

FCC TEST REPORT

REPORT NO.: RF921114R03A

MODEL NO.: GL2454RT-NM (for Brand: GLOBAL SUN)

OEM MODEL NO.: WLL-3810M (for Brand: ORIGO)
WRT-411 (for Brand: PLANET)

RECEIVED: NA

TESTED: Nov. 13 ~ Nov. 25, 2003

APPLICANT: GLOBAL SUN TECHNOLOGY INC.

ADDRESS: NO.13 Tung Yuan Rd., Jung Li Industrial Park
Jung Li City, Tao Yuan Hsien, Taiwan

ISSUED BY: Advance Data Technology Corporation

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

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0528
ILAC MRA



Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT NAME : 802.11g Wireless Lan Router

MODEL NO.: GL2454RT-NM (for Brand: GLOBAL SUN)

OEM MODEL NO.: WLL-3810M (for Brand: ORIGO)
WRT-411 (for Brand: PLANET)

APPLICANT : GLOBAL SUN TECHNOLOGY INC.

TEST ITEM : ENGINEERING SAMPLE

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 have been tested in our facility from Nov. 13 to Nov. 25, 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: Windy Chou, **DATE:** Nov. 27, 2003

Windy Chou

APPROVED BY: Ellis Wu, **DATE:** Nov. 27, 2003

Ellis Wu, Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -21.81dB at 0.267MHz
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 -1.30dB at 2560.00MHz
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

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

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT NAME	802.11g Wireless Lan Router
MODEL NO.:	GL2454RT-NM (for Brand: GLOBAL SUN)
OEM MODEL NO.:	WLL-3810M (for Brand: ORIGO) WRT-411 (for Brand: PLANET)
POWER SUPPLY	5VDC from power adapter
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
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	19.42dBm
ANTENNA TYPE	Dipole antenna with 2dBi gain
DATA CABLE	NA
I/O PORTS	RJ45
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was tested with the following adapter:

BRAND :	FAIRWAY
MODEL :	WN10A-050U
INPUT :	100-240V-1.0A MAX 50-60Hz
OUTPUT :	+5.0V--2.5A

2. This is a duplicate report of RF921114R03, the only difference are the model no., brand name and enclosure shape.
3. The EUT operates in the 2.4GHz frequency spectrum and compatible with the draft 802.11g standard to provide a wireless data rate of up to 54Mbps.
4. 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 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, the worst case, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. Transfer rate at 11Mbps with CCK technique and 6Mbps with OFDM technique, worst cases, were chosen for final test.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 802.11g Wireless Lan Router. 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: 2001

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

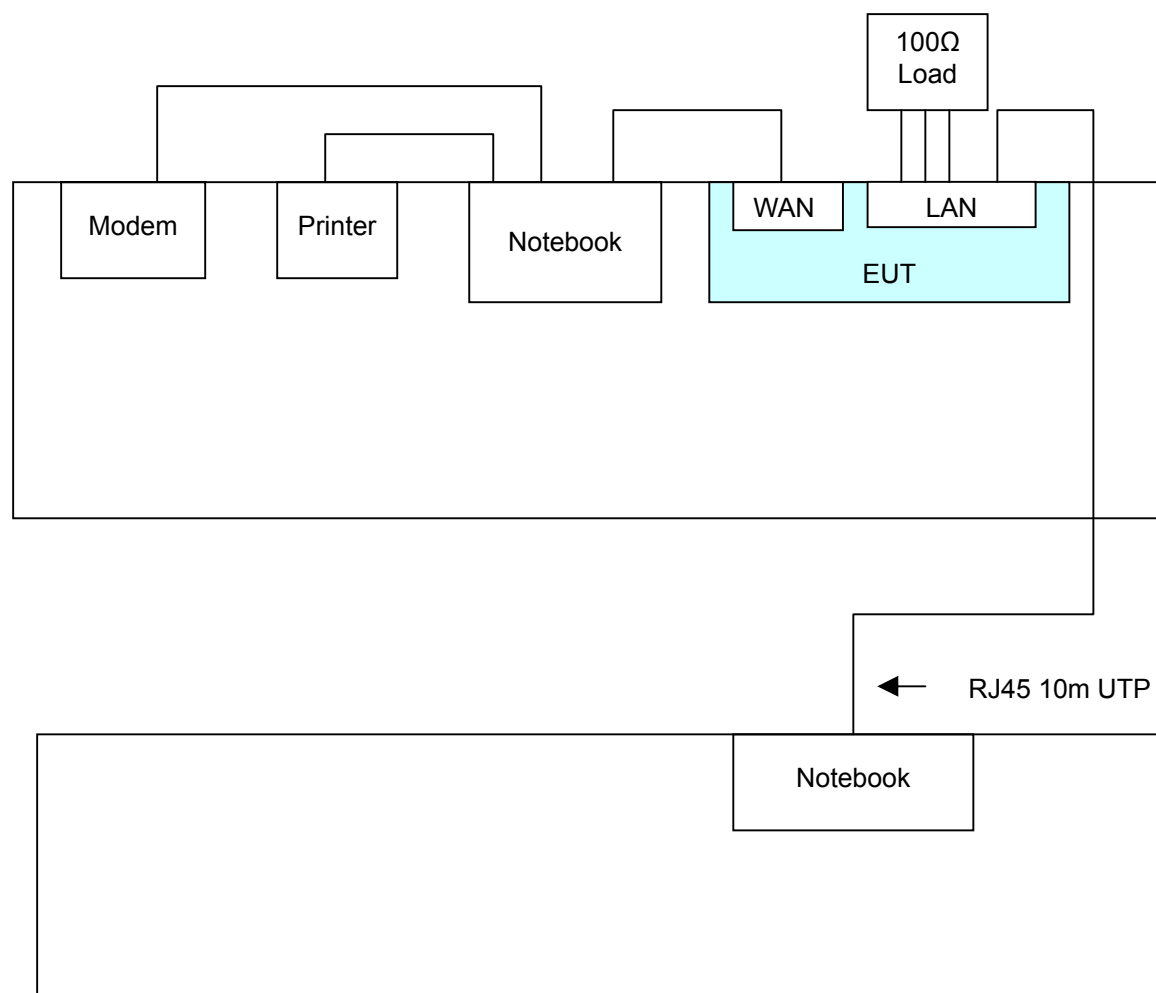
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook	Dell	PP01L	TW-09C748-12800-16M-5064	FCC DoC Approved
2	MODEM	ACEEX	1414	980020503	IFAXDM1414
3	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC Approved
4	Notebook	Compaq	N800C	470048-515	FCC DoC Approved

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2 m braid shielded wire, terminated with DB25 and DB9 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	NA

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	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
SUHNTER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010770	Mar. 24, 2004
SUHNTER 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.



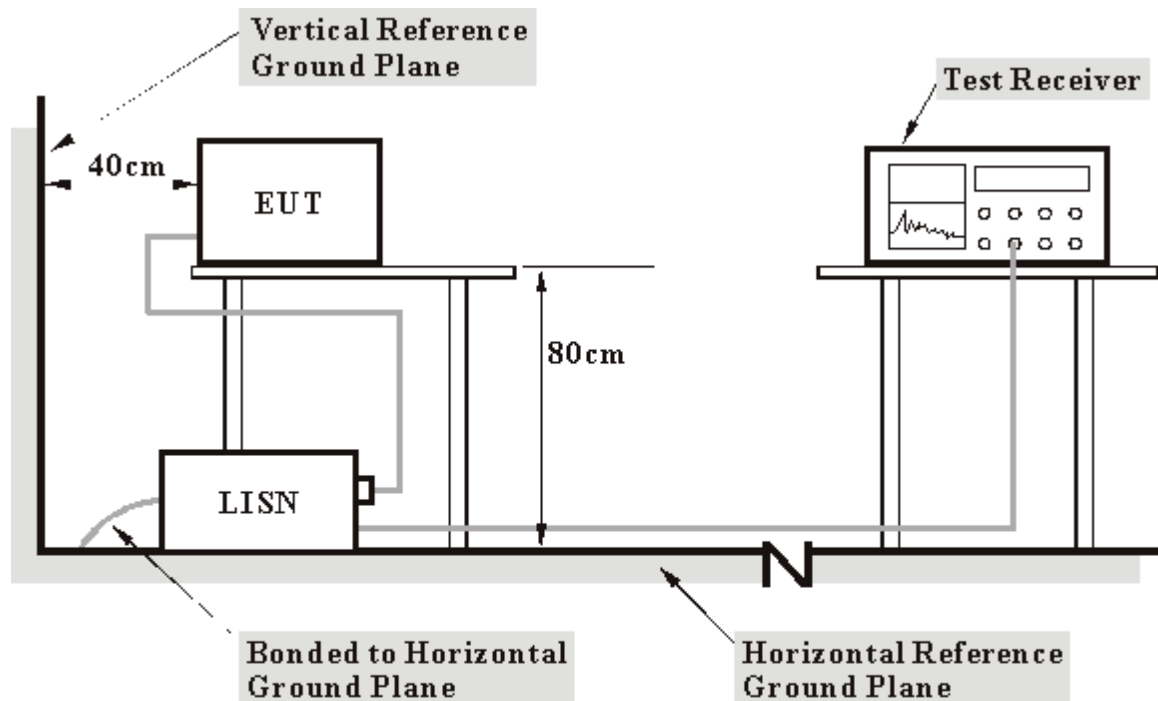
4.1.3 TEST PROCEDURES

- 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

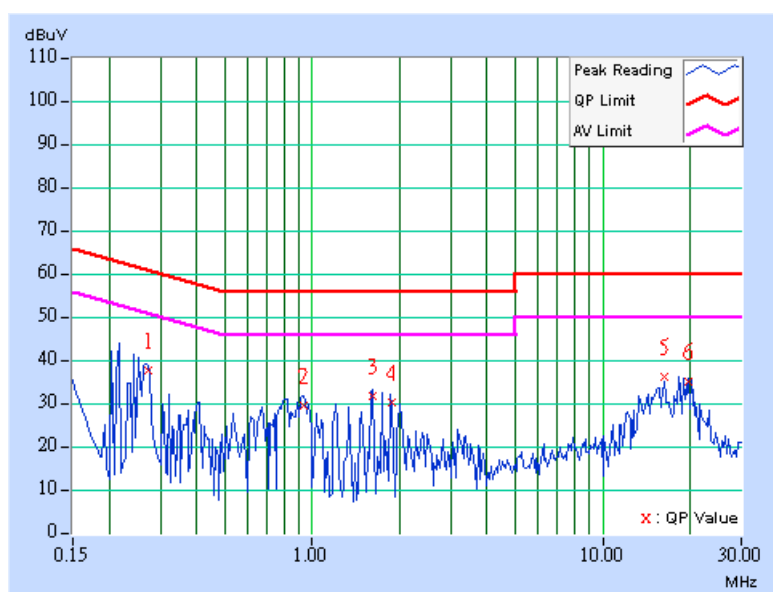
- a. Placed the EUT on the testing table.
- b. The computer system sent data to EUT by command "PING" via RJ45 cable.
- c. The computer system sent "H" messages to Color Monitor and Monitor displayed "H" patterns on its screen.
- d. The computer system sent "H" messages to modem.
- e. The computer system sent "H" messages to the printer, and the printer prints them on paper.
- f. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- g. The communication partner ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency via RJ45 cable.
- h. The communication partner sent data to EUT by command "PING".

4.1.7 TEST RESULTS

EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY: Steven Lu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.271	0.06	37.01	-	37.07	-	61.08	51.08	-24.01	-
2	0.939	0.15	29.06	-	29.21	-	56.00	46.00	-26.79	-
3	1.621	0.17	31.31	-	31.48	-	56.00	46.00	-24.52	-
4	1.869	0.18	29.72	-	29.90	-	56.00	46.00	-26.10	-
5	16.227	0.58	35.54	-	36.12	-	60.00	50.00	-23.88	-
6	19.707	0.64	34.57	-	35.21	-	60.00	50.00	-24.79	-

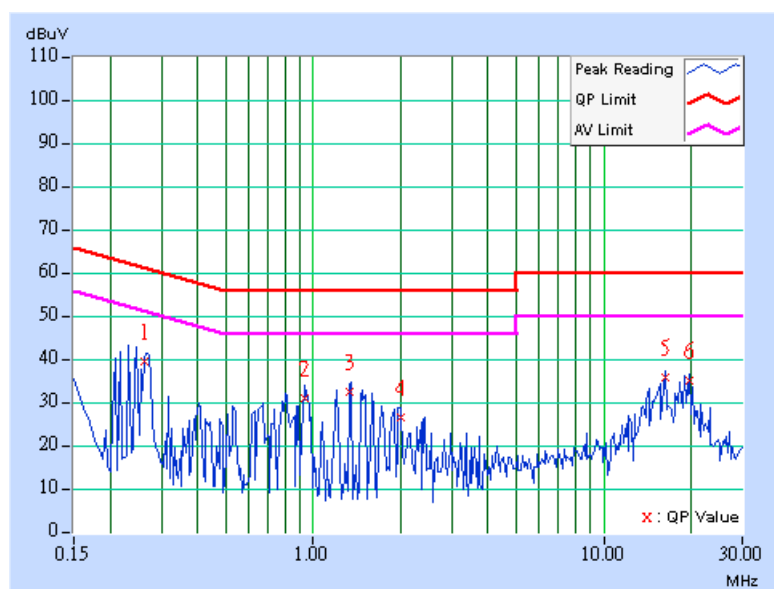
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY: Steven Lu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.263	0.05	39.07	-	39.12	-	61.32	51.32	-22.20	-
2	0.935	0.15	30.70	-	30.85	-	56.00	46.00	-25.15	-
3	1.332	0.17	32.25	-	32.42	-	56.00	46.00	-23.58	-
4	2.012	0.18	26.34	-	26.52	-	56.00	46.00	-29.48	-
5	16.227	0.49	35.30	-	35.79	-	60.00	50.00	-24.21	-
6	19.707	0.51	34.54	-	35.05	-	60.00	50.00	-24.95	-

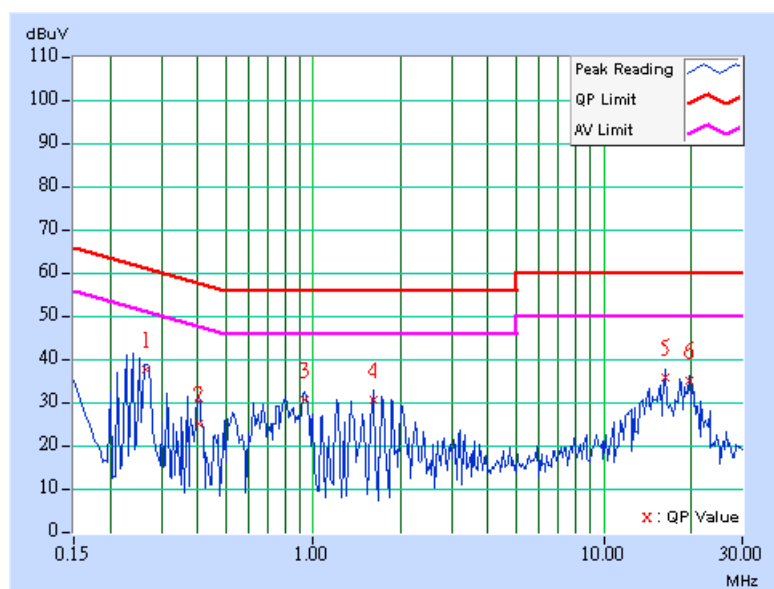
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 6	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY:	Steven Lu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.267	0.06	37.25	-	37.31	-	61.20	51.20	-23.89	-
2	0.404	0.06	24.62	-	24.68	-	57.77	47.77	-33.09	-
3	0.939	0.15	29.97	-	30.12	-	56.00	46.00	-25.88	-
4	1.605	0.17	30.10	-	30.27	-	56.00	46.00	-25.73	-
5	16.227	0.58	35.17	-	35.75	-	60.00	50.00	-24.25	-
6	19.707	0.64	34.46	-	35.10	-	60.00	50.00	-24.90	-

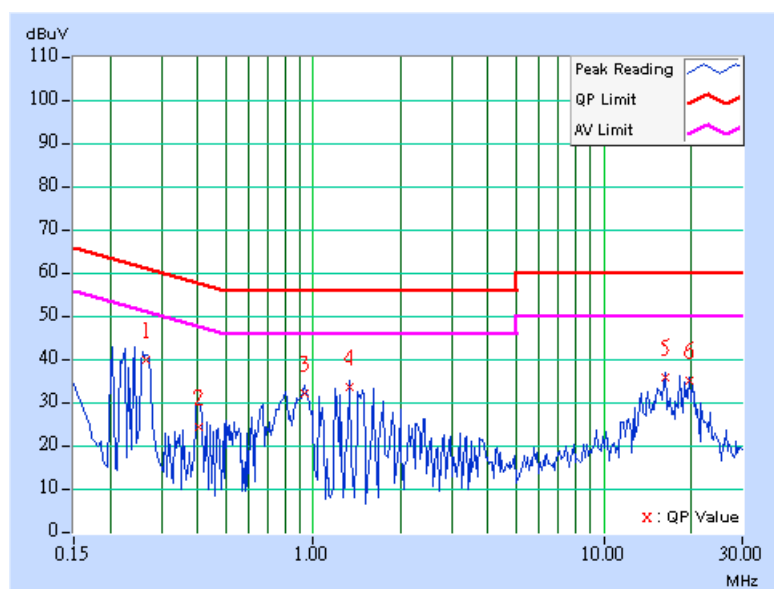
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 6	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY: Steven Lu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.267	0.05	39.35	-	39.40	-	61.21	51.21	-21.81	-
2	0.404	0.05	23.80	-	23.85	-	57.77	47.77	-33.92	-
3	0.931	0.15	31.63	-	31.78	-	56.00	46.00	-24.22	-
4	1.336	0.17	33.07	-	33.24	-	56.00	46.00	-22.76	-
5	16.227	0.49	35.52	-	36.01	-	60.00	50.00	-23.99	-
6	19.707	0.51	34.59	-	35.10	-	60.00	50.00	-24.90	-

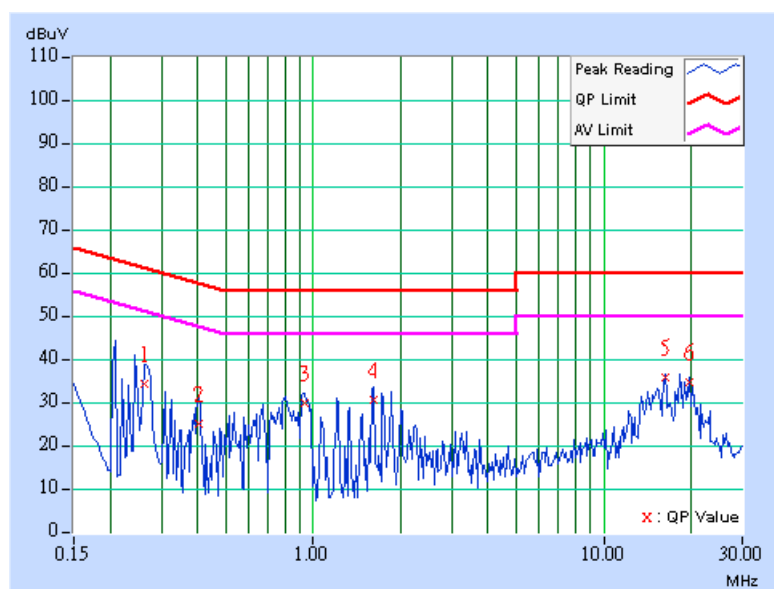
- REMARKS:**
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 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level -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



EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY: Steven Lu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.263	0.06	33.94	-	34.00	-	61.33	51.33	-27.33	-
2	0.404	0.06	24.72	-	24.78	-	57.77	47.77	-32.99	-
3	0.931	0.15	29.42	-	29.57	-	56.00	46.00	-26.43	-
4	1.617	0.17	30.22	-	30.39	-	56.00	46.00	-25.61	-
5	16.227	0.58	35.17	-	35.75	-	60.00	50.00	-24.25	-
6	19.707	0.64	34.36	-	35.00	-	60.00	50.00	-25.00	-

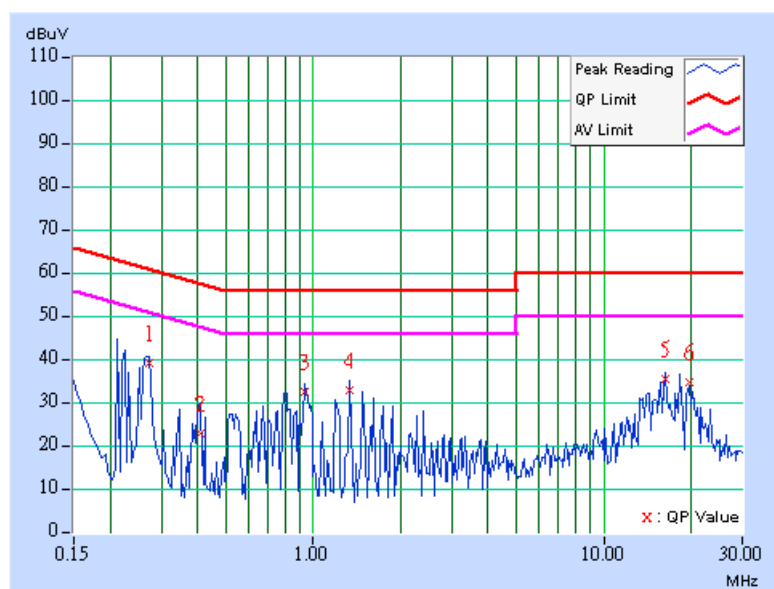
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg.C, 62%RH, 991hPa	TESTED BY: Steven Lu	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.271	0.05	38.71	-	38.76	-	61.08	51.08	-22.32	-
2	0.408	0.05	22.41	-	22.46	-	57.69	47.69	-35.23	-
3	0.935	0.15	31.93	-	32.08	-	56.00	46.00	-23.92	-
4	1.332	0.17	32.57	-	32.74	-	56.00	46.00	-23.26	-
5	16.227	0.49	35.22	-	35.71	-	60.00	50.00	-24.29	-
6	19.707	0.51	34.40	-	34.91	-	60.00	50.00	-25.09	-

- 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	3008A01201	Dec. 11, 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.

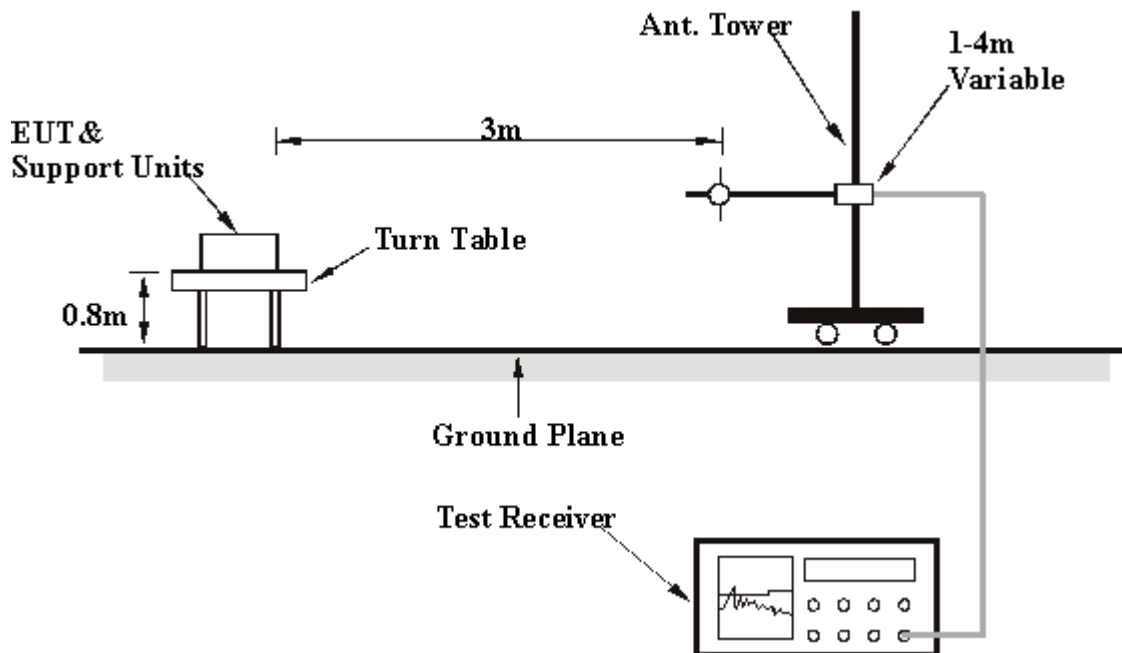
NOTE:

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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 55%RH, 991hPa	TESTED BY: Steven Lu	

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	101.13	30.72 QP	43.50	-12.78	2.14 H	4	20.31	10.41
2	160.41	36.87 QP	43.50	-6.63	1.50 H	70	22.62	14.24
3	250.94	42.35 QP	46.00	-3.65	1.00 H	94	28.95	13.40
4	300.52	40.37 QP	46.00	-5.63	1.00 H	52	25.26	15.10
5	321.00	40.91 QP	46.00	-5.09	1.00 H	46	25.26	15.65
6	481.59	40.59 QP	46.00	-5.41	1.50 H	316	20.85	19.75
7	551.64	39.86 QP	46.00	-6.14	1.50 H	58	18.69	21.17
8	601.22	40.57 QP	46.00	-5.43	1.50 H	46	17.95	22.62
9	641.10	41.92 QP	46.00	-4.08	1.00 H	22	18.79	23.13
10	720.86	37.47 QP	46.00	-8.53	1.50 H	34	12.92	24.55
11	751.03	38.76 QP	46.00	-7.24	1.00 H	64	13.41	25.36
12	800.00	43.04 QP	46.00	-2.96	1.00 H	154	17.42	25.62
13	913.78	37.73 QP	46.00	-8.27	4.00 H	136	10.43	27.30
14	961.20	44.87 QP	54.00	-9.13	1.00 H	124	17.11	27.76

REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	22deg. C, 55%RH, 991hPa	TESTED BY: Steven Lu	

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	100.00	32.63 QP	43.50	-10.87	1.25 V	200	22.34	10.29
2	160.41	39.71 QP	43.50	-3.79	1.00 V	88	25.47	14.24
3	250.94	38.95 QP	46.00	-7.05	1.00 V	190	25.54	13.40
4	300.52	34.53 QP	46.00	-11.47	1.50 V	316	19.42	15.10
5	321.00	33.78 QP	46.00	-12.22	1.00 V	190	18.13	15.65
6	481.59	40.29 QP	46.00	-5.71	2.00 V	82	20.54	19.75
7	551.64	37.88 QP	46.00	-8.12	1.00 V	358	16.71	21.17
8	601.22	36.38 QP	46.00	-9.62	1.00 V	10	13.76	22.62
9	641.10	40.93 QP	46.00	-5.07	1.50 V	160	17.80	23.13
10	751.03	36.88 QP	46.00	-9.12	1.00 V	310	11.53	25.36
11	800.00	44.26 QP	46.00	-1.74	1.00 V	10	18.64	25.62
12	961.20	42.84 QP	54.00	-11.16	1.50 V	154	15.08	27.76

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 1	FREQUENCY RANGE	Above 1000MHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	64.39 PK	89.76	-25.37	1.19 H	138	31.70	32.69
1	2038.00	59.94 AV	81.41	-21.47	1.19 H	138	27.25	32.69
2	2319.00	52.10 PK	74.00	-21.90	1.19 H	138	18.74	33.36
2	2319.00	44.20 AV	54.00	-9.80	1.19 H	138	10.84	33.36
3	*2412.00	109.76 PK			1.19 H	138	76.32	33.44
3	*2412.00	101.41 AV			1.19 H	138	67.97	33.44
4	4076.00	48.26 PK	74.00	-25.74	1.35 H	14	9.13	39.13
5	4824.00	55.62 PK	74.00	-18.38	1.69 H	31	14.98	40.64
5	4824.00	42.26 AV	54.00	-11.74	1.69 H	31	1.62	40.64
6	7236.00	56.86 PK	74.00	-17.14	1.18 H	274	11.39	45.47
6	7236.00	46.16 AV	54.00	-7.84	1.18 H	274	0.69	45.47

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	2038.00	67.39 PK	95.57	-28.18	1.00 V	160	34.70	32.69
1	2038.00	65.28 AV	87.16	-21.88	1.00 V	160	32.59	32.69
2	2319.00	58.64 PK	74.00	-15.36	1.18 V	160	25.28	33.36
2	2319.00	50.67 AV	54.00	-3.33	1.18 V	160	17.31	33.36
3	*2412.00	115.57 PK			1.18 V	160	82.13	33.44
3	*2412.00	107.16 AV			1.18 V	160	73.72	33.44
4	4076.00	49.06 PK	74.00	-24.94	1.14 V	34	9.93	39.13
5	4824.00	62.28 PK	74.00	-11.72	1.06 V	352	21.64	40.64
5	4824.00	49.12 AV	54.00	-4.88	1.06 V	352	8.48	40.64
6	7234.00	60.63 PK	74.00	-13.37	1.71 V	137	15.17	45.46
6	7234.00	49.54 AV	54.00	-4.46	1.71 V	137	4.08	45.46

- 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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 6	FREQUENCY RANGE	Above 1000MHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2063.00	63.20 PK	87.87	-24.67	1.40 H	324	30.50	32.70
1	2063.00	60.50 AV	79.62	-19.12	1.40 H	324	27.80	32.70
2	2437.00	107.87 PK			1.40 H	324	74.38	33.49
2	2437.00	99.62 AV			1.40 H	324	66.13	33.49
3	4126.00	49.27 PK	74.00	-24.73	1.22 H	341	10.13	39.15
4	4874.00	54.26 PK	74.00	-19.74	1.16 H	34	13.61	40.65
4	4874.00	42.36 AV	54.00	-11.64	1.16 H	34	1.71	40.65
5	7311.00	58.89 PK	74.00	-15.11	2.06 H	360	13.27	45.63
5	7311.00	45.69 AV	54.00	-8.31	2.06 H	360	0.07	45.63

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	2063.00	62.00 PK	96.00	-34.00	1.15 V	43	29.30	32.70
1	2063.00	60.40 AV	88.49	-28.09	1.15 V	43	27.70	32.70
2	*2437.00	116.00 PK			1.00 V	235	82.51	33.49
2	*2437.00	108.49 AV			1.00 V	235	75.00	33.49
3	4126.00	49.17 PK	74.00	-24.83	1.40 V	274	10.03	39.15
4	4874.00	57.57 PK	74.00	-16.43	1.26 V	241	16.92	40.65
4	4874.00	44.00 AV	54.00	-10.00	1.26 V	241	3.35	40.65
5	7314.00	59.87 PK	74.00	-14.13	1.84 V	114	14.24	45.63
5	7314.00	46.40 AV	54.00	-7.60	1.84 V	114	0.77	45.63

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(Db)
2. Correction Factor(Db/m) = Antenna Factor (Db/m) + Cable Factor (Db)

4. The other emission levels were very low against the limit.
5. Margin value = Emission level – Limit value.
6. “ * “ : Fundamental frequency.

EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	FREQUENCY RANGE	Above 1000MHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (Db)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (Db/m)
1	2088.00	66.30 PK	91.37	-25.07	1.17 H	345	33.58	32.72
1	2088.00	63.70 AV	82.70	-19.00	1.17 H	345	30.98	32.72
2	*2462.00	111.37 PK			1.00 H	74	77.82	33.55
2	*2462.00	102.70 AV			1.00 H	74	69.15	33.55
3	2486.50	55.70 PK	74.00	-18.30	1.17 H	345	22.10	33.60
3	2486.50	47.50 AV	54.00	-6.50	1.17 H	345	13.90	33.60
4	4924.00	55.82 PK	74.00	-18.18	1.41 H	2	15.11	40.71
4	4924.00	44.02 AV	54.00	-9.98	1.41 H	2	3.31	40.71
5	7386.00	58.12 PK	74.00	-15.88	1.19 H	174	12.44	45.68
5	7386.00	46.52 AV	54.00	-7.48	1.19 H	174	0.84	45.68

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	2088.00	68.00 PK	96.90	-28.90	1.52 V	45	35.28	32.72
1	2088.00	66.00 AV	88.90	22.90	1.52 V	45	33.28	32.72
2	2386.00	62.00 PK	74.00	-12.00	1.19 V	151	28.60	33.40
2	2386.00	48.10 AV	54.00	-5.90	1.19 V	151	14.70	33.40
3	*2462.00	116.90 PK			1.19 V	151	83.35	33.55
3	*2462.00	108.90 AV			1.19 V	151	75.35	33.55
4	2560.00	61.24 PK	74.00	-12.76	1.14 V	186	27.29	33.95
4	2560.00	52.70 AV	54.00	-1.30	1.14 V	186	18.75	33.95
5	4176.00	48.67 PK	74.00	-25.33	1.54 V	117	9.63	39.04
6	4924.00	62.48 PK	74.00	-11.52	1.71 V	24	21.77	40.71
6	4924.00	49.19 AV	54.00	-4.81	1.71 V	24	8.48	40.71
7	7386.00	62.94 PK	74.00	-11.06	1.34 V	345	17.26	45.68
7	7386.00	48.99 AV	54.00	-5.01	1.34 V	345	3.31	45.68

- 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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 1	FREQUENCY RANGE	Above 1000MHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	60.10 PK	79.40	-19.30	1.40 H	230	27.41	32.69
1	2038.00	56.30 AV	69.70	-13.40	1.40 H	230	23.61	32.69
2	2390.00	49.20 PK	74.00	-24.80	1.46 H	230	15.80	33.40
3	*2412.00	99.40 PK			1.46 H	230	65.96	33.44
3	*2412.00	89.70 AV			1.46 H	230	56.26	33.44
4	4824.00	52.65 PK	74.00	-21.35	1.38 H	34	12.01	40.64
4	4824.00	41.35 AV	54.00	-12.65	1.38 H	34	0.71	40.64
5	7236.00	57.76 PK	74.00	-16.24	1.17 H	34	12.29	45.47
5	7236.00	46.26 AV	54.00	-7.74	1.17 H	34	0.79	45.47

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	2038.00	66.50 PK	88.30	-21.80	1.04 V	34	33.81	32.69
1	2038.00	64.10 AV	78.40	-14.30	1.04 V	34	31.41	32.69
2	2390.00	60.10 PK	74.00	-13.90	1.20 V	187	26.70	33.40
2	2390.00	50.00 AV	54.00	-4.00	1.20 V	187	16.60	33.40
3	*2412.00	108.30 PK			1.20 V	187	74.86	33.44
3	*2412.00	98.40 AV			1.20 V	187	64.96	33.44
4	4824.00	52.05 PK	74.00	-21.95	1.54 V	130	11.41	40.64
4	4824.00	41.75 AV	54.00	-12.25	1.54 V	130	1.11	40.64
5	7236.00	57.95 PK	74.00	-16.05	1.20 V	214	12.48	45.47
5	7236.00	46.36 AV	54.00	-7.64	1.20 V	214	0.89	45.47

- 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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 6	FREQUENCY RANGE	Above 1000MHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2063.00	63.86 PK	80.90	-17.01	1.24 H	241	31.16	32.70
1	2063.00	60.10 AV	70.90	10.80	1.24 H	241	27.40	32.70
2	*2437.00	100.90 PK			1.35 H	324	67.41	33.49
2	*2437.00	90.90 AV			1.35 H	324	57.41	33.49
3	4874.00	53.36 PK	74.00	-20.64	1.01 H	341	12.71	40.65
3	4874.00	41.66 AV	54.00	-12.34	1.01 H	341	1.01	40.65
4	7311.00	57.39 PK	74.00	-16.61	1.54 H	275	11.77	45.63
4	7311.00	46.29 AV	54.00	-7.71	1.54 H	275	0.67	45.63

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	2063.00	65.80 PK	87.85	-22.05	1.36 V	345	33.10	32.70
1	2063.00	62.70 AV	77.90	-15.20	1.36 V	345	30.00	32.70
2	*2437.00	107.85 PK			1.00 V	195	74.36	33.49
2	*2437.00	97.90 AV			1.00 V	195	64.41	33.49
3	4874.00	54.06 PK	74.00	-19.94	1.17 V	112	13.41	40.65
3	4874.00	42.56 AV	54.00	-11.44	1.17 V	112	1.91	40.65
4	7311.00	57.18 PK	74.00	-16.82	1.54 V	119	11.56	45.63
4	7311.00	46.39 AV	54.00	-7.61	1.54 V	119	0.77	45.63

- 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	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
CHANNEL	Channel 11	FREQUENCY RANGE	Above 1000MHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY: Gray Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2088.00	66.30 PK	77.24	-10.94	1.00 H	82	33.58	32.72
1	2088.00	64.10 AV	67.80	-3.70	1.00 H	82	31.38	32.72
2	*2462.00	97.24 PK			1.46 H	40	63.69	33.55
2	*2462.00	87.80 AV			1.46 H	40	54.25	33.55
3	2485.00	50.20 PK	74.00	-23.80	1.46 H	40	16.60	33.60
4	4924.00	53.12 PK	74.00	-20.88	1.26 H	174	12.41	40.71
4	4924.00	42.72 AV	54.00	-11.28	1.26 H	174	2.01	40.71
5	7386.00	58.92 PK	74.00	-15.08	1.24 H	341	13.24	45.68
5	7386.00	46.62 AV	54.00	-7.38	1.24 H	341	0.94	45.68

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	2088.00	66.50 PK	87.50	-21.00	1.06 V	45	33.78	32.72
1	2088.00	64.80 AV	77.86	-13.06	1.06 V	45	32.08	32.72
2	*2462.00	107.50 PK			1.00 V	230	73.95	33.55
2	*2462.00	97.86 AV			1.00 V	230	64.31	33.55
3	2485.90	59.80 PK	74.00	-14.20	1.00 V	230	26.20	33.60
3	2485.90	48.90 AV	54.00	-5.10	1.00 V	230	15.30	33.60
4	4924.00	52.79 PK	74.00	-21.21	1.58 V	147	12.08	40.71
4	4924.00	42.02 AV	54.00	-11.98	1.58 V	147	1.31	40.71
5	7386.00	57.32 PK	74.00	-16.68	1.13 V	34	11.64	45.68
5	7386.00	45.92 AV	54.00	-8.08	1.13 V	34	0.24	45.68

- 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.

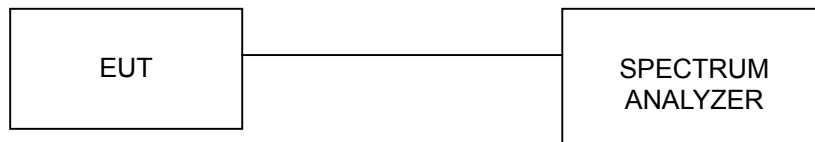
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 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



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

4.3.6 EUT OPERATING CONDITIONS

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



4.3.7 TEST RESULTS

EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	9.52	0.5	PASS
6	2437	9.48	0.5	PASS
11	2462	9.48	0.5	PASS

1 PK VIEW

R/S

Ref 16 dBm *Att 30 dB *RBW 100 kHz Delta 1 [T1] -0.56 dB
SWT 5 ms 9.520000000 MHz

Offset 0.8 dB D1 7.6 dBm D2 1.6 dBm Marker 1 [T1] 1.58 dBm 2.407000000 GHz

Center 2.412 GHz 2 MHz/ Span 20 MHz

IVL

Frequency (GHz)	Power (dBm)
2.407000000	1.58
2.412000000	-10
2.417000000	-10

Ref 20.8 dBm *Att 30 dB *RBW 100 kHz Delta 1 [T1] -0.08 dB
SWT 5 ms 9.480000000 MHz

20 Offset 0.8 dB D1 10.81 dBm D2 4.81 dBm Marker 1 [T1] 5.06 dBm 2.432000000 GHz

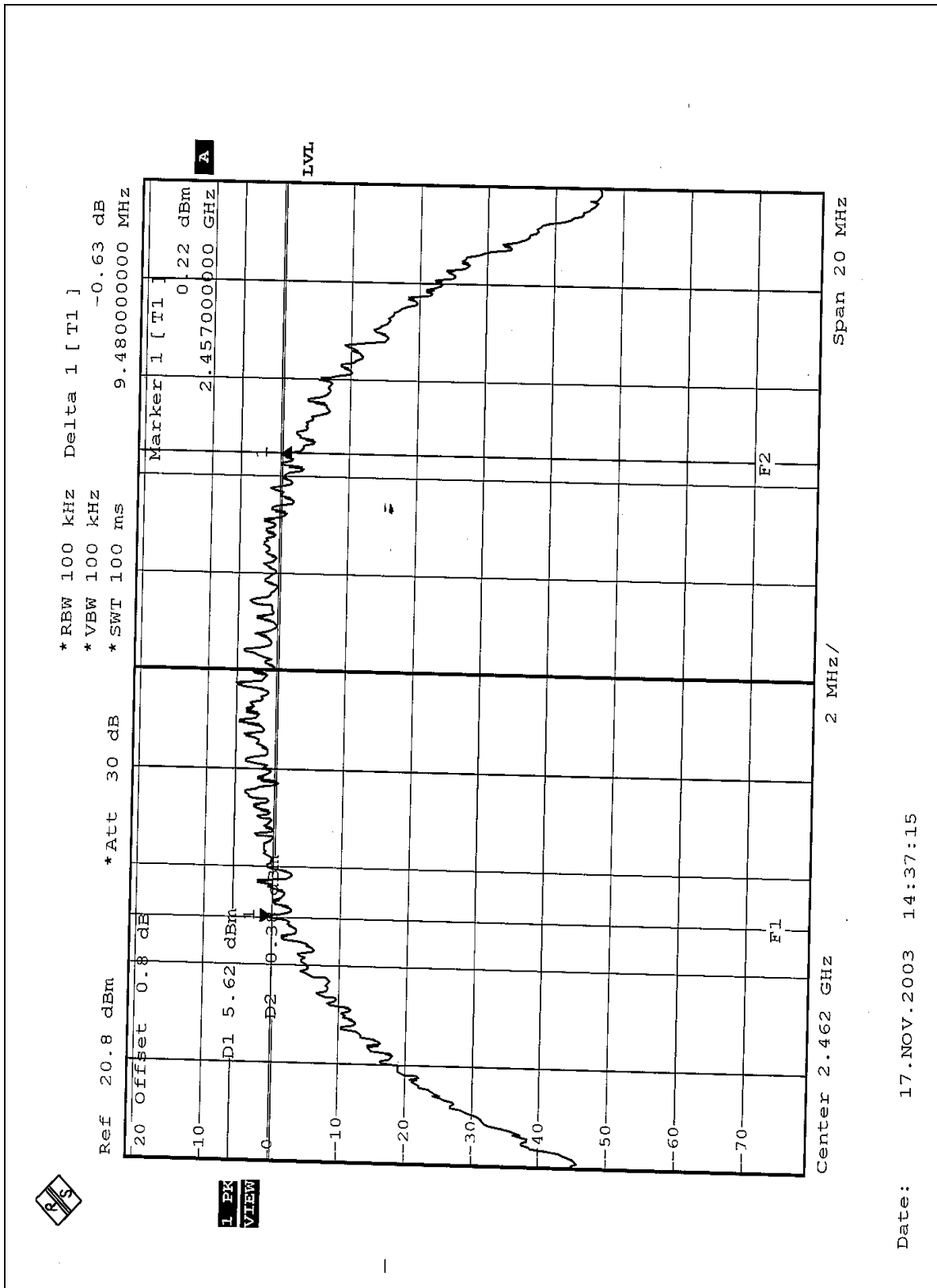
Center 2.437 GHz 2 MHz/ Span 20 MHz

1 PK VIEW

LVL

The figure is a spectrum plot with a grid. The horizontal axis represents frequency, with a center frequency of 2.437 GHz and a span of 20 MHz. The vertical axis represents power in dBm, ranging from -70 to 20. A signal trace is visible, showing a peak at 10.81 dBm. The plot includes various measurement parameters such as RBW (100 kHz), Delta (1 [T1]), and Att (30 dB). The plot is labeled with '1 PK VIEW' and 'LVL'.

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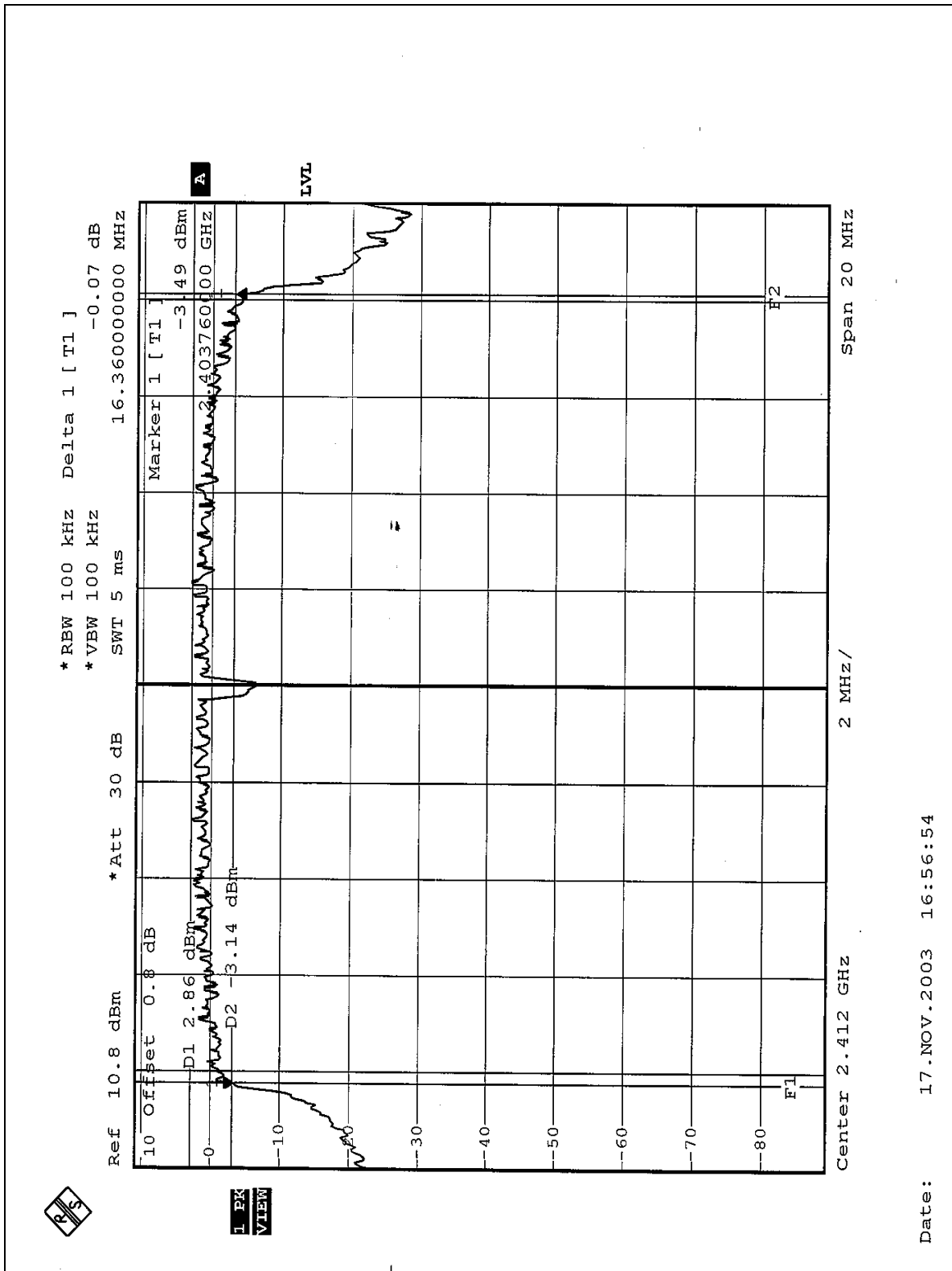




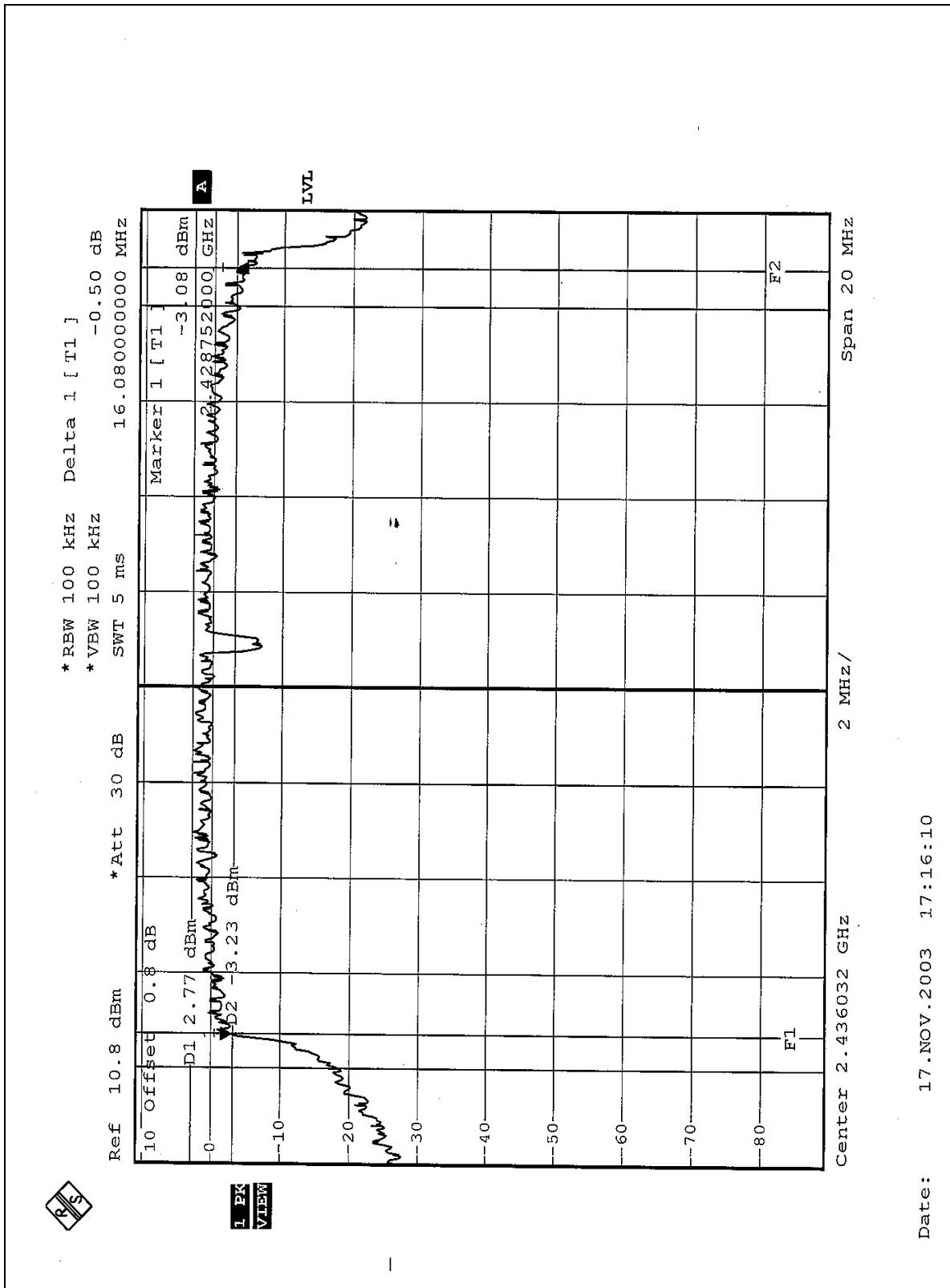
EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.36	0.5	PASS
6	2437	16.08	0.5	PASS
11	2462	16.04	0.5	PASS

CH1

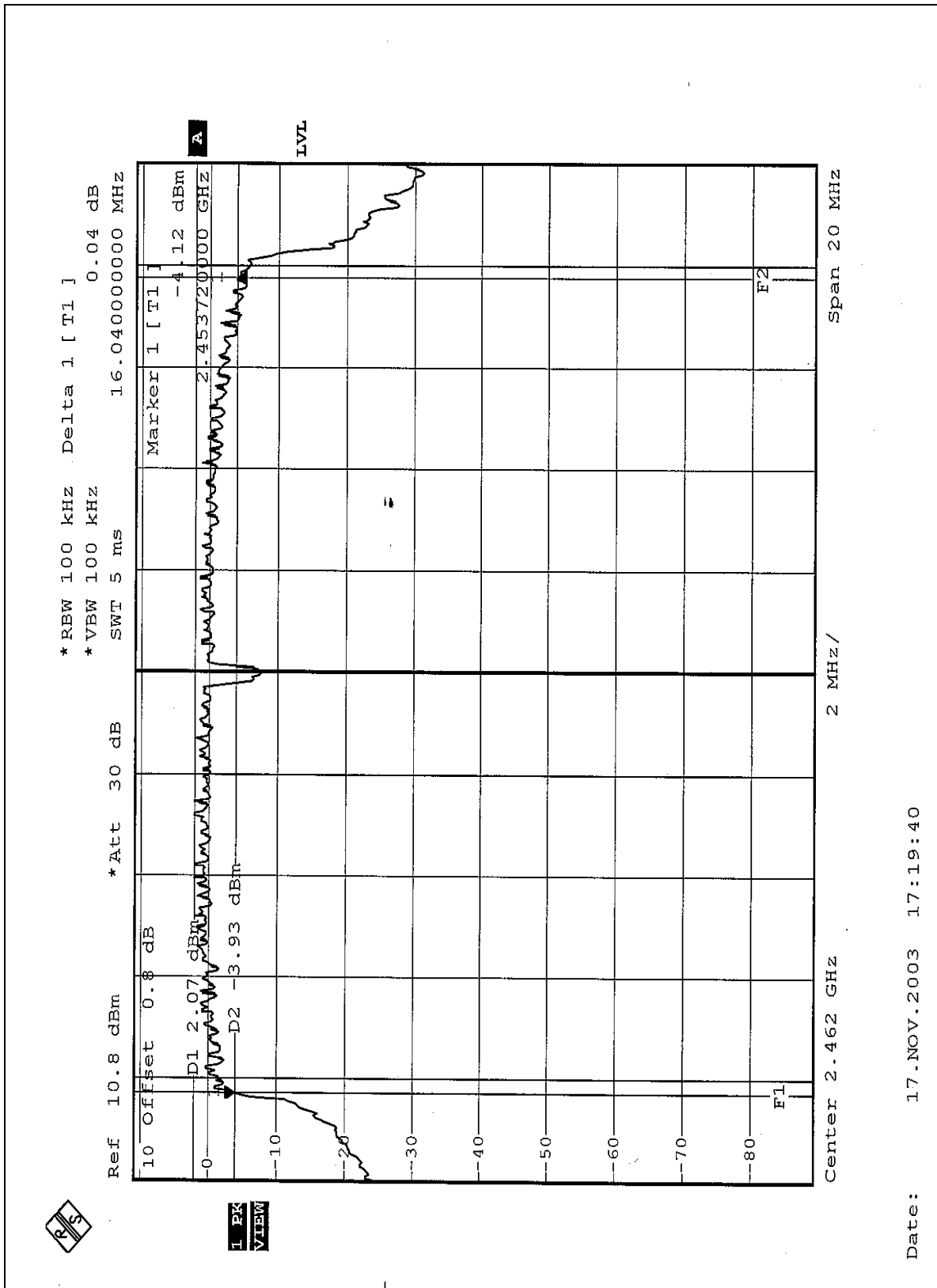


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Date: 17.NOV.2003 17:16:10

CH11



Date: 17.NOV.2003 17:19:40

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

EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.17	30	PASS
6	2437	19.23	30	PASS
11	2462	19.42	30	PASS

EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.21	30	PASS
6	2437	18.90	30	PASS
11	2462	19.05	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.

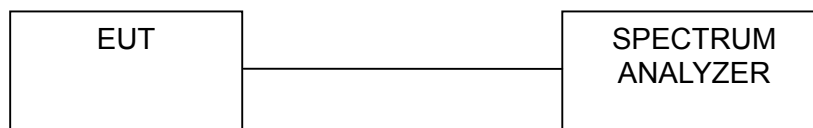
4.5.3 TEST PROCEDURE

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 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 CONDITIONS

Same as 4.3.6

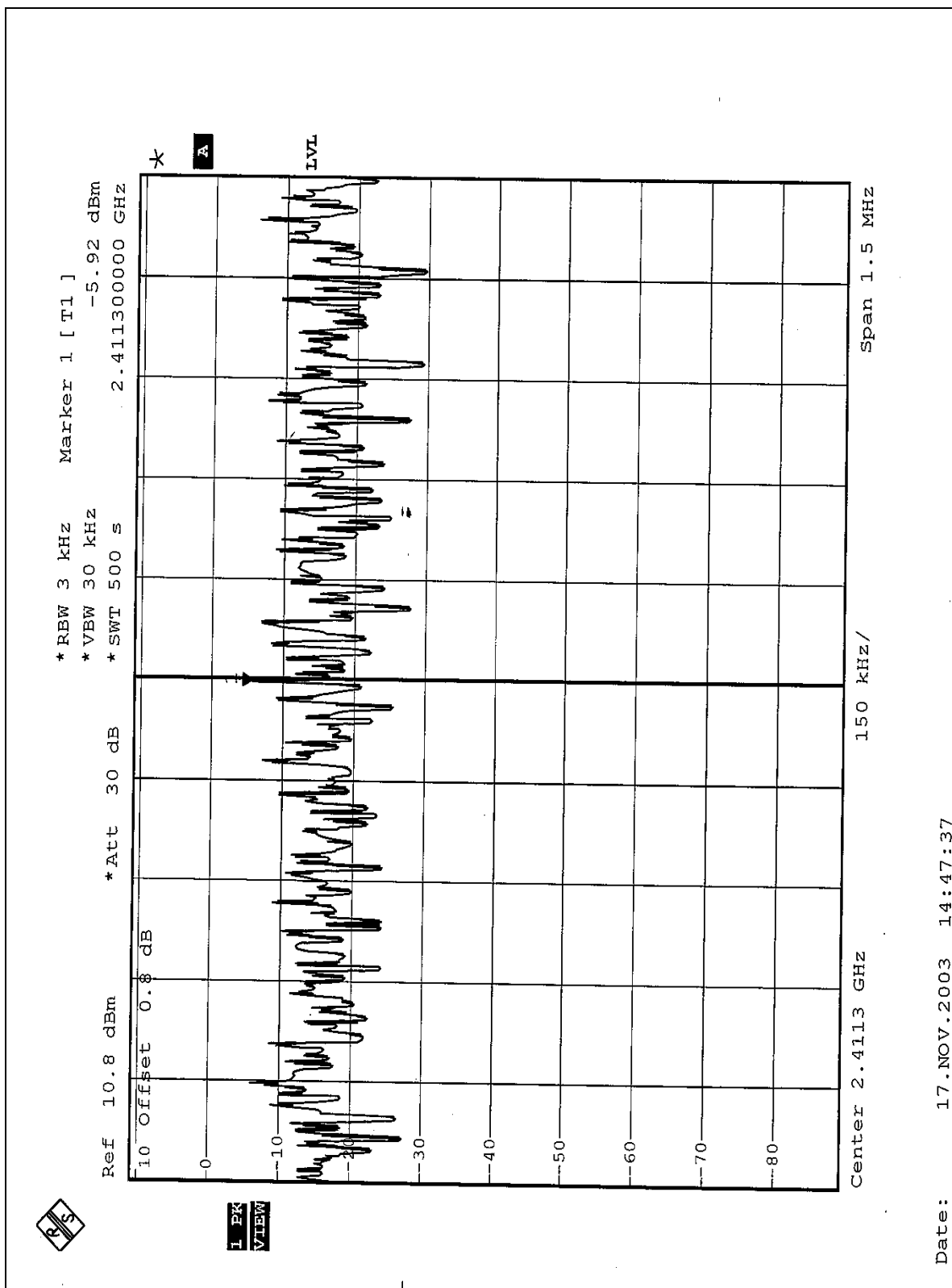


4.5.7 TEST RESULTS

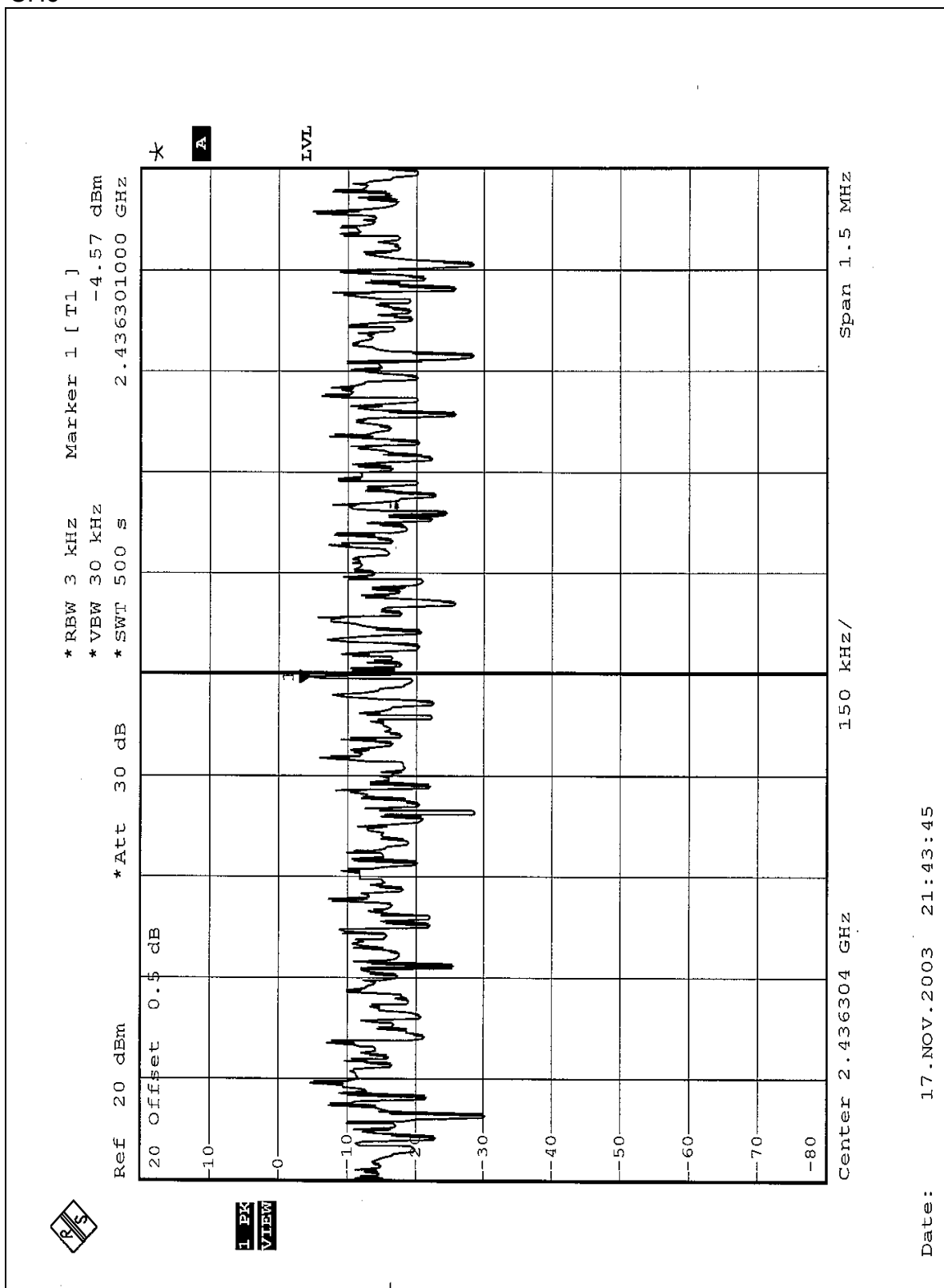
EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-5.92	8	PASS
6	2437	-4.57	8	PASS
11	2462	-5.59	8	PASS

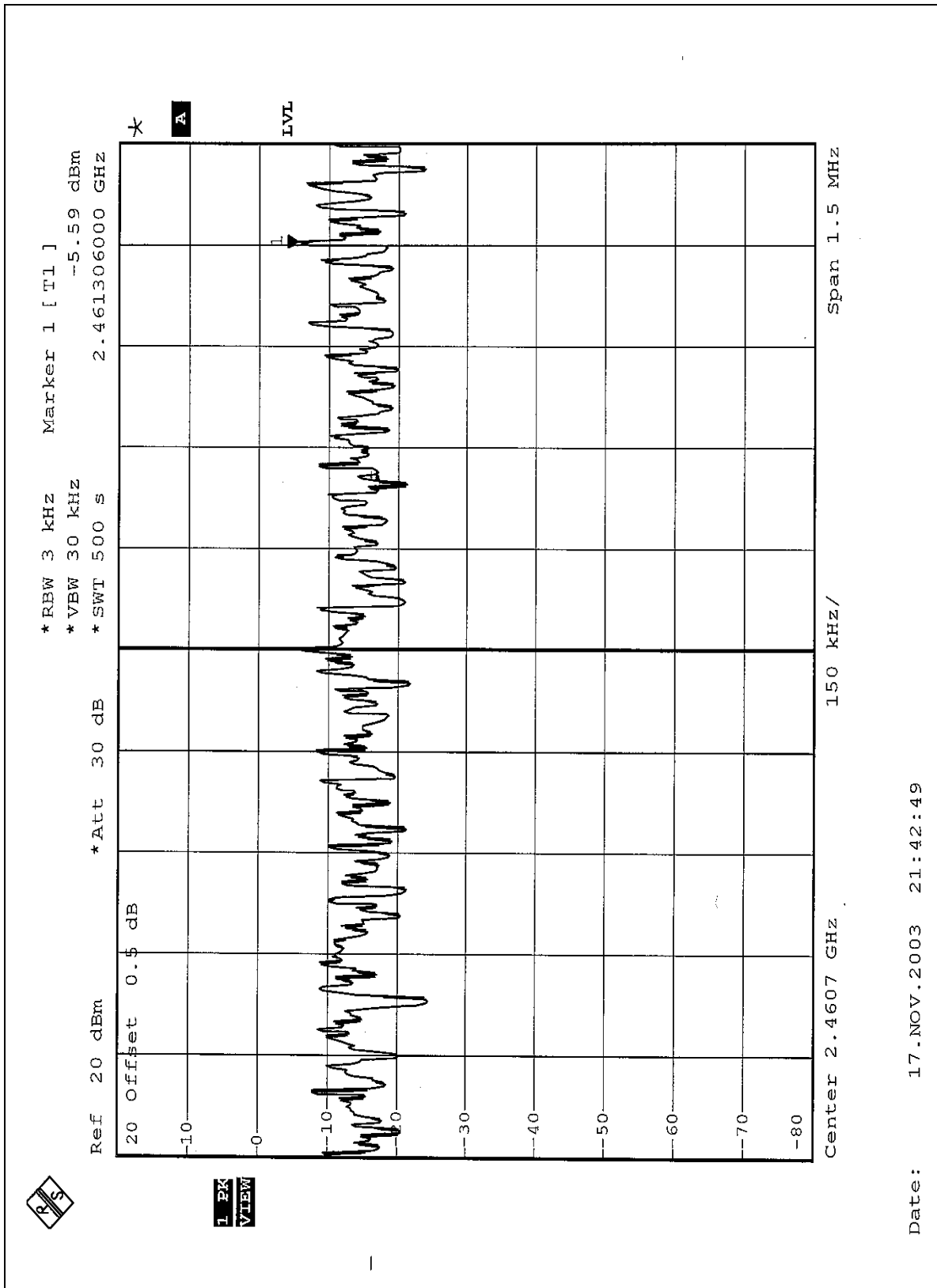
CH1



CH6



CH11

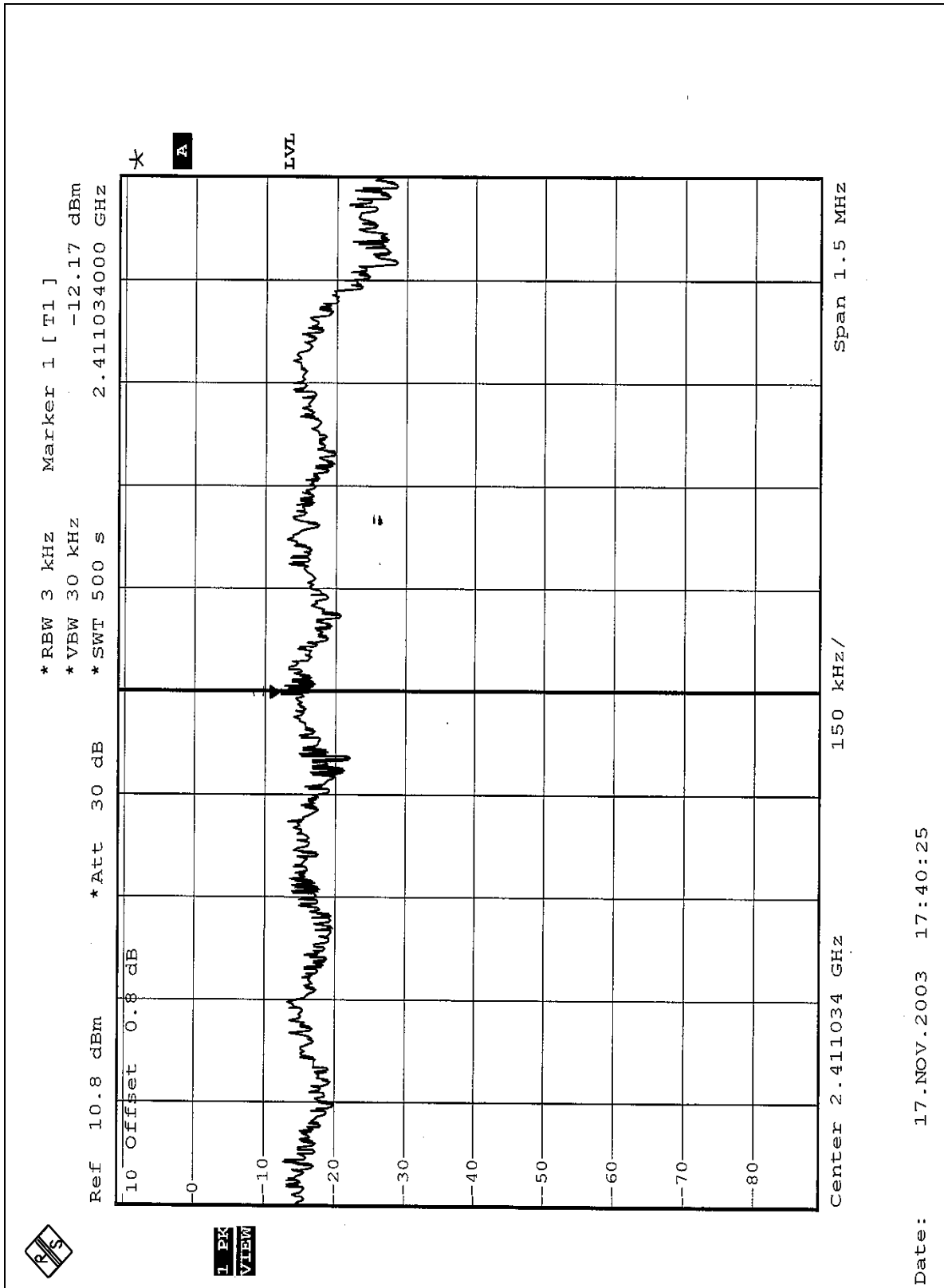




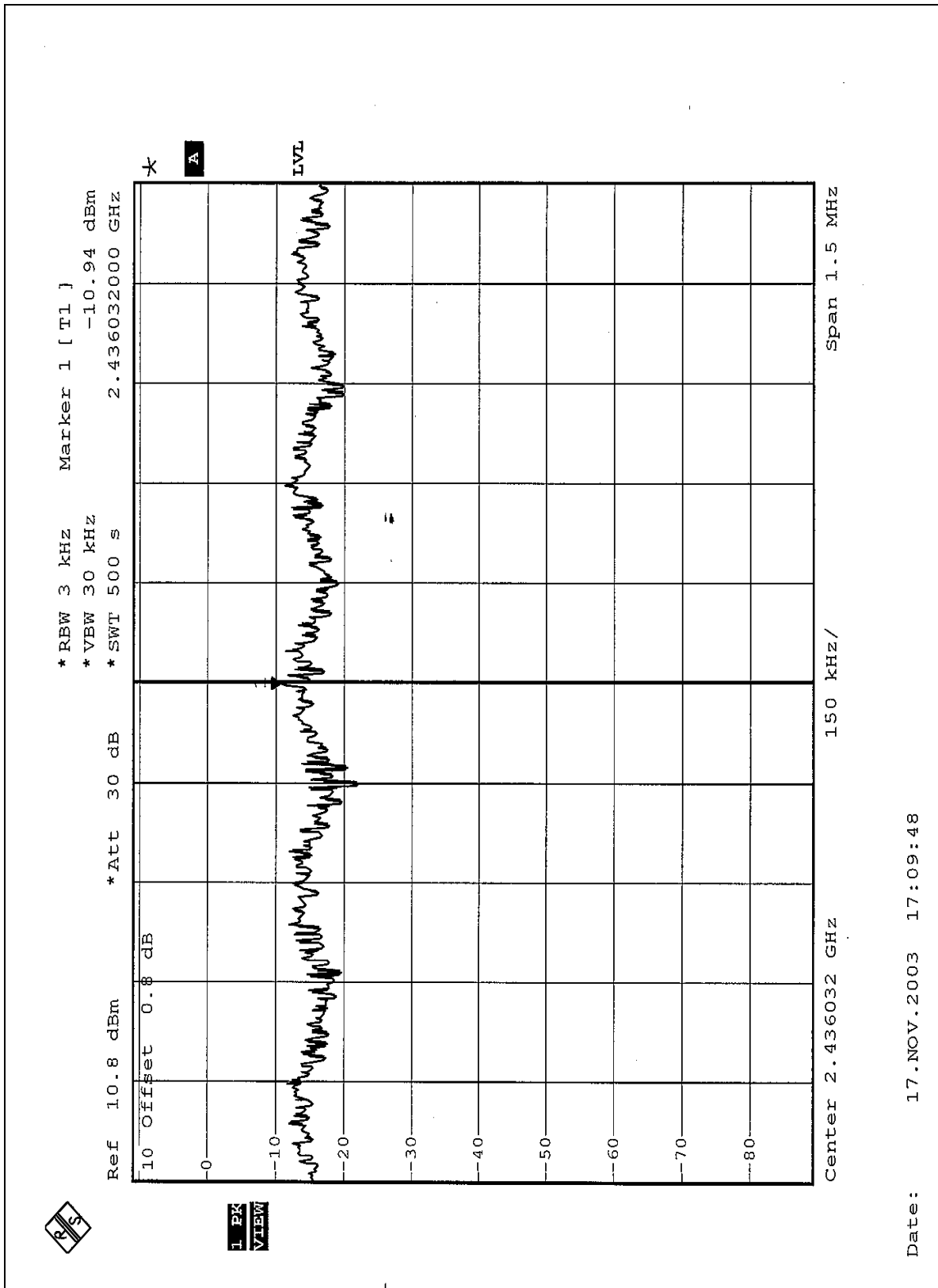
EUT	802.11g Wireless Lan Router	MODEL	GL2454RT-NM
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-12.17	8	PASS
6	2437	-10.94	8	PASS
11	2462	-12.64	8	PASS

CH1

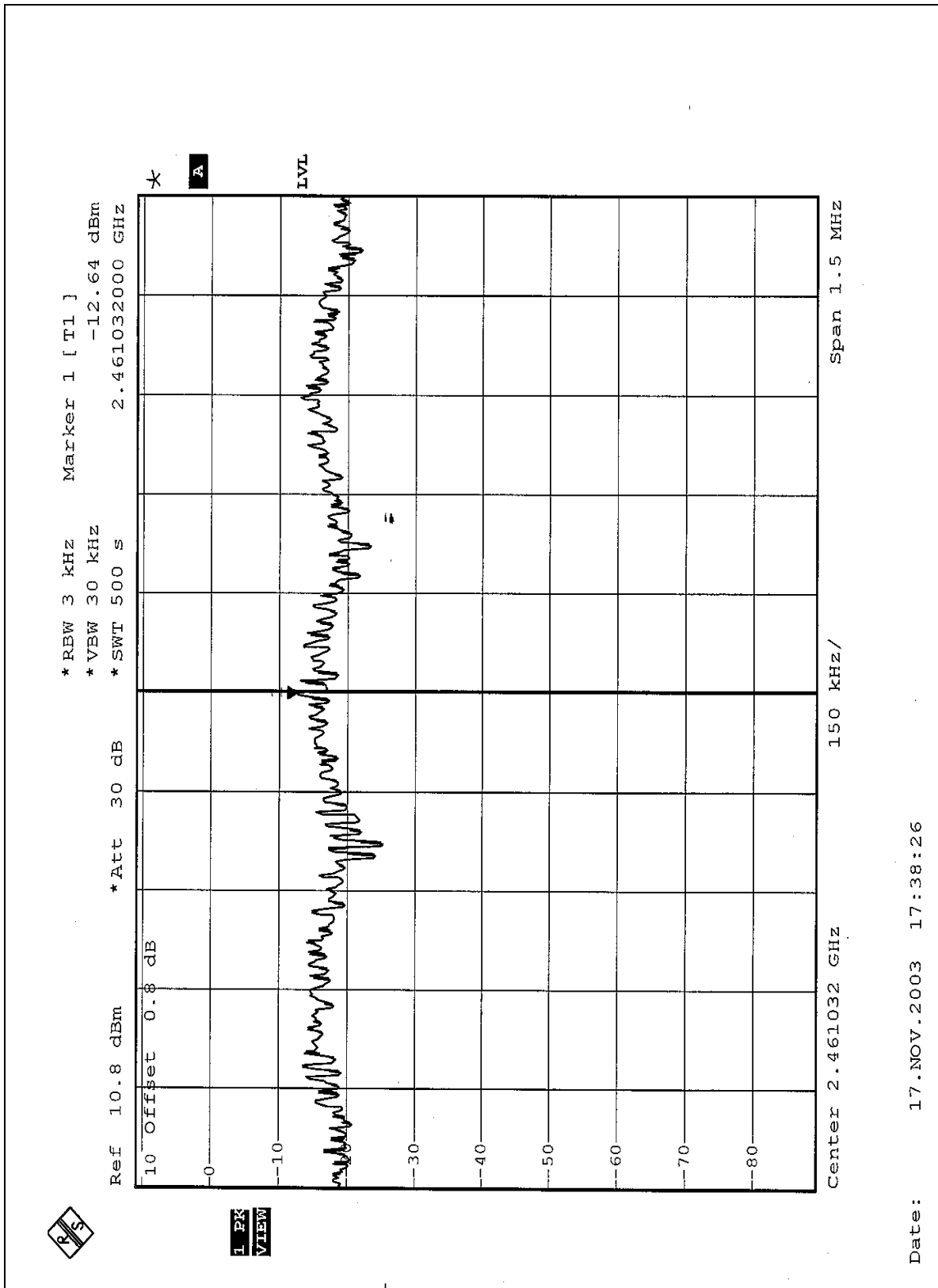


CH6





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
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 loss cable. Set both RBW and VBW of spectrum analyzer to 100 kHz 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

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 1:

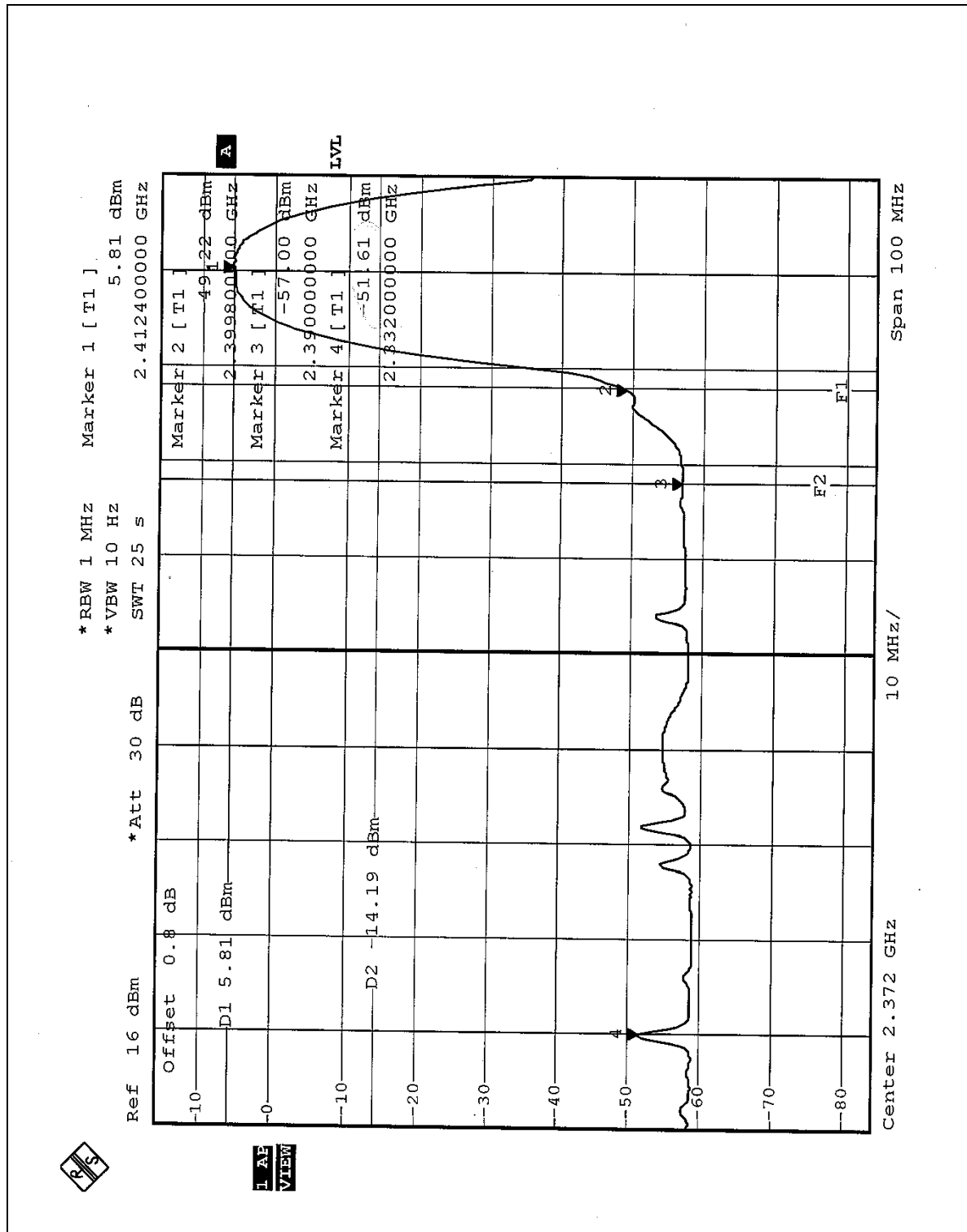
The band edge emission plot of the CCK technique on the following first pages show 57.42dB delta between carrier maximum power and local maximum emission in restrict band (2.3320GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.16dBuV/m, so the maximum field strength in restrict band is $107.16 - 57.42 = 49.74$ dBuV/m which is under 54dBuV/m limit.

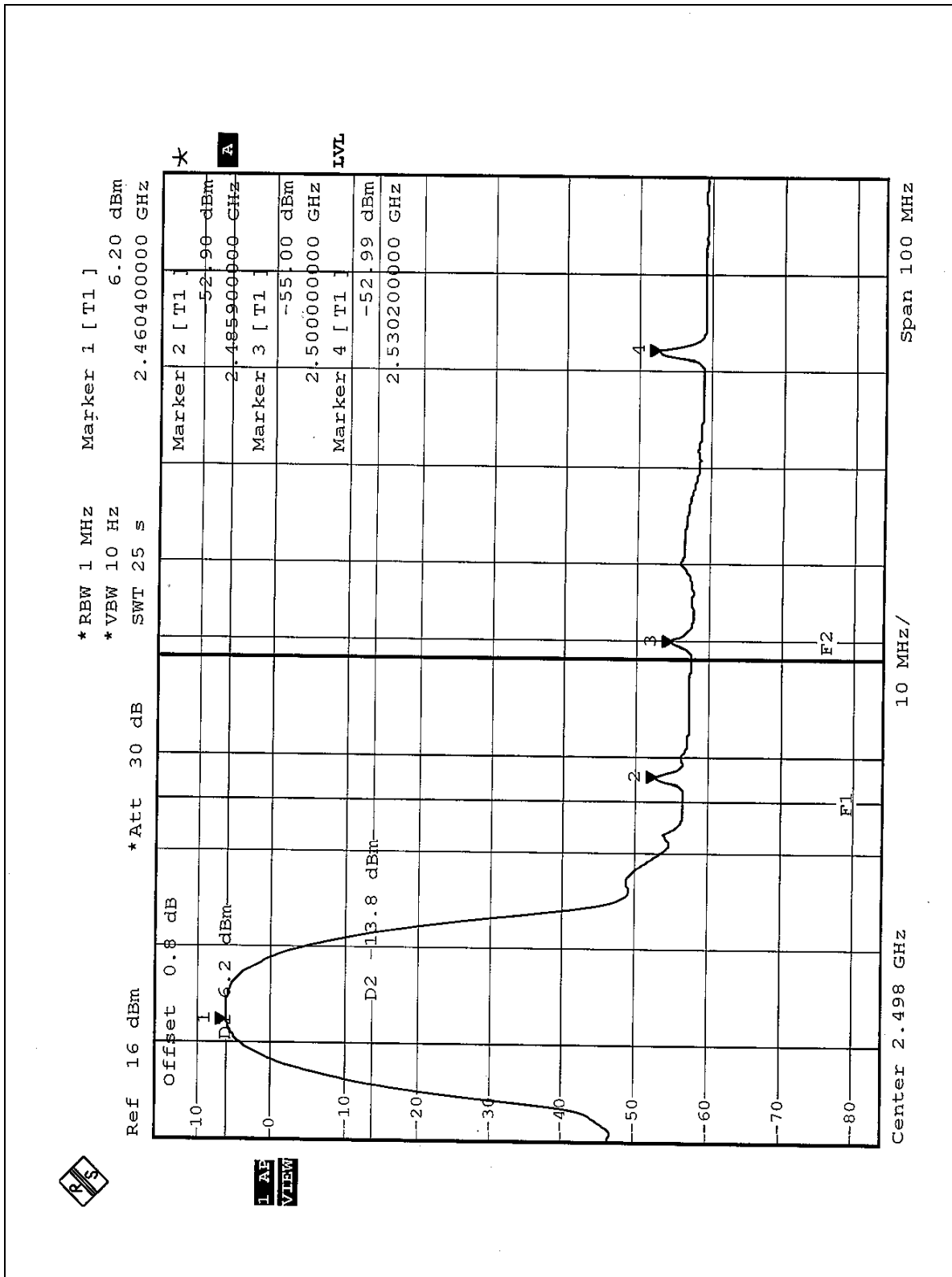
The band edge emission plot of the CCK technique on the following second pages show 59.10dB delta between carrier maximum power and local maximum emission in restrict band (2.4859GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 108.90dBuV/m, so the maximum field strength in restrict band is $108.90 - 59.10 = 49.80$ dBuV/m which is under 54dBuV/m limit.

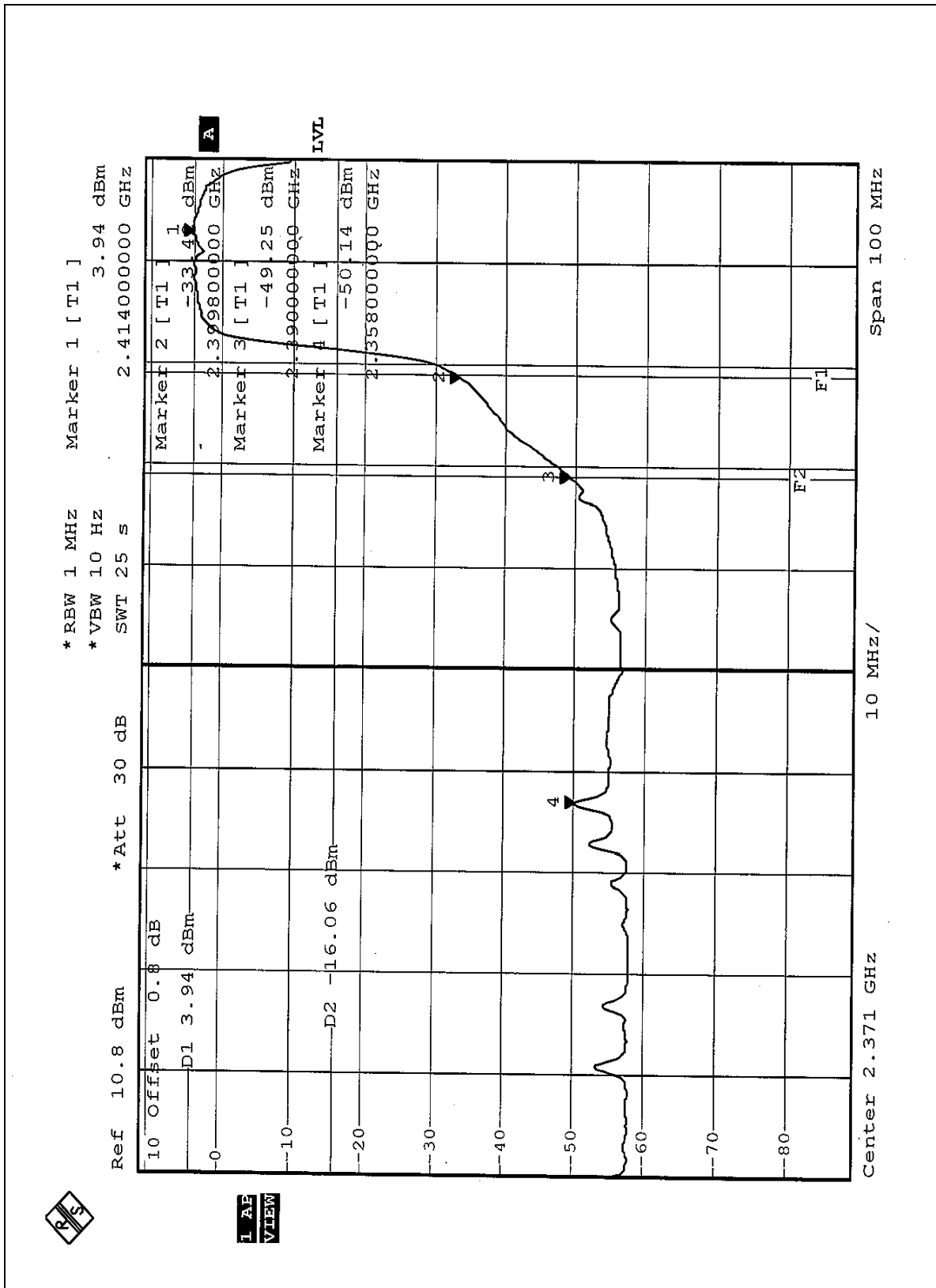
NOTE 2:

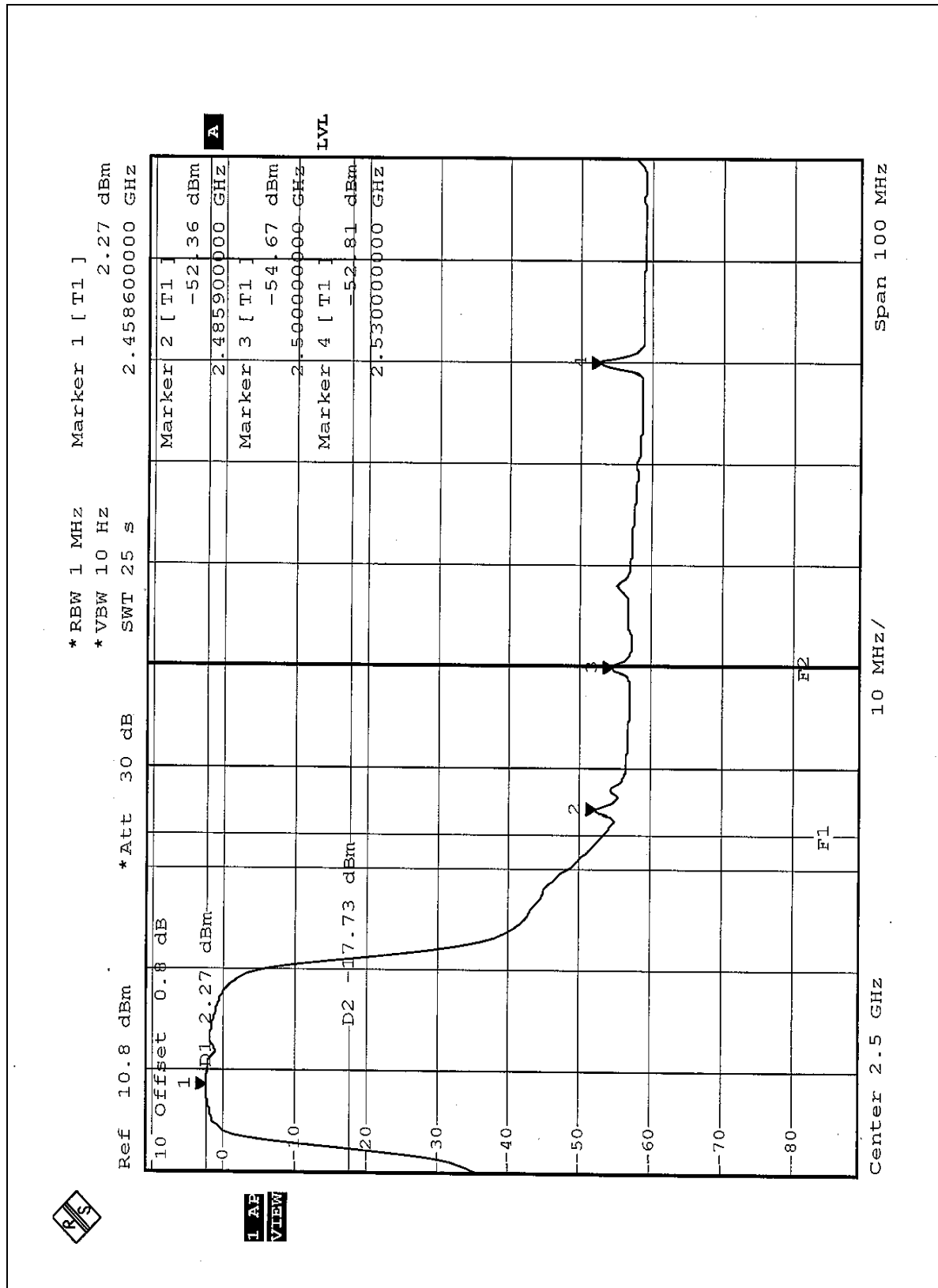
The band edge emission plot of the OFDM technique on the following third pages show 53.19dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 98.40dBuV/m, so the maximum field strength in restrict band is $98.40 - 53.19 = 45.21$ dBuV/m which is under 54dBuV/m limit.

The band edge emission plot of the OFDM technique on the following fourth pages show 54.63dB delta between carrier maximum power and local maximum emission in restrict band (2.4859GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 97.86dBuV/m, so the maximum field strength in restrict band is $97.86 - 54.63 = 43.23$ 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 type used in this product is Dipole Antenna with Reverse SMA antenna connector. The maximum Gain of this antenna is only 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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Web Site: www.adt.com.tw

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