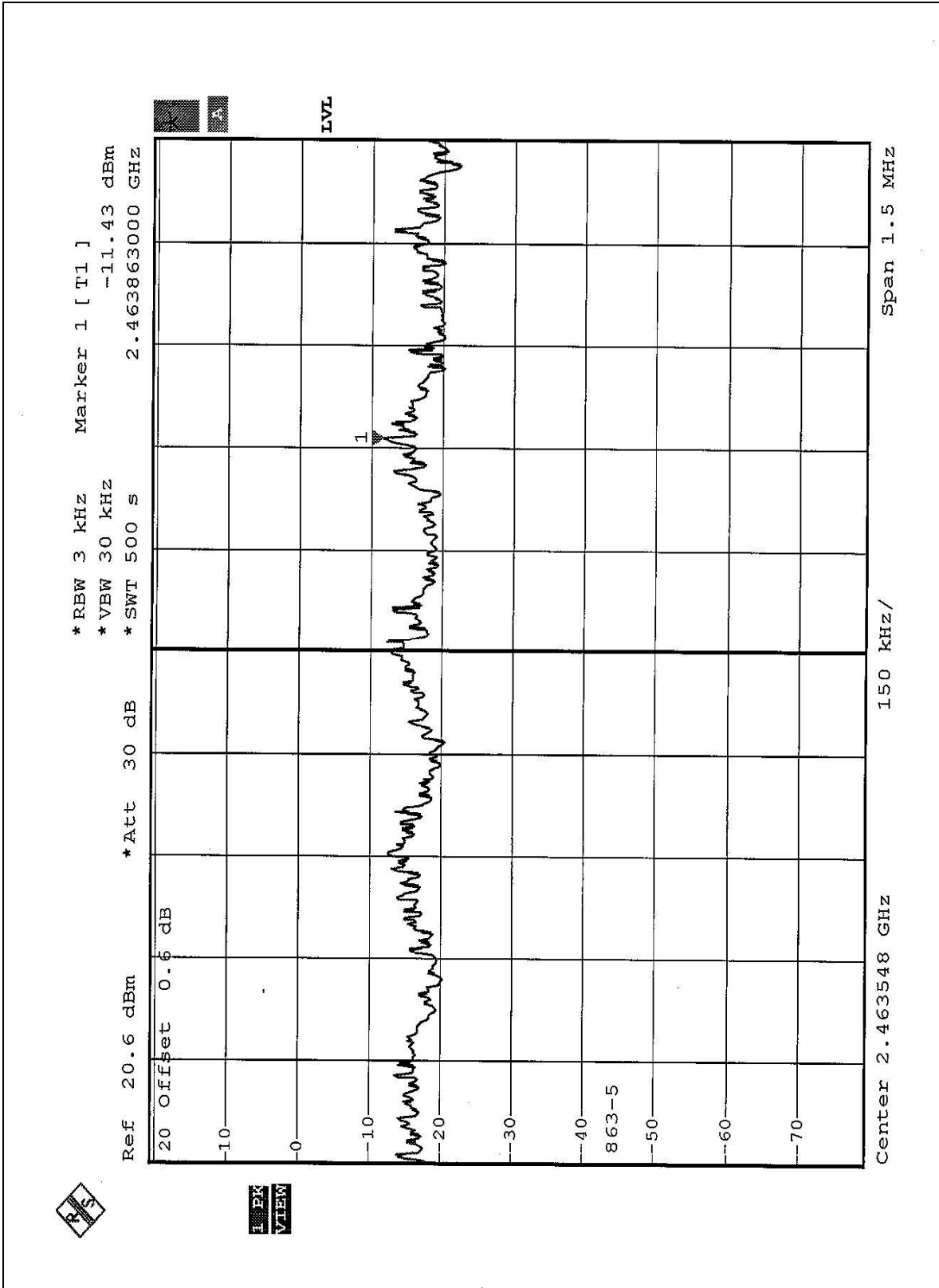


CH6





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	Aug. 12, 2004

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

### 4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 300Hz with suitable frequency span including 100MHz 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).

#### **CCK Mode:**

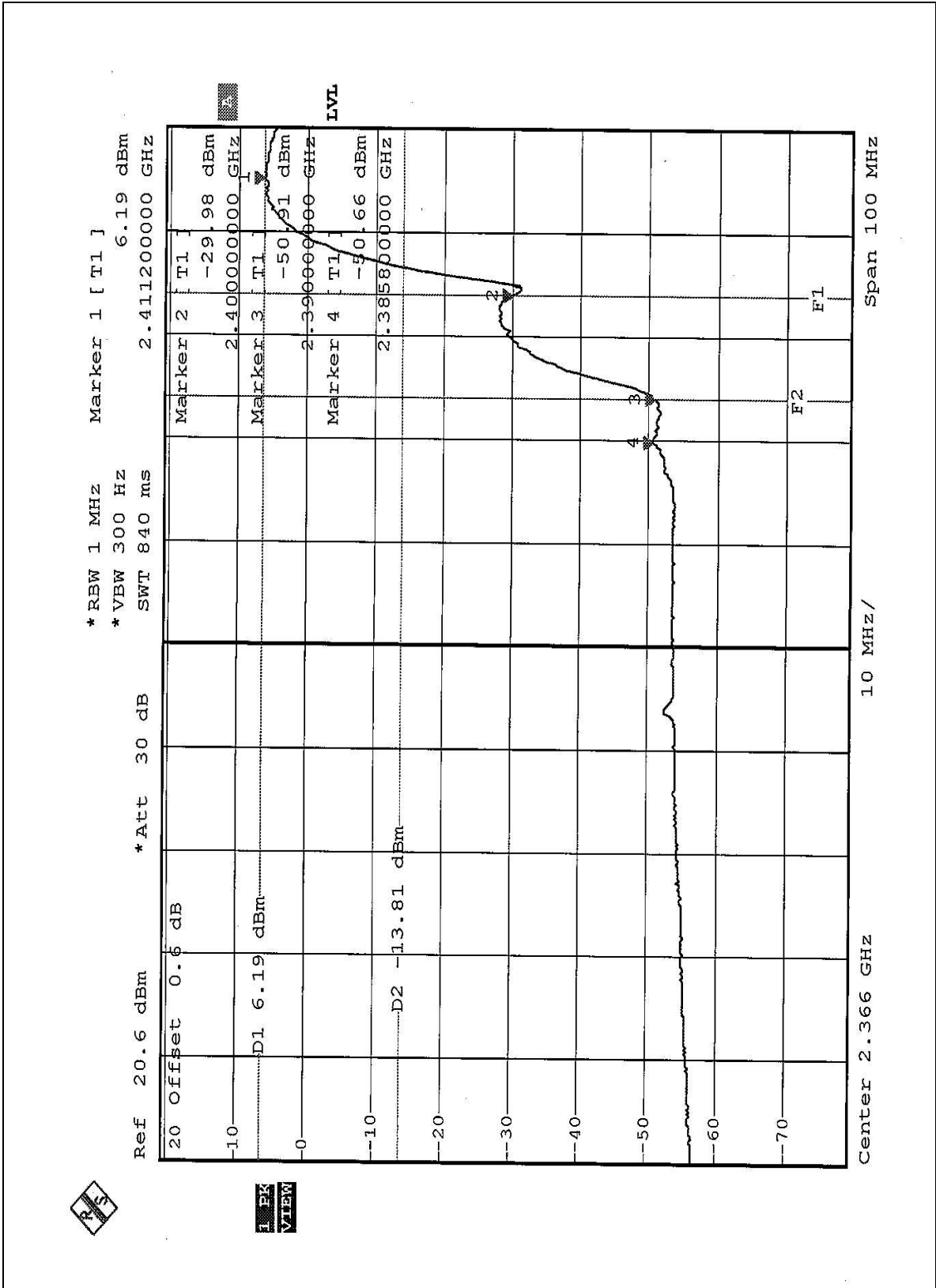
**NOTE1:** The band edge emission plot on the following first page shows 56.85dB delta between carrier maximum power and local maximum emission in restrict band (2.3858GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 (page 27) is 106.6dBuV/m, so the maximum field strength in restrict band is  $106.6 - 56.85 = 49.75$  dBuV/m which is under 54dBuV/m limit.

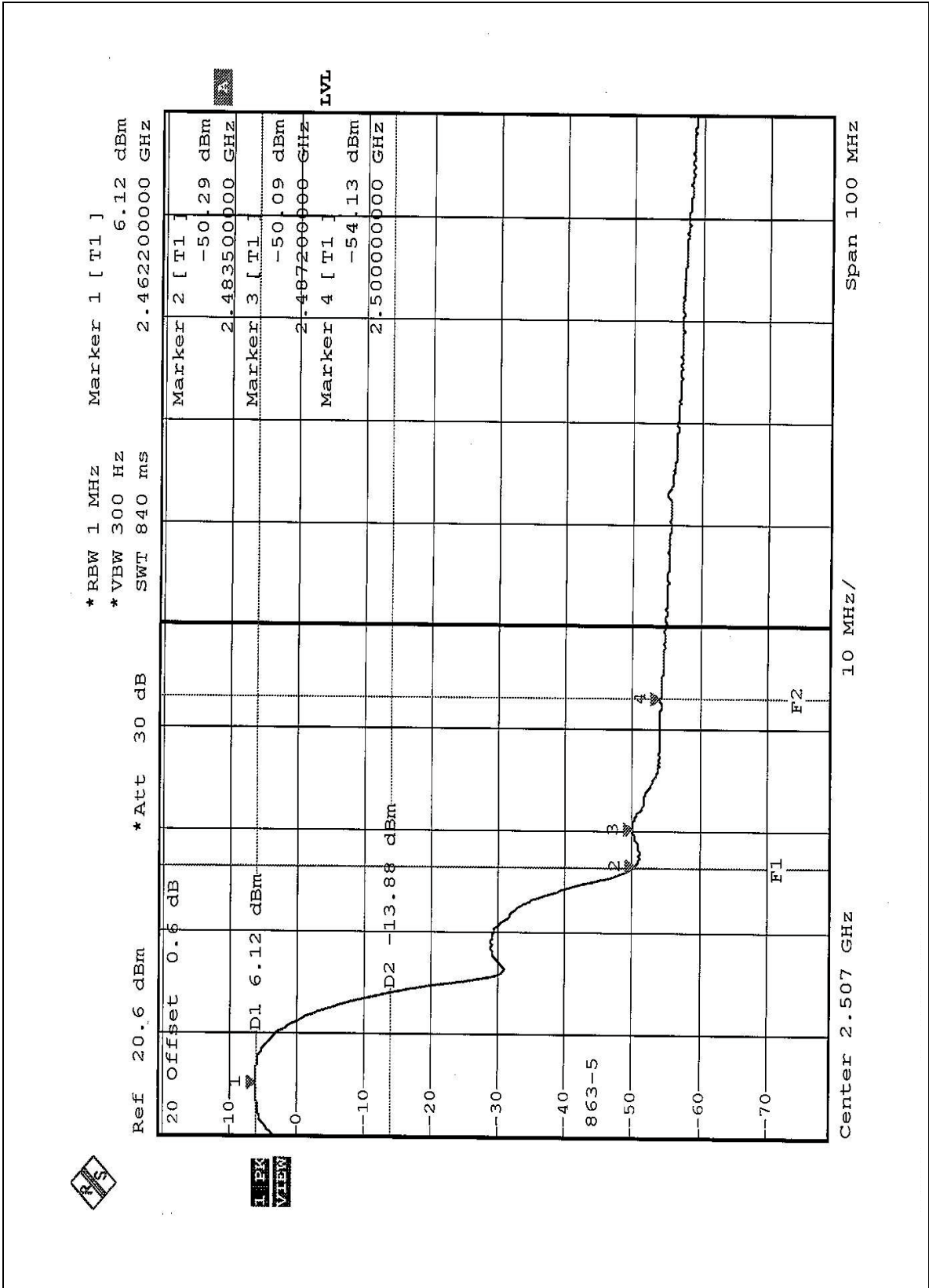
**NOTE2:** The band edge emission plot on the following second page shows 56.21dB delta between carrier maximum power and local maximum emission in restrict band (2.4872GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 (page 29) is 105.3dBuV/m, so the maximum field strength in restrict band is  $105.3 - 56.21 = 49.09$  dBuV/m which is under 54dBuV/m limit.

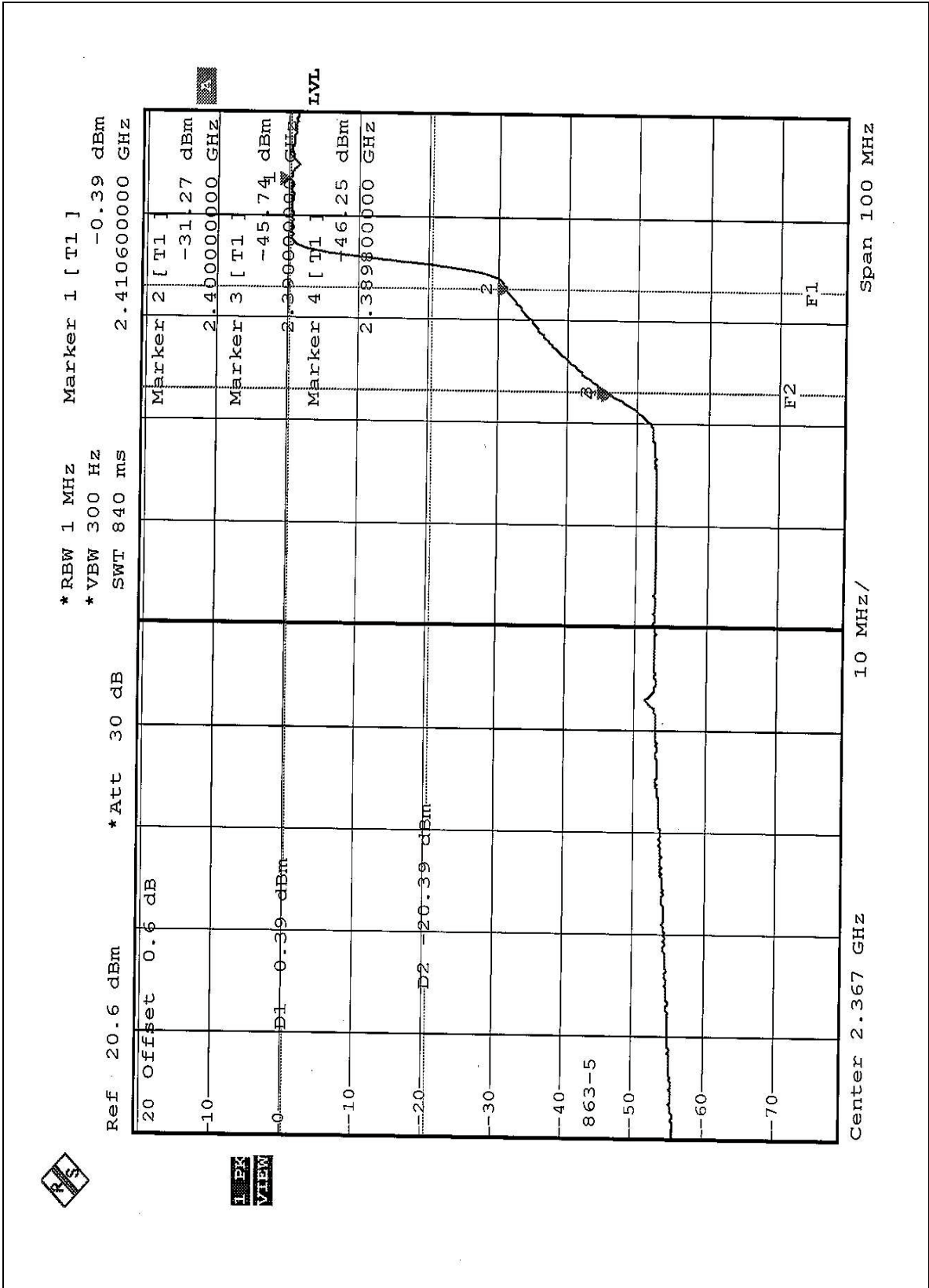
#### **OFDM Mode:**

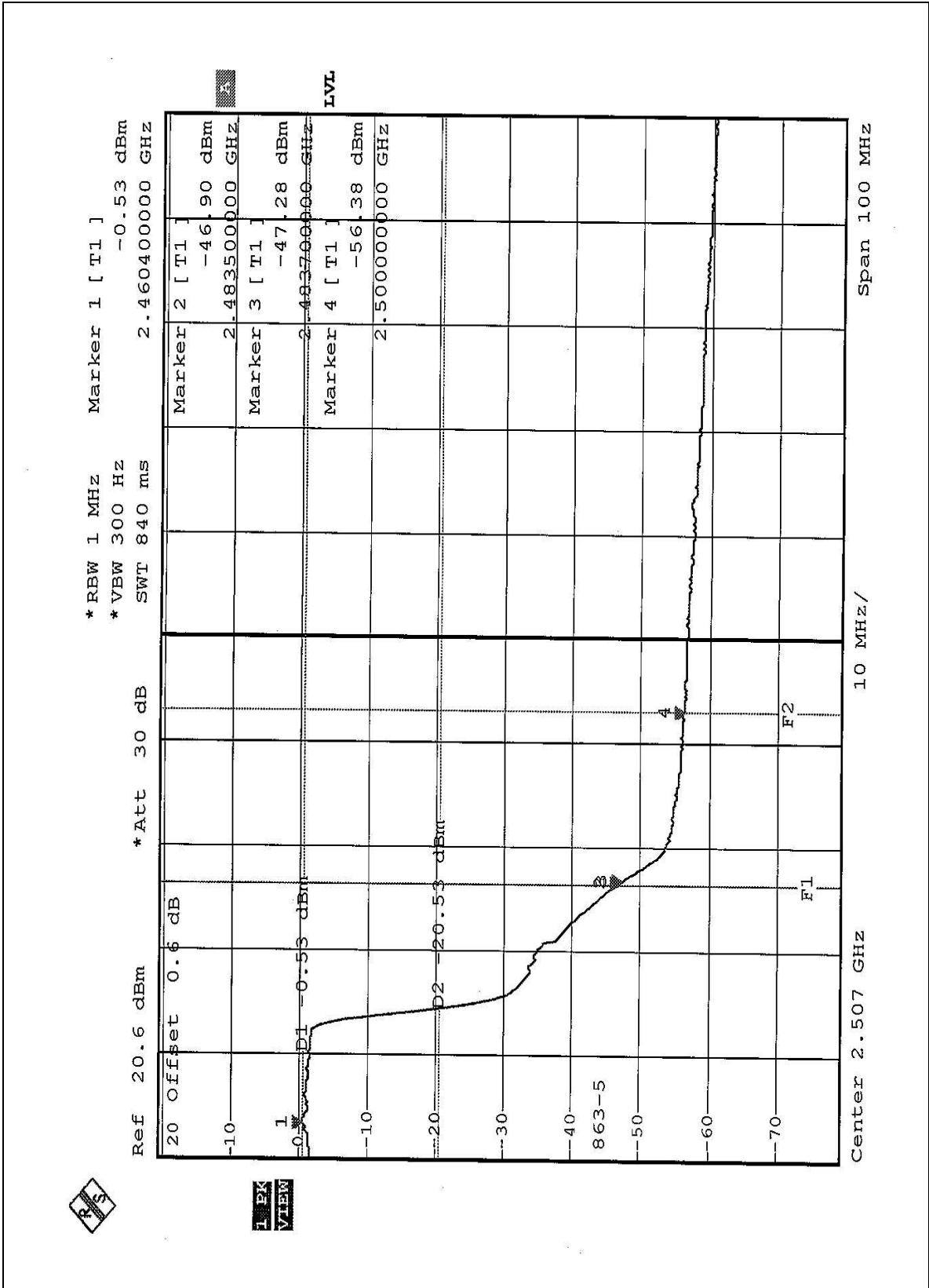
**NOTE1:** The band edge emission plot on the following third page shows 45.35dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 (page 30) is 98dBuV/m, so the maximum field strength in restrict band is  $98 - 45.35 = 52.65$  dBuV/m which is under 54dBuV/m limit.

**NOTE2:** The band edge emission plot on the following fourth page shows 46.37dB 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 4.2.7 (page 32) is 95.2dBuV/m, so the maximum field strength in restrict band is  $95.2 - 46.37 = 48.83$  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 with UFL antenna connector. The maximum Gain of the antenna is 1dBi.