FCC TEST REPORT

REPORT NO.: RF921204R02
MODEL NO.: GL2454VP-2A
(for other models please refer to page 6)
RECEIVED: Nov. 27, 2003
TESTED: Nov. 27 ~ Dec. 9, 2003

APPLICANT: Global Sun Technology, Inc.

ADDRESS: No.13, Tung Yuan Rd., Jung Li Industrial Park, Jung Li City, Taoyuan Hsien, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

0528
ILAC MRA

Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT :	108Mbps Wireless LAN PCI Card
BRAND NAME :	GLOBAL SUN (for other brands please refer to page 6)
MODEL NO. :	GL2454VP-2A (for other models please refer to page 6)
TEST ITEM:	Engineering Sample
APPLICANT :	Global Sun Technology, Inc.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Nov. 27 ~ Dec. 9, 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:** December 11, 2003

APPROVED BY: Ellis Wu, Manager , **DATE:** December 11, 2003

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 –14.26dB at 20.86MHz
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)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –1.91dB at 2387.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

NOTE: The information of measurement uncertainty is available upon the customer's request.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	108Mbps Wireless LAN PCI Card
MODEL NO.	GL2454VP-2A (for other models please refer to the following table)
POWER SUPPLY	5Vdc from host equipment
MODULATION TYPE	BPSK, QPSK, CCK, 16QAM, 64QAM
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	1/2/5.5/6/9/11/12/18/24/36/48/54Mbps (Turbo mode : up to 108Mbps)
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
MAXIMUM OUTPUT POWER	19.02dBm
ANTENNA TYPE	Dipole antenna
ANTENNA GAIN	2dBi
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are 6 models provided to this EUT and identical to each other except for their model names and brand names due to marketing requirement.
2. Details for 6 models:

Brand	Model	Description
GLOBAL SUN	GL2454VP-2A	
ATLANTIS LAND	A02-WPCI-54G	OEM model
LevelOne	WNC-0400	OEM model
ORIGO	WLL-3311	OEM model
PLANET	WL-8310	OEM model
TeleWell	TeleWell Wlan 802.11b/g PCI	OEM model

3. Fully compatible with the 802.11g standard to provide a wireless data rate of up to 54Mbps.
4. This EUT is capable of providing data rates up to 108Mbps in turbo mode.
5. Backwards compatible with the 802.11b standard to provide a wireless data rate of up to 11Mbps.
6. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT.

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

NOTE:

1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.
3. Data rate 11Mbps with CCK technique and 6Mbps with OFDM technique, the worst cases, were chosen for final test.
4. One turbo mode was presented at frequency 2437MHz.
5. Two test results were presented in the following sections, the test result A is for CCK technique and the test result B is for OFDM technique.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 108Mbps Wireless LAN PCI Card. 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)
ANSI C63.4 : 1992

All test items 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

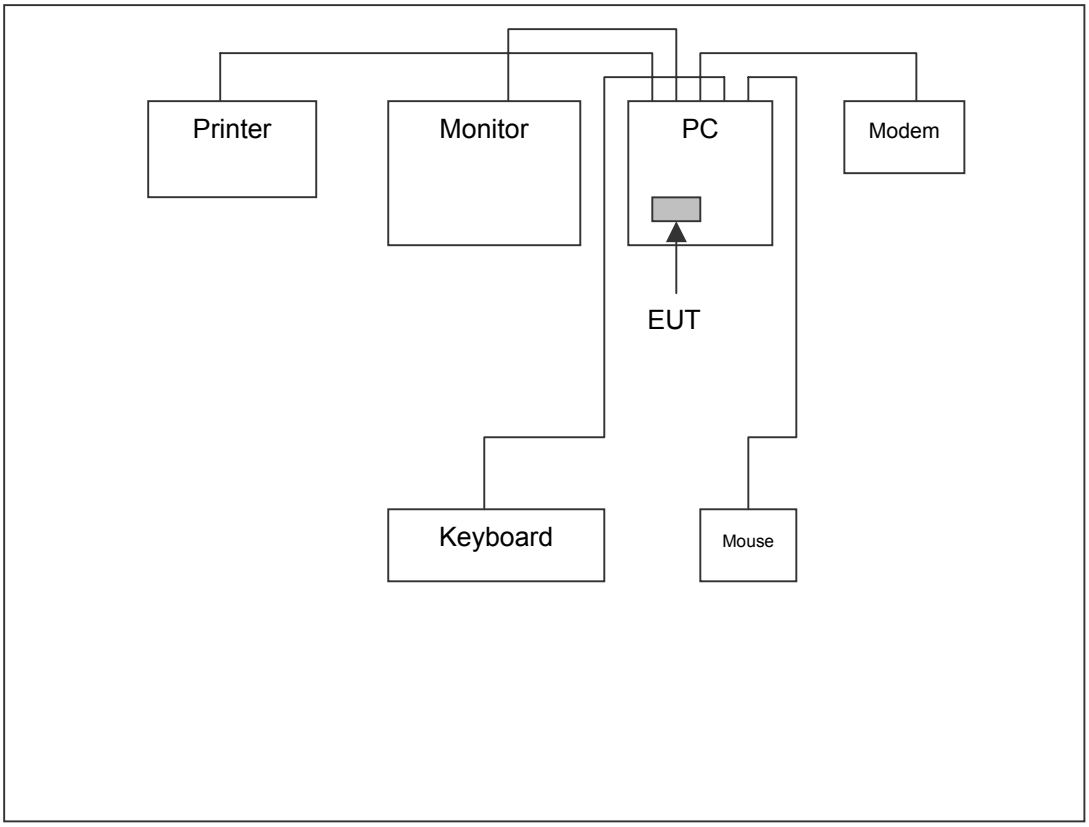
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PERSONAL COMPUTER	MSI	Hetis 865G Giga	1A36I98A000220	FCC DoC Approved
2	MONITOR	SONY	CPD-G520	2402885	FCC DoC Approved
3	PRINTER	EPSON	LQ-300+	DCGY017070	FCC DoC Approved
4	MODEM	ACEEX	1414	980020514	IFAXDM1414
5	PS2/KEYBOARD	HP	SK-2502C	M020303720	FCC DoC Approved
6	PS/2 MOUSE	BTC	M851	N/A	E5XMSM860

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	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
4	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	NA
6	1.5 m Non shielded wire, terminated with PS/2 connector via drain wire, w/o core.

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST TYPES AND RESULTS

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. 19 2004
*ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 19 2004
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.

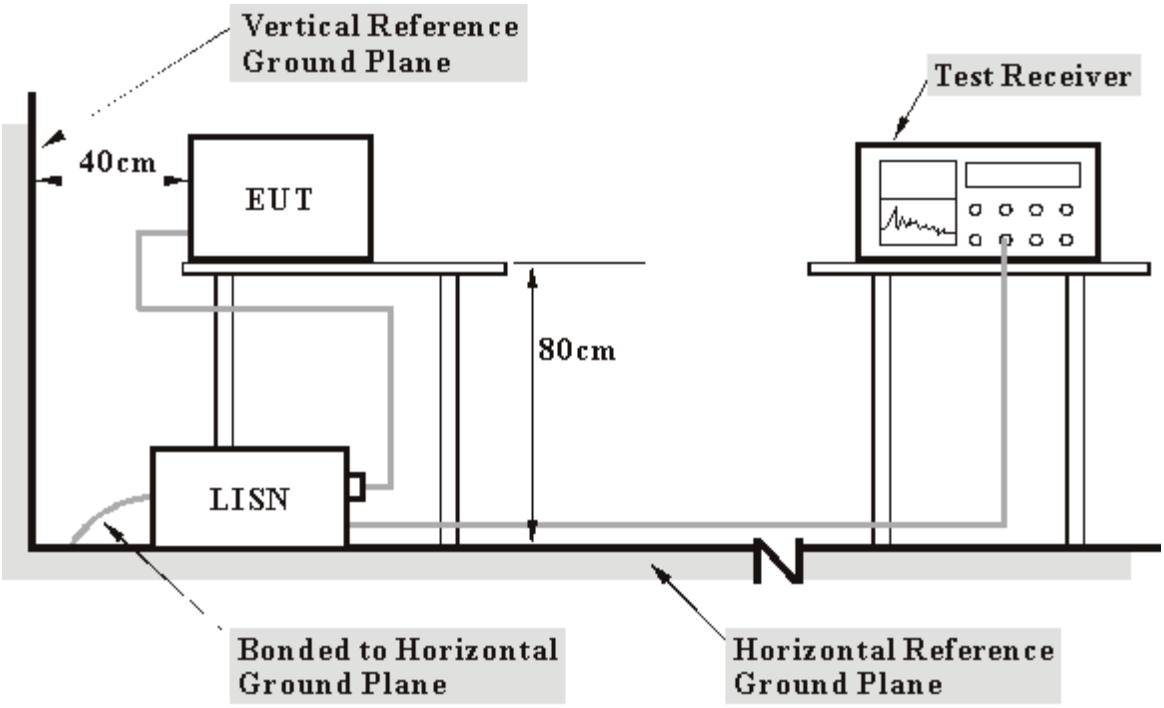
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 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

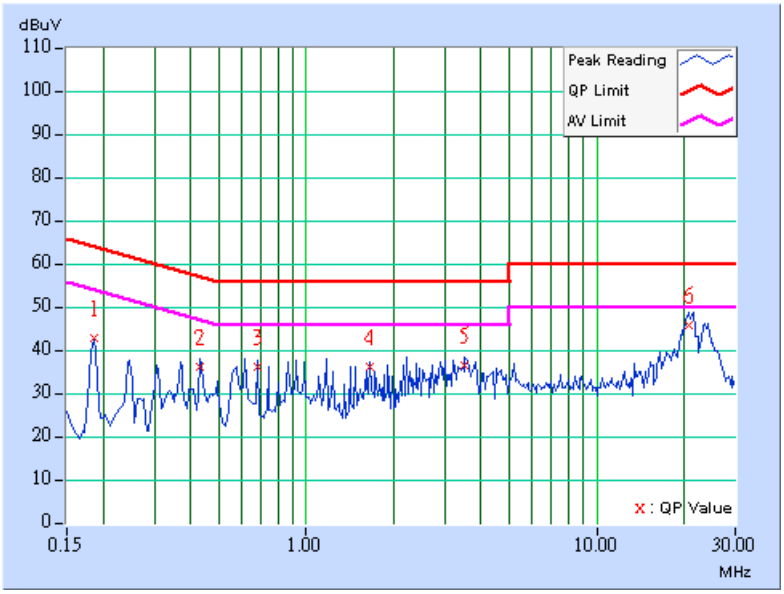
a. Plug the EUT a notebook computer system placed on a testing table.
b. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The computer system sent "H" messages to its screen.
d. The computer system sent “H” messages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

4.1.7 TEST RESULTS

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.06	42.30	-	42.36	-	64.25	54.25	-21.89	-
2	0.431	0.07	35.78	-	35.85	-	57.23	47.23	-21.38	-
3	0.677	0.11	35.43	-	35.54	-	56.00	46.00	-20.46	-
4	1.664	0.17	35.48	-	35.65	-	56.00	46.00	-20.35	-
5	3.516	0.21	35.93	-	36.14	-	56.00	46.00	-19.86	-
6	**20.864**	**0.68**	**45.06**	**-**	**45.74**	**-**	**60.00**	**50.00**	**-14.26**	**-**

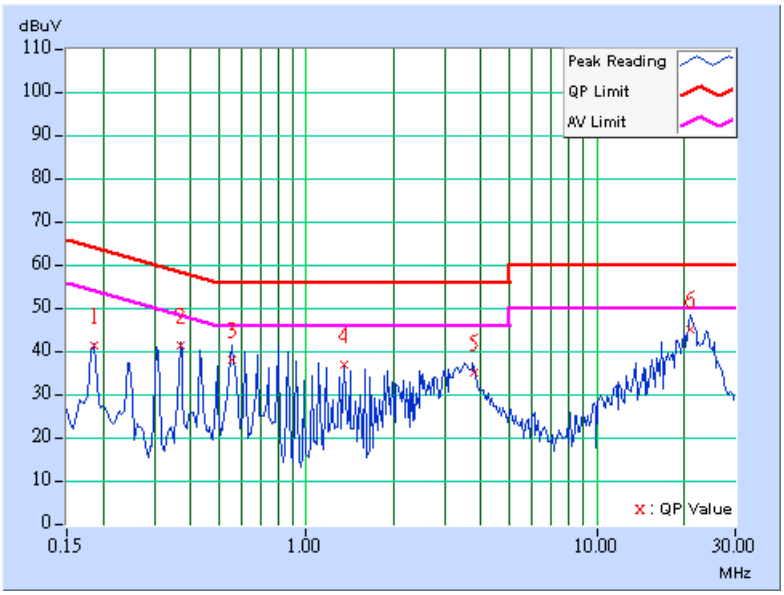
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.05	40.98	-	41.03	-	64.25	54.25	-23.22	-
2	0.369	0.05	41.04	-	41.09	-	58.53	48.53	-17.44	-
3	0.552	0.08	37.53	-	37.61	-	56.00	46.00	-18.39	-
4	1.355	0.17	36.35	-	36.52	-	56.00	46.00	-19.48	-
5	3.759	0.20	34.50	-	34.70	-	56.00	46.00	-21.30	-
6	21.018	0.55	44.53	-	45.08	-	60.00	50.00	-14.92	-

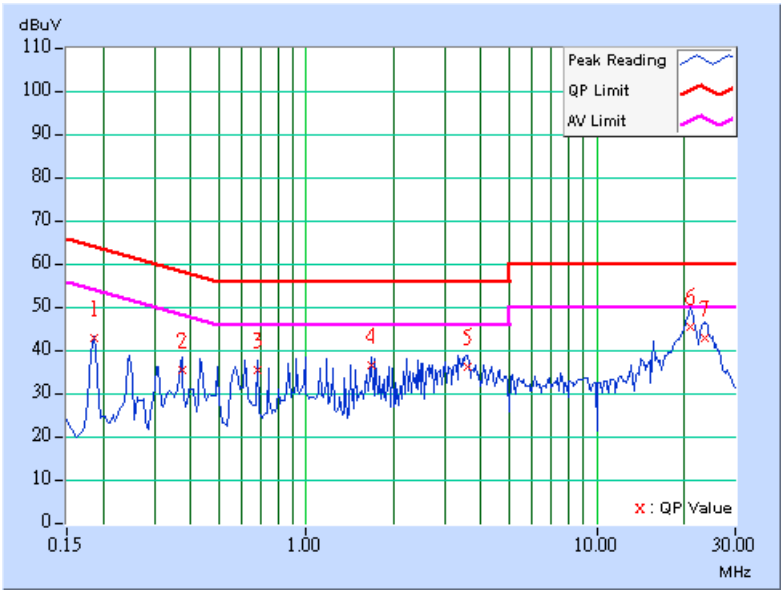
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.06	42.32	-	42.38	-	64.25	54.25	-21.87	-
2	0.373	0.06	34.71	-	34.77	-	58.44	48.44	-23.67	-
3	0.677	0.11	34.85	-	34.96	-	56.00	46.00	-21.04	-
4	1.668	0.17	35.93	-	36.10	-	56.00	46.00	-19.90	-
5	3.582	0.21	35.36	-	35.57	-	56.00	46.00	-20.43	-
6	21.142	0.70	44.78	-	45.48	-	60.00	50.00	-14.52	-
7	23.684	0.82	42.23	-	43.05	-	60.00	50.00	-16.95	-

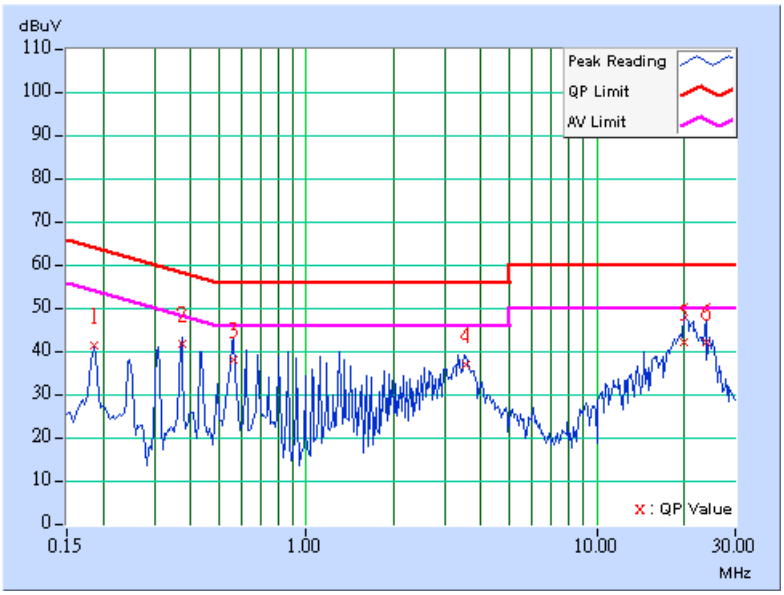
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.05	40.68	-	40.73	-	64.25	54.25	-23.52	-
2	0.373	0.05	41.31	-	41.36	-	58.44	48.44	-17.08	-
3	0.560	0.08	37.61	-	37.69	-	56.00	46.00	-18.31	-
4	3.529	0.20	36.32	-	36.52	-	56.00	46.00	-19.48	-
5	19.929	0.51	41.68	-	42.19	-	60.00	50.00	-17.81	-
6	23.833	0.68	41.63	-	42.31	-	60.00	50.00	-17.69	-

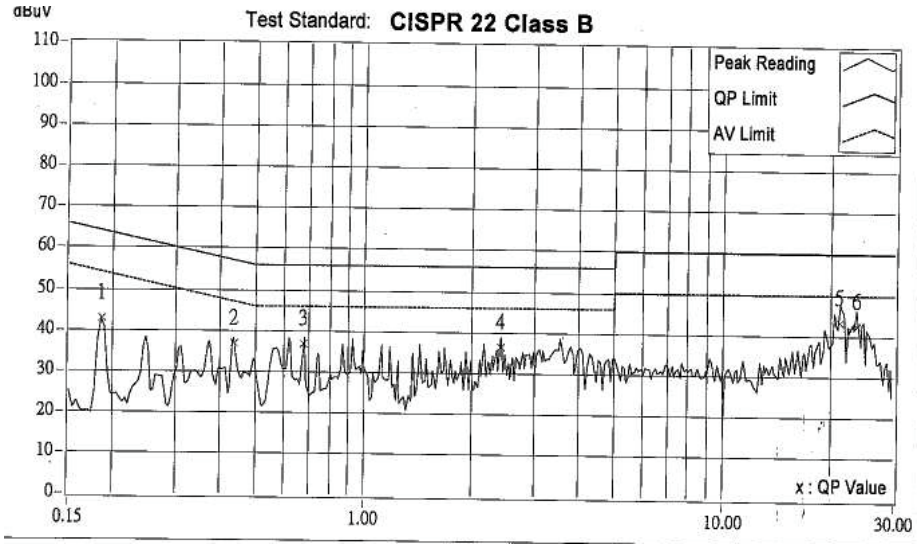
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.06	42.08	-	42.14	-	64.25	54.25	-22.11	-
2	0.435	0.07	35.92	-	35.99	-	57.15	47.15	-21.17	-
3	0.681	0.11	35.96	-	36.07	-	56.00	46.00	-19.93	-
4	2.418	0.19	35.48	-	35.67	-	56.00	46.00	-20.33	-
5	21.141	0.70	42.34	-	43.04	-	60.00	50.00	-16.96	-
6	23.567	0.82	41.81	-	42.63	-	60.00	50.00	-17.37	-

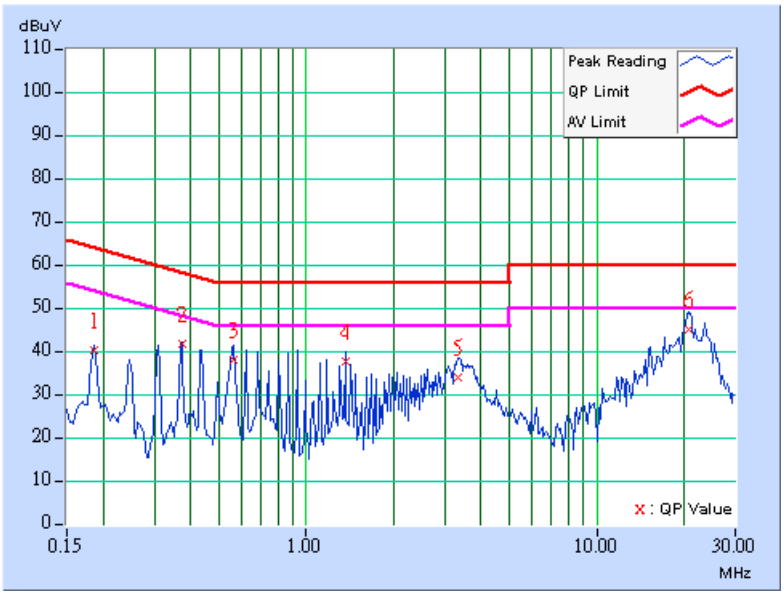
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	32deg. C, 50%RH, 991 hPa	**TESTED BY**: Steven Lu	

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	0.185	0.05	39.88	-	39.93	-	64.25	54.25	-24.32	-
2	0.373	0.05	41.35	-	41.40	-	58.44	48.44	-17.04	-
3	0.560	0.08	37.61	-	37.69	-	56.00	46.00	-18.31	-
4	1.363	0.17	37.06	-	37.23	-	56.00	46.00	-18.77	-
5	3.340	0.20	33.36	-	33.56	-	56.00	46.00	-22.44	-
6	20.821	0.55	44.51	-	45.06	-	60.00	50.00	-14.94	-

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	8594E	3911A07465	July 07, 2004
* HP Preamplifier	8447D	2432A03504	June 10, 2004
* HP Preamplifier	8449B	3008A01292	Aug. 11, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Jun. 26, 2004
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 13, 2004
*Schwarzbeck Antenna	VULB9168	137	Apr. 03, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	June 30, 2004
*ADT. Turn Table	TT100	0306	NA
*ADT. Tower	AT100	0306	NA
*Software	ADT_Radiated_V 5.14	NA	NA
*TIMES RF cable	LL142	CABLE-CH6-01	Apr. 30, 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 Chamber No. 6.

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 peak, quasi-peak or average method as specified and then reported in a data sheet.

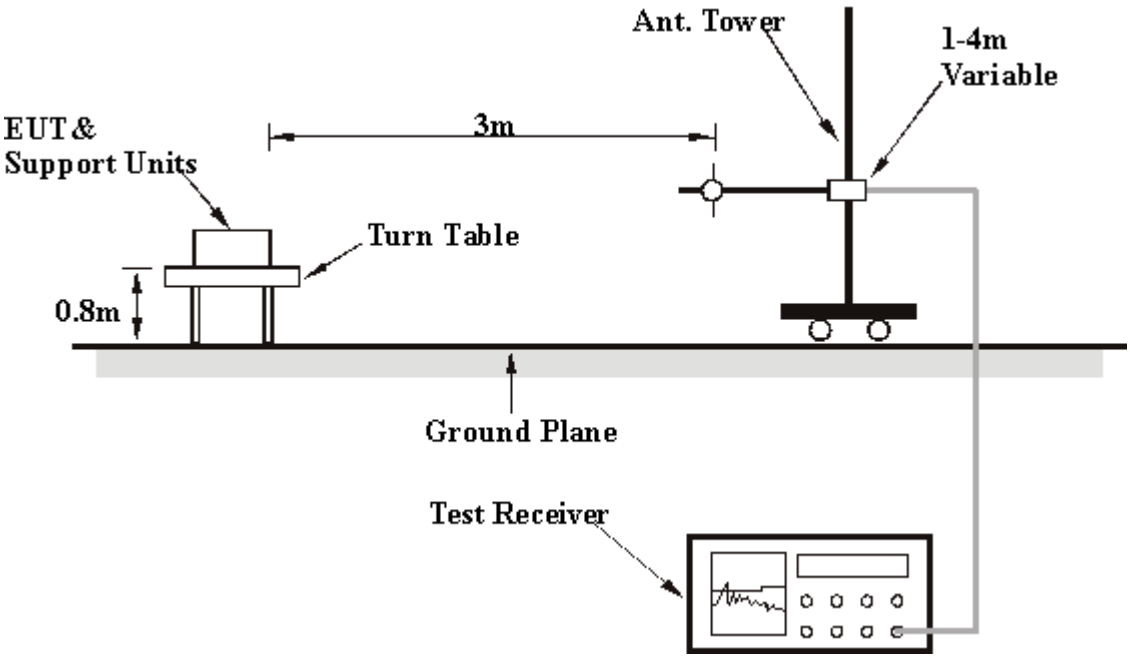
NOTE:

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 10 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	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22 deg. C, 76 % RH, 991 hPa	**TESTED BY**: Martin 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	168.02	33.00	43.50	-10.50	1.50	229	19.44	13.57
2	236.05	41.47	46.00	-4.53	1.50	181	28.49	12.98
3	539.30	37.72	46.00	-8.28	2.00	232	16.84	20.88
4	574.29	35.08	46.00	-10.92	1.75	250	13.24	21.84
5	661.76	36.84	46.00	-9.16	1.00	85	13.42	23.42
6	720.08	38.92	46.00	-7.08	1.25	52	14.38	24.53
7	811.44	42.80	46.00	-3.20	1.00	121	17.07	25.74
8	856.15	34.65	46.00	-11.35	1.00	142	8.39	26.26
9	939.74	37.15	46.00	-8.85	1.75	121	9.56	27.59

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.

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22 deg. C, 76 % RH, 991 hPa	**TESTED BY**: Martin 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	45.55	34.88	40.00	-5.12	1.25	271	20.40	14.48
2	236.05	34.83	46.00	-11.17	2.00	337	21.85	12.98
3	537.35	36.89	46.00	-9.11	1.25	253	16.05	20.84
4	574.29	35.37	46.00	-10.63	1.00	229	13.53	21.84
5	657.88	37.68	46.00	-8.32	1.25	187	14.32	23.36
6	720.08	41.97	46.00	-4.03	1.00	166	17.44	24.53
7	776.45	35.41	46.00	-10.59	1.00	163	9.92	25.49
8	811.44	40.82	46.00	-5.18	1.00	178	15.08	25.74
9	898.92	35.48	46.00	-10.52	1.25	340	8.37	27.12
10	945.57	38.77	46.00	-7.23	1.25	163	11.11	27.66

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.

4.2.8 TEST RESULTS (A)

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	2390.00	54.27 PK	74.00	-19.73	1.02 H	25	23.52	30.75
1	2390.00	45.85 AV	54.00	-8.15	1.02 H	25	15.10	30.75
2	*2412.00	109.09 PK			1.02 H	25	78.25	30.84
2	*2412.00	100.67 AV			1.02 H	25	69.83	30.84
3	2688.00	40.09 PK	74.00	-33.91	1.02 H	25	8.49	31.60
4	4824.00	52.77 PK	74.00	-21.23	1.20 H	153	16.52	36.26
4	4824.00	38.29 AV	54.00	-15.71	1.20 H	153	2.04	36.26
5	7236.00	60.46 PK	89.09	-28.63	1.20 H	339	18.21	42.25
5	7236.00	49.19 AV	80.67	-31.48	1.20 H	339	6.94	42.25
6	9648.00	60.25 PK	89.09	-28.84	1.11 H	322	15.28	44.97
6	9648.00	51.47 AV	80.67	-29.20	1.11 H	322	6.50	44.97

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	2387.00	60.42 PK	74.00	-13.58	1.13 V	221	29.69	30.73
1	**2387.00**	**52.09 AV**	**54.00**	**-1.91**	**1.13 V**	**221**	**21.36**	**30.73**
2	*2412.00	115.24 PK			1.15 V	121	84.40	30.84
2	*2412.00	106.91 AV			1.15 V	121	76.07	30.84
3	2688.00	46.24 PK	74.00	-27.76	1.13 V	221	14.64	31.60
4	4824.00	58.24 PK	74.00	-15.76	1.13 V	221	21.99	36.26
4	4824.00	44.02 AV	54.00	-9.98	1.13 V	221	7.77	36.26
5	7235.00	64.22 PK	95.24	-31.02	1.00 V	211	21.97	42.25
5	7235.00	54.08 AV	86.91	-32.83	1.00 V	211	11.83	42.25
6	9648.00	62.06 PK	95.24	-33.18	1.18 V	50	17.09	44.97
6	9648.00	56.41 AV	86.91	-30.50	1.18 V	50	11.44	44.97

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. " * " : Fundamental frequency

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	*2437.00	106.50 PK			1.14 H	310	75.55	30.95
1	*2437.00	97.70 AV			1.14 H	310	66.75	30.95
2	2437.00	47.80 PK	74.00	-26.20	1.27 H	216	16.85	30.95
3	7308.00	61.12 PK	74.00	-12.88	1.19 H	342	18.74	42.38
3	7308.00	49.29 AV	54.00	-4.71	1.19 H	342	6.91	42.38
4	9748.00	58.07 PK	86.50	-28.43	1.13 H	333	12.75	45.32
4	9748.00	48.11 AV	77.70	-29.59	1.13 H	333	2.79	45.32

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	115.62 PK			1.44 V	263	84.67	30.95
1	*2437.00	107.23 AV			1.44 V	263	76.28	30.95
2	4874.00	57.15 PK	74.00	-16.85	1.03 V	360	20.81	36.34
2	4874.00	43.70 AV	54.00	-10.30	1.03 V	360	7.36	36.34
3	7311.00	61.79 PK	74.00	-12.21	1.28 V	211	19.41	42.38
3	7311.00	50.94 AV	54.00	-3.06	1.28 V	211	8.56	42.38
4	9748.00	59.57 PK	95.62	-36.05	1.22 V	355	14.25	45.32
4	9748.00	50.83 AV	87.23	-36.40	1.22 V	355	5.51	45.32

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. " * " : Fundamental frequency

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	*2462.00	107.91 PK			1.48 H	309	76.85	31.06
1	*2462.00	99.64 AV			1.48 H	309	68.58	31.06
2	2483.50	51.91 PK	74.00	-22.09	1.48 H	309	20.76	31.15
2	2483.50	43.64 AV	54.00	-10.36	1.48 H	309	12.49	31.15
3	2688.00	38.91 PK	74.00	-35.09	1.48 H	309	7.31	31.60
4	4924.00	50.52 PK	74.00	-23.48	1.60 H	155	14.10	36.42
5	7378.00	55.58 PK	74.00	-18.42	1.35 H	231	13.08	42.50
5	7378.00	44.48 AV	54.00	-9.52	1.35 H	231	1.98	42.50

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	*2462.00	116.07 PK			1.37 V	267	85.01	31.06
1	*2462.00	107.46 AV			1.37 V	267	76.40	31.06
2	2483.50	60.07 PK	74.00	-13.93	1.37 V	267	28.92	31.15
2	2483.50	51.46 AV	54.00	-2.54	1.37 V	267	20.31	31.15
3	2688.00	47.07 PK	74.00	-26.93	1.37 V	267	15.47	31.60
4	2908.00	52.74 PK	74.00	-21.26	1.21 V	277	20.49	32.25
4	2908.00	44.91 AV	54.00	-9.09	1.21 V	277	12.66	32.25
5	4924.00	56.51 PK	74.00	-17.49	1.27 V	37	20.09	36.42
5	4924.00	42.48 AV	54.00	-11.52	1.27 V	37	6.06	36.42
6	7384.00	60.05 PK	74.00	-13.95	1.12 V	342	17.53	42.51
6	7384.00	48.20 AV	54.00	-5.80	1.12 V	342	5.68	42.51
7	9848.00	58.87 PK	96.07	-37.20	1.19 V	351	13.34	45.53
7	9848.00	49.36 AV	87.46	-38.10	1.19 V	351	3.83	45.53

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. " * " : Fundamental frequency

4.2.9 TEST RESULTS (B)

Normal mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	22 deg. C, 76 % RH, 991 hPa	**TESTED BY**: Martin 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	2390.00	55.53 PK	74.00	-18.47	1.11 H	218	24.78	30.75
1	2390.00	44.62 AV	54.00	-9.38	1.11 H	218	13.87	30.75
2	*2412.00	104.09 PK			1.11 H	218	73.25	30.84
2	*2412.00	93.18 AV			1.11 H	218	62.34	30.84
3	2688.00	40.69 PK	74.00	-33.31	1.11 H	218	9.09	31.60
4	4824.00	49.44 PK	74.00	-24.56	1.48 H	230	13.19	36.26
5	7237.00	55.44 PK	74.00	-18.56	1.20 H	360	13.19	42.25
5	7237.00	42.04 AV	54.00	-11.96	1.20 H	360	-0.21	42.25

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.90 PK	74.00	-13.10	1.00 V	148	30.15	30.75
1	2390.00	49.85 AV	54.00	-4.15	1.00 V	148	19.10	30.75
2	*2412.00	109.46 PK			1.00 V	148	78.61	30.84
2	*2412.00	98.41 AV			1.00 V	148	67.56	30.84
3	2688.00	46.06 PK	74.00	-27.94	1.11 V	218	14.46	31.60
4	4824.00	52.96 PK	74.00	-21.04	1.00 V	208	16.71	36.26
4	4824.00	37.56 AV	54.00	-16.44	1.00 V	208	1.31	36.26
5	7234.00	61.19 PK	74.00	-12.81	1.11 V	218	18.94	42.25
5	7234.00	44.15 AV	54.00	-9.85	1.11 V	218	1.90	42.25

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. " * " : Fundamental frequency

Normal mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	*2437.00	101.77 PK			1.46 H	309	70.82	30.95
1	*2437.00	91.73 AV			1.46 H	309	60.78	30.95
2	4874.00	52.26 PK	74.00	-21.74	1.06 H	85	15.92	36.34
2	4874.00	37.80 AV	54.00	-16.20	1.06 H	85	1.46	36.34
3	7311.00	55.62 PK	74.00	-18.38	1.56 H	74	13.24	42.38
3	7311.00	41.82 AV	54.00	-12.18	1.56 H	74	-0.56	42.38

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.72 PK			1.16 V	120	78.77	30.95
1	*2437.00	99.30 AV			1.16 V	120	68.35	30.95
2	4874.00	54.14 PK	74.00	-19.86	1.00 V	25	17.80	36.34
2	4874.00	36.74 AV	54.00	-17.26	1.00 V	25	0.40	36.34
3	7311.00	55.56 PK	74.00	-18.44	1.16 V	139	13.18	42.38
3	7311.00	42.53 AV	54.00	-11.47	1.16 V	139	0.15	42.38

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. " * " : Fundamental frequency

Normal mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	*2462.00	101.73 PK			1.27 H	151	70.67	31.06
1	*2462.00	91.56 AV			1.27 H	151	60.50	31.06
2	2483.50	50.73 PK	74.00	-23.27	1.27 H	151	19.58	31.15
3	2688.00	41.73 PK	74.00	-32.27	1.27 H	151	10.13	31.60
4	4924.00	53.58 PK	74.00	-20.42	1.20 H	66	17.16	36.42
4	4924.00	36.18 AV	54.00	-17.82	1.20 H	66	-0.24	36.42
5	7386.00	49.27 PK	74.00	-24.73	1.00 H	201	6.75	42.52

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	*2462.00	112.11 PK			1.25 V	296	81.05	31.06
1	*2462.00	101.67 AV			1.25 V	296	70.61	31.06
2	2483.50	61.11 PK	74.00	-12.89	1.25 V	296	29.96	31.15
2	2483.50	50.67 AV	54.00	-3.33	1.25 V	296	19.52	31.15
3	2688.00	52.11 PK	74.00	-21.89	1.25 V	296	20.51	31.60
3	2688.00	41.67 AV	54.00	-12.33	1.25 V	296	10.07	31.60
4	4924.00	52.92 PK	74.00	-21.08	1.16 V	139	16.50	36.42
4	4924.00	36.22 AV	54.00	-17.78	1.16 V	139	-0.20	36.42
5	7386.00	56.06 PK	74.00	-17.94	1.06 V	35	13.55	42.52
5	7386.00	41.16 AV	54.00	-12.84	1.06 V	35	-1.35	42.52

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. " * " : Fundamental frequency

Turbo mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60 % RH, 991 hPa	**TESTED BY**: Martin 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	2390.00	50.40 PK	74.00	-23.60	1.22 H	151	17.73	32.67
1	2390.00	39.23 AV	54.00	-14.77	1.22 H	151	6.56	32.67
2	*2437.00	100.57 PK			1.22 H	151	67.67	32.90
2	*2437.00	89.40 AV			1.22 H	151	56.50	32.90
3	2483.50	50.73 PK	74.00	-23.27	1.22 H	151	17.59	33.14
3	2483.50	39.56 AV	54.00	-14.44	1.22 H	151	6.42	33.14
4	4874.00	46.95 PK	74.00	-27.05	1.00 H	321	7.89	39.05
4	4874.00	36.02 AV	54.00	-17.98	1.00 H	321	-3.04	39.05
5	7313.00	57.03 PK	74.00	-16.97	1.27 H	357	11.34	45.69
5	7313.00	43.83 AV	54.00	-10.17	1.27 H	357	-1.86	45.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	60.40 PK	74.00	-13.60	1.30 V	94	27.73	32.67
1	2390.00	49.40 AV	54.00	-4.60	1.30 V	94	16.73	32.67
2	*2437.00	110.57 PK			1.30 V	94	77.67	32.90
2	*2437.00	99.57 AV			1.30 V	94	66.67	32.90
3	2483.50	60.73 PK	74.00	-13.27	1.30 V	94	27.59	33.14
3	2483.50	49.73 AV	54.00	-4.27	1.30 V	94	16.59	33.14
4	4874.00	48.30 PK	74.00	-25.70	1.00 V	36	9.24	39.05
4	4874.00	37.42 AV	54.00	-16.58	1.00 V	36	-1.64	39.05
5	7311.00	57.16 PK	74.00	-16.84	1.19 V	36	11.47	45.69
5	7311.00	44.16 AV	54.00	-9.84	1.19 V	36	-1.53	45.69

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. " * " : Fundamental frequency

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	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 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP

4.3.6 EUT OPERATING CONDITIONS

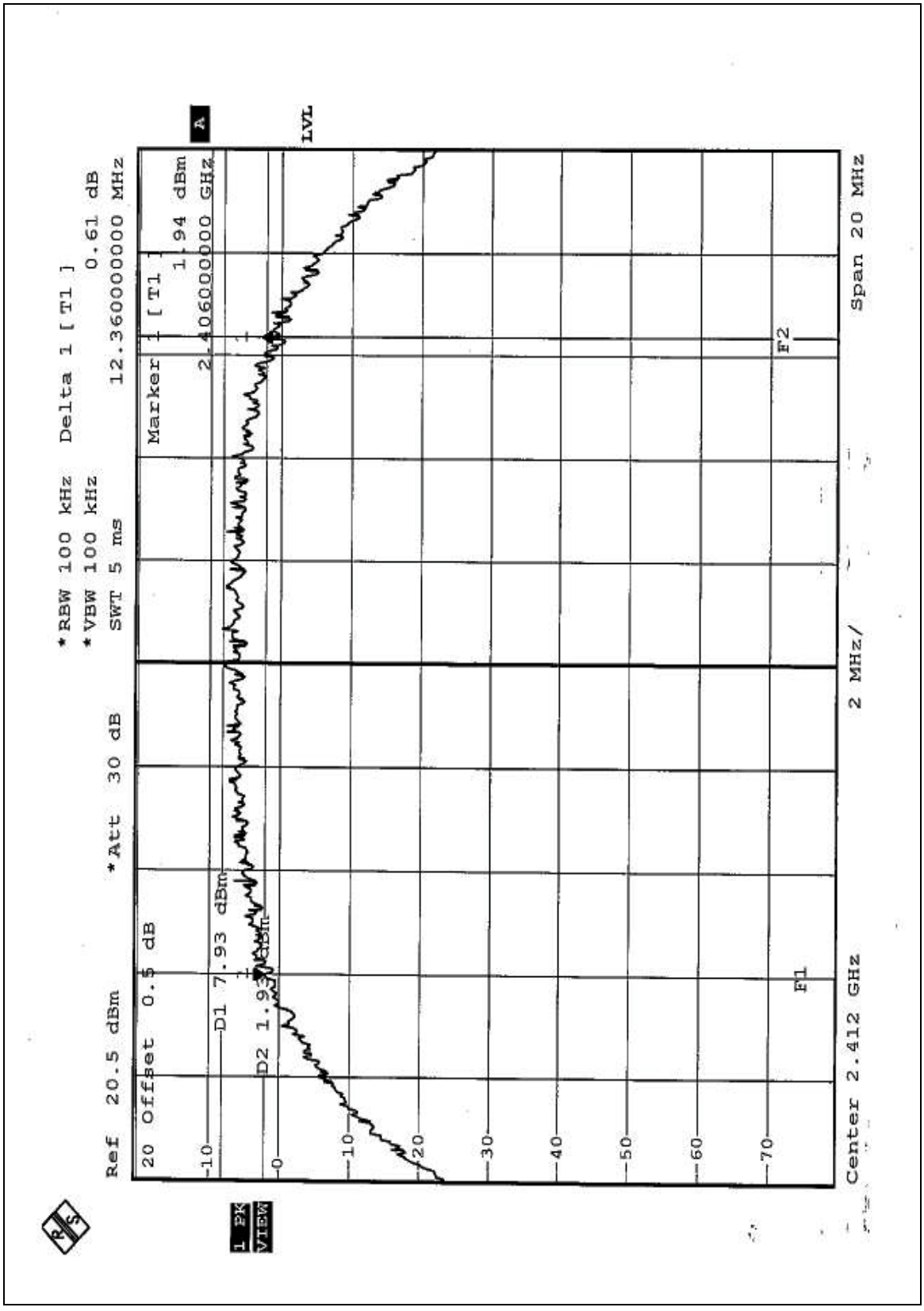
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (A)

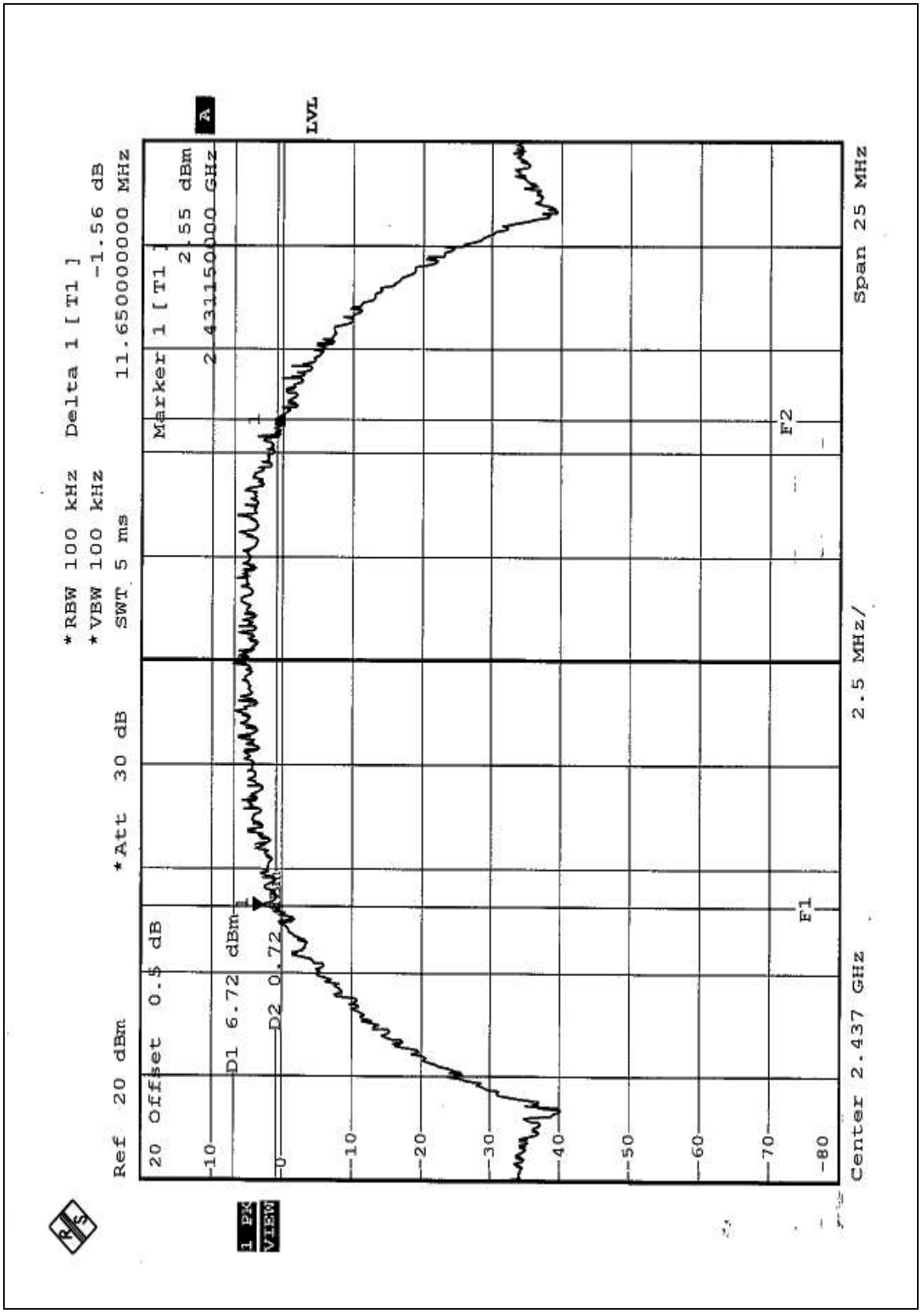
EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.36	0.5	PASS
6	2437	11.65	0.5	PASS
11	2462	12.16	0.5	PASS

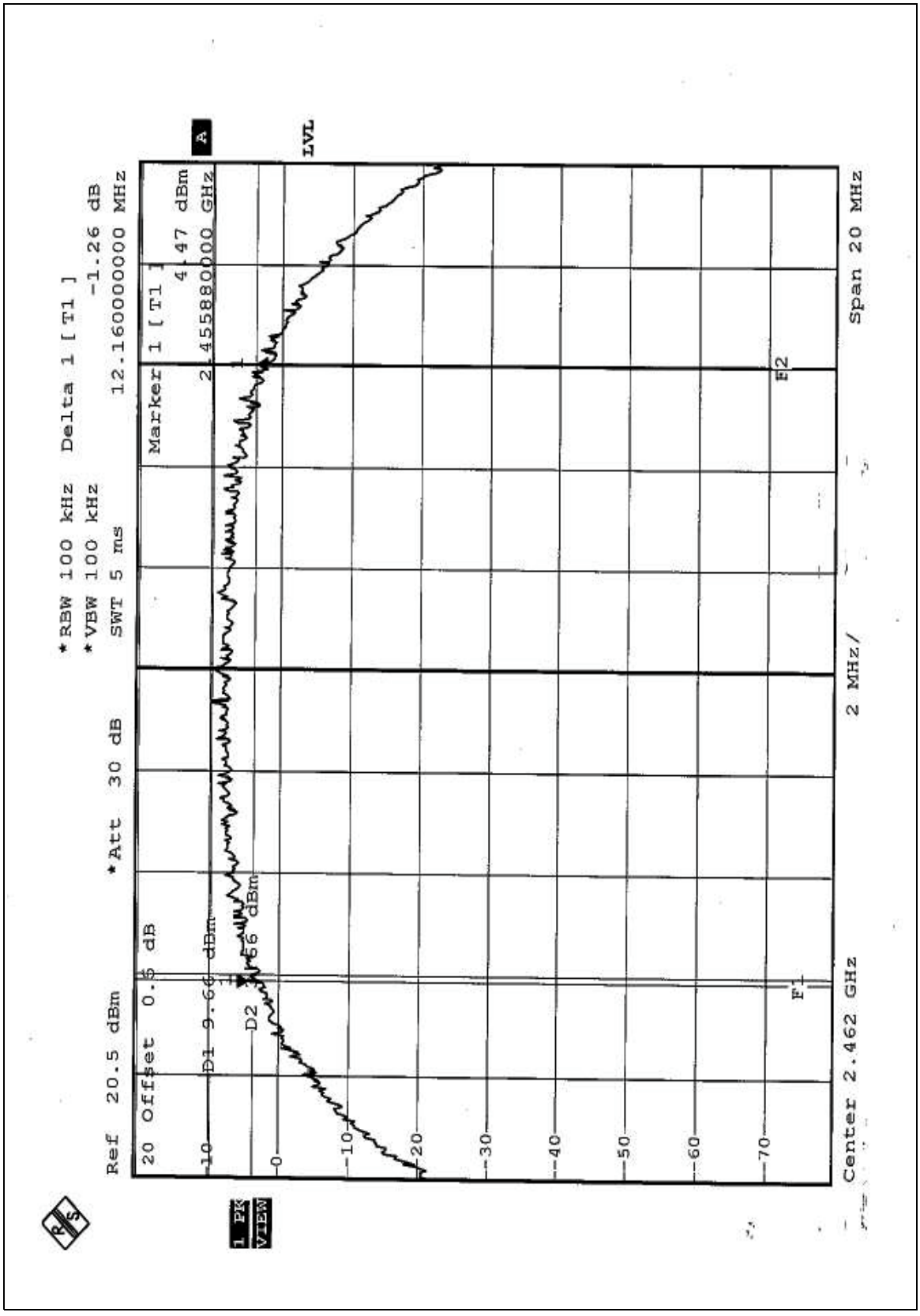
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.61 dB
12.360000000 MHz
Marker 1 [T1]
1.94 dBm
2.406000000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 7.93 dBm
D2 1.93 dBm
LVL
A
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz
1 PK VIEW

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-1.56 dB
11.650000000 MHz
Marker 1 [T1]
2.55 dBm
2.431150000 GHz
Ref 20 dBm
Offset 0.5 dB
Att 30 dB
D1 6.72 dBm
D2 0.72 dB
Center 2.437 GHz
2.5 MHz/
Span 25 MHz
F1
F2
1 PK VIEW

CH11


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-1.26 dB
12.160000000 MHz
Marker 1 [T1]
4.47 dBm
2.455880000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 9.66 dBm
D2
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
LVL
1 PK
VIEW

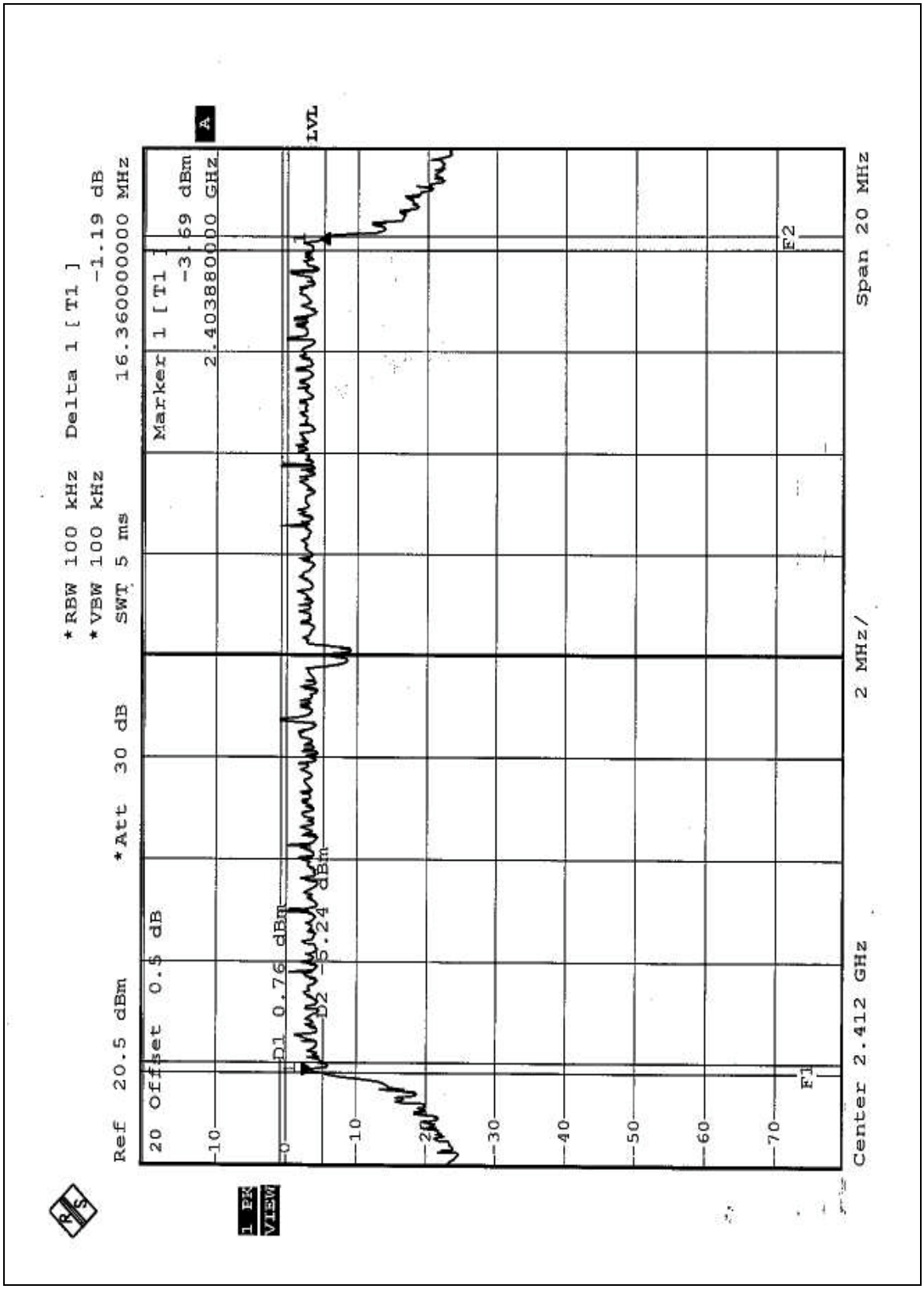
4.3.8 TEST RESULTS (B)

Normal mode:

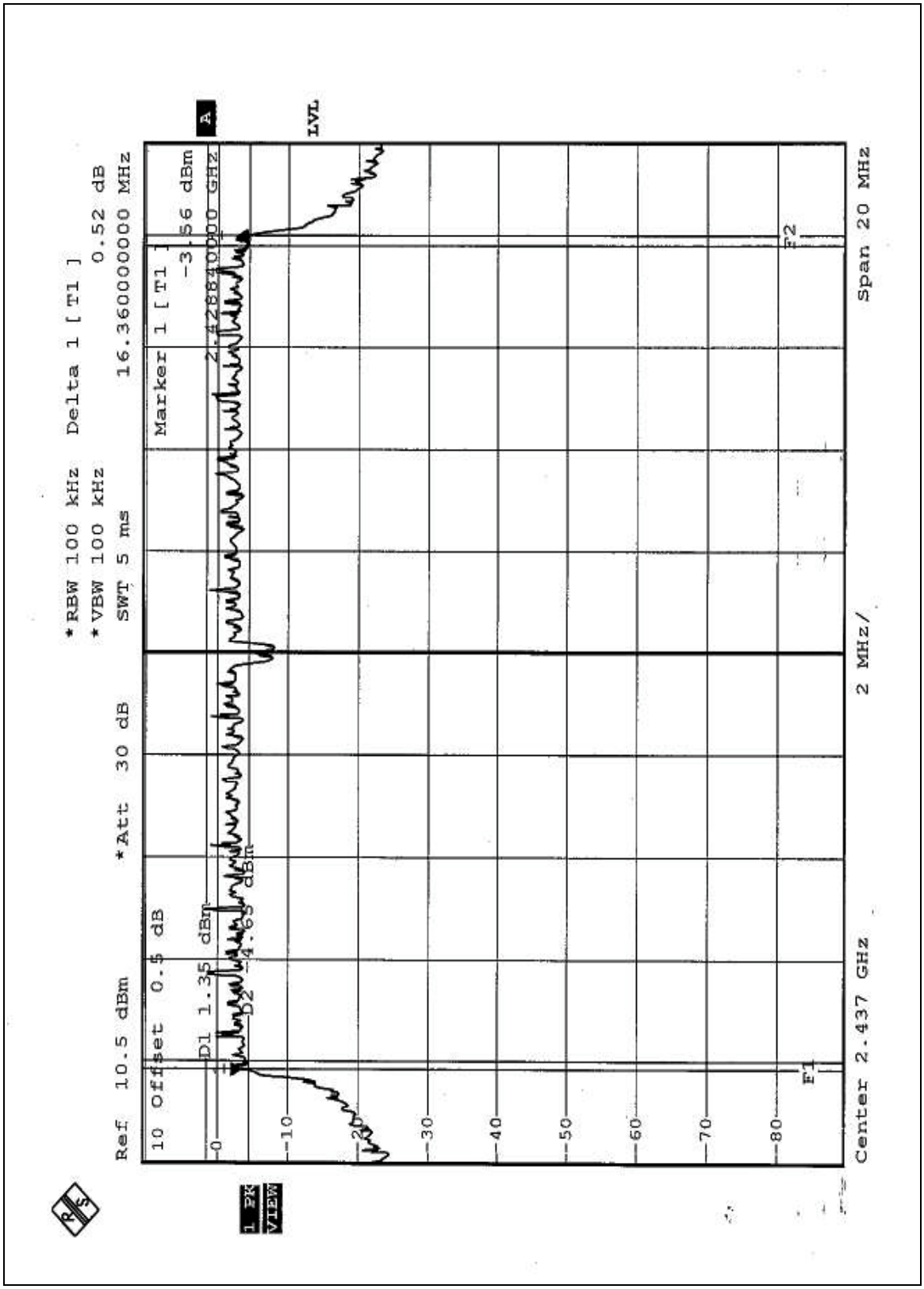
EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.36	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.44	0.5	PASS

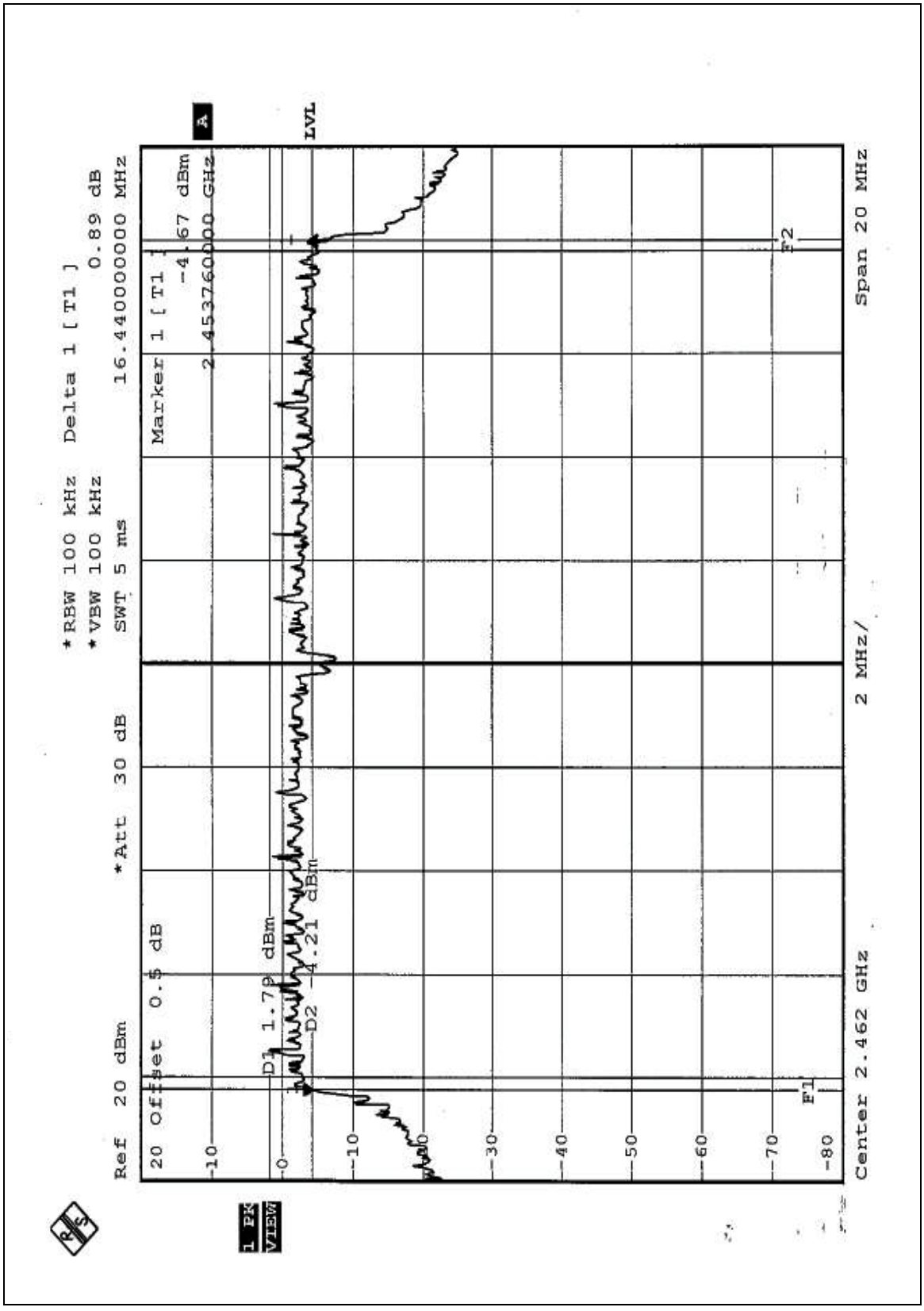
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-1.19 dB
16.360000000 MHz
Marker 1 [T1]
-3.69 dBm
2.403880000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 0.76 dBm
D2 -5.24 dBm
Center 2.412 GHz
2 MHz/
Span 20 MHz
1 PK VIEW

CH6


Ref 10.5 dBm
10 Offset 0.4 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.52 dB
16.360000000 MHz
Marker 1 [T1]
-3.56 dBm
2.428840000 GHz
D1 1.35 dBm
D2 -4.69 dBm
Center 2.437 GHz
2 MHz/
Span 20 MHz
F1
F2
1 PK
VIEW

CH11

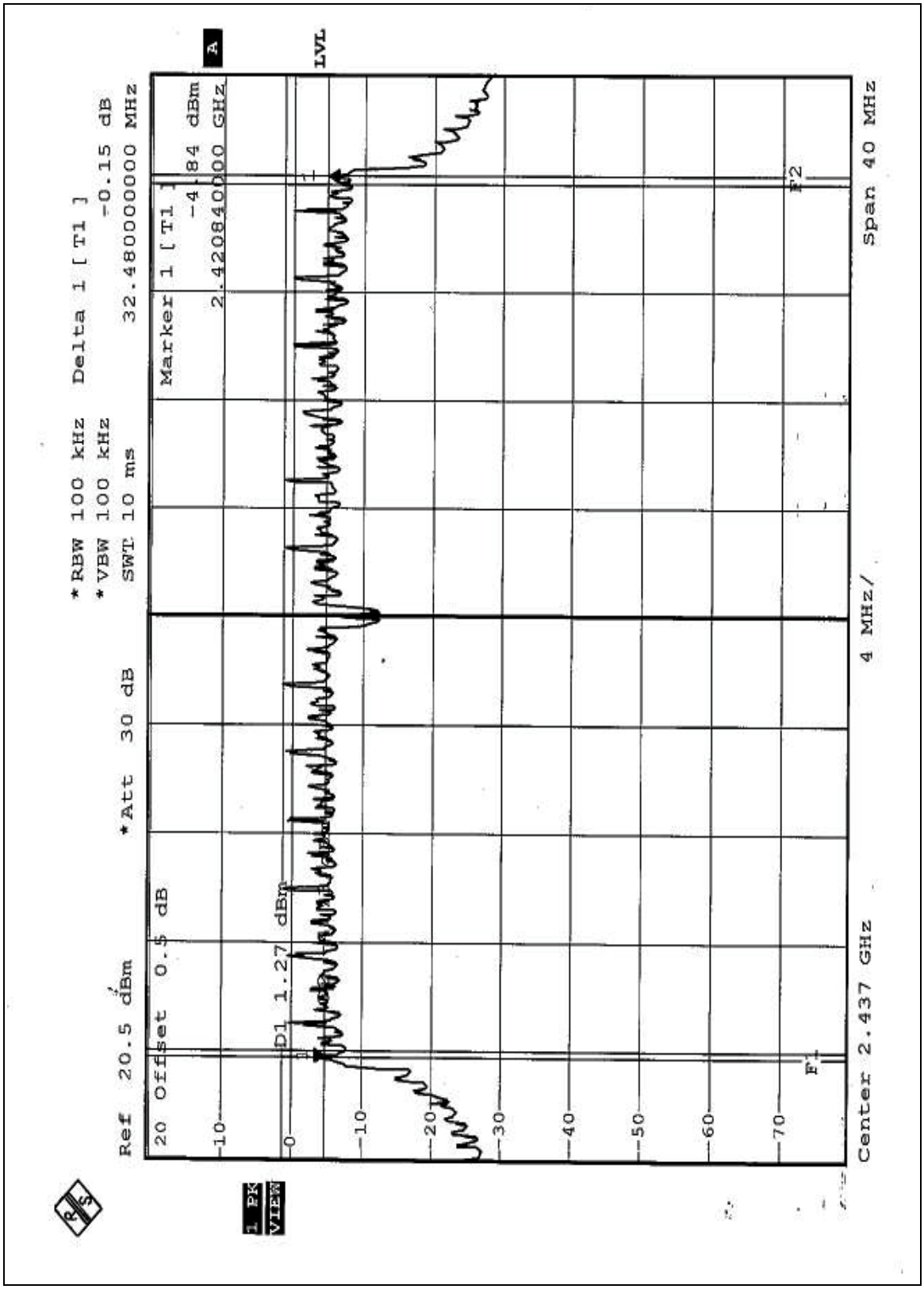

Ref 20 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.89 dB
16.440000000 MHz
Marker 1 [T1]
-4.67 dBm
2.453760000 GHz
LVL
D1 1.79 dBm
D2 -4.21 dBm
F1
F2
1 PK VIEW
Center 2.462 GHz
2 MHz/
Span 20 MHz

Turbo mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
6	2437	32.48	0.5	PASS

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Delta 1 [T1]
-0.15 dB
32.480000000 MHz
Marker 1 [T1]
-4.84 dBm
2.420840000 GHz
D1 1.27 dBm
LVL
A
1 PK VIEW
Center 2.437 GHz
4 MHz/
Span 40 MHz

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 TEST 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..

4.4.3 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.

4.4.4 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 (A)

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.02	30	PASS
6	2437	18.92	30	PASS
11	2462	18.90	30	PASS

4.4.8 TEST RESULTS (B)

Normal Mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.04	30	PASS
6	2437	18.10	30	PASS
11	2462	18.10	30	PASS

Turbo Mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
6	2437	18.34	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	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.

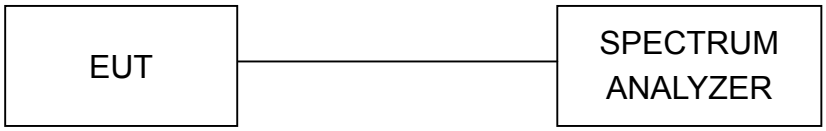
4.5.3 TEST PROCEDURE

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 3 kHz RBW and 30 kHz 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 CONDITIONS

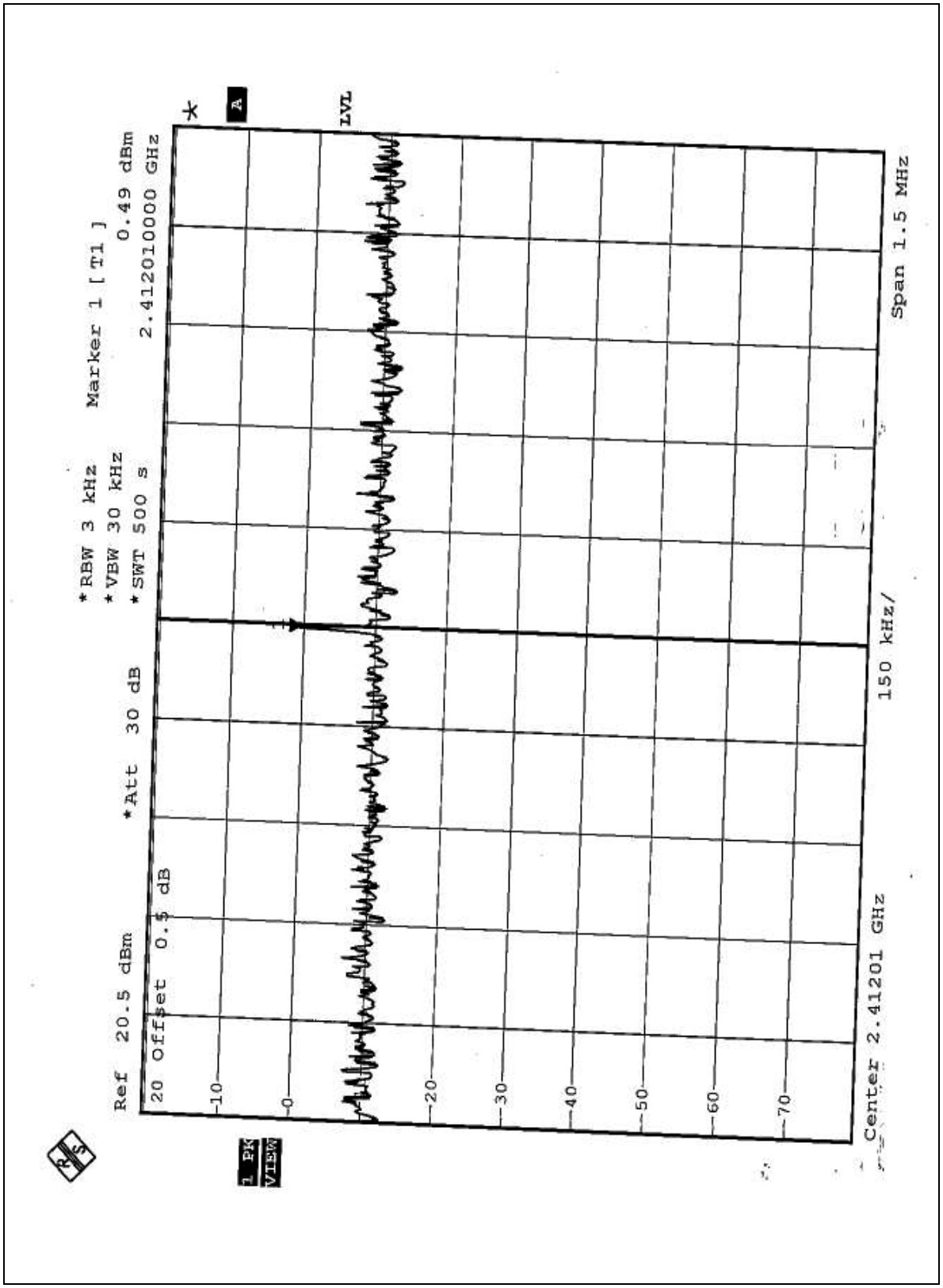
Same as 4.3.6

4.5.7 TEST RESULTS (A)

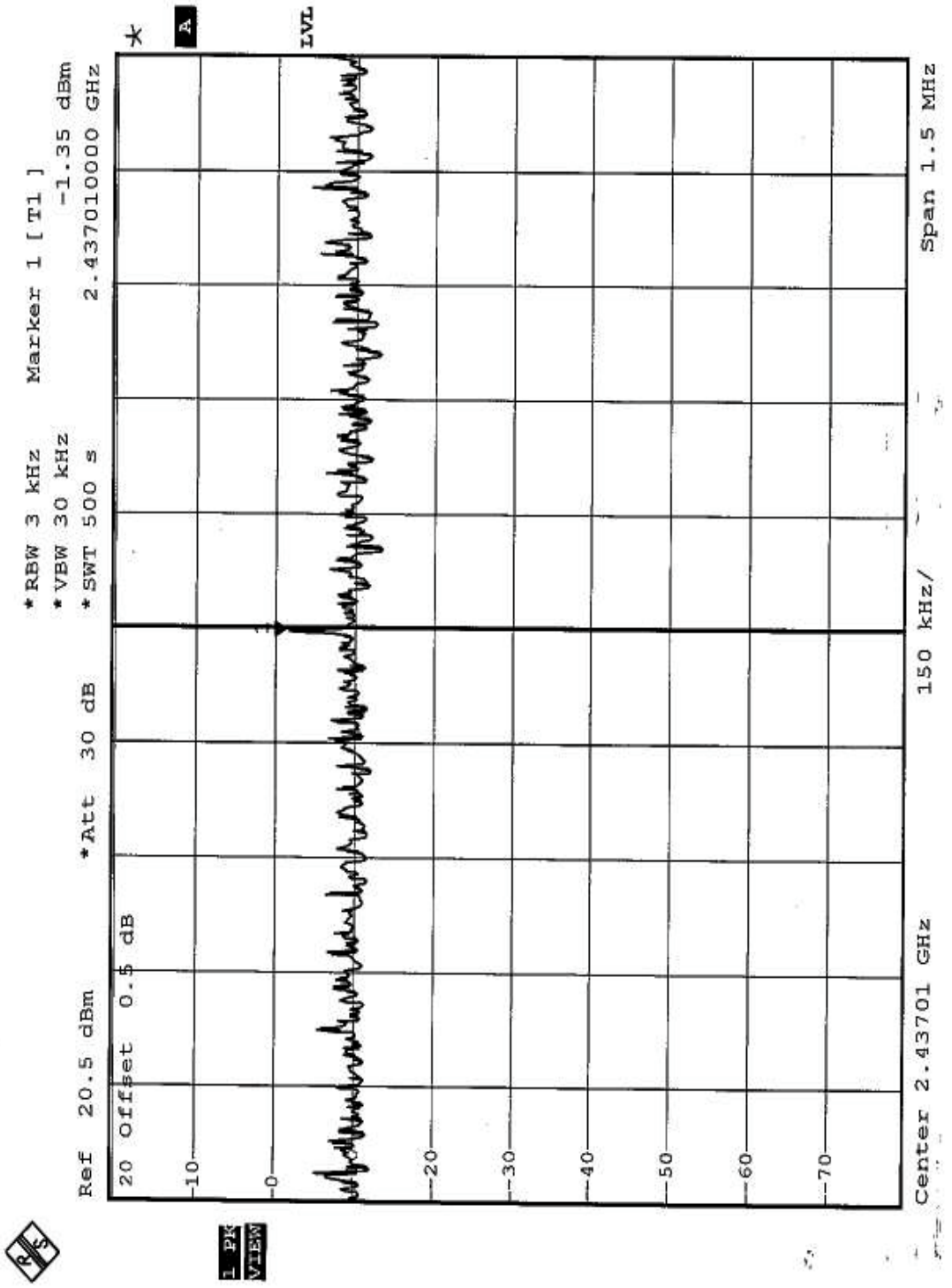
EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	0.49	8	PASS
6	2437	-1.35	8	PASS
11	2462	-1.29	8	PASS

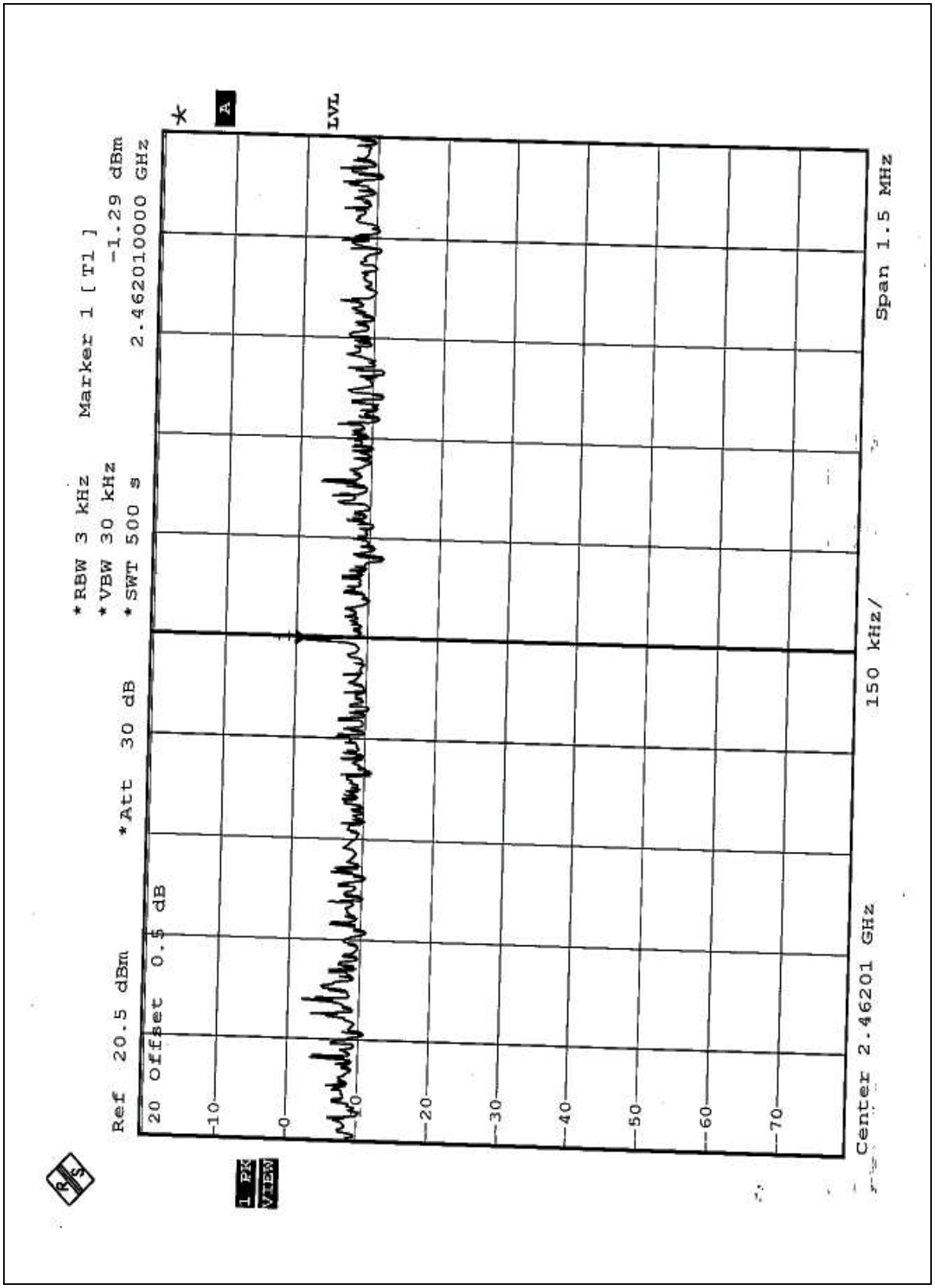
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
0.49 dBm
2.412010000 GHz
Center 2.41201 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-1.35 dBm
2.437010000 GHz
1 PK VIEW
Center 2.43701 GHz
150 kHz/
Span 1.5 MHz

CH11


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-1.29 dBm
2.462010000 GHz
Center 2.46201 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
A
LVL

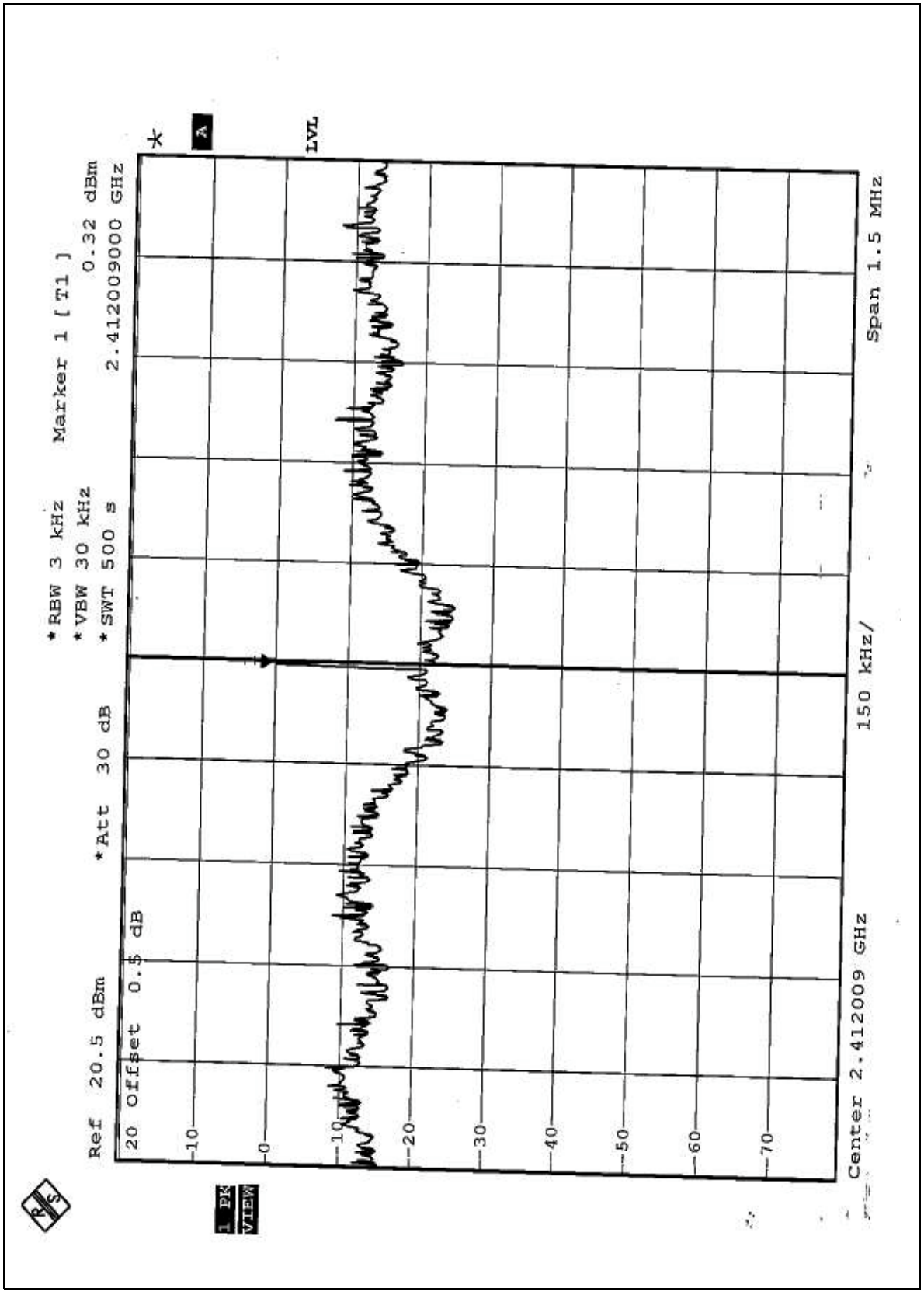
4.5.8 TEST RESULTS (B)

Normal mode:

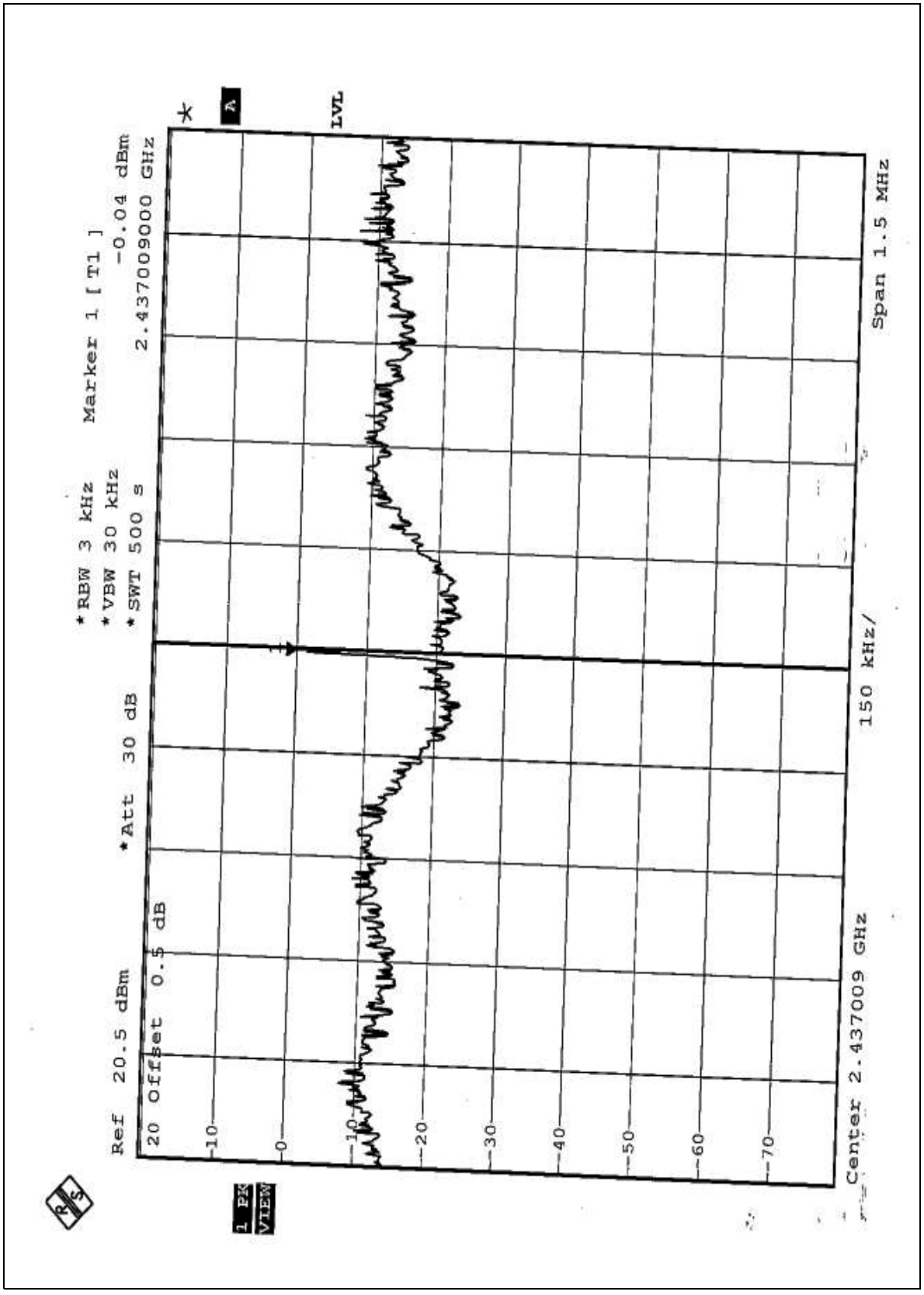
EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	0.32	8	PASS
6	2437	-0.04	8	PASS
11	2462	-3.04	8	PASS

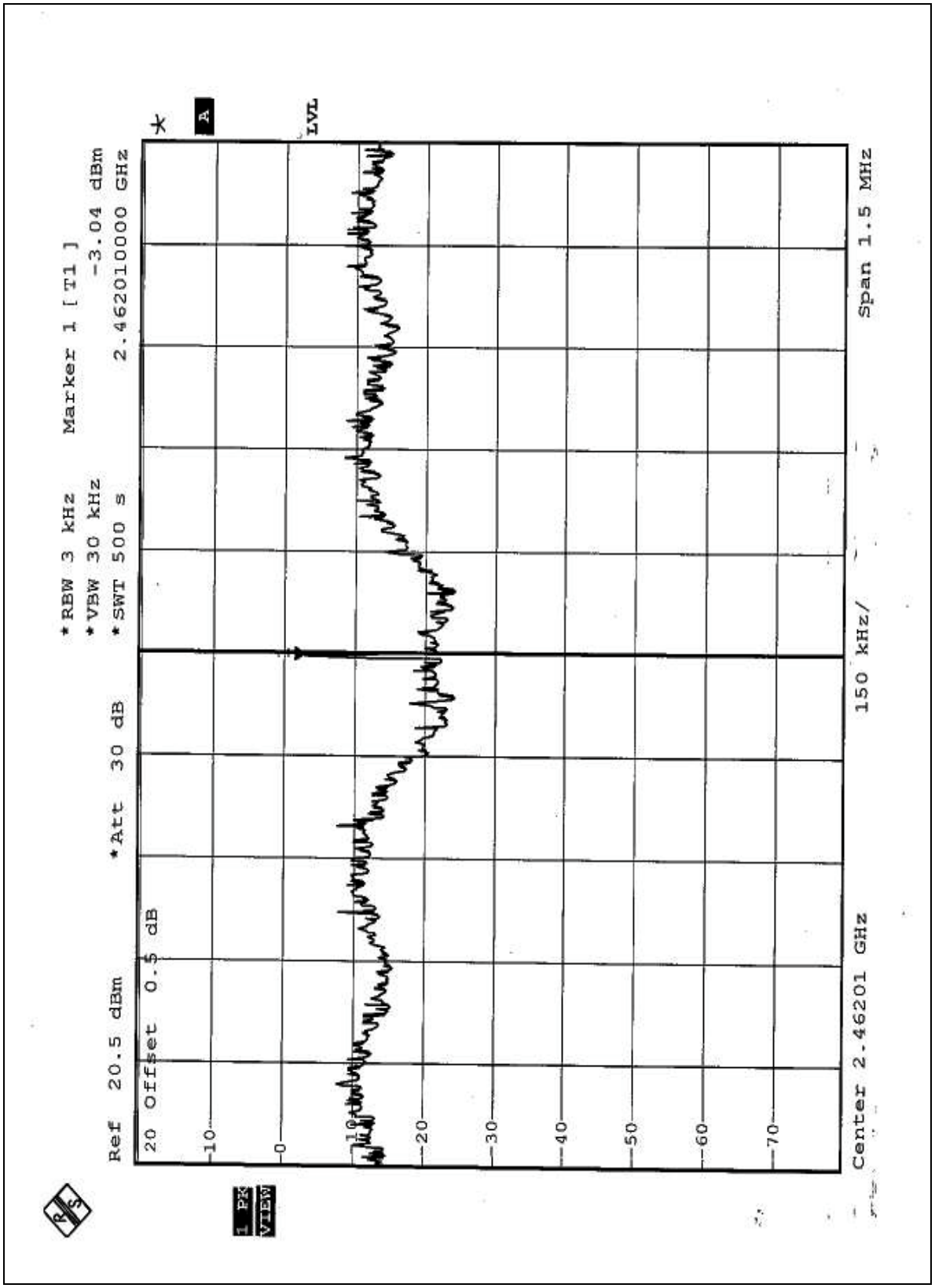
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
0.32 dBm
2.412009000 GHz
Center 2.412009 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-0.04 dBm
2.437009000 GHz
Center 2.437009 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
LVL

CH11

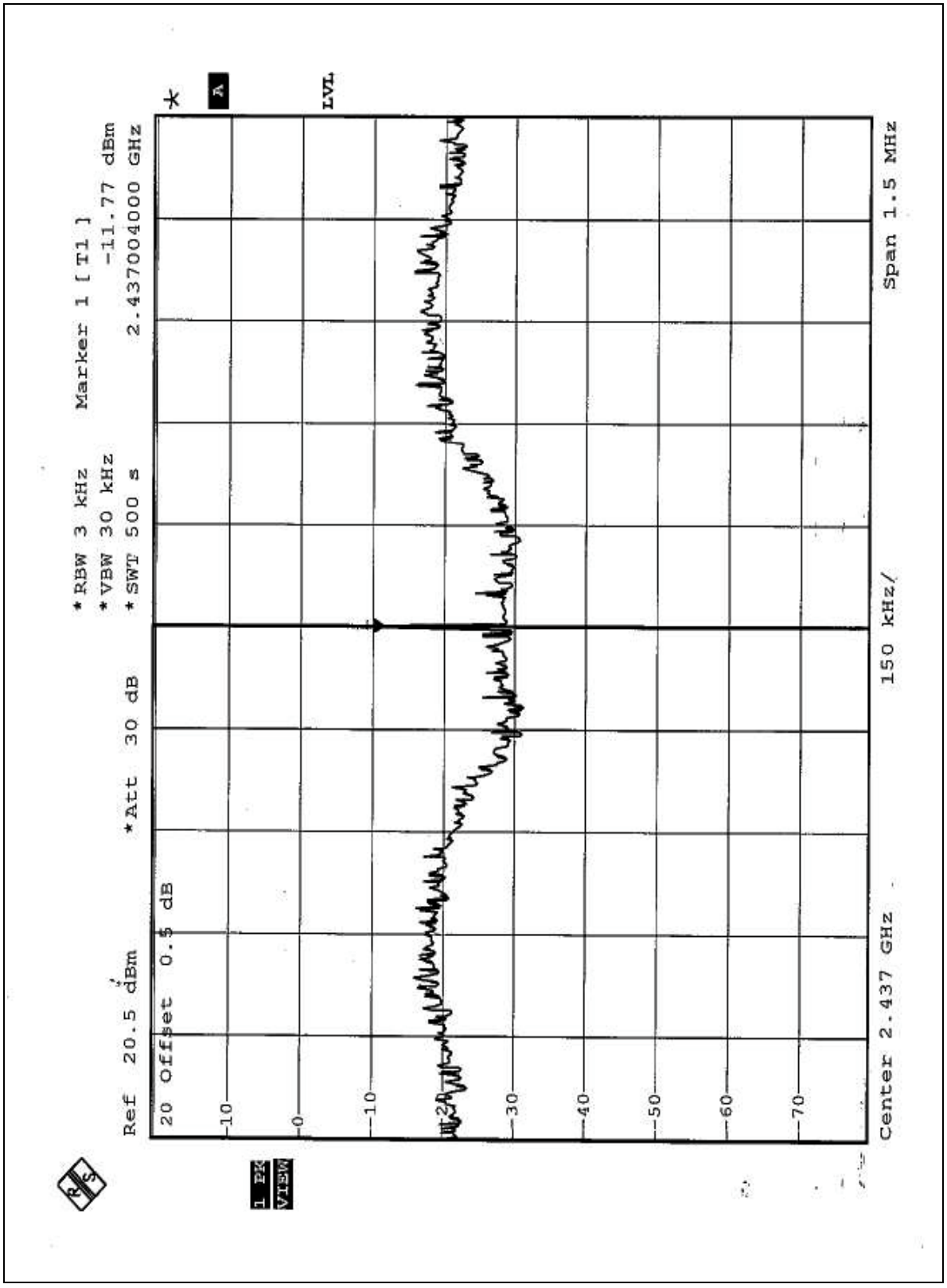

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-3.04 dBm
2.462010000 GHz
Center 2.46201 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW

Turbo mode:

EUT	108Mbps Wireless LAN PCI Card	**MODEL**	GL2454VP-2A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	22deg. C, 60%RH, 991 hPa
TESTED BY: Martin Lee			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-11.77	8	PASS

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-11.77 dBm
2.43700400 0 GHz
Center 2.437 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
LVL
A

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	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 1 MHz and 10 Hz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

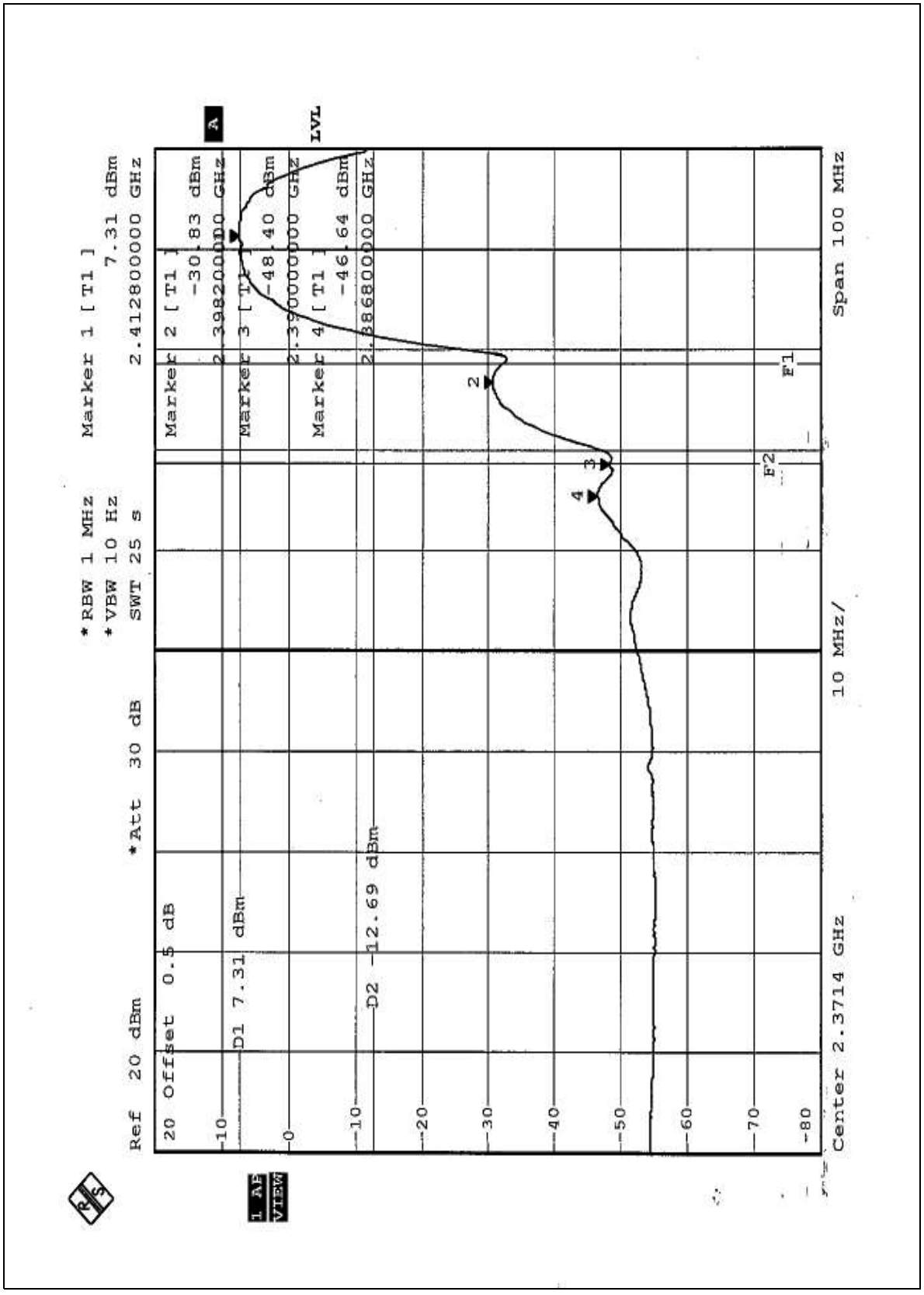
4.6.6 TEST RESULTS (A)

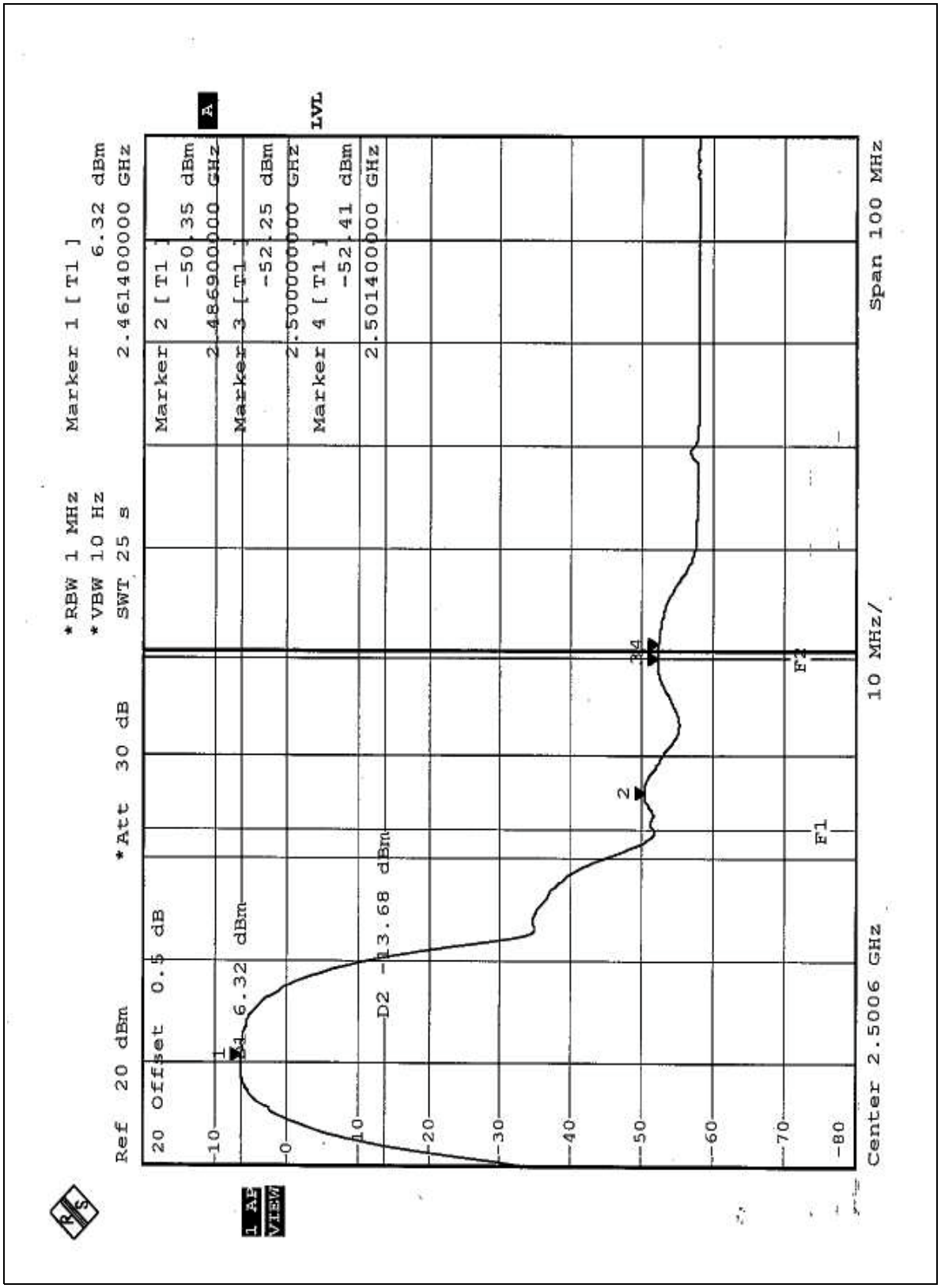
The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

NOTE:

The band edge emission plot on the following first page shows 53.95dB delta between carrier maximum power and local maximum emission in restrict band (2.3868GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 106.91dBuV/m, so the maximum field strength in restrict band is 106.91-53.95=52.96dBuV/m which is under 54 dBuV/m limit.

The band edge emission plot on the following second page shows 56.67dB delta between carrier maximum power and local maximum emission in restrict band (2.4869GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 107.46dBuV/m, so the maximum field strength in restrict band is 107.46-56.67=50.79dBuV/m which is under 54 dBuV/m limit.


Marker 1 [T1]
7.31 dBm
2.412800000 GHz
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
*Att 30 dB
Ref 20 dBm
20 Offset 0.5 dB
D1 7.31 dBm
D2 -12.69 dBm
Marker 2 [T1]
-30.83 dBm
2.398200000 GHz
Marker 3 [T1]
-48.40 dBm
2.390000000 GHz
Marker 4 [T1]
-46.64 dBm
2.386800000 GHz
A
LVL
F1
F2
Center 2.3714 GHz
10 MHz/
Span 100 MHz
1 AP
VIEW


RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 1 [T1]
6.32 dBm
2.461400000 GHz
Ref 20 dBm
Att 30 dB
Offset 0.5 dB
Marker 2 [T1]
-50.35 dBm
2.486900000 GHz
Marker 3 [T1]
-52.25 dBm
2.500000000 GHz
Marker 4 [T1]
-52.41 dBm
2.501400000 GHz
D2 -13.68 dBm
Center 2.5006 GHz
10 MHz/
Span 100 MHz
1 AP
VIEW

4.6.7 TEST RESULTS (B)

The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

NOTE:

Normal mode:

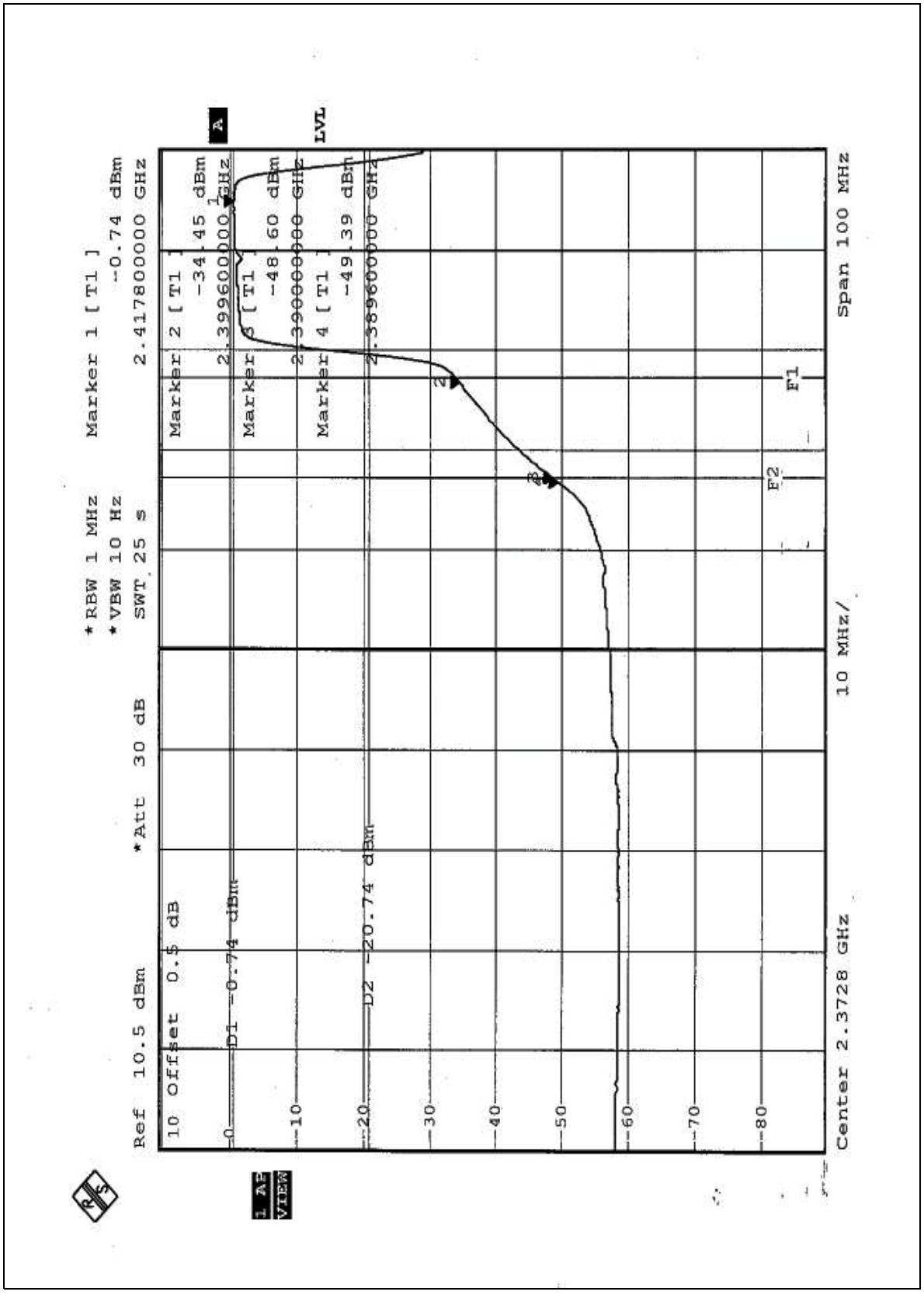
The band edge emission plot on the following first page shows 47.86dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 98.41dBuV/m, so the maximum field strength in restrict band is 98.41-47.86=50.55dBuV/m which is under 54 dBuV/m limit.

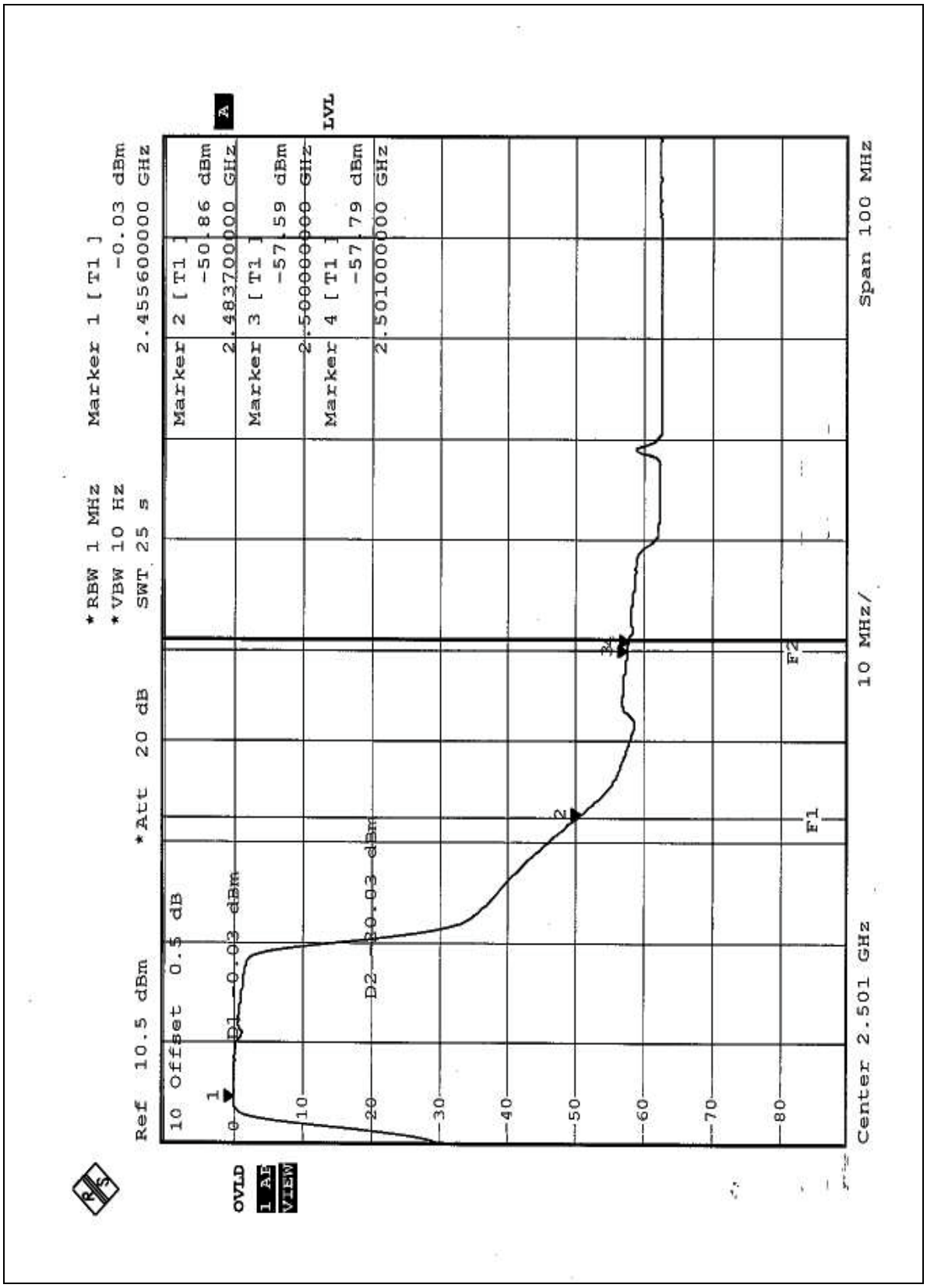
The band edge emission plot on the following second page shows 50.83dB delta between carrier maximum power and local maximum emission in restrict band (2.4837GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 101.67dBuV/m, so the maximum field strength in restrict band is 101.67-50.83=50.84dBuV/m which is under 54 dBuV/m limit.

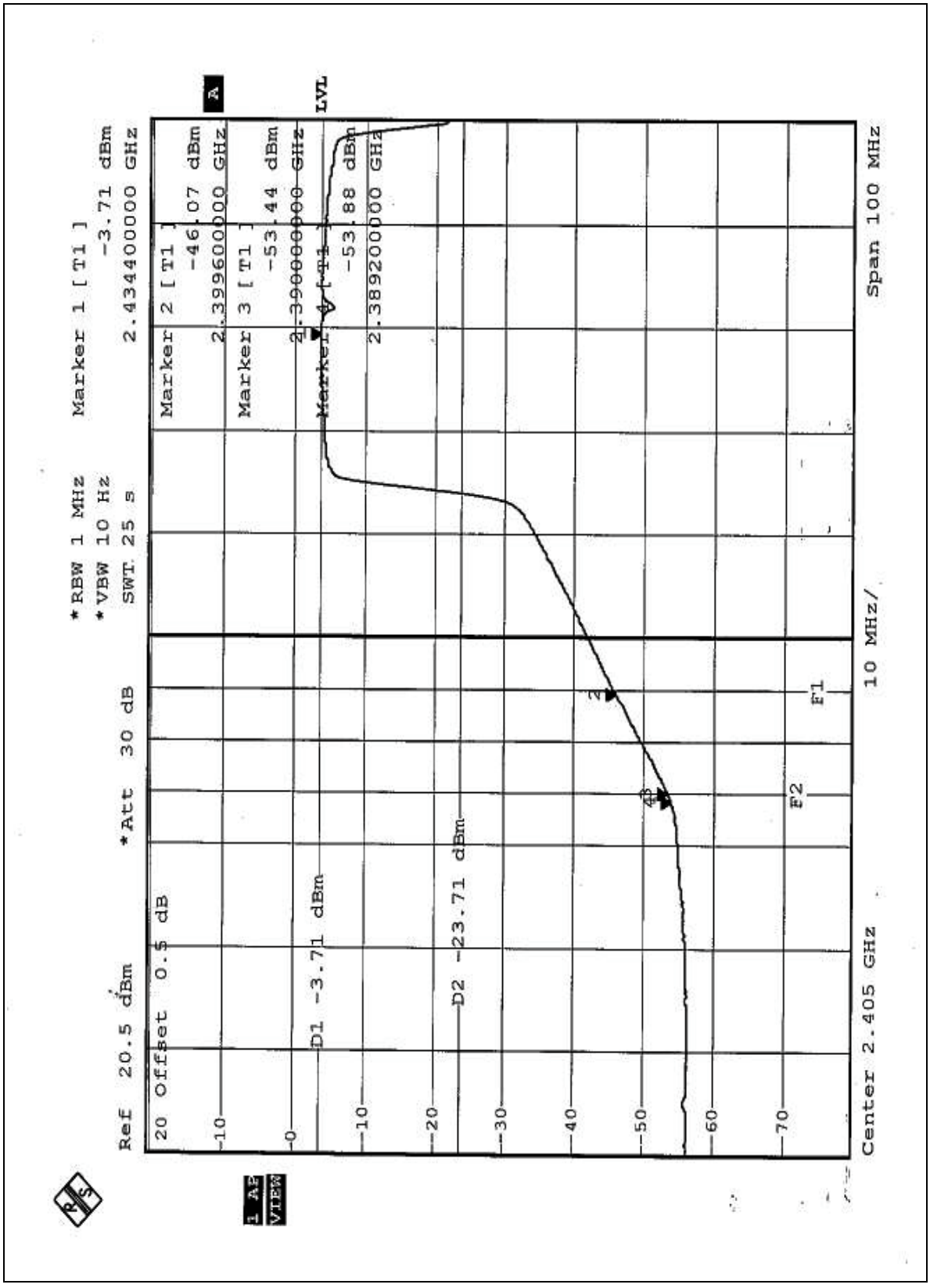
Turbo mode:

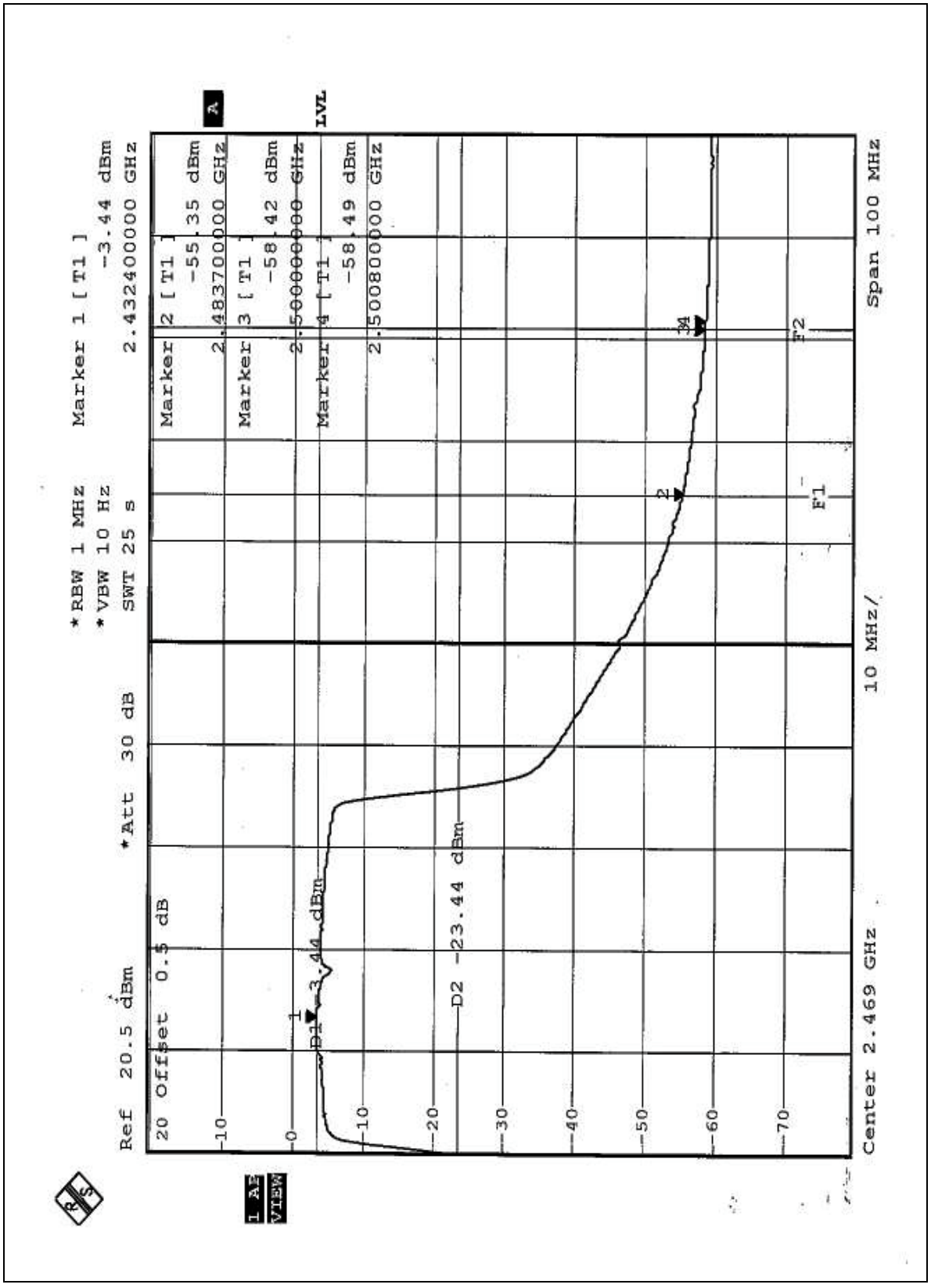
The band edge emission plot on the following third page shows 49.73dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 99.57dBuV/m, so the maximum field strength in restrict band is 99.57-49.73=49.84dBuV/m which is under 54 dBuV/m limit.

The band edge emission plot on the following forth page shows 51.91dB delta between carrier maximum power and local maximum emission in restrict band (2.4837GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 99.57dBuV/m, so the maximum field strength in restrict band is 99.57-51.91=47.66dBuV/m which is under 54 dBuV/m limit.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
Att 30 dB
Offset 0.5 dB
Ref 10.5 dBm
Marker 1 [T1]
-0.74 dBm
2.417800000 GHz
Marker 2 [T1]
-34.45 dBm
2.399600000 GHz
Marker 3 [T1]
-48.60 dBm
2.390000000 GHz
Marker 4 [T1]
-49.39 dBm
2.389600000 GHz
D1 -0.74 dBm
D2 -20.74 dBm
LVL
Center 2.3728 GHz
10 MHz/
Span 100 MHz
F1
F2
1 AP VIEW


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-0.03 dBm
2.455600000 GHz
Marker 2 [T1]
-50.86 dBm
2.483700000 GHz
Marker 3 [T1]
-57.59 dBm
2.500000000 GHz
Marker 4 [T1]
-57.79 dBm
2.501000000 GHz
D1 -0.03 dBm
D2 -30.03 dBm
Center 2.501 GHz
10 MHz/
Span 100 MHz
OVLD
1 AP
VIEW


RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-3.71 dBm
2.434400000 GHz
Marker 2 [T1]
-46.07 dBm
2.399600000 GHz
Marker 3 [T1]
-53.44 dBm
2.390000000 GHz
Marker 4 [T1]
-53.88 dBm
2.389200000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 -3.71 dBm
D2 -23.71 dBm
Center 2.405 GHz
10 MHz/
Span 100 MHz
F1
F2
LVL
A
1 AP
VIEW


RBW 1 MHz
VBW 10 Hz
SWT 25 s
Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Marker 1 [T1]
-3.44 dBm
2.43240000 GHz
Marker 2 [T1]
-55.35 dBm
2.48370000 GHz
Marker 3 [T1]
-58.42 dBm
2.50000000 GHz
Marker 4 [T1]
-58.49 dBm
2.50080000 GHz
D1 -3.44 dBm
D2 -23.44 dBm
Center 2.469 GHz
10 MHz/
Span 100 MHz
1 AP VIEW

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

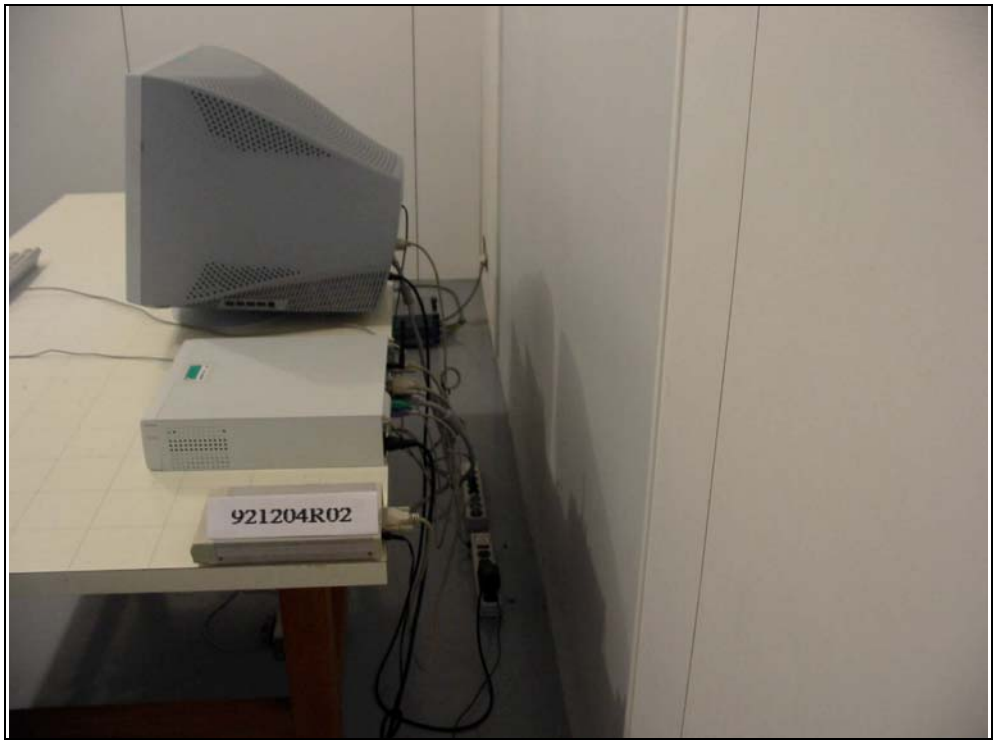
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional 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 maximum Gain antenna used in this product is Dipole antenna with Reversed SMA antenna connector. And the maximum Gain of these antennas is 2dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST

6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.

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