FCC TEST REPORT

REPORT NO.: RF930525L04
MODEL NO.: WUSB54AG
RECEIVED: May 25, 2004
TESTED: May 25 ~ June 2, 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 A/G USB Network Adapter
BRAND NAME :	Linksys
MODEL NO. :	WUSB54AG
APPLICANT :	Cisco-Linksys, LLC
TESTED :	May 25 ~ June 2, 2004
TEST ITEM:	Engineering Sample
STANDARDS :	FCC Part 15, Subpart C (Section 15.247), Subpart E (Section 15.407), ANSI C63.4-2001

The above equipment have 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:** June 2, 2004

APPROVED BY: Cody Chang/ Supervisor , **DATE:** June 2, 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 –19.20dB at 0.211MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –1.88dB at 480.98MHz
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.

APPLIED STANDARD: FCC Part 15, Subpart E			
Standard Section	**Test Type**	**Result**	**REMARK**
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –19.78dB at 0.216MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz – 40000 MHz	PASS	Meet the requirement of limit Minimum passing margin is –1.88dB at 480.98MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless A/G USB Network Adapter
MODEL NO.	WUSB54AG
POWER SUPPLY	5Vdc from host equipment
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 802.11a: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	802.11b & 802.11g: 2400 ~ 2483.50MHz 802.11a: 5.15 ~ 5.35GHz and 5.725 ~ 5.825GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 802.11a: 12
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz
OUTPUT POWER	802.11b: 15.00dBm 802.11g: 15.00dBm 802.11a: 15.60dBm
DATA CABLE	1.5m shielded cable with one core
ANTENNA TYPE	Dipole antenna
ANTENNA GAIN	802.11b & 802.11g: 1.3dBi 802.11a: 0dBi
I/O PORTS	USB
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT operates in both the 5GHz and 2.4GHz Bands and compatibility with 802.11a and 802.11b, 802.11g technology.
2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

For 802.11b and draft 802.11g: Eleven channels are provided to this EUT.

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

NOTE:

1. Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. From our experience and technical viewpoint, we have chosen data rates, 11Mbps with CCK technique and 6Mbps with OFDM technique, as the worst cases for the test among other data rates.

For 802.11a: Twelve channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	5180 MHz	7	5300 MHz
2	5200 MHz	8	5320 MHz
3	5220 MHz	9	5745MHz
4	5240 MHz	10	5765MHz
5	5260 MHz	11	5785MHz
6	5280 MHz	12	5805MHz

NOTE:

1. The EUT allows data rates of up to 54Mbps and was tested at 6Mbps data rate that produced the highest output power.
2. Channel 1, 4, 5, 8, 9 and 12 are the closest frequencies to the band edge, were chosen for final test.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless A/G USB Adapter. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247),
Subpart E (15.407). 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

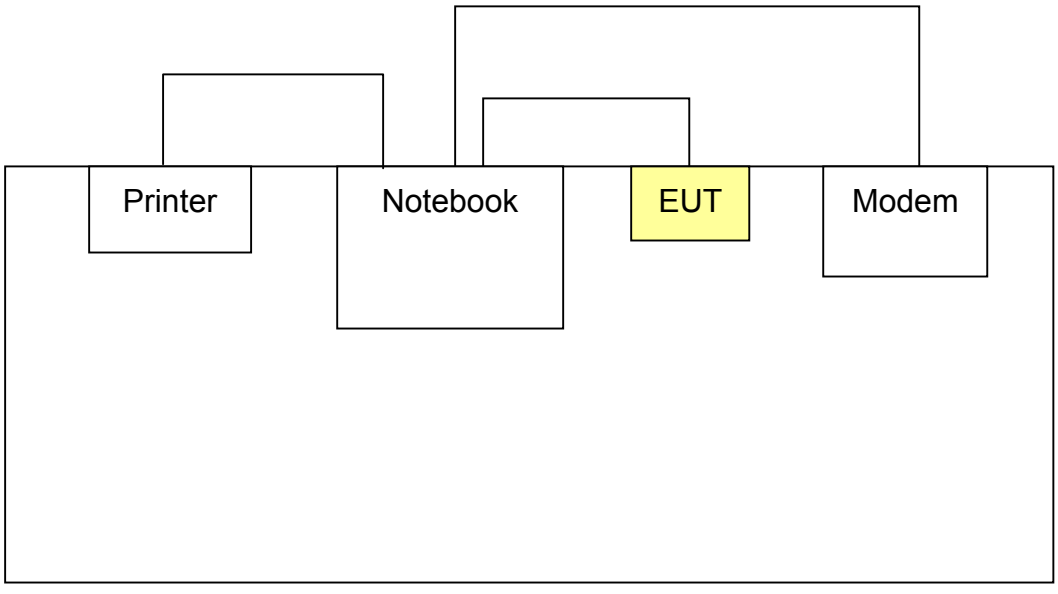
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	33898721680	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY054146	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008260	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m shielded cable without core.
3	1.2m shielded cable without core.

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



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

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 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.

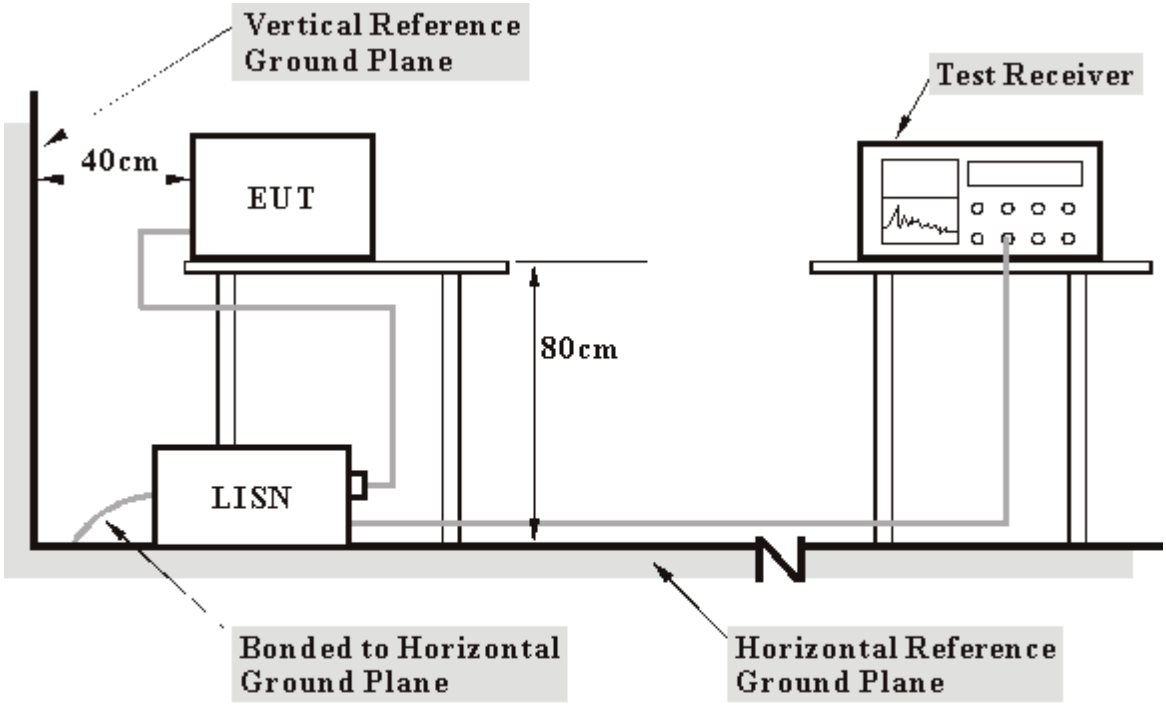
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz 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

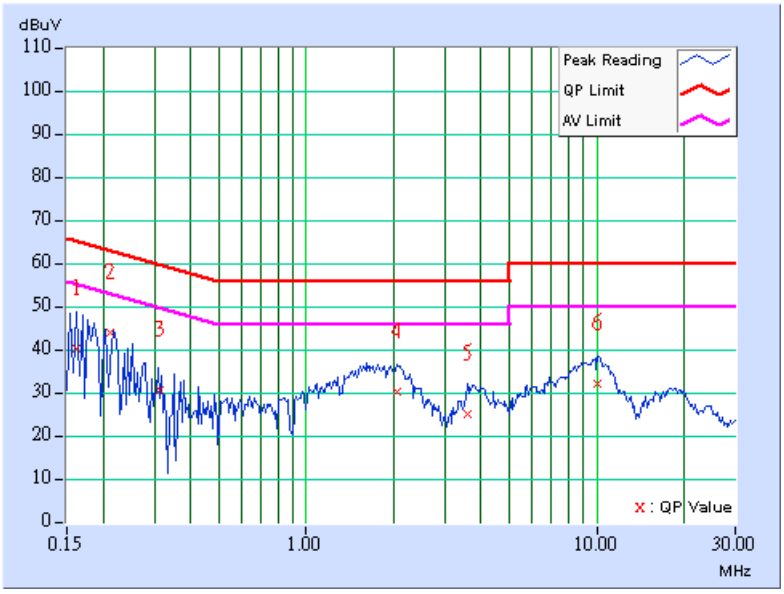
a. Connected the EUT to a notebook system placed on a testing table.
b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The notebook system sent "H" messages to its screen.
d. The notebook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

4.1.7 TEST RESULTS

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.162	0.11	40.09	-	40.20	-	65.38	55.38	-25.18	-
2	**0.211**	**0.12**	**43.83**	**-**	**43.95**	**-**	**63.15**	**53.15**	**-19.20**	**-**
3	0.314	0.12	30.42	-	30.54	-	59.85	49.85	-29.31	-
4	2.059	0.16	30.19	-	30.35	-	56.00	46.00	-25.65	-
5	3.574	0.20	24.75	-	24.95	-	56.00	46.00	-31.05	-
6	10.121	0.31	31.75	-	32.06	-	60.00	50.00	-27.94	-

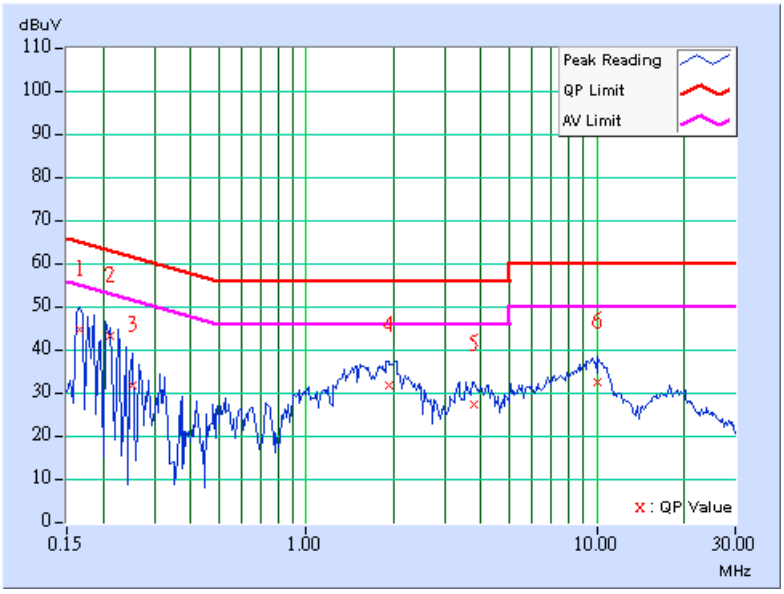
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.166	0.10	44.65	-	44.75	-	65.18	55.18	-20.42	-
2	0.211	0.11	43.13	-	43.24	-	63.16	53.16	-19.92	-
3	0.252	0.11	31.58	-	31.69	-	61.71	51.71	-30.01	-
4	1.926	0.16	31.49	-	31.65	-	56.00	46.00	-24.35	-
5	3.766	0.20	27.16	-	27.36	-	56.00	46.00	-28.64	-
6	10.078	0.29	32.14	-	32.43	-	60.00	50.00	-27.57	-

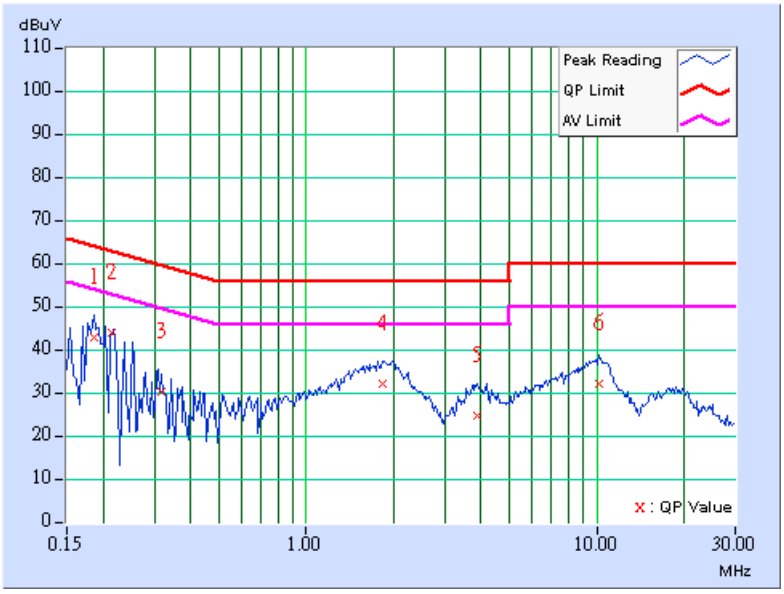
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.12	42.70	-	42.82	-	64.25	54.25	-21.44	-
2	0.215	0.12	43.67	-	43.79	-	63.01	53.01	-19.22	-
3	0.318	0.12	30.08	-	30.20	-	59.76	49.76	-29.56	-
4	1.844	0.16	32.00	-	32.16	-	56.00	46.00	-23.84	-
5	3.879	0.20	24.50	-	24.70	-	56.00	46.00	-31.30	-
6	10.215	0.32	31.96	-	32.28	-	60.00	50.00	-27.72	-

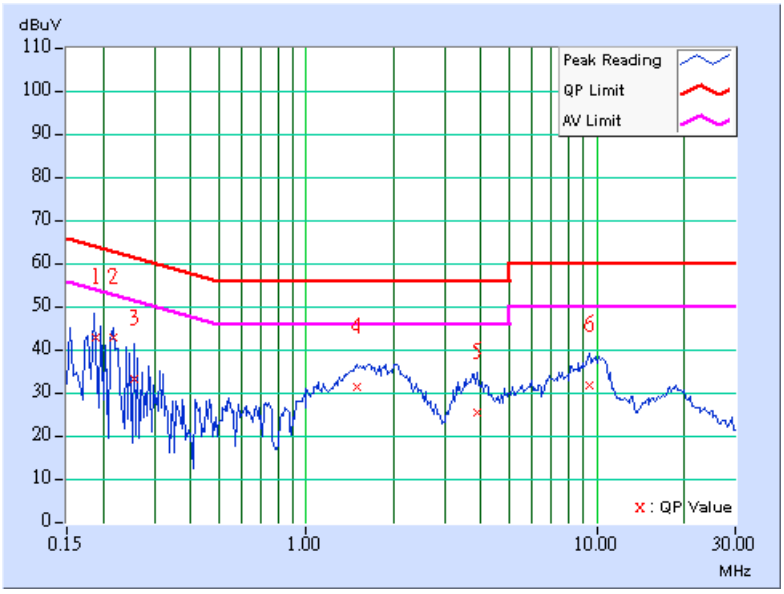
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.188	0.11	42.72	-	42.83	-	64.12	54.12	-21.29	-
2	0.216	0.11	42.78	-	42.89	-	62.96	52.96	-20.07	-
3	0.255	0.11	33.21	-	33.32	-	61.58	51.58	-28.26	-
4	1.500	0.16	31.19	-	31.35	-	56.00	46.00	-24.65	-
5	3.898	0.20	25.36	-	25.56	-	56.00	46.00	-30.44	-
6	9.465	0.28	31.46	-	31.74	-	60.00	50.00	-28.26	-

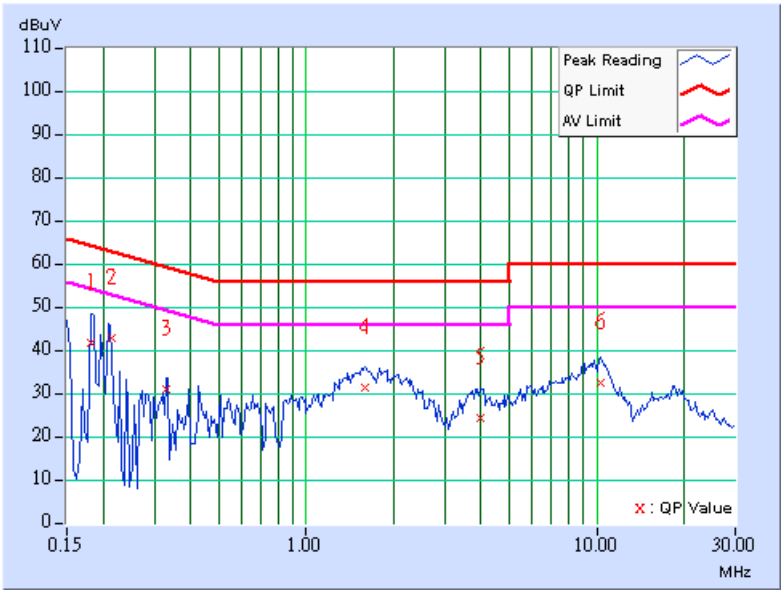
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.11	41.40	-	41.51	-	64.43	54.43	-22.91	-
2	0.215	0.12	42.74	-	42.86	-	63.02	53.02	-20.16	-
3	0.328	0.12	30.90	-	31.02	-	59.50	49.50	-28.48	-
4	1.602	0.16	31.24	-	31.40	-	56.00	46.00	-24.60	-
5	3.992	0.21	24.22	-	24.43	-	56.00	46.00	-31.57	-
6	10.313	0.33	32.12	-	32.45	-	60.00	50.00	-27.55	-

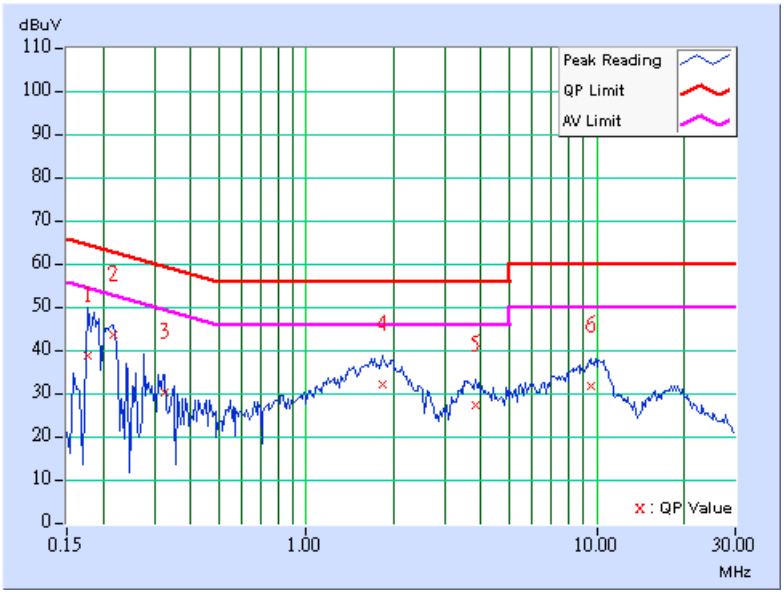
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	38.47	-	38.58	-	64.61	54.61	-26.03	-
2	0.216	0.11	43.53	-	43.64	-	62.96	52.96	-19.32	-
3	0.326	0.11	29.98	-	30.09	-	59.56	49.56	-29.46	-
4	1.844	0.16	31.88	-	32.04	-	56.00	46.00	-23.96	-
5	3.836	0.20	27.03	-	27.23	-	56.00	46.00	-28.77	-
6	9.582	0.28	31.70	-	31.98	-	60.00	50.00	-28.02	-

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	838496/016	Feb. 09, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170242	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10631	Jan. 15, 2005
Preamplifier Agilent	8449B	3008A01960	Jan. 22, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Mar. 04, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219275/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 3.

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 IC4924-4.

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 the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

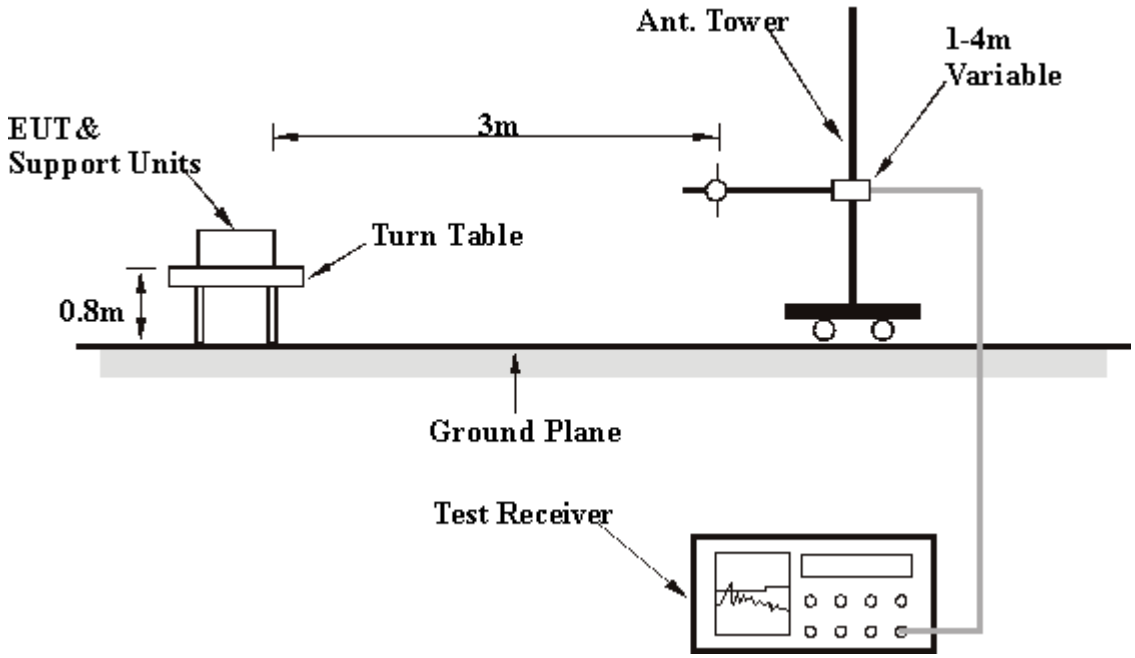
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10Hz 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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**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	119.42	38.91 QP	43.50	-4.59	2.50 H	277	26.10	12.80
2	142.75	38.63 QP	43.50	-4.87	1.75 H	94	24.12	14.51
3	239.94	35.63 QP	46.00	-10.37	1.50 H	247	22.67	12.96
4	288.54	36.49 QP	46.00	-9.51	1.00 H	70	22.26	14.23
5	335.19	34.44 QP	46.00	-11.56	1.25 H	55	19.25	15.19
6	399.34	34.46 QP	46.00	-11.54	1.00 H	190	17.74	16.71
7	**480.98**	**44.12 QP**	**46.00**	**-1.88**	**1.75 H**	**64**	**25.76**	**18.35**
8	560.68	35.69 QP	46.00	-10.31	1.50 H	37	15.94	19.75
9	601.50	40.74 QP	46.00	-5.26	1.50 H	310	19.89	20.85
10	640.38	37.84 QP	46.00	-8.16	1.25 H	304	16.49	21.35
11	720.08	32.84 QP	46.00	-13.16	1.25 H	292	10.34	22.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	47.49	37.54 QP	40.00	-2.46	1.00 V	235	22.52	15.01
2	117.47	36.45 QP	43.50	-7.05	3.00 V	13	23.84	12.61
3	160.24	35.47 QP	43.50	-8.03	1.00 V	184	20.55	14.92
4	249.66	32.11 QP	46.00	-13.89	1.75 V	208	19.00	13.11
5	438.22	32.68 QP	46.00	-13.32	2.50 V	73	14.98	17.70
6	480.98	36.40 QP	46.00	-9.60	1.75 V	31	18.05	18.35
7	519.86	33.29 QP	46.00	-12.71	1.75 V	1	14.36	18.92
8	601.50	34.13 QP	46.00	-11.87	1.75 V	169	13.29	20.85
9	640.38	31.75 QP	46.00	-14.25	1.50 V	334	10.40	21.35

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 1	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	CCK
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	2390.00	50.96 PK	74.00	-23.04	1.35 H	132	18.16	32.80
1	2390.00	42.59 AV	54.00	-11.41	1.35 H	132	9.79	32.80
2	*2412.00	103.76 PK			1.35 H	132	70.85	32.91
2	*2412.00	95.39 AV			1.35 H	132	62.48	32.91
3	4824.00	55.18 PK	74.00	-18.82	1.70 H	72	15.80	39.38
3	4824.00	41.57 AV	54.00	-12.43	1.70 H	72	2.19	39.38
4	9648.00	61.99 PK	74.00	-12.01	1.66 H	20	12.96	49.03

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.52 PK	74.00	-17.48	1.11 V	10	23.72	32.80
1	2390.00	47.90 AV	54.00	-6.10	1.11 V	10	15.10	32.80
2	*2412.00	109.32 PK			1.11 V	10	76.41	32.91
2	*2412.00	100.70 AV			1.11 V	10	67.79	32.91
3	4824.00	62.18 PK	74.00	-11.82	1.00 V	50	22.80	39.38
3	4824.00	49.04 AV	54.00	-4.96	1.00 V	50	9.66	39.38
4	9648.00	64.87 PK	74.00	-9.13	1.35 V	84	15.84	49.03

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 6	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	CCK
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	*2437.00	105.85 PK			1.38 H	144	72.83	33.02
1	*2437.00	97.32 AV			1.38 H	144	64.30	33.02
2	4874.00	56.66 PK	74.00	-17.34	1.55 H	95	17.25	39.41
2	4874.00	42.82 AV	54.00	-11.18	1.55 H	95	3.41	39.41
3	9748.00	64.27 PK	74.00	-9.73	1.97 H	35	14.83	49.44

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	110.73 PK			1.18 V	145	77.71	33.02
1	*2437.00	101.93 AV			1.18 V	145	68.91	33.02
2	4874.00	62.93 PK	74.00	-11.07	1.00 V	330	23.52	39.41
2	4874.00	48.77 AV	54.00	-5.23	1.00 V	330	9.36	39.41
3	9748.00	67.70 PK	74.00	-6.30	1.24 V	63	18.26	49.44

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	CCK
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	*2462.00	105.68 PK			1.37 H	148	72.56	33.12
1	*2462.00	97.16 AV			1.37 H	148	64.04	33.12
2	2483.50	53.70 PK	74.00	-20.30	1.37 H	148	20.49	33.21
2	2483.50	45.18 AV	54.00	-8.82	1.37 H	148	11.97	33.21
3	4924.00	55.53 PK	74.00	-18.47	1.52 H	97	16.09	39.44
3	4924.00	41.76 AV	54.00	-12.24	1.52 H	97	2.32	39.44
4	9848.00	64.80 PK	74.00	-9.20	1.58 H	30	15.04	49.76

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.01 PK			1.15 V	122	76.89	33.12
1	*2462.00	101.31 AV			1.15 V	122	68.19	33.12
2	2483.50	58.00 PK	74.00	-16.00	1.15 V	122	24.79	33.21
2	2483.50	49.33 AV	54.00	-4.67	1.15 V	122	16.12	33.21
3	4924.00	62.43 PK	74.00	-11.57	1.11 V	352	22.99	39.44
3	4924.00	48.86 AV	54.00	-5.14	1.11 V	352	9.42	39.44
4	9848.00	66.63 PK	74.00	-7.37	1.12 V	52	16.87	49.76

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 1	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	OFDM
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	2390.00	49.47 PK	74.00	-24.53	1.63 H	224	16.67	32.80
1	2390.00	39.74 AV	54.00	-14.26	1.63 H	224	6.94	32.80
2	*2412.00	96.61 PK			1.63 H	224	63.70	32.91
2	*2412.00	86.88 AV			1.63 H	224	53.97	32.91
3	4824.00	50.11 PK	74.00	-23.89	1.47 H	24	10.73	39.38
3	4824.00	39.20 AV	54.00	-14.80	1.47 H	24	-0.18	39.38

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	53.30 PK	74.00	-20.70	1.21 V	147	20.50	32.80
1	2390.00	43.50 AV	54.00	-10.50	1.21 V	147	10.70	32.80
2	*2412.00	100.44 PK			1.21 V	147	67.53	32.91
2	*2412.00	90.64 AV			1.21 V	147	57.73	32.91
3	4824.00	51.95 PK	74.00	-22.05	1.65 V	33	12.57	39.38
3	4824.00	38.13 AV	54.00	-15.87	1.65 V	33	-1.25	39.38

REMARKS:

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

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 6	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	OFDM
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	*2437.00	97.76 PK			1.05 H	148	64.74	33.02
1	*2437.00	88.04 AV			1.05 H	148	55.02	33.02
2	4874.00	51.29 PK	74.00	-22.71	1.08 H	102	11.88	39.41
2	4874.00	36.13 AV	54.00	-17.87	1.08 H	102	-3.28	39.41

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	102.54 PK			1.26 V	174	69.52	33.02
1	*2437.00	92.87 AV			1.26 V	174	59.85	33.02
2	4874.00	51.78 PK	74.00	-22.22	1.00 V	17	12.37	39.41
2	4874.00	39.05 AV	54.00	-14.95	1.00 V	17	-0.36	39.41

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**FREQUENCY RANGE**	1~25GHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**TEST MODE**	OFDM
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	*2462.00	96.18 PK			1.05 H	128	63.06	33.12
1	*2462.00	86.47 AV			1.05 H	128	53.35	33.12
2	2483.50	50.48 PK	74.00	-23.52	1.05 H	128	17.27	33.21
2	2483.50	40.77 AV	54.00	-13.23	1.05 H	128	7.56	33.21
3	4924.00	50.16 PK	74.00	-23.84	1.95 H	28	10.72	39.44
3	4924.00	36.10 AV	54.00	-17.90	1.95 H	28	-3.34	39.44

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	102.98 PK			1.17 V	154	69.86	33.12
1	*2462.00	93.24 AV			1.17 V	154	60.12	33.12
2	2483.50	57.28 PK	74.00	-16.72	1.17 V	154	24.07	33.21
2	2483.50	47.54 AV	54.00	-6.46	1.17 V	154	14.33	33.21
3	4924.00	50.10 PK	74.00	-23.90	1.47 V	111	10.66	39.44
3	4924.00	36.20 AV	54.00	-17.80	1.47 V	111	-3.24	39.44

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.

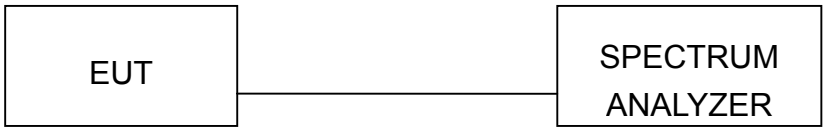
4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

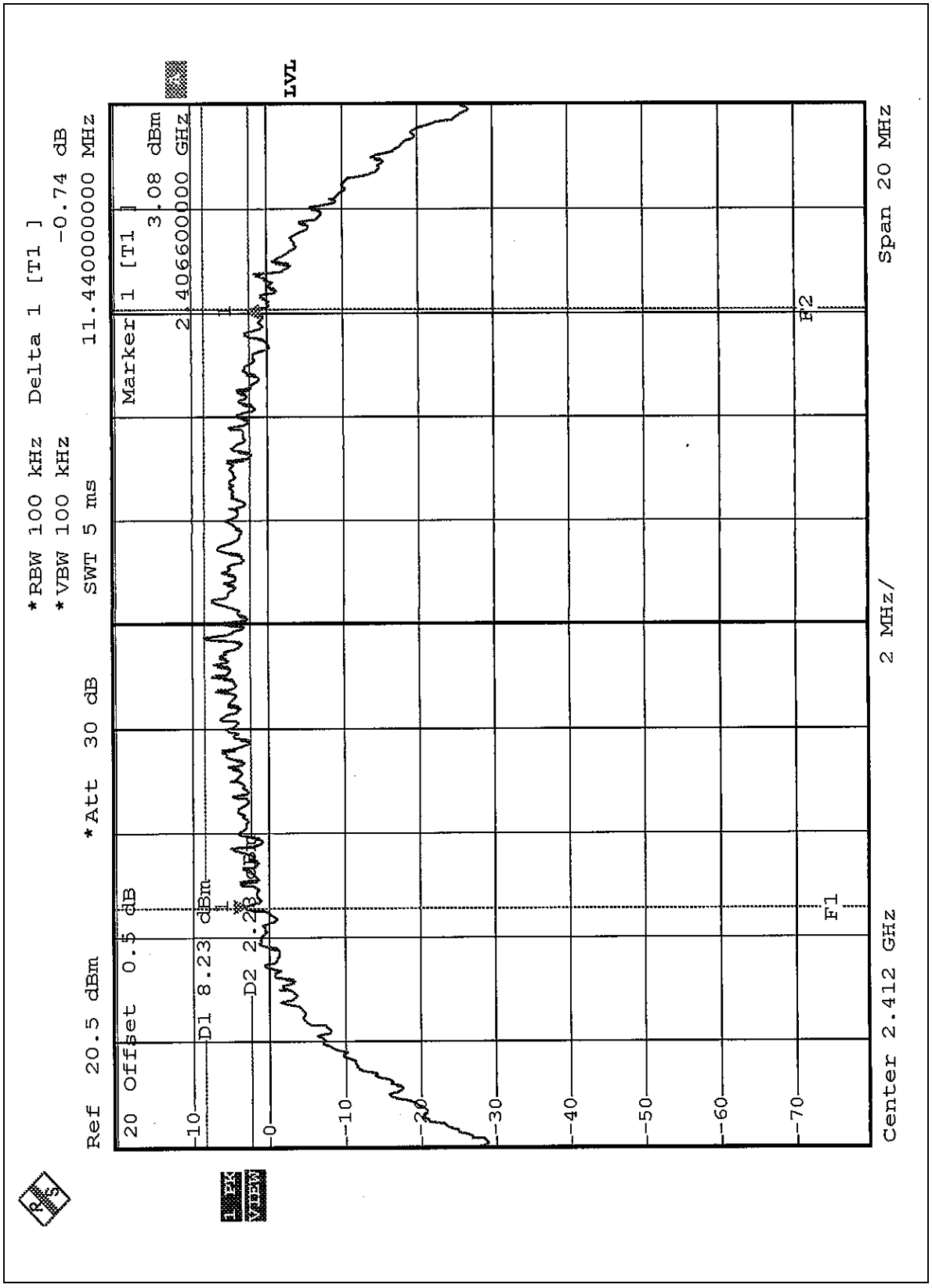
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

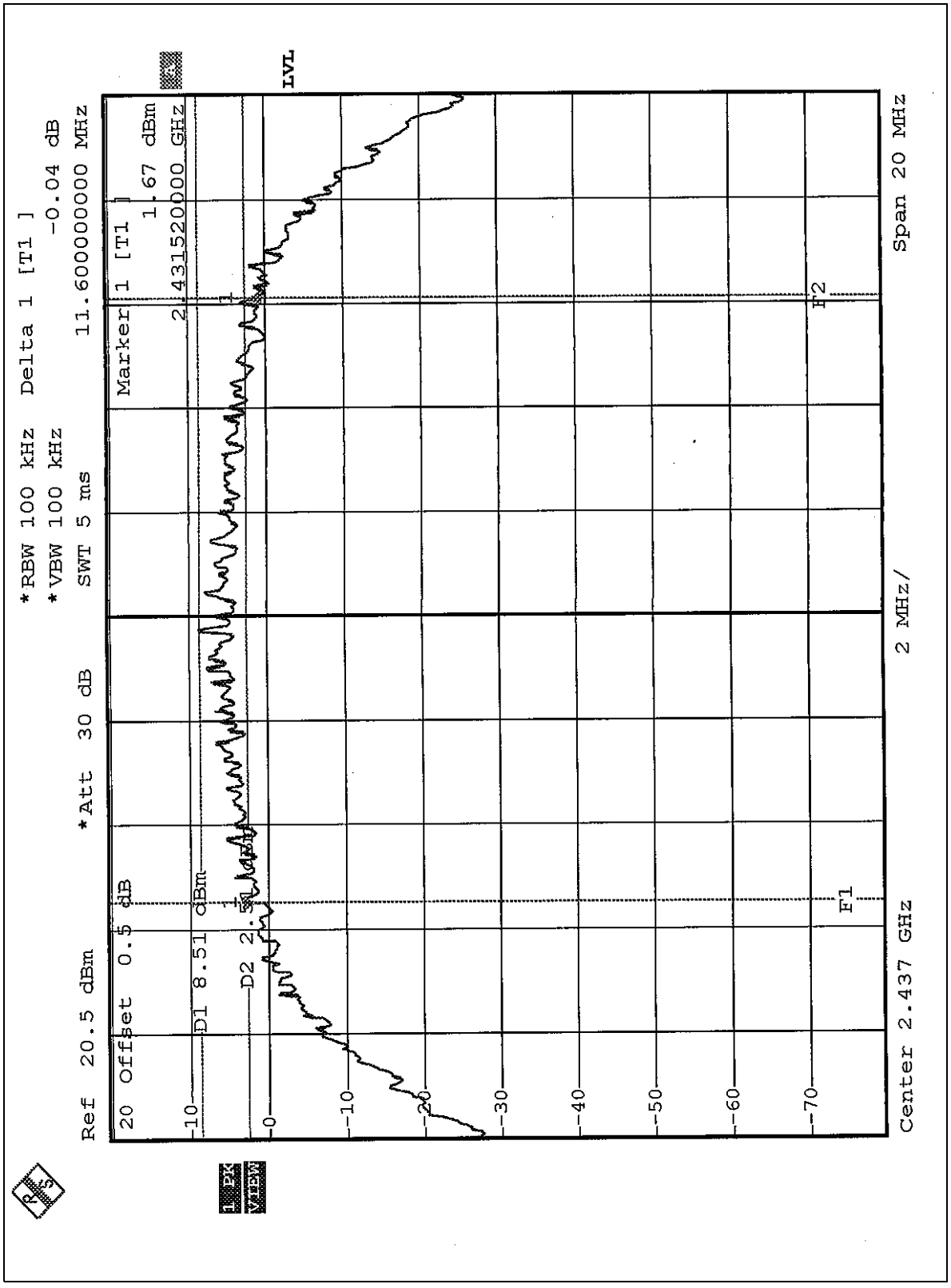
EUT	Wireless A/G USB Network Adapter	MODEL	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa
TEST MODE	CCK	TESTED BY	Allen Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.44	0.5	PASS
6	2437	11.60	0.5	PASS
11	2462	11.56	0.5	PASS

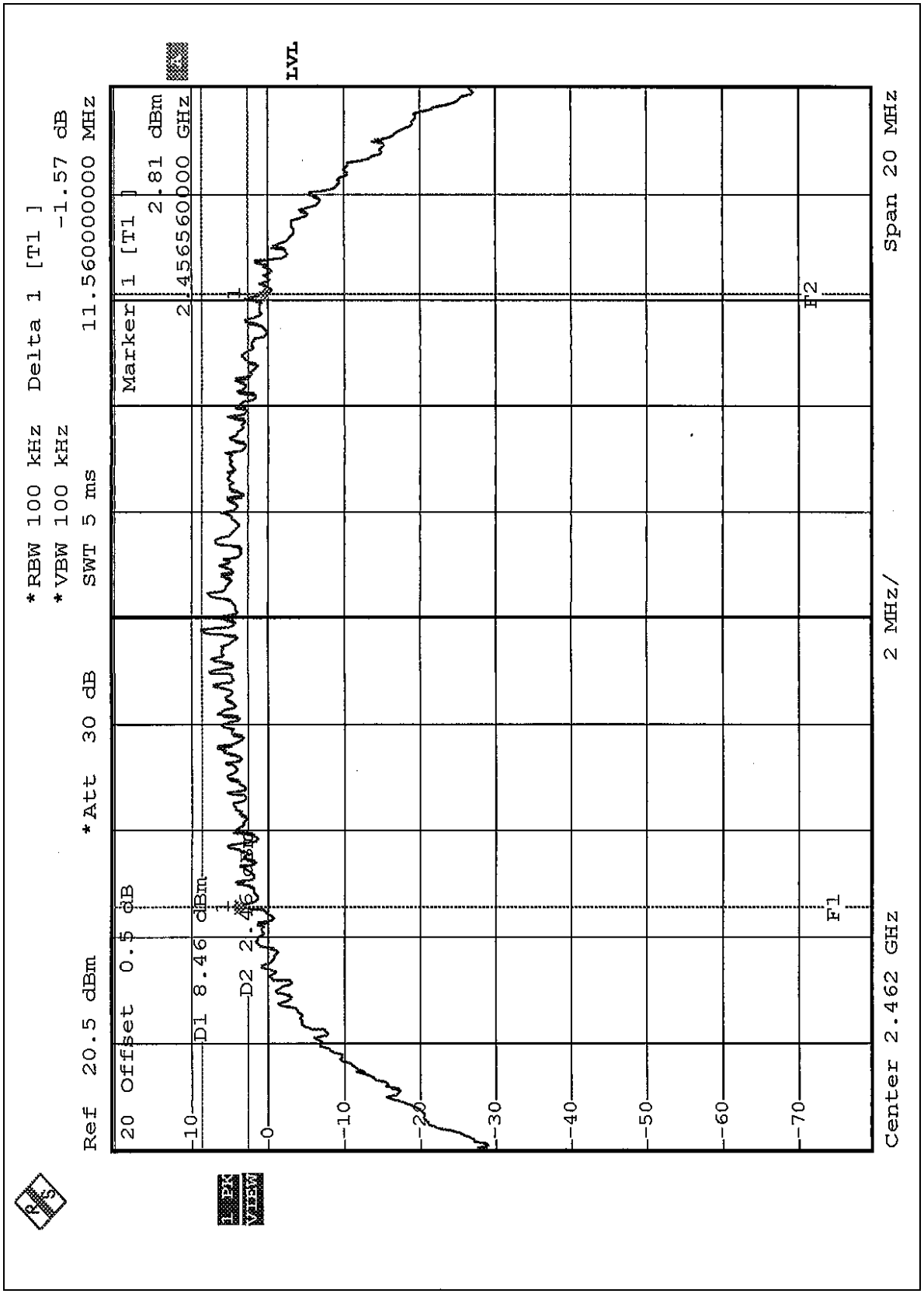
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
D1 8.23 dBm
D2 2.23 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.74 dB
11.440000000 MHz
Marker 1 [T1]
3.08 dBm
2.406600000 GHz
LVL
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
SWT 5 ms
Delta 1 [T1]
-0.04 dB
11.60000000 MHz
Marker 1 [T1]
1.67 dBm
2.43152000 GHz
D1 8.51 dBm
D2 2.51 dBm
LVL
Center 2.437 GHz
2 MHz/
Span 20 MHz
F1
F2
1 PK
VIEW

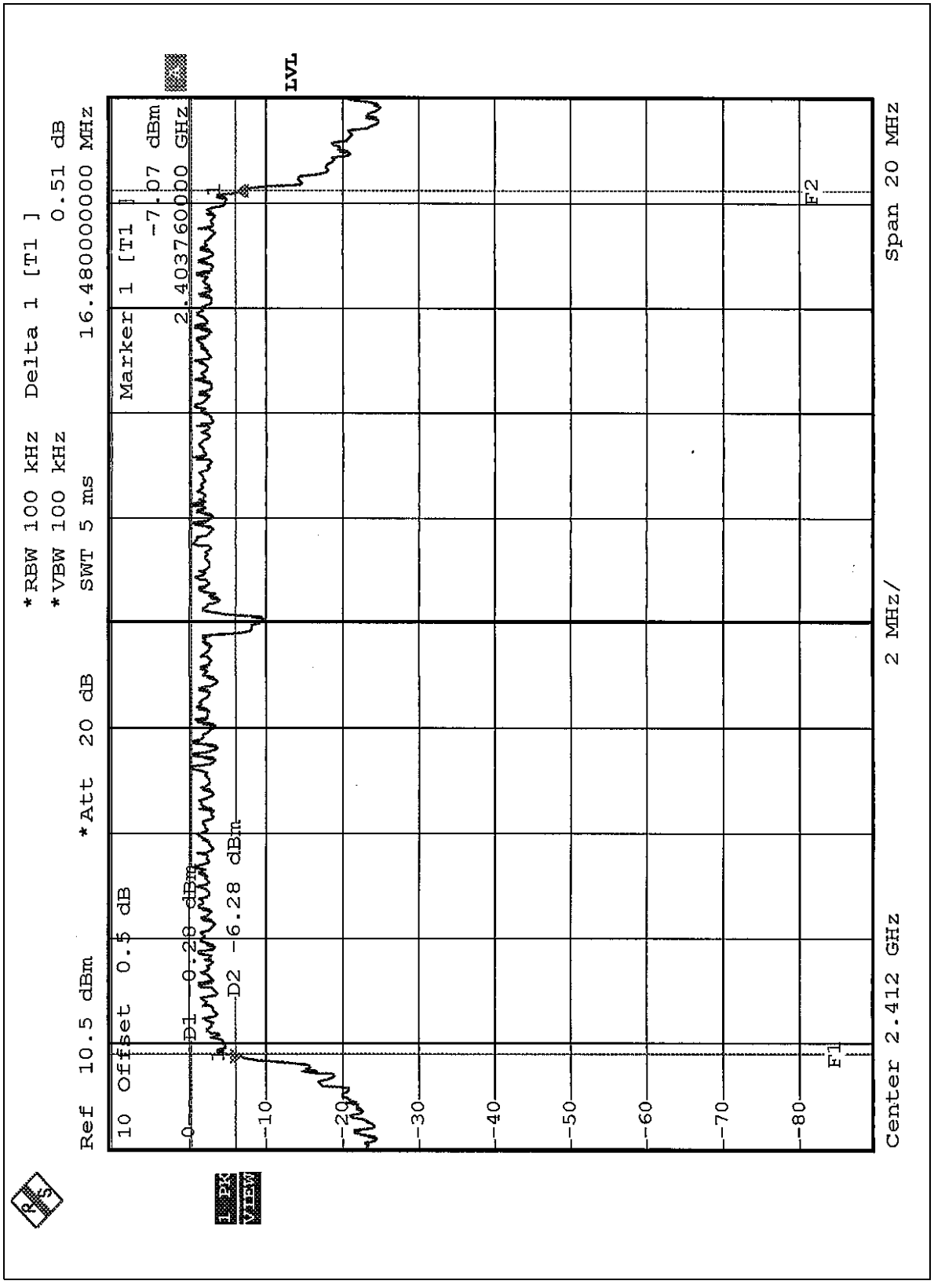
CH11


*RBW 100 kHz
*VBW 100 kHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
SWT 5 ms
Delta 1 [T1]
-1.57 dB
11.560000000 MHz
Marker 1 [T1]
2.81 dBm
2.456560000 GHz
D1 8.46 dBm
D2 2.46 dBm
Center 2.462 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
1 PK
VIEW

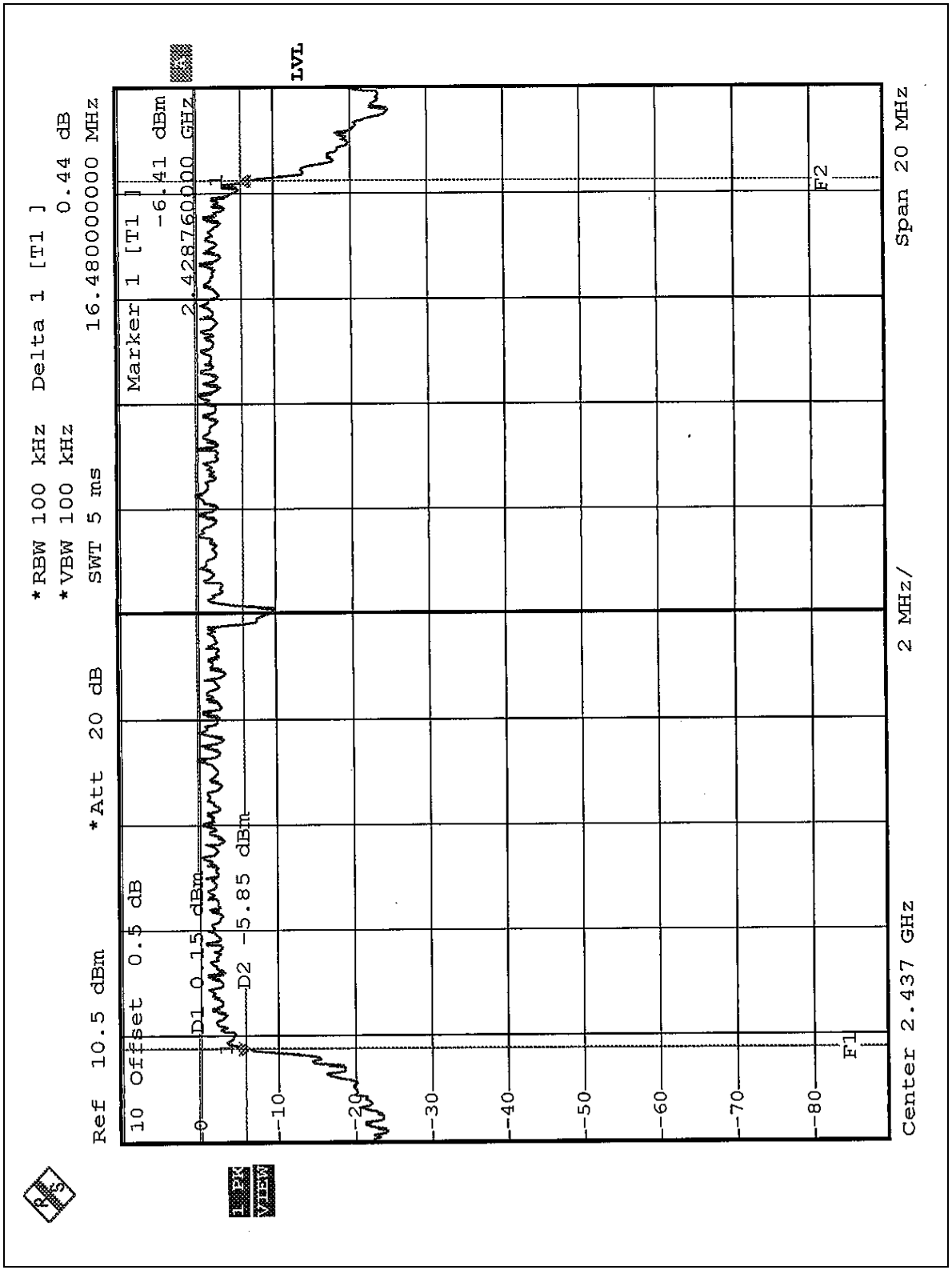
EUT	Wireless A/G USB Network Adapter	MODEL	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa
TEST MODE	OFDM	TESTED BY	Allen Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.48	0.5	PASS
6	2437	16.48	0.5	PASS
11	2462	16.40	0.5	PASS

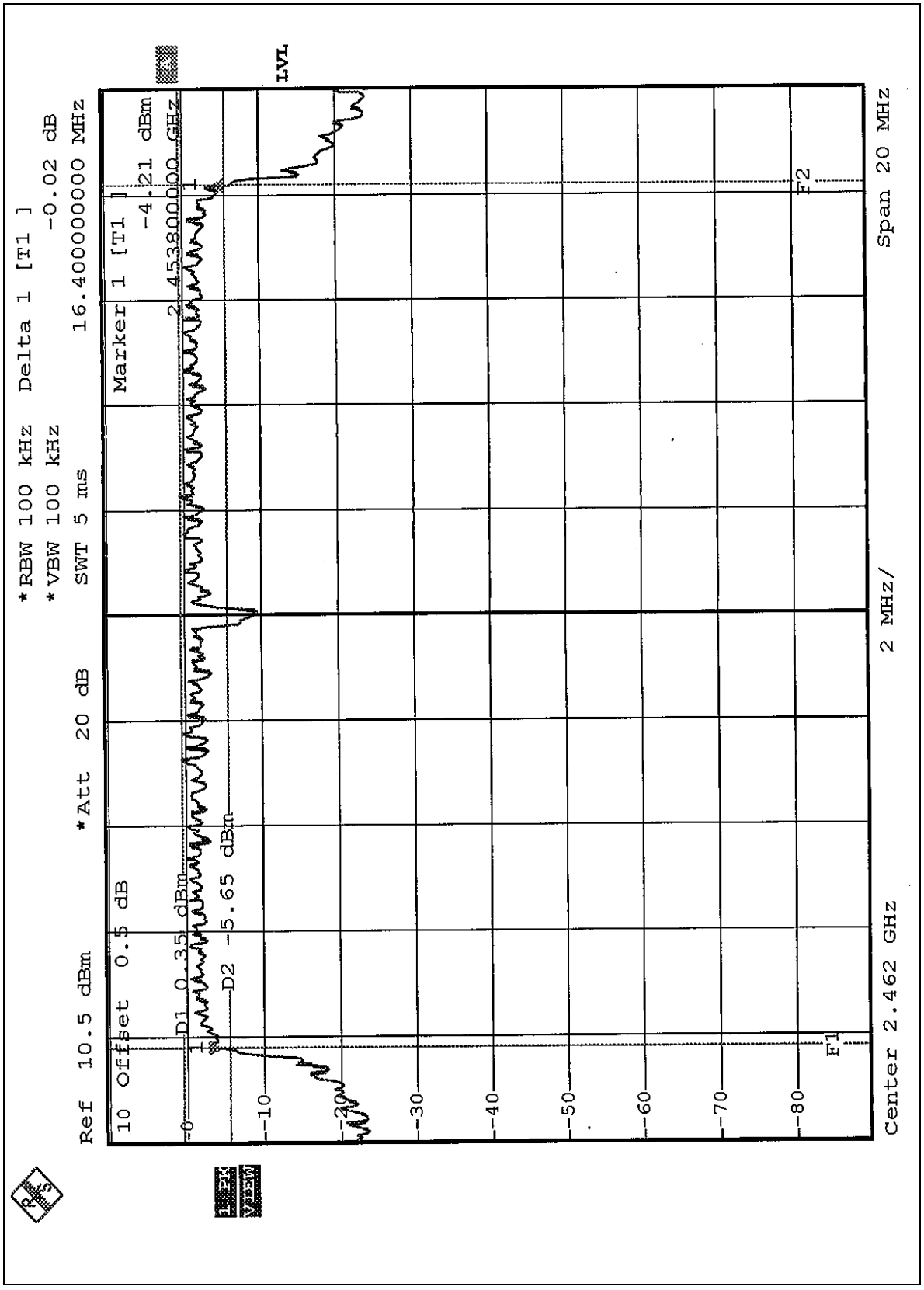
CH1


*RBW 100 kHz
*VBW 100 kHz
Ref 10.5 dBm
Offset 0.5 dB
*Att 20 dB
SWT 5 ms
Delta 1 [T1]
0.51 dB
16.480000000 MHz
Marker 1 [T1]
-7.07 dBm
2.403760000 GHz
D1 0.28 dBm
D2 -6.28 dBm
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


Ref 10.5 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.44 dB
16.480000000 MHz
Marker 1 [T1]
-6.41 dBm
2.42760000 GHz
10 Offset 0.5 dB
D1 0.15 dBm
D2 -5.85 dBm
Center 2.437 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
RBW
VBW

CH11


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.02 dB
16.40000000 MHz
Marker 1 [T1]
-4.21 dBm
2.45380000 GHz
Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
D1 0.35 dBm
D2 -5.65 dBm
Center 2.462 GHz
2 MHz/
Span 20 MHz
F1
F2
LVL
PM
VIEW

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Feb. 1, 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.

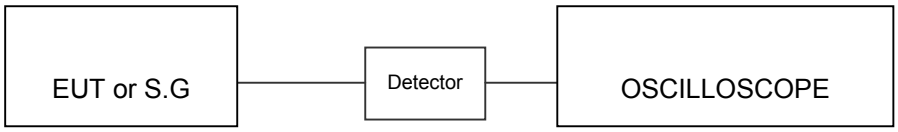
4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the peak 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

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 64%RH, 991 hPa
TEST MODE	CCK	**TESTED BY**	Allen Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.05	30	PASS
6	2437	15.03	30	PASS
11	2462	15.04	30	PASS

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	24deg. C, 64%RH, 991 hPa
TEST MODE	OFDM	**TESTED BY**	Allen Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.00	30	PASS
6	2437	15.02	30	PASS
11	2462	15.03	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

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

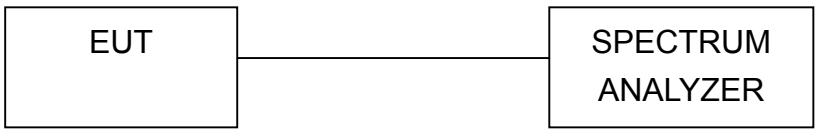
4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

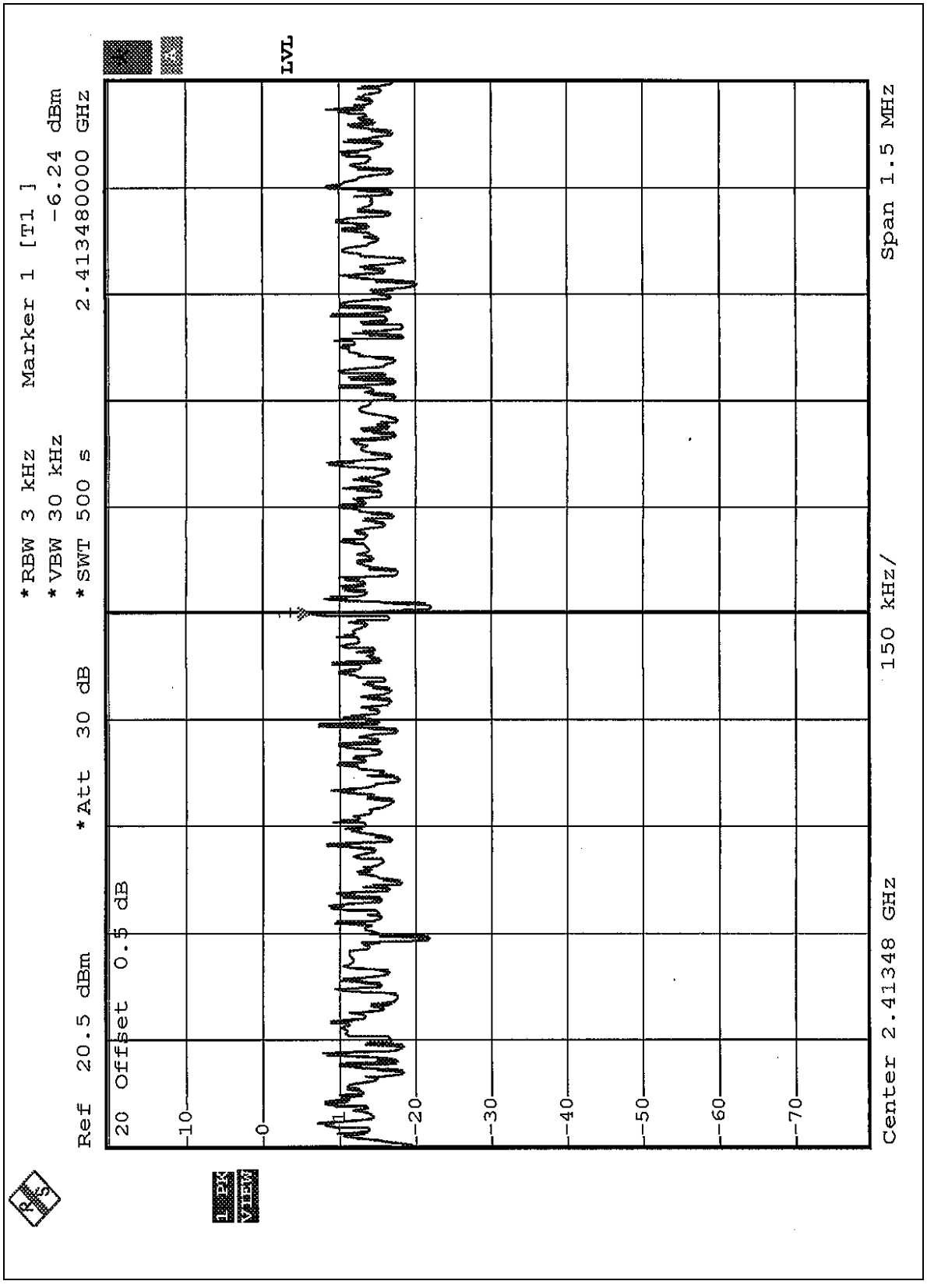
Same as Item 4.3.6

4.5.7 TEST RESULTS

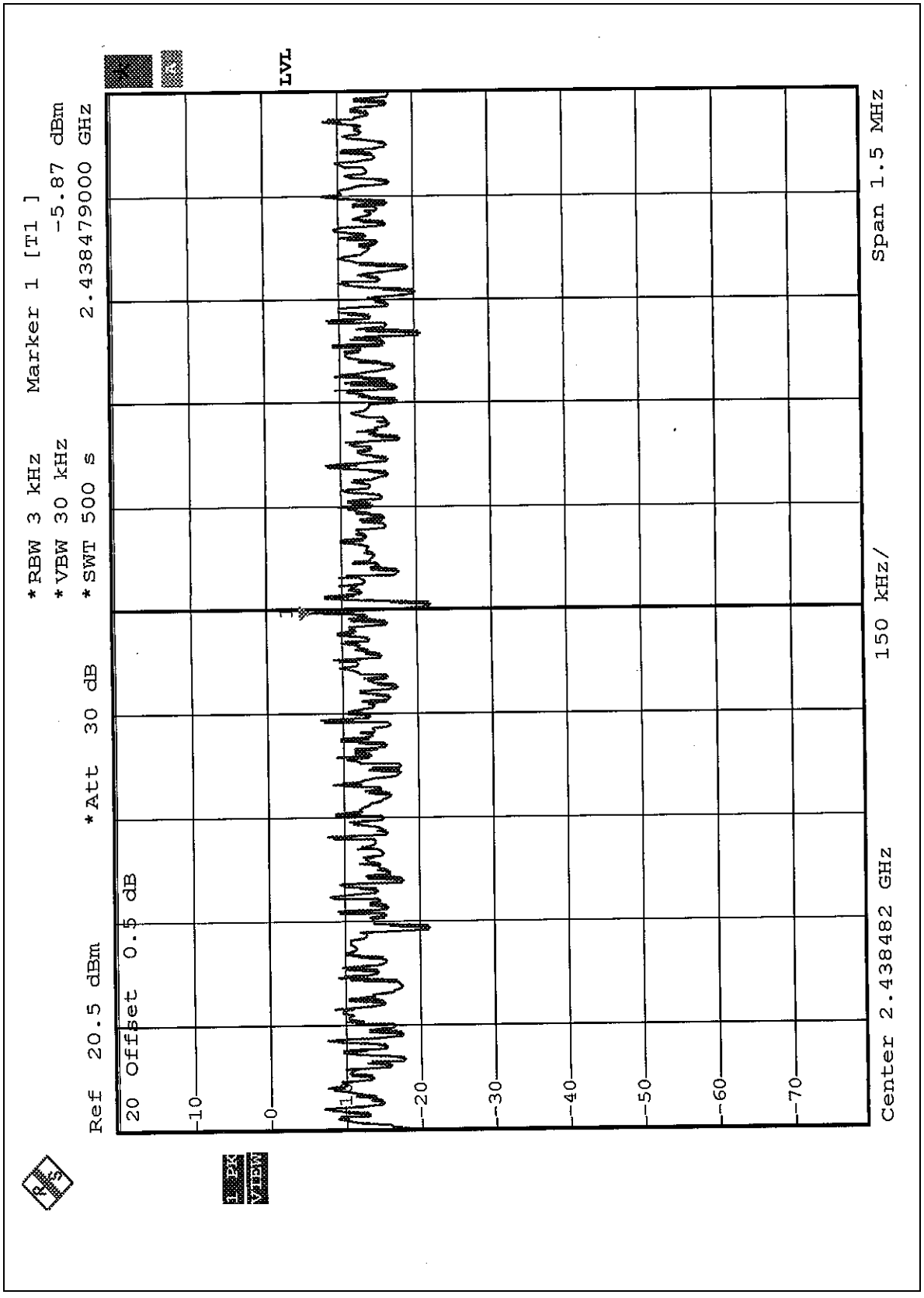
EUT	Wireless A/G USB Network Adapter	MODEL	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa
TEST MODE	CCK	TESTED BY	Allen Chang

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-6.24	8	PASS
6	2437	-5.87	8	PASS
11	2462	-5.62	8	PASS

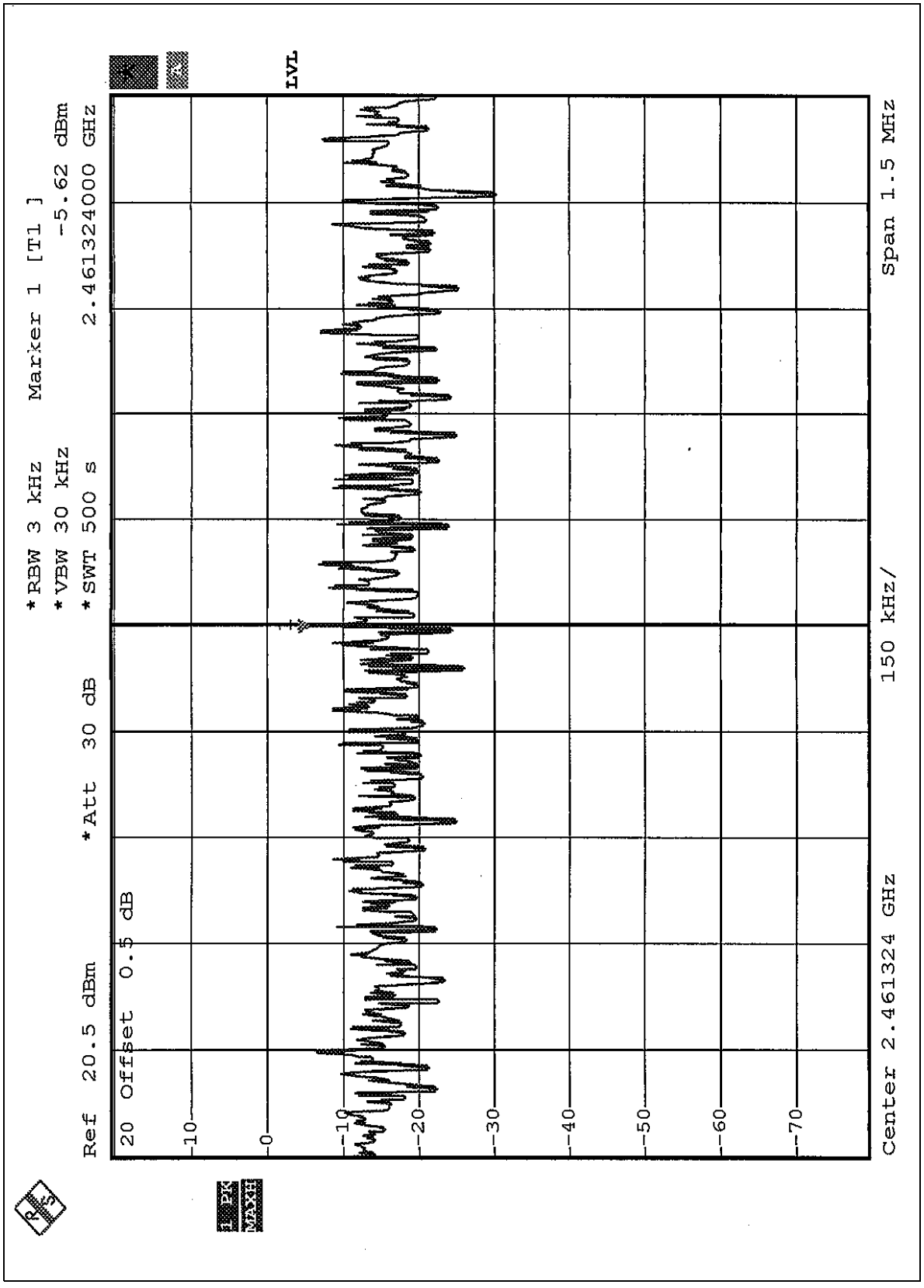
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-6.24 dBm
2.413480000 GHz
LVL
Center 2.41348 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-5.87 dBm
2.438479000 GHz
LVL
Span 1.5 MHz
150 kHz/
Center 2.438482 GHz
1 PK
MAXH

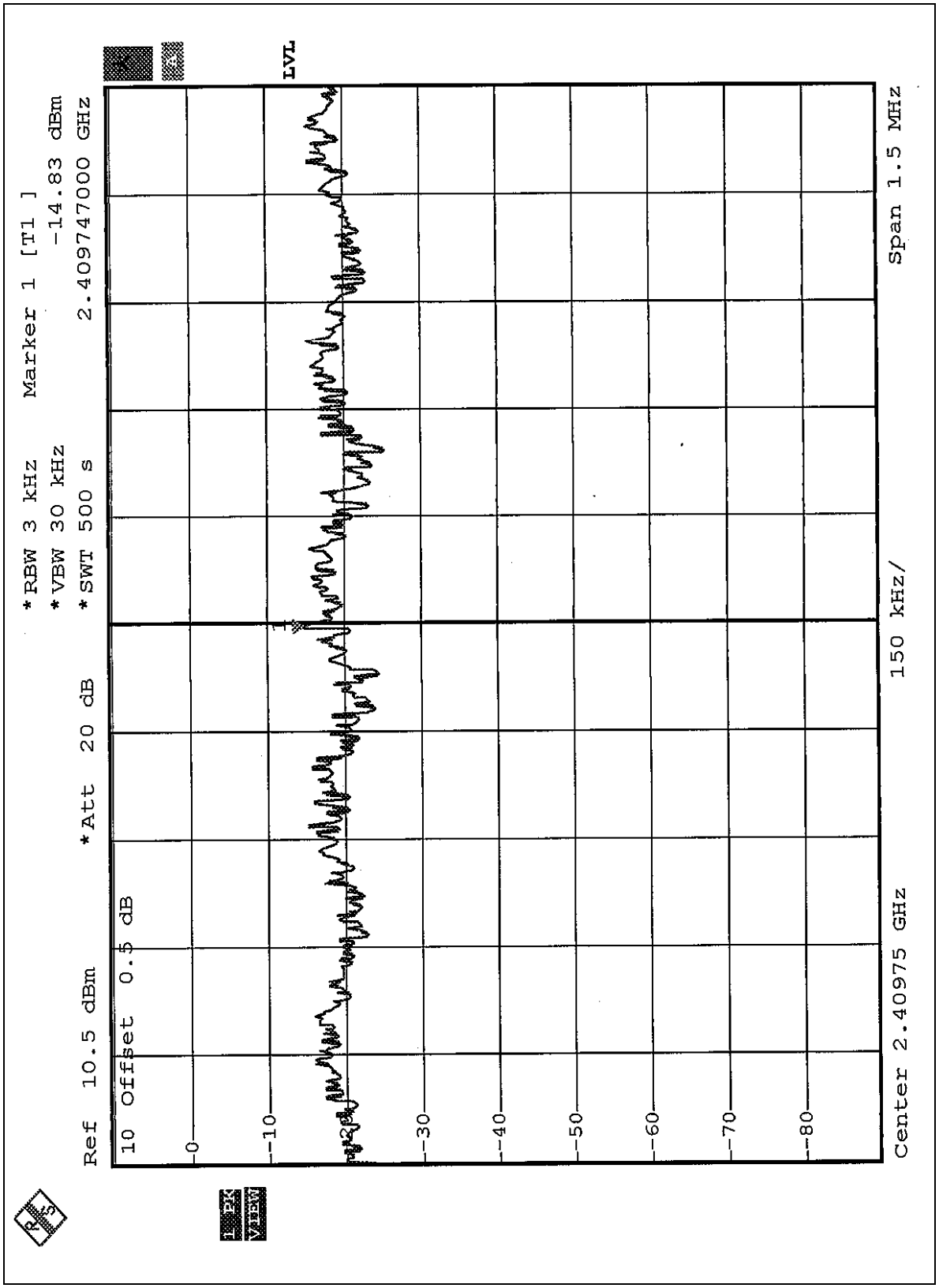
CH11


Marker 1 [T1]
-5.62 dBm
2.461324000 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 30 dB
Ref 20.5 dBm
Offset 0.5 dB
Center 2.461324 GHz
150 kHz/
Span 1.5 MHz
LVL
10
0
-10
-20
-30
-40
-50
-60
-70

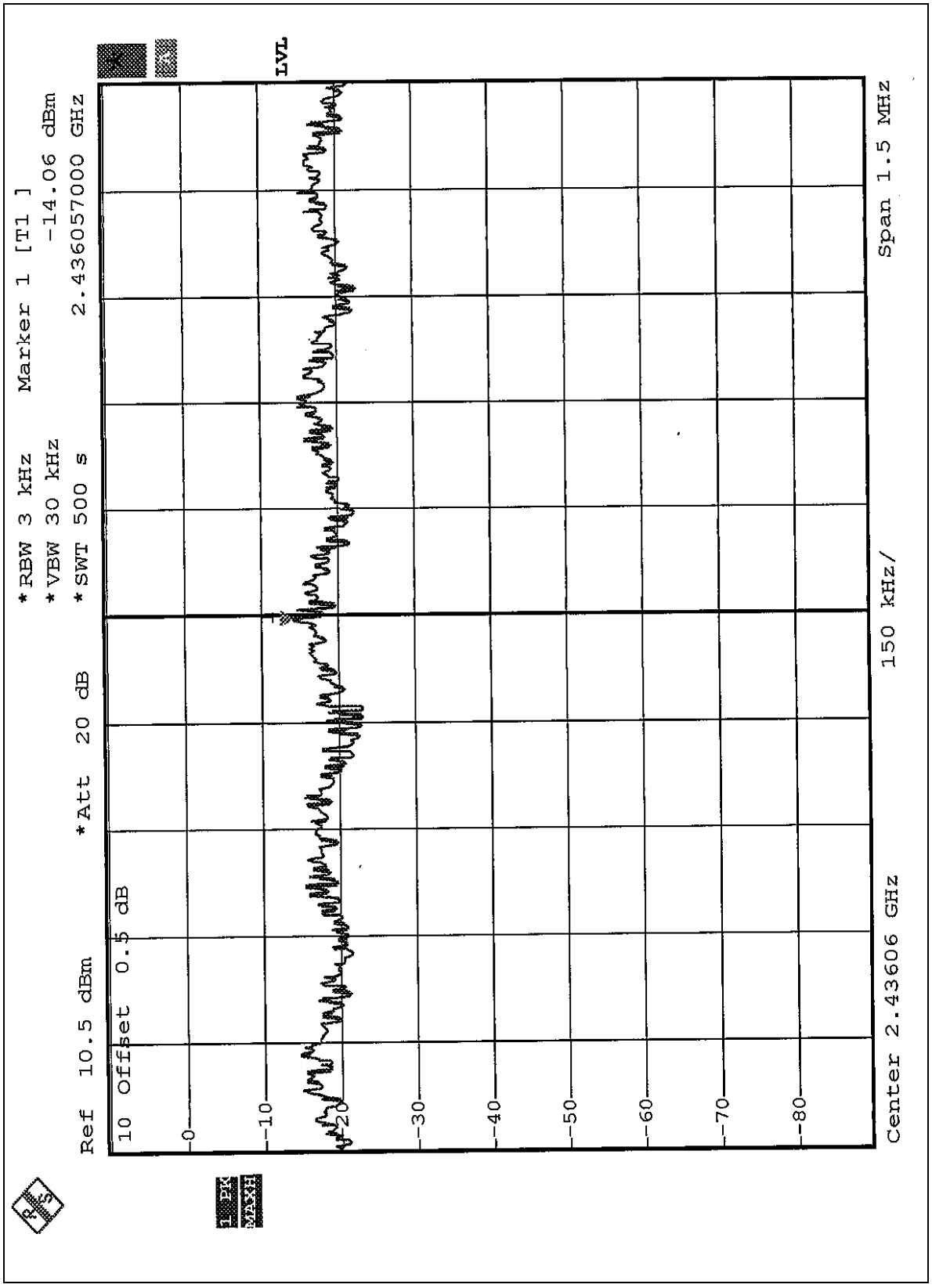
EUT	Wireless A/G USB Network Adapter	MODEL	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa
TEST MODE	OFDM	TESTED BY	Allen Chang

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-14.83	8	PASS
6	2437	-14.06	8	PASS
11	2462	-13.73	8	PASS

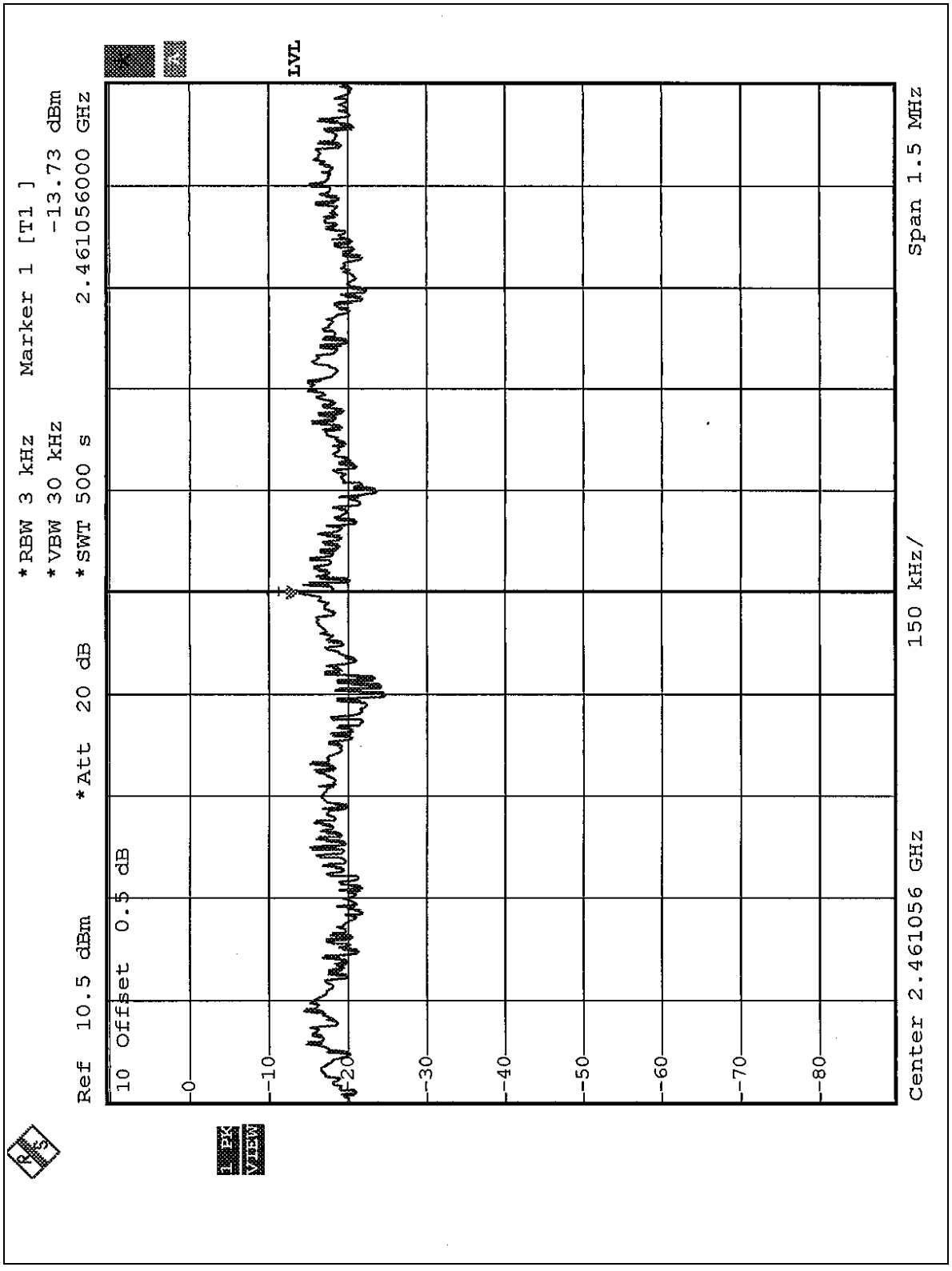
CH1


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.83 dBm
2.409747000 GHz
LVL
Center 2.40975 GHz
150 kHz/
Span 1.5 MHz
0
-10
-20
-30
-40
-50
-60
-70
-80

CH6


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.06 dBm
2.436057000 GHz
LVL
Span 1.5 MHz
150 kHz/
Center 2.43606 GHz
1 PK
MAXH
0
-10
-20
-30
-40
-50
-60
-70
-80

CH11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-13.73 dBm
2.461056000 GHz
Ref 10.5 dBm
Offset 0.5 dB
Att 20 dB
LVL
Center 2.461056 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

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 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

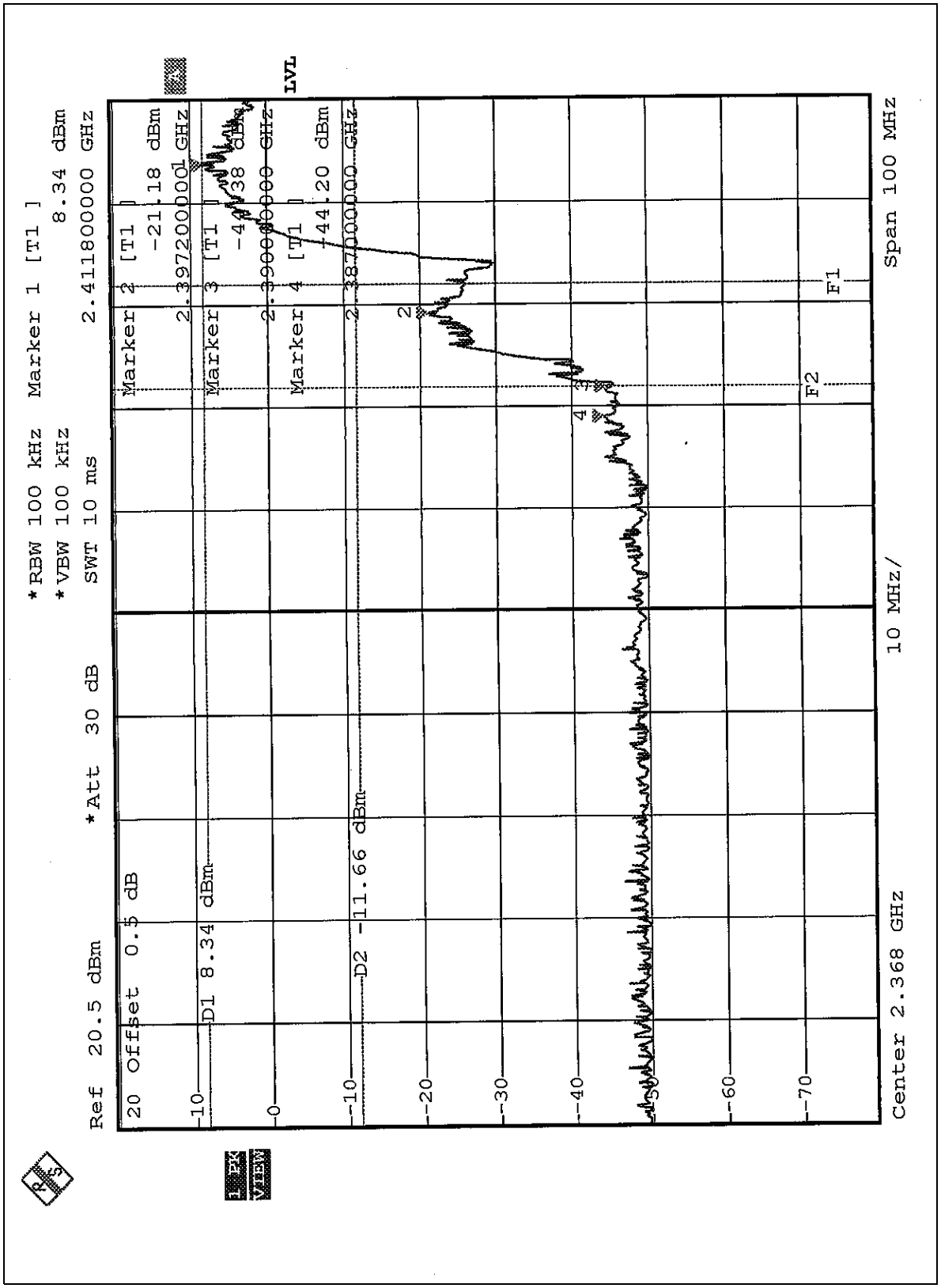
The spectrum plots are attached on the following 8 pages. D2 line indicates the highest level, and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

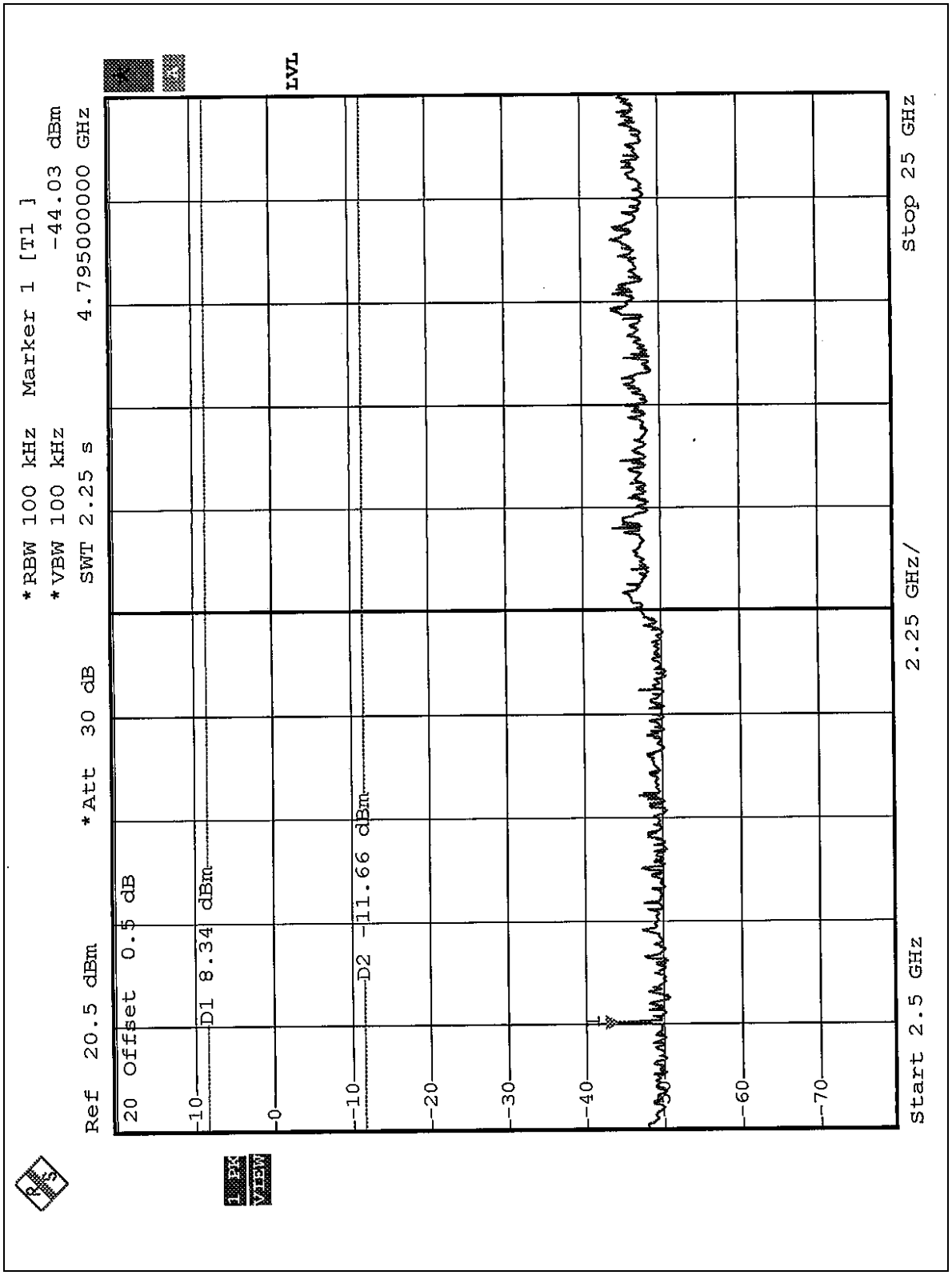
NOTE 1:
The band edge emission plot of CCK technique on page 57 show 52.54dB delta between carrier maximum power and local maximum emission in restrict band (2.3870GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 100.70dBuV/m, so the maximum field strength in restrict band is 100.70-52.54=48.16dBuV/m which is under 54dBuV/m limit.

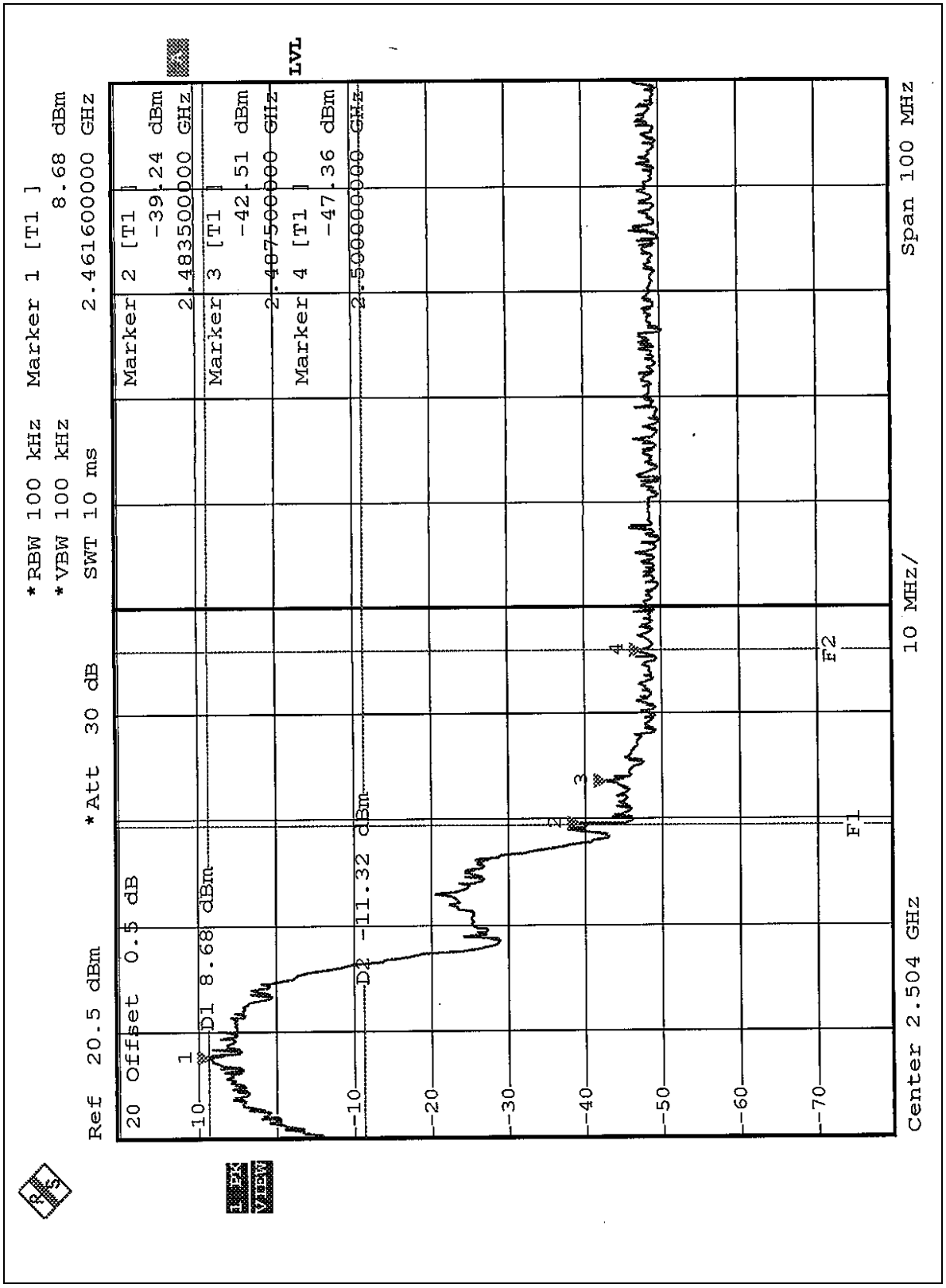
NOTE 2:
The band edge emission plot of CCK technique on page 59 show 45.92dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 101.31dBuV/m, so the maximum field strength in restrict band is 101.31-47.92=53.39dBuV/m which is under 54dBuV/m limit.

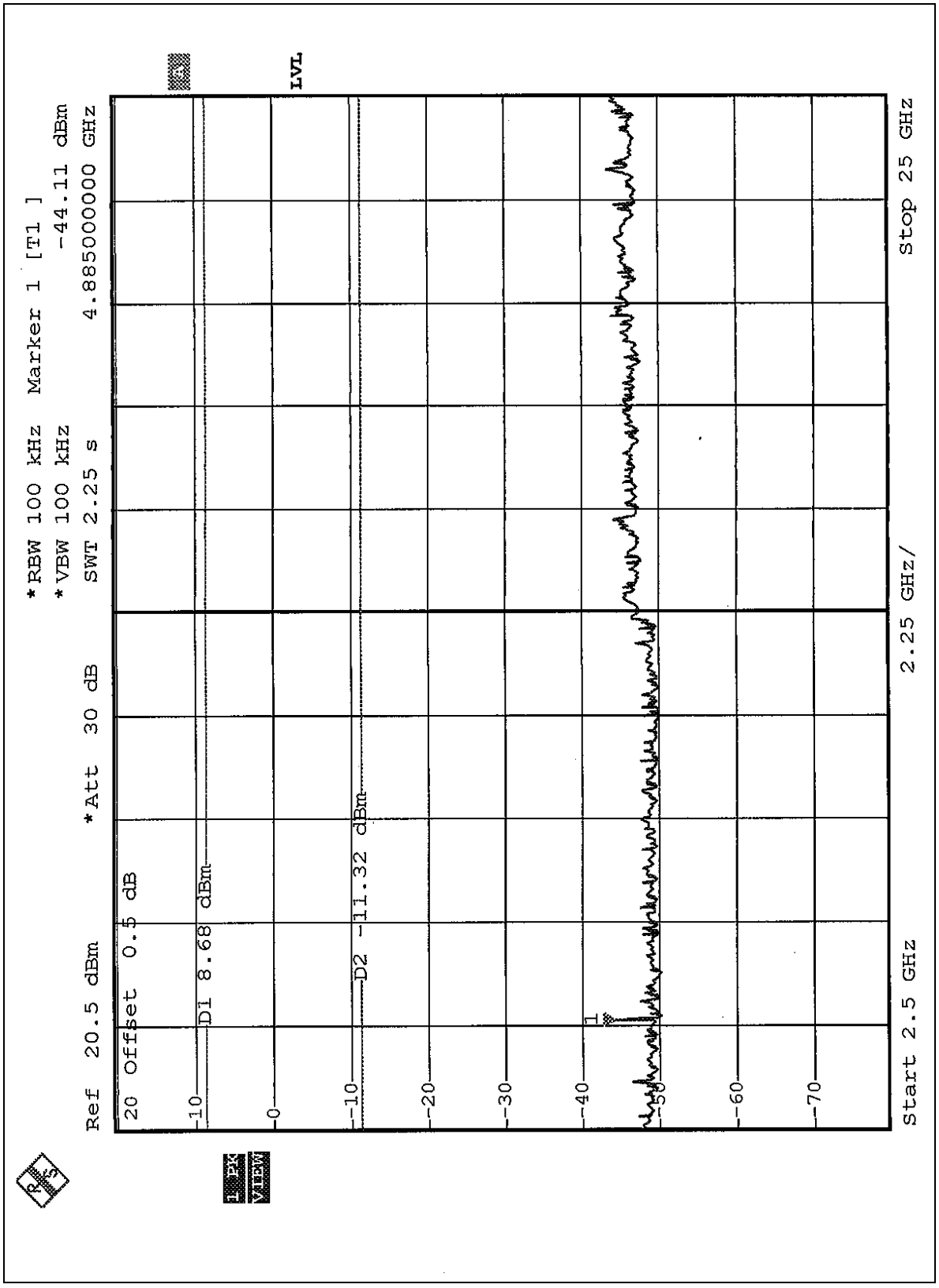
NOTE 3:
The band edge emission plot of OFDM technique on page 61 show 45.92dB delta between carrier maximum power and local maximum emission in restrict band (2.3894GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 90.64dBuV/m, so the maximum field strength in restrict band is 90.64-45.92=44.72dBuV/m which is under 54dBuV/m limit.

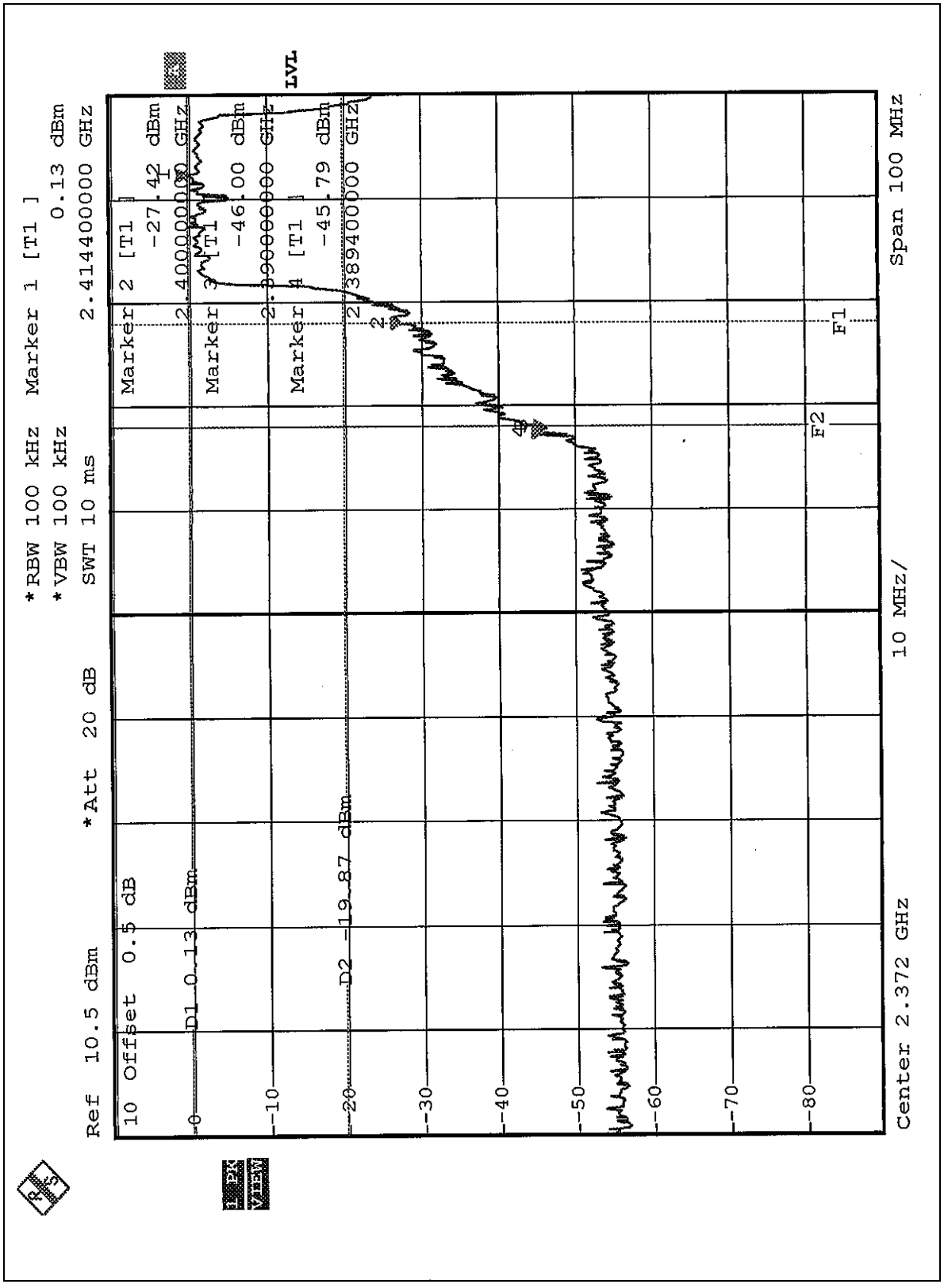
NOTE 4:
The band edge emission plot of OFDM technique on page 63 show 42.64dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 93.24dBuV/m, so the maximum field strength in restrict band is 93.24-42.64=50.60dBuV/m which is under 54dBuV/m limit.

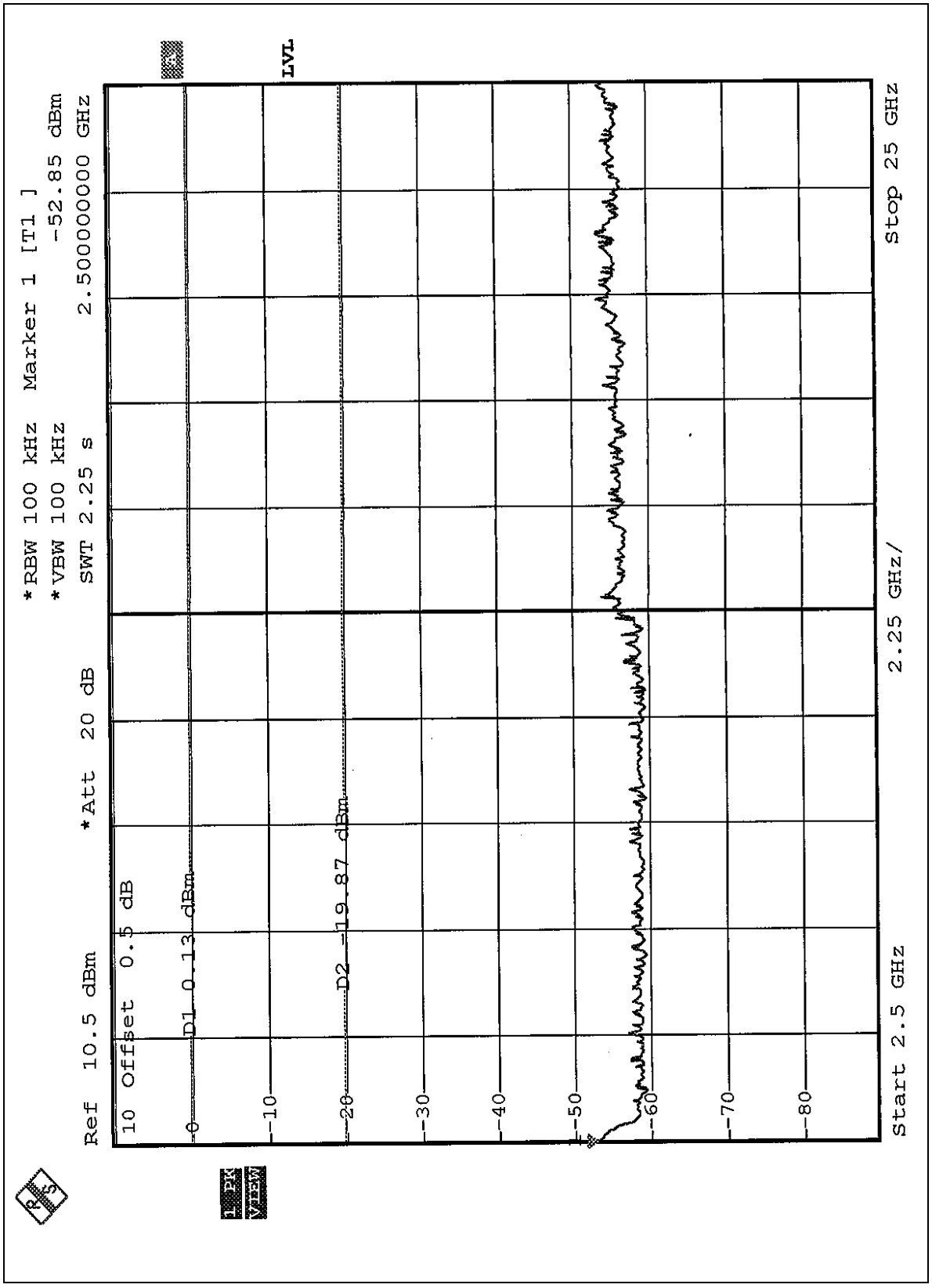

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
8.34 dBm
2.411800000 GHz
Marker 2 [T1]
-21.18 dBm
2.397200001 GHz
Marker 3 [T1]
-44.38 dBm
2.390000000 GHz
Marker 4 [T1]
-44.20 dBm
2.387000000 GHz
D1 8.34 dBm
D2 -11.66 dBm
F1
F2
LVL
Center 2.368 GHz
10 MHz/
Span 100 MHz

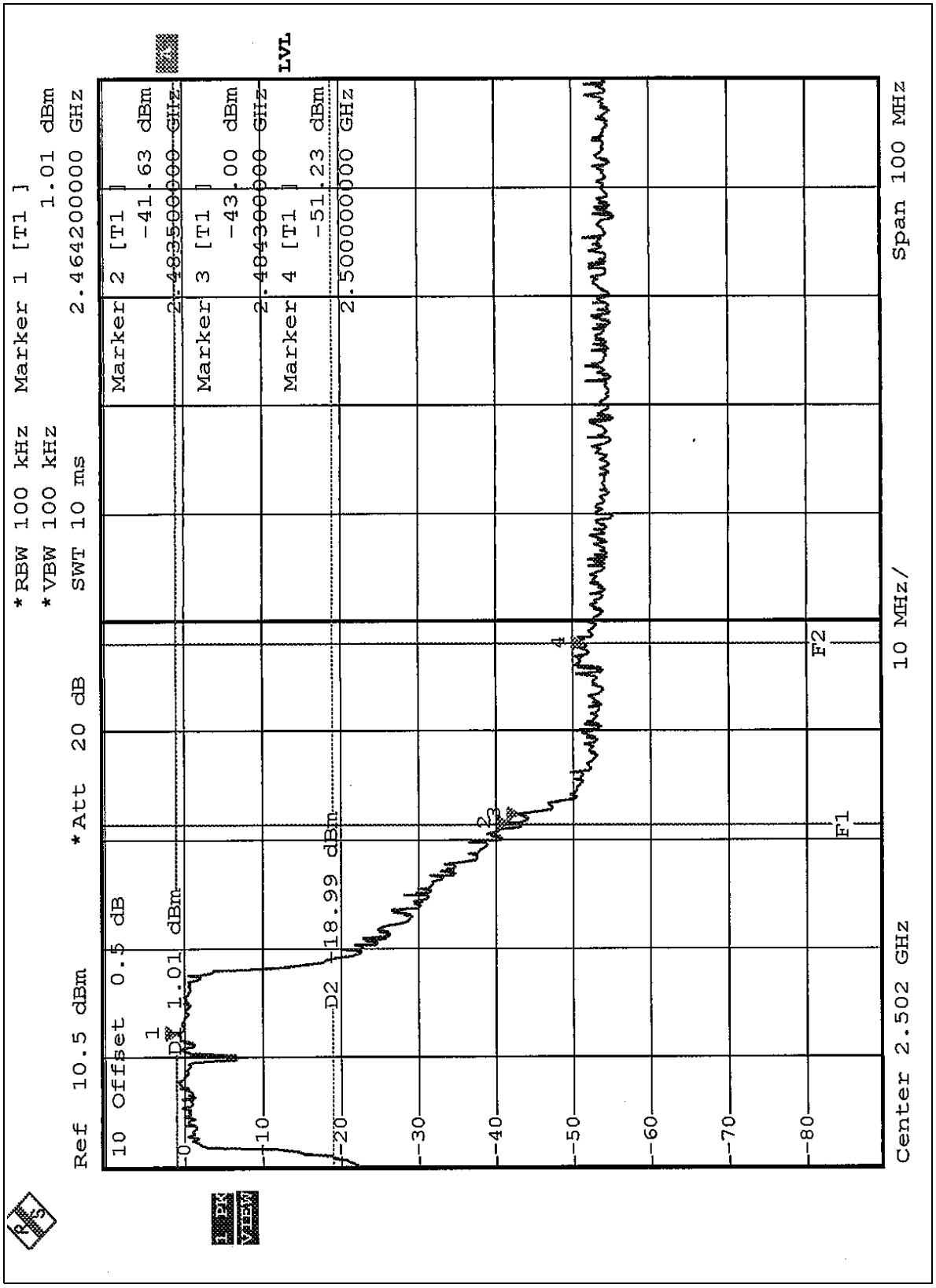

*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-44.03 dBm
4.795000000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 8.34 dBm
D2 -11.66 dBm
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
1 PK
MaxA

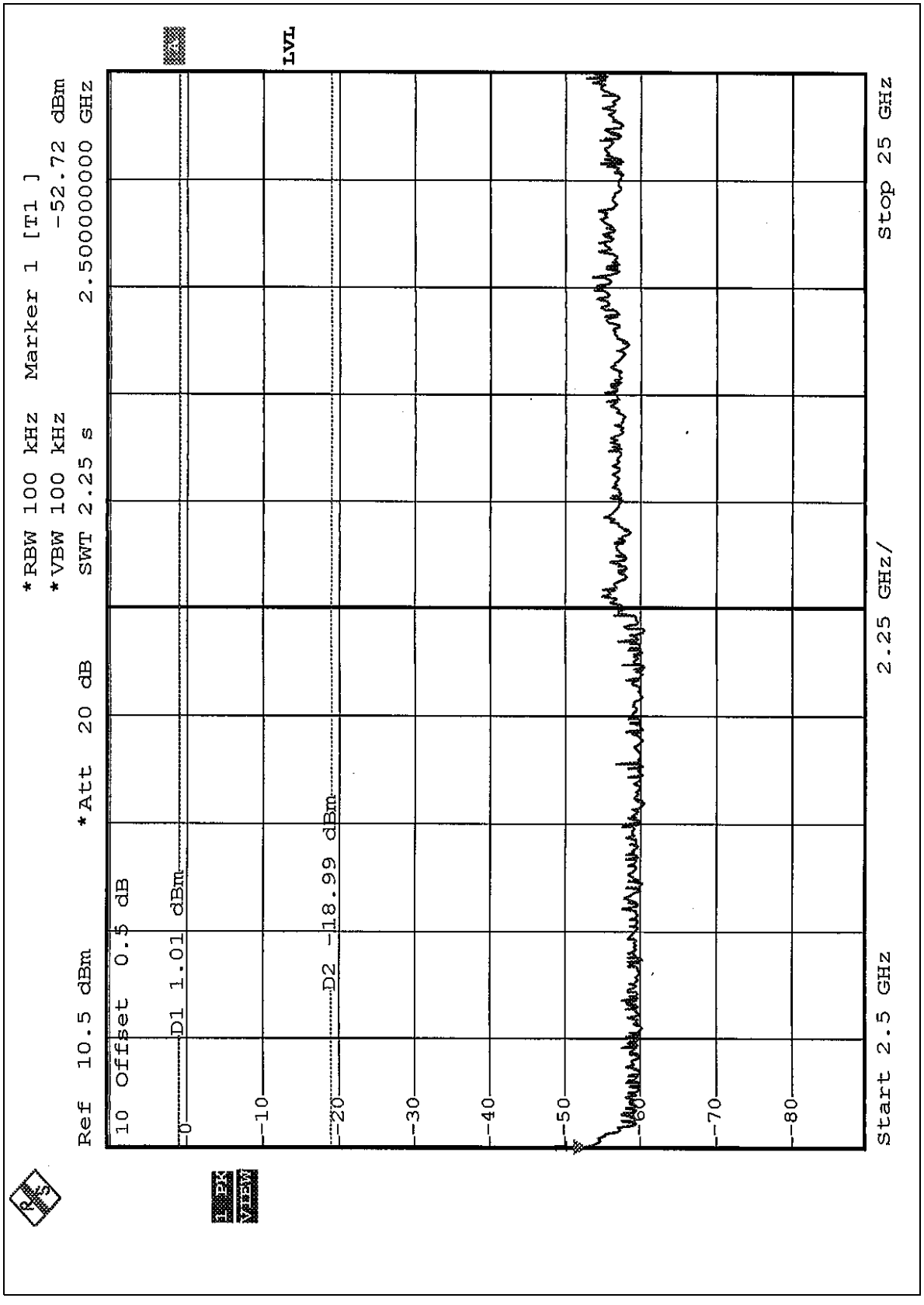

*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
8.68 dBm
2.461600000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 8.68 dBm
D2 -11.32 dBm
Marker 2 [T1]
-39.24 dBm
2.483500000 GHz
Marker 3 [T1]
-42.51 dBm
2.487500000 GHz
Marker 4 [T1]
-47.36 dBm
2.500000000 GHz
LVL
Center 2.504 GHz
10 MHz/
Span 100 MHz
F1
F2
RBW
VBW


*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-44.11 dBm
4.885000000 GHz
Ref 20.5 dBm
Offset 0.5 dB
*Att 30 dB
D1 8.68 dBm
D2 -11.32 dBm
1 PK
VIEW
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
0.13 dBm
2.414400000 GHz
Ref 10.5 dBm
Offset 0.5 dB
*Att 20 dB
D1 0.13 dBm
D2 -19.87 dBm
Marker 2 [T1]
-27.42 dBm
2.400000000 GHz
Marker 3 [T1]
-46.00 dBm
2.390000000 GHz
Marker 4 [T1]
-45.79 dBm
2.389400000 GHz
LVL
F1
F2
Center 2.372 GHz
10 MHz/
Span 100 MHz


*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-52.85 dBm
2.500000000 GHz
Ref 10.5 dBm
*Att 20 dB
Offset 0.5 dB
D1 0.13 dBm
D2 -19.87 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
LVL
1 PK
VIEW


*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
1.01 dBm
2.464200000 GHz
Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
D1 1.01 dBm
D2 18.99 dBm
Marker 2 [T1]
-41.63 dBm
2.483500000 GHz
Marker 3 [T1]
-43.00 dBm
2.484300000 GHz
Marker 4 [T1]
-51.23 dBm
2.500000000 GHz
LVL
Center 2.502 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK
VIEW


*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-52.72 dBm
2.50000000 GHz
Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
LVL
D1 1.01 dBm
D2 -18.99 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
0
-10
-20
-30
-40
-50
-60
-70
-80
RBW
VBW

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna without antenna connector. The maximum Gain of the antenna is 1.3dBi

5. TEST TYPES AND RESULTS (FOR PART 802.11a)

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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.

5.1.2 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

5.1.3 TEST PROCEDURES

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

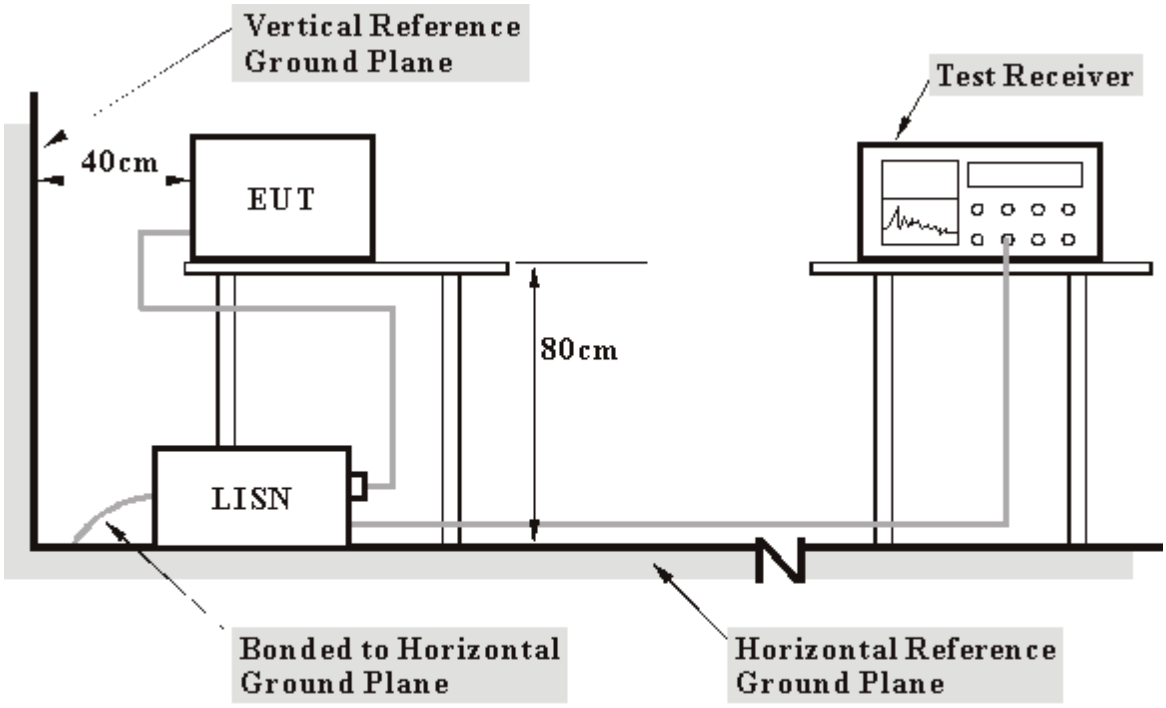
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

5.1.4 DEVIATION FROM TEST STANDARD

No deviation

5.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

5.1.6 EUT OPERATING CONDITIONS

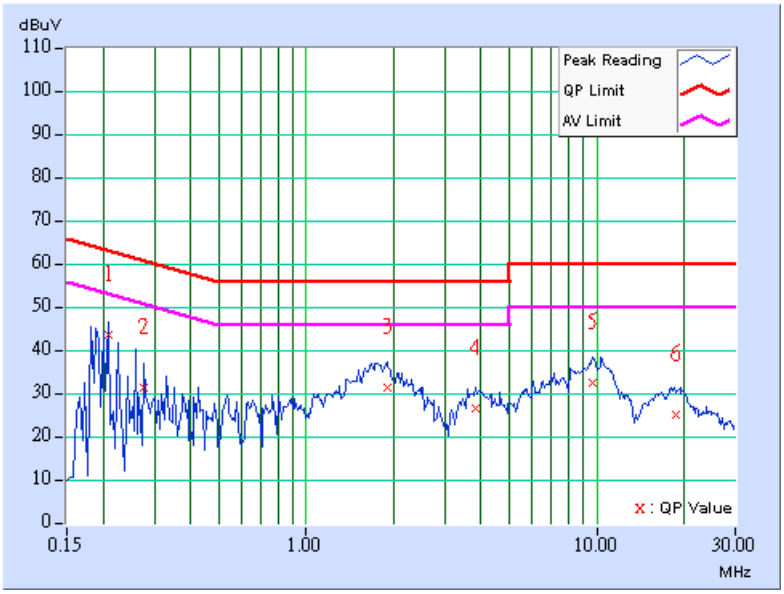
Same as 4.1.6

5.1.7 TEST RESULTS

EUT	Wireless A/G USB Network Adapter	MODEL	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	6dB BANDWIDTH	9 kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	PHASE	Line (L)
TESTED BY	Steven Lu		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.209	0.12	42.60	-	42.72	-	63.26	53.26	-20.54	-
2	0.275	0.12	30.47	-	30.59	-	60.97	50.97	-30.37	-
3	1.898	0.16	30.61	-	30.77	-	56.00	46.00	-25.23	-
4	3.832	0.20	25.64	-	25.84	-	56.00	46.00	-30.16	-
5	9.699	0.30	31.63	-	31.93	-	60.00	50.00	-28.07	-
6	18.648	0.96	24.10	-	25.06	-	60.00	50.00	-34.94	-

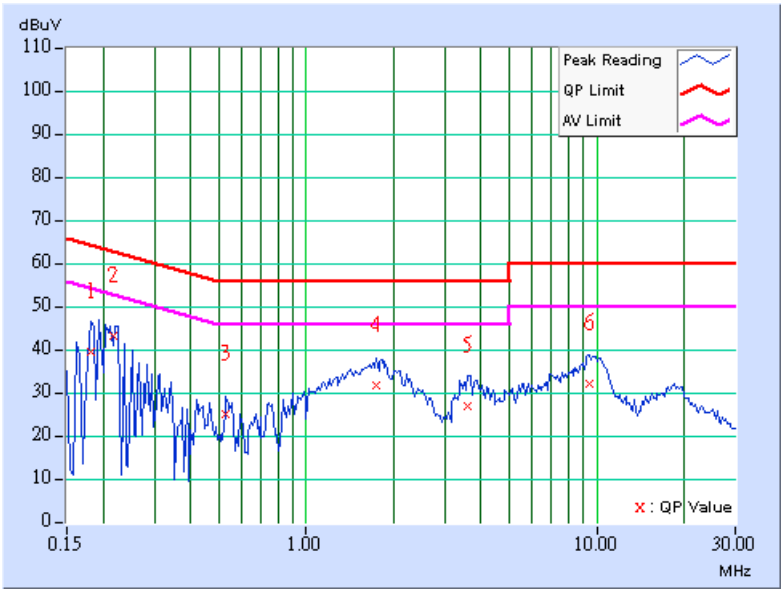
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	**6dB BANDWIDTH**	9 kHz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**PHASE**	Neutral (N)
TESTED BY	Steven Lu		

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.181	0.11	39.18	-	39.29	-	64.43	54.43	-25.14	-
2	**0.216**	**0.11**	**43.08**	**-**	**43.19**	**-**	**62.97**	**52.97**	**-19.78**	**-**
3	0.529	0.12	25.06	-	25.18	-	56.00	46.00	-30.82	-
4	1.750	0.16	31.74	-	31.90	-	56.00	46.00	-24.10	-
5	3.605	0.19	26.87	-	27.06	-	56.00	46.00	-28.94	-
6	9.441	0.28	31.94	-	32.22	-	60.00	50.00	-27.78	-

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.



5.2 RADIATED EMISSION MEASUREMENT

5.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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

5.2.2 LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS

Frequencies (MHz)	**EIRP Limit (dBm)**	**Equivalent Field Strength at 3m (dBμV/m)** *note 3
5150~5250	-27	68.30
5250~5350	-27	68.30
5725~5825	-27 *note 1	68.30
	-17 *note 2	78.30

NOTE:

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

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

5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Feb. 09, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170242	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10631	Jan. 15, 2005
Preamplifier Agilent	8449B	3008A01960	Jan. 22, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Mar. 04, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219275/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	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 3.

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 IC4924-4.

5.2.4 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 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 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

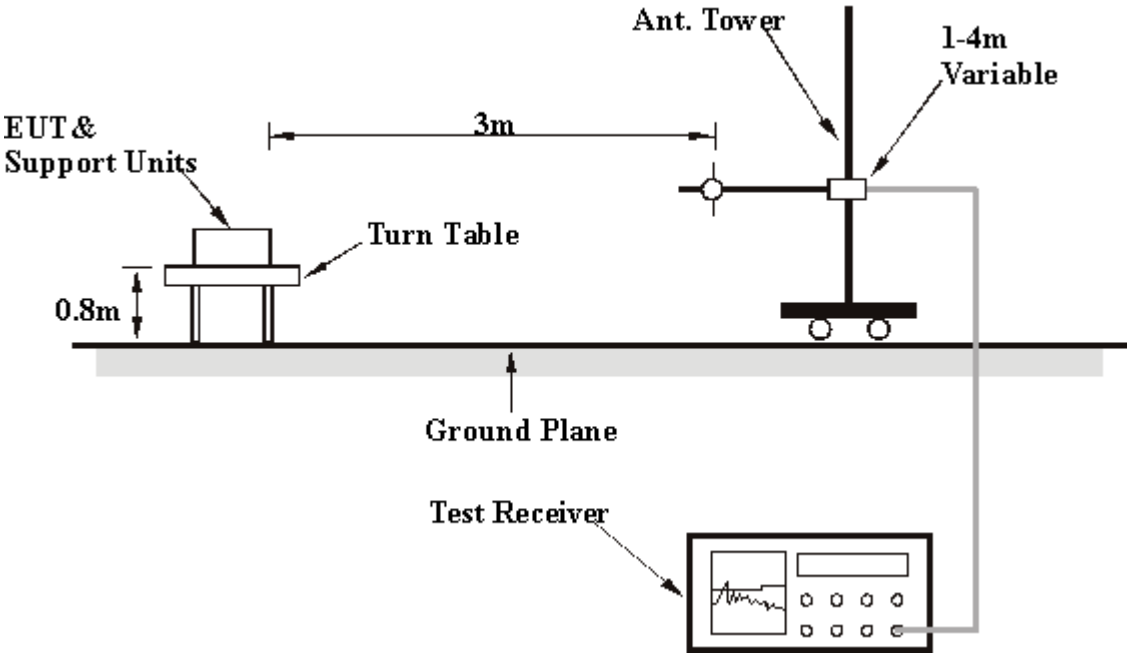
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

5.2.5 DEVIATION FROM TEST STANDARD

No deviation

5.2.6 TEST SETUP



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

5.2.7 EUT OPERATING CONDITIONS

Same as 4.1.6

5.2.8 TEST RESULTS

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
MODE	Channel 11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 65%RH, 991 hPa	**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	119.42	38.91 QP	43.50	-4.59	2.50 H	277	26.10	12.80
2	142.75	38.63 QP	43.50	-4.87	1.75 H	94	24.12	14.51
3	239.94	35.63 QP	46.00	-10.37	1.50 H	247	22.67	12.96
4	288.54	36.49 QP	46.00	-9.51	1.00 H	70	22.26	14.23
5	335.19	34.44 QP	46.00	-11.56	1.25 H	55	19.25	15.19
6	399.34	34.46 QP	46.00	-11.54	1.00 H	190	17.74	16.71
7	**480.98**	**44.12 QP**	**46.00**	**-1.88**	**1.75 H**	**64**	**25.76**	**18.35**
8	560.68	35.69 QP	46.00	-10.31	1.50 H	37	15.94	19.75
9	601.50	40.74 QP	46.00	-5.26	1.50 H	310	19.89	20.85
10	640.38	37.84 QP	46.00	-8.16	1.25 H	304	16.49	21.35
11	720.08	32.84 QP	46.00	-13.16	1.25 H	292	10.34	22.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	47.49	37.54 QP	40.00	-2.46	1.00 V	235	22.52	15.01
2	117.47	36.45 QP	43.50	-7.05	3.00 V	13	23.84	12.61
3	160.24	35.47 QP	43.50	-8.03	1.00 V	184	20.55	14.92
4	249.66	32.11 QP	46.00	-13.89	1.75 V	208	19.00	13.11
5	438.22	32.68 QP	46.00	-13.32	2.50 V	73	14.98	17.70
6	480.98	36.40 QP	46.00	-9.60	1.75 V	31	18.05	18.35
7	519.86	33.29 QP	46.00	-12.71	1.75 V	1	14.36	18.92
8	601.50	34.13 QP	46.00	-11.87	1.75 V	169	13.29	20.85
9	640.38	31.75 QP	46.00	-14.25	1.50 V	334	10.40	21.35

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 A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	1
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	#5143.00	46.81 PK	74.00	-27.19	1.75 H	255	6.84	39.97
1	#5143.00	37.05 AV	54.00	-16.95	1.75 H	255	-2.92	39.97
2	*5180.00	98.13 PK			1.75 H	255	57.94	40.19
2	*5180.00	88.37 AV			1.75 H	255	48.18	40.19
3	10360.00	61.02 PK	68.30	-7.28	1.75 H	255	10.67	50.35

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	#5143.00	55.62 PK	74.00	-18.38	1.34 V	251	15.65	39.97
1	#5143.00	45.86 AV	54.00	-8.14	1.34 V	251	5.89	39.97
2	*5180.00	106.94 PK			1.34 V	251	66.75	40.19
2	*5180.00	97.18 AV			1.34 V	251	56.99	40.19
3	10360.00	62.16 PK	68.30	-6.14	1.72 V	184	11.81	50.35

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
6. "# " : The radiated frequency falling in the restricted band.

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	4
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	*5240.00	97.90 PK			1.41 H	106	57.57	40.33
1	*5240.00	87.99 AV			1.41 H	106	47.66	40.33
2	10480.00	61.37 PK	68.30	-6.93	1.58 H	219	10.65	50.72

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	*5240.00	105.58 PK			1.56 V	289	65.25	40.33
1	*5240.00	95.51 AV			1.56 V	289	55.18	40.33
2	10480.00	62.11 PK	68.30	-6.19	1.40 V	88	11.39	50.72

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
6. "# " : The radiated frequency falling in the restricted band.

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	5
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	*5260.00	98.38 PK			1.76 H	252	58.03	40.35
1	*5260.00	88.18 AV			1.76 H	252	47.83	40.35
2	10520.00	61.84 PK	68.30	-6.46	1.61 H	127	10.98	50.87

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT3 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	*5260.00	105.94 PK			1.45 V	250	65.59	40.35
1	*5260.00	96.07 AV			1.45 V	250	55.72	40.35
2	10520.00	61.65 PK	68.30	-6.65	1.15 V	252	10.79	50.87

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
6. "# " : The radiated frequency falling in the restricted band.

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	8
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	*5320.00	95.99 PK			1.00 H	283	55.56	40.43
1	*5320.00	86.01 AV			1.00 H	283	45.58	40.43
2	#5356.00	44.33 PK	74.00	-29.67	1.00 H	283	3.81	40.52
2	#5356.00	34.35 AV	54.00	-19.65	1.00 H	283	-6.17	40.52
3	#10640.00	61.60 PK	74.00	-12.40	1.15 H	120	10.30	51.29
3	#10640.00	47.88 AV	54.00	-6.12	1.15 H	120	-3.42	51.29

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	*5320.00	106.83 PK			1.03 V	344	66.40	40.43
1	*5320.00	97.11 AV			1.03 V	344	56.68	40.43
2	#5356.00	55.17 PK	74.00	-18.83	1.03 V	344	14.65	40.52
2	#5356.00	45.45 AV	54.00	-8.55	1.03 V	344	4.93	40.52
3	#10640.00	61.79 PK	74.00	-12.21	1.35 V	87	10.49	51.29
3	#10640.00	48.57 AV	54.00	-5.43	1.35 V	87	-2.73	51.29

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
6. "# " : The radiated frequency falling in the restricted band.

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	9
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	5715.00	64.23 PK	68.30	-4.07	1.62 H	72	23.22	41.01
2	5725.00	68.94 PK	78.30	-9.36	1.62 H	72	27.94	41.00
3	*5745.00	95.07 PK			1.62 H	72	54.09	40.98
3	*5745.00	85.15 AV			1.62 H	72	44.17	40.98
4	#11490.00	63.60 PK	74.00	-10.40	1.43 H	336	11.68	51.92
4	#11490.00	49.25 AV	54.00	-4.75	1.43 H	336	-2.67	51.92

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	5715.00	65.36 PK	68.30	-2.94	1.18 V	338	24.35	41.01
2	5725.00	70.04 PK	78.30	-8.26	1.19 V	337	29.04	41.00
3	*5745.00	100.08 PK			1.18 V	338	59.10	40.98
3	*5745.00	90.16 AV			1.18 V	338	49.18	40.98
4	#11490.00	63.37 PK	74.00	-10.63	1.67 V	18	11.45	51.92
4	#11490.00	50.28 AV	54.00	-3.72	1.67 V	18	-1.64	51.92

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
6. "# " : The radiated frequency falling in the restricted band.

EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
		CHANNEL	12
FREQUENCY RANGE	1~40GHz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60Hz
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	*5805.00	94.46 PK			1.61 H	73	53.52	40.94
1	*5805.00	84.46 AV			1.61 H	73	43.52	40.94
2	5825.00	68.36 PK	78.30	-9.94	1.61 H	73	27.37	40.99
3	5835.00	64.58 PK	68.30	-3.72	1.61 H	73	23.57	41.01
4	#11610.00	63.77 PK	74.00	-10.23	1.38 H	185	11.56	52.21
4	#11610.00	49.57 AV	54.00	-4.43	1.38 H	185	-2.64	52.21

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5805.00	98.97 PK			1.49 V	47	58.03	40.94
1	*5805.00	88.01 AV			1.49 V	47	47.07	40.94
2	5825.00	68.59 PK	78.30	-9.71	1.49 V	47	27.60	40.99
3	5835.00	65.29 PK	68.30	-3.01	1.49 V	47	24.28	41.01
4	#11610.00	63.63 PK	74.00	-10.37	1.41 V	51	11.42	52.21
4	#11610.00	50.95 AV	54.00	-3.05	1.41 V	51	-1.26	52.21

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
6. "# " : The radiated frequency falling in the restricted band.

5.3 PEAK TRANSMIT POWER MEASUREMENT

5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35 GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825 GHz	The lesser of 1W (30dBm) or 17dBm + 10logB

Note: Where B is the 26dB emission bandwidth in MHz.

5.3.2 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.

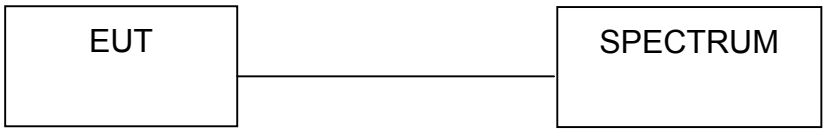
5.3.3 TEST PROCEDURE

4. The transmitter output was connected to the spectrum analyzer.
5. Set span to encompass the entire emission bandwidth of the signal.
6. Set RBW to 1MHz, VBW to 300kHz.
7. Using the spectrum analyzer's channel power measurement function to measure the output power.

5.3.4 DEVIATION FROM TEST STANDARD

No deviation

5.3.5 TEST SETUP



5.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.3.7 TEST RESULTS

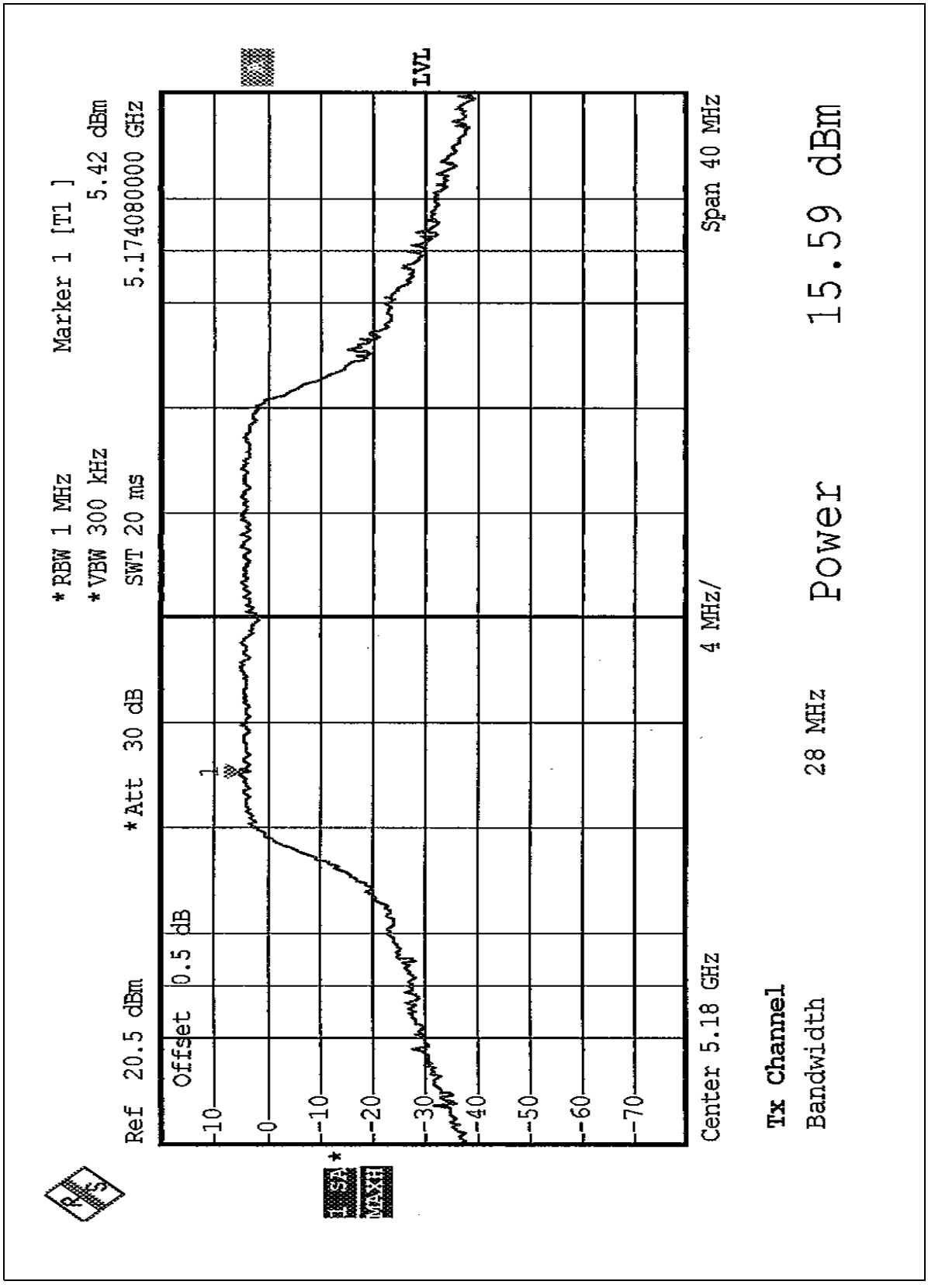
EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY	Steven Lu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	15.59	17.00	21.49	PASS
4	5240	15.57	17.00	21.35	PASS
5	5260	15.60	24.00	21.49	PASS
8	5320	15.52	24.00	21.42	PASS
9	5745	15.53	30.00	26.18	PASS
12	5805	15.51	30.00	24.22	PASS

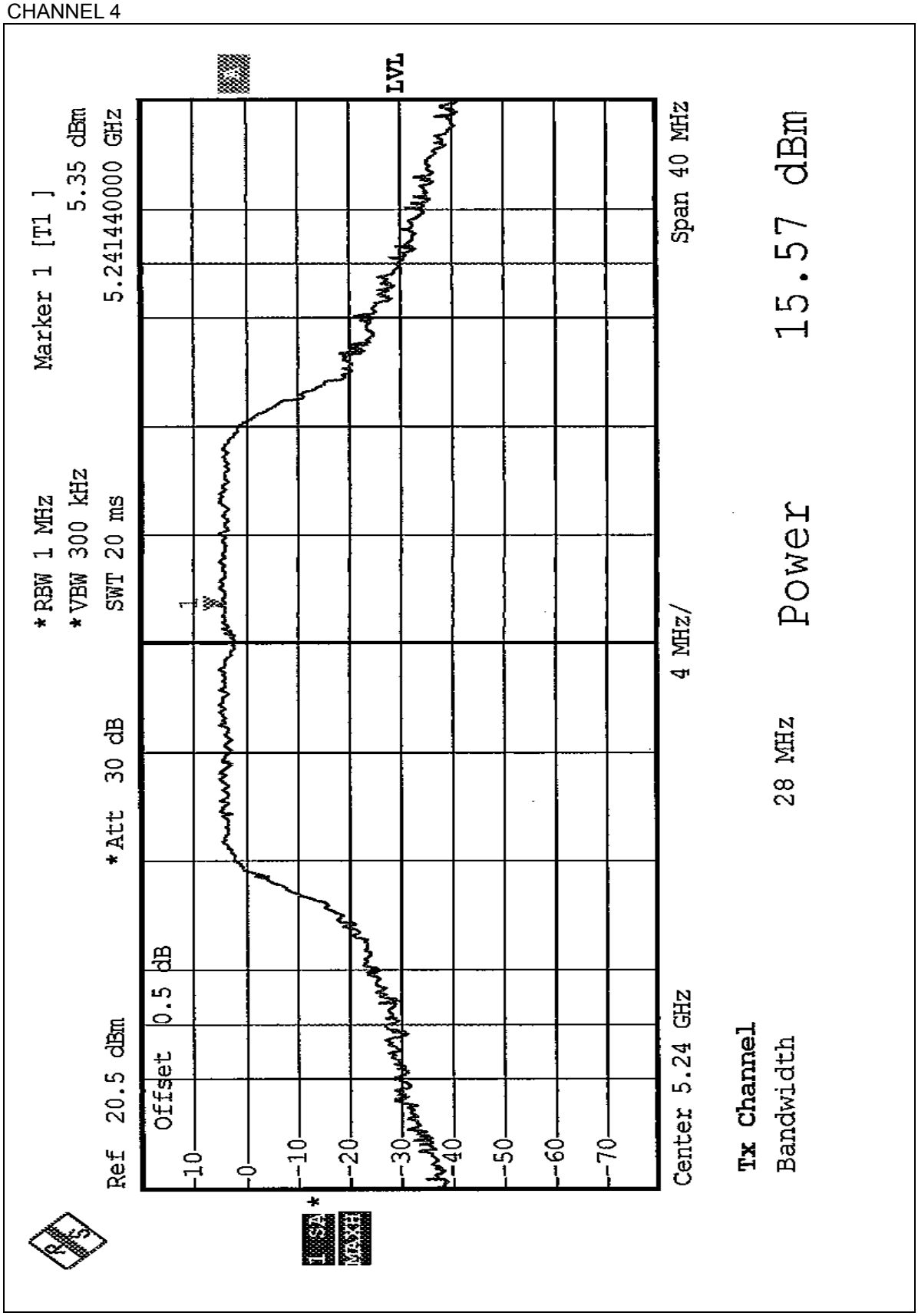
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.

Peak Power Output:

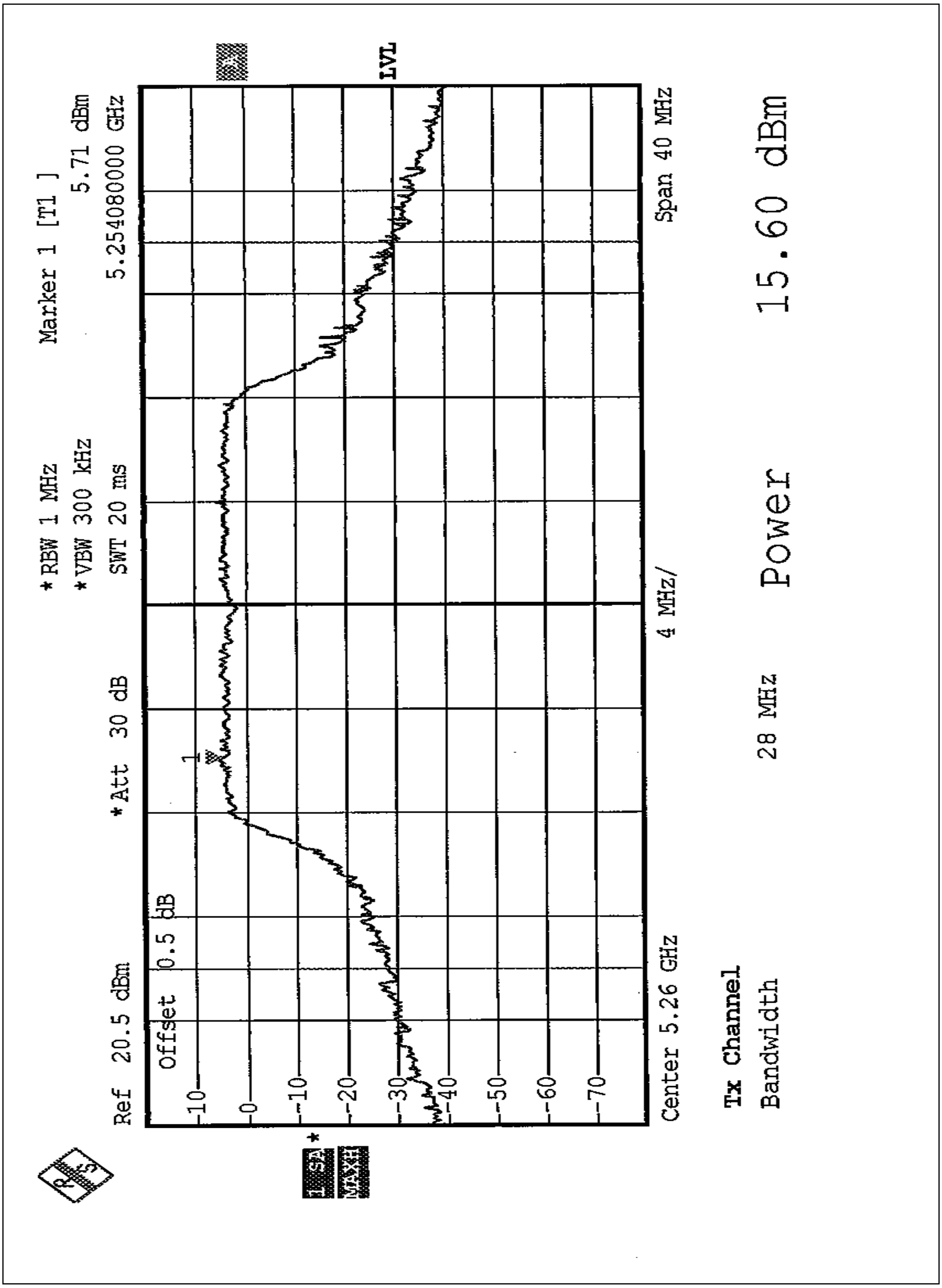
CHANNEL 1



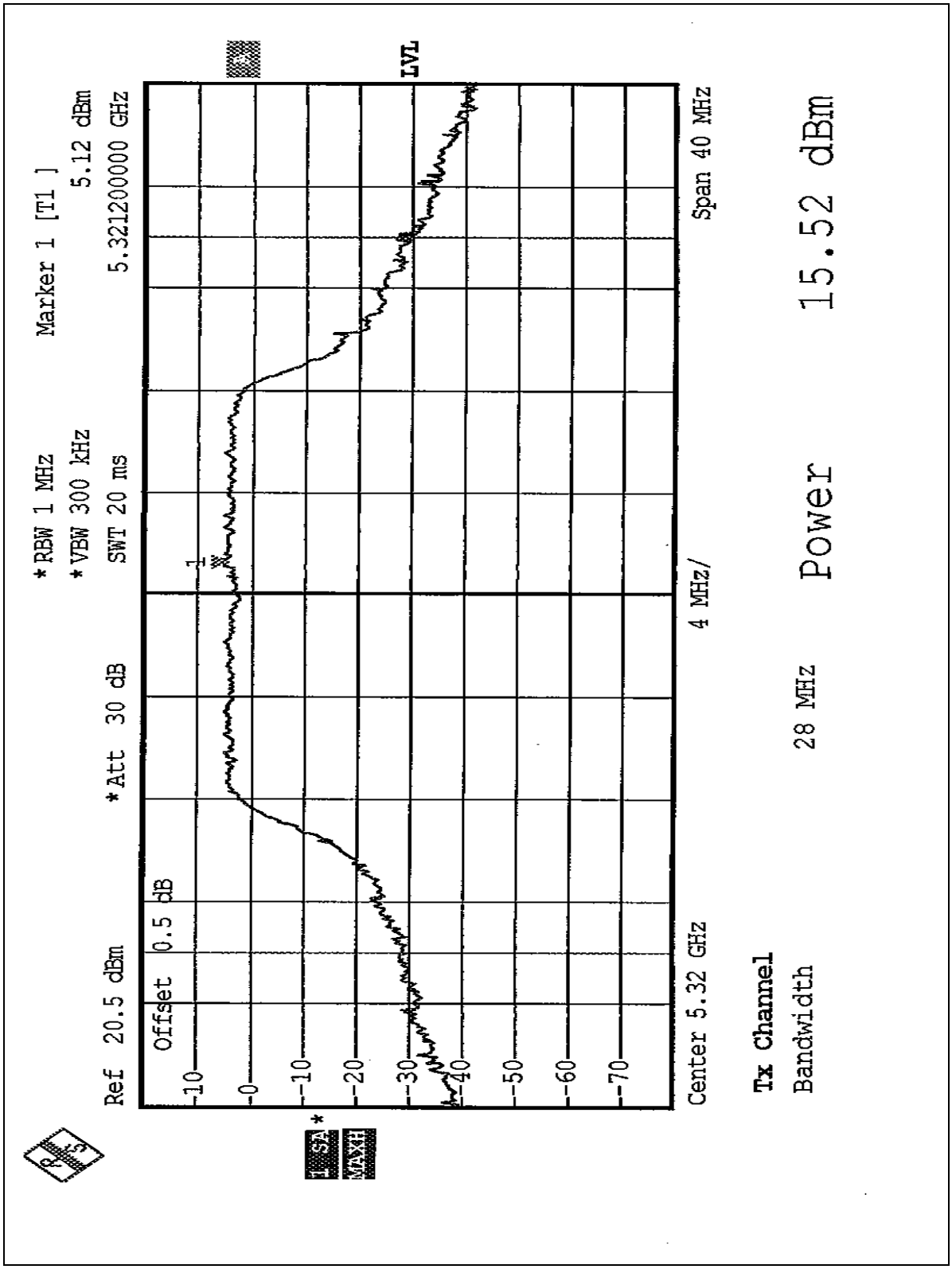
CHANNEL 4


Ref 20.5 dBm
Offset 0.5 dB
*Att 30 dB
*VBW 300 kHz
SWT 20 ms
Marker 1 [T1]
5.35 dBm
5.241440000 GHz
*RBW 1 MHz
LVL
Center 5.24 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
28 MHz
Power
15.57 dBm

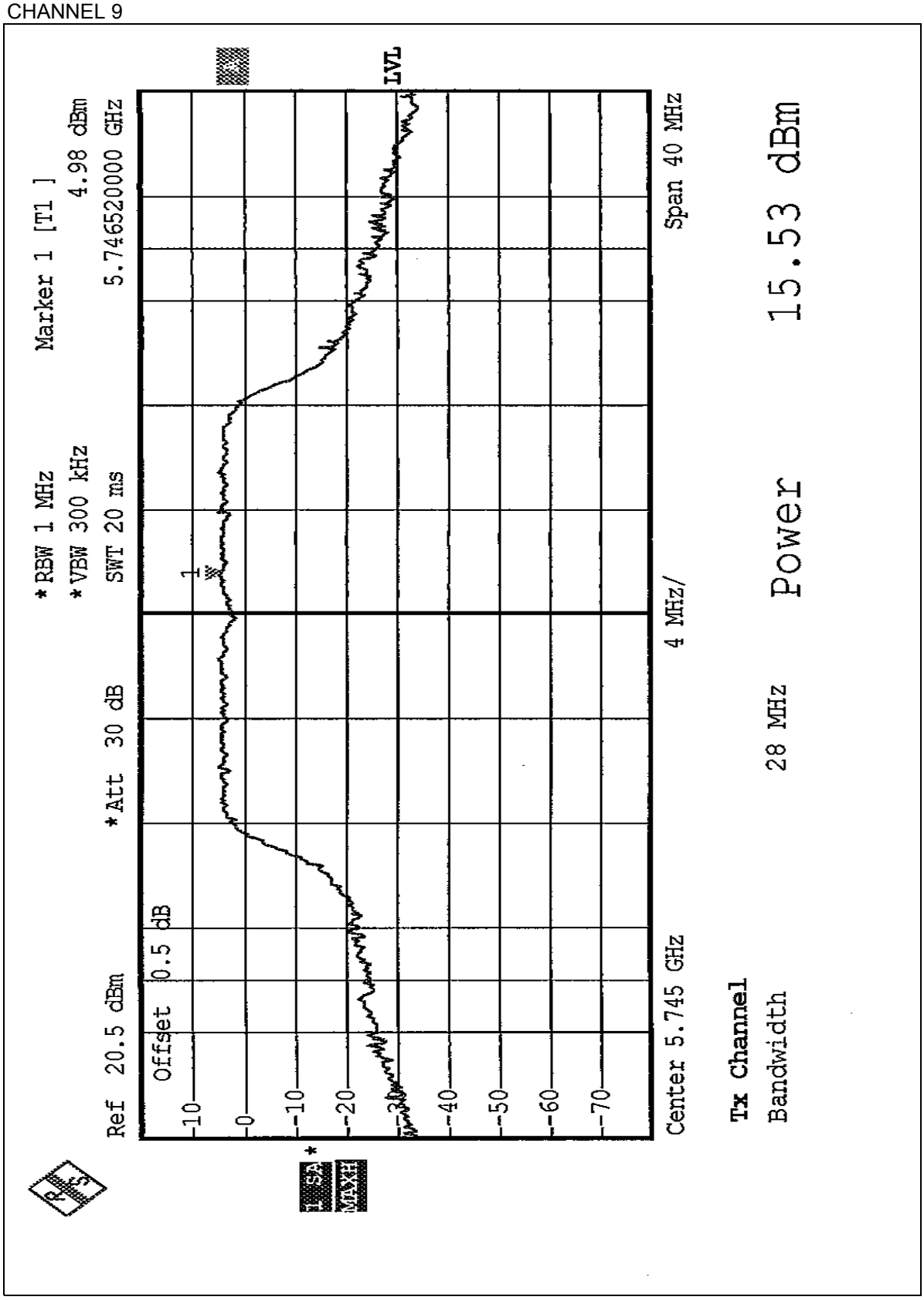
CHANNEL 5


Marker 1 [T1]
5.71 dBm
5.25408000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Ref 20.5 dBm
*Att 30 dB
Offset 0.5 dB
LVL
1 SA
MAXH
Center 5.26 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
28 MHz
Power
15.60 dBm

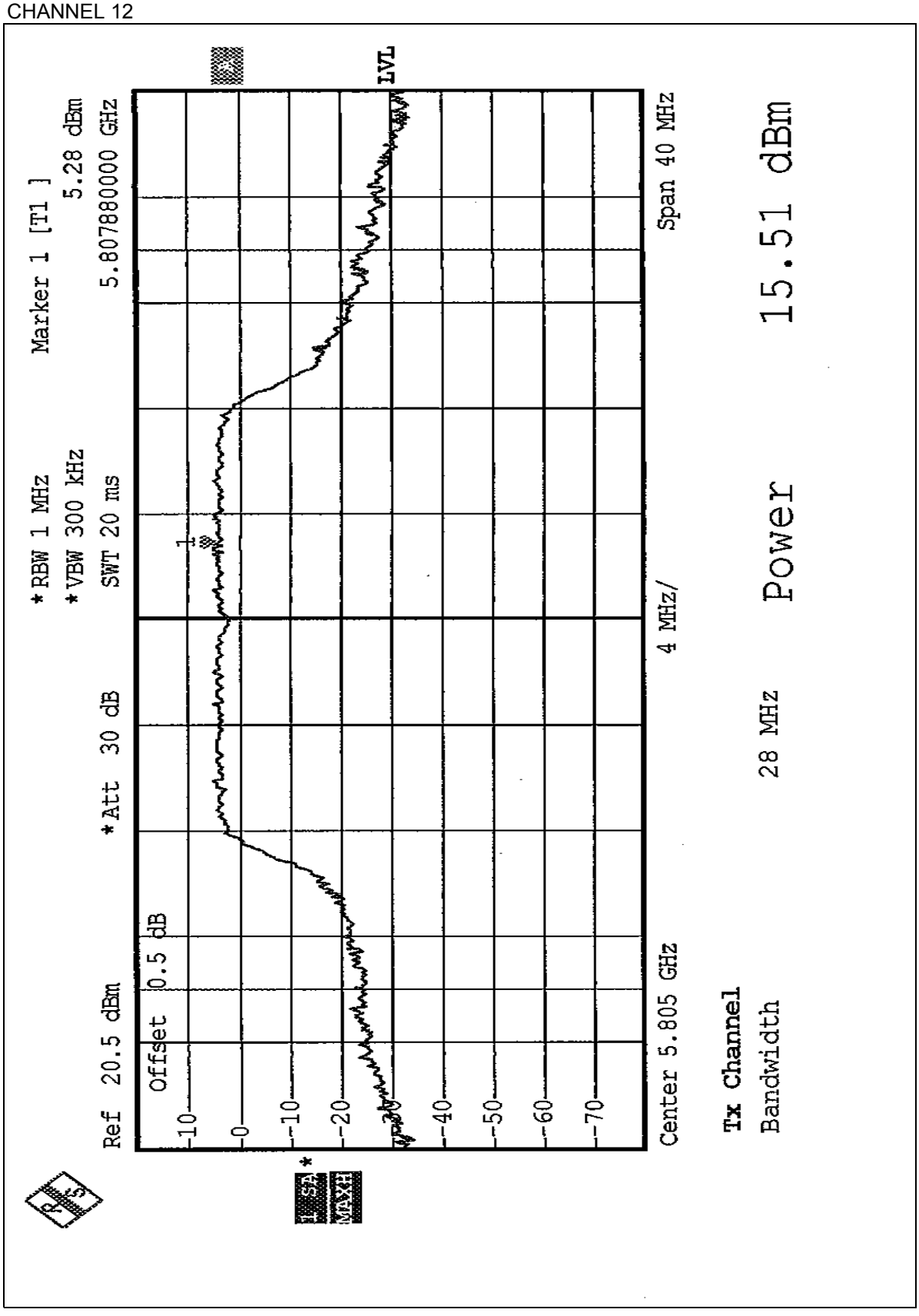
CHANNEL 8


Marker 1 [T1]
5.12 dBm
5.321200000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.32 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
28 MHz
Power
15.52 dBm
LVL
-10
0
10
20
30
40
50
60
70

CHANNEL 9

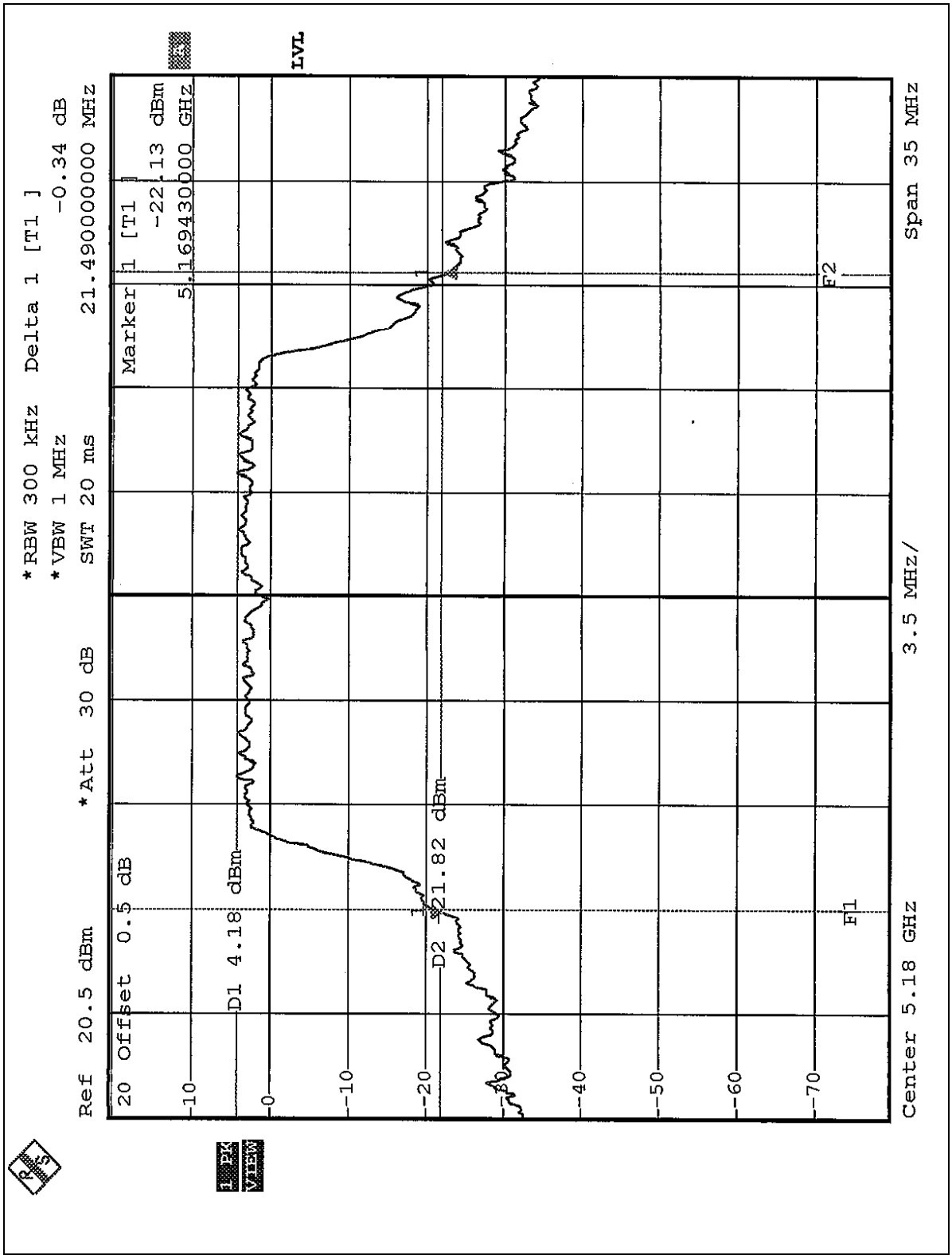

Marker 1 [T1]
4.98 dBm
5.746520000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.745 GHz
4 MHz/
Span 40 MHz
LVL
Power
15.53 dBm
Tx Channel
Bandwidth
28 MHz

CHANNEL 12

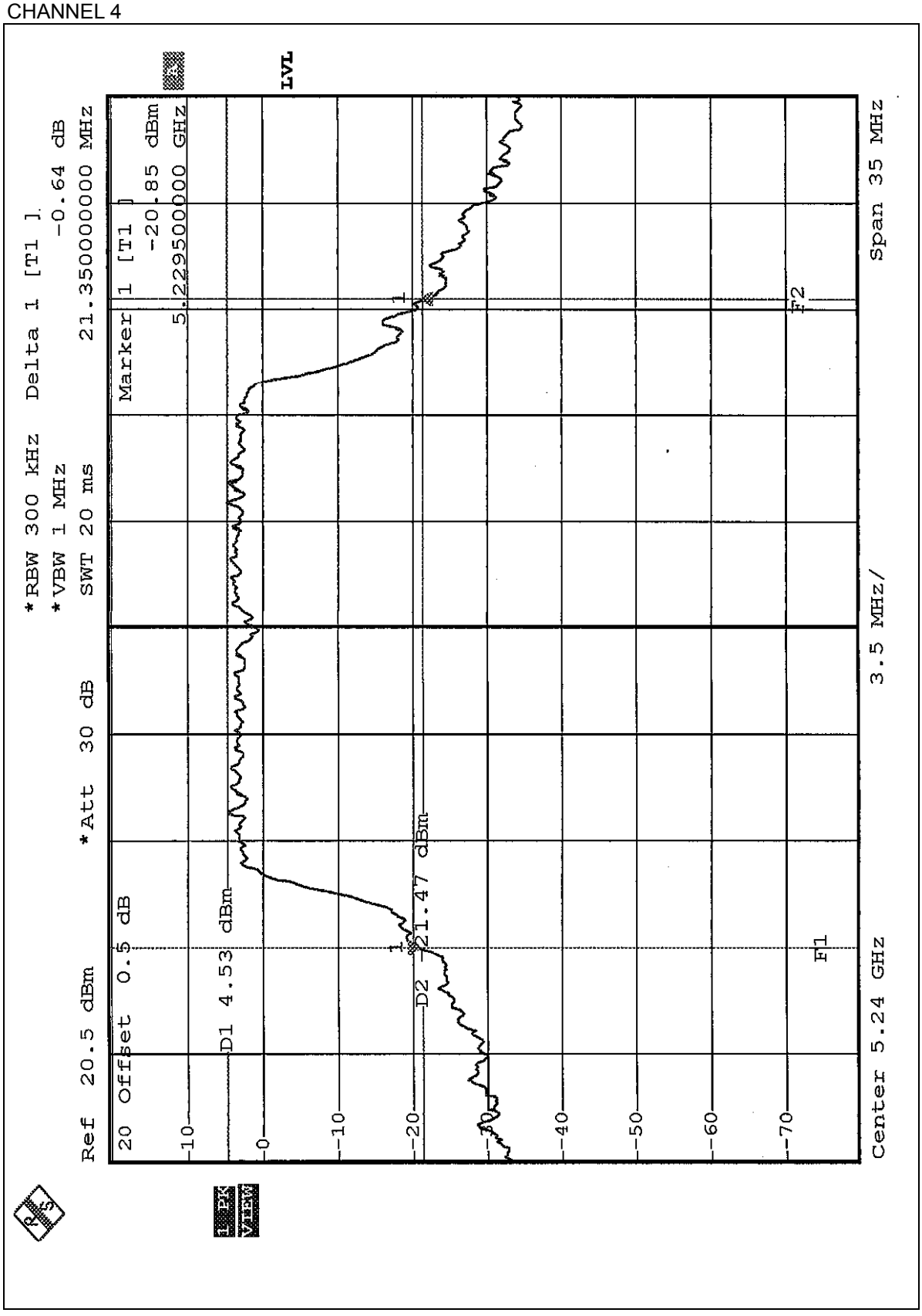

Marker 1 [T1]
5.28 dBm
5.807880000 GHz
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.805 GHz
4 MHz/
Span 40 MHz
Tx Channel
Bandwidth
28 MHz
Power
15.51 dBm
LVL
-10
0
10
20
30
40
50
60
70

26dB Occupied Bandwidth:

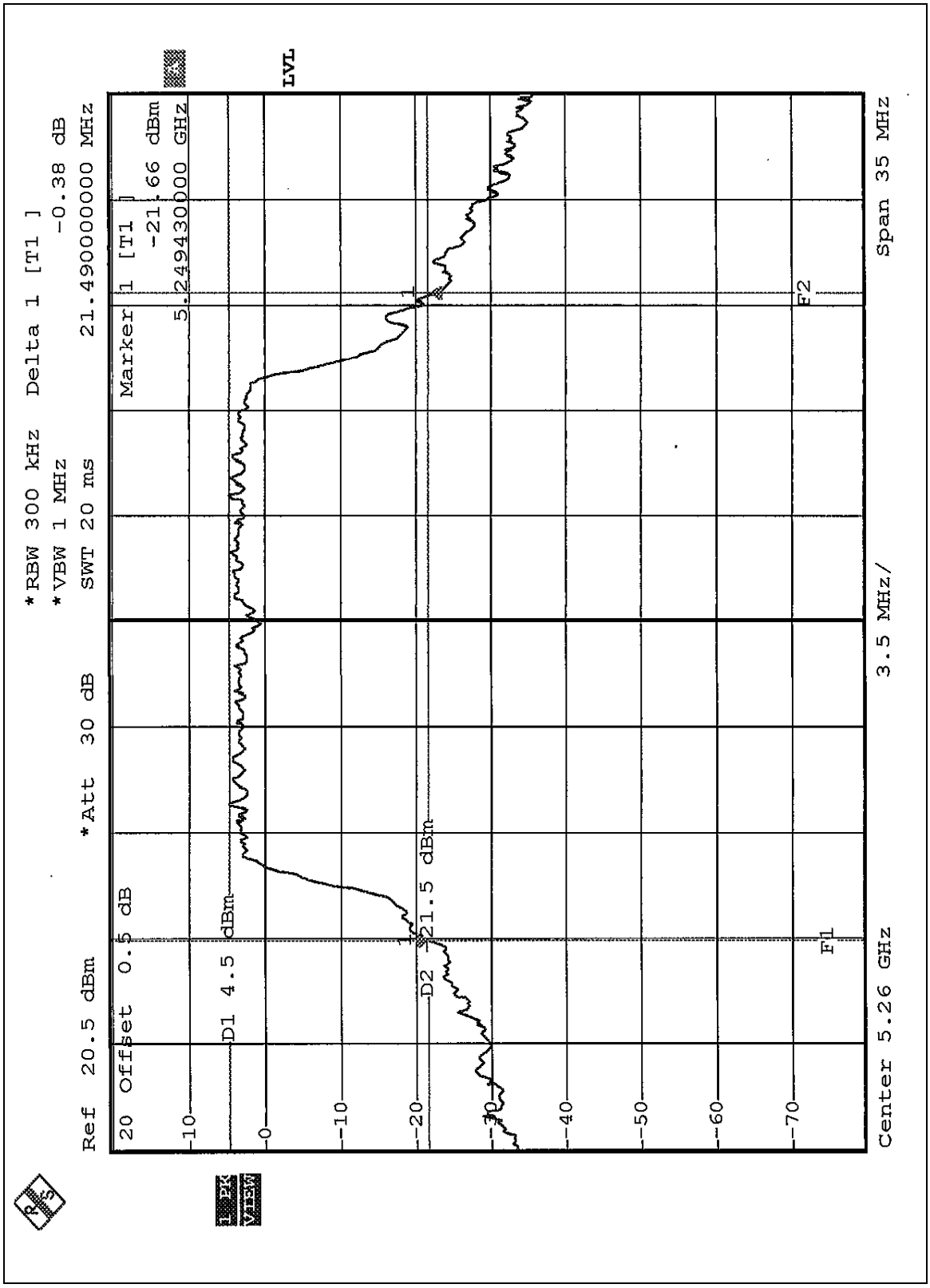
CHANNEL 1



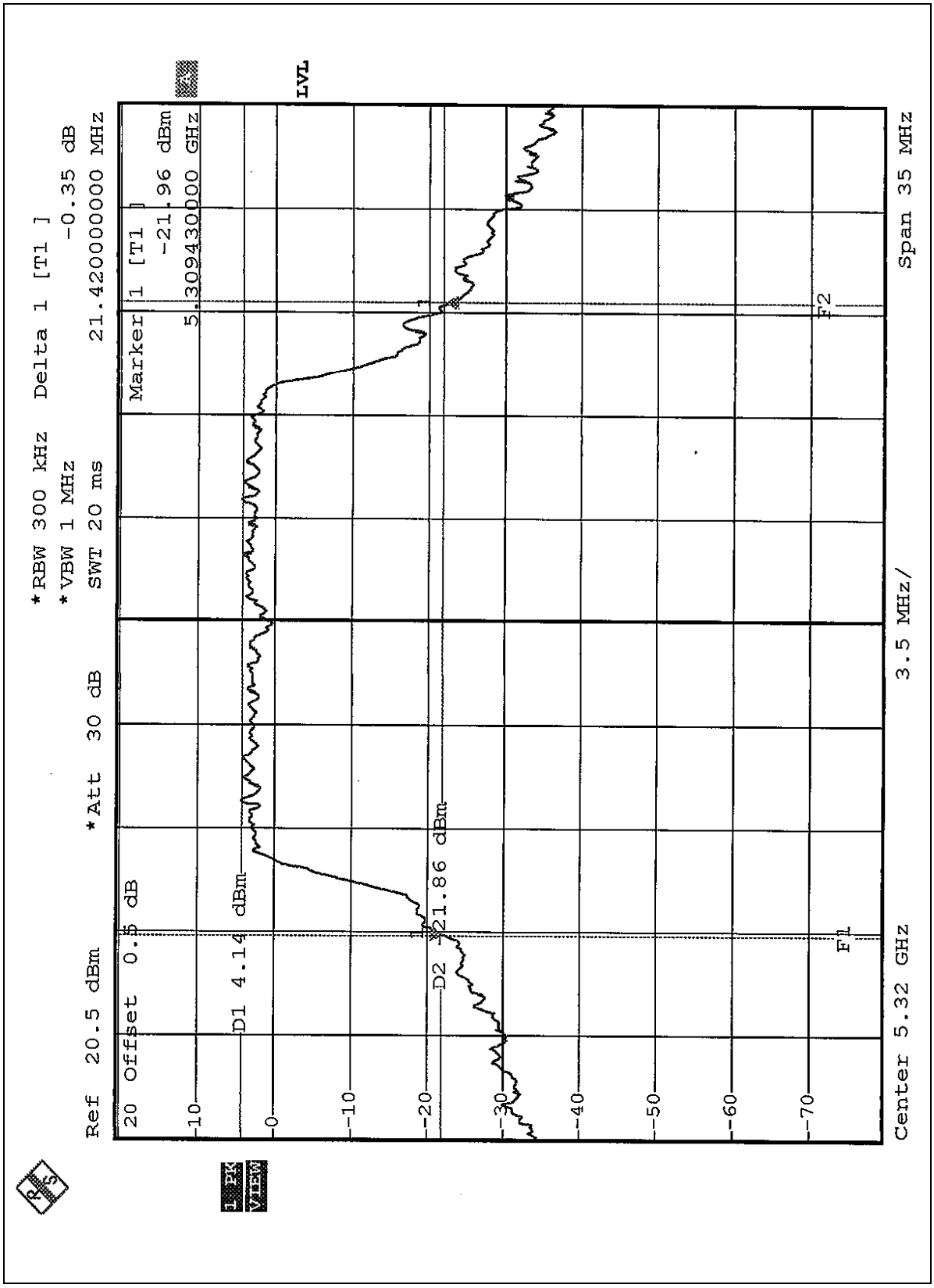
CHANNEL 4


*RBW 300 kHz
*VBW 1 MHz
Delta 1 [T1]
-0.64 dB
SWT 20 ms
21.350000000 MHz
Marker 1 [T1]
-20.85 dBm
5.229500000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 4.53 dBm
D2 -21.47 dBm
F1
F2
Center 5.24 GHz
3.5 MHz/
Span 35 MHz

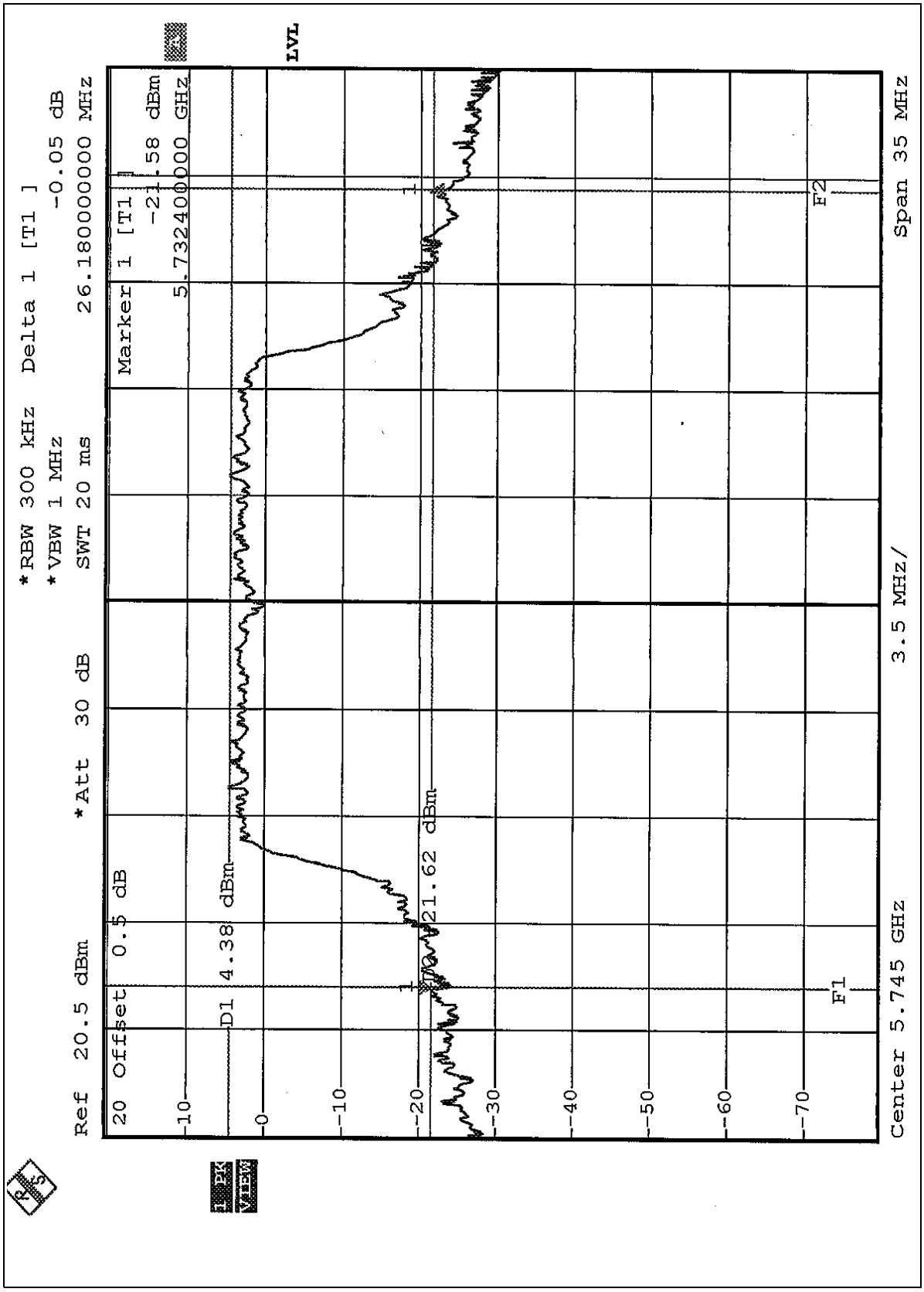
CHANNEL 5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.38 dB
21.490000000 MHz
Marker 1 [T1]
-21.66 dBm
5.249430000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
D1 4.5 dBm
D2 21.5 dBm
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
F1
F2
LVL
1 PK
VIEW

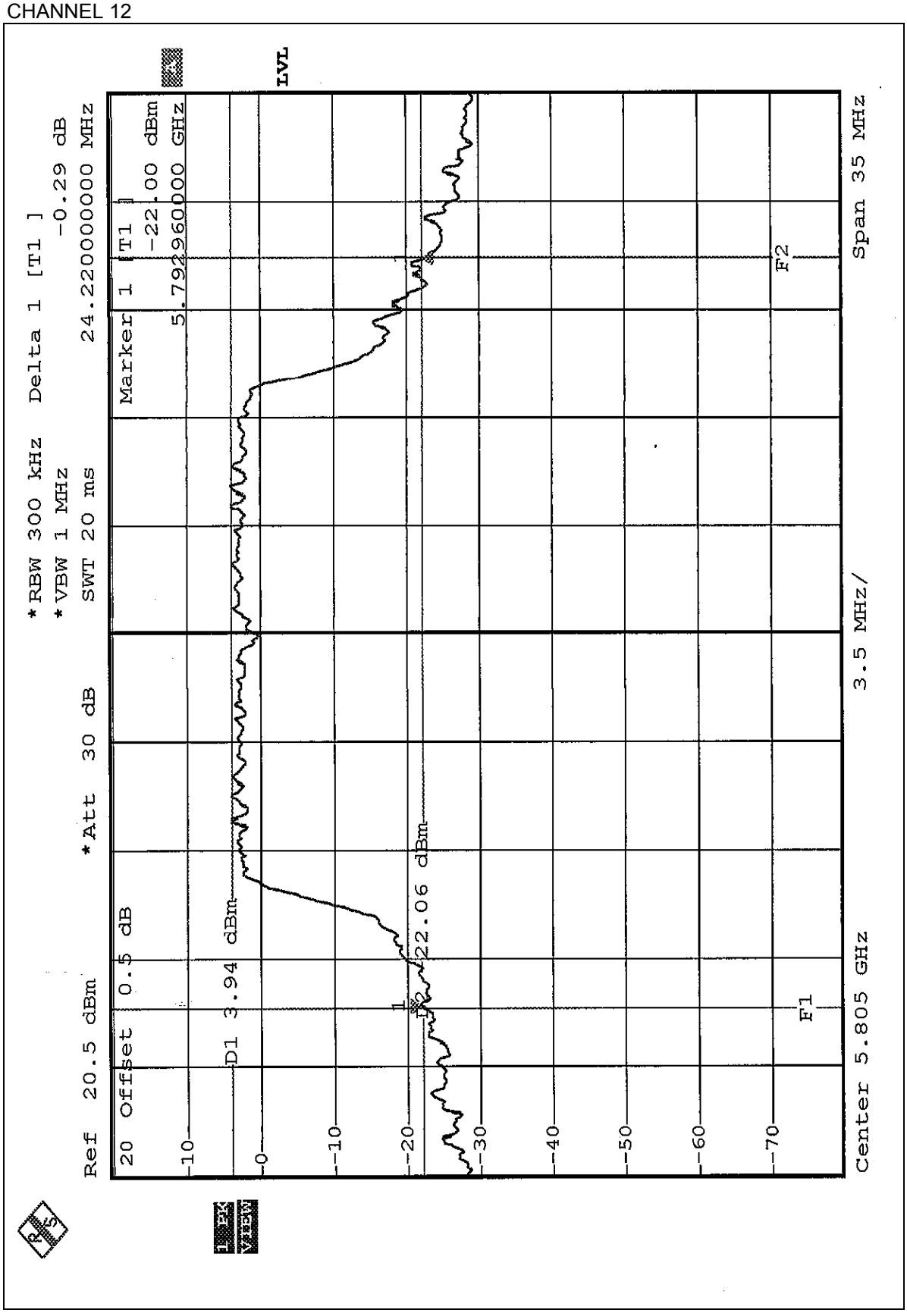
CHANNEL 8


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Delta 1 [T1]
-0.35 dB
21.42000000 MHz
Marker 1 [T1]
-21.96 dBm
5.30943000 GHz
D1 4.14 dBm
D2 -21.86 dBm
F1
F2
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
LVL
1 PK
VIEW

CHANNEL 9


*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.05 dB
26.180000000 MHz
Marker 1 [T1]
-21.58 dBm
5.732400000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
D1 4.38 dBm
21.62 dBm
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
F1
F2
LVL
PK
VBW

CHANNEL 12


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.29 dB
24.220000000 MHz
Marker 1 [T1]
-22.00 dBm
5.792960000 GHz
D1 3.94 dBm
D2 22.06 dBm
F1
F2
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
LVL
1 PK
VIEW

5.4 PEAK POWER EXCURSION MEASUREMENT

5.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.725 – 5.825 GHz	13dB

5.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE&SCHWARZ SPECTRUM ANALYZER	FSEK30	100049	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.

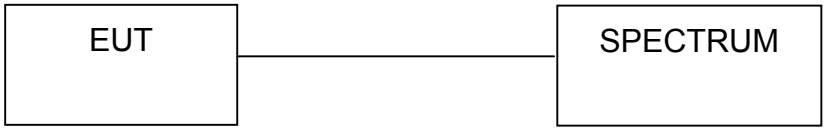
5.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300kHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

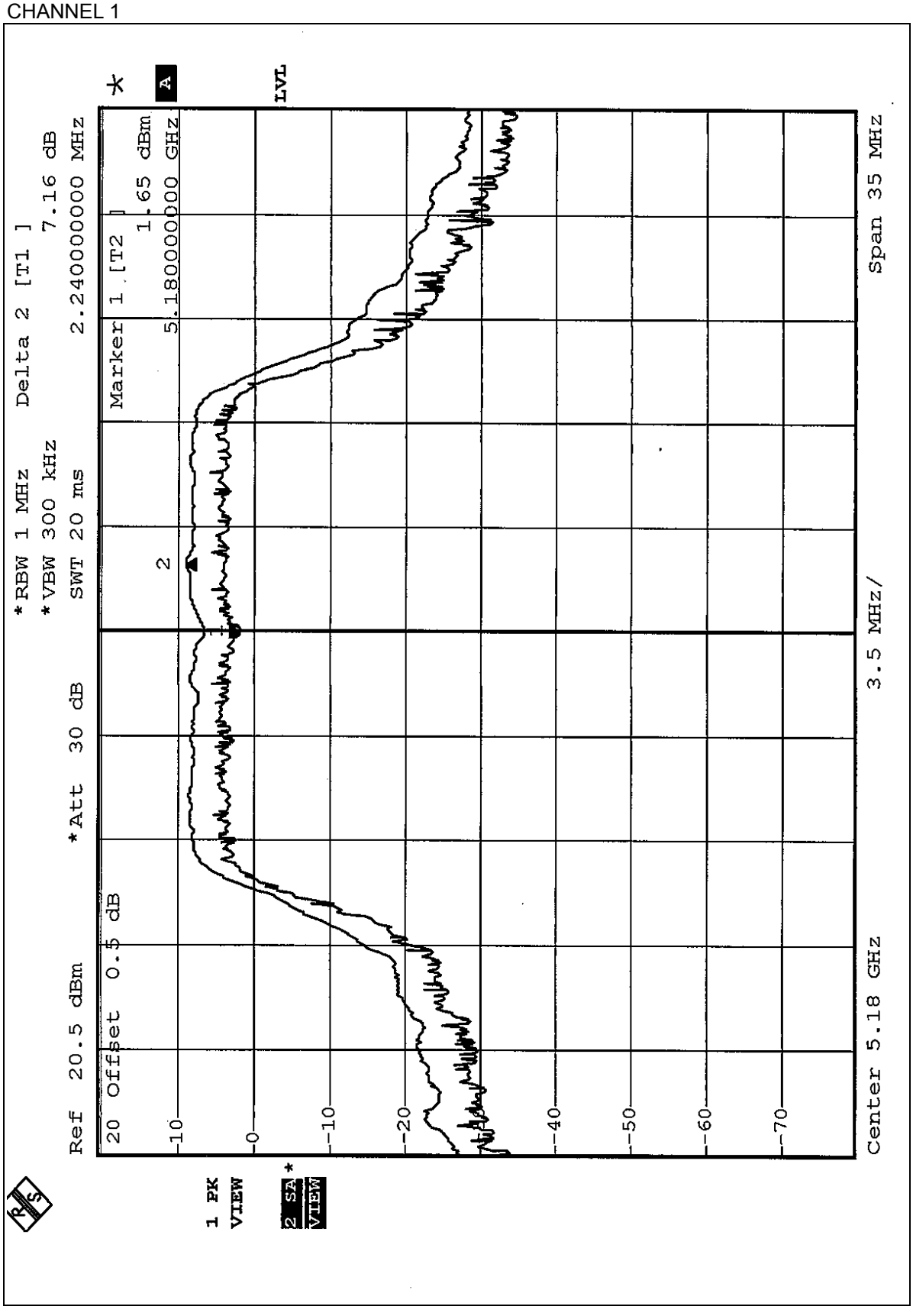
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.4.7 TEST RESULTS

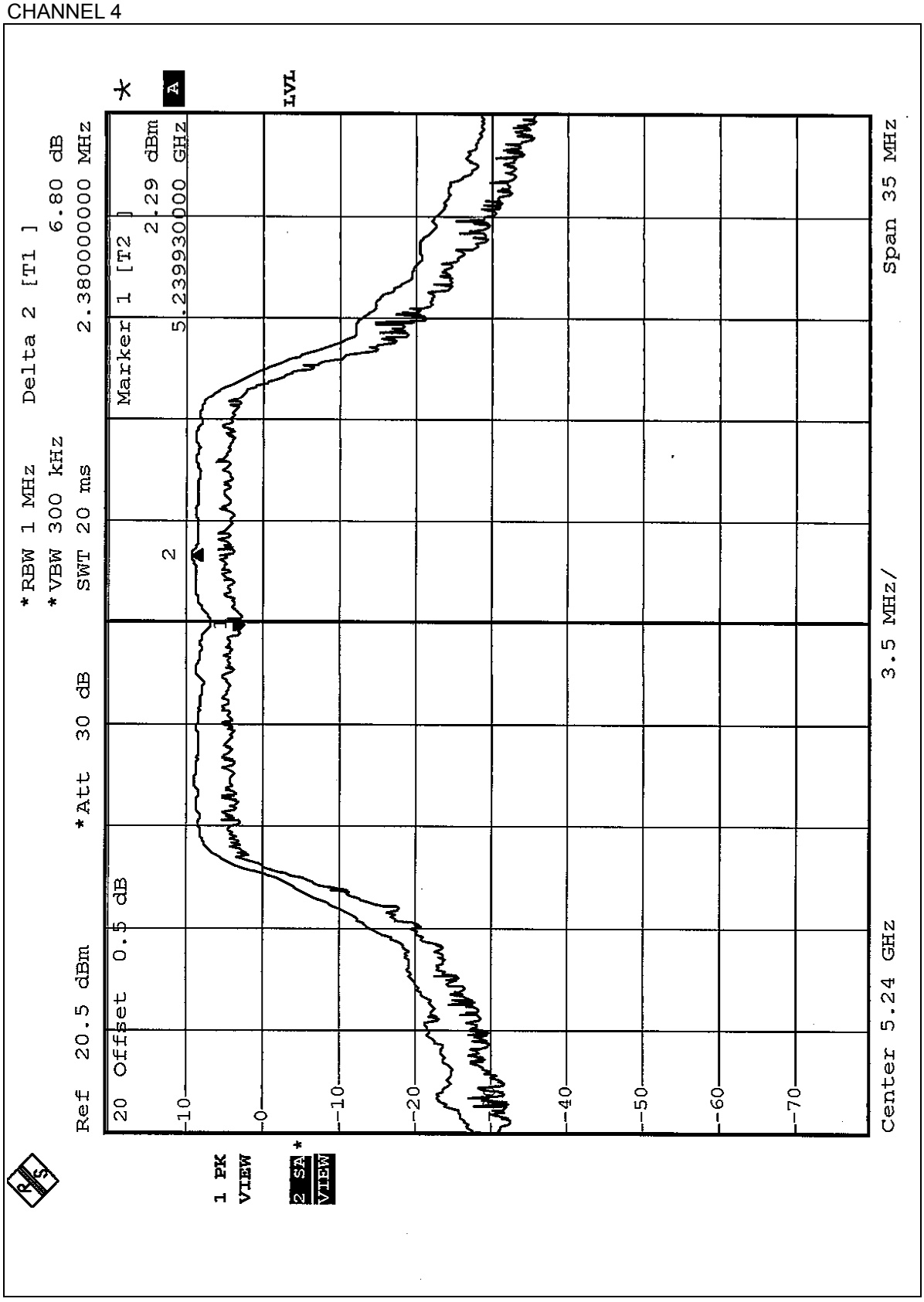
EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY	Steven Lu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.16	13	PASS
4	5240	6.80	13	PASS
5	5260	6.72	13	PASS
8	5320	6.89	13	PASS
9	5745	6.52	13	PASS
12	5805	6.52	13	PASS

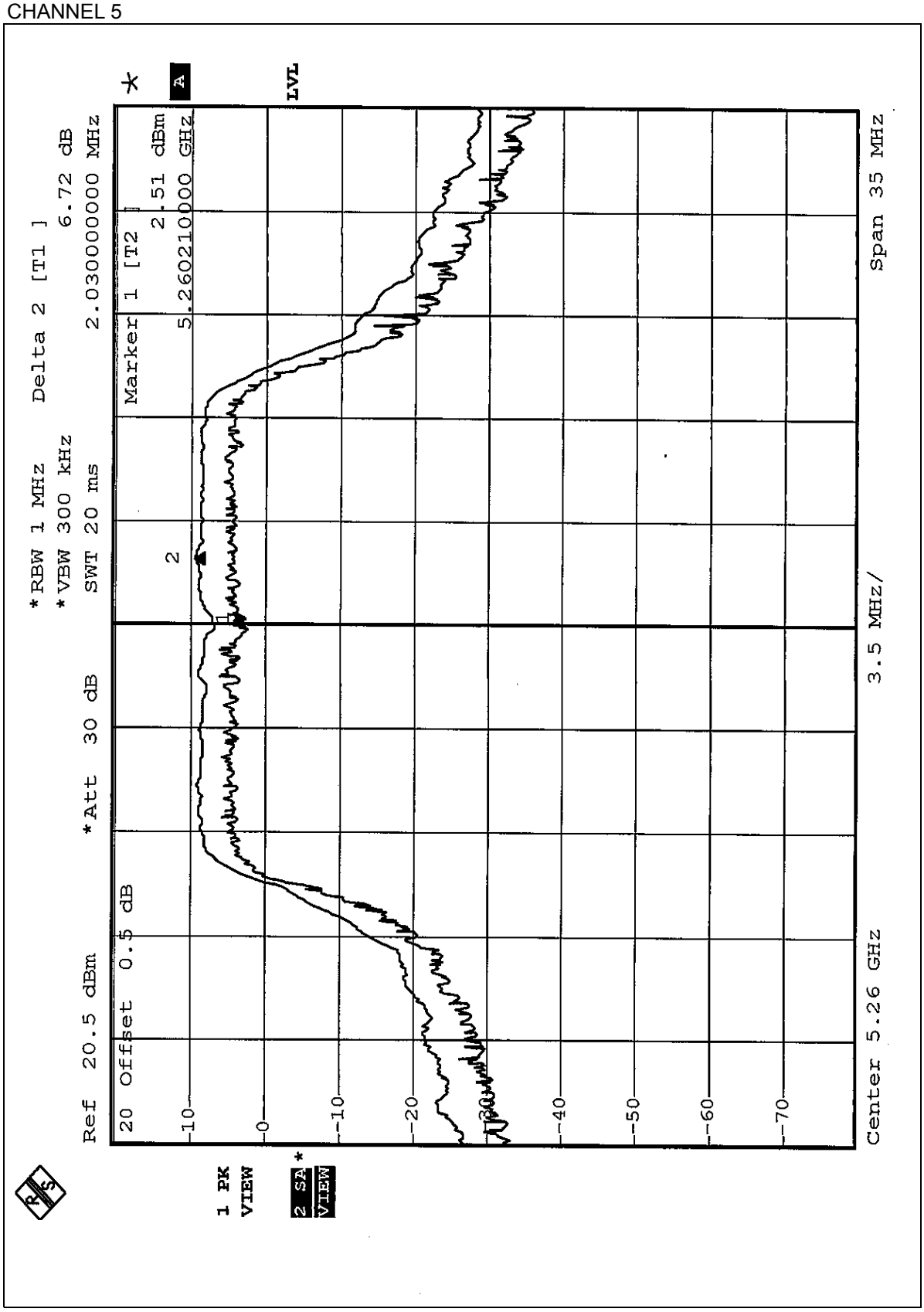
CHANNEL 1


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 2 [T1]
7.16 dB
2.24000000 MHz
Marker 1 [T2]
1.65 dBm
5.18000000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
Att 30 dB
Center 5.18 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 SA VIEW

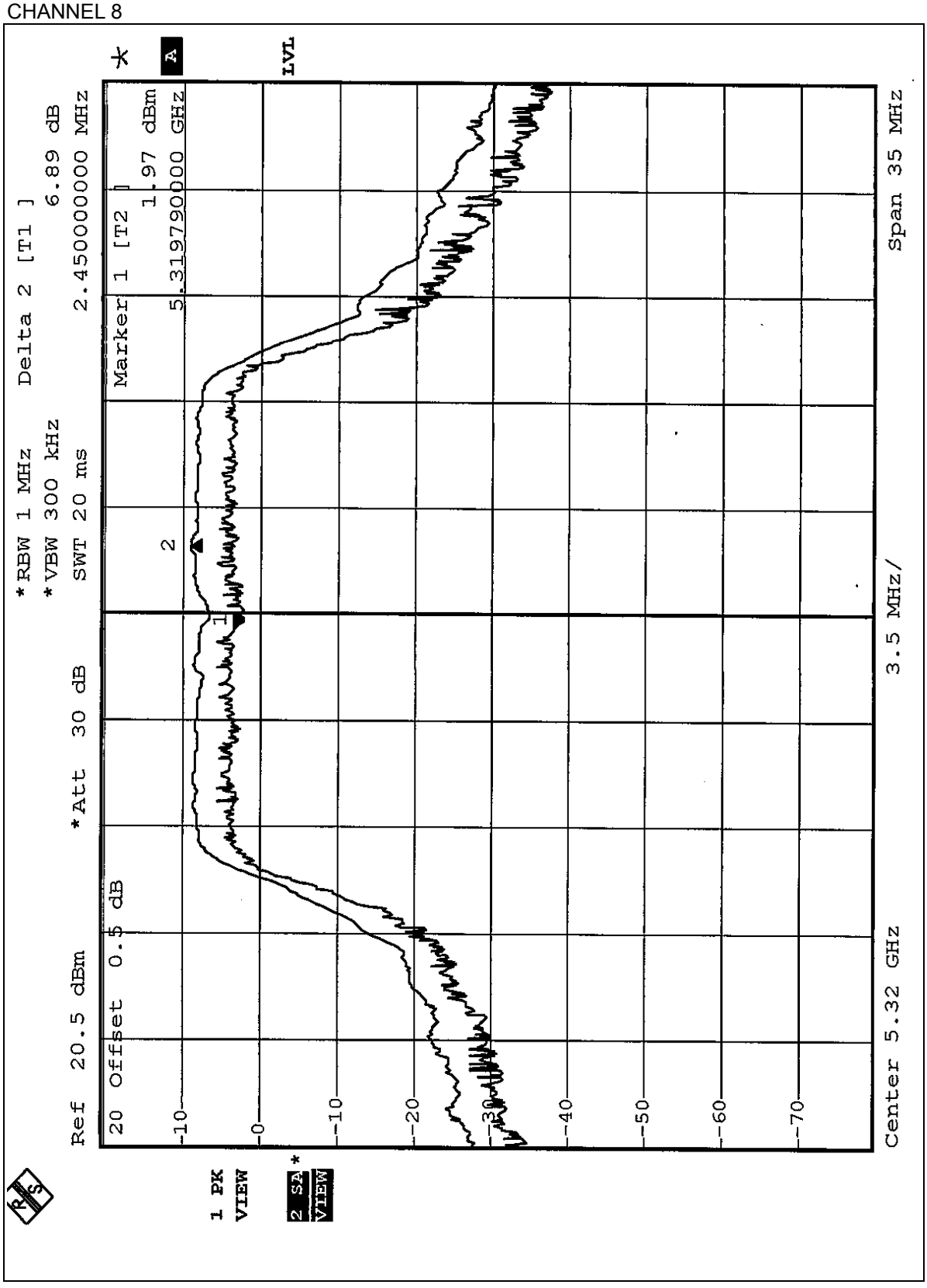
CHANNEL 4


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 2 [T1] 6.80 dB
2.380000000 MHz
Marker 1 [T2] 2.29 dBm
5.239930000 GHz
LVL
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 SA VIEW

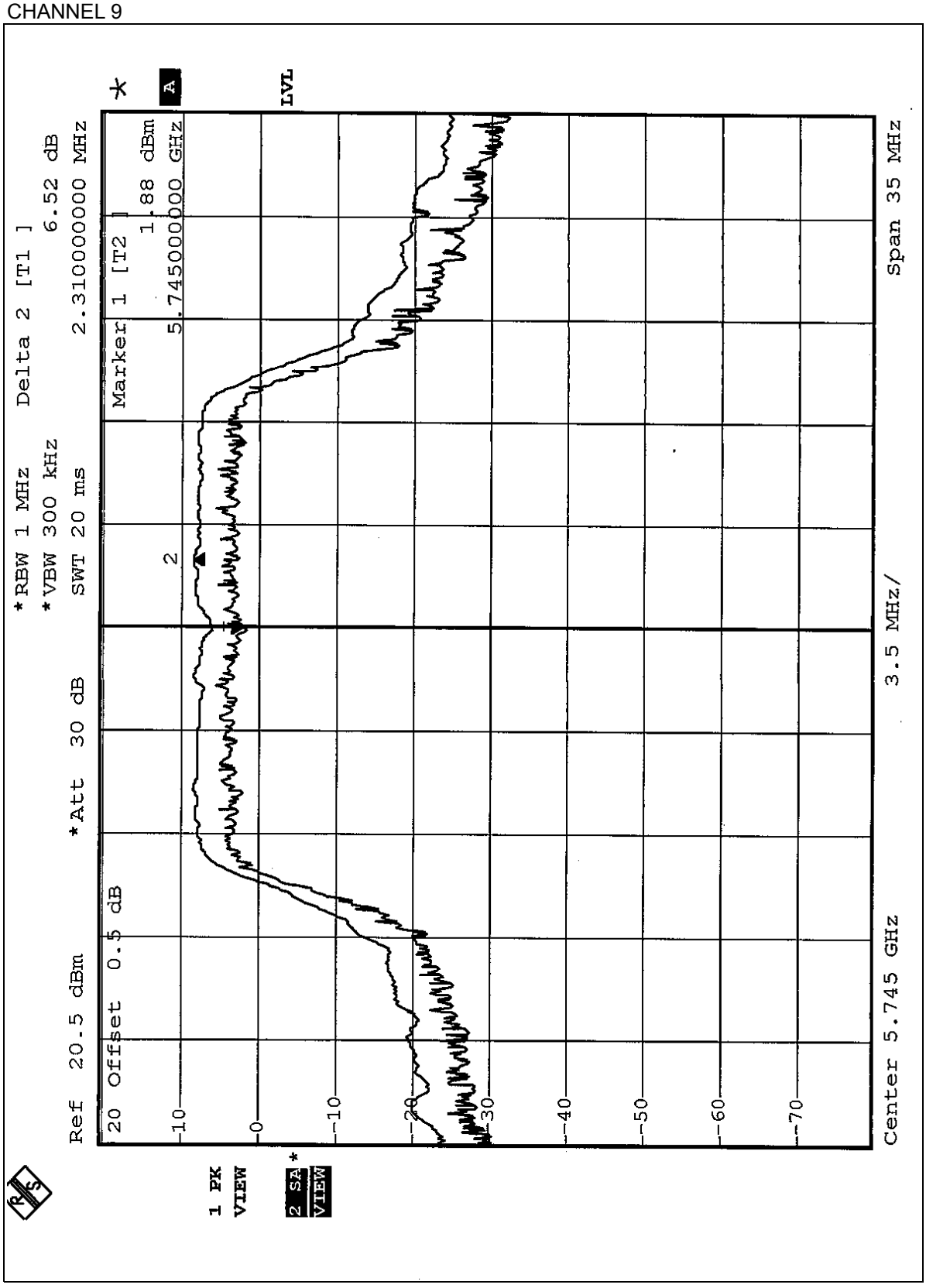
CHANNEL 5


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 2 [T1]
6.72 dB
2.03000000 MHz
Marker 1 [T2]
2.51 dBm
5.26021000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
LVL
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 SA VIEW

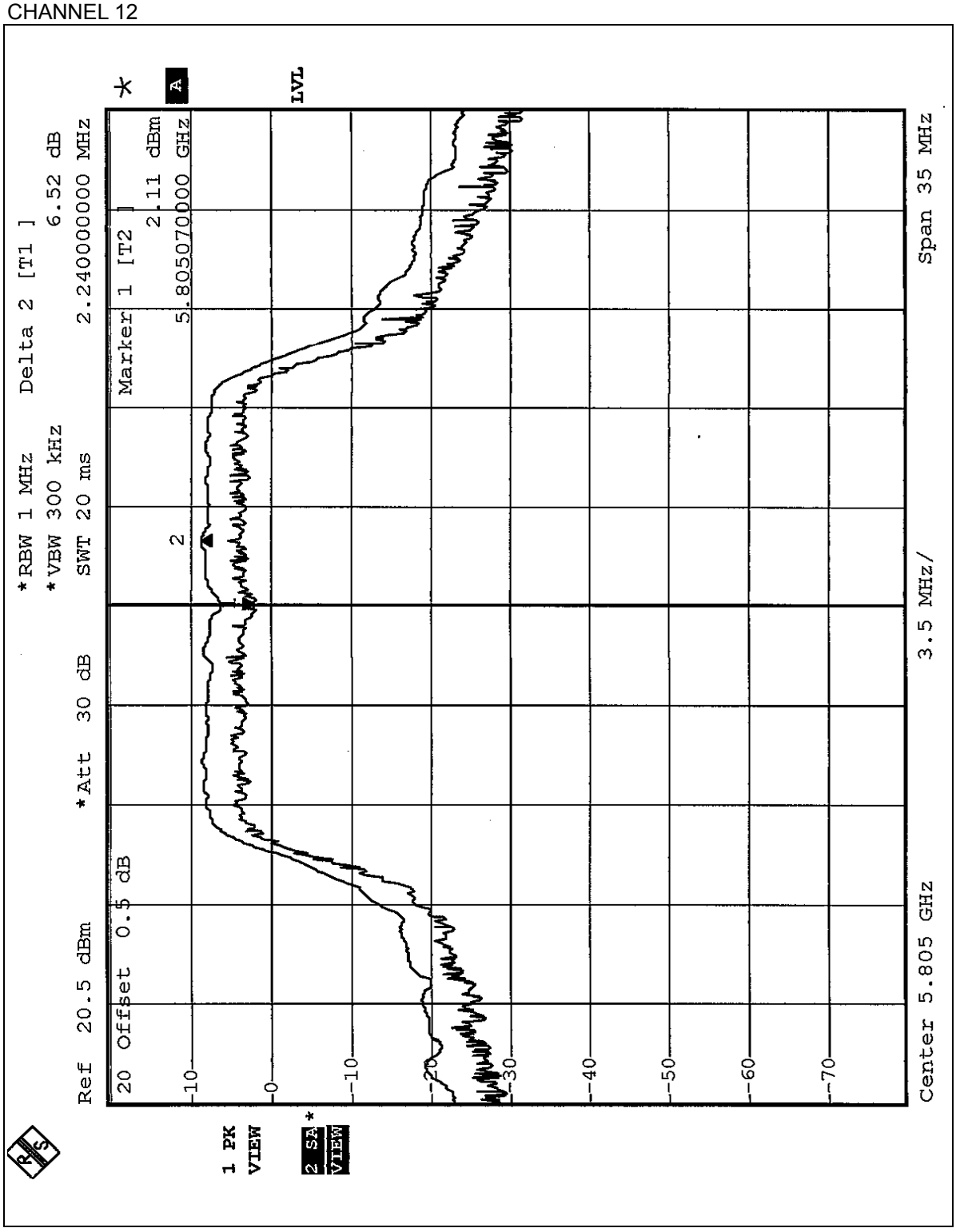
CHANNEL 8


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 2 [T1] 6.89 dB
2.450000000 MHz
Marker 1 [T2] 1.97 dBm
5.319790000 GHz
LVL
Center 5.32 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 SA VIEW

CHANNEL 9


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 2 [T1]
6.52 dB
2.310000000 MHz
Marker 1 [T2]
1.88 dBm
5.745000000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
LVL
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
1 PK VIEW
2 SA VIEW

CHANNEL 12


*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 2 [T1]
6.52 dB
2.240000000 MHz
Marker 1 [T2]
2.11 dBm
5.805070000 GHz
*Att 30 dB
Offset 0.5 dB
Ref 20.5 dBm
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
LVL
1 PK VIEW
2 SA VIEW

5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	4dBm
5.25 – 5.35 GHz	11dBm
5.725 – 5.825 GHz	17dBm

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE&SCHWARZ 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.

5.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP

5.5.6 EUT OPERATING CONDITIONS

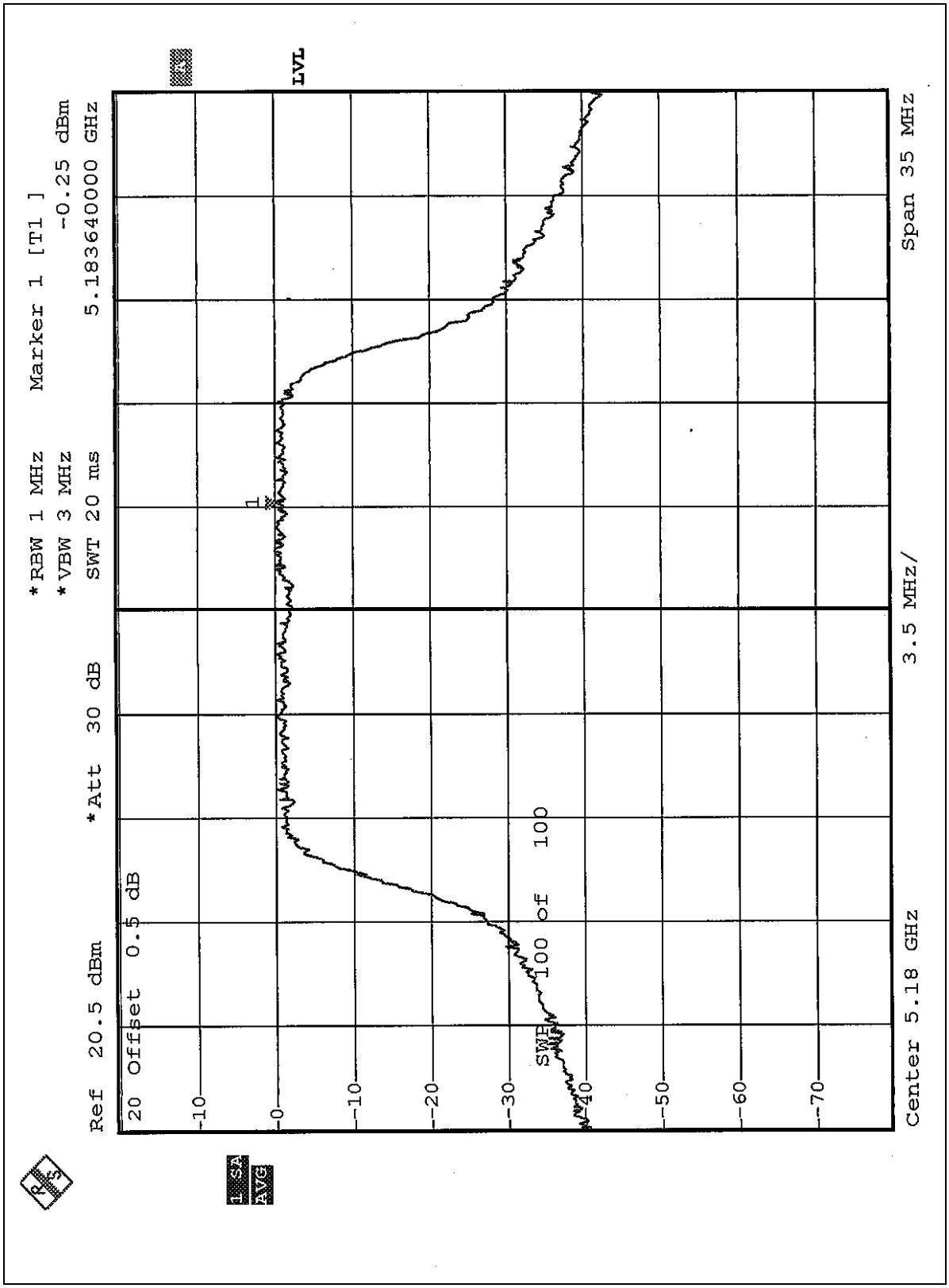
Same as 5.3.6

5.5.7 TEST RESULTS

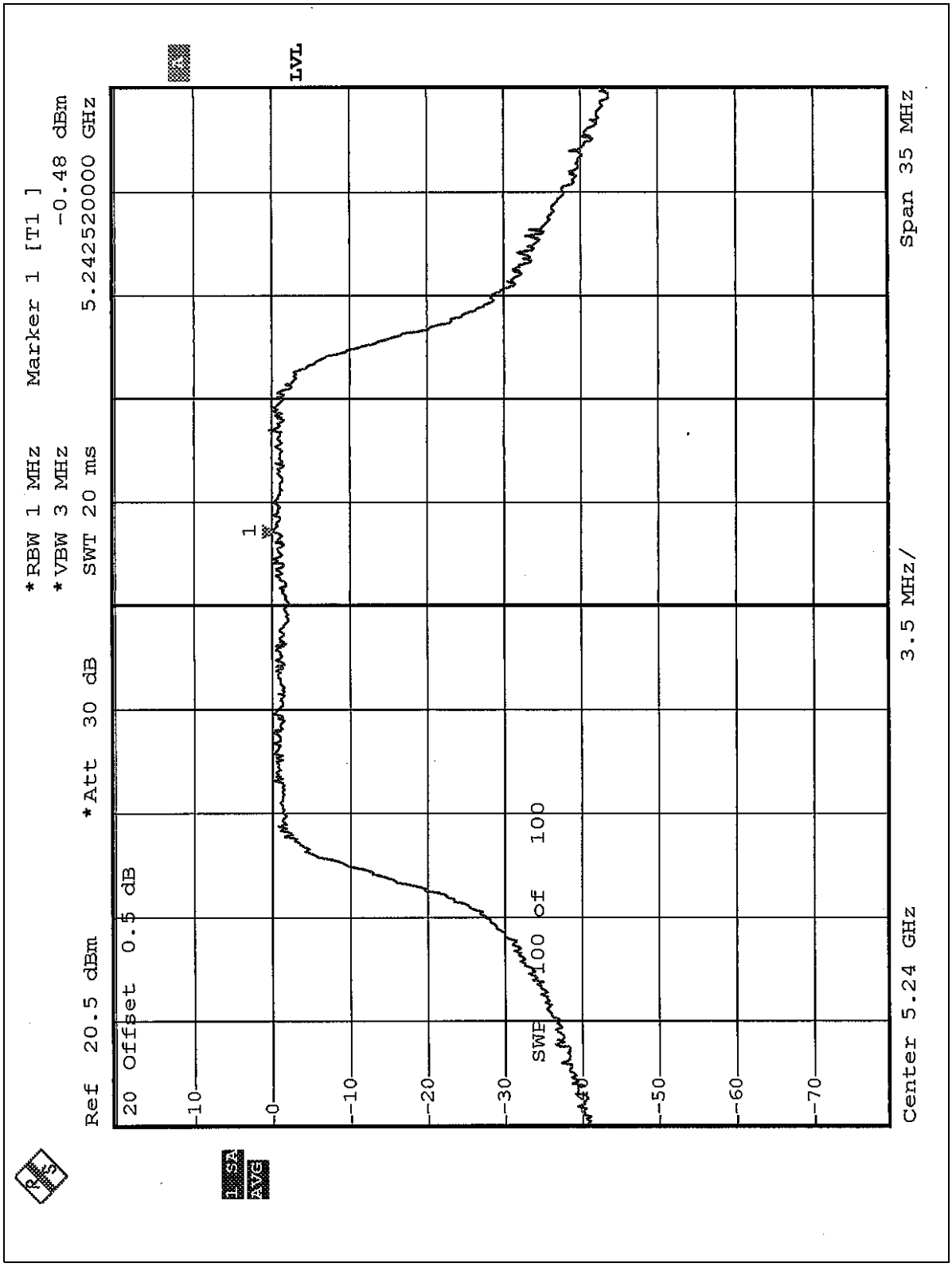
EUT	Wireless A/G USB Network Adapter	**MODEL**	WUSB54AG
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY	Steven Lu		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.25	4	PASS
4	5240	-0.48	4	PASS
5	5260	-0.48	11	PASS
8	5320	-1.30	11	PASS
9	5745	-0.23	17	PASS
12	5805	-1.28	17	PASS

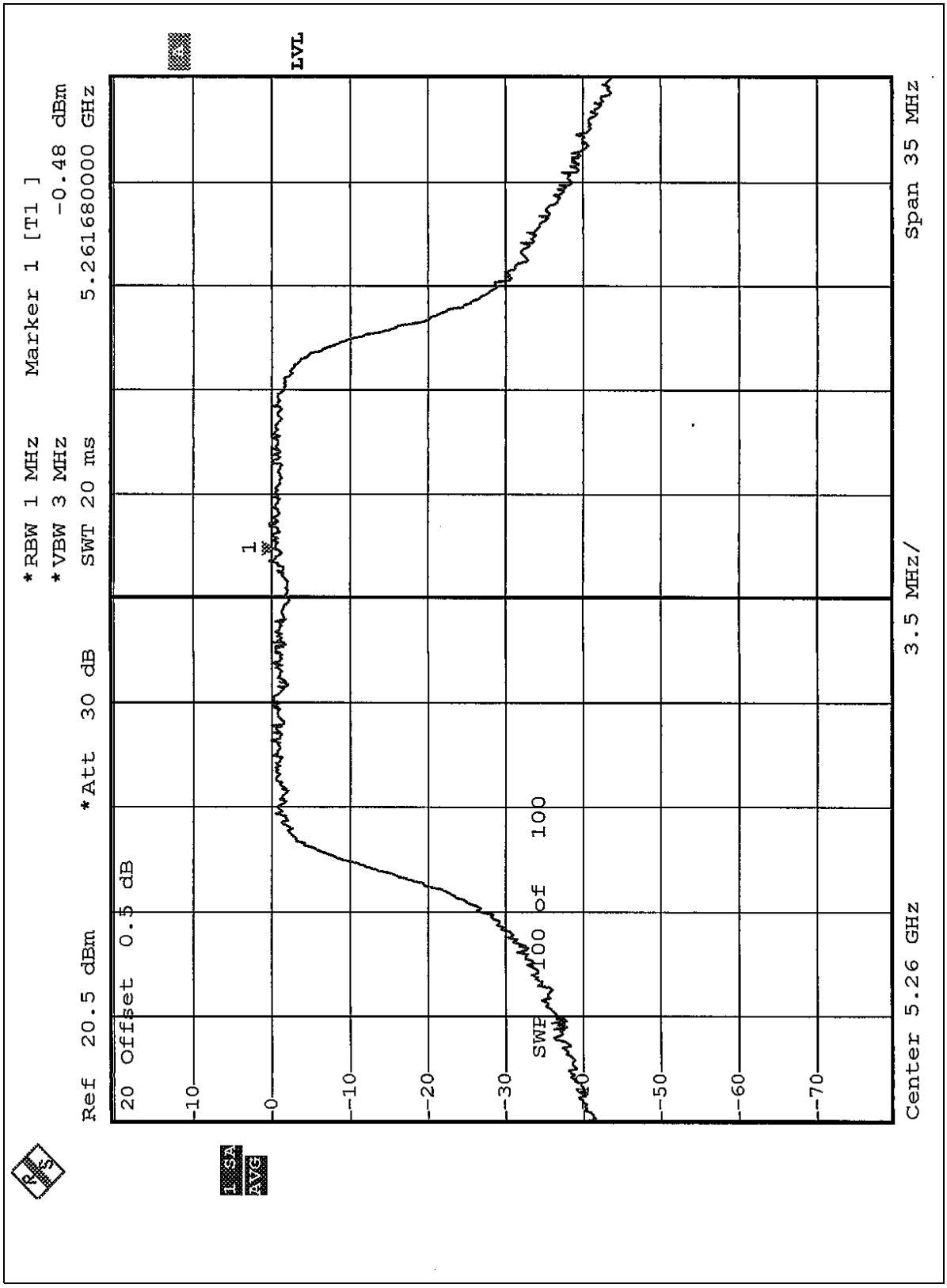
CHANNEL 1


LVL
Marker 1 [T1]
-0.25 dBm
5.183640000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
-10
0
-10
-20
-30
-40
-50
-60
-70
SWP
100 of 100
Center 5.18 GHz
3.5 MHz/
Span 35 MHz
1 SA
AVG

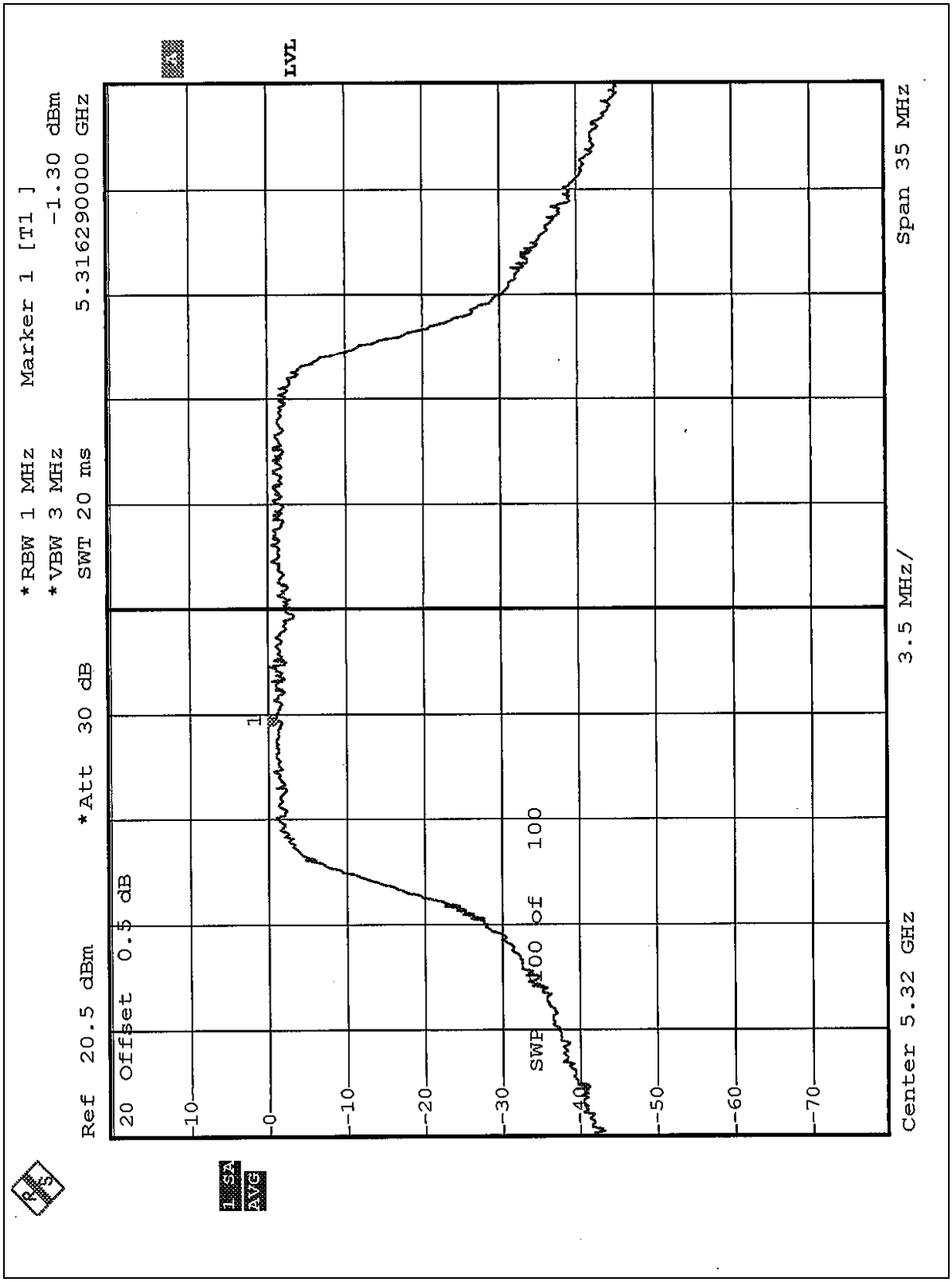
CHANNEL 4


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-0.48 dBm
5.242520000 GHz
SWP 100 of 100
Center 5.24 GHz
3.5 MHz/
Span 35 MHz
LVL
1 SA
AVG

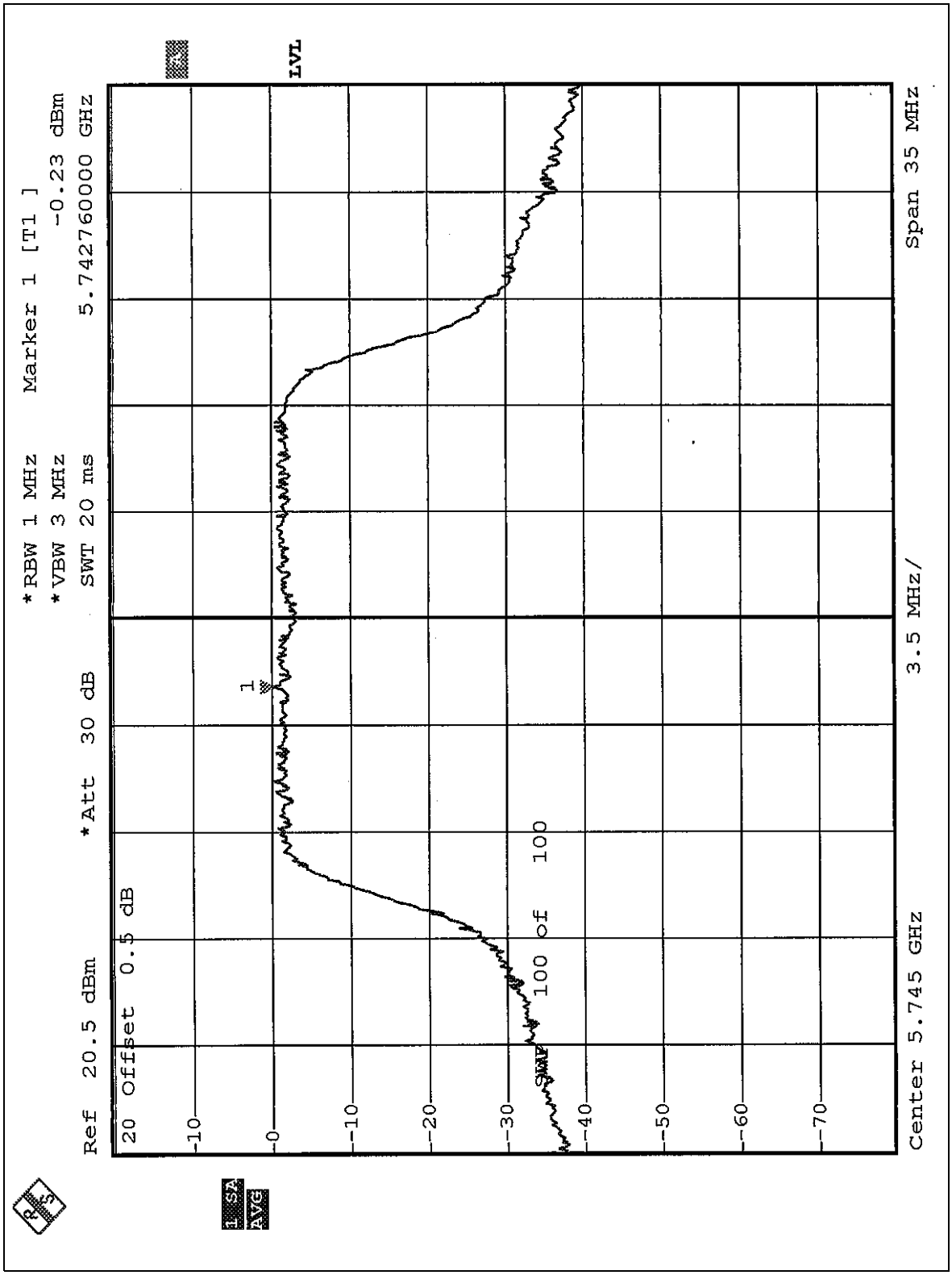
CHANNEL 5


RBW 1 MHz
VBW 3 MHz
Att 30 dB
SWT 20 ms
Marker 1 [T1]
-0.48 dBm
5.26168000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Center 5.26 GHz
3.5 MHz/
Span 35 MHz
SWP
100 of 100
1 SA
AVG
LVL

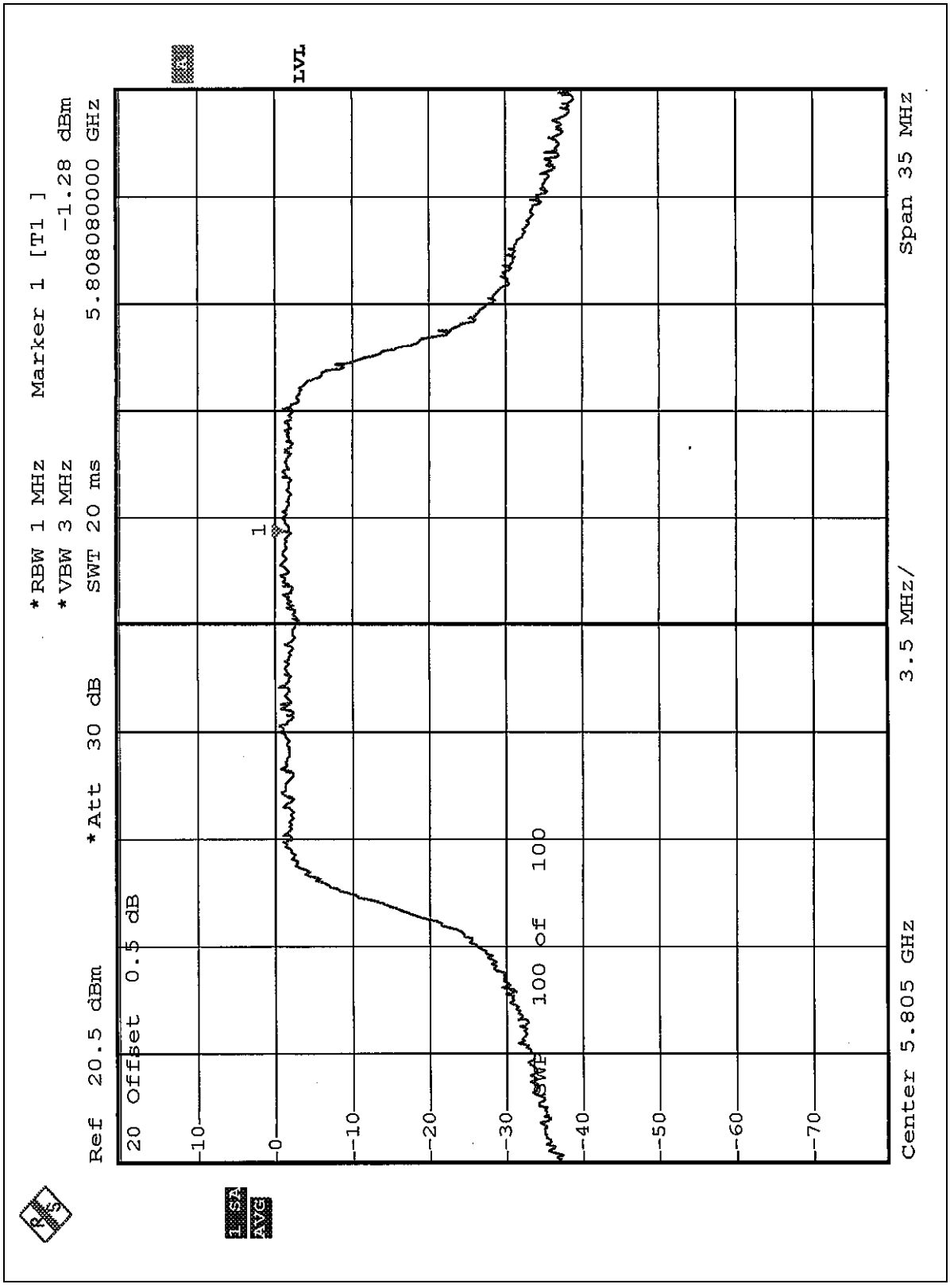
CHANNEL 8


Marker 1 [T1]
-1.30 dBm
5.316290000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
LVL
Span 35 MHz
3.5 MHz/
Center 5.32 GHz
SWP 100 of 100
1 SA
AVG

CHANNEL 9


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-0.23 dBm
5.742760000 GHz
Center 5.745 GHz
3.5 MHz/
Span 35 MHz
100 of 100
1 SA
AVG
LVL

CHANNEL 12


Marker 1 [T1]
-1.28 dBm
5.808080000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
Center 5.805 GHz
3.5 MHz/
Span 35 MHz
100 of 100
LVL
1 SA
AVG

5.6 FREQUENCY STABILITY

5.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of –30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Aug. 12, 2004
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	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.

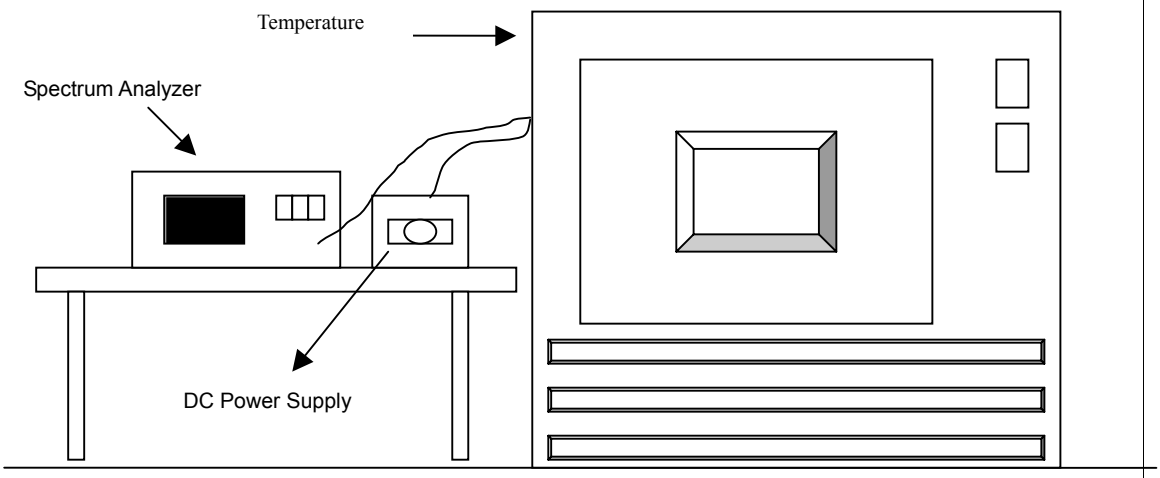
5.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : ± 0.02%			
Temp. (℃)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	93.5	5319.9540	-0.0008647	5319.9540	-0.0008647	5319.9540	-0.0008647
	110	5319.9540	-0.0008647	5319.9543	-0.0008590	5319.9540	-0.0008647
	126.5	5319.9543	-0.0008590	5319.9540	-0.0008647	5319.9533	-0.0008778
40	93.5	5319.9673	-0.0006147	5319.9673	-0.0006147	5319.9670	-0.0006203
	110	5319.9673	-0.0006147	5319.9677	-0.0006071	5319.9670	-0.0006203
	126.5	5319.9673	-0.0006147	5319.9673	-0.0006147	5319.9670	-0.0006203
30	93.5	5319.9857	-0.0002688	5319.9850	-0.0002820	5319.9850	-0.0002820
	110	5319.9850	-0.0002820	5319.9850	-0.0002820	5319.9850	-0.0002820
	126.5	5319.9853	-0.0002763	5319.9850	-0.0002820	5319.9850	-0.0002820
20	93.5	5320.0020	0.0000376	5320.0027	0.0000564	5320.0023	0.0000432
	110	5320.0030	0.0000564	5320.0030	0.0000564	5320.0023	0.0000432
	126.5	5320.0030	0.0000564	5320.0030	0.0003571	5320.0023	0.0000432
10	93.5	5320.0177	0.0003327	5320.0190	0.0003440	5320.0190	0.0003571
	110	5320.0177	0.0003327	5320.0183	0.0003515	5320.0190	0.0003571
	126.5	5320.0177	0.0003327	5320.0187	0.0005883	5320.0190	0.0003571
0	93.5	5320.0307	0.0005771	5320.0313	0.0005959	5320.0317	0.0005959
	110	5320.0310	0.0005827	5320.0317	0.0005883	5320.0317	0.0005959
	126.5	5320.0313	0.0005883	5320.0313	0.0007086	5320.0317	0.0005959
-10	93.5	5320.0373	0.0007011	5320.0377	0.0007086	5320.0390	0.0007331
	110	5320.0377	0.0007086	5320.0377	0.0007274	5320.0383	0.0007199
	126.5	5320.0377	0.0007086	5320.0387	0.0006447	5320.0383	0.0007199
-20	93.5	5320.0343	0.0006447	5320.0343	0.0006579	5320.0357	0.0006711
	110	5320.0343	0.0006447	5320.0350	0.0006711	5320.0353	0.0006635
	126.5	5320.0350	0.0006579	5320.0357	0.0003816	5320.0350	0.0006579
-30	93.5	5320.0197	0.0003703	5320.0203	0.0003703	5320.0197	0.0003703
	110	5320.0197	0.0003703	5320.0197	0.0003703	5320.0193	0.0003628
	126.5	5320.0203	0.0003816	5320.0197	0.0003703	5320.0193	0.0003628

5.7 BAND EDGES MEASUREMENT

5.7.1 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.

5.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

5.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.7.4 TEST RESULTS

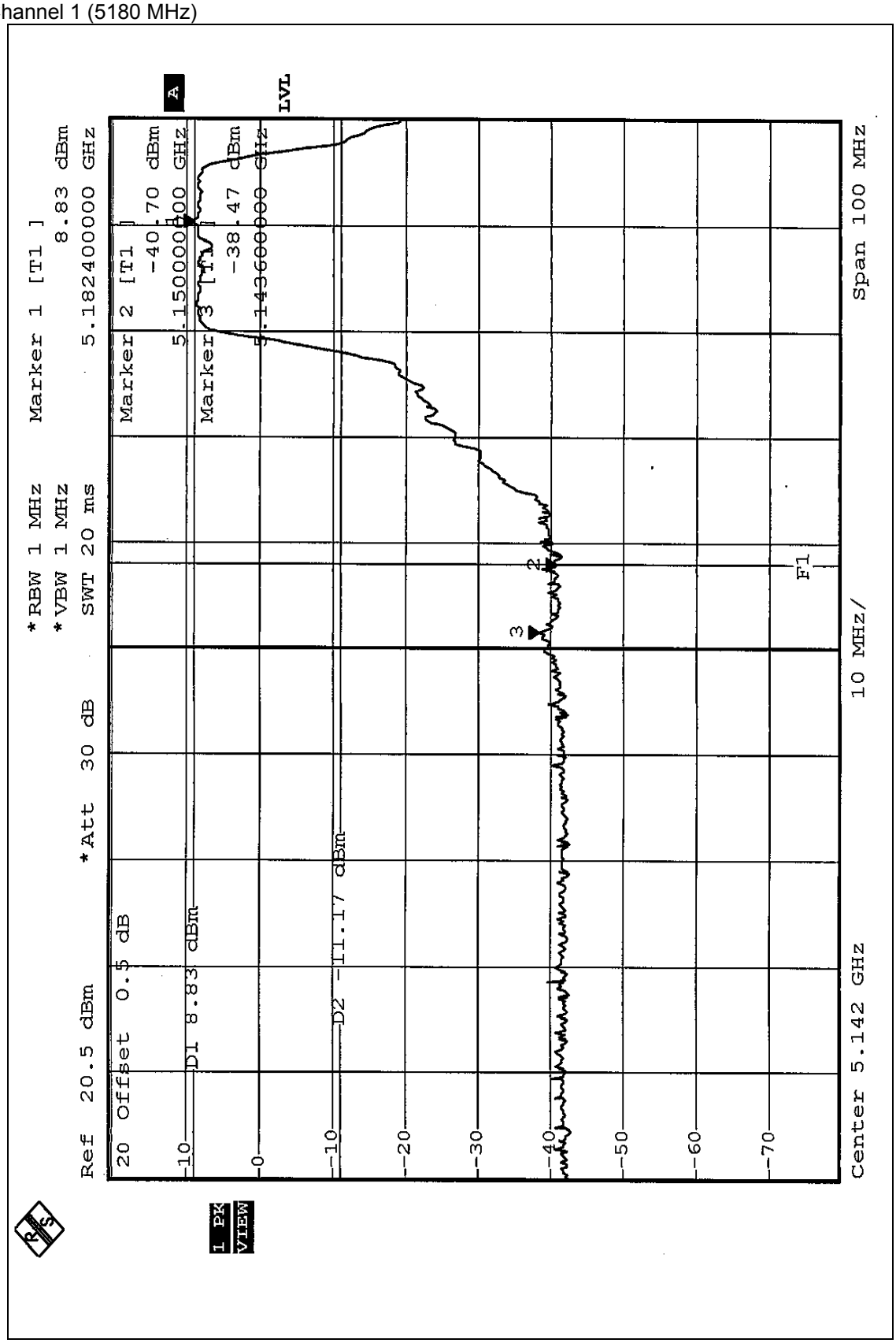
For signals in the restricted bands above and below the 5.15 to 5.35 GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

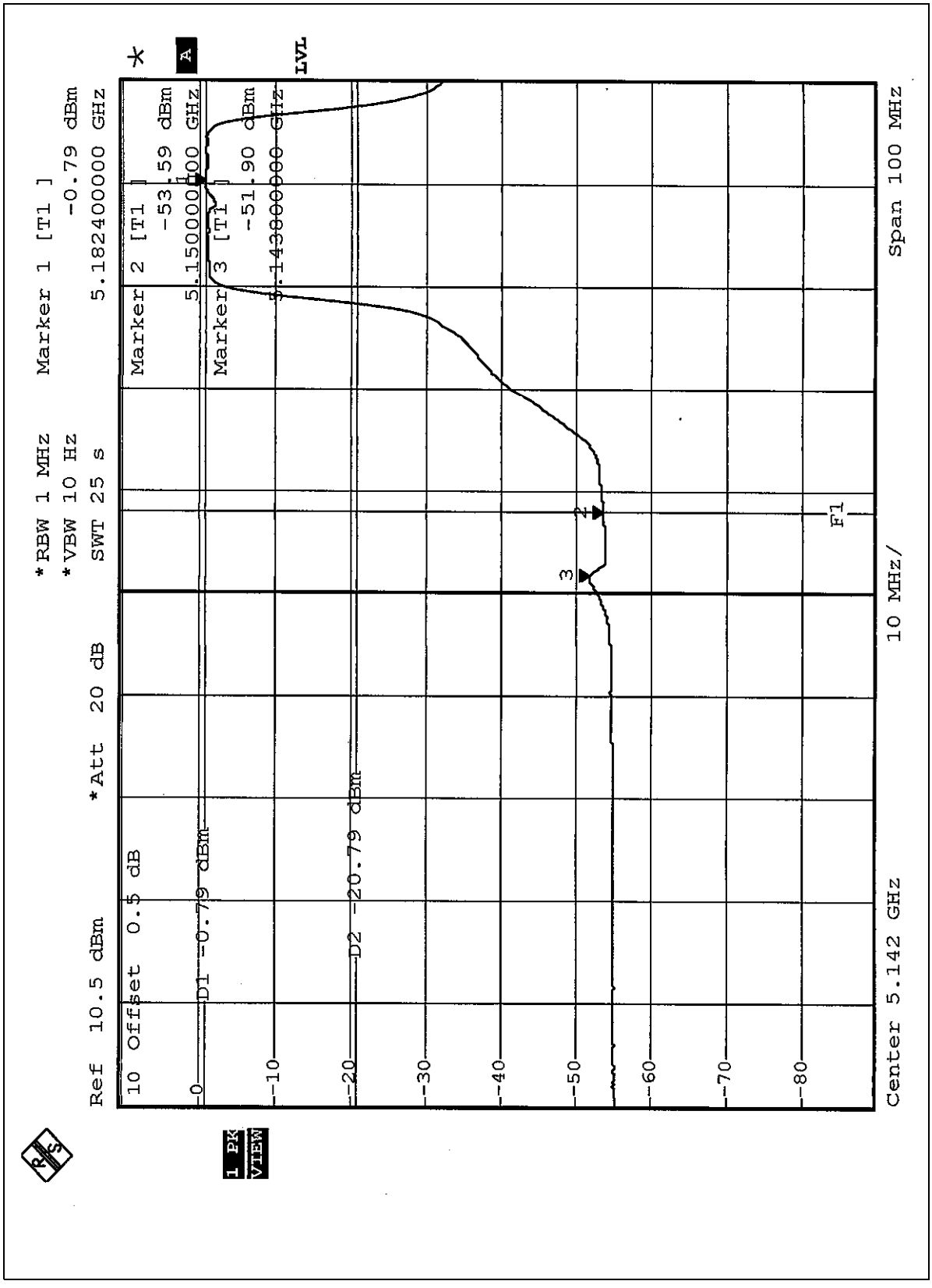
The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=10Hz) are attached on the following 8 pages.

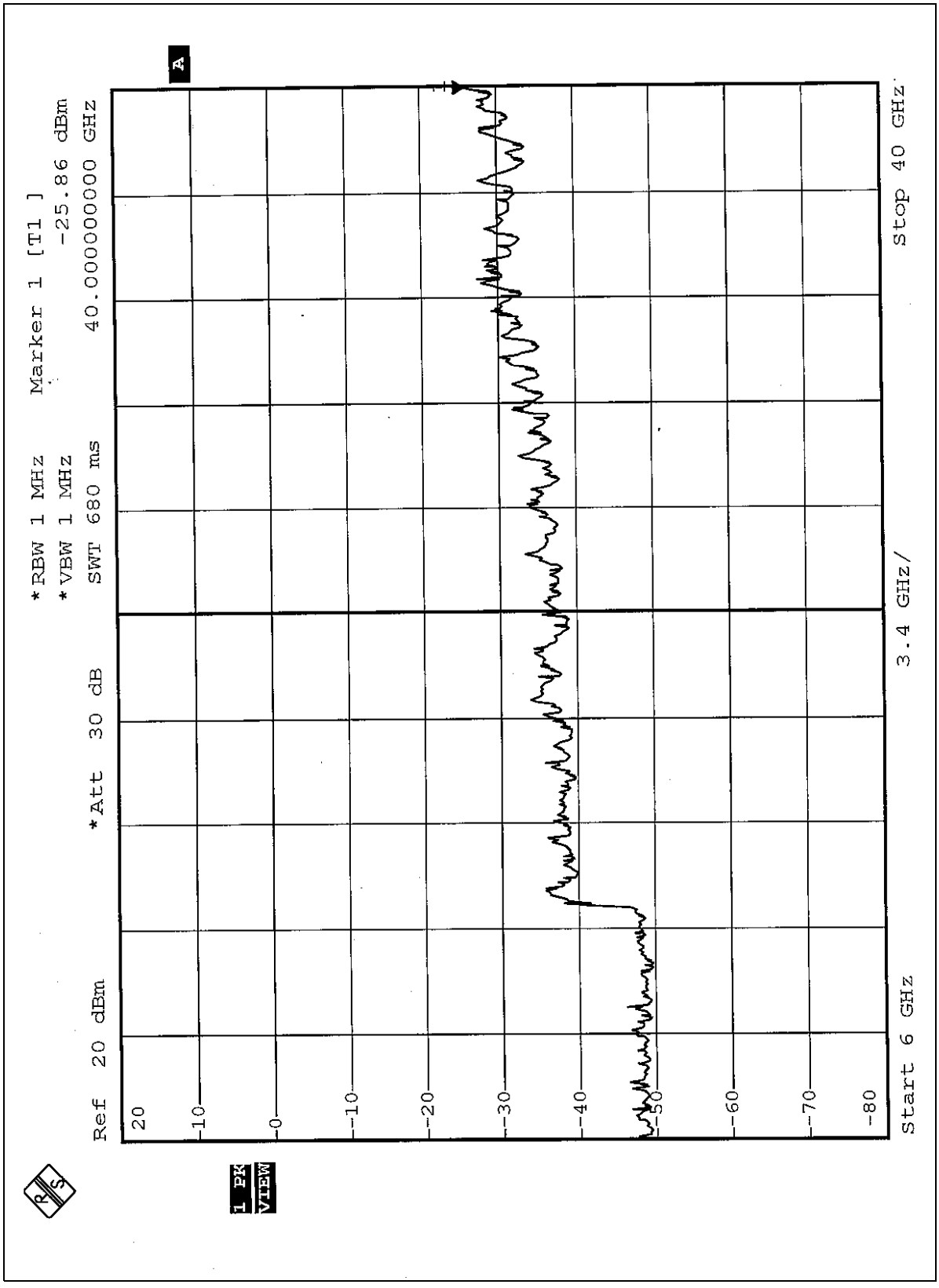
Channel 1 (5180MHz)
The band edge emission plot on the pages 121 ~ 123 shows 47.30dBc (Peak) / 51.11dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 97.18dBuV/m, so the maximum field strength in restrict band is 97.18-51.11=46.07dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320MHz)
The band edge emission plot on the pages 125 ~ 126 shows 48.70dBc (Peak) / 51.40dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 is 97.11dBuV/m, so the maximum field strength in restrict band is 97.11-51.40=45.71dBuV/m which is under 54dBuV/m limit.

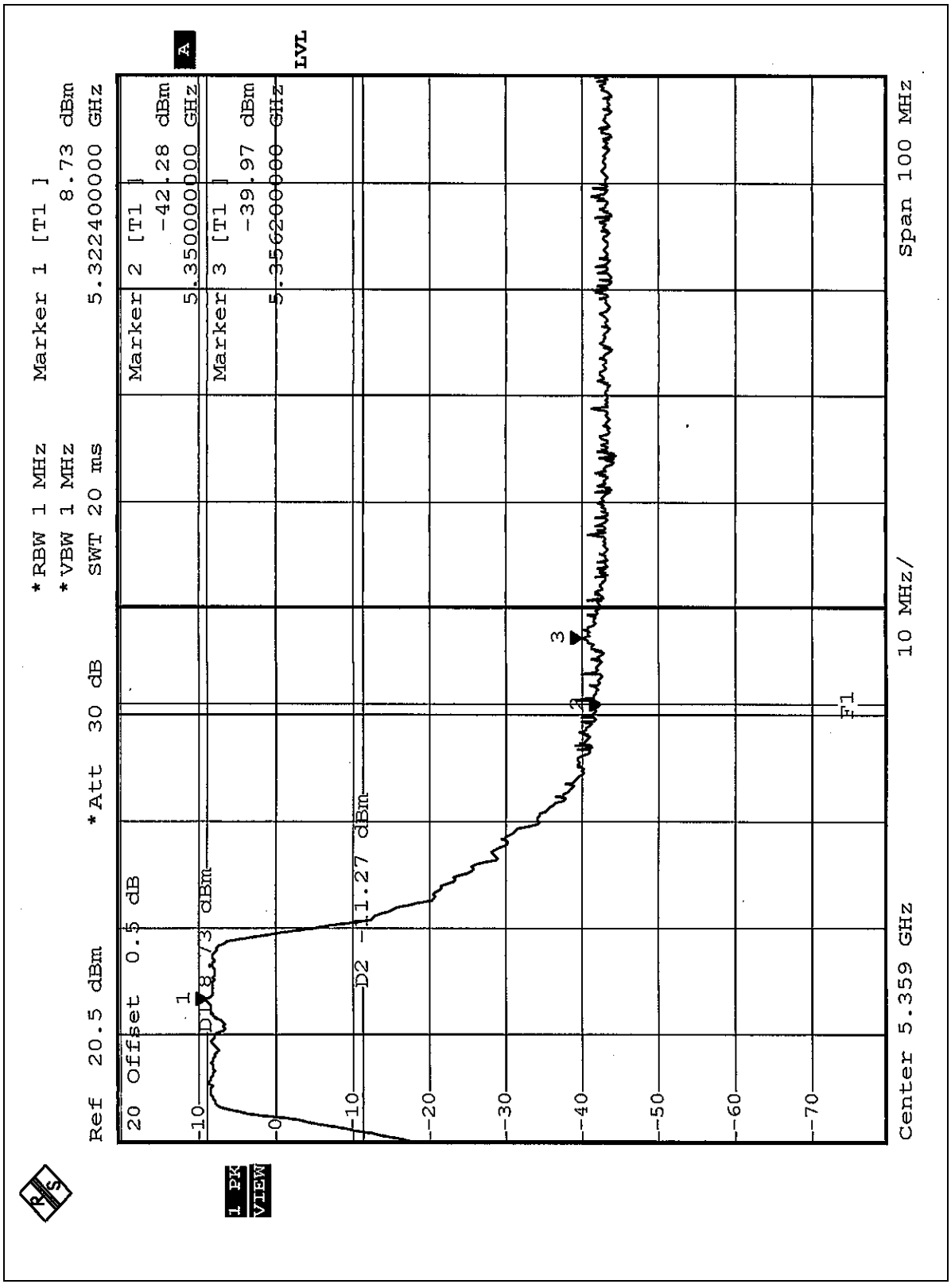
Channel 1 (5180 MHz)

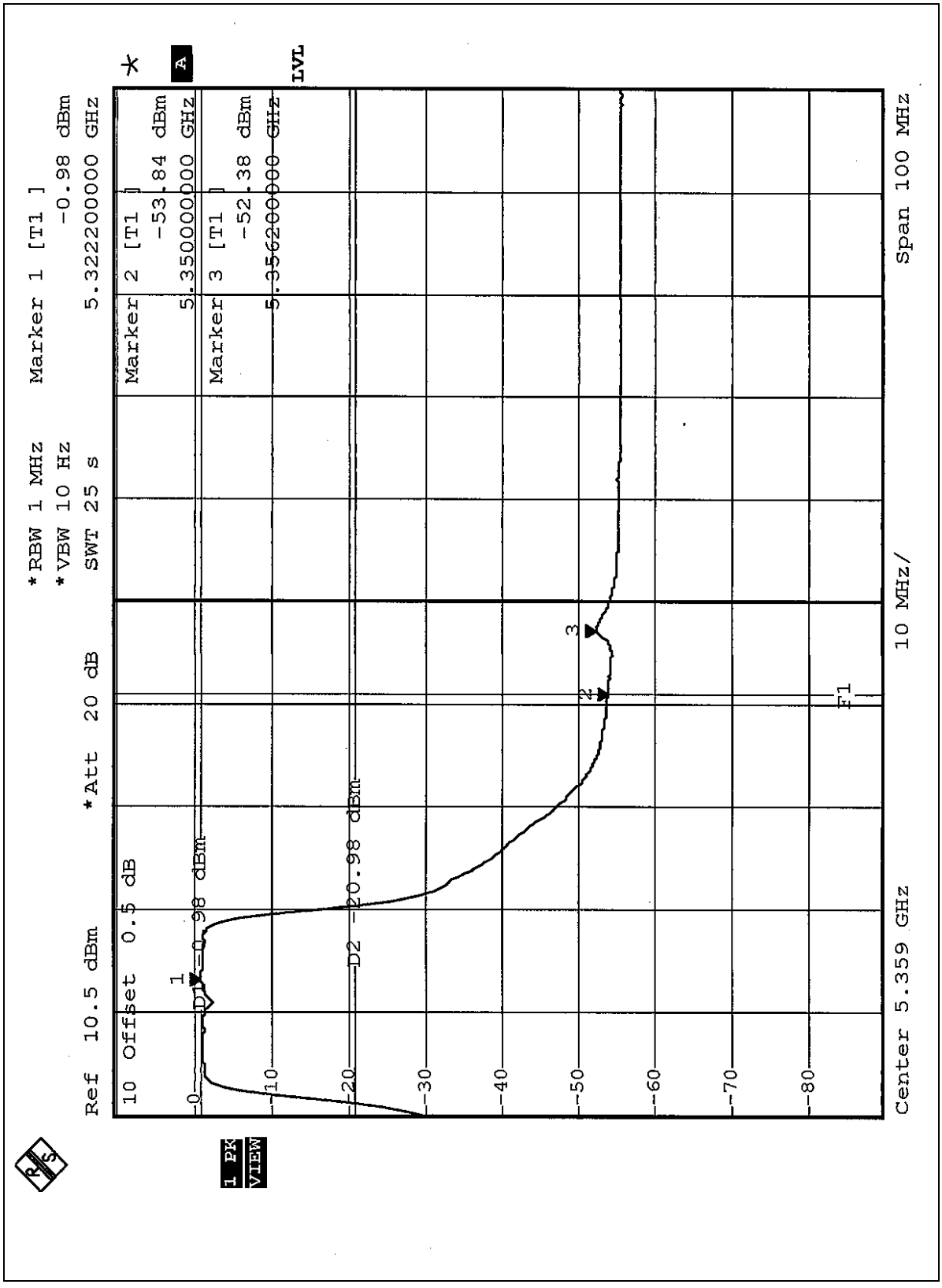


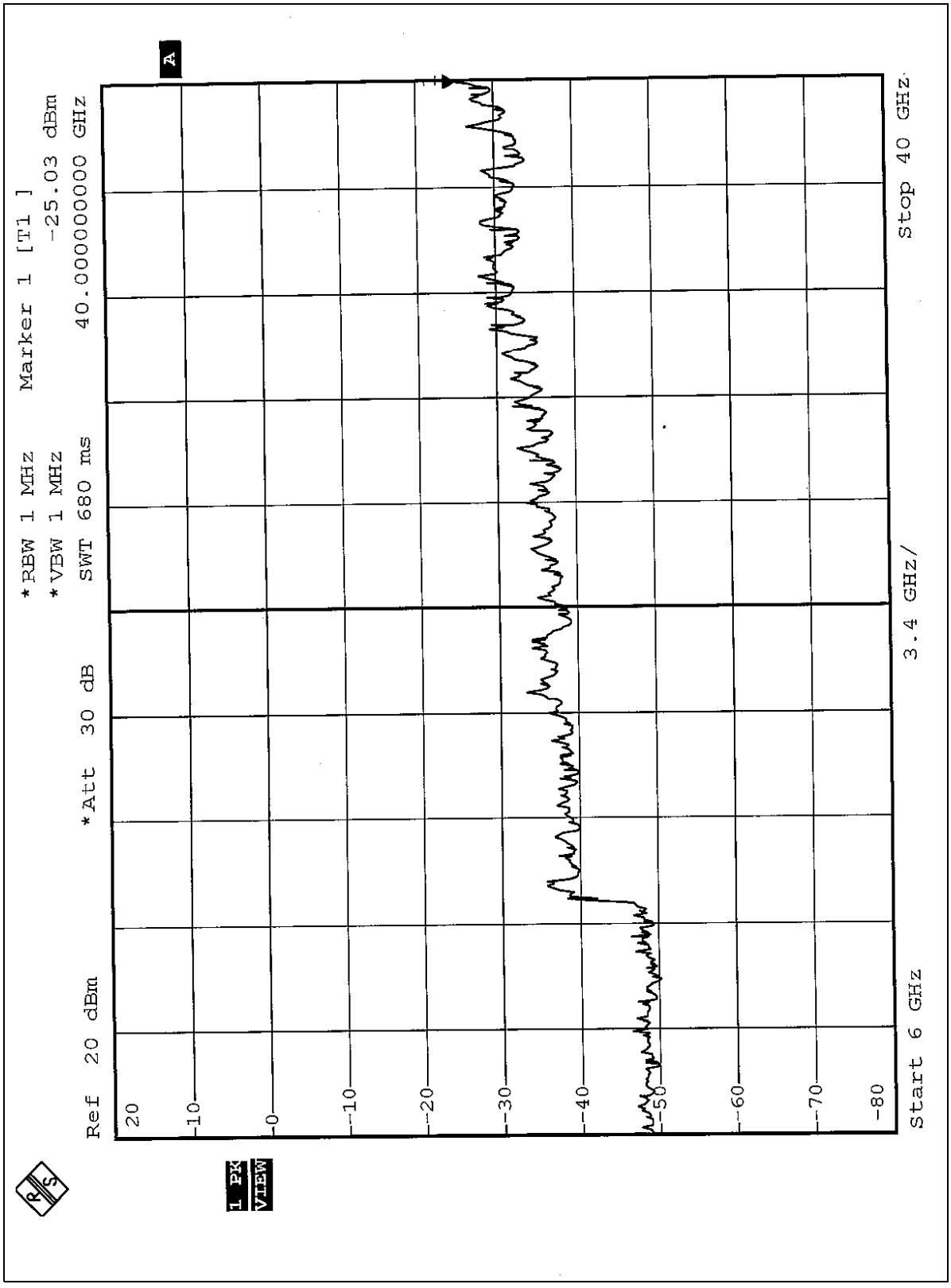

RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-0.79 dBm
5.182400000 GHz
Att 20 dB
Ref 10.5 dBm
Offset 0.5 dB
Marker 2 [T1]
-53.59 dBm
5.150000100 GHz
Marker 3 [T1]
-51.90 dBm
5.143000000 GHz
D1 -0.79 dBm
D2 -20.79 dBm
LVL
Center 5.142 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW


A
Marker 1 [T1]
-25.86 dBm
40.000000000 GHz
*RBW 1 MHz
*VBW 1 MHz
SWT 680 ms
*Att 30 dB
Ref 20 dBm
Start 6 GHz
3.4 GHz/
Stop 40 GHz
1 PK
VIEW
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80

Channel 8 (5320 MHz)




*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-0.98 dBm
5.322200000 GHz
Marker 2 [T1]
-53.84 dBm
5.350000000 GHz
Marker 3 [T1]
-52.38 dBm
5.356200000 GHz
Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
D1 -0.98 dBm
D2 -20.98 dBm
Center 5.359 GHz
10 MHz/
Span 100 MHz
1 PK VIEW
LVL
A
F1


A
*RBW 1 MHz
*VBW 1 MHz
Marker 1 [T1]
-25.03 dBm
40.000000000 GHz
SWT 680 ms
Ref 20 dBm
*Att 30 dB
Stop 40 GHz
3.4 GHz/
Start 6 GHz
1 PK
VIEW

5.8 ANTENNA REQUIREMENT

5.8.1 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 15.407(a), 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.

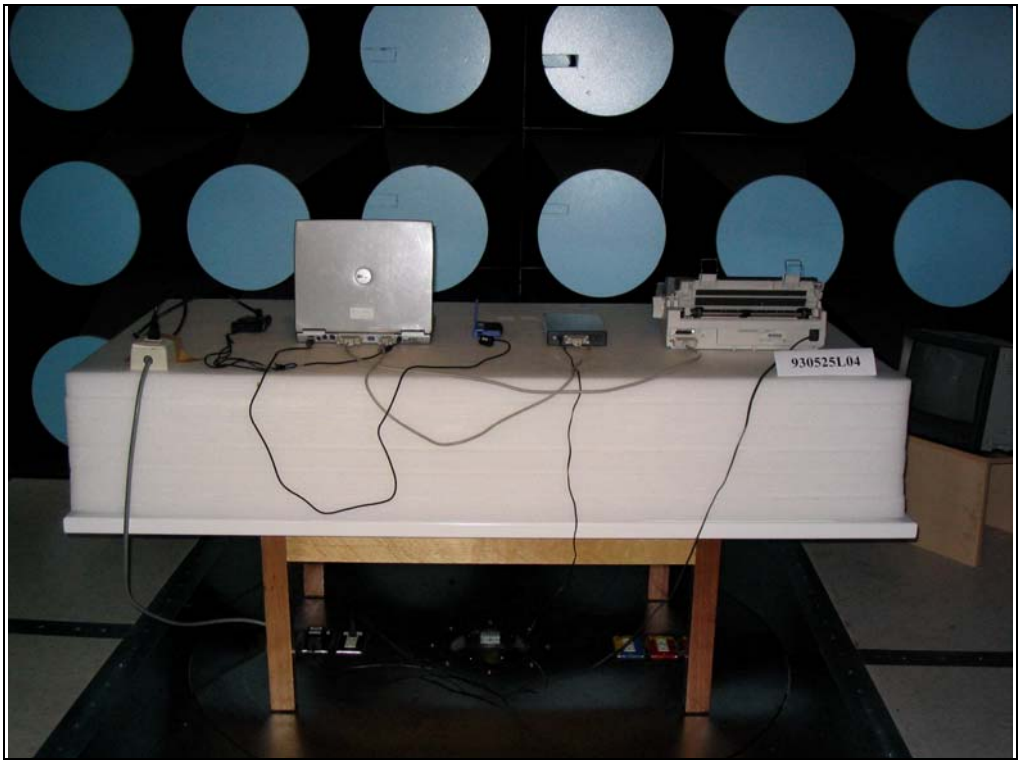
5.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna without antenna connector. The maximum Gain of the antenna is 0dBi.

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST



7. 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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