FCC TEST REPORT

REPORT NO.: RF930622L03
MODEL NO.: WRV54G
RECEIVED: June 24, 2004
TESTED: June 24, 2004 ~ June 28, 2004

APPLICANT: Cisco-Linksys, LLC

ADDRESS: 121 Theory Drive, Irvine, CA 92612 (USA)

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 19, Hwa Ya 2nd Rd., Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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1 CERTIFICATION

PRODUCT :	Wireless-G VPN Broadband Router
MODEL NO.:	WRV54G
BRAND:	Linksys
APPLICANT :	Cisco-Linksys, LLC
TESTED:	June 24, 2004 ~ June 28, 2004
TEST ITEM:	ENGINEERING SAMPLE
STANDARDS :	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2001

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY: Wendy Liao , **DATE:** July 01, 2004

APPROVED BY: Cody Chang / Supervisor , **DATE:** July 01, 2004

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC 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 –10.11dB at 1.680MHz.
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 –1.47dB at 58.74MHz.
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	Wireless-G VPN Broadband Router
MODEL NO.	WRV54G
POWER SUPPLY	5Vdc from power adapter
MODULATION TYPE	BPSK, QPSK, CCK, 16QAM, 64QAM
MODULATION TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b:11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
MAXIMUM OUTPUT POWER (FOF CCK)	15.00dBm
MAXIMUM OUTPUT POWER (FOF OFDM)	14.00dBm
ANTENNA TYPE	Dipole antenna with 7dBi and 5dBi gain
DATA CABLE	NA
I/O PORTS	RJ45
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT were powered by the following power adapter :

BRAND:	LINKSYS
MODEL :	MT15-5050250-A1
INPUT :	100-120Vac, 50-60Hz, 0.5A
OUTPUT :	5.0Vdc, 2.5A

2. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
3. There are two types of antennas provided to this EUT:

Antenna	Antenna Type	Antenna Gain (dBi)	Difference
1	Dipole	5dBi	Separated from EUT (with antenna stand)
2	Dipole	7dBi	Attached to EUT directly

4. The EUT complies with IEEE 802.11g draft standards, and backwards compatible with IEEE 802.11b products.
5. The above EUT information was declared by manufacturer and 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, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. From our experience and technical viewpoint, we have chosen data rates 11Mbps for CCK technique and 6Mbps for OFDM technique, as the worst cases for the test among other data rates.
4. Two test results were presented in the following sections, the test result A was for CCK technique, the test result B was for OFDM technique.

5 .Two test modes were provided to this EUT. The mode A was for antenna with 5dBi gain separated from EUT (with antenna stand), and the mode B was for antenna with 7dBi gain attached to EUT directly.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless-G VPN Broadband Router . According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 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

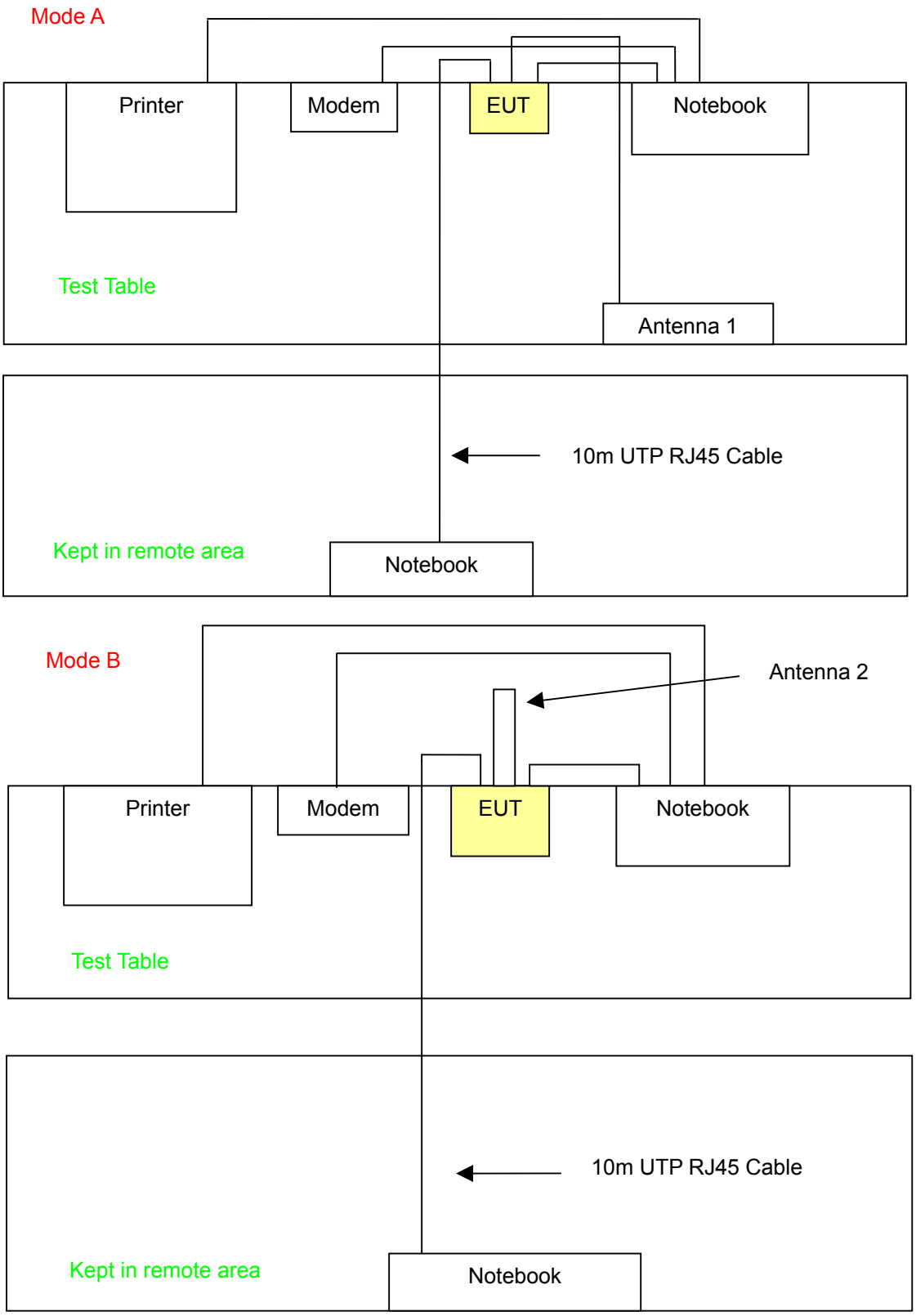
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	9954115984	E2K24CLNS
2	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS
3	PRINTER	EPSON	LQ-300+	DCGY054146	FCC DoC Approved
4	MODEM	ACEEX	1414V/3	0401008260	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA
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.

NOTE: 1. All power cords of the above support units are non shielded (1.8m).
2. Item 2 acted as a communication partner to transfer data.

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 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESCS30	100291	Dec. 12, 2004
RF signal cable Woken	5D-FB	Cable-HYC01-01	Mar. 02, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	847265/023	Oct. 22, 2004
LISN ROHDE & SCHWARZ	ESH3-Z5	100220	Dec. 10, 2004
Software ADT	ADT_Cond_V3	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.Hwa Ya Global Certification Office

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.

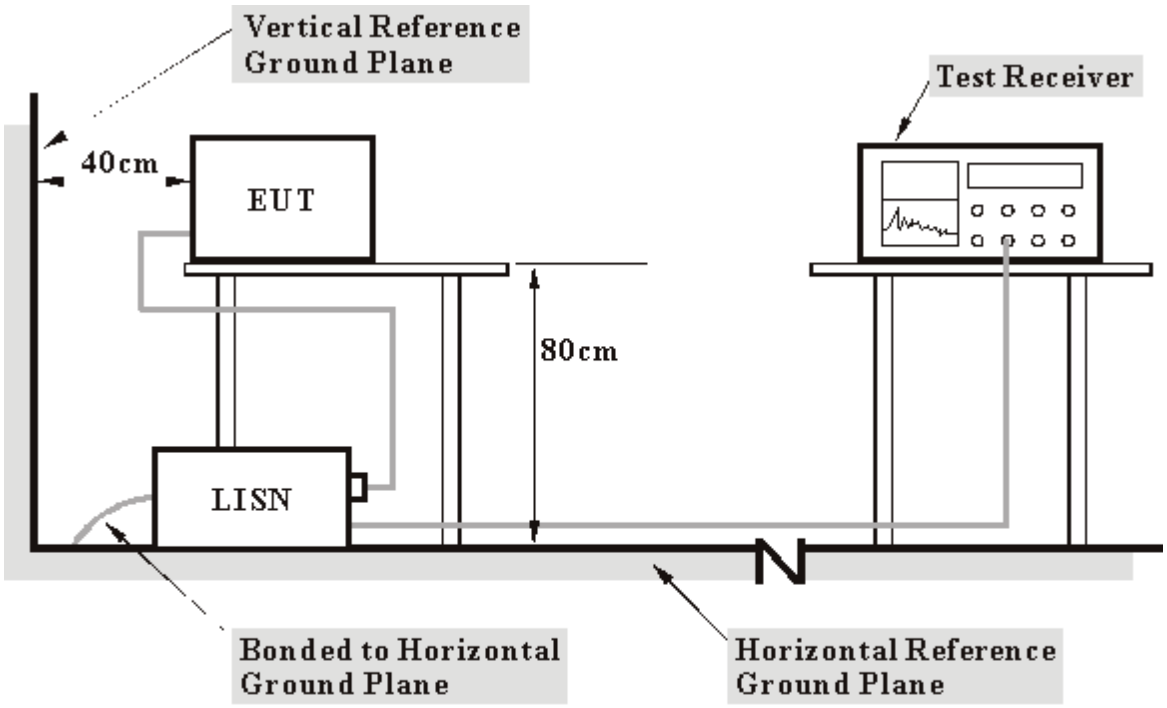
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under Limit - 20dB was not recorded.

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

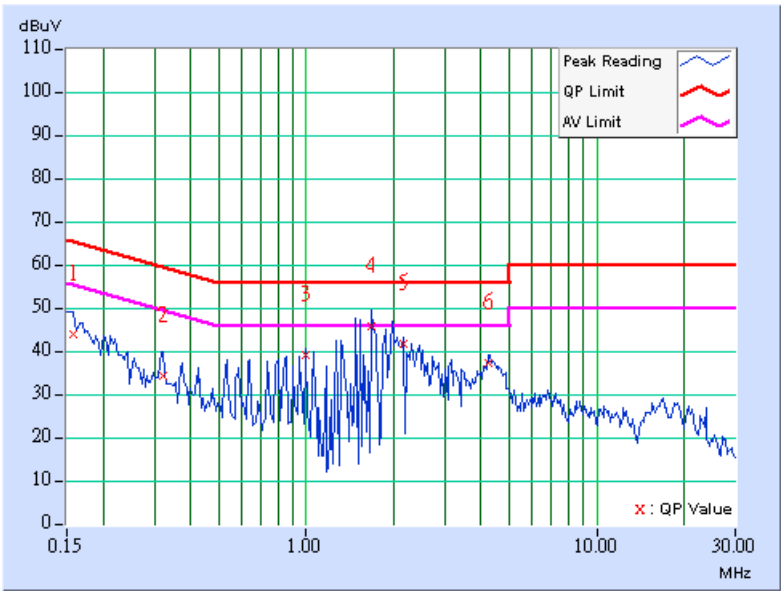
a. Connected the EUT to a Notebook system placed on a testing table.
b. The Notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The Notebook system show “H” messages on its screen.
d. The Notebook sent “H” messages to modem.
e. The Notebook sent "H" messages to printer, and the printer prints them on paper.
f. Repeated c ~e.

4.1.7 TEST RESULTS

EUT	Wireless-G VPN Broadband Router	MODEL	WRV54G
MODE	Channel 1	6dB BANDWIDTH	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

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	0.158	0.11	43.70	-	43.81	-	65.58	55.58	-21.77	-
2	0.322	0.12	34.37	-	34.49	-	59.66	49.66	-25.16	-
3	0.998	0.15	39.07	-	39.22	-	56.00	46.00	-16.78	-
4	**1.680**	**0.16**	**45.73**	**-**	**45.89**	**-**	**56.00**	**46.00**	**-10.11**	**-**
5	2.168	0.16	41.58	-	41.74	-	56.00	46.00	-14.26	-
6	4.223	0.21	37.24	-	37.45	-	56.00	46.00	-18.55	-

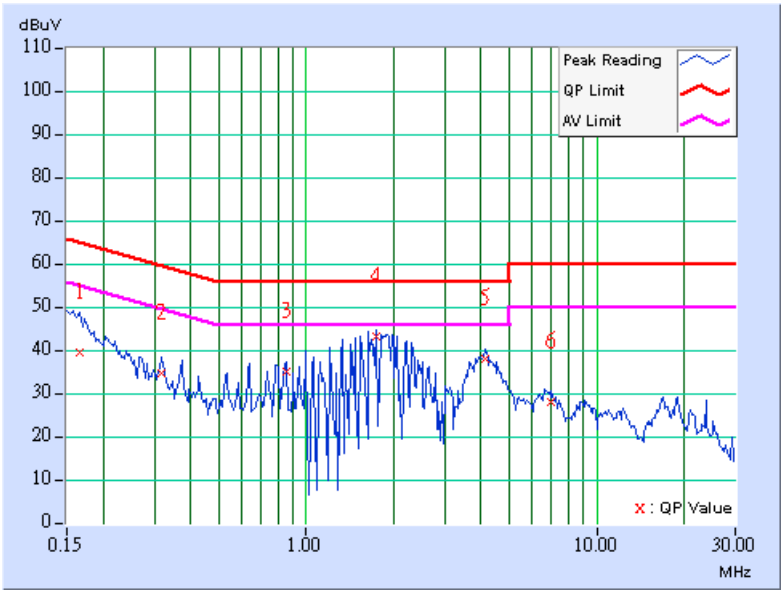
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 1	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	0.166	0.10	39.44	-	39.54	-	65.18	55.18	-25.63	-
2	0.318	0.11	34.65	-	34.76	-	59.76	49.76	-25.00	-
3	0.853	0.14	34.73	-	34.87	-	56.00	46.00	-21.13	-
4	1.746	0.16	43.16	-	43.32	-	56.00	46.00	-12.68	-
5	4.145	0.20	37.85	-	38.05	-	56.00	46.00	-17.95	-
6	6.988	0.27	27.98	-	28.25	-	60.00	50.00	-31.75	-

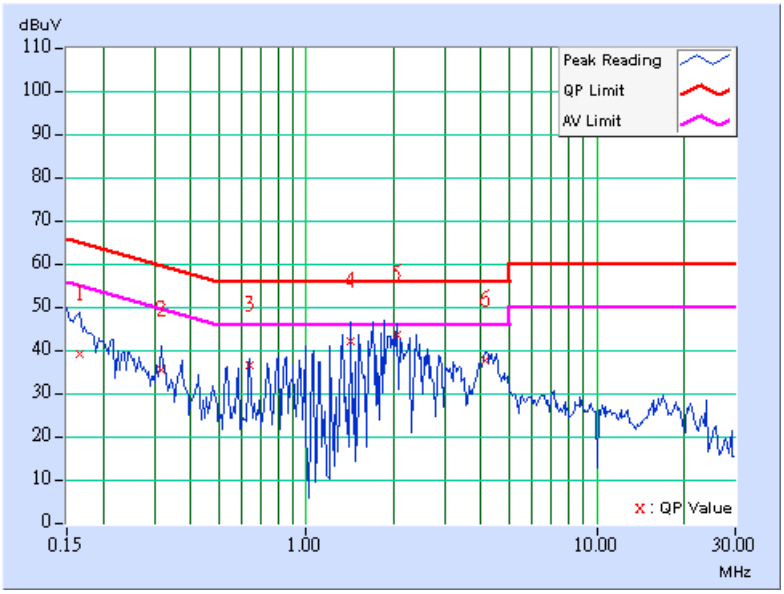
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 6	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	0.166	0.11	39.15	-	39.26	-	65.18	55.18	-25.92	-
2	0.318	0.12	35.28	-	35.40	-	59.76	49.76	-24.36	-
3	0.638	0.13	36.58	-	36.71	-	56.00	46.00	-19.29	-
4	1.414	0.15	41.88	-	42.03	-	56.00	46.00	-13.97	-
5	2.051	0.16	43.34	-	43.50	-	56.00	46.00	-12.50	-
6	4.145	0.21	37.61	-	37.82	-	56.00	46.00	-18.18	-

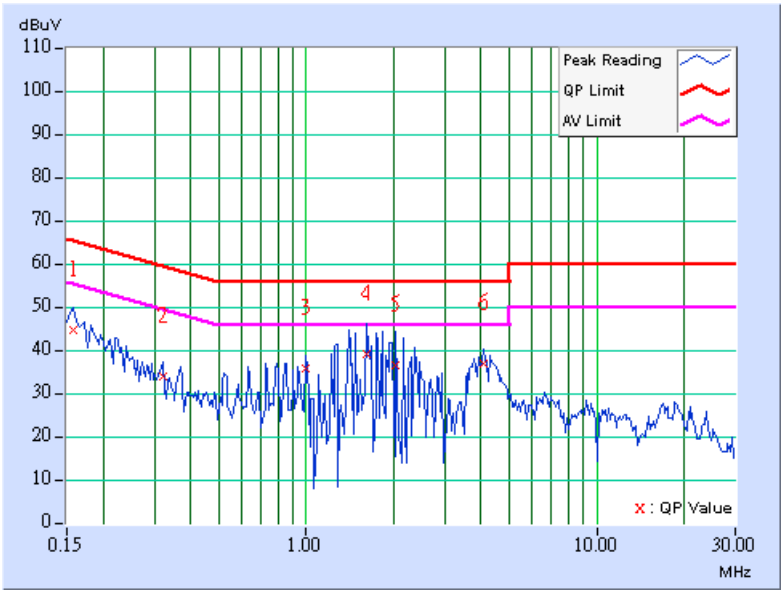
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 6	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	0.158	0.10	44.64	-	44.74	-	65.58	55.58	-20.84	-
2	0.322	0.11	33.89	-	34.00	-	59.66	49.66	-25.65	-
3	0.994	0.15	35.84	-	35.99	-	56.00	46.00	-20.01	-
4	1.621	0.16	39.24	-	39.40	-	56.00	46.00	-16.60	-
5	2.031	0.16	36.32	-	36.48	-	56.00	46.00	-19.52	-
6	4.074	0.20	37.00	-	37.20	-	56.00	46.00	-18.80	-

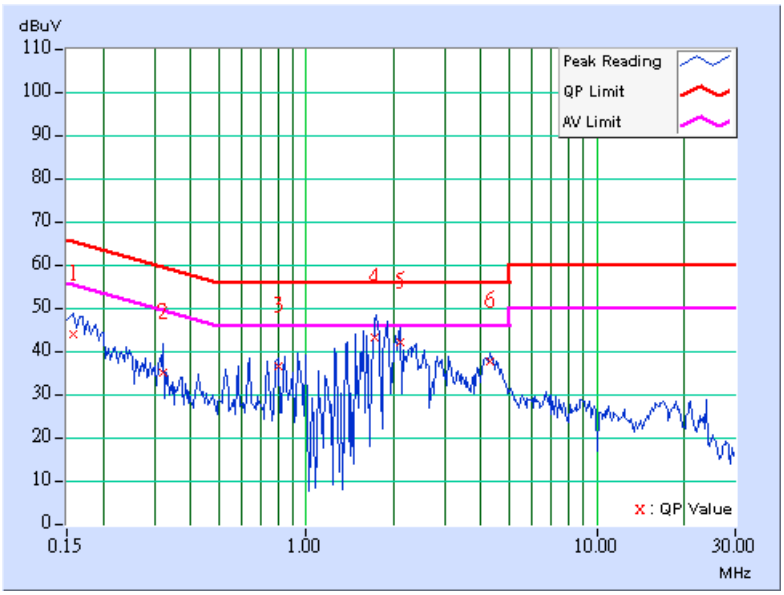
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 11	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	0.158	0.11	43.72	-	43.83	-	65.58	55.58	-21.75	-
2	0.322	0.12	34.81	-	34.93	-	59.66	49.66	-24.72	-
3	0.798	0.14	36.39	-	36.53	-	56.00	46.00	-19.47	-
4	1.730	0.16	42.94	-	43.10	-	56.00	46.00	-12.90	-
5	2.121	0.16	42.16	-	42.32	-	56.00	46.00	-13.68	-
6	4.285	0.21	37.65	-	37.86	-	56.00	46.00	-18.14	-

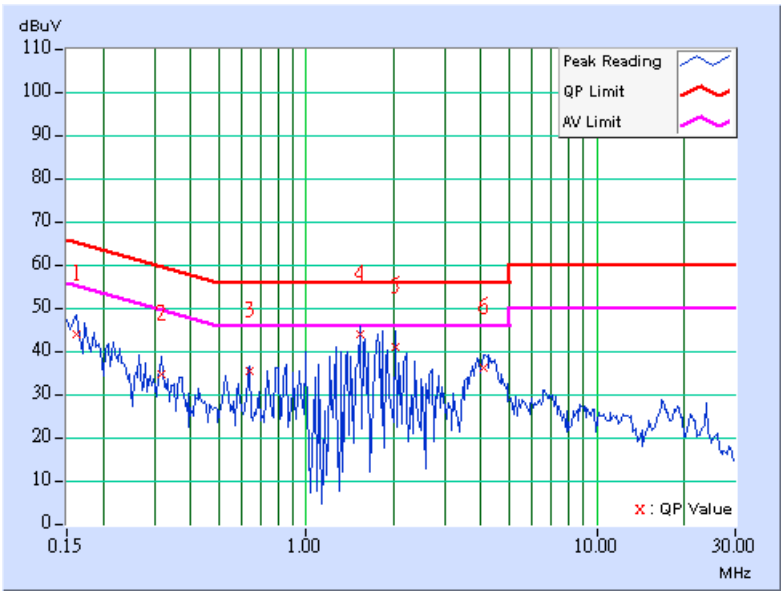
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 11	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	**TESTED BY**: Leo Hung	

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	0.162	0.10	43.82	-	43.92	-	65.38	55.38	-21.45	-
2	0.318	0.11	34.65	-	34.76	-	59.76	49.76	-25.00	-
3	0.638	0.12	35.35	-	35.47	-	56.00	46.00	-20.53	-
4	1.535	0.16	44.00	-	44.16	-	56.00	46.00	-11.84	-
5	2.020	0.16	41.02	-	41.18	-	56.00	46.00	-14.82	-
6	4.066	0.20	36.27	-	36.47	-	56.00	46.00	-19.53	-

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
Test Receiver ROHDE & SCHWARZ	ESI7	100033	Jun, 08, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-153	Feb. 03, 2005
HORN Antenna SCHWARZBECK	9120D	9120D-408	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170243	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10633	Jan. 15, 2005
Preamplifier Agilent	8449B	3008A01964	Jan. 27, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218183/4	Mar. 05, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	218195/4	Mar. 05, 2005
Software ADT.	ADT_Radiated _V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA
Antenna Tower Controller inn-co GmbH	CO2000	017303	NA
Turn Table ADT.	TT100.	TT93021703	NA
Turn Table Controller ADT.	SC100.	SC93021703	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 2.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The IC Site Registration No. is IC4924-3.

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 3 meter semi-anechoic chamber. 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.

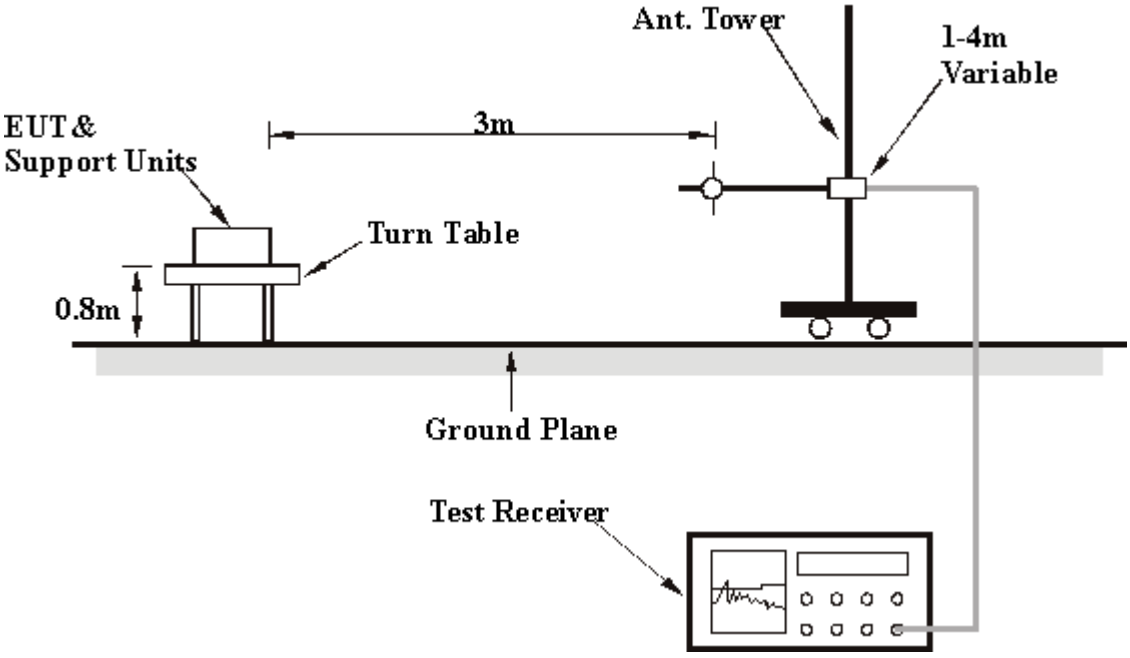
NOTE:

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60 % RH, 991hPa	**TEST MODE**	Mode A
TEST BY	Gary Chang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	45.55	30.87 QP	40.00	-9.13	2.50 H	64	14.96	15.91
2	117.47	40.63 QP	43.50	-2.87	3.00 H	148	28.00	12.63
3	164.13	33.82 QP	43.50	-9.68	1.50 H	94	19.45	14.37
4	249.66	39.89 QP	46.00	-6.11	1.00 H	130	26.47	13.41
5	302.14	42.79 QP	46.00	-3.21	1.00 H	286	27.93	14.86
6	356.57	35.46 QP	46.00	-10.54	2.50 H	295	19.45	16.00
7	399.34	34.75 QP	46.00	-11.25	2.50 H	298	17.80	16.95
8	500.00	43.98 QP	46.00	-2.02	1.49 H	106	25.27	18.71
9	657.88	35.36 QP	46.00	-10.64	1.00 H	94	13.33	22.03
10	751.18	32.52 QP	46.00	-13.48	1.00 H	100	8.84	23.68
11	850.32	32.90 QP	46.00	-13.10	1.00 H	343	8.64	24.26

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	33.89	36.63 QP	40.00	-3.37	1.00 V	352	21.82	14.81
2	80.54	35.18 QP	40.00	-4.82	1.50 V	118	24.68	10.50
3	115.53	38.64 QP	43.50	-4.86	1.00 V	196	26.18	12.47
4	164.13	32.39 QP	43.50	-11.11	1.00 V	310	18.02	14.37
5	249.66	35.13 QP	46.00	-10.87	1.00 V	328	21.72	13.41
6	399.34	32.68 QP	46.00	-13.32	1.00 V	19	15.73	16.95
7	467.37	33.10 QP	46.00	-12.90	1.00 V	229	14.78	18.32
8	500.42	39.33 QP	46.00	-6.67	2.00 V	97	20.61	18.72
9	655.93	36.59 QP	46.00	-9.41	1.50 V	112	14.58	22.01
10	844.49	34.66 QP	46.00	-11.34	1.00 V	130	10.46	24.20

REMARKS:
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	Below 1000MHz
MODE	Channel 11	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 58 % RH, 991hPa	**TEST MODE**	Mode B
TESTED BY	Long Chen		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	117.47	32.10 QP	43.50	-11.40	3.00 H	265	19.46	12.63
2	164.13	38.68 QP	43.50	-4.82	1.50 H	256	24.31	14.37
3	199.12	33.21 QP	43.50	-10.29	1.25 H	127	21.68	11.53
4	214.67	34.25 QP	43.50	-9.25	1.00 H	127	22.43	11.82
5	249.66	34.98 QP	46.00	-11.02	1.00 H	85	21.56	13.41
6	348.80	31.15 QP	46.00	-14.85	1.00 H	238	15.32	15.83
7	374.07	32.86 QP	46.00	-13.14	1.00 H	208	16.47	16.39
8	500.00	43.22 QP	46.00	-2.78	2.50 H	238	24.51	18.71
9	661.76	38.03 QP	46.00	-7.97	1.25 H	304	15.95	22.07
10	751.18	35.21 QP	46.00	-10.79	1.00 H	193	11.53	23.68

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	**58.74**	**38.53 QP**	**40.00**	**-1.47**	**1.00 V**	**336**	**24.41**	**14.12**
2	105.81	36.38 QP	43.50	-7.12	1.50 V	76	24.74	11.64
3	166.07	37.43 QP	43.50	-6.07	1.00 V	322	23.23	14.20
4	189.40	37.18 QP	43.50	-6.32	1.75 V	175	24.91	12.27
5	249.66	35.80 QP	46.00	-10.20	2.00 V	166	22.38	13.41
6	399.34	33.79 QP	46.00	-12.21	1.00 V	211	16.84	16.95
7	475.15	36.34 QP	46.00	-9.66	1.25 V	355	17.92	18.41
8	500.00	43.65 QP	46.00	-2.35	1.50 V	177	24.94	18.71
9	751.18	34.46 QP	46.00	-11.54	1.00 V	145	10.77	23.68

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.

4.2.8 TEST RESULTS (A)

EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 1	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen 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	2390.00	35.08 PK	74.00	-38.92	1.00 H	196	1.25	33.83
1	2390.00	27.15 AV	54.00	-26.82	1.00 H	196	-6.65	33.83
2	*2412.00	91.38 PK			1.00 H	196	57.45	33.93
2	*2412.00	83.48 AV			1.00 H	196	49.55	33.93
3	4824.00	52.73 PK	74.00	-21.27	1.16 H	93	12.07	40.66
3	4824.00	41.54 AV	54.00	-12.46	1.16 H	93	0.88	40.66
4	9648.00	63.93 PK	74.00	-10.07	1.05 H	98	10.42	53.51
4	9648.00	50.66 AV	54.00	-3.34	1.05 H	98	-2.85	53.51

NTENNA 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	52.69 PK	74.00	-21.31	1.01 V	124	18.86	33.83
1	2390.00	44.59 AV	54.00	-9.41	1.01 V	124	10.76	33.83
2	*2412.00	108.99 PK			1.01 V	124	75.06	33.93
2	*2412.00	100.89 AV			1.01 V	124	66.96	33.93
3	4824.00	51.41 PK	74.00	-22.59	1.14 V	108	10.75	40.66
3	4824.00	39.17 AV	54.00	-14.83	1.14 V	108	-1.49	40.66
4	9648.00	63.66 PK	74.00	-10.34	1.52 V	16	10.15	53.51
4	9648.00	50.09 AV	54.00	-3.91	1.52 V	16	-3.42	53.51

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 6	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	94.57 PK			1.20 H	116	60.52	34.05
1	*2437.00	86.34 AV			1.20 H	116	52.29	34.05
2	4874.00	52.29 PK	74.00	-21.71	1.14 H	96	11.60	40.69
2	4874.00	40.64 AV	54.00	-13.36	1.14 H	96	-0.05	40.69
3	9748.00	62.79 PK	74.00	-11.21	1.14 H	327	8.96	53.83
3	9748.00	49.71 AV	54.00	-4.29	1.14 H	327	-4.12	53.83

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.24 PK			1.06 V	331	75.19	34.05
1	*2437.00	101.09 AV			1.06 V	331	67.04	34.05
2	4874.00	51.93 PK	74.00	-22.07	1.06 V	44	11.24	40.69
2	4874.00	38.50 AV	54.00	-15.50	1.06 V	44	-2.19	40.69
3	9748.00	64.31 PK	74.00	-9.69	1.04 V	205	10.48	53.83
3	9748.00	51.41 AV	54.00	-2.59	1.04 V	205	-2.42	53.83

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 11	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	97.03 PK	74.00		1.33 H	312	62.87	34.16
1	*2462.00	88.87 AV	54.00		1.33 H	312	54.71	34.16
2	2488.30	42.85 PK	74.00	-31.15	1.33 H	312	8.57	34.28
2	2488.30	34.69 AV	54.00	-19.31	1.33 H	312	0.41	34.28
3	4924.00	52.59 PK	74.00	-21.41	1.12 H	93	11.73	40.86
3	4924.00	40.41 AV	54.00	-13.59	1.12 H	93	-0.45	40.86
4	9848.00	63.48 PK	74.00	-10.52	1.25 H	114	9.53	53.95
4	9848.00	49.80 AV	54.00	-4.20	1.25 H	114	-4.15	53.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	109.02 PK			1.00 V	141	74.86	34.16
1	*2462.00	100.82 AV			1.00 V	141	66.66	34.16
2	2488.30	54.84 PK	74.00	-19.16	1.00 V	141	20.56	34.28
2	2488.30	46.64 AV	54.00	-7.36	1.00 V	141	12.36	34.28
3	4924.00	52.21 PK	74.00	-21.79	1.06 V	35	11.35	40.86
3	4924.00	39.78 AV	54.00	-14.22	1.06 V	35	-1.08	40.86
4	9848.00	64.01 PK	74.00	-9.99	1.15 V	342	10.06	53.95
4	9848.00	50.37 AV	54.00	-3.63	1.15 V	342	-3.58	53.95

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 1	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	41.36 PK	74.00	-32.64	1.88 H	245	7.53	33.83
1	2390.00	33.34 AV	54.00	-20.66	1.88 H	245	-0.49	33.83
2	*2412.00	100.83 PK			1.88 H	245	66.90	33.93
2	*2412.00	92.81 AV			1.88 H	245	58.88	33.93
3	4824.00	52.03 PK	74.00	-21.97	1.39 H	251	11.37	40.66
3	4824.00	40.61 AV	54.00	-13.39	1.39 H	251	-0.05	40.66
4	9648.00	62.90 PK	74.00	-11.10	1.41 H	282	9.39	53.51
4	9648.00	50.52 AV	54.00	-3.48	1.41 H	282	-2.99	53.51

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	52.96 PK	74.00	-21.04	1.16 V	54	19.13	33.83
1	2390.00	44.84 AV	54.00	-9.16	1.16 V	54	11.01	33.83
2	*2412.00	112.13 PK			1.16 V	54	78.20	33.93
2	*2412.00	104.01 AV			1.16 V	54	70.08	33.93
3	4824.00	53.23 PK	74.00	-20.77	1.05 V	322	12.57	40.66
3	4824.00	42.86 AV	54.00	-11.14	1.05 V	322	2.20	40.66
4	9648.00	63.75 PK	74.00	-10.25	1.37 V	279	10.24	53.51
4	9648.00	50.17 AV	54.00	-3.83	1.37 V	279	-3.34	53.51

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 6	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	100.69 PK			1.87 H	246	66.64	34.05
1	*2437.00	92.31 AV			1.87 H	246	58.26	34.05
2	4874.00	53.21 PK	74.00	-20.79	1.02 H	352	12.52	40.69
2	4874.00	42.88 AV	54.00	-11.12	1.02 H	352	2.19	40.69
3	9748.00	63.88 PK	74.00	-10.12	1.38 H	25	10.05	53.83
3	9748.00	50.23 AV	54.00	-3.77	1.38 H	25	-3.60	53.83

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	112.02 PK			1.21 V	51	77.97	34.05
1	*2437.00	104.05 AV			1.21 V	51	70.00	34.05
2	4874.00	53.32 PK	74.00	-20.68	1.05 V	342	12.63	40.69
2	4874.00	42.66 AV	54.00	-11.34	1.05 V	342	1.97	40.69
3	9748.00	64.12 PK	74.00	-9.88	1.32 V	311	10.29	53.83
3	9748.00	50.36 AV	54.00	-3.64	1.32 V	311	-3.47	53.83

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 11	**MODE**	CCK
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	102.34 PK			1.31 H	301	68.18	34.16
1	*2462.00	94.15 AV			1.31 H	301	59.99	34.16
2	2483.50	42.87 PK	74.00	-31.13	1.31 H	301	8.61	34.26
2	2483.50	34.68 AV	54.00	-19.32	1.31 H	301	0.42	34.26
3	4924.00	52.11 PK	74.00	-21.89	1.00 H	130	11.25	40.86
3	4924.00	40.88 AV	54.00	-13.12	1.00 H	130	0.02	40.86
4	9848.00	64.12 PK	74.00	-9.88	1.00 H	21	10.17	53.95
4	9848.00	51.77 AV	54.00	-2.23	1.00 H	21	-2.18	53.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	112.19 PK			1.00 V	307	78.03	34.16
1	*2462.00	104.06 AV			1.00 V	307	69.90	34.16
2	2483.50	52.72 PK	74.00	-21.28	1.00 V	307	18.46	34.26
2	2483.50	44.59 AV	54.00	-9.41	1.00 V	307	10.33	34.26
3	4924.00	53.56 PK	74.00	-20.44	1.05 V	145	12.70	40.86
3	4924.00	41.20 AV	54.00	-12.80	1.05 V	145	0.34	40.86
4	9848.00	64.09 PK	74.00	-9.91	1.00 V	96	10.14	53.95
4	9848.00	51.22 AV	54.00	-2.78	1.00 V	96	-2.73	53.95

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)

EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 1	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen 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	2390.00	41.96 PK	74.00	-32.04	1.09 H	268	8.13	33.83
1	2390.00	32.36 AV	54.00	-21.64	1.09 H	268	-1.47	33.83
2	*2412.00	90.77 PK			1.09 H	268	56.84	33.93
2	*2412.00	81.17 AV			1.09 H	268	47.24	33.93
3	4824.00	52.72 PK	74.00	-21.28	1.15 H	94	12.06	40.66
3	4824.00	41.74 AV	54.00	-12.26	1.15 H	94	1.08	40.66
4	9648.00	63.65 PK	74.00	-10.35	1.06 H	85	10.14	53.51
4	9648.00	49.55 AV	54.00	-4.45	1.06 H	85	-3.96	53.51

NTENNA 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	55.94 PK	74.00	-18.06	1.05 V	50	22.11	33.83
1	2390.00	46.45 AV	54.00	-7.55	1.05 V	50	12.62	33.83
2	*2412.00	104.75 PK			1.05 V	50	70.82	33.93
2	*2412.00	95.26 AV			1.05 V	50	61.33	33.93
3	4824.00	51.26 PK	74.00	-22.74	1.28 V	139	10.60	40.66
3	4824.00	38.19 AV	54.00	-15.81	1.28 V	139	-2.47	40.66
4	9648.00	63.93 PK	74.00	-10.07	1.08 V	320	10.42	53.51
4	9648.00	49.95 AV	54.00	-4.05	1.08 V	320	-3.56	53.51

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 6	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	91.64 PK			1.34 H	267	57.59	34.05
1	*2437.00	81.93 AV			1.34 H	267	47.88	34.05
2	4874.00	52.35 PK	74.00	-21.65	1.12 H	95	11.66	40.69
2	4874.00	41.21 AV	54.00	-12.79	1.12 H	95	0.52	40.69
3	9748.00	63.95 PK	74.00	-10.05	1.04 H	320	10.12	53.83
3	9748.00	49.87 AV	54.00	-4.13	1.04 H	320	-3.96	53.83

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	105.89 PK			1.07 V	331	71.84	34.05
1	*2437.00	96.35 AV			1.07 V	331	62.30	34.05
2	4874.00	51.73 PK	74.00	-22.27	1.00 V	115	11.04	40.69
2	4874.00	37.79 AV	54.00	-16.21	1.00 V	115	-2.90	40.69
3	9748.00	64.25 PK	74.00	-9.75	1.10 V	352	10.42	53.83
3	9748.00	50.98 AV	54.00	-3.02	1.10 V	352	-2.85	53.83

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 11	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode A	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	91.97 PK			1.34 H	312	57.81	34.16
1	*2462.00	82.30 AV			1.34 H	312	48.14	34.16
2	2483.50	43.64 PK	74.00	-30.36	1.34 H	312	9.38	34.26
2	2483.50	33.97 AV	54.00	-20.03	1.34 H	312	-2.09	34.26
3	4924.00	52.63 PK	74.00	-21.37	1.11 H	93	11.77	40.86
3	4924.00	41.14 AV	54.00	-12.86	1.11 H	93	0.28	40.86
4	9848.00	64.07 PK	74.00	-9.93	1.05 H	215	10.12	53.95
4	9848.00	51.71 AV	54.00	-2.29	1.05 H	215	-2.24	53.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	105.37 PK			1.00 V	141	71.21	34.16
1	*2462.00	95.65 AV			1.00 V	141	61.49	34.16
2	2483.50	57.04 PK	74.00	-16.96	1.00 V	141	22.78	34.26
2	2483.50	47.32 AV	54.00	-6.68	1.00 V	141	13.06	34.26
3	4924.00	52.01 PK	74.00	-21.99	1.00 V	139	11.15	40.86
3	4924.00	39.01 AV	54.00	-14.99	1.00 V	139	-1.85	40.86
4	9848.00	63.97 PK	74.00	-10.03	1.05 V	258	10.02	53.95
4	9848.00	51.10 AV	54.00	-2.90	1.05 V	258	-2.85	53.95

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 1	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen 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	2390.00	42.97 PK	74.00	-31.03	1.15 H	151	9.14	33.83
1	2390.00	33.35 AV	54.00	-20.65	1.15 H	151	-0.48	33.83
2	*2412.00	95.68 PK			1.15 H	151	61.75	33.93
2	*2412.00	86.06 AV			1.15 H	151	52.13	33.93
3	4824.00	52.12 PK	74.00	-21.88	1.18 H	280	11.46	40.66
3	4824.00	41.10 AV	54.00	-12.90	1.18 H	280	0.44	40.66
4	9648.00	64.08 PK	74.00	-9.92	1.01 H	288	10.57	53.51
4	9648.00	50.77 AV	54.00	-3.23	1.01 H	288	-2.74	53.51

NTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.52 PK	74.00	-17.48	1.00 V	265	22.69	33.83
1	2390.00	46.83 AV	54.00	-7.17	1.00 V	265	13.00	33.83
2	*2412.00	109.23 PK			1.00 V	265	75.30	33.93
2	*2412.00	99.54 AV			1.00 V	265	65.61	33.93
3	4824.00	53.45 PK	74.00	-20.55	1.05 V	321	12.79	40.66
3	4824.00	43.14 AV	54.00	-10.86	1.05 V	321	2.48	40.66
4	9648.00	64.03 PK	74.00	-9.97	1.09 V	279	10.52	53.51
4	9648.00	50.56 AV	54.00	-3.44	1.09 V	279	-2.95	53.51

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 6	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	99.17 PK			1.09 H	120	65.12	34.05
1	*2437.00	89.42 AV			1.09 H	120	55.37	34.05
2	4874.00	52.52 PK	74.00	-21.48	1.08 H	311	11.83	40.69
2	4874.00	40.19 AV	54.00	-13.81	1.08 H	311	-0.50	40.69
3	9748.00	64.59 PK	74.00	-9.41	1.15 H	236	10.76	53.83
3	9748.00	51.14 AV	54.00	-2.86	1.15 H	236	-2.69	53.83

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	109.56 PK			1.16 V	6	75.51	34.05
1	*2437.00	99.75 AV			1.16 V	6	65.70	34.05
2	4874.00	52.63 PK	74.00	-21.37	1.13 V	323	11.94	40.69
2	4874.00	40.98 AV	54.00	-13.02	1.13 V	323	0.29	40.69
3	9748.00	64.06 PK	74.00	-9.94	1.55 V	273	10.23	53.83
3	9748.00	51.28 AV	54.00	-2.72	1.55 V	273	-2.55	53.83

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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
CHANNEL	Channel 11	**MODE**	OFDM
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	1 ~25GHz
ENVIRONMENTAL CONDITIONS	28 deg. C, 65 % RH, 991hPa	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
TEST MODE	Mode B	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	99.70 PK			1.31 H	124	65.54	34.16
1	*2462.00	89.96 AV			1.31 H	124	55.80	34.16
2	2483.50	49.46 PK	74.00	-24.54	1.31 H	124	15.20	34.26
2	2483.50	39.72 AV	54.00	-14.28	1.31 H	124	5.46	34.26
3	4924.00	52.58 PK	74.00	-21.42	1.08 H	311	11.72	40.86
3	4924.00	41.02 AV	54.00	-12.98	1.08 H	311	0.16	40.86
4	9848.00	64.21 PK	74.00	-9.79	1.06 H	203	10.26	53.95
4	9848.00	51.36 AV	54.00	-2.64	1.06 H	203	-2.59	53.95

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	108.84 PK			1.31 V	46	74.68	34.16
1	*2462.00	99.05 AV			1.31 V	46	64.89	34.16
2	2483.50	58.60 PK	74.00	-15.40	1.31 V	46	24.34	34.26
2	2483.50	48.81 AV	54.00	-5.19	1.31 V	46	14.55	34.26
3	4924.00	52.78 PK	74.00	-21.22	1.14 V	324	11.92	40.86
3	4924.00	41.52 AV	54.00	-12.48	1.14 V	324	0.66	40.86
4	9848.00	64.68 PK	74.00	-9.32	1.11 V	274	10.73	53.95
4	9848.00	50.96 AV	54.00	-3.04	1.11 V	274	-2.99	53.95

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
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.

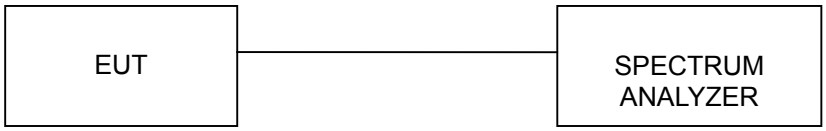
4.3.3 TEST PROCEDURE

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 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

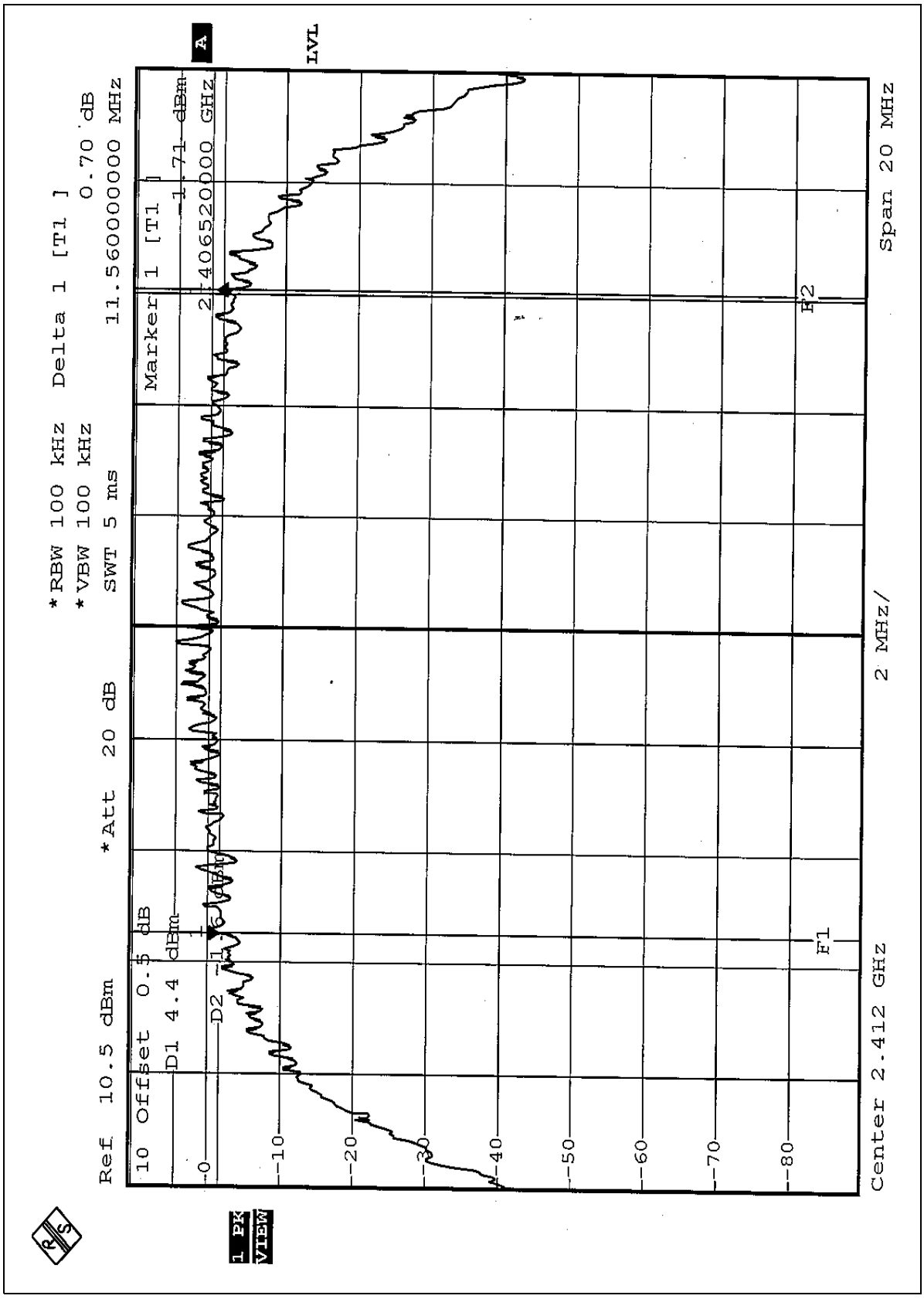
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (A)

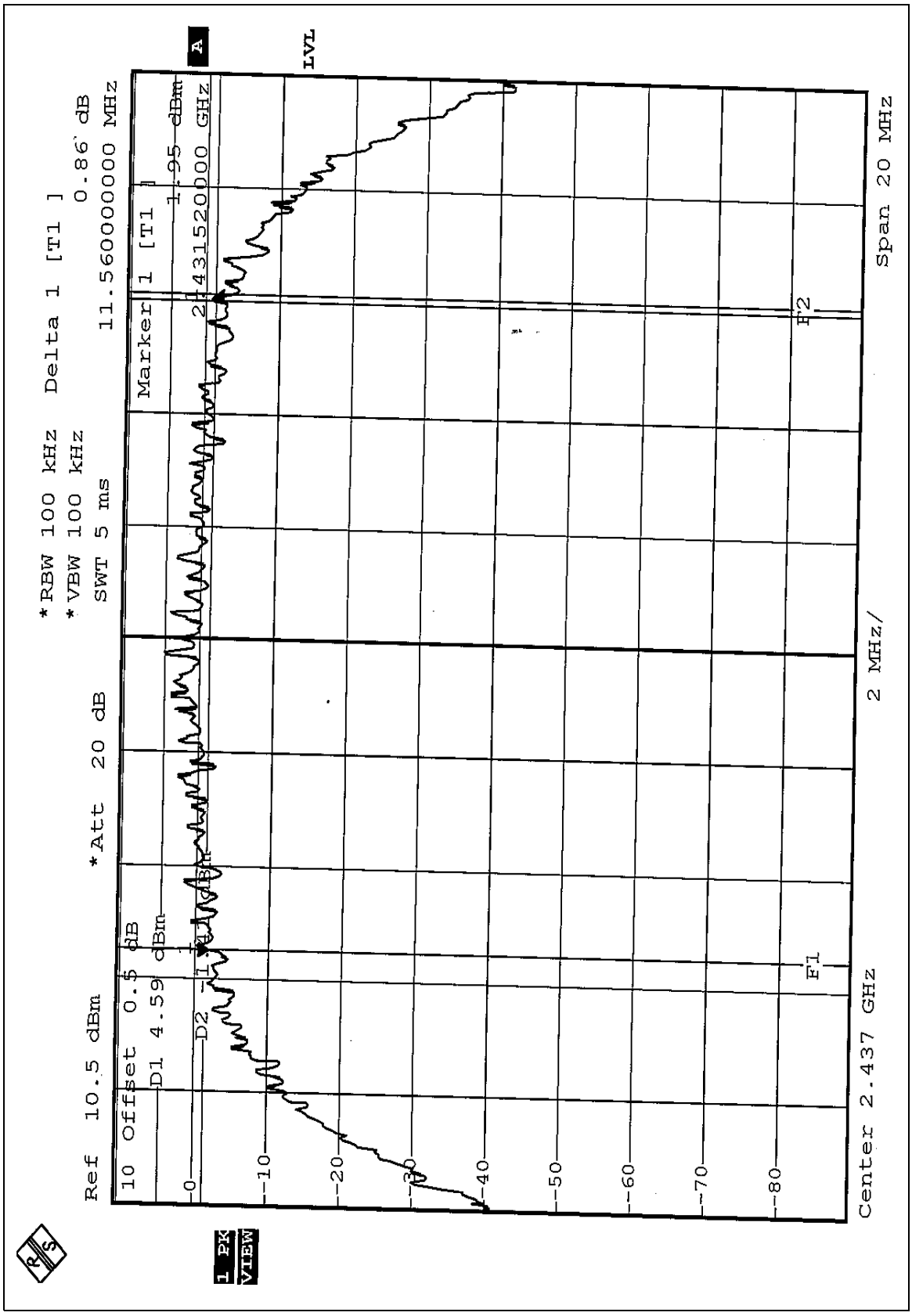
EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	CCK
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.56	0.5	PASS
6	2437	11.56	0.5	PASS
11	2462	11.52	0.5	PASS

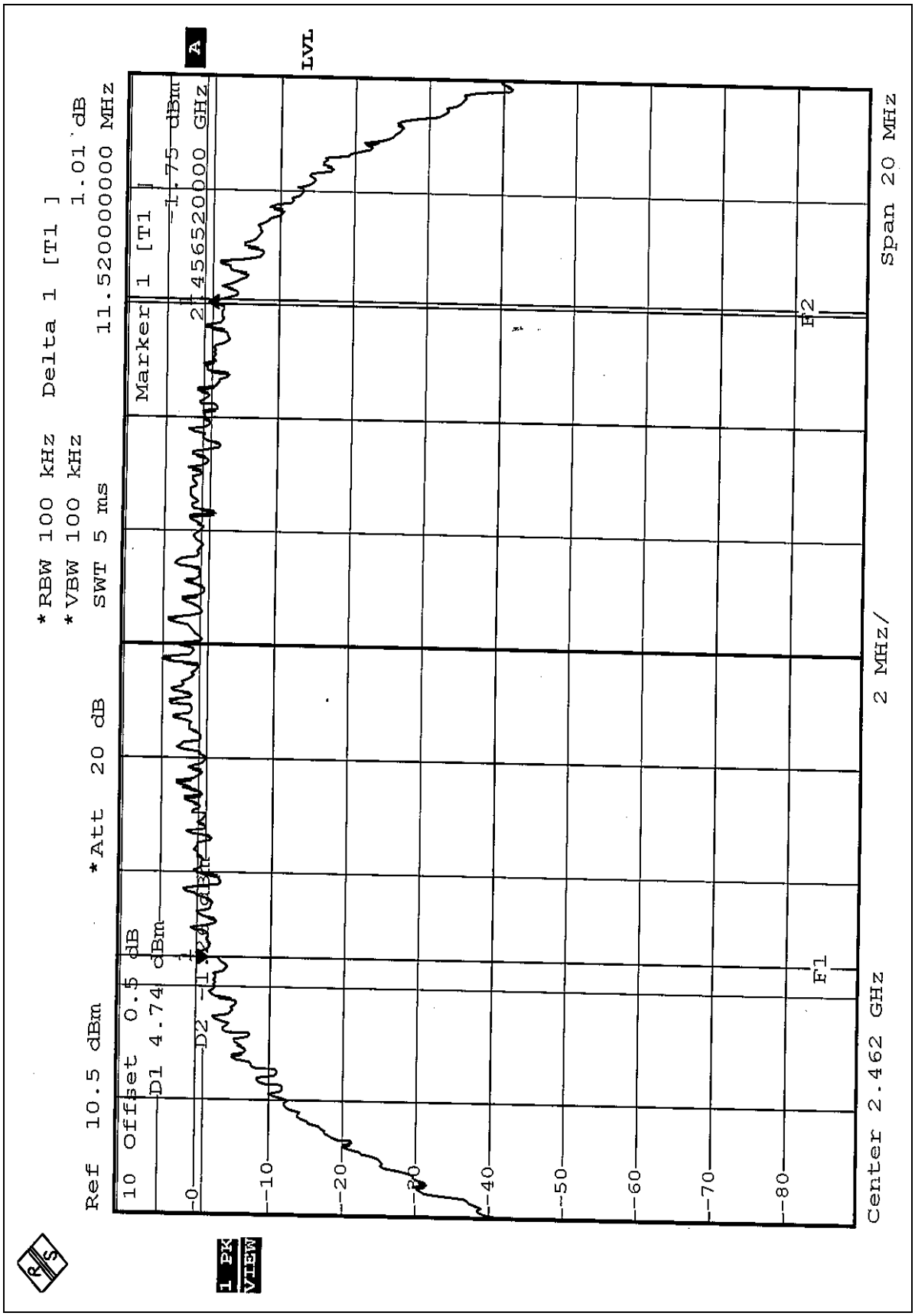
CH1


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.70 dB
11.560000000 MHz
Marker 1 [T1]
-1.71 dBm
2.406520000 GHz
Ref 10.5 dBm
Offset 0.5 dB
10 dB/
Att 20 dB
D1 4.4 dBm
D2 -1.6 dBm
Center 2.412 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
A
1 PK
VIEW

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.86 dB
11.56000000 MHz
Marker 1 [T1]
1.95 dBm
2.43152000 GHz
Ref 10.5 dBm
Offset 0.5 dB
Att 20 dB
D1 4.59 dBm
D2
Center 2.437 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
1 PK
VIEW

CH11

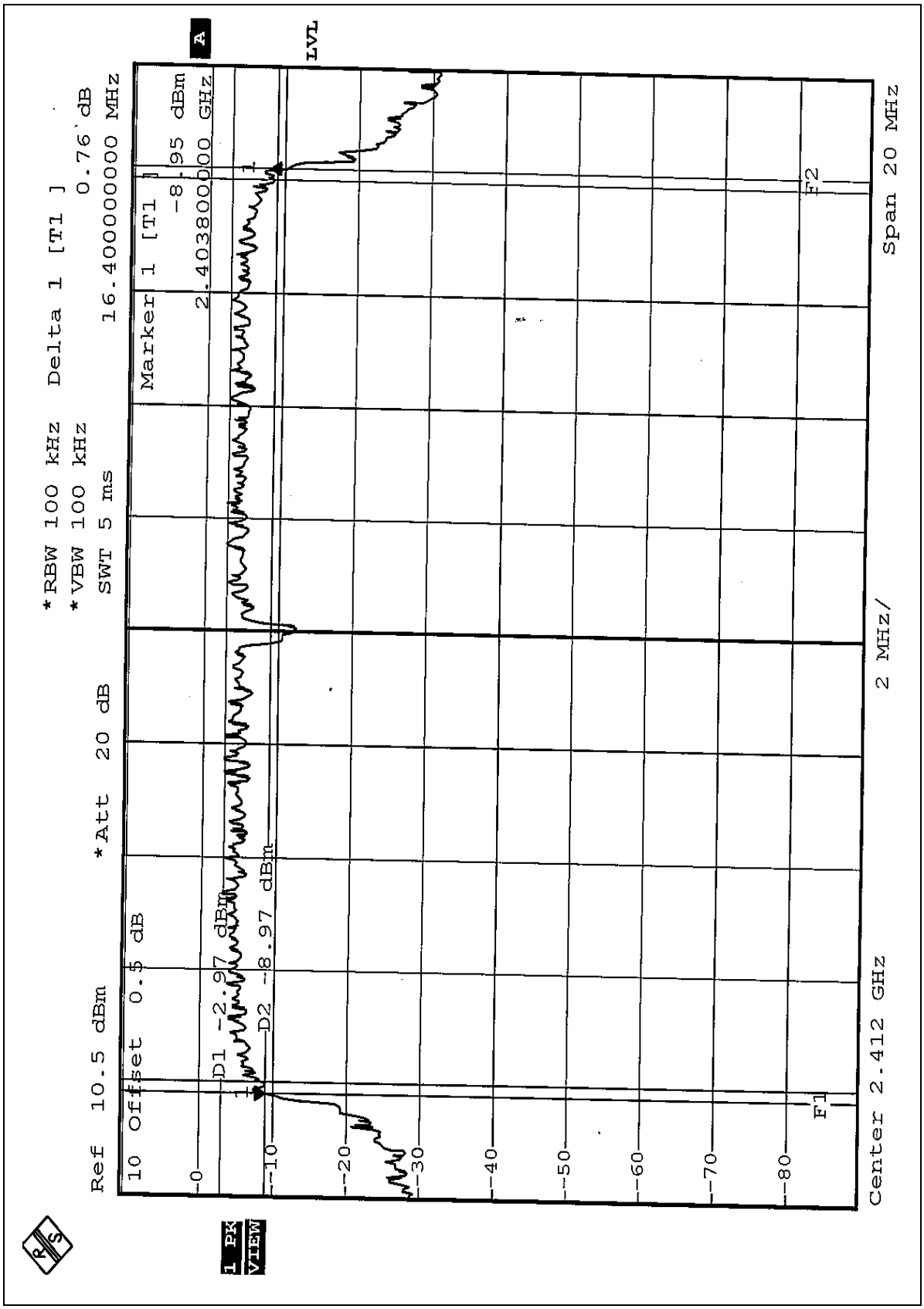

RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.01 dB
11.520000000 MHz
Marker 1 [T1]
-1.75 dBm
2.456520000 GHz
Ref 10.5 dBm
Offset 0.5 dB
D1 4.74 dBm
D2 -1.24 dBm
Att 20 dB
LVL
Span 20 MHz
2 MHz/
Center 2.462 GHz
F1
F2
1 PK
VIEW

4.3.8 TEST RESULTS (B)

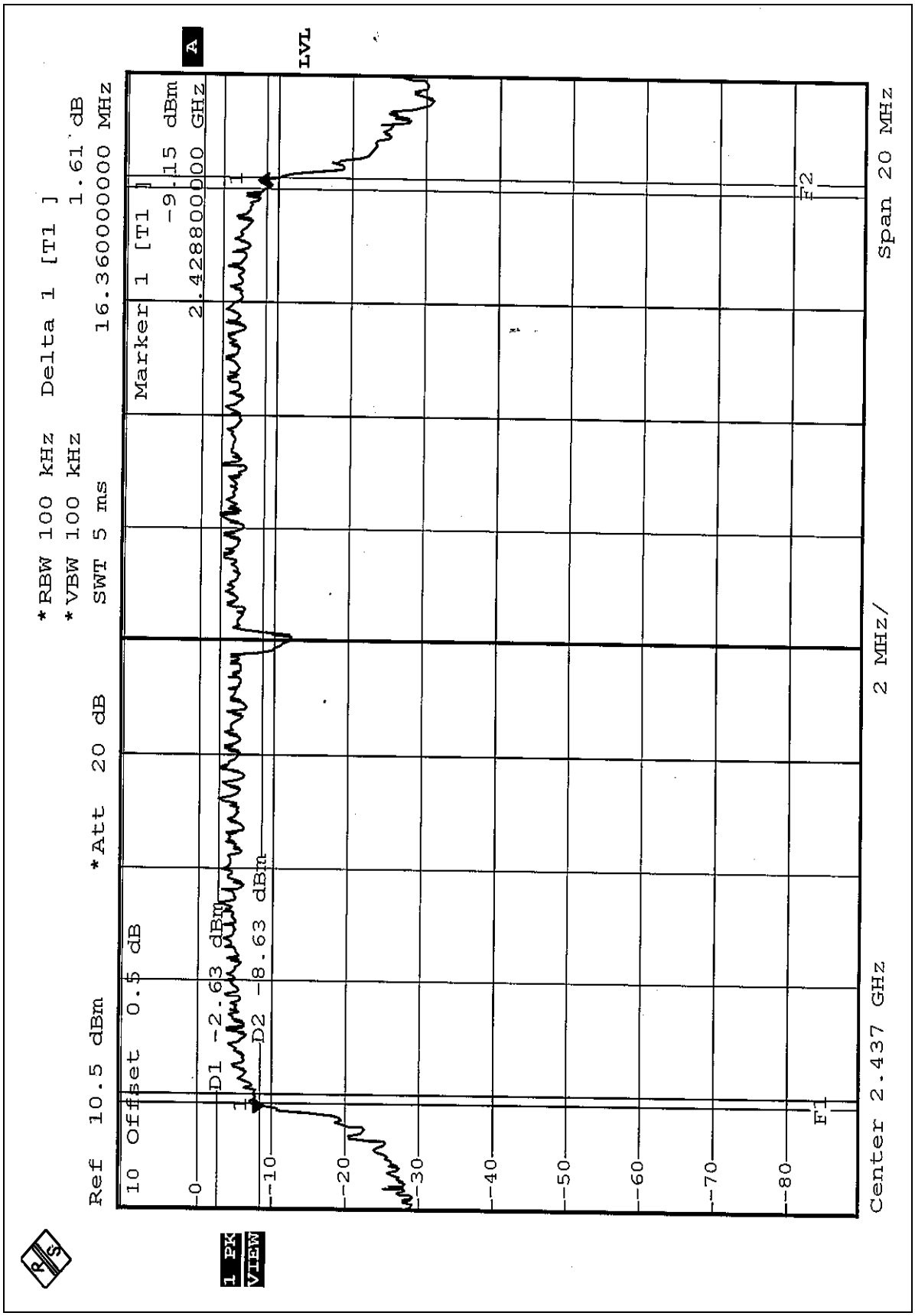
EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	OFDM
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.40	0.5	PASS
6	2437	16.36	0.5	PASS
11	2462	16.40	0.5	PASS

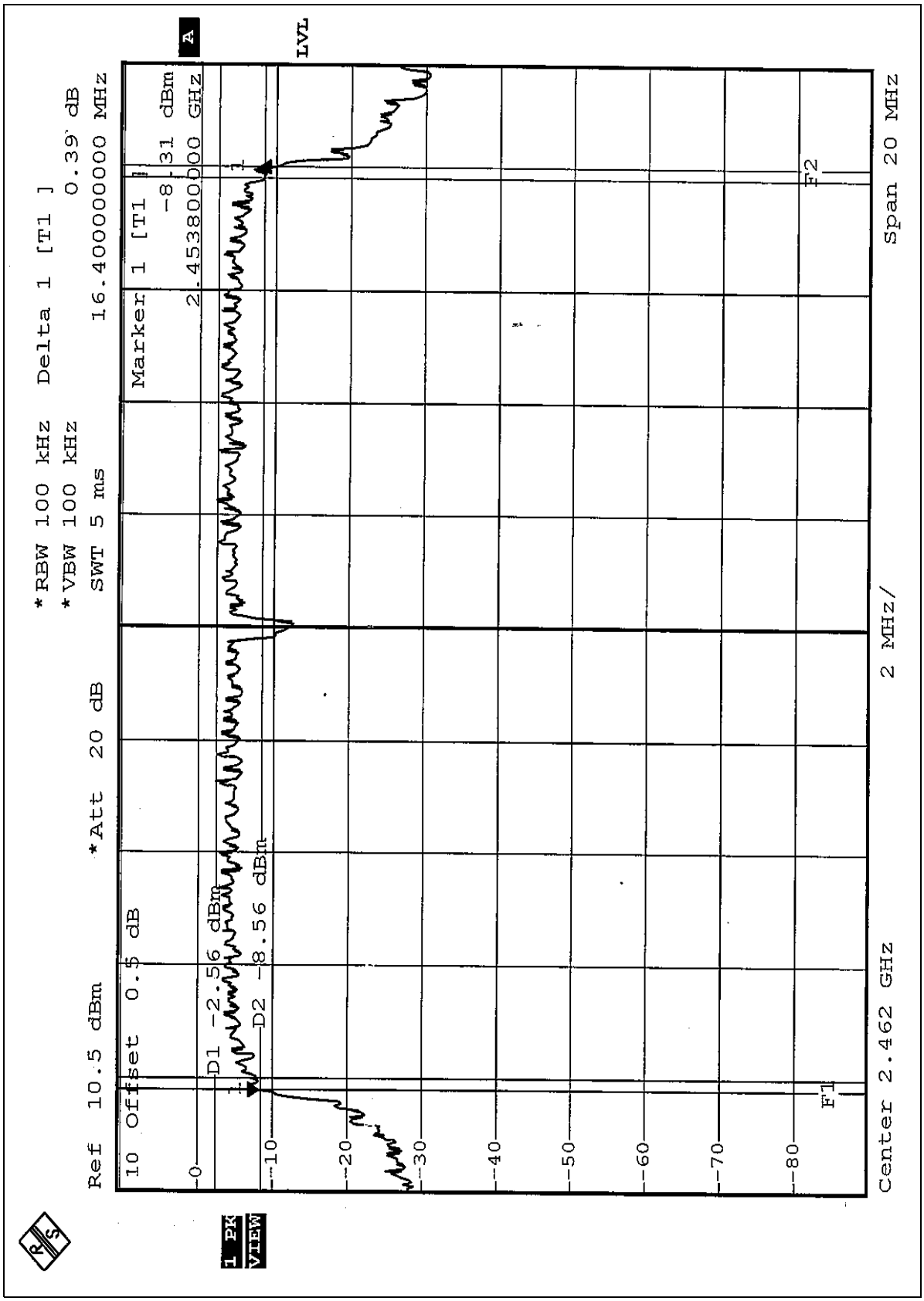
CH1


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.76 dB
16.400000000 MHz
Marker 1 [T1]
-8.95 dBm
2.403800000 GHz
D1 -2.97 dBm
D2 -8.97 dBm
Center 2.412 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
A
1 PK
VIEW

CH6


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.61 dB
16.360000000 MHz
Marker 1 [T1]
-9.15 dBm
2.428800000 GHz
D1 -2.63 dBm
D2 -8.63 dBm
Center 2.437 GHz
2 MHz/
Span 20 MHz
1 PK
VIEW
A
LVL

CH11


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.39 dB
16.400000000 MHz
Marker 1 [T1]
-8.31 dBm
2.453800000 GHz
D1 -2.56 dBm
D2 -8.56 dBm
Center 2.462 GHz
2 MHz/
Span 20 MHz
F1
F2
1 PK
VIEW
LVL
A

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	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	C019167	Feb. 01, 2005
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 peak 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 peak 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	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	CCK
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.00	29	PASS
6	2437	15.00	29	PASS
11	2462	15.00	29	PASS

4.4.8 TEST RESULTS (B)

EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	OFDM
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.00	29	PASS
6	2437	14.00	29	PASS
11	2462	14.00	29	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

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

4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

4.5.6 EUT OPERATING CONDITIONS

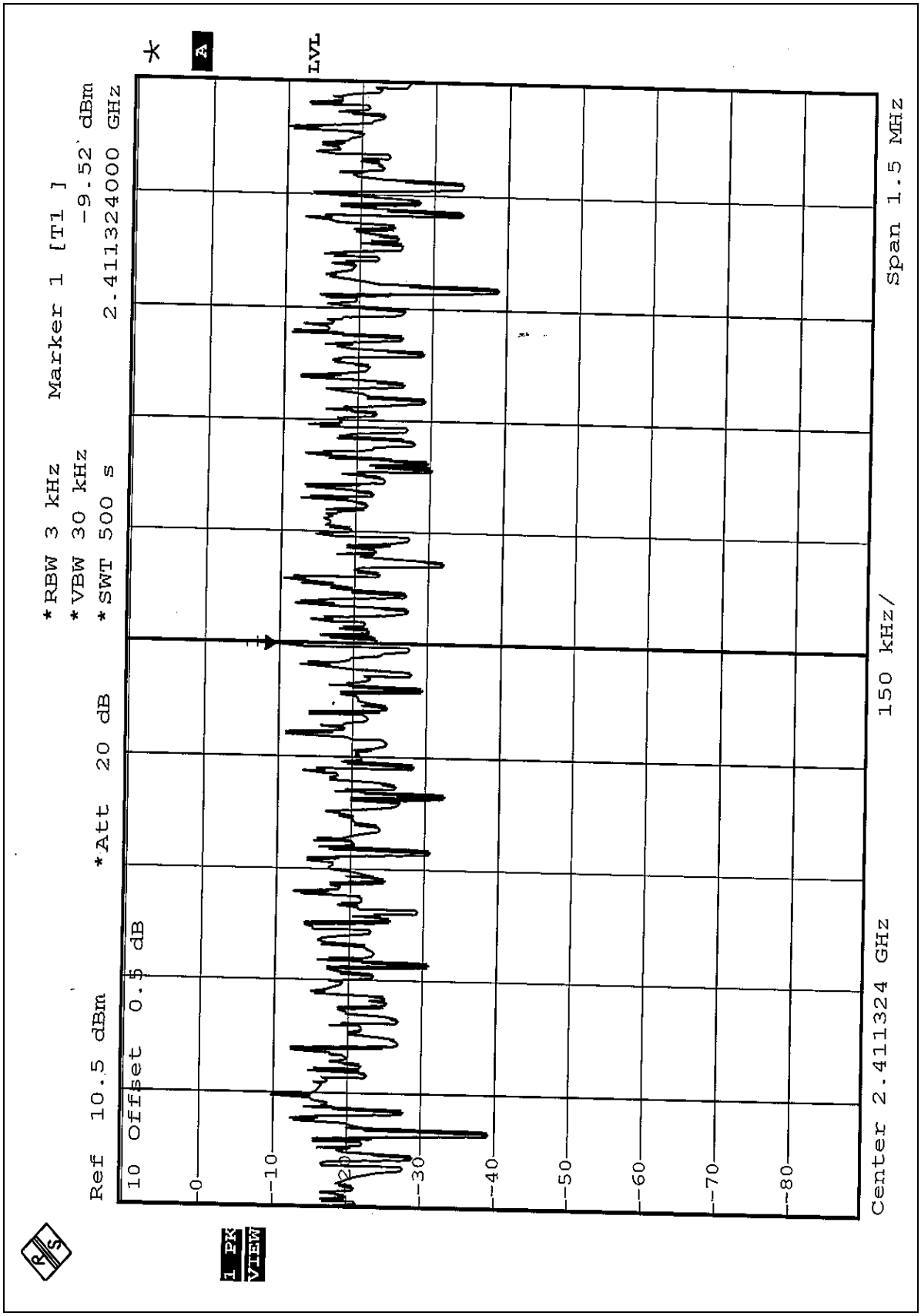
Same as 4.3.6

4.5.7 TEST RESULTS (A)

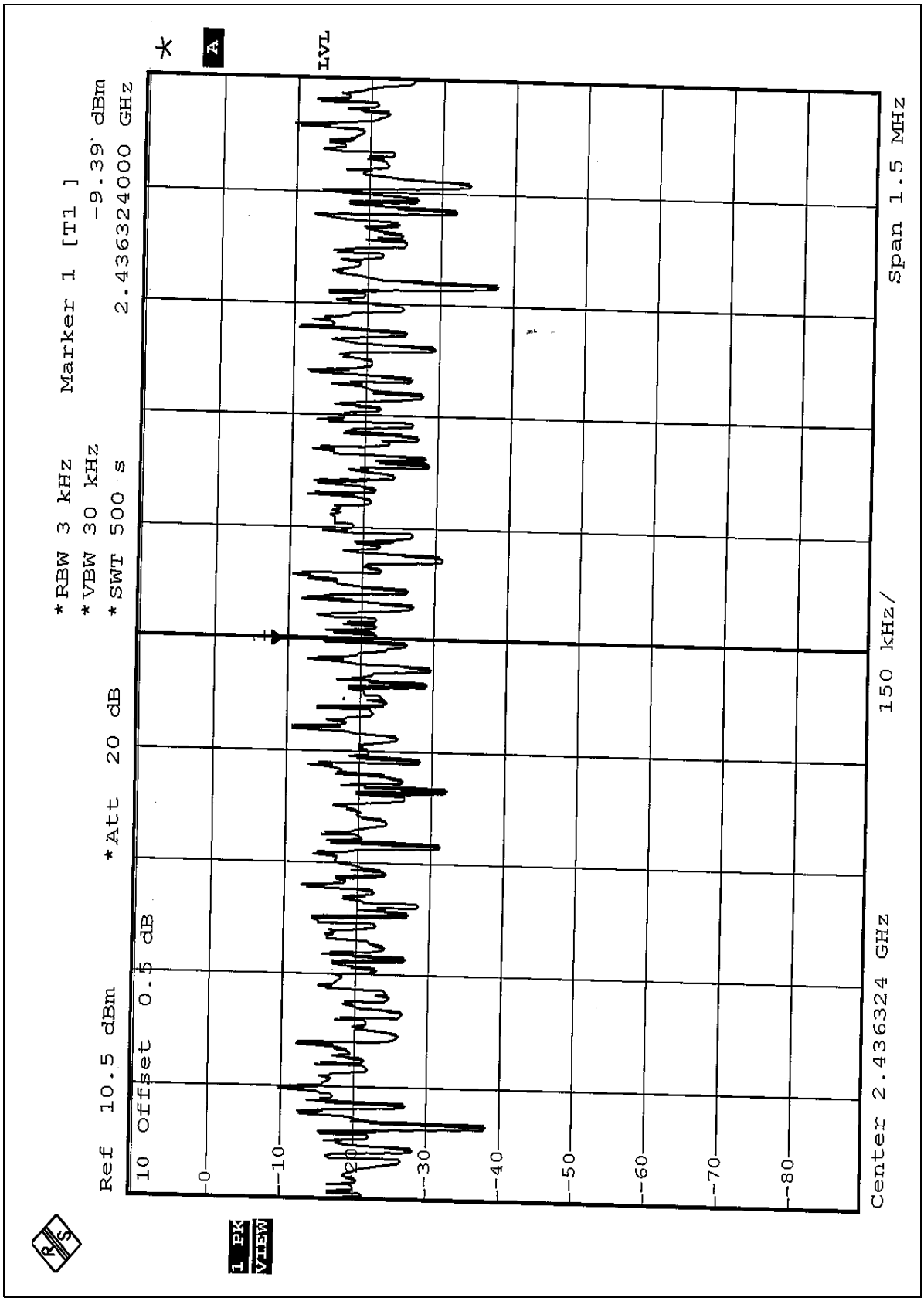
EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	CCK
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.52	8	PASS
6	2437	-9.39	8	PASS
11	2462	-10.06	8	PASS

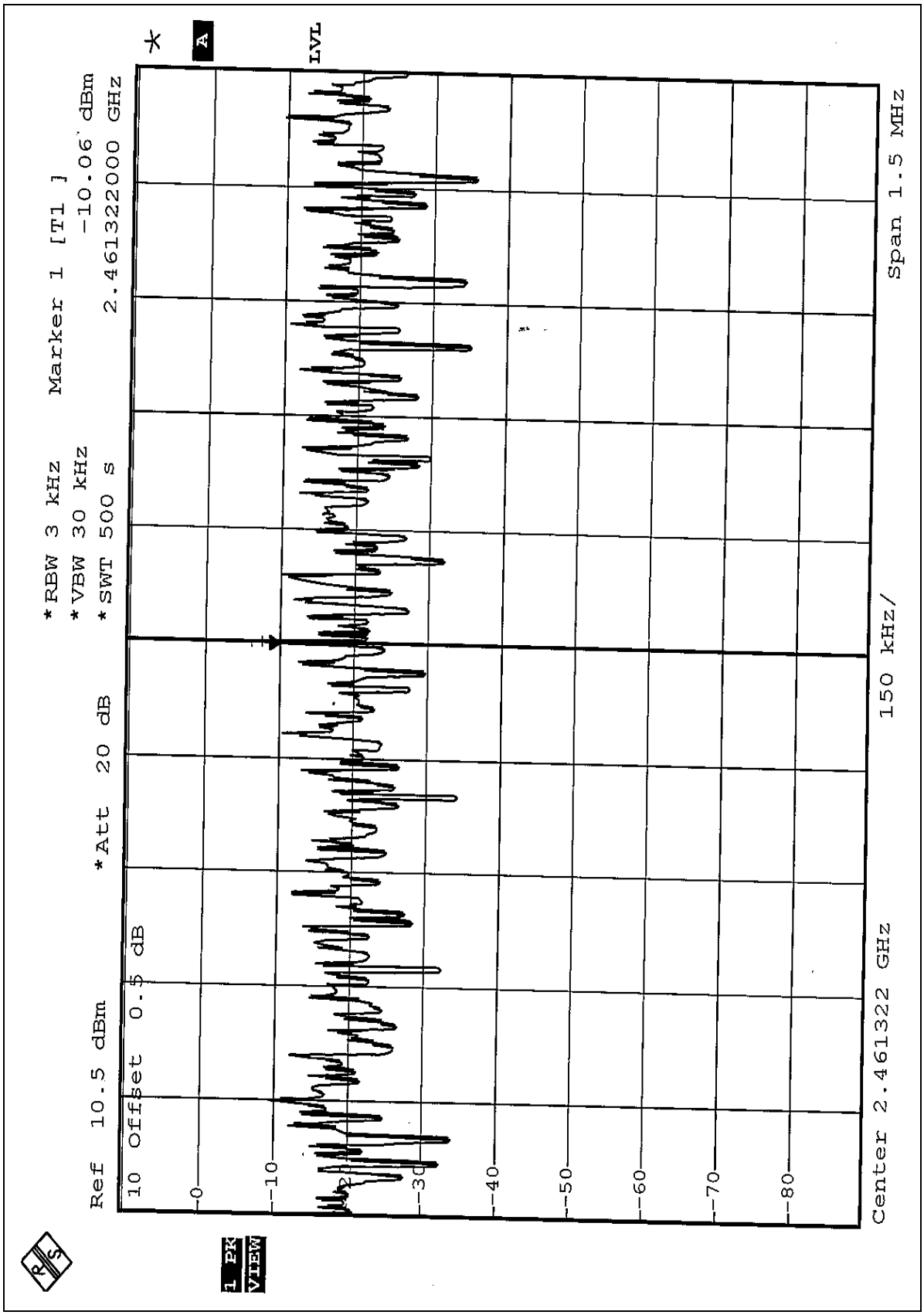
CH1


Marker 1 [T1]
-9.52 dBm
2.41132400 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 20 dB
Ref 10.5 dBm
10 Offset 0.5 dB
Center 2.411324 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
A
LVL

CH6


Marker 1 [T1]
-9.39 dBm
2.436324000 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 20 dB
Ref 10.5 dBm
10 Offset 0.5 dB
Center 2.436324 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW

CH11

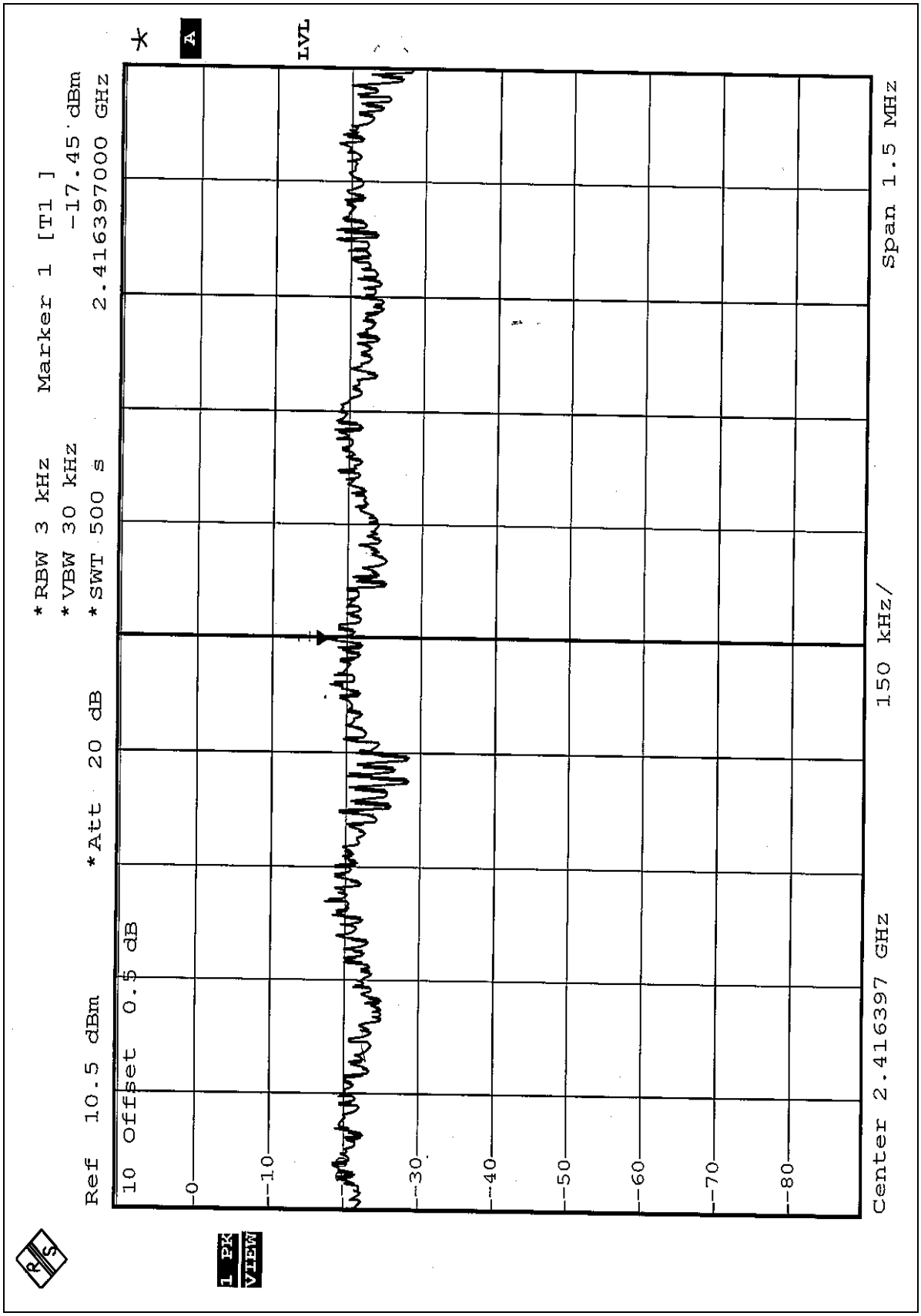

Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.06 dBm
2.461322000 GHz
LVL
A
Center 2.461322 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW
0
-10
-30
-40
-50
-60
-70
-80

4.5.8 TEST RESULTS (B)

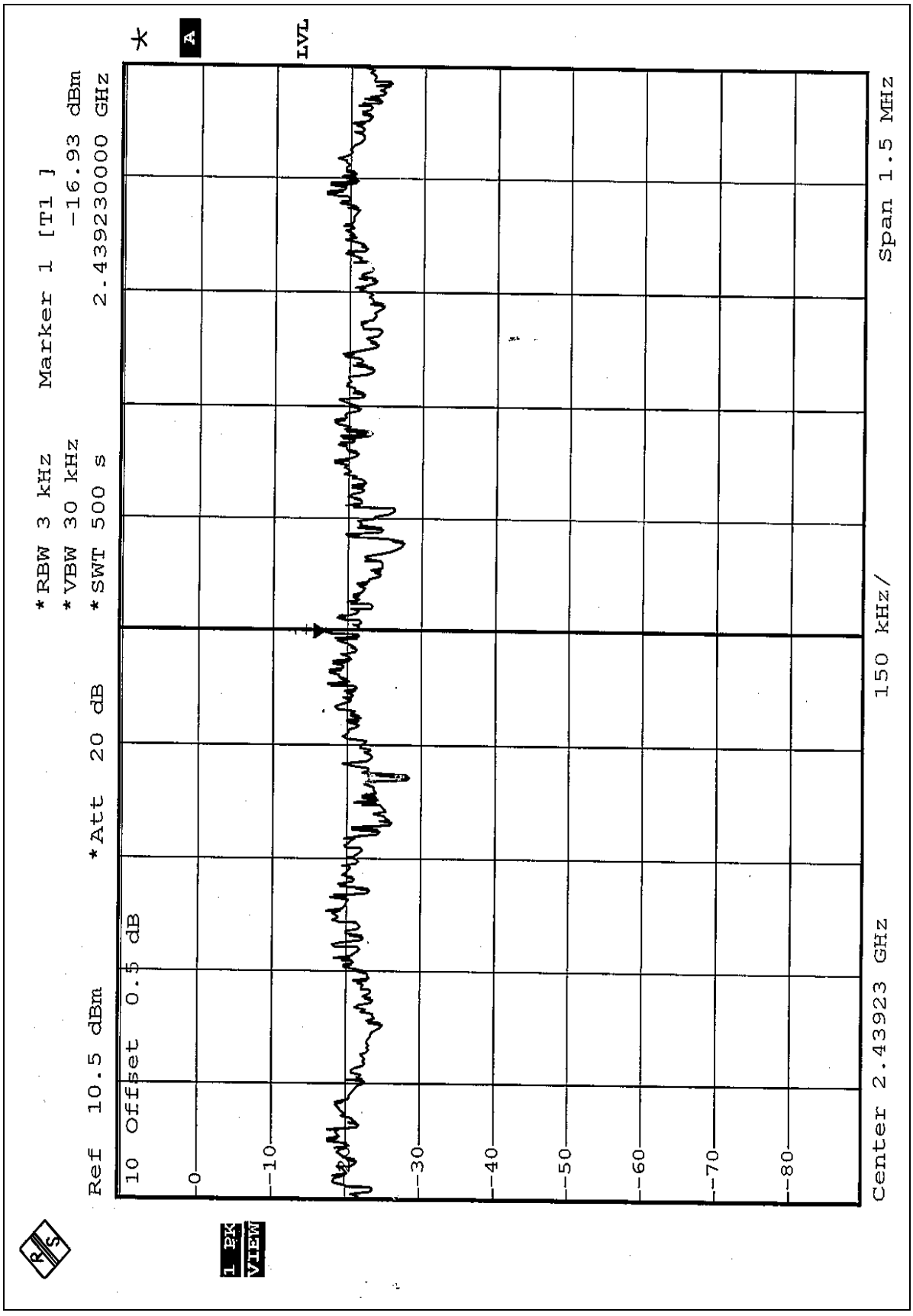
EUT	Wireless-G VPN Broadband Router	**MODEL**	WRV54G
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**MODE**	OFDM
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991hPa	**TEST MODE**	Mode A & B
TESTED BY:	Allen Chang		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-17.45	8	PASS
6	2437	-16.93	8	PASS
11	2462	-17.19	8	PASS

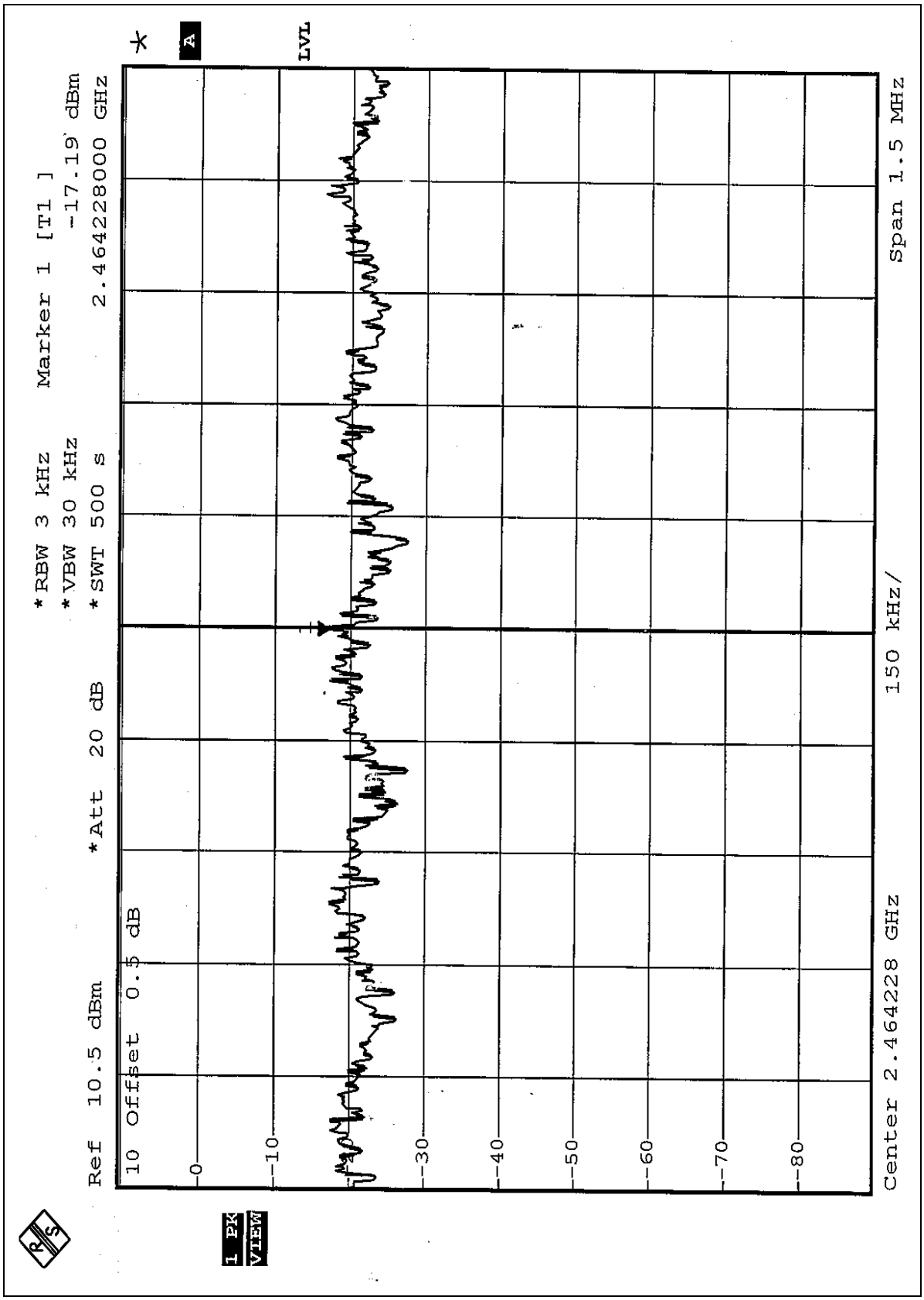
CH1


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-17.45 dBm
2.416397000 GHz
Center 2.416397 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
A
MAXH
0
-10
-30
-40
-50
-60
-70
-80

CH6


Marker 1 [T1]
-16.93 dBm
2.439230000 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 20 dB
Offset 0.5 dB
Ref 10.5 dBm
Center 2.43923 GHz
150 kHz/
Span 1.5 MHz
1 PK VIEW
LVL
A

CH11


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-17.19 dBm
2.464228000 GHz
LVL
A
1 PK
VIEW
Center 2.464228 GHz
150 kHz/
Span 1.5 MHz
0
-10
-30
-40
-50
-60
-70
-80

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

4.6.6 TEST RESULTS (A)

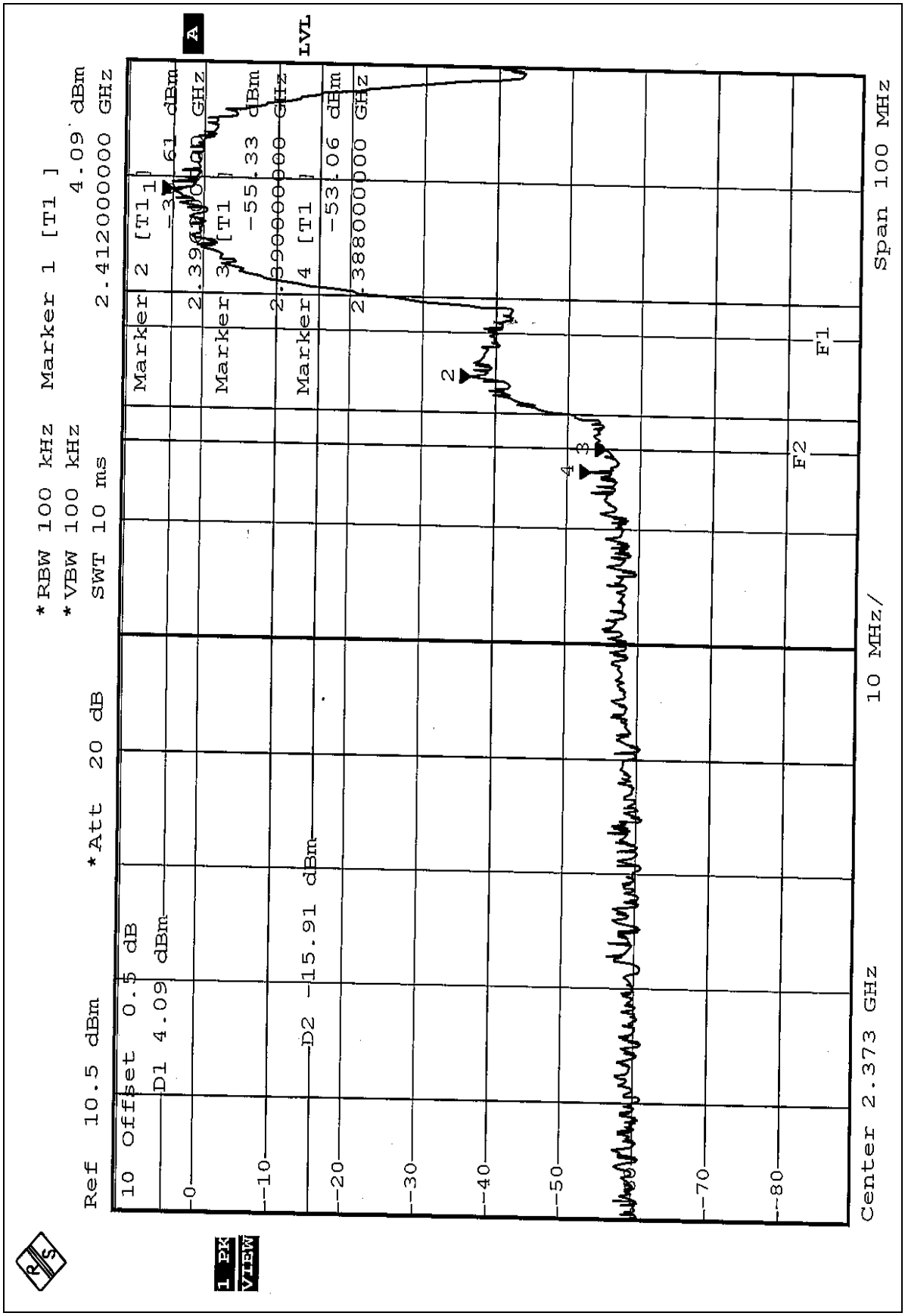
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

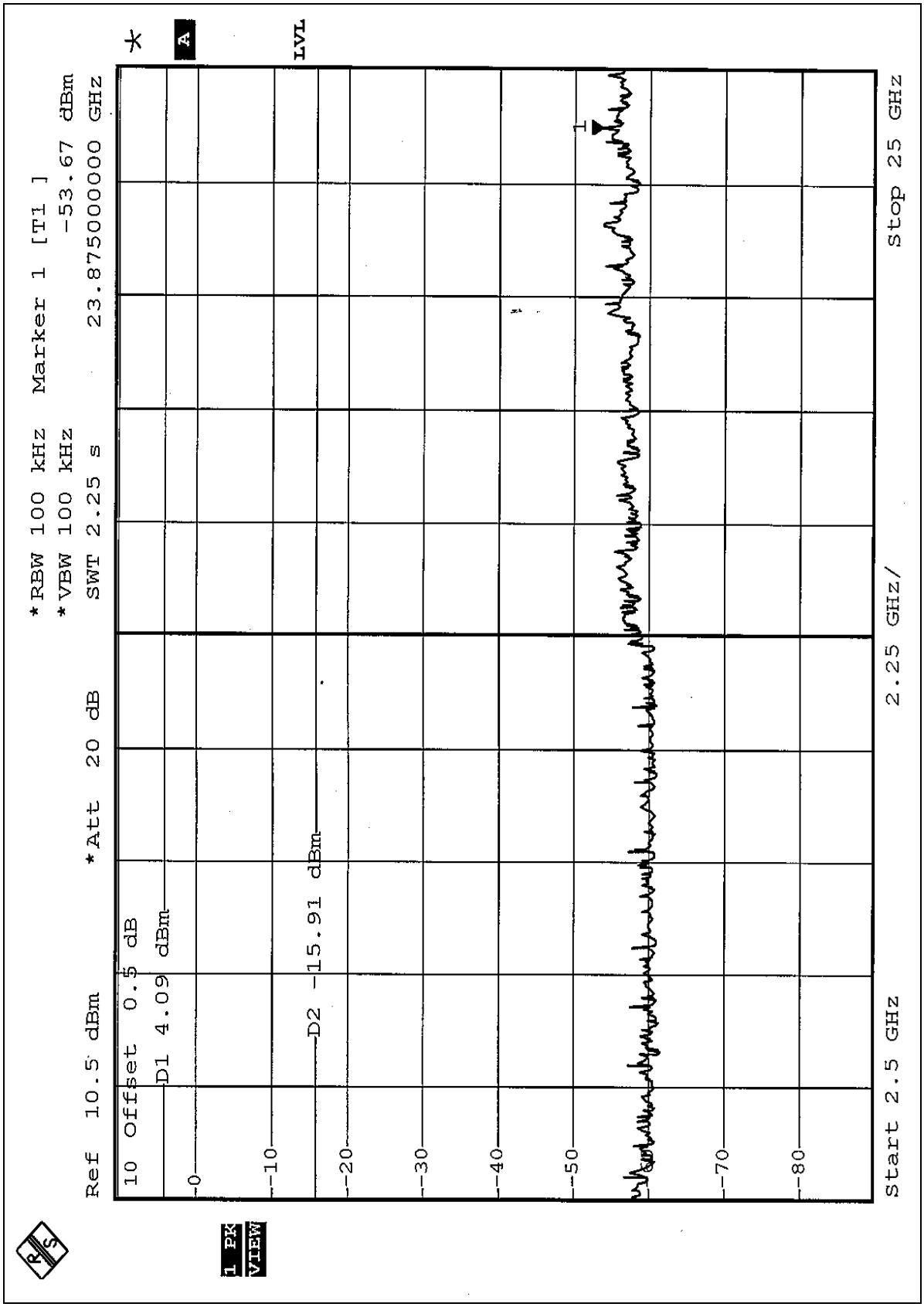
MODE A
NOTE 1:
The band edge emission plot of CCK technique on the following 1-2 pages shows 57.15dB delta between carrier maximum power and local maximum emission in restrict band (2.3880GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 100.89dBuV/m, so the maximum field strength in restrict band is 100.89-57.15=43.74dBuV/m which is under 54dBuV/m limit.

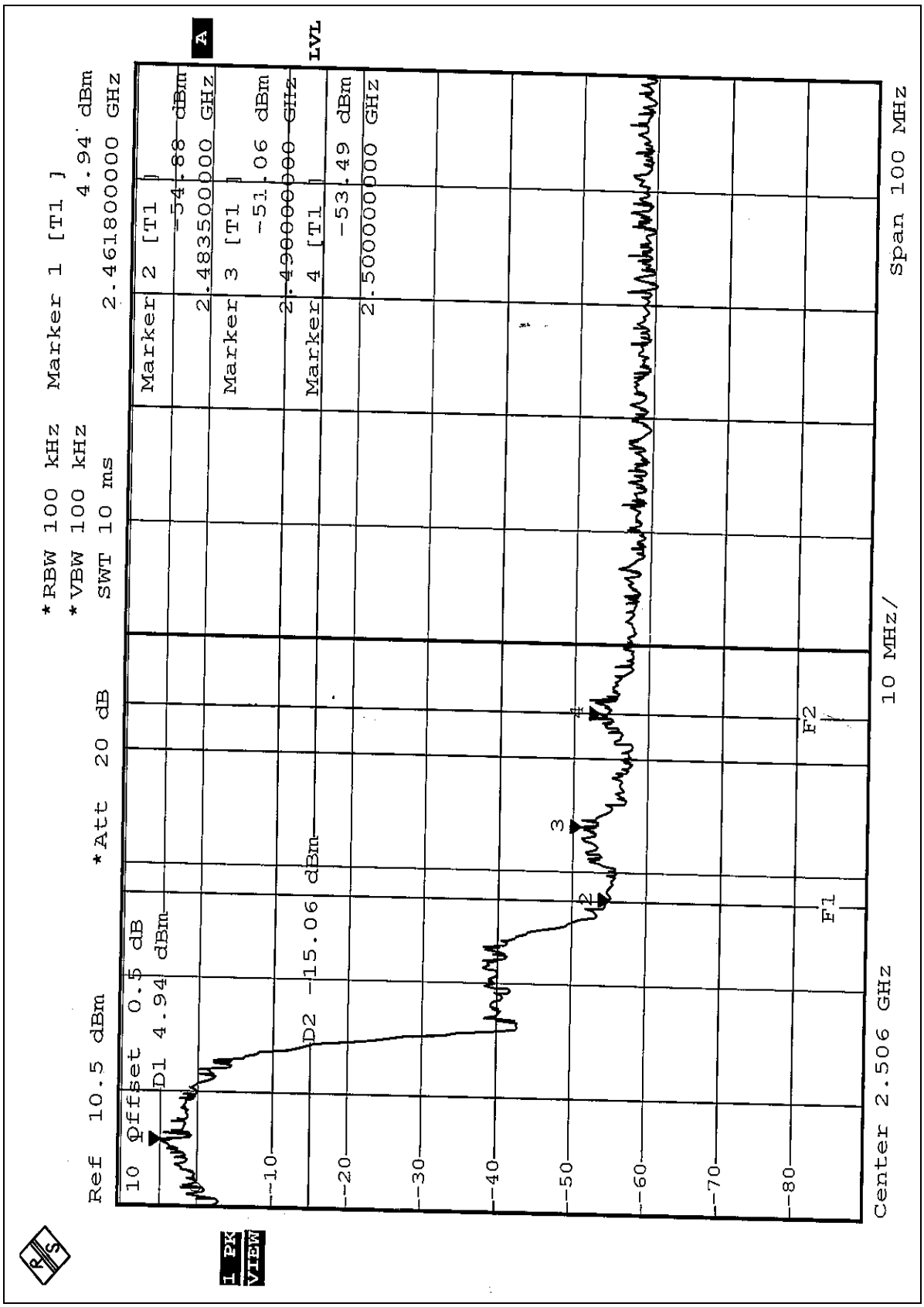
NOTE 2:
The band edge emission plot of CCK technique on the following 3-4 pages shows 56.00dB delta between carrier maximum power and local maximum emission in restrict band (2.4900GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 100.82dBuV/m, so the maximum field strength in restrict band is 100.82-56.00=44.82dBuV/m which is under 54dBuV/m limit.

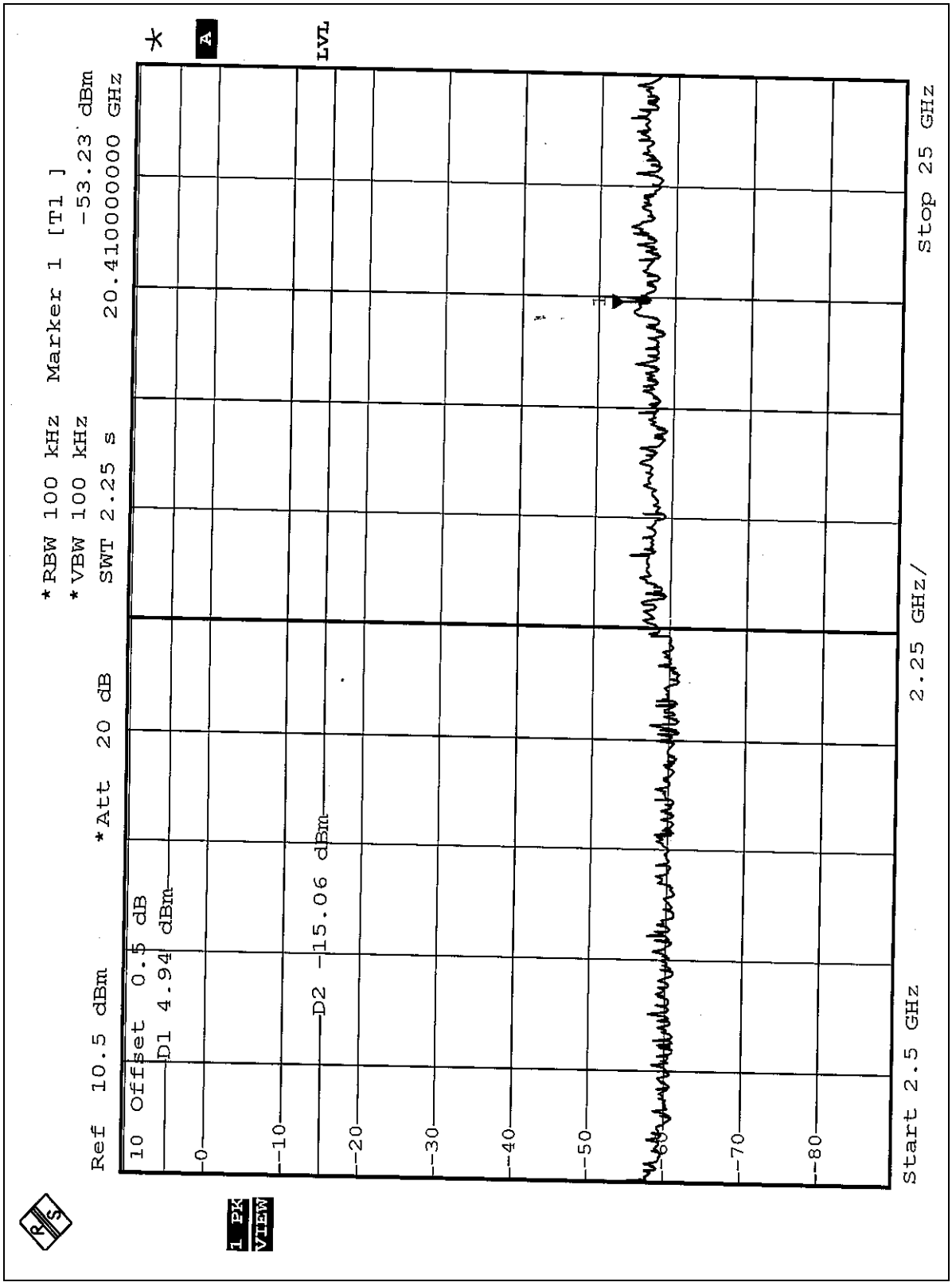
MODE B
NOTE 3:
The band edge emission plot of CCK technique on the following 1-2 pages shows 57.15dB delta between carrier maximum power and local maximum emission in restrict band (2.3880GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 104.01dBuV/m, so the maximum field strength in restrict band is 104.01-57.15=46.86dBuV/m which is under 54dBuV/m limit.

NOTE 4:
The band edge emission plot of CCK technique on the following 3-4 pages shows 56.00dB delta between carrier maximum power and local maximum emission in restrict band (2.4900GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 104.06dBuV/m, so the maximum field strength in restrict band is 104.06-56.00=48.06dBuV/m which is under 54dBuV/m limit.


Ref 10.5 dBm
10 Offset 0.5 dB
D1 4.09 dBm
D2 -15.91 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
4.09 dBm
2.412000000 GHz
Marker 2 [T1]
-3.61 dBm
2.390000000 GHz
Marker 3 [T1]
-55.33 dBm
2.390000000 GHz
Marker 4 [T1]
-53.06 dBm
2.388000000 GHz
LVL
Center 2.373 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK
VIEW


*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-53.67 dBm
23.875000000 GHz
Ref 10.5 dBm
*Att 20 dB
10 Offset 0.5 dB
D1 4.09 dBm
D2 -15.91 dBm
LVL
A
1 PK VIEW
Start 2.5 GHz
2.25 GHz/
Stop 2.5 GHz


Ref 10.5 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
4.94 dBm
2.461800000 GHz
Offset 0.5 dB
D1 4.94 dBm
D2 -15.06 dBm
Marker 2 [T1]
-54.88 dBm
2.483500000 GHz
Marker 3 [T1]
-51.06 dBm
2.490000000 GHz
Marker 4 [T1]
-53.49 dBm
2.500000000 GHz
LVL
Center 2.506 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK
VIEW


Ref 10.5 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-53.23 dBm
20.41000000 GHz
10 Offset 0.5 dB
D1 4.94 dBm
D2 -15.06 dBm
1 PK VIEW
A
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

4.6.7 TEST RESULTS (B)

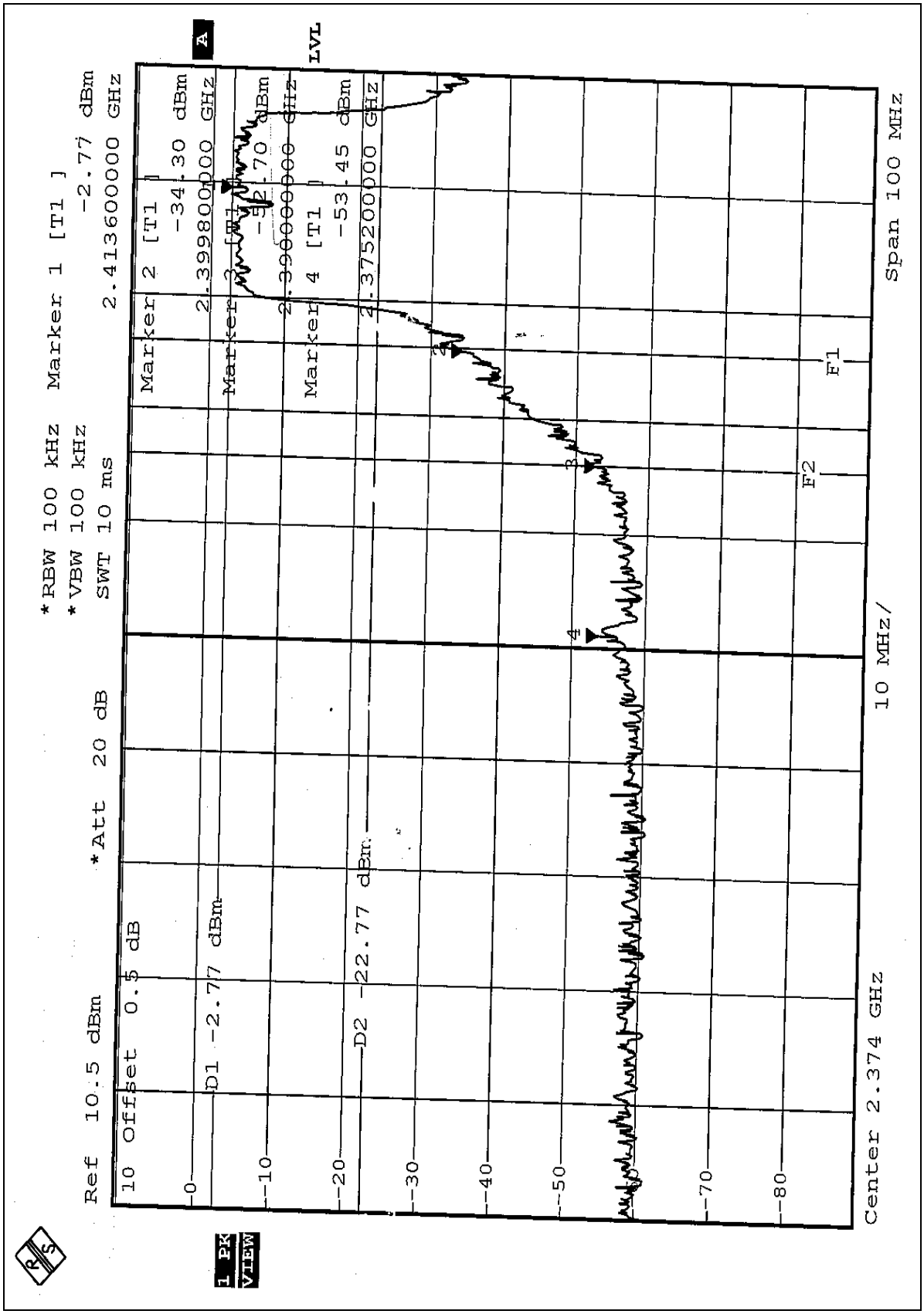
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

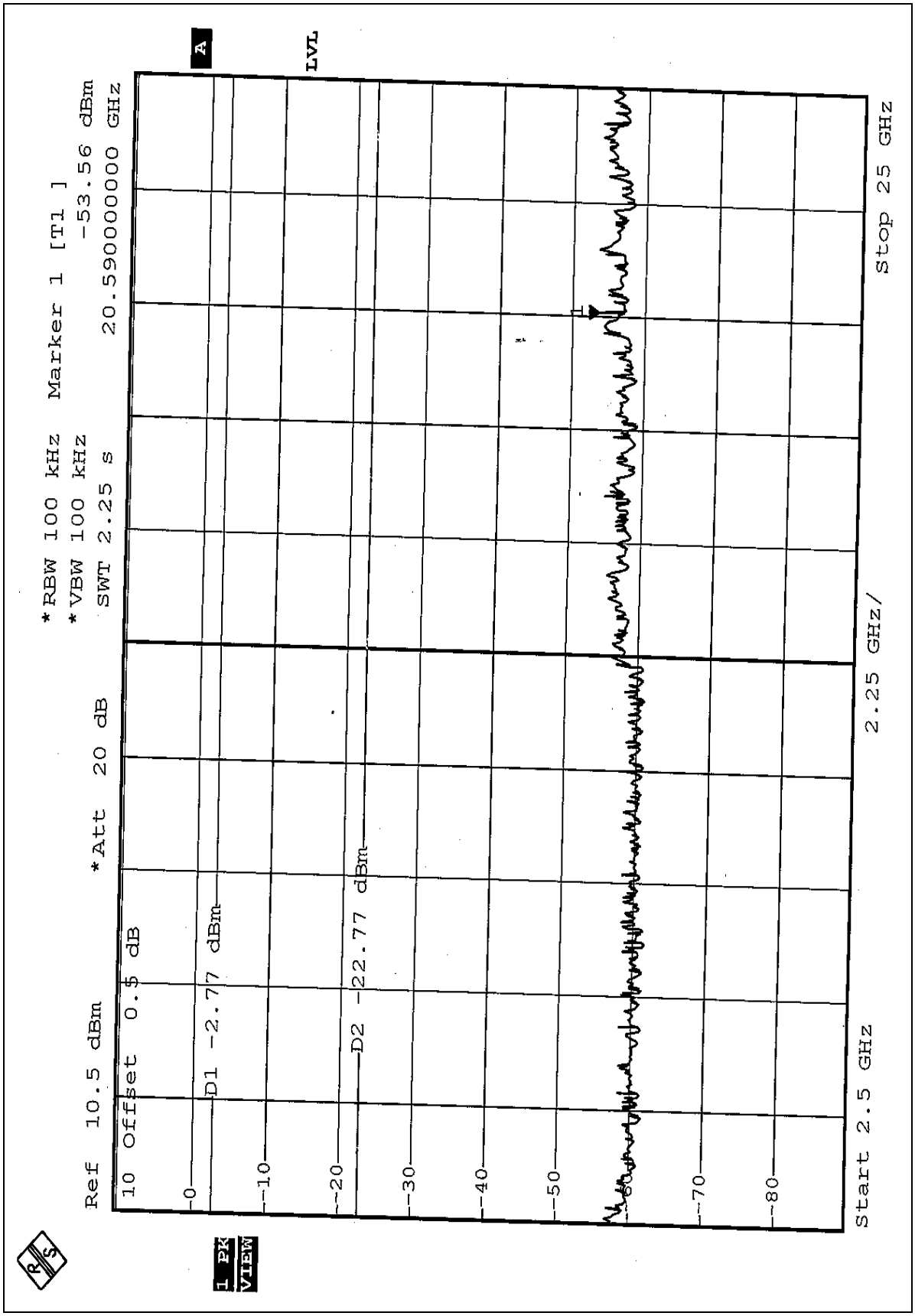
MODE A
NOTE 1:
The band edge emission plot of OFDM technique on the following 1-2 pages shows 49.93lta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 95.26dBuV/m, so the maximum field strength in restrict band is 95.26-49.93=45.33dBuV/m which is under 54dBuV/m limit.

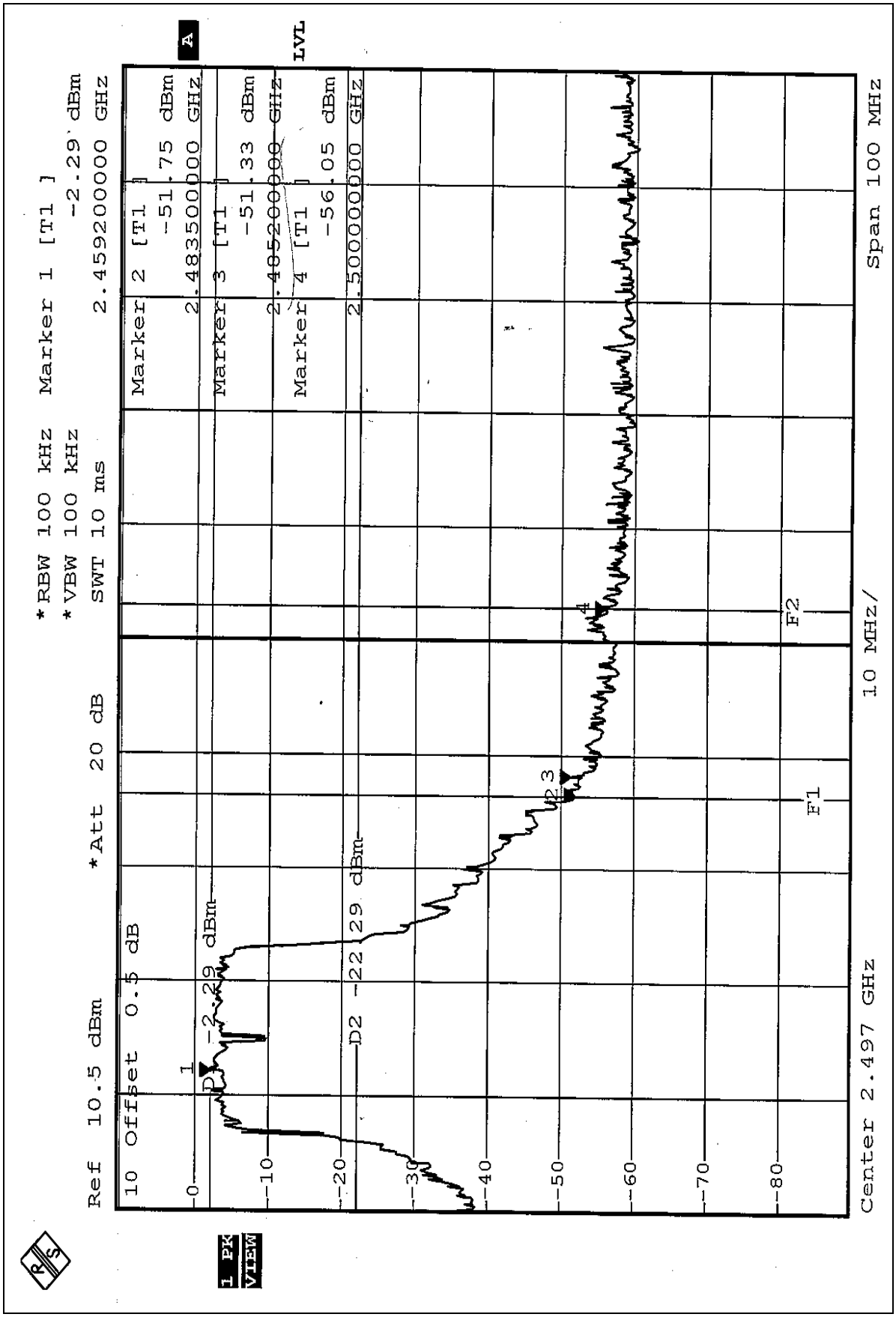
NOTE 2:
The band edge emission plot of OFDM technique on the following 3-4 pages shows 49.04dB delta between carrier maximum power and local maximum emission in restrict band (2.4852GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 95.65dBuV/m, so the maximum field strength in restrict band is 95.65-49.04=46.61dBuV/m which is under 54dBuV/m limit.

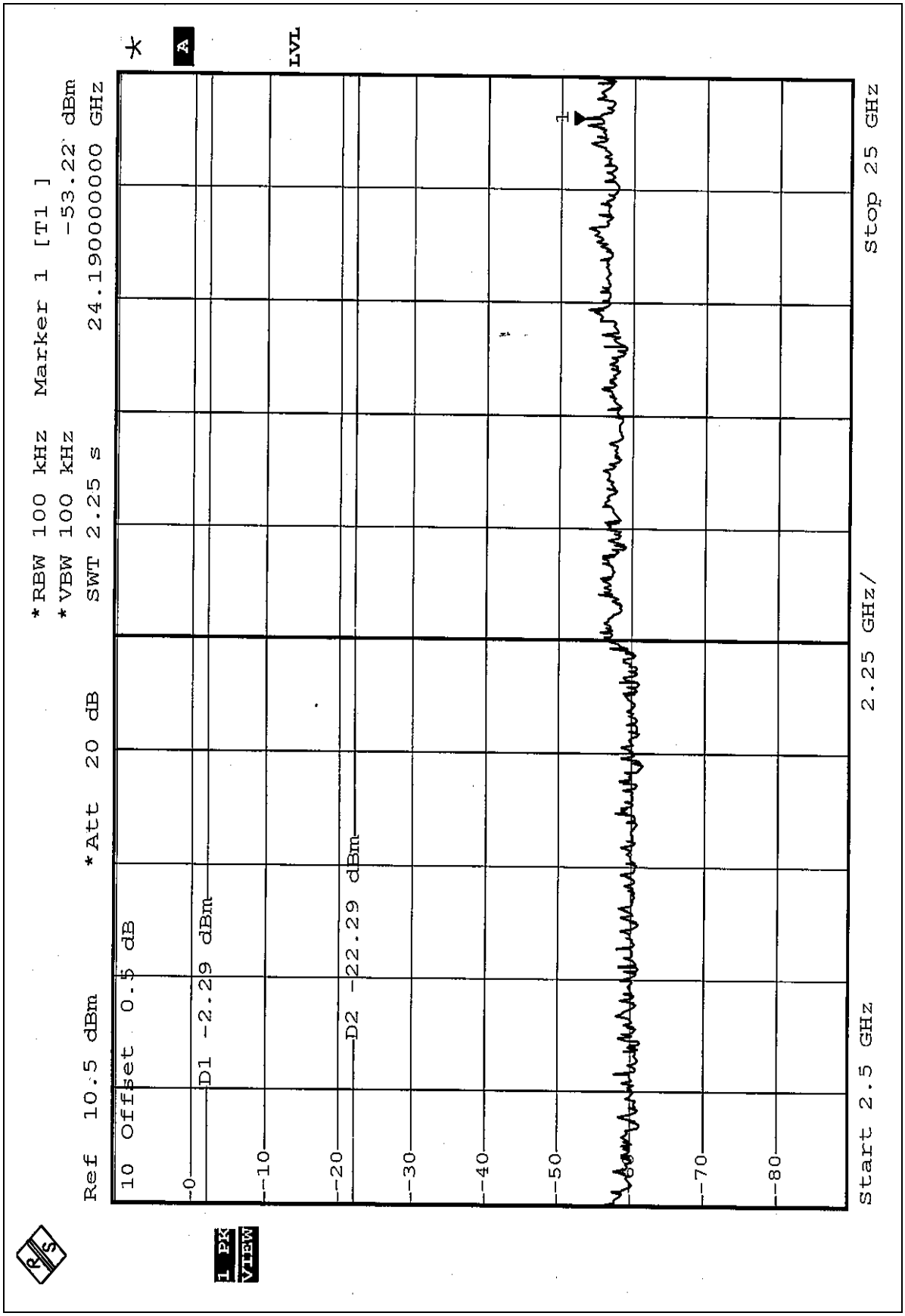
MODE B
NOTE 3:
The band edge emission plot of OFDM technique on the following 1-2 pages shows 49.93dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 99.54dBuV/m, so the maximum field strength in restrict band is 99.54-49.93=49.61dBuV/m which is under 54dBuV/m limit.

NOTE 4:
The band edge emission plot of OFDM technique on the following 3-4 pages shows 49.04dB delta between carrier maximum power and local maximum emission in restrict band (2.4852GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 99.05dBuV/m, so the maximum field strength in restrict band is 99.05-49.04=50.01dBuV/m which is under 54dBuV/m limit.


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-2.77 dBm
2.413600000 GHz
Marker 2 [T1]
-34.30 dBm
2.399800000 GHz
Marker 3 [T1]
-5.70 dBm
2.390000000 GHz
Marker 4 [T1]
-53.45 dBm
2.375200000 GHz
D1 -2.77 dBm
D2 -22.77 dBm
Center 2.374 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK VIEW
A
LVL


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-53.56 dBm
20.590000000 GHz
D1 -2.77 dBm
D2 -22.77 dBm
A
LVL
1 PK VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
0
-10
-20
-30
-40
-50
-70
-80


RBW 100 kHz
VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-2.29 dBm
2.459200000 GHz
Att 20 dB
Offset 0.5 dB
Ref 10.5 dBm
Marker 2 [T1]
-51.75 dBm
2.483500000 GHz
Marker 3 [T1]
-51.33 dBm
2.405200000 GHz
Marker 4 [T1]
-56.05 dBm
2.500000000 GHz
LVL
A
D1 -2.29 dBm
D2 -22.29 dBm
F1
F2
Center 2.497 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-53.22 dBm
24.190000000 GHz
D1 -2.29 dBm
D2 -22.29 dBm
1 PK VIEW
A
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

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

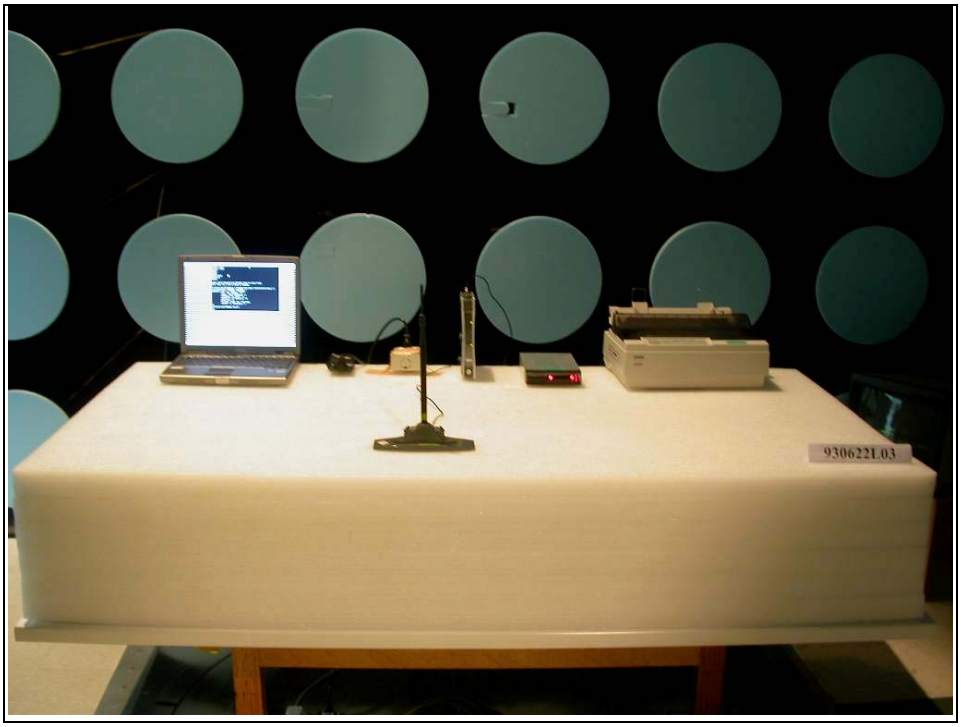
The antenna type used in this product is Dipole antenna with reverse SMA antenna connector. The maximum Gain of this antenna is only 7.0dBi.

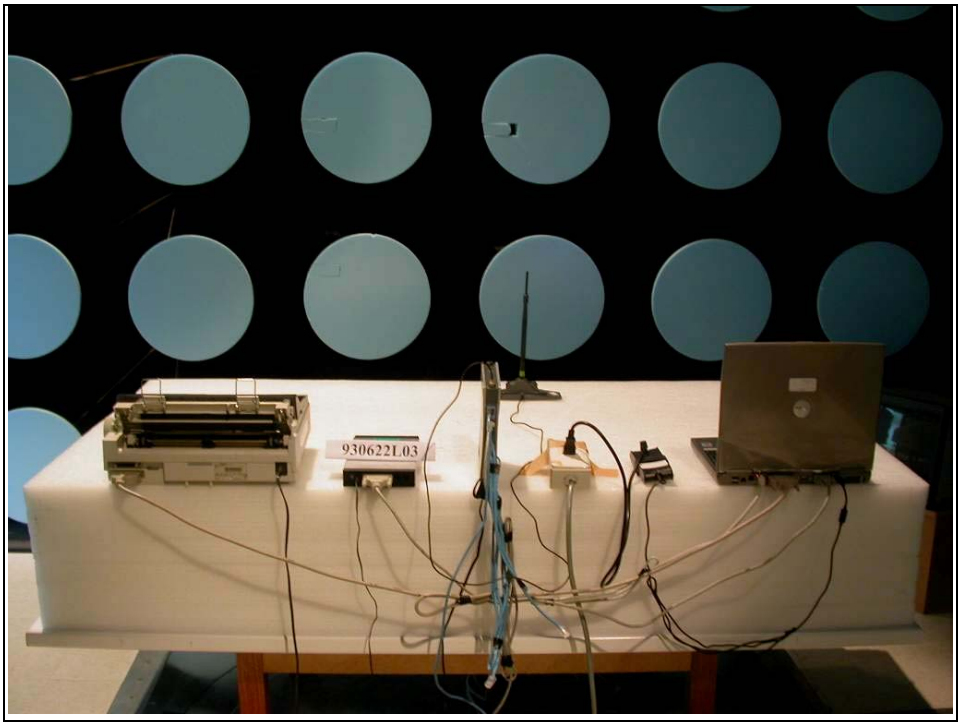
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST
Mode A

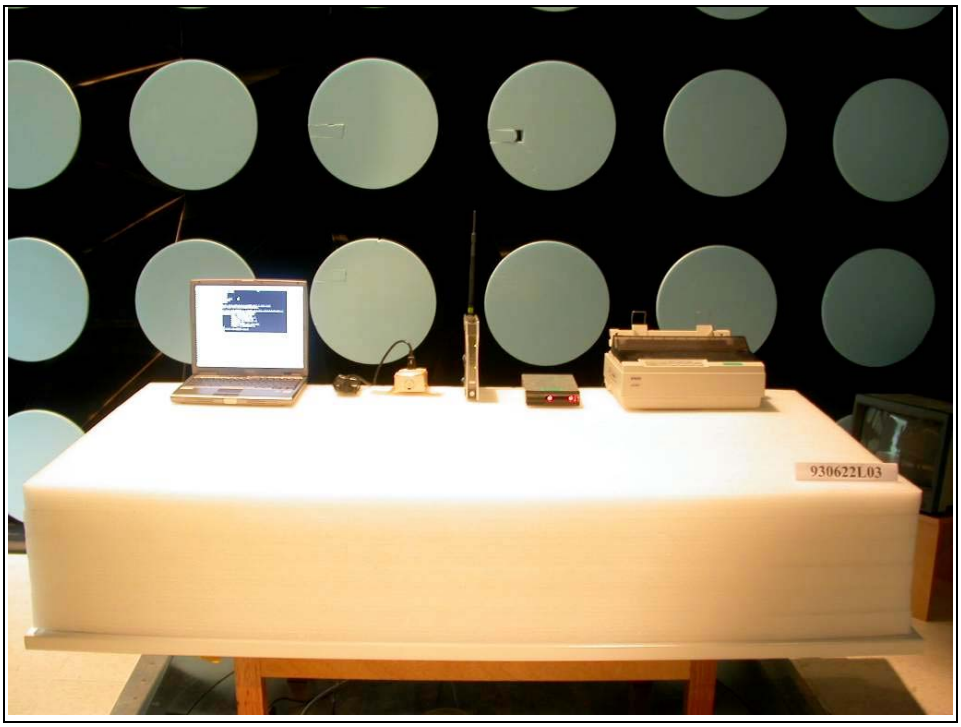
Mode B

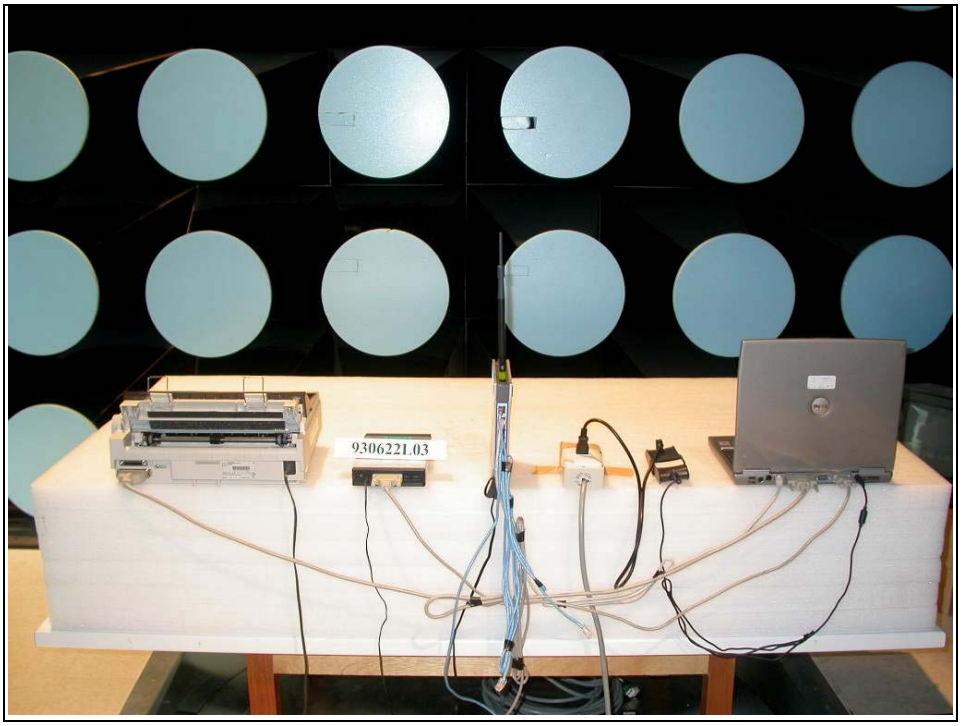
RADIATED EMISSION TEST
Mode A





Mode B





6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF Lab.
Tel: 886-3-3270910
Fax: 886-3-3270892

Email: service@mail.adt.com.tw
Web Site: www.adt.com.tw

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

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