

FCC TEST REPORT

REPORT NO.: RF931028L08

MODEL NO.: WPCA-112AG

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APPLICANT: Gemtek Technology Co., Ltd.

ADDRESS: No.1, Jen Ai Road, Hsinchu Industrial Park,
Hukou Hsinchu 303, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB ADDRESS: No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou
Hsiang 244, Taipei Hsien, Taiwan, R.O.C.

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

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0528
ILAC MRA



No. 2177-01

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1. CERTIFICATION

PRODUCT: Wireless A/G CardBus Network Card
BRAND NAME: Gemtek
MODEL NO.: WPCA-112AG
TEST SAMPLE: Engineering Sample
TESTED: Nov. 01 ~ Nov. 08, 2004
APPLICANT: Gemtek Technology Co., Ltd.
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407), ANSI C63.4-2003

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 : Windy Chou , **DATE:** Nov. 11, 2004
(Windy Chou)

TECHNICAL
ACCEPTANCE : Gary Chang , **DATE:** Nov. 11, 2004
Responsible for
RF
(Gary Chang)

APPROVED BY : Cody Chang , **DATE:** Nov. 11, 2004
(Cody Chang, Deputy
Manager)

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 -16.02dB at 0.193MHz
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(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.02dB at 2483.5MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

For Freq. 5.15 ~ 5.35GHz:

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 -17.13dB at 0.201MHz
15.407(b/1/2/3) (b)(5)	Electric Field Strength Spurious Emissions, 30MHz ~ 40000MHz	PASS	Meet the requirement of limit. Minimum passing margin is -1.00dB at 5350.00MHz
15.407(a/1/2/3)	Peak Transmit Power	PASS	Meet the requirement of limit.
15.407(a)(6)	Peak Power Excursion	PASS	Meet the requirement of limit.
15.407(a/1/2/3)	Peak Power Spectral Density	PASS	Meet the requirement of limit.
15.407(g)	Frequency Stability	PASS	Meet the requirement of limit.

For Freq. 5.725 ~ 5.850GHz :

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 -17.13dB at 0.201MHz
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(d)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -1.06dB at 11490.00MHz
15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(d)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.73 dB
	200MHz ~ 1000MHz	3.74 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless A/G CardBus Network Card
MODEL NO.	WPCA-112AG
POWER SUPPLY	3.3Vdc from host equipment
MODULATION TYPE	DBPSK, DQPSK, 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 (Turbo mode: up to 108Mbps *see Note 2)
FREQUENCY RANGE	802.11b & 802.11g: 2412 ~ 2462MHz 802.11a: 5.15 ~ 5.35GHz and 5.725 ~ 5.850GHz
NUMBER OF CHANNEL	802.11b & 802.11g: 11 for Normal mode / 1 for Turbo mode 802.11a: 13 for Normal mode / 5 for Turbo mode
CHANNEL SPACING	802.11b & 802.11g: 5MHz 802.11a: 20MHz for Normal mode / 40MHz for Turbo mode
OUTPUT POWER	802.11b: 66.069mW 802.11g: 67.608mW 802.11a: 47.863mW
DATA CABLE	NA
ANTENNA TYPE	Printed antenna with 1.0dBi gain for 2.4GHz band with 1.5dBi gain for 5GHz band
I/O PORTS	NA
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. This EUT is capable of providing data rates of up to 108Mbps in Turbo Mode depending upon reception quality.
3. 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

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

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

NOTE:

- Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
- Above 1GHz, the channel 1, 6, and 11 were tested individually.
- 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.

One channel is provided to this EUT for Turbo Mode.

Channel	Frequency
6	2437 MHz

NOTE: One turbo mode at frequency 2437MHz.

For 802.11a: Thirteen channels are provided to this EUT for Normal mode.

Channel	Frequency	Channel	Frequency
1	5180 MHz	8	5320 MHz
2	5200 MHz	9	5745 MHz
3	5220 MHz	10	5765 MHz
4	5240 MHz	11	5785 MHz
5	5260 MHz	12	5805 MHz
6	5280 MHz	13	5825 MHz
7	5300 MHz		

Five channels are provided to this EUT for Turbo Mode.

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

NOTE:

- The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
- "Normal Mode" allows data rates of up to 54Mbps. The device was, therefore, tested in Normal mode at the data rate that produced the highest output power for normal mode (6Mbps).
- "Turbo Mode" allows data rates of up to 108Mbps. At data rates higher than 12Mbps the PA gain is reduced to improve signal fidelity. The device was, therefore, tested in turbo mode at the data rate that produced the highest output power for turbo mode (12Mbps).
- Channel 1, 4, 5, 8, 9, 11 and 13 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
- Channel 1~5 were chosen for final test of Turbo mode.



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless A/G CardBus Network Card. 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 : 2003**

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

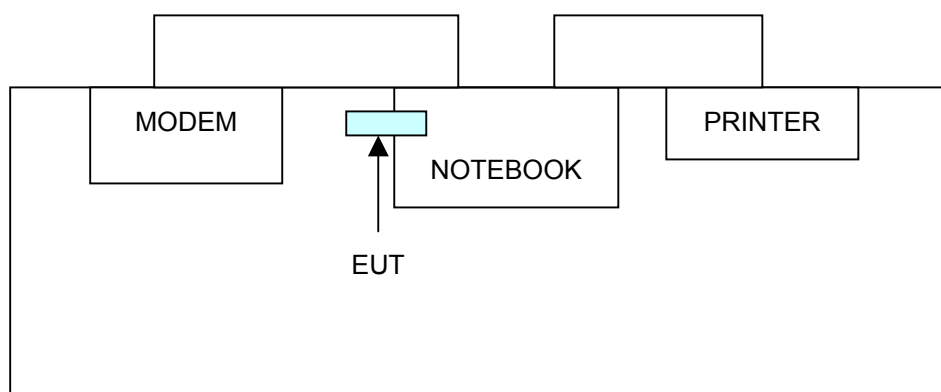
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY054147	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008269	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



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

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
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	100312	Mar. 03, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Mar. 02, 2005
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.



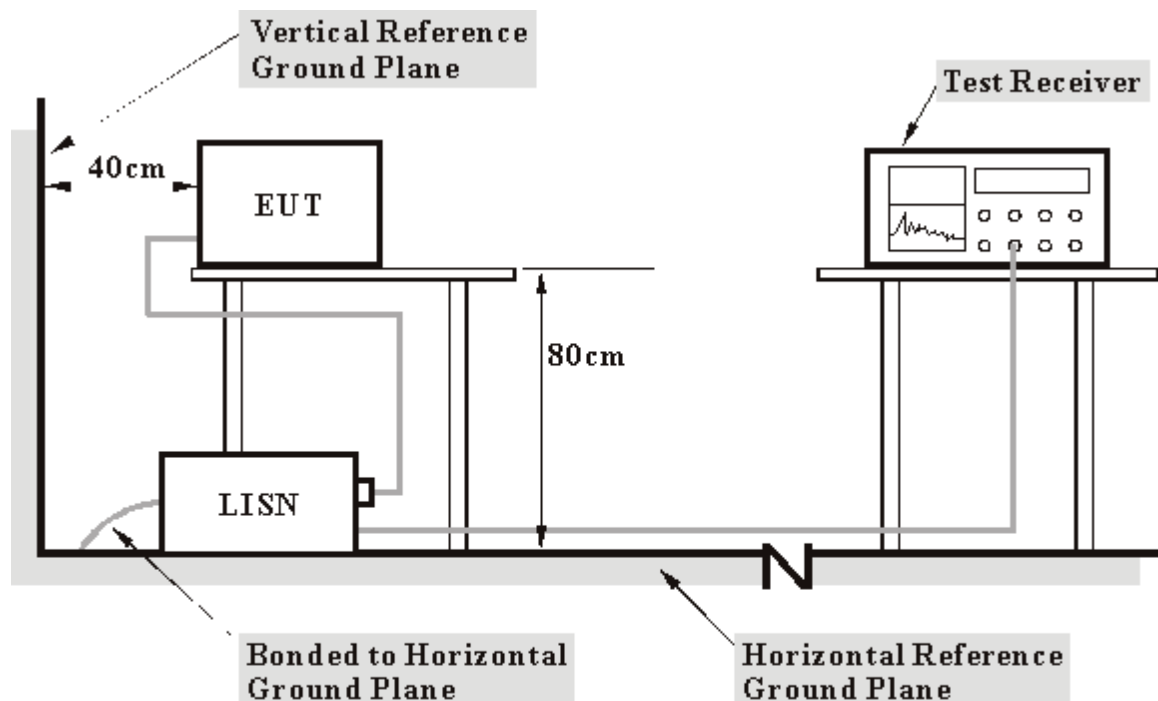
4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

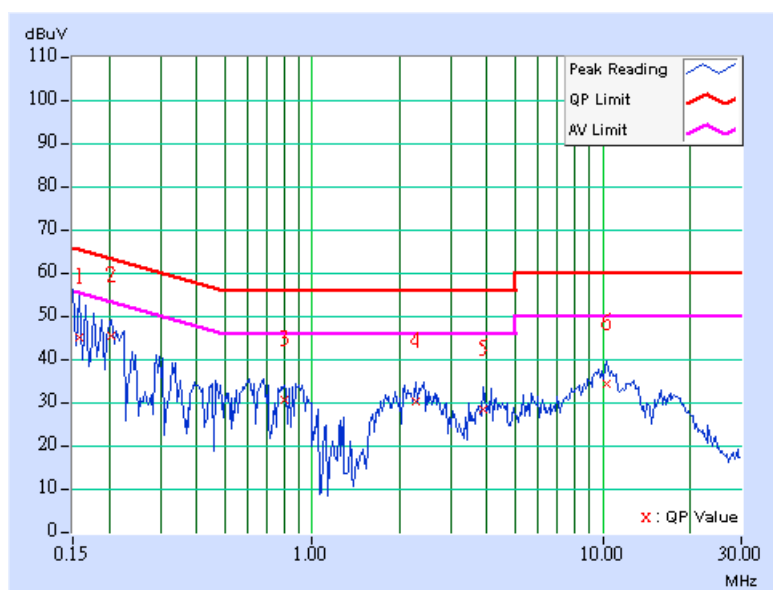
- a. Connected the EUT to a notebook system placed on a testing table.
- b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The notebook system sent "H" messages to its screen.
- d. 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 CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.11	44.80	-	44.91	-	65.58	55.58	-20.67	-
2	0.205	0.12	45.26	-	45.38	-	63.42	53.42	-18.04	-
3	0.806	0.14	30.30	-	30.44	-	56.00	46.00	-25.56	-
4	2.277	0.17	30.09	-	30.26	-	56.00	46.00	-25.74	-
5	3.895	0.20	28.03	-	28.23	-	56.00	46.00	-27.77	-
6	10.262	0.33	34.29	-	34.62	-	60.00	50.00	-25.38	-

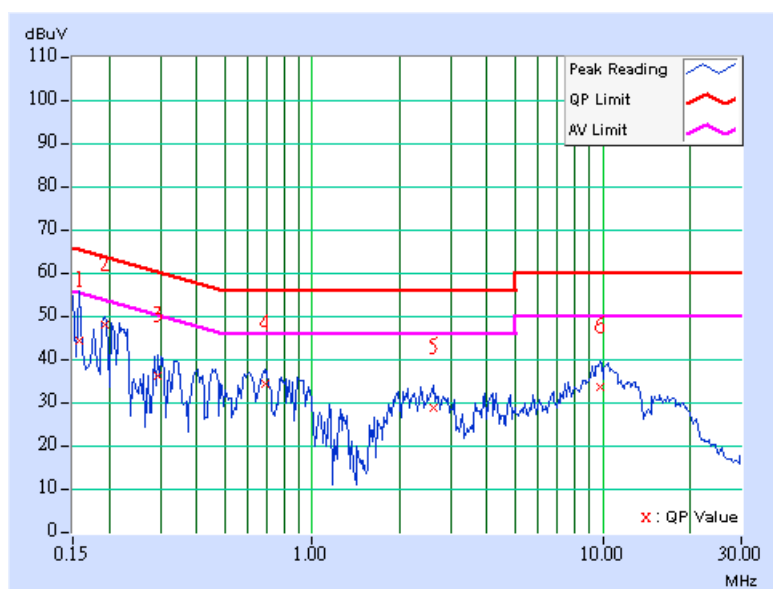
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.10	44.02	-	44.12	-	65.58	55.58	-21.46	-
2	0.193	0.11	47.78	-	47.89	-	63.91	53.91	-16.02	-
3	0.295	0.11	35.88	-	35.99	-	60.40	50.40	-24.40	-
4	0.689	0.12	34.22	-	34.34	-	56.00	46.00	-21.66	-
5	2.617	0.17	28.51	-	28.68	-	56.00	46.00	-27.32	-
6	9.855	0.28	33.42	-	33.70	-	60.00	50.00	-26.30	-

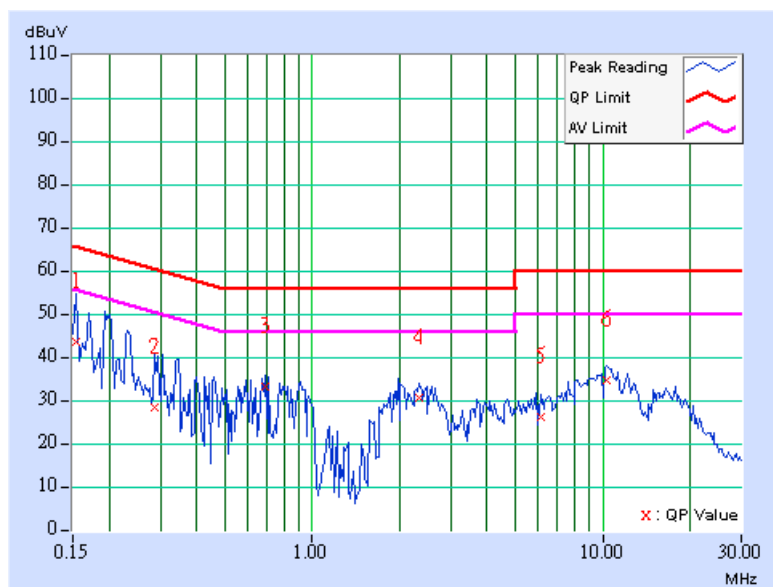
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.11	43.21	-	43.32	-	65.79	55.79	-22.47	-
2	0.287	0.12	28.06	-	28.18	-	60.62	50.62	-32.44	-
3	0.693	0.13	33.11	-	33.24	-	56.00	46.00	-22.76	-
4	2.332	0.17	30.36	-	30.53	-	56.00	46.00	-25.47	-
5	6.152	0.27	25.95	-	26.22	-	60.00	50.00	-33.78	-
6	10.367	0.34	34.33	-	34.67	-	60.00	50.00	-25.33	-

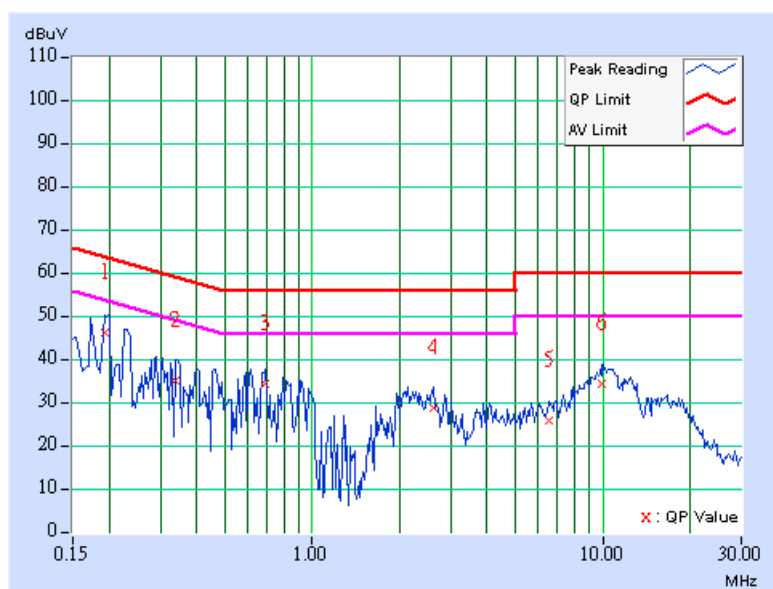
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.193	0.11	45.98	-	46.09	-	63.91	53.91	-17.82	-
2	0.338	0.11	34.87	-	34.98	-	59.26	49.26	-24.28	-
3	0.689	0.12	34.28	-	34.40	-	56.00	46.00	-21.60	-
4	2.602	0.17	28.58	-	28.75	-	56.00	46.00	-27.25	-
5	6.570	0.26	25.63	-	25.89	-	60.00	50.00	-34.11	-
6	9.938	0.28	34.13	-	34.41	-	60.00	50.00	-25.59	-

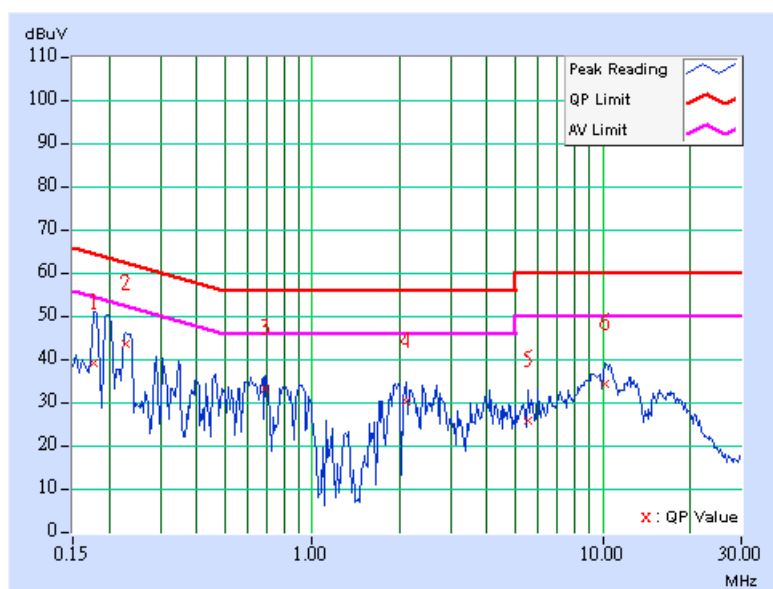
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	38.98	-	39.09	-	64.61	54.61	-25.52	-
2	0.228	0.12	43.22	-	43.34	-	62.52	52.52	-19.18	-
3	0.693	0.13	32.88	-	33.01	-	56.00	46.00	-22.99	-
4	2.113	0.16	29.88	-	30.04	-	56.00	46.00	-25.96	-
5	5.520	0.25	25.46	-	25.71	-	60.00	50.00	-34.29	-
6	10.207	0.32	34.17	-	34.49	-	60.00	50.00	-25.51	-

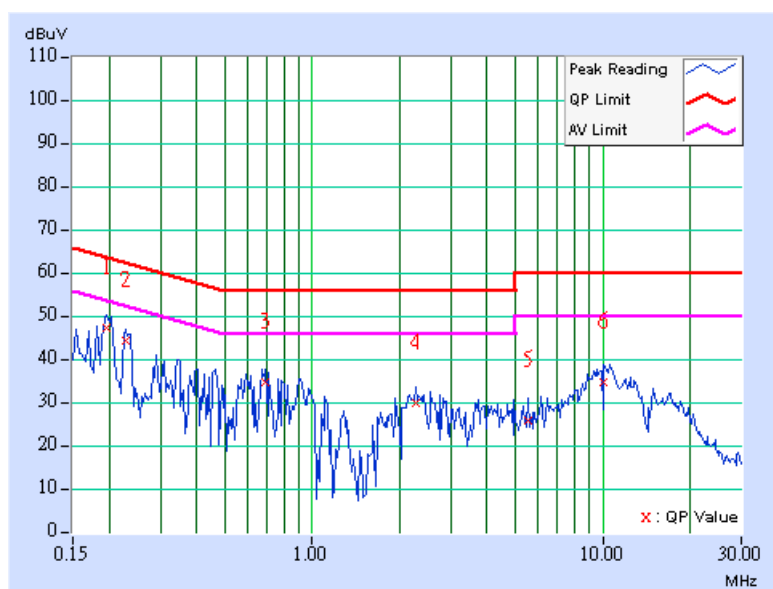
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.11	47.03	-	47.14	-	63.74	53.74	-16.60	-
2	0.228	0.11	44.04	-	44.15	-	62.52	52.52	-18.37	-
3	0.693	0.12	34.36	-	34.48	-	56.00	46.00	-21.52	-
4	2.281	0.17	29.72	-	29.89	-	56.00	46.00	-26.11	-
5	5.563	0.24	25.75	-	25.99	-	60.00	50.00	-34.01	-
6	10.059	0.28	34.38	-	34.66	-	60.00	50.00	-25.34	-

- 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	ESIB7	100188	Jan. 13, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-407	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170241	Feb. 23, 2005
Preamplifier Agilent	8449B	3008A01959	Jan. 11, 2005
Preamplifier Agilent	8447D	2944A10738	Oct. 10, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218182/4	Mar. 04, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218194/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	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 1.
 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 IC4924-2.



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.

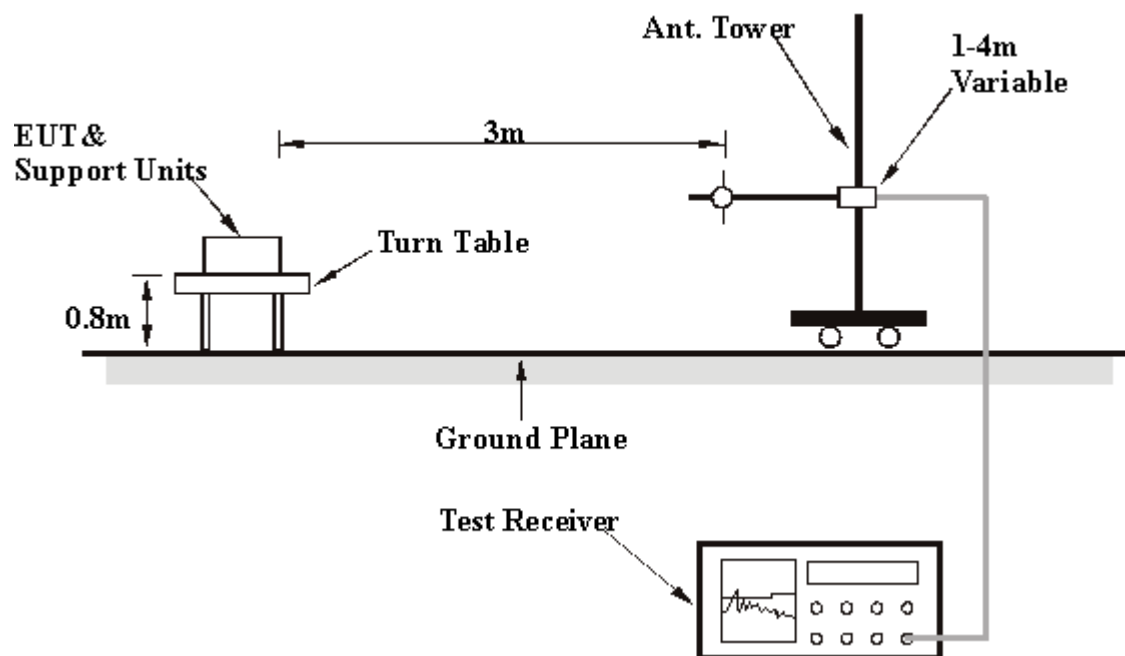
NOTE:

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 10 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	57.21	22.95 QP	40.00	-17.05	2.00 H	271	8.97	13.99
2	113.59	37.17 QP	43.50	-6.33	1.50 H	262	24.80	12.37
3	168.02	32.35 QP	43.50	-11.15	1.50 H	256	18.23	14.12
4	199.12	37.09 QP	43.50	-6.41	1.50 H	7	25.63	11.46
5	232.16	27.63 QP	46.00	-18.37	1.50 H	274	15.04	12.59
6	298.26	30.75 QP	46.00	-15.25	1.00 H	340	16.28	14.47
7	332.37	38.59 QP	46.00	-7.41	1.00 H	336	23.35	15.24
8	362.40	32.29 QP	46.00	-13.71	1.00 H	55	16.36	15.92
9	399.34	34.41 QP	46.00	-11.59	1.00 H	31	17.68	16.74
10	440.16	32.64 QP	46.00	-13.36	2.00 H	124	14.83	17.81
11	465.43	34.72 QP	46.00	-11.28	2.00 H	256	16.45	18.27
12	531.52	29.07 QP	46.00	-16.93	1.50 H	199	9.73	19.34
13	597.62	34.19 QP	46.00	-11.81	1.50 H	85	13.24	20.95
14	665.65	30.18 QP	46.00	-15.82	1.00 H	355	8.31	21.87
15	797.84	30.19 QP	46.00	-15.81	1.00 H	214	6.38	23.81
16	933.91	27.17 QP	46.00	-18.83	1.50 H	163	1.70	25.47

REMARKS:

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

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 99hPa	TESTED BY: Match Tsui	

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	57.21	30.10 QP	40.00	-9.90	1.00 V	205	16.11	13.99
2	84.43	29.62 QP	40.00	-10.38	1.00 V	346	19.55	10.07
3	129.14	34.84 QP	43.50	-8.66	1.00 V	10	21.17	13.67
4	162.18	36.63 QP	43.50	-6.87	1.00 V	292	21.95	14.68
5	333.25	40.21 QP	46.00	-5.79	2.00 V	232	24.95	15.26
6	364.35	32.02 QP	46.00	-13.98	1.00 V	319	16.06	15.97
7	401.28	29.91 QP	46.00	-16.09	1.50 V	349	13.12	16.78
8	440.16	34.49 QP	46.00	-11.51	1.00 V	337	16.68	17.81
9	467.37	31.02 QP	46.00	-14.98	2.00 V	211	12.72	18.30
10	531.52	29.69 QP	46.00	-16.31	1.00 V	334	10.36	19.34
11	593.73	32.12 QP	46.00	-13.88	1.50 V	346	11.27	20.84
12	607.33	32.99 QP	46.00	-13.01	1.50 V	322	11.88	21.11
13	652.04	29.60 QP	46.00	-16.40	1.00 V	19	7.90	21.71
14	667.60	32.20 QP	46.00	-13.80	1.00 V	238	10.30	21.90
15	799.78	29.30 QP	46.00	-16.70	1.50 V	256	5.49	23.82
16	931.96	28.83 QP	46.00	-17.17	1.00 V	274	3.38	25.45

- 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 CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2375.00	53.86 PK	74.00	-20.14	1.10 H	156	22.11	31.75
1	2375.00	42.38 AV	54.00	-11.62	1.10 H	156	10.63	31.75
2	2387.00	54.98 PK	74.00	-19.02	1.09 H	154	23.19	31.79
2	2387.00	47.82 AV	54.00	-6.18	1.09 H	154	16.03	31.79
3	*2412.00	111.26 PK			1.09 H	154	79.39	31.87
3	*2412.00	104.10 AV			1.09 H	154	72.23	31.87
4	4824.00	56.59 PK	74.00	-17.41	1.12 H	50	18.48	38.11
4	4824.00	49.00 AV	54.00	-5.00	1.12 H	50	10.89	38.11

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	2375.00	44.44 PK	74.00	-29.56	1.25 V	20	12.69	31.75
2	2387.00	48.29 PK	74.00	-25.71	1.29 V	210	16.50	31.79
3	*2412.00	104.57 PK			1.29 V	210	72.70	31.87
3	*2412.00	97.27 AV			1.29 V	210	65.40	31.87
4	4824.00	54.88 PK	74.00	-19.12	1.30 V	169	16.77	38.11
4	4824.00	48.39 AV	54.00	-5.61	1.30 V	169	10.28	38.11
5	9648.00	53.93 PK	74.00	-20.07	1.52 V	33	11.65	42.28
5	9648.00	47.04 AV	54.00	-6.96	1.52 V	33	4.76	42.28

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	52.79 PK	74.00	-21.21	1.12 H	156	21.08	31.71
1	2360.00	40.71 AV	54.00	-13.29	1.12 H	156	9.00	31.71
2	*2437.00	113.15 PK			1.37 H	81	81.20	31.95
2	*2437.00	112.15 AV			1.37 H	81	80.20	31.95
3	4874.00	54.25 PK	74.00	-19.75	1.00 H	351	15.97	38.28
3	4874.00	46.98 AV	54.00	-7.02	1.00 H	351	8.70	38.28
4	9748.00	48.92 PK	74.00	-25.08	1.17 H	25	10.41	38.51

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	2360.00	45.26 PK	74.00	-28.74	1.24 V	19	13.55	31.71
2	*2437.00	102.86 PK			1.22 V	337	70.91	31.95
2	*2437.00	95.13 AV			1.22 V	337	63.18	31.95
3	4874.00	55.89 PK	74.00	-18.11	1.27 V	211	17.61	38.28
3	4874.00	48.68 AV	54.00	-5.32	1.27 V	211	10.40	38.28
4	9748.00	50.91 PK	74.00	-23.09	1.29 V	37	12.40	38.51
4	9748.00	37.34 AV	54.00	-16.66	1.29 V	37	-1.17	38.51

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODE	CCK		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	51.80 PK	74.00	-22.20	1.11 H	154	20.09	31.71
1	2360.00	40.45 AV	54.00	-13.55	1.11 H	154	8.74	31.71
2	*2462.00	111.17 PK			1.06 H	155	79.15	32.02
2	*2462.00	103.88 AV			1.06 H	155	71.86	32.02
3	2487.00	53.56 PK	74.00	-20.44	1.06 H	155	21.46	32.10
3	2487.00	46.27 AV	54.00	-7.73	1.06 H	155	14.17	32.10
4	4924.00	54.55 PK	74.00	-19.45	1.00 H	124	16.06	38.49
4	4924.00	47.90 AV	54.00	-6.10	1.00 H	124	9.41	38.49

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	2360.00	47.12 PK	74.00	-26.88	1.10 V	212	15.41	31.71
2	*2462.00	104.57 PK			1.29 V	210	72.55	32.02
2	*2462.00	98.42 AV			1.29 V	210	66.40	32.02
3	2487.00	46.96 PK	74.00	-27.04	1.29 V	210	14.86	32.10
4	4924.00	53.03 PK	74.00	-20.97	1.12 V	80	14.54	38.49
4	4924.00	45.37 AV	54.00	-8.63	1.12 V	80	6.88	38.49
5	9848.00	46.52 PK	74.00	-27.48	1.36 V	172	11.19	35.33

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

Normal mode

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~ 25GHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	51.05 PK	74.00	-22.95	1.36 H	71	19.34	31.71
1	2360.00	40.22 AV	54.00	-13.78	1.36 H	71	8.51	31.71
2	2390.00	62.14 PK	74.00	-11.86	1.09 H	159	30.34	31.80
2	2390.00	52.04 AV	54.00	-1.96	1.09 H	159	20.24	31.80
3	*2412.00	107.52 PK			1.09 H	159	75.65	31.87
3	*2412.00	97.42 AV			1.09 H	159	65.55	31.87
4	4824.00	52.00 PK	74.00	-22.00	1.28 H	40	13.89	38.11
4	4824.00	38.45 AV	54.00	-15.55	1.28 H	40	0.34	38.11

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	2360.00	46.11 PK	74.00	-27.89	1.09 V	208	14.40	31.71
2	2390.00	55.92 PK	74.00	-18.08	1.31 V	210	24.12	31.80
2	2390.00	45.56 AV	54.00	-8.44	1.31 V	210	13.76	31.80
3	*2412.00	101.30 PK			1.31 V	210	69.43	31.87
3	*2412.00	90.94 AV			1.31 V	210	59.07	31.87
4	4824.00	50.29 PK	74.00	-23.71	1.10 V	76	12.18	38.11
4	4824.00	37.13 AV	54.00	-16.87	1.10 V	76	-0.98	38.11

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	52.27 PK	74.00	-21.73	1.12 H	174	20.56	31.71
1	2360.00	40.45 AV	54.00	-13.55	1.12 H	174	8.74	31.71
2	*2437.00	109.47 PK			1.08 H	160	77.52	31.95
2	*2437.00	99.79 AV			1.08 H	160	67.84	31.95
3	4874.00	53.18 PK	74.00	-20.82	1.14 H	120	14.90	38.28
3	4874.00	39.63 AV	54.00	-14.37	1.14 H	120	1.35	38.28

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	2360.00	48.16 PK	74.00	-25.84	1.09 V	211	16.45	31.71
2	*2437.00	104.23 PK			1.28 V	211	72.28	31.95
2	*2437.00	94.86 AV			1.28 V	211	62.91	31.95
3	4874.00	54.10 PK	74.00	-19.90	1.40 V	198	15.82	38.28
3	4874.00	40.07 AV	54.00	-13.93	1.40 V	198	1.79	38.28

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	1 ~ 25GHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	52.66 PK	74.00	-21.34	1.13 H	176	20.95	31.71
1	2360.00	40.77 AV	54.00	-13.23	1.13 H	176	9.06	31.71
2	*2462.00	108.93 PK			1.35 H	81	76.91	32.02
2	*2462.00	98.57 AV			1.35 H	81	66.55	32.02
3	2483.50	62.16 PK	74.00	-11.84	1.35 H	81	30.07	32.09
3	2483.50	52.22 AV	54.00	-1.78	1.35 H	81	20.13	32.09
4	4924.00	49.26 PK	74.00	-24.74	1.14 H	66	10.77	38.49

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	2360.00	44.49 PK	74.00	-29.51	1.20 V	175	12.78	31.71
2	*2462.00	102.01 PK			1.30 V	210	69.99	32.02
2	*2462.00	92.35 AV			1.30 V	210	60.33	32.02
3	2483.50	55.57 PK	74.00	-18.43	1.30 V	210	23.48	32.09
3	2483.50	45.91 AV	54.00	-8.09	1.30 V	210	13.82	32.09
4	4924.00	48.43 PK	74.00	-25.57	1.14 V	323	9.94	38.49

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * “ : Fundamental frequency

Turbo mode

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 6	FREQUENCY RANGE	1 ~ 25GHz
MODE	OFDM		
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	2360.00	55.13 PK	74.00	-18.87	1.09 H	169	23.42	31.71
1	2360.00	46.67 AV	54.00	-7.33	1.09 H	169	14.96	31.71
2	2390.00	66.82 PK	74.00	-7.18	1.07 H	360	35.02	31.80
2	2390.00	52.51 AV	54.00	-1.49	1.07 H	360	20.71	31.80
3	*2437.00	107.50 PK			1.07 H	360	75.55	31.95
3	*2437.00	98.86 AV			1.07 H	360	66.91	31.95
4	2483.50	64.18 PK	74.00	-9.82	1.07 H	360	32.09	32.09
4	2483.50	52.98 AV	54.00	-1.02	1.07 H	360	20.89	32.09
5	4874.00	54.00 PK	74.00	-20.00	1.09 H	117	15.72	38.28
5	4874.00	39.89 AV	54.00	-14.11	1.09 H	117	1.61	38.28

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	2342.00	46.04 PK	74.00	-27.96	1.37 V	195	14.39	31.65
2	2390.00	63.90 PK	74.00	-10.10	1.62 V	197	32.10	31.80
2	2390.00	51.75 AV	54.00	-2.25	1.62 V	197	19.95	31.80
3	*2437.00	104.01 PK			1.62 V	197	72.06	31.95
3	*2437.00	94.03 AV			1.62 V	197	62.08	31.95
4	2483.50	61.52 PK	74.00	-12.48	1.62 V	197	29.43	32.09
4	2483.50	51.60 AV	54.00	-2.40	1.62 V	197	19.51	32.09
5	4874.00	48.86 PK	74.00	-25.14	1.44 V	161	10.58	38.28

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. The limit value is defined as per 15.247
 6. “ * ” : Fundamental frequency

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK 30	100049	Aug. 12, 2005

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

4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

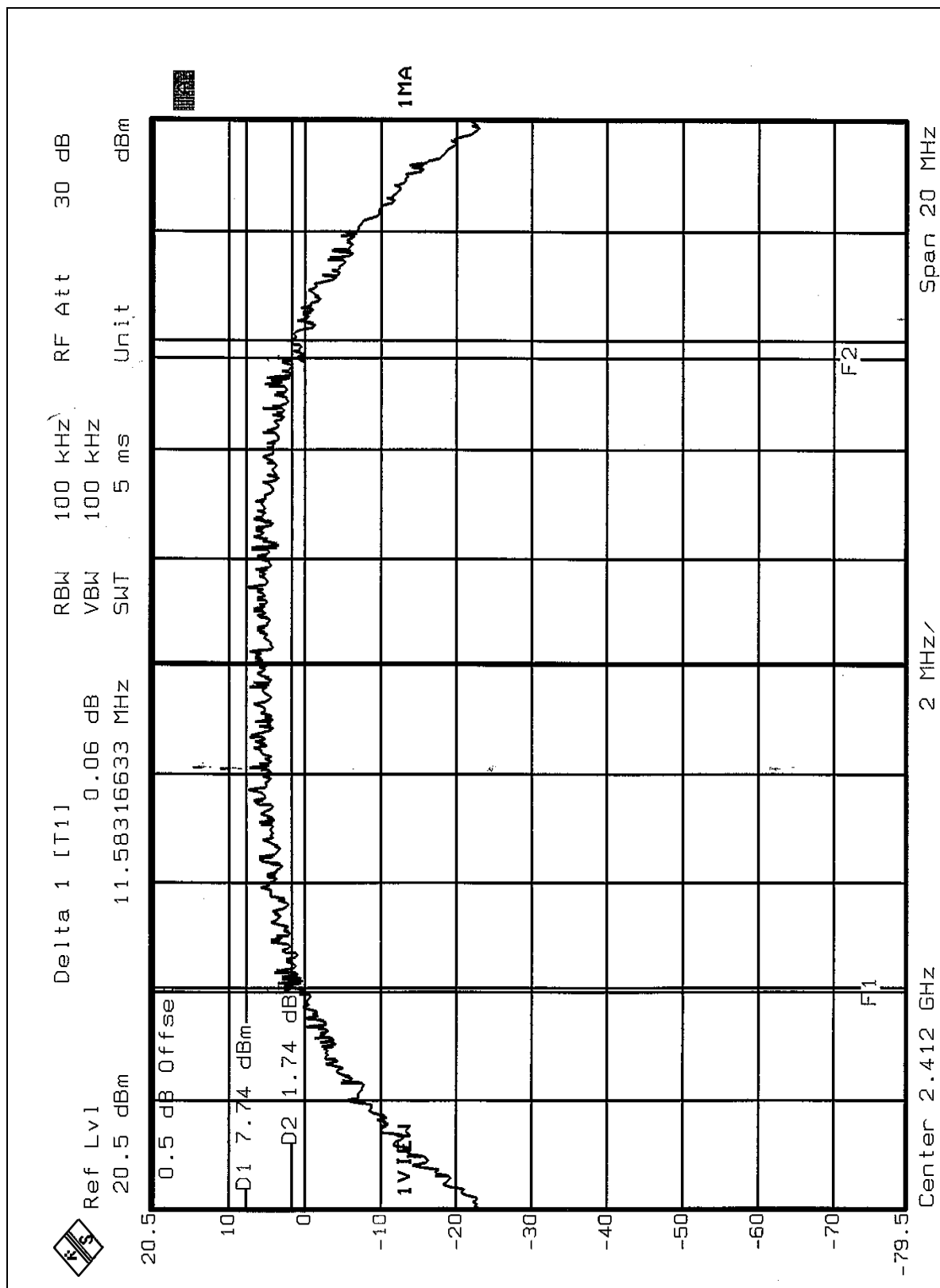
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

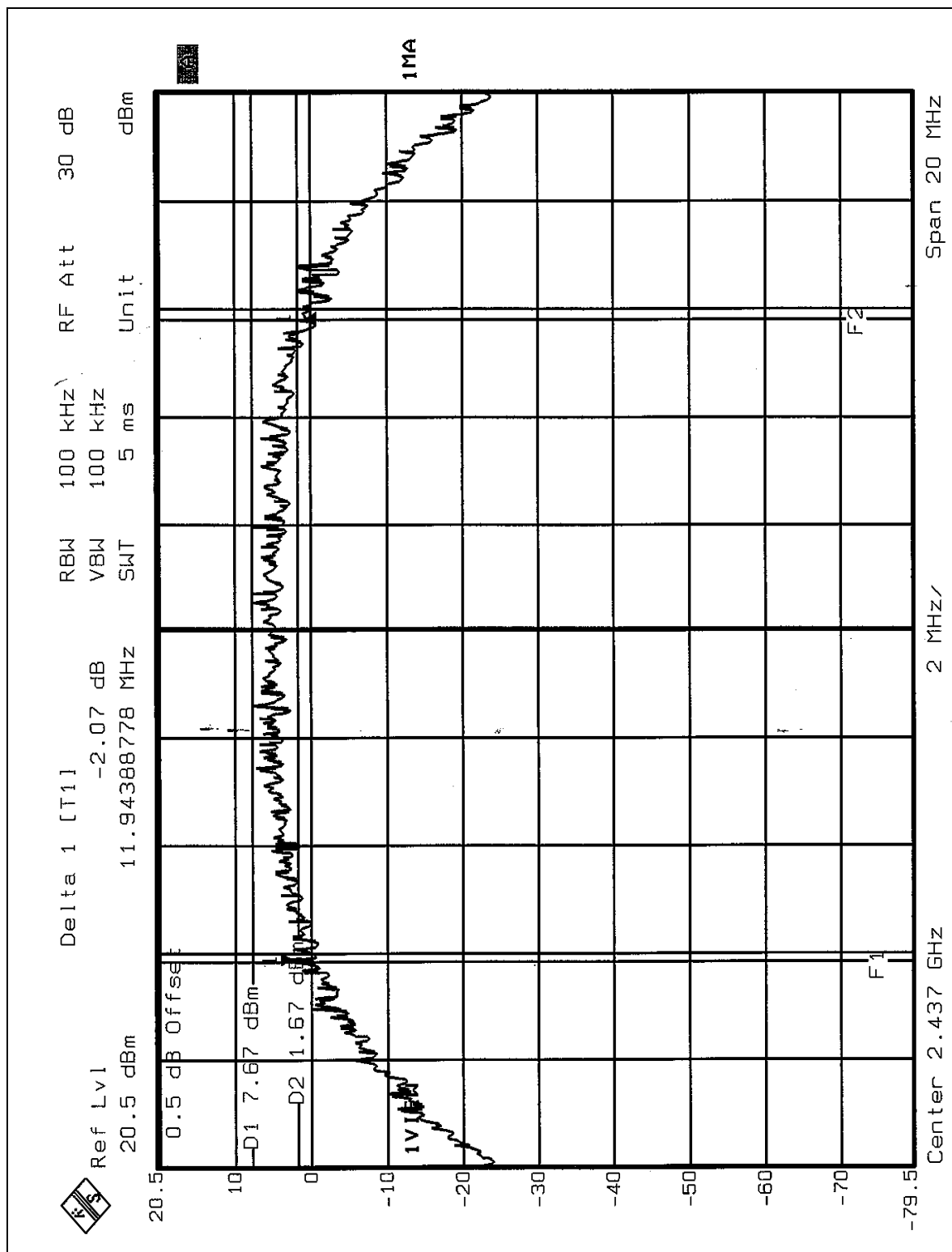
EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.583	0.5	PASS
6	2437	11.944	0.5	PASS
11	2462	11.663	0.5	PASS

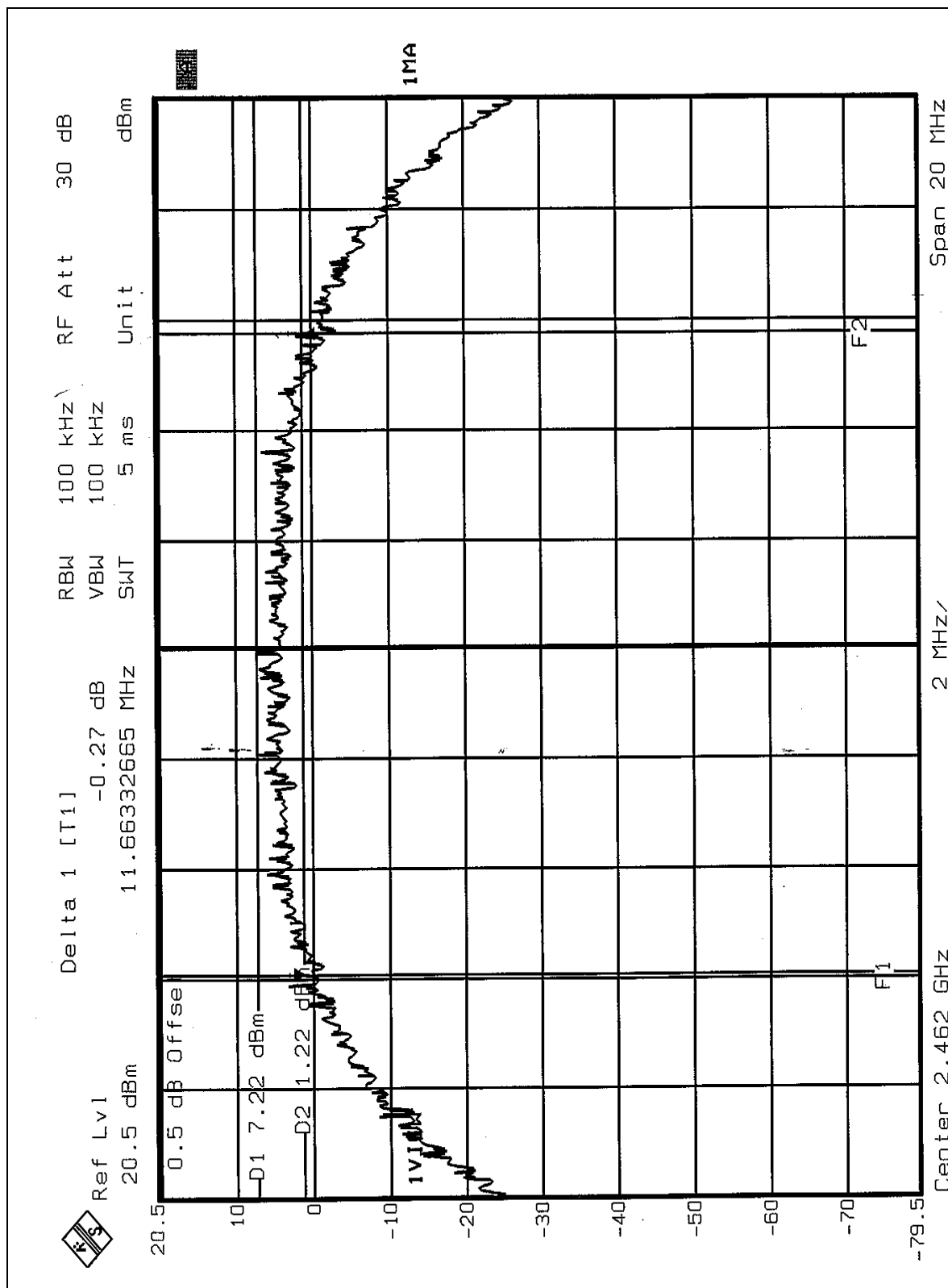
CH1



CH6



CH11



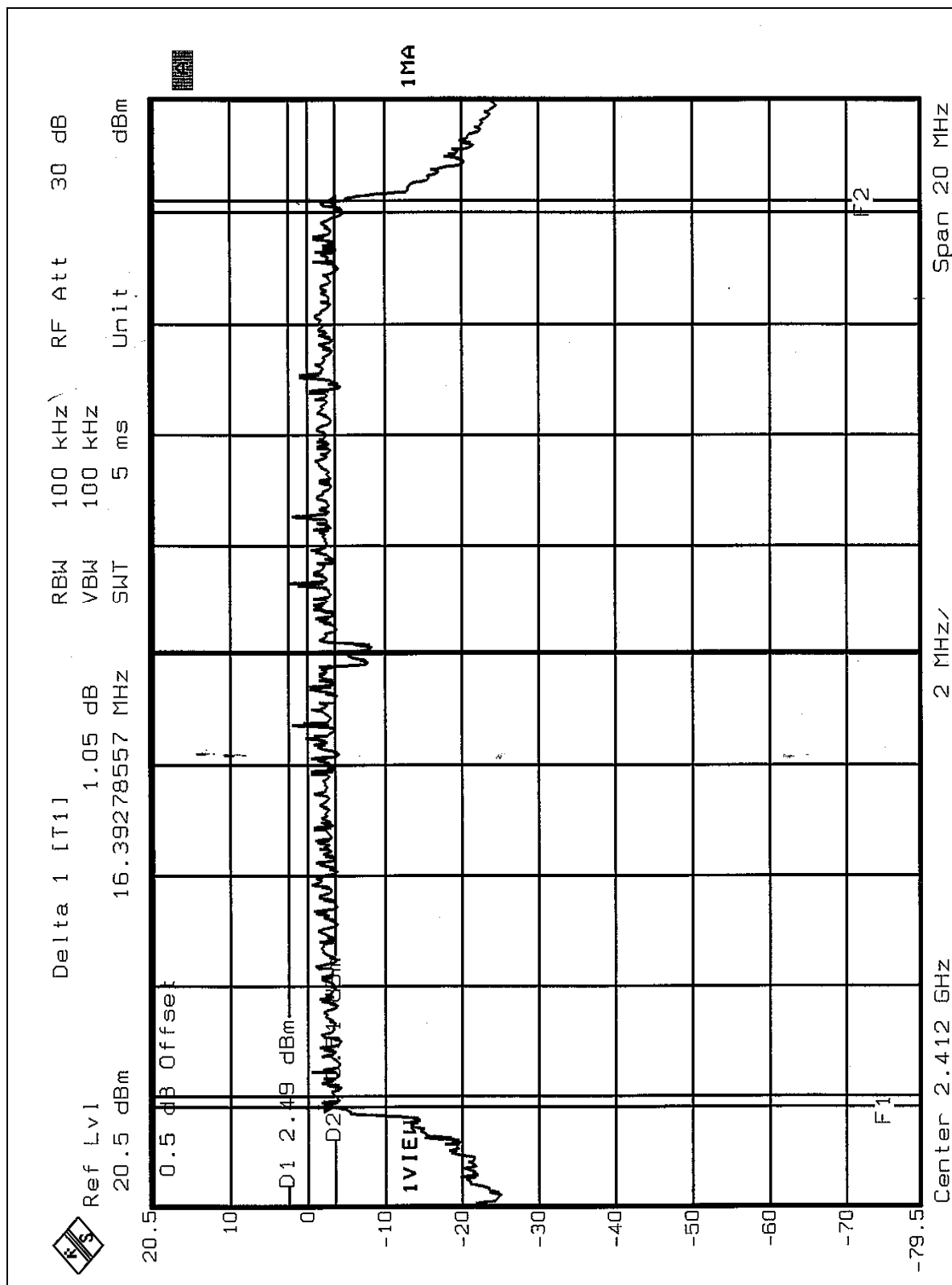
**Normal mode**

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH, 991hPa	TESTED BY	Leo Hung

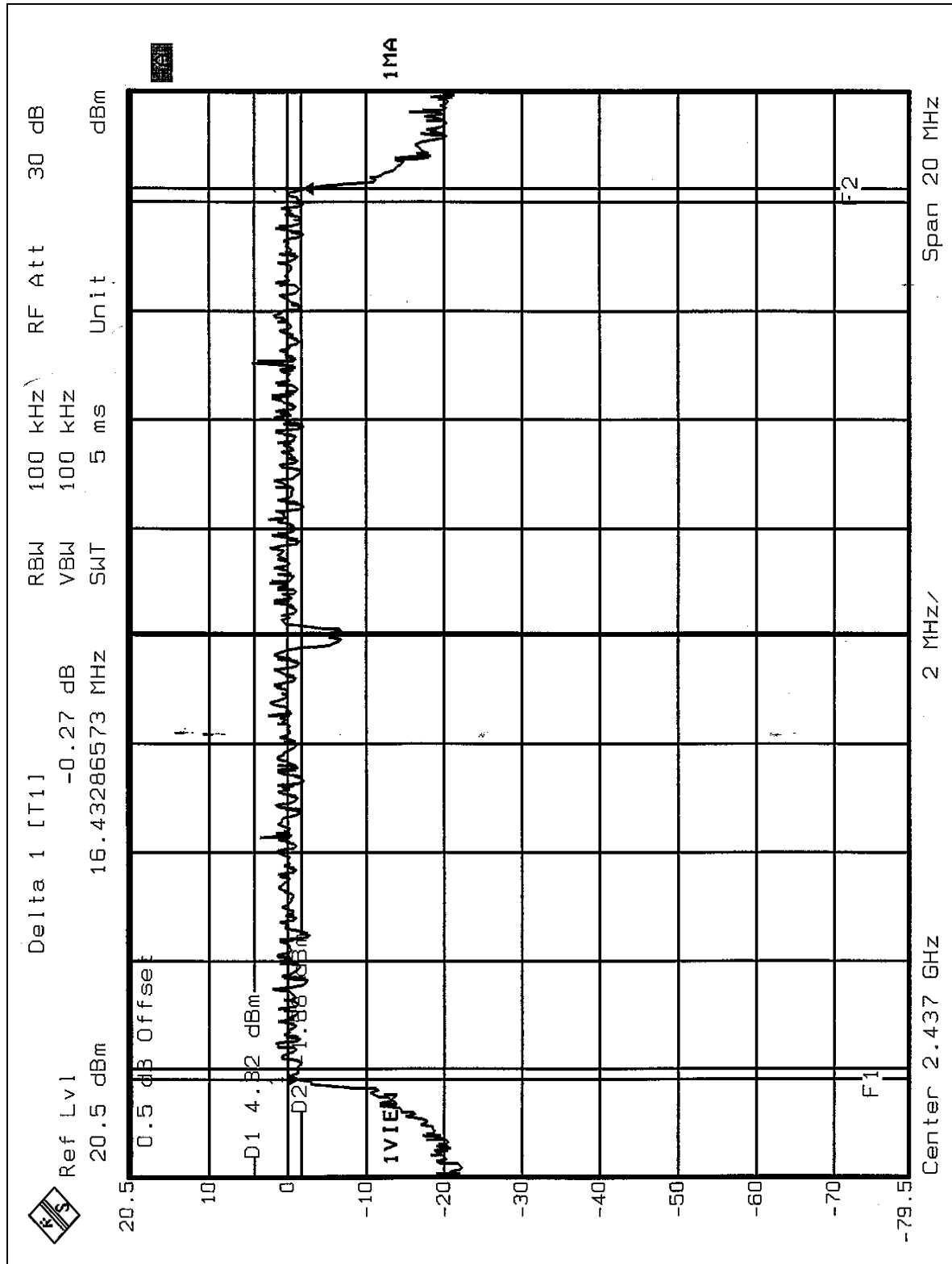
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.393	0.5	PASS
6	2437	16.433	0.5	PASS
11	2462	16.473	0.5	PASS



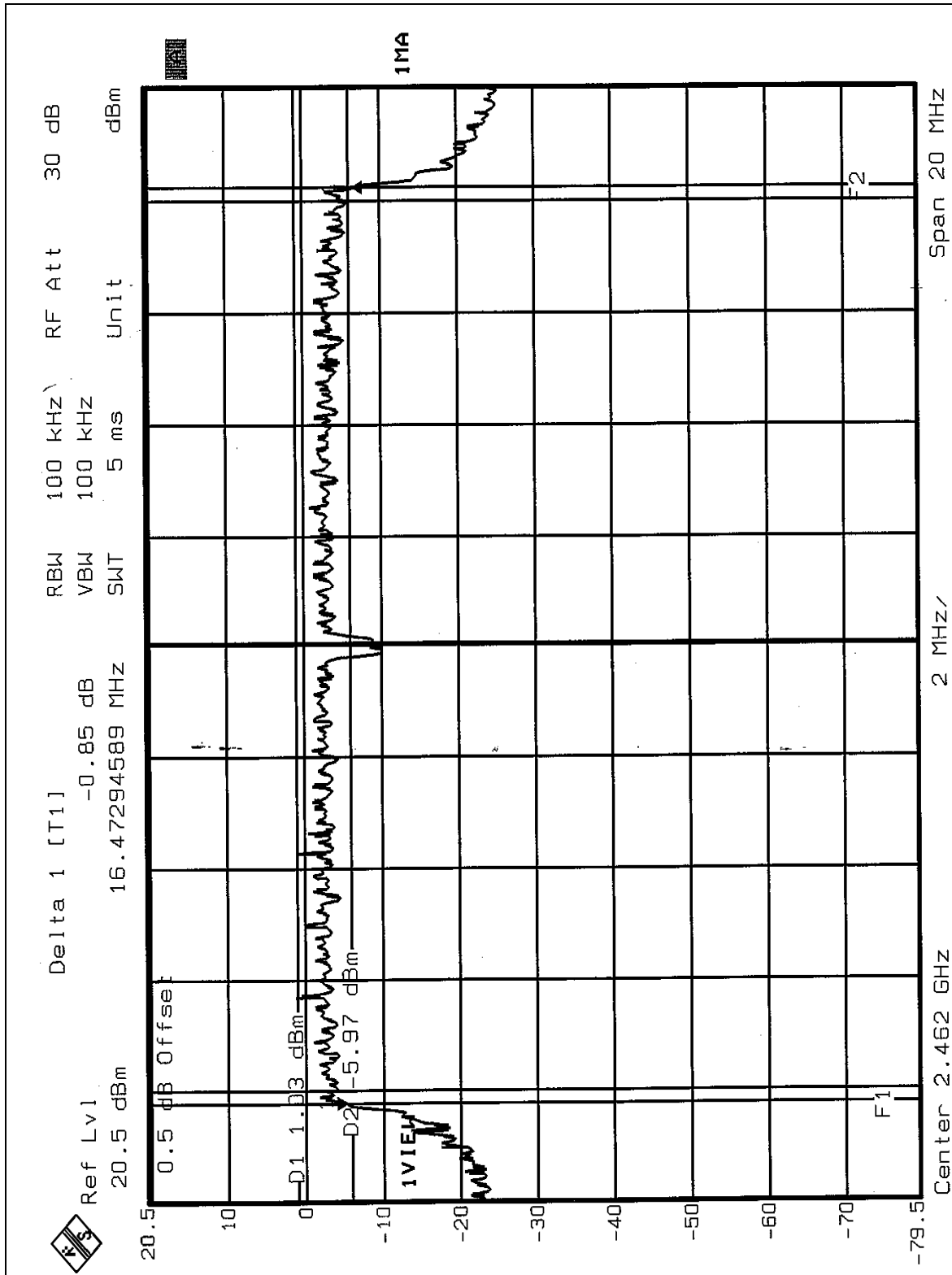
CH1



CH6



CH11

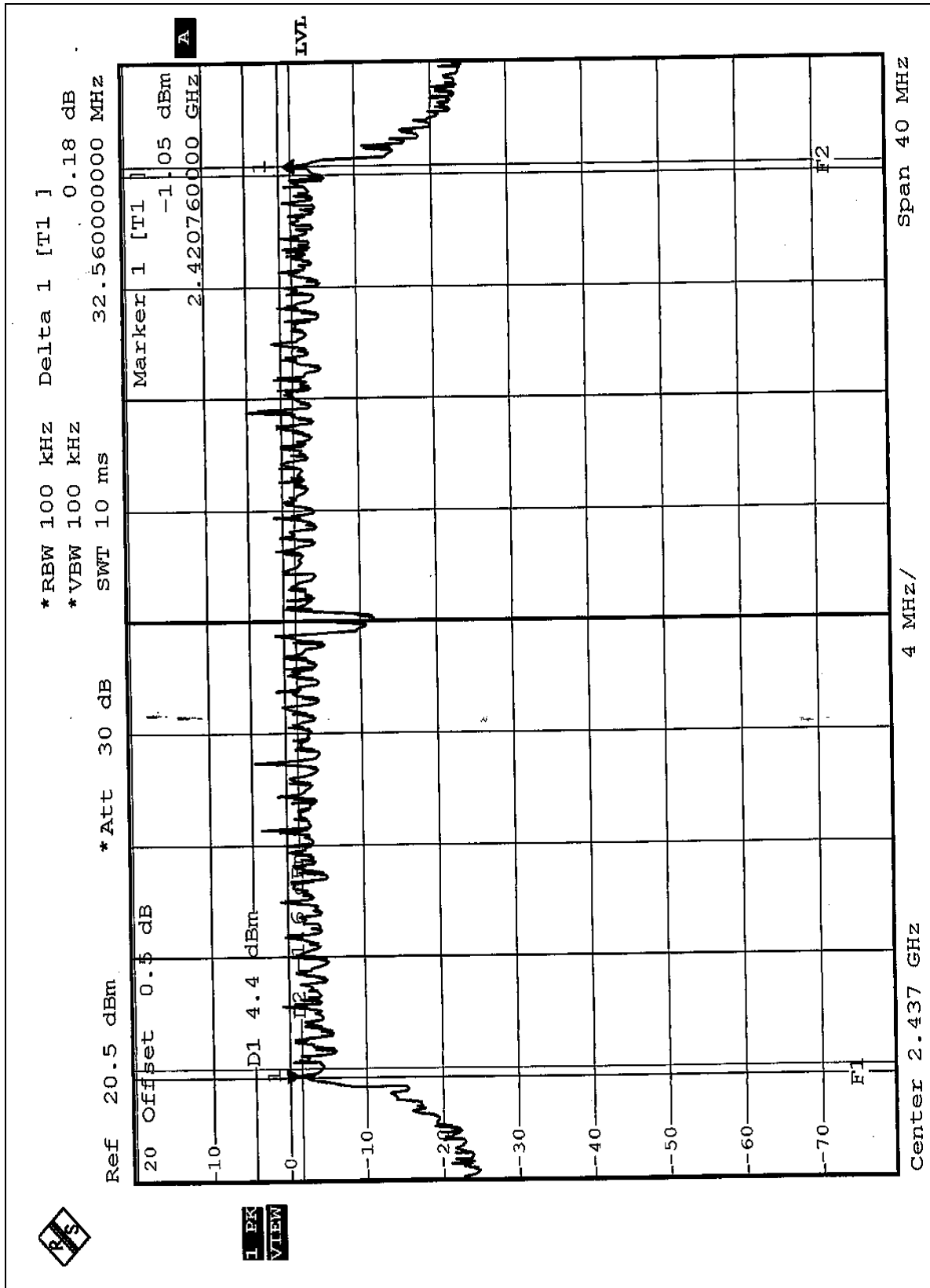


**Turbo mode**

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	23deg. C, 67%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
6	2437	32.560	0.5	PASS

CH6



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, 2005
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

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

4.4.1 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator . The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

4.4.2 DEVIATION FROM TEST STANDARD

No deviation

4.4.3 TEST SETUP



4.4.4 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.3 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	CCK	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	63.096	18.0	30	PASS
6	2437	66.069	18.2	30	PASS
11	2462	64.565	18.1	30	PASS

Normal mode

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	44.668	16.5	30	PASS
6	2437	63.096	18.0	30	PASS
11	2462	39.811	16.0	30	PASS

Turbo mode

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
6	2437	67.608	18.3	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTE:

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

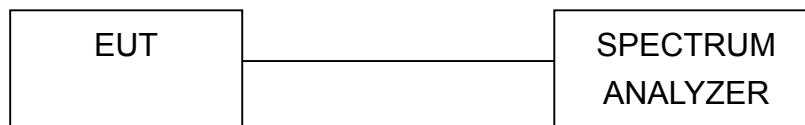
4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



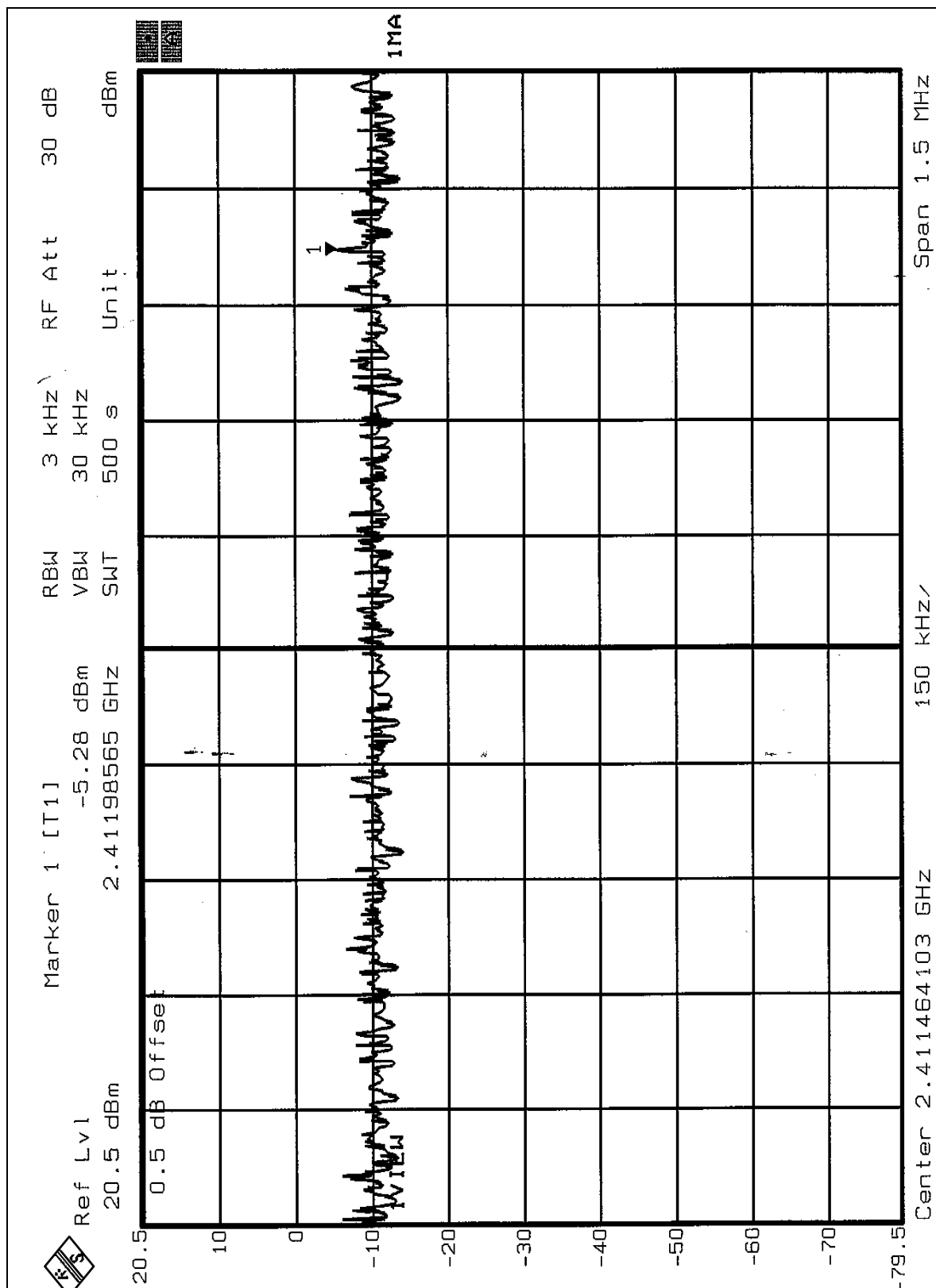
4.5.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	CCK	TESTED BY	Leo Hung

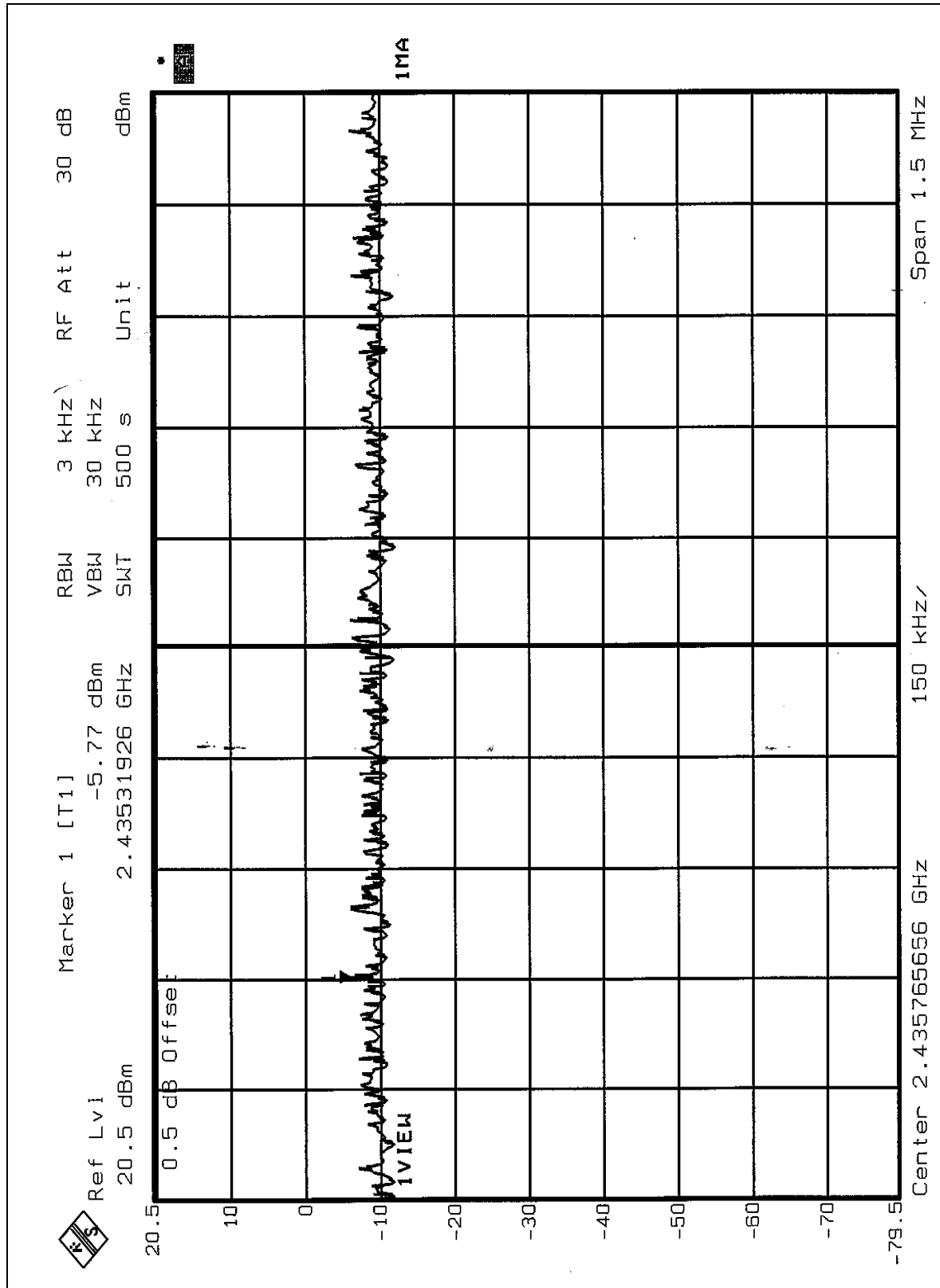
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-5.28	8	PASS
6	2437	-5.77	8	PASS
11	2462	-5.96	8	PASS



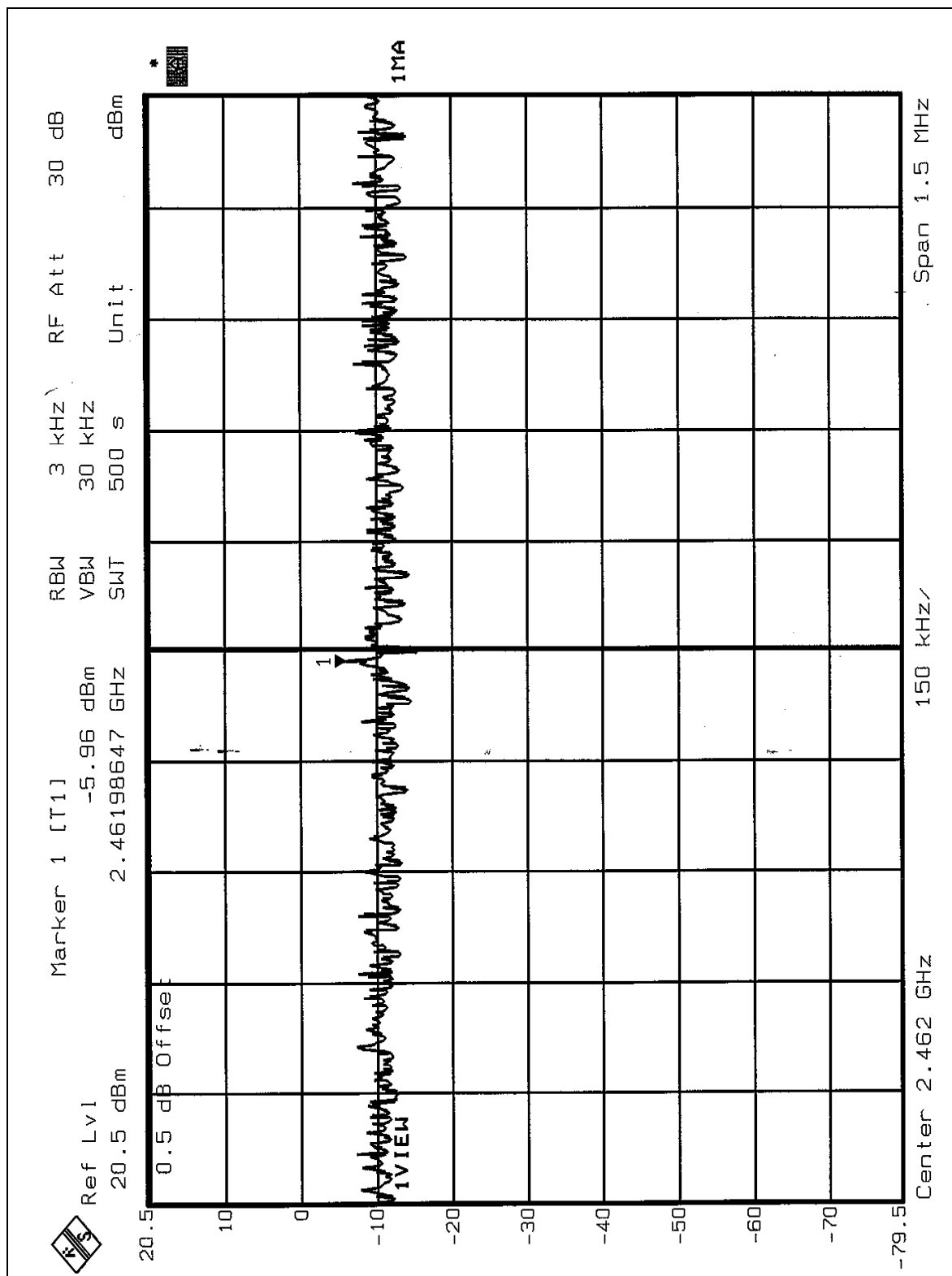
CH1



CH6



CH11



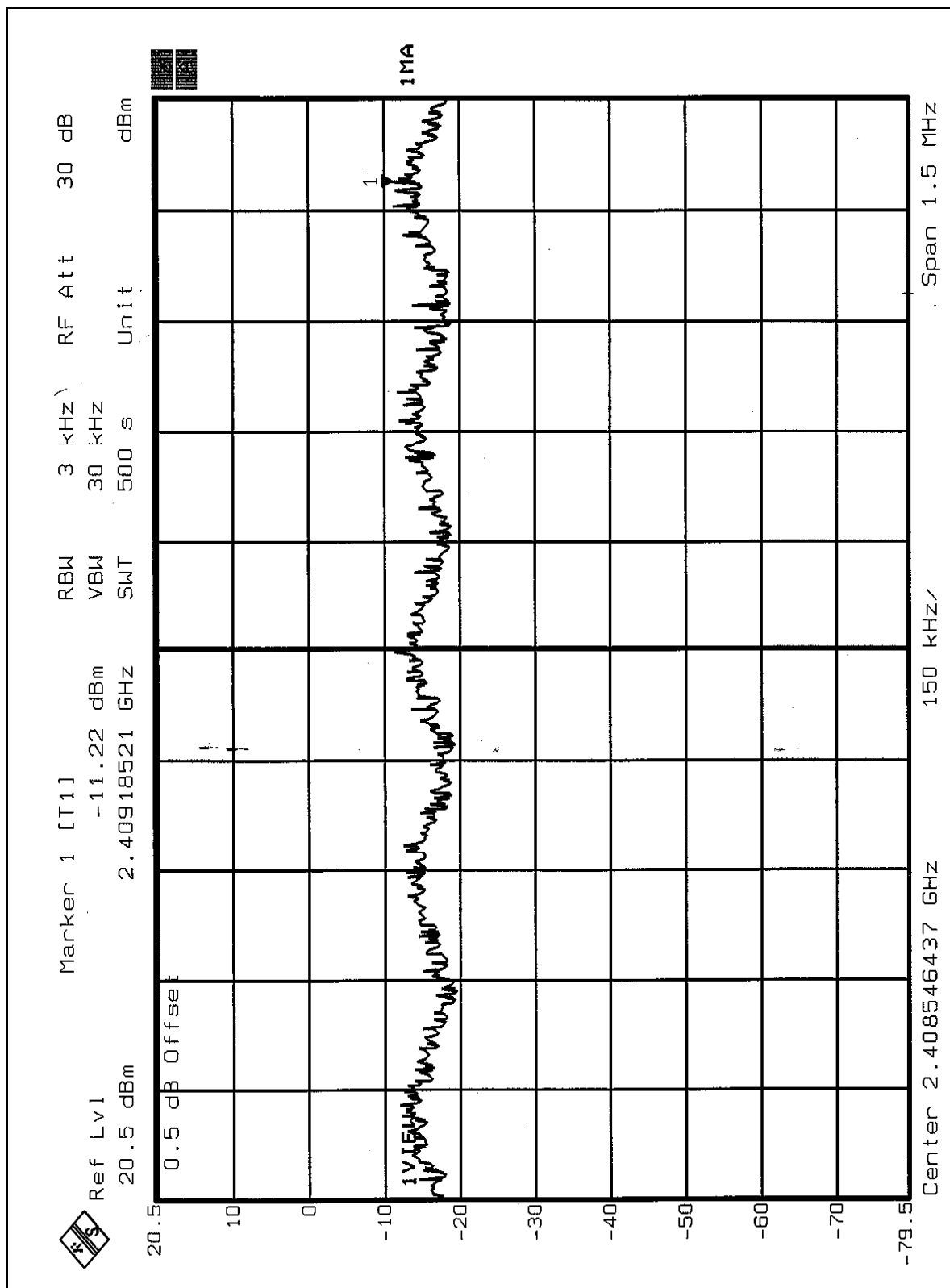
Normal mode

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	OFDM	TESTED BY	Leo Hung

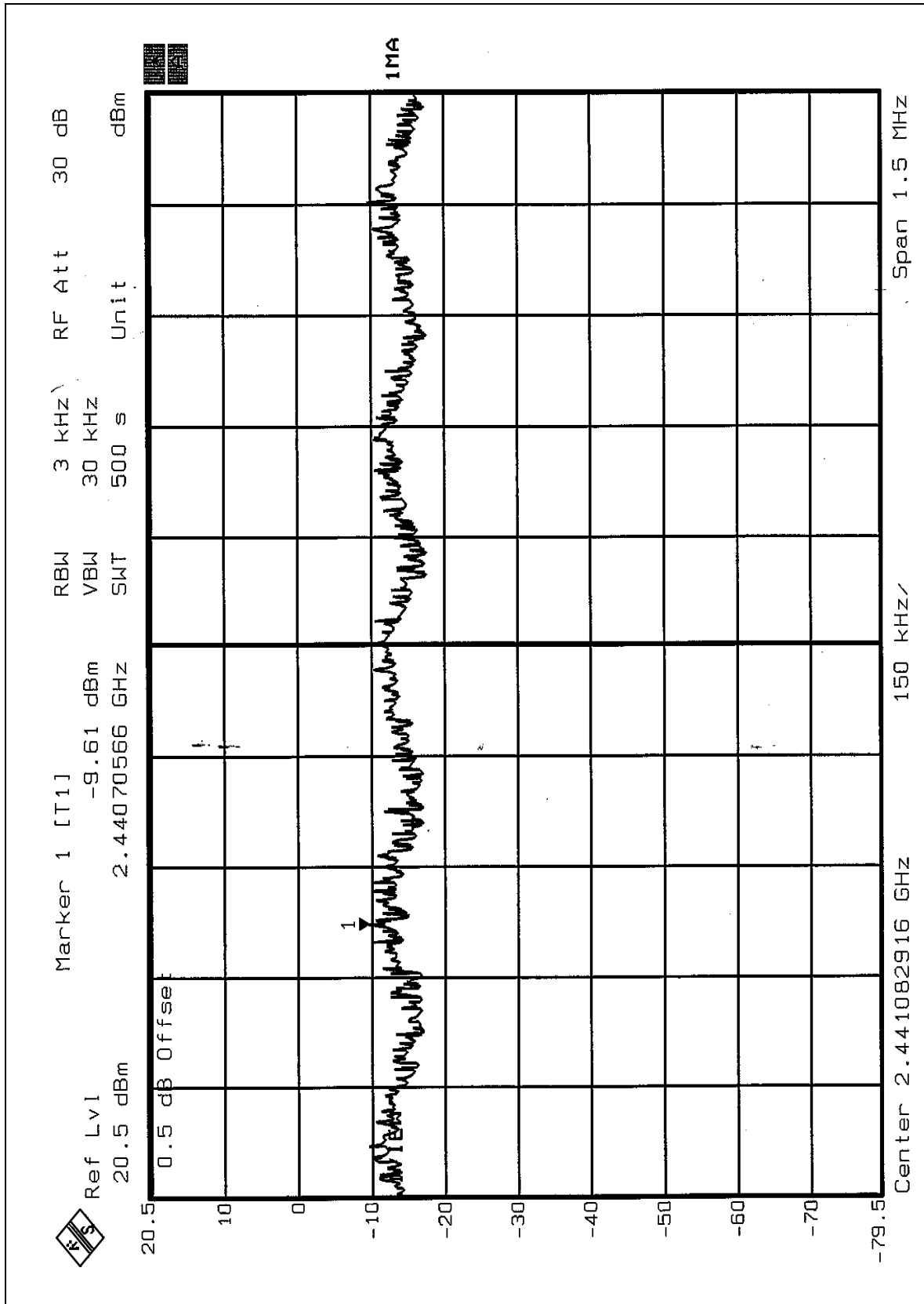
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.22	8	PASS
6	2437	-9.61	8	PASS
11	2462	-11.59	8	PASS



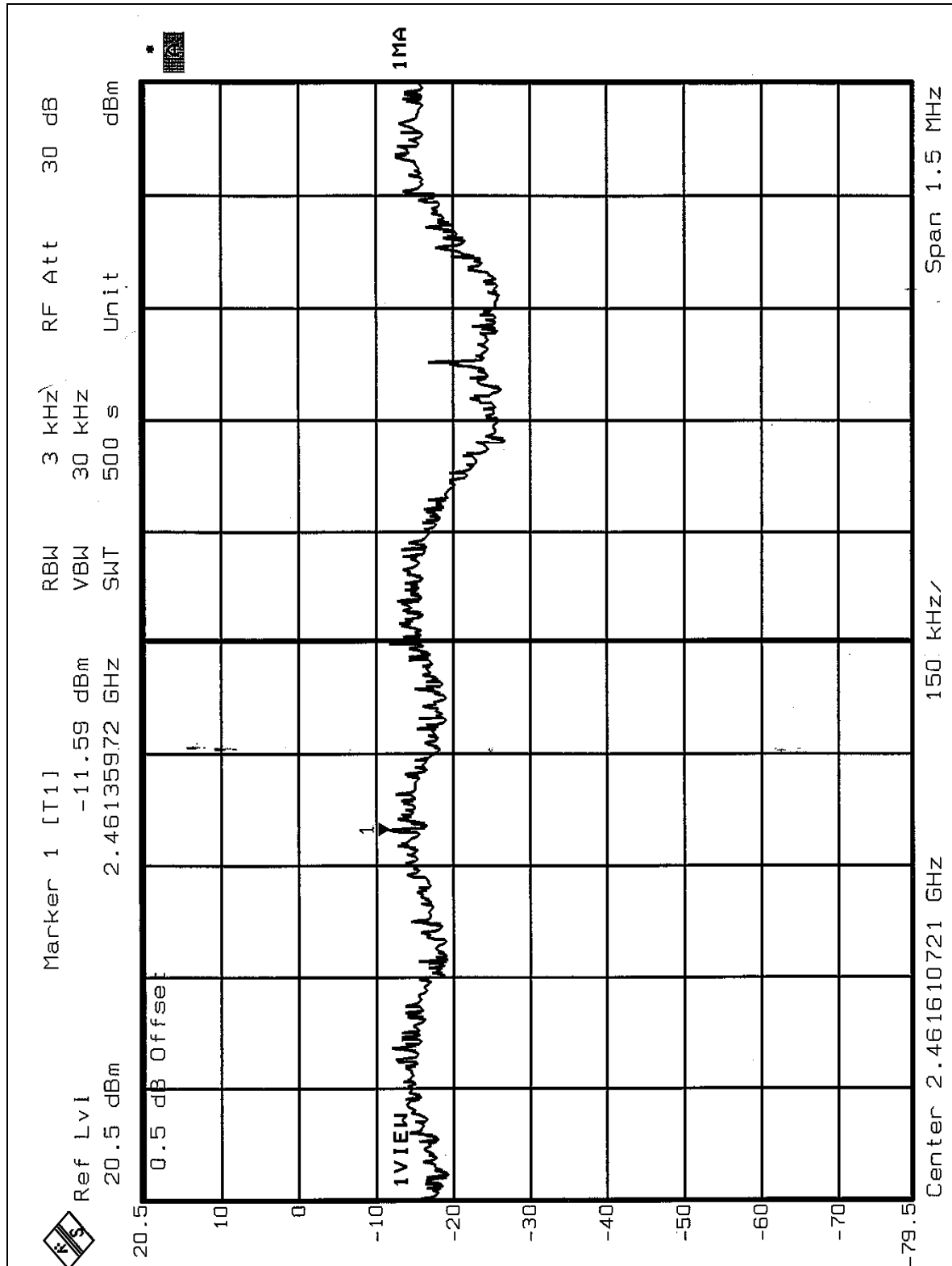
CH1



CH6



CH11

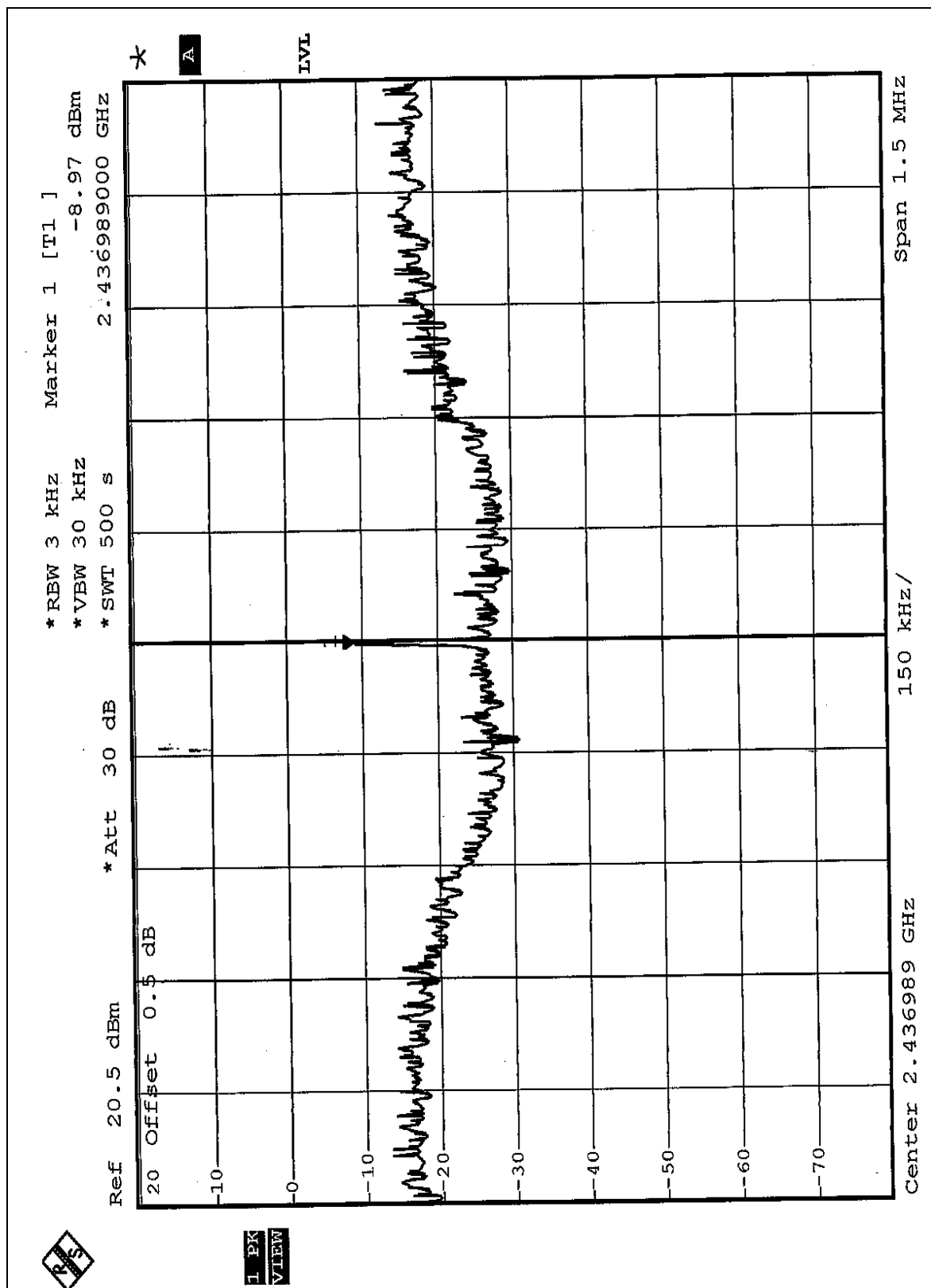


**Turbo mode**

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 67%RH, 991hPa
MODE	OFDM	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-8.97	8	PASS

CH6



4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 10Hz 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 12 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(d).



NOTE 1: The band edge emission plot of CCK technique on page 66 show 54.19dB delta between carrier maximum power and local maximum emission in restrict band (2.3872GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.10dBuV/m, so the maximum field strength in restrict band is $104.10 - 54.19 = 49.91$ dBuV/m which is under 54dBuV/m limit.

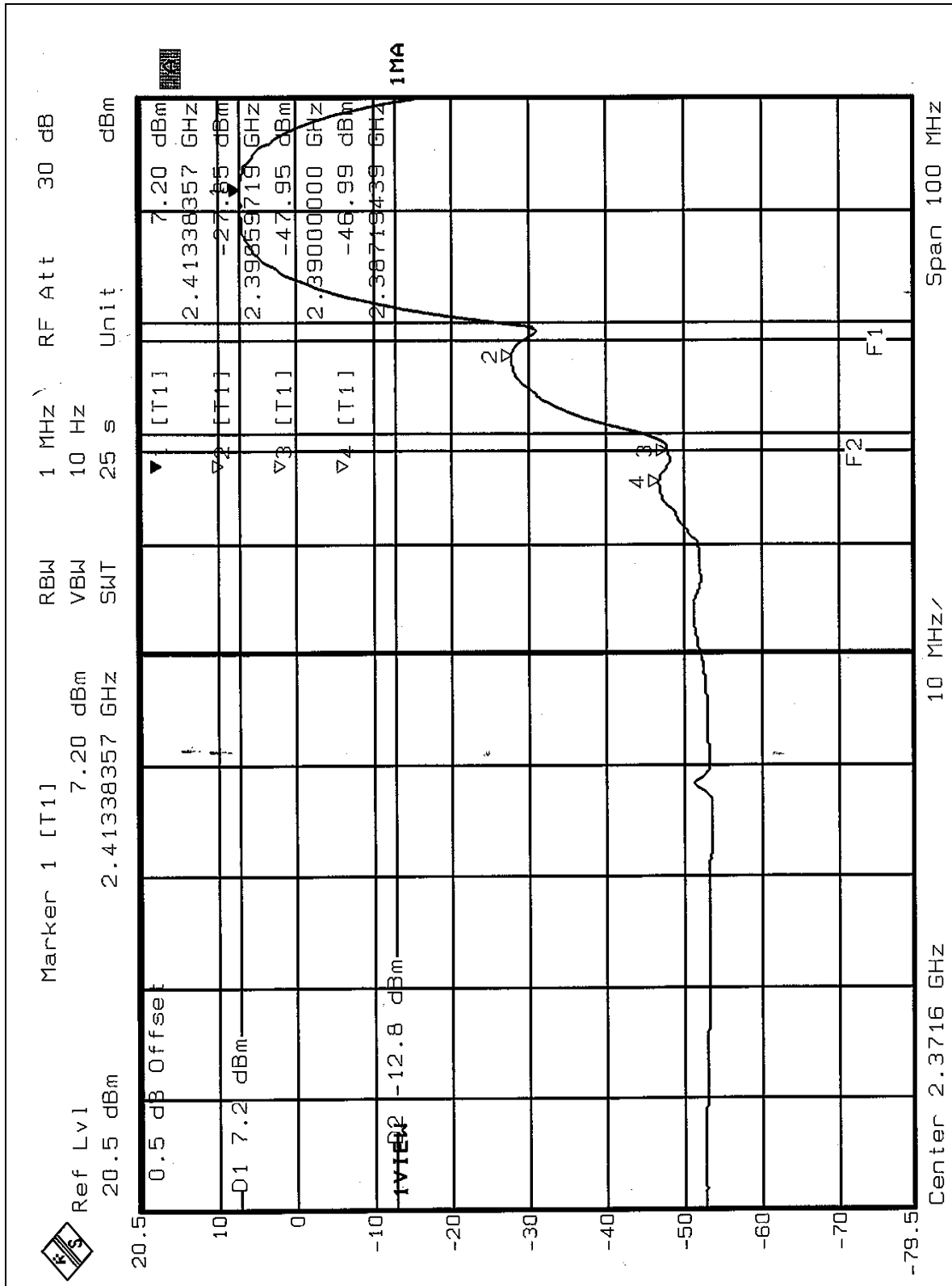
NOTE 2: The band edge emission plot of CCK technique on page 68 show 54.41dB delta between carrier maximum power and local maximum emission in restrict band (2.4877GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.88dBuV/m, so the maximum field strength in restrict band is $103.88 - 54.41 = 49.47$ dBuV/m which is under 54dBuV/m limit.

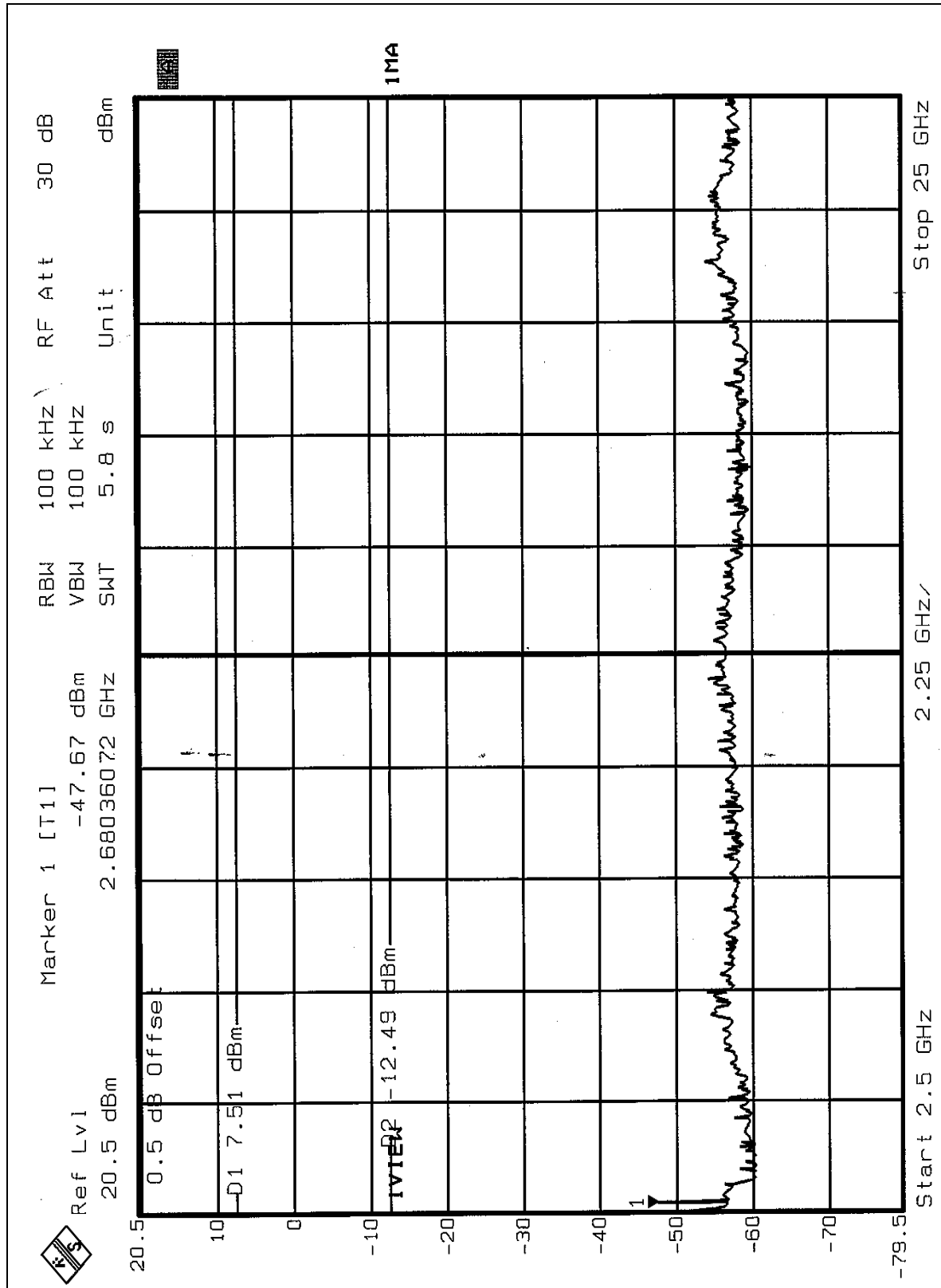
NOTE 3: The band edge emission plot of OFDM technique on page 70 show 45.42dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 97.42dBuV/m, so the maximum field strength in restrict band is $97.42 - 45.42 = 52.00$ dBuV/m which is under 54dBuV/m limit.

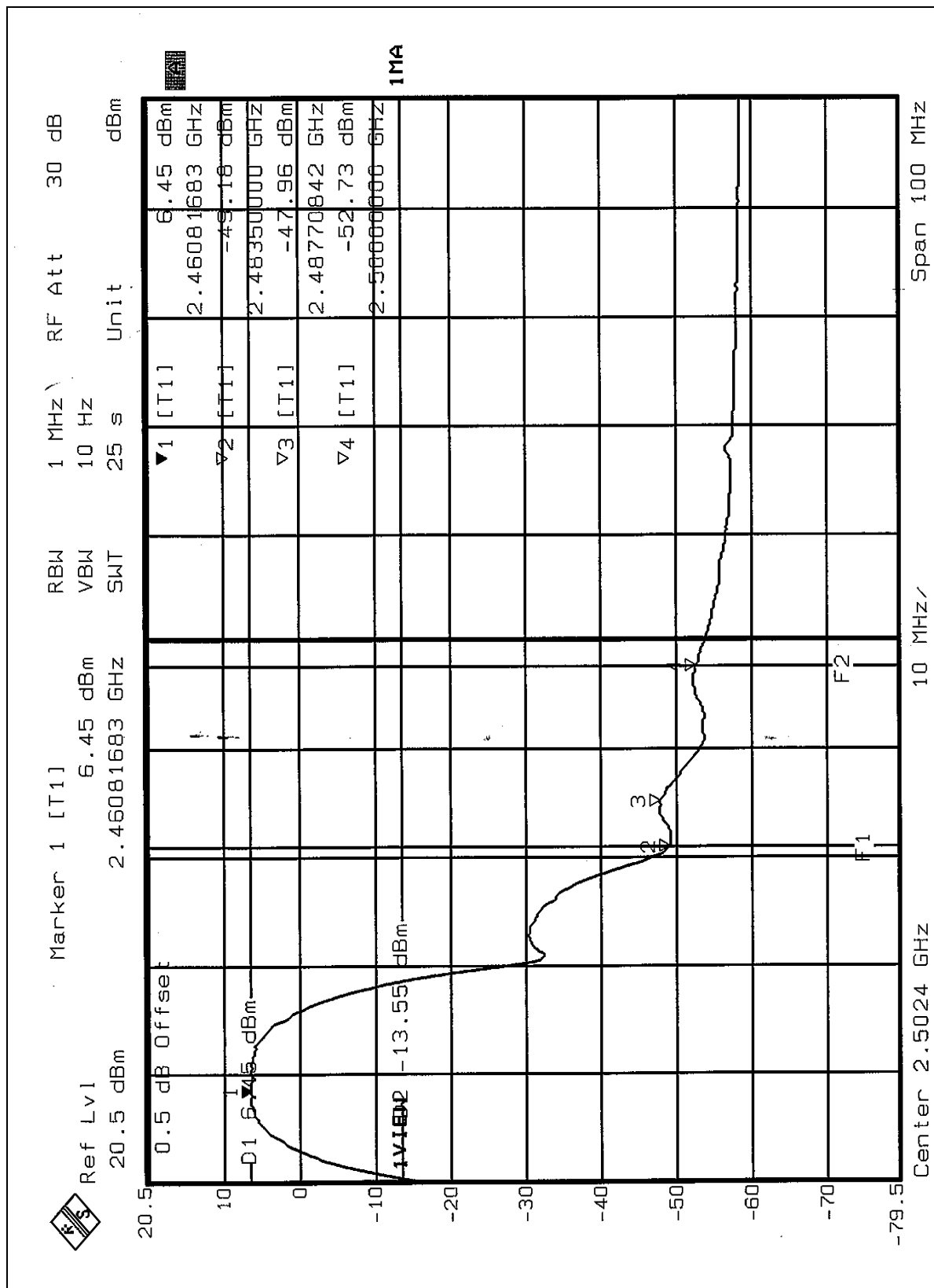
NOTE 4: The band edge emission plot of OFDM technique on page 72 show 46.72dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 98.57dBuV/m, so the maximum field strength in restrict band is $98.57 - 46.72 = 51.85$ dBuV/m which is under 54dBuV/m limit.

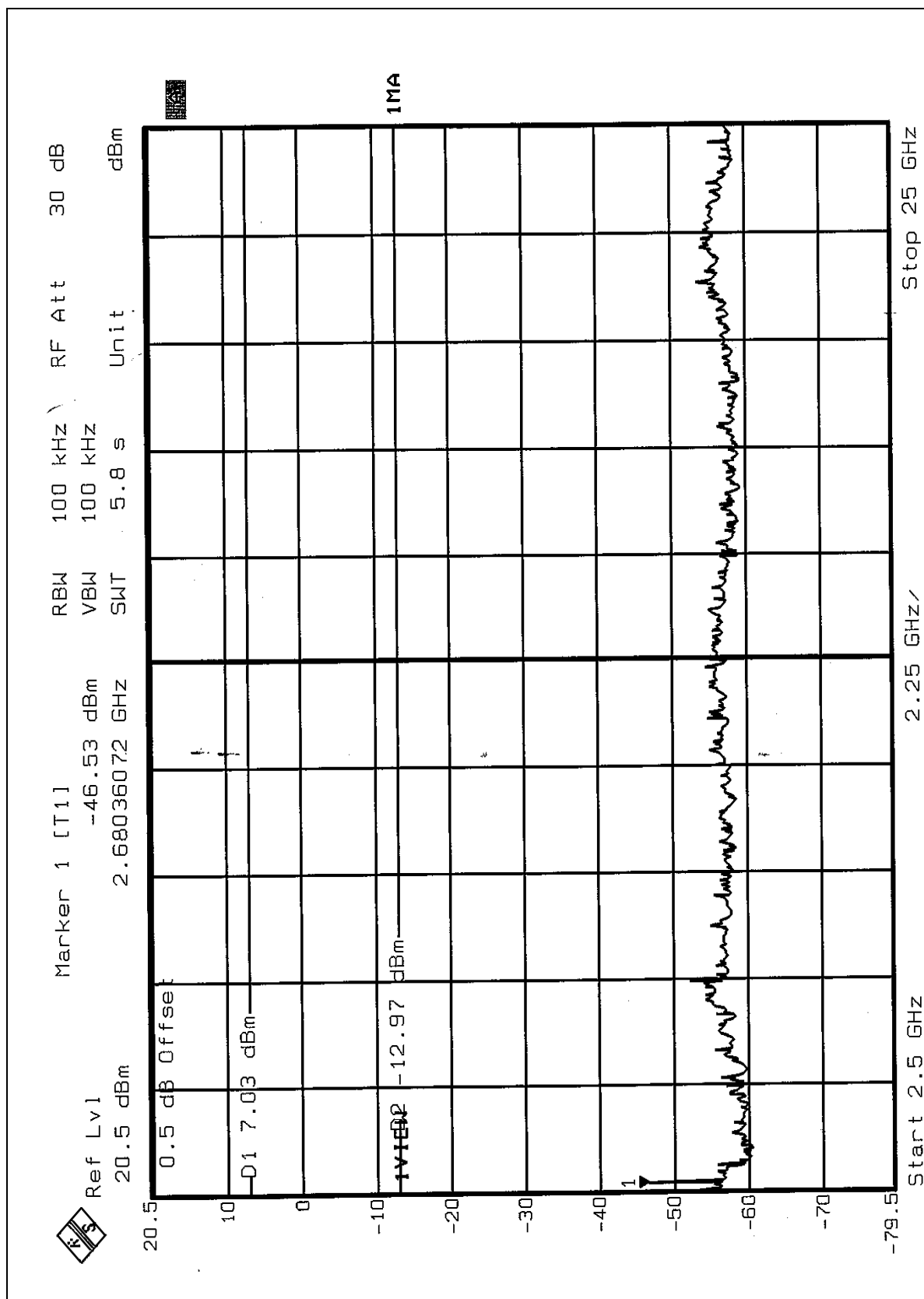
NOTE 5: The band edge emission plot of OFDM technique with Turbo mode on page 74 shows 45.82dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 98.86dBuV/m, so the maximum field strength in restrict band is $98.86 - 45.82 = 53.04$ dBuV/m which is under 54dBuV/m limit.

NOTE 6: The band edge emission plot of OFDM technique with Turbo mode on page 76 shows 46.85dB 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 6 at the item 4.2.7 is 98.86dBuV/m, so the maximum field strength in restrict band is $98.86 - 46.85 = 52.01$ dBuV/m which is under 54dBuV/m limit.

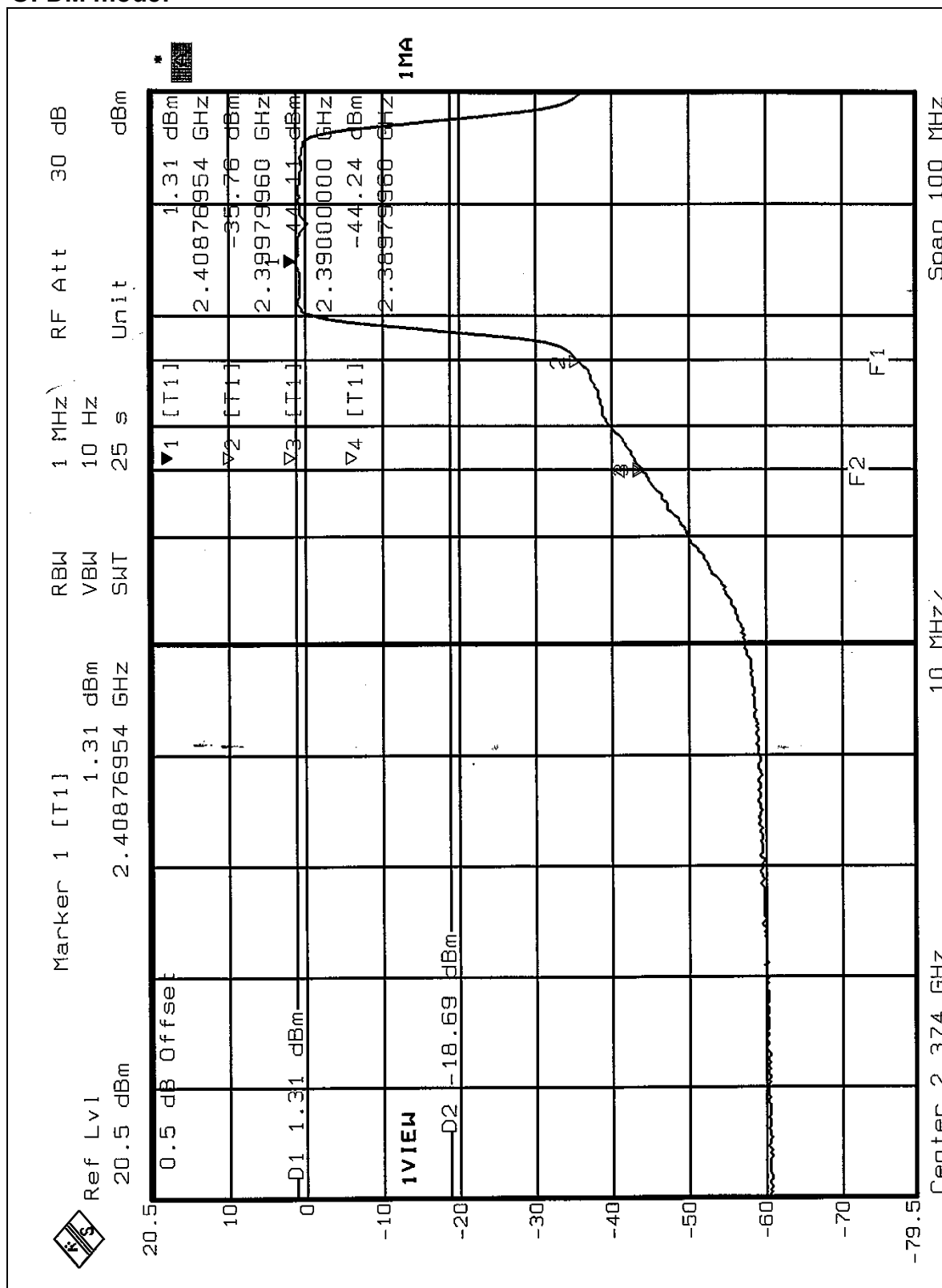
CCK mode:

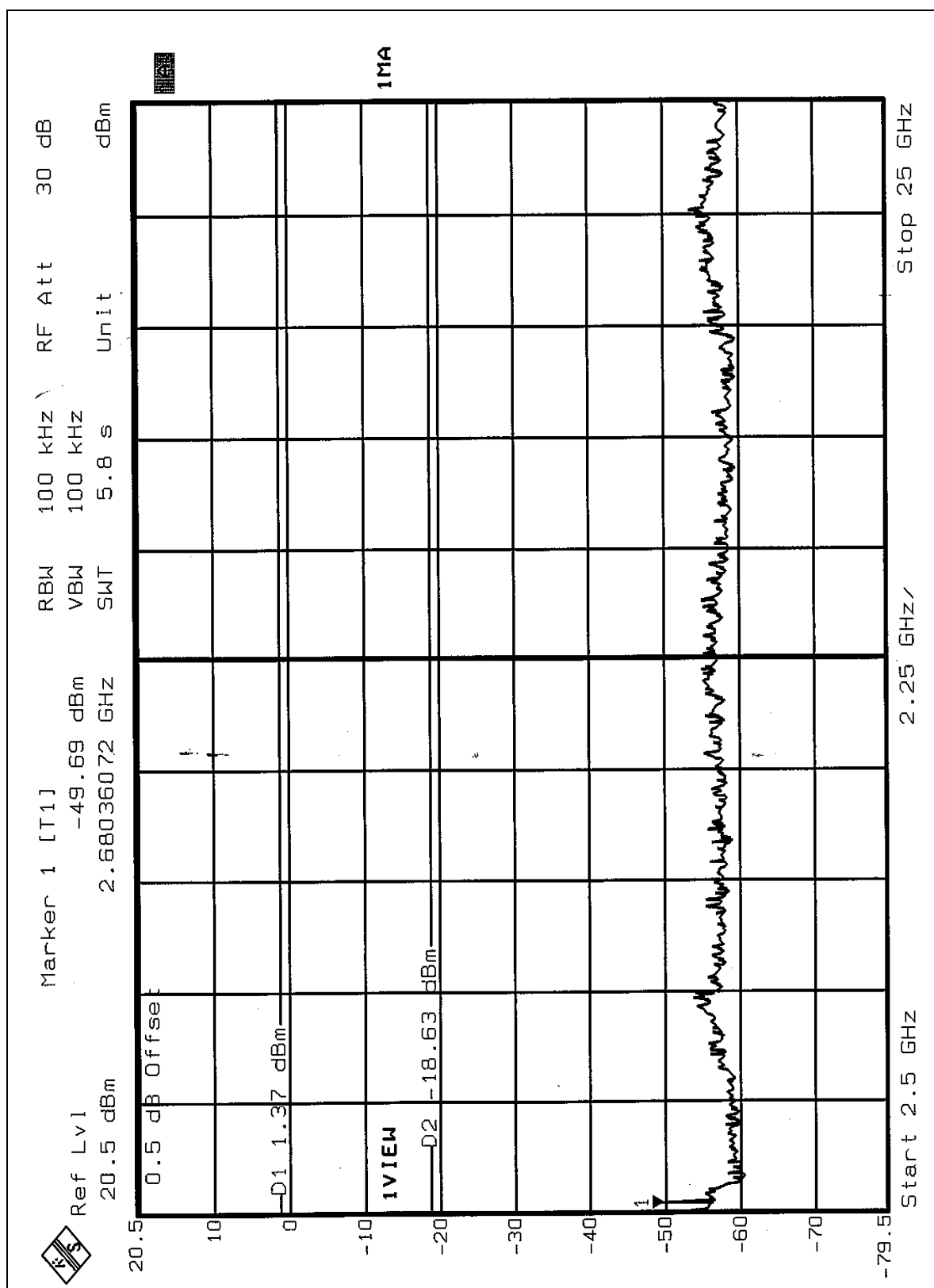


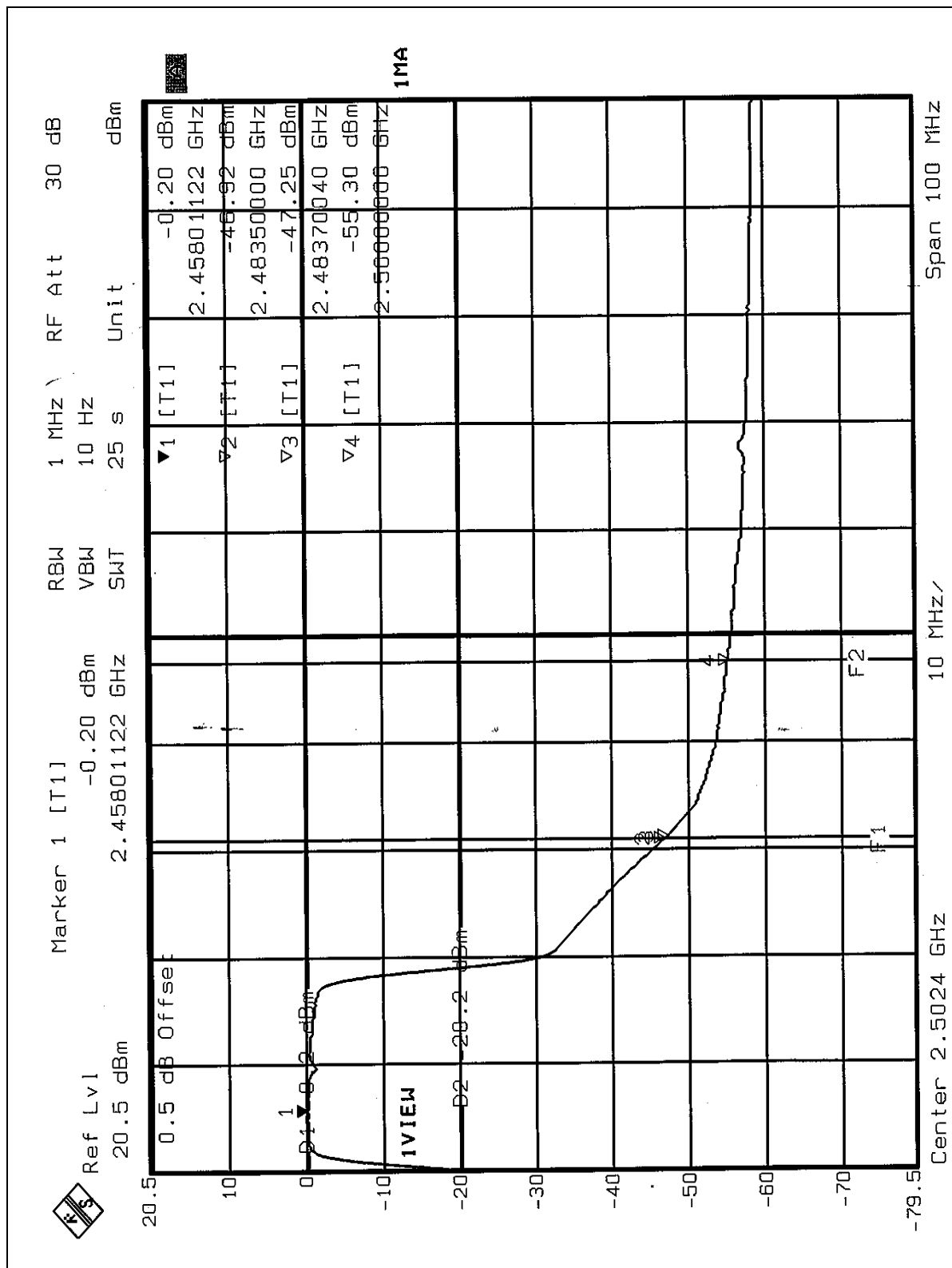


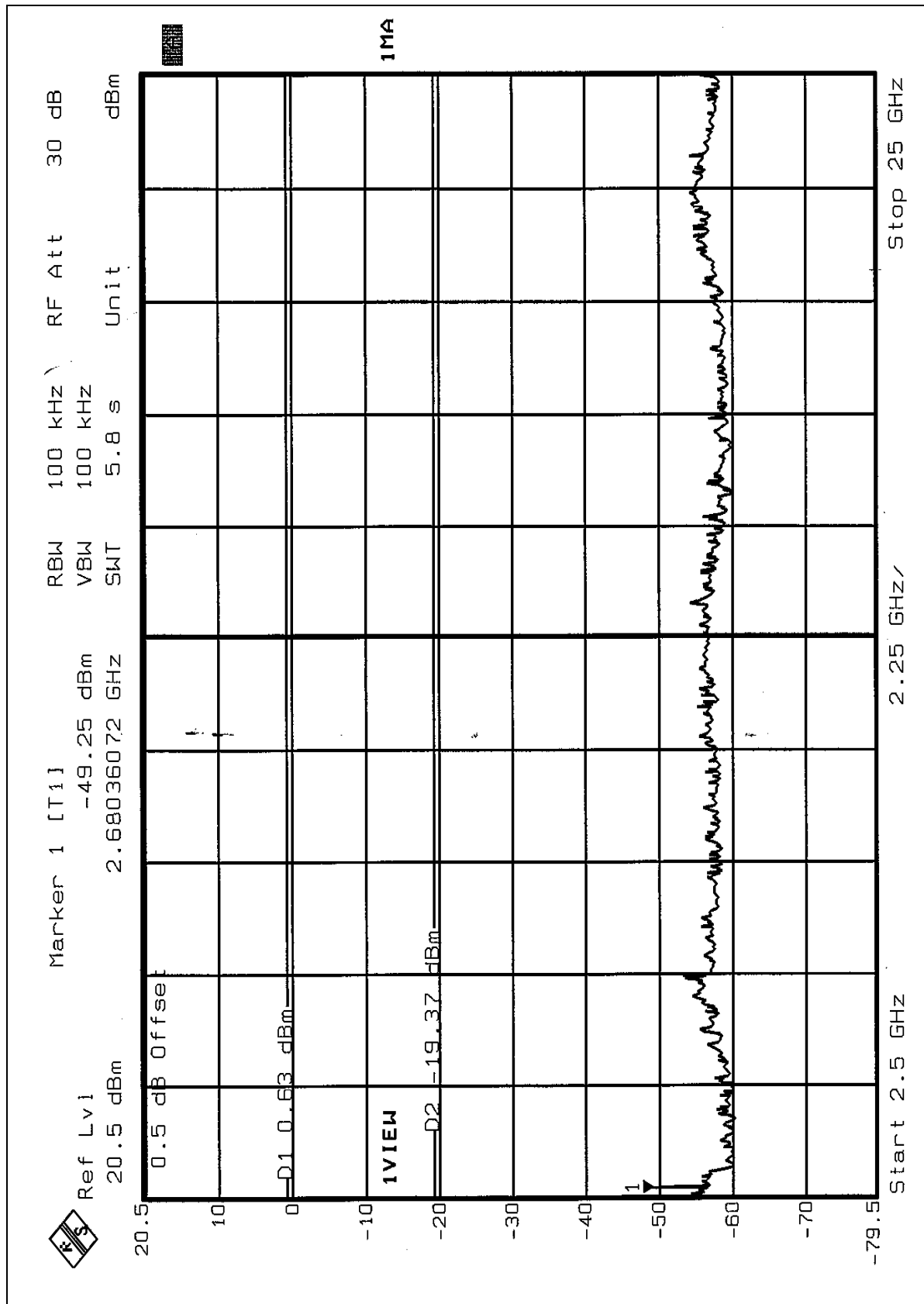


OFDM mode:

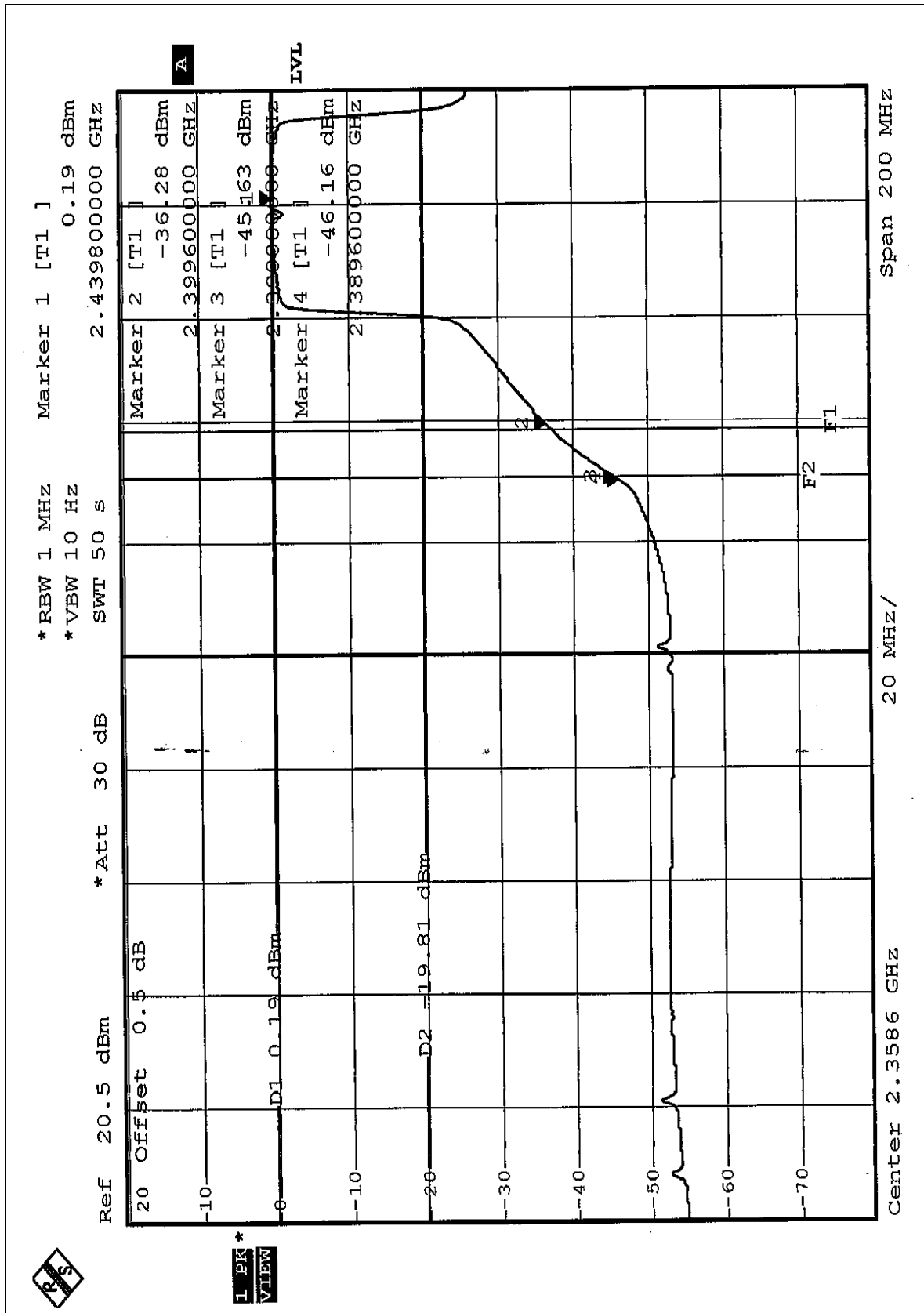


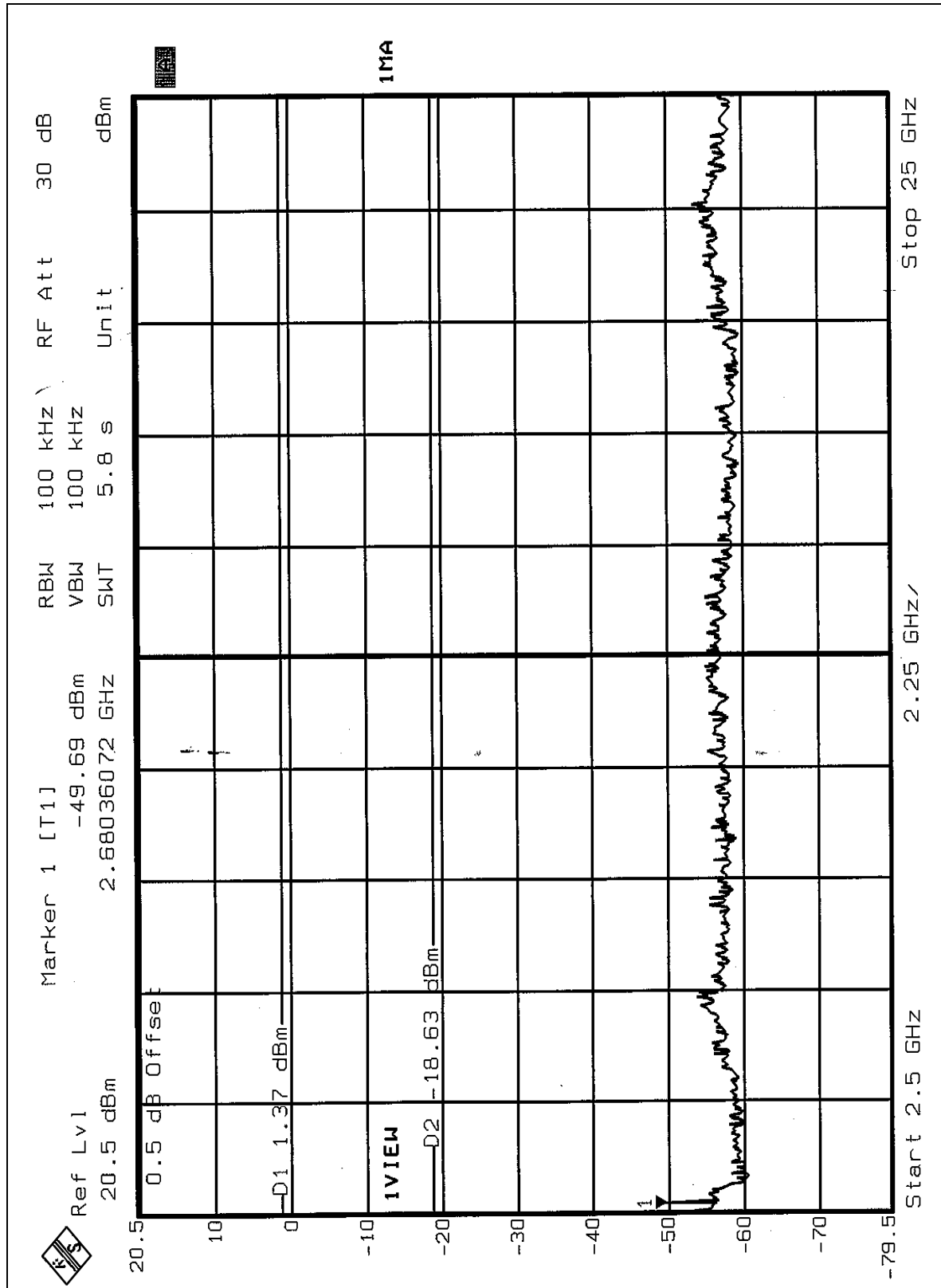


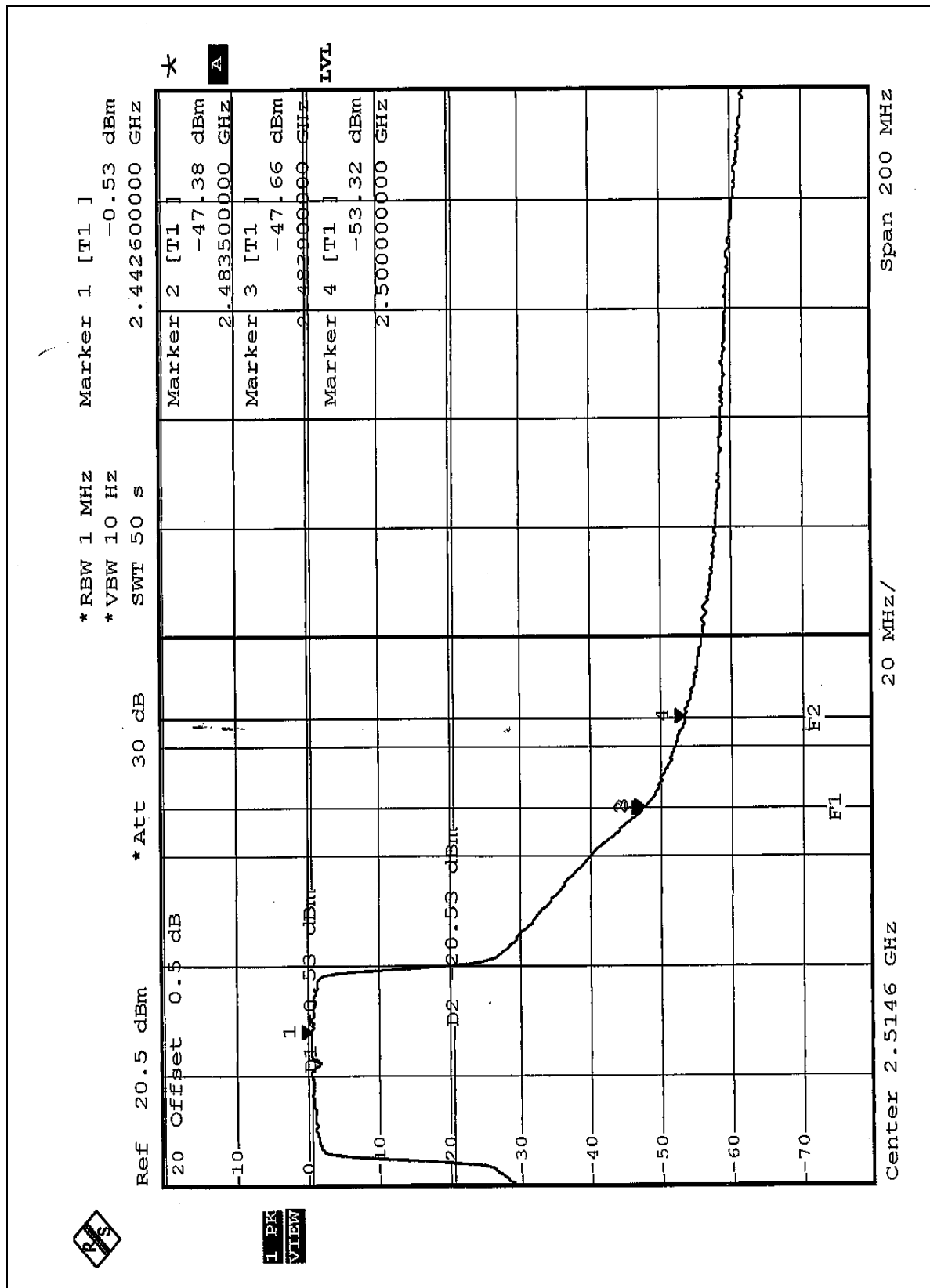


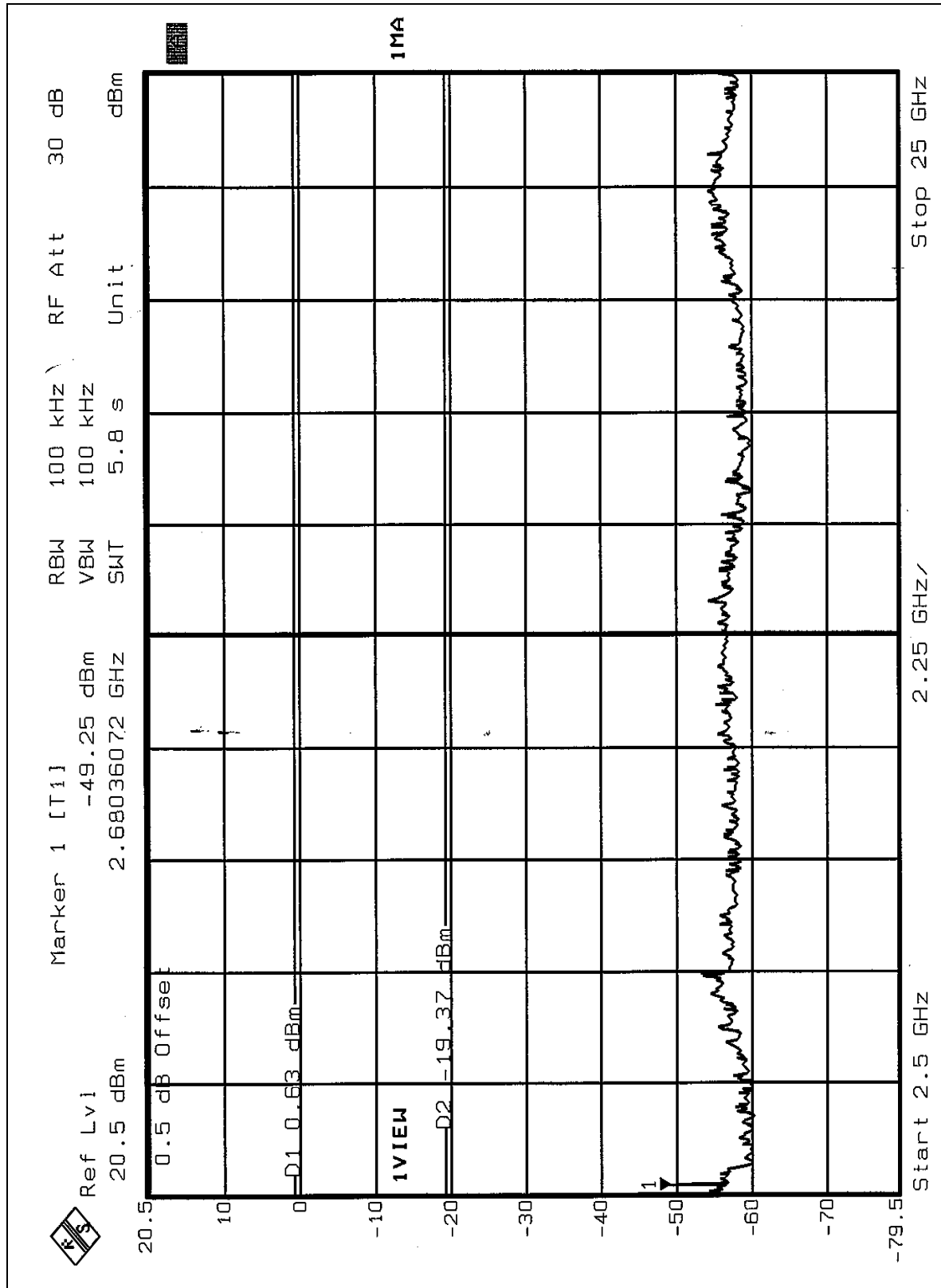


OFDM Turbo mode:











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 Printed antenna without connector. The maximum Gain of the antenna is 1dBi.

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

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

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	100312	Mar. 03, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100104	Mar. 02, 2005
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.



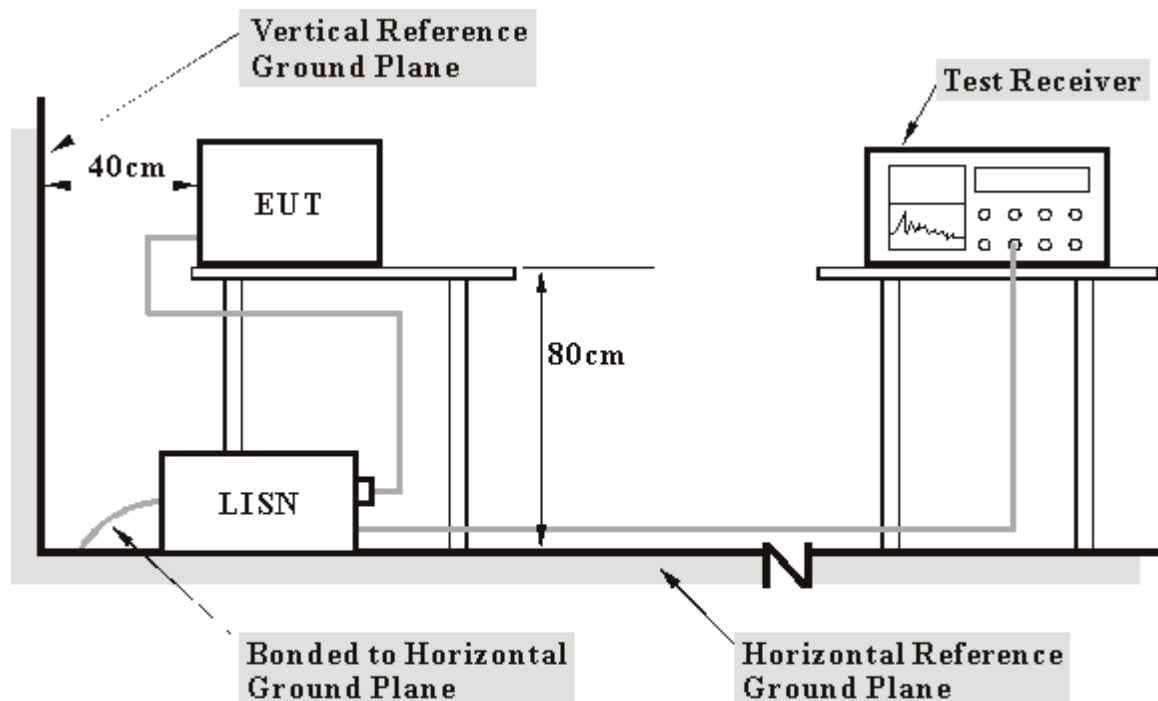
5.1.3 TEST PROCEDURES

- 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 150kHz to 30MHz 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

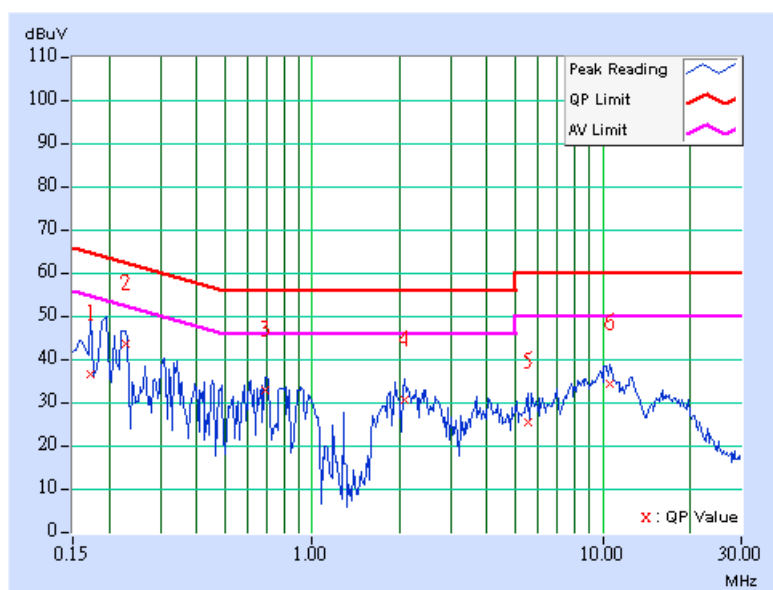
Same as 4.1.6

5.1.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.173	0.11	36.25	-	36.36	-	64.79	54.79	-28.43	-
2	0.228	0.12	43.32	-	43.44	-	62.52	52.52	-19.08	-
3	0.685	0.13	32.70	-	32.83	-	56.00	46.00	-23.17	-
4	2.090	0.16	30.46	-	30.62	-	56.00	46.00	-25.38	-
5	5.504	0.25	25.08	-	25.33	-	60.00	50.00	-34.67	-
6	10.539	0.35	33.98	-	34.33	-	60.00	50.00	-25.67	-

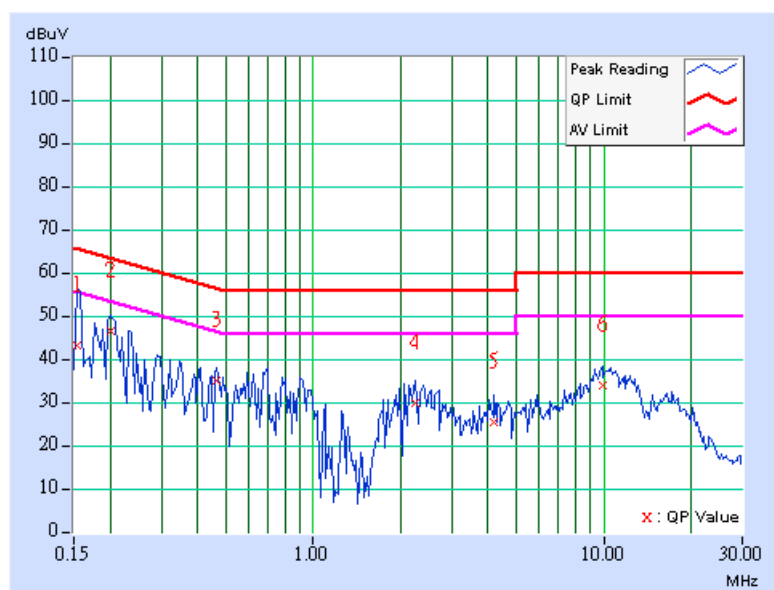
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
		6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY: Leo Hung	

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.10	42.92	-	43.02	-	65.79	55.79	-22.77	-
2	0.201	0.11	46.34	-	46.45	-	63.58	53.58	-17.13	-
3	0.463	0.12	34.84	-	34.96	-	56.65	46.65	-21.69	-
4	2.238	0.16	29.71	-	29.87	-	56.00	46.00	-26.13	-
5	4.207	0.20	25.30	-	25.50	-	56.00	46.00	-30.50	-
6	9.941	0.28	33.91	-	34.19	-	60.00	50.00	-25.81	-

- 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	68.3
5250~5350	-27	68.3
5725~5825	-27 *note 1	68.3
	-17 *note 2	78.3

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

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



5.2.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESIB7	100188	Jan. 13, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-157	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-407	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170241	Feb. 23, 2005
Preamplifier Agilent	8449B	3008A01961	Nov. 09, 2005
Preamplifier Agilent	8447D	2944A10629	Nov. 09, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218182/4	Mar. 04, 2005
RF signal cable HUBER+SUHNER	SUCOFLEX 104	218194/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower ADT.	AT100	AT93021702	NA
Turn Table ADT.	TT100.	TT93021702	NA
Controller ADT.	SC100.	SC93021702	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 1.
 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 IC4924-2.

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.

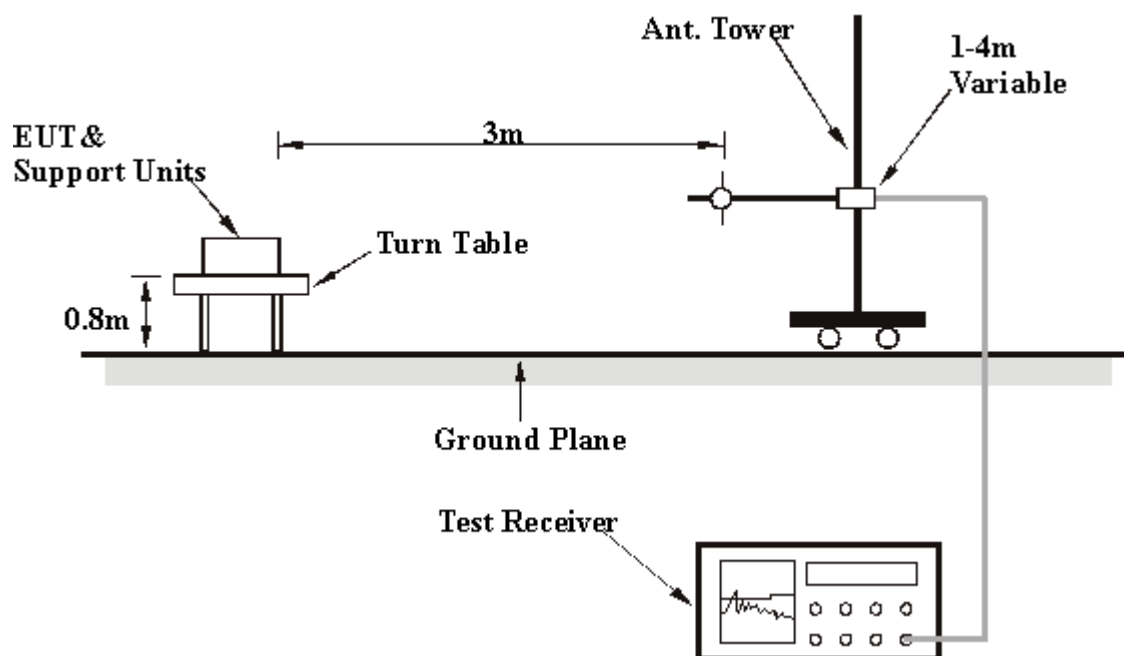
NOTE:

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 10 Hz 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 CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 991hPa	TESTED BY: Match Tsui	

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	57.21	22.95 QP	40.00	-17.05	2.00 H	271	8.97	13.99
2	113.59	37.17 QP	43.50	-6.33	1.50 H	262	24.80	12.37
3	168.02	32.35 QP	43.50	-11.15	1.50 H	256	18.23	14.12
4	199.12	37.09 QP	43.50	-6.41	1.50 H	7	25.63	11.46
5	232.16	27.63 QP	46.00	-18.37	1.50 H	274	15.04	12.59
6	298.26	30.75 QP	46.00	-15.25	1.00 H	340	16.28	14.47
7	332.37	38.59 QP	46.00	-7.41	1.00 H	336	23.35	15.24
8	362.40	32.29 QP	46.00	-13.71	1.00 H	55	16.36	15.92
9	399.34	34.41 QP	46.00	-11.59	1.00 H	31	17.68	16.74
10	440.16	32.64 QP	46.00	-13.36	2.00 H	124	14.83	17.81
11	465.43	34.72 QP	46.00	-11.28	2.00 H	256	16.45	18.27
12	531.52	29.07 QP	46.00	-16.93	1.50 H	199	9.73	19.34
13	597.62	34.19 QP	46.00	-11.81	1.50 H	85	13.24	20.95
14	665.65	30.18 QP	46.00	-15.82	1.00 H	355	8.31	21.87
15	797.84	30.19 QP	46.00	-15.81	1.00 H	214	6.38	23.81
16	933.91	27.17 QP	46.00	-18.83	1.50 H	163	1.70	25.47

REMARKS:

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

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
CHANNEL	Channel 5	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	24deg. C, 60%RH, 99hPa	TESTED BY: Match Tsui	

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	57.21	30.10 QP	40.00	-9.90	1.00 V	205	16.11	13.99
2	84.43	29.62 QP	40.00	-10.38	1.00 V	346	19.55	10.07
3	129.14	34.84 QP	43.50	-8.66	1.00 V	10	21.17	13.67
4	162.18	36.63 QP	43.50	-6.87	1.00 V	292	21.95	14.68
5	333.25	40.21 QP	46.00	-5.79	2.00 V	232	24.95	15.26
6	364.35	32.02 QP	46.00	-13.98	1.00 V	319	16.06	15.97
7	401.28	29.91 QP	46.00	-16.09	1.50 V	349	13.12	16.78
8	440.16	34.49 QP	46.00	-11.51	1.00 V	337	16.68	17.81
9	467.37	31.02 QP	46.00	-14.98	2.00 V	211	12.72	18.30
10	531.52	29.69 QP	46.00	-16.31	1.00 V	334	10.36	19.34
11	593.73	32.12 QP	46.00	-13.88	1.50 V	346	11.27	20.84
12	607.33	32.99 QP	46.00	-13.01	1.50 V	322	11.88	21.11
13	652.04	29.60 QP	46.00	-16.40	1.00 V	19	7.90	21.71
14	667.60	32.20 QP	46.00	-13.80	1.00 V	238	10.30	21.90
15	799.78	29.30 QP	46.00	-16.70	1.50 V	256	5.49	23.82
16	931.96	28.83 QP	46.00	-17.17	1.00 V	274	3.38	25.45

- 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 CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	1
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3453.00	56.74 PK	68.30	-11.56	1.11 H	162	21.16	35.58
2	#5150.00	60.72 PK	74.00	-13.28	1.07 H	44	21.62	39.10
2	#5150.00	50.42 AV	54.00	-3.58	1.07 H	44	11.32	39.10
3	*5180.00	110.34 PK			1.07 H	44	71.17	39.17
3	*5180.00	100.04 AV			1.07 H	44	60.87	39.17
4	6906.00	53.49 PK	68.30	-14.81	1.13 H	165	11.98	41.51
5	10360.00	59.73 PK	68.30	-8.57	1.56 H	50	14.44	45.29

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	3453.00	50.18 PK	68.30	-18.12	1.00 V	81	14.60	35.58
2	#5150.00	60.01 PK	74.00	-13.99	1.76 V	265	20.91	39.10
2	#5150.00	50.20 AV	54.00	-3.80	1.76 V	265	11.10	39.10
3	*5180.00	109.63 PK			1.76 V	265	70.46	39.17
3	*5180.00	99.82 AV			1.76 V	265	60.65	39.17
4	6906.00	55.83 PK	68.30	-12.47	1.18 V	115	14.32	41.51
5	10360.00	66.45 PK	68.30	-1.85	1.53 V	105	21.16	45.29

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3493.00	54.41 PK	68.30	-13.89	1.09 H	360	18.72	35.70
2	*5240.00	113.33 PK			1.44 H	62	74.15	39.18
2	*5240.00	103.16 AV			1.44 H	62	63.98	39.18
3	6986.00	54.17 PK	68.30	-14.13	1.54 H	10	12.47	41.70
4	10480.00	59.95 PK	68.30	-8.35	1.52 H	49	13.86	46.08

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	3493.00	54.88 PK	68.30	-13.42	1.20 V	252	19.19	35.70
2	*5240.00	111.08 PK			1.44 V	261	71.90	39.18
2	*5240.00	100.68 AV			1.44 V	261	61.50	39.18
3	6986.00	53.44 PK	68.30	-14.86	1.39 V	50	11.74	41.70
4	10480.00	66.15 PK	68.30	-2.15	1.81 V	96	20.06	46.08

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	5
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3506.00	56.17 PK	68.30	-12.13	1.09 H	83	20.43	35.73
2	*5260.00	111.62 PK			1.04 H	45	72.46	39.16
2	*5260.00	101.29 AV			1.04 H	45	62.13	39.16
3	7013.00	53.96 PK	68.30	-14.34	1.61 H	8	12.11	41.85
4	10520.00	59.06 PK	68.30	-9.24	1.19 H	253	12.91	46.16

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	3506.00	50.19 PK	68.30	-18.11	1.00 V	78	14.45	35.73
2	*5260.00	109.99 PK			1.44 V	269	70.83	39.16
2	*5260.00	99.91 AV			1.44 V	269	60.75	39.16
3	7013.00	54.16 PK	68.30	-14.14	1.85 V	47	12.31	41.85
4	10520.00	67.10 PK	68.30	-1.20	1.53 V	71	20.95	46.16

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#": The radiated frequency falling in the restricted band.

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	8
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	110.53 PK			1.42 H	60	71.38	39.15
1	*5320.00	100.60 AV			1.42 H	60	61.45	39.15
2	#5350.00	60.87 PK	74.00	-13.13	1.42 H	60	21.67	39.20
2	#5350.00	50.94 AV	54.00	-3.06	1.42 H	60	11.74	39.20
3	7093.00	55.05 PK	68.30	-13.25	1.56 H	360	12.53	42.52
4	#10640.00	57.07 PK	74.00	-16.93	1.40 H	244	10.84	46.23
4	#10640.00	45.28 AV	54.00	-8.72	1.40 H	244	-0.95	46.23

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	109.78 PK			1.42 V	60	70.63	39.15
1	*5320.00	99.71 AV			1.42 V	60	60.56	39.15
2	#5350.00	60.12 PK	74.00	-13.88	1.42 V	60	20.92	39.20
2	#5350.00	50.05 AV	54.00	-3.95	1.42 V	60	10.85	39.20
3	7093.00	54.83 PK	68.30	-13.47	1.49 V	51	12.31	42.52
4	#10640.00	65.34 PK	74.00	-8.66	1.65 V	110	19.11	46.23
4	#10640.00	52.75 AV	54.00	-1.25	1.65 V	110	6.52	46.23

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	9
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	#3829.00	50.14 PK	74.00	-23.86	1.00 H	360	13.80	36.34
1	#3829.00	42.95 AV	54.00	-11.05	1.00 H	360	6.61	36.34
2	*5745.00	109.38 PK			1.04 H	42	68.48	40.90
2	*5745.00	99.20 AV			1.04 H	42	58.30	40.90
3	#11490.00	61.39 PK	74.00	-12.61	1.50 H	54	14.01	47.38
3	#11490.00	49.25 AV	54.00	-4.75	1.50 H	54	1.87	47.38

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	#3829.00	51.13 PK	74.00	-22.87	1.48 V	210	14.79	36.34
1	#3829.00	44.63 AV	54.00	-9.37	1.48 V	210	8.29	36.34
2	*5745.00	108.16 PK			1.27 V	265	67.26	40.90
2	*5745.00	97.64 AV			1.27 V	265	56.74	40.90
3	#11490.00	66.28 PK	74.00	-7.72	1.67 V	116	18.90	47.38
3	#11490.00	52.94 AV	54.00	-1.06	1.67 V	116	5.56	47.38

NOTE:

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.
7. The limit value is defined as per 15.247



EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	11
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 30 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	#3856.00	44.24 PK	74.00	-29.76	1.00 H	141	7.81	36.43
1	#3856.00	42.38 AV	54.00	-11.62	1.00 H	141	5.95	36.43
2	*5785.00	109.67 PK			1.27 H	45	68.62	41.05
2	*5785.00	99.78 AV			1.27 H	45	58.73	41.05
3	#11570.00	59.77 PK	74.00	-14.23	1.50 H	95	12.30	47.47
3	#11570.00	47.58 AV	54.00	-6.42	1.50 H	95	0.11	47.47

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#3856.00	50.01 PK	74.00	-23.99	1.02 V	105	13.58	36.43
1	#3856.00	42.21 AV	54.00	-11.79	1.02 V	105	5.78	36.43
2	*5785.00	108.60 PK			1.28 V	266	67.55	41.05
2	*5785.00	98.98 AV			1.28 V	266	57.93	41.05
3	#11570.00	66.47 PK	74.00	-7.53	1.53 V	92	19.00	47.47
3	#11570.00	52.47 AV	54.00	-1.53	1.53 V	92	5.00	47.47

NOTE:

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.
- 7.The limit value is defined as per 15.247

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal Mode	CHANNEL	13
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	#3883.00	49.46 PK	74.00	-24.54	1.11 H	1	12.94	36.52
1	#3883.00	40.76 AV	54.00	-13.24	1.11 H	1	4.24	36.52
2	*5825.00	112.54 PK			1.33 H	67	71.59	40.95
2	*5825.00	102.31 AV			1.33 H	67	61.36	40.95
3	#11650.00	58.81 PK	74.00	-15.19	1.41 H	242	11.09	47.72
3	#11650.00	46.54 AV	54.00	-7.46	1.41 H	242	-1.18	47.72

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	#3883.00	51.80 PK	74.00	-22.20	1.44 V	211	15.28	36.52
1	#3883.00	44.70 AV	54.00	-9.30	1.44 V	211	8.18	36.52
2	*5825.00	110.10 PK			1.04 V	268	69.15	40.95
2	*5825.00	99.77 AV			1.04 V	268	58.82	40.95
3	#11650.00	63.83 PK	74.00	-10.17	1.38 V	71	16.11	47.72
3	#11650.00	51.00 AV	54.00	-3.00	1.38 V	71	3.28	47.72

NOTE:

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.
7. The limit value is defined as per 15.247

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo Mode	CHANNEL	1
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3473.00	55.71 PK	68.30	-12.59	1.27 H	356	20.07	35.64
2	#5150.00	64.15 PK	74.00	-9.85	1.06 H	43	25.05	39.10
2	#5150.00	52.98 AV	54.00	-1.02	1.06 H	43	13.88	39.10
3	*5210.00	107.98 PK			1.06 H	43	68.77	39.21
3	*5210.00	97.93 AV			1.06 H	43	58.72	39.21
4	6946.00	54.02 PK	68.30	-14.28	1.00 H	1	12.41	41.61
5	10420.00	59.08 PK	68.30	-9.22	1.14 H	160	13.31	45.77

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	3473.00	53.78 PK	68.30	-14.52	1.72 V	267	18.14	35.64
2	#5150.00	62.12 PK	74.00	-11.88	1.16 V	309	23.02	39.10
2	#5150.00	52.50 AV	54.00	-1.50	1.16 V	309	13.40	39.10
3	*5210.00	105.86 PK			1.16 V	309	66.65	39.21
3	*5210.00	96.24 AV			1.16 V	309	57.03	39.21
4	6946.00	52.29 PK	68.30	-16.01	1.59 V	33	10.68	41.61
5	10420.00	64.91 PK	68.30	-3.39	1.78 V	109	19.14	45.77

NOTE:

1. Emission level = Raw value+ Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo Mode	CHANNEL	2
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3500.00	50.07 PK	68.30	-18.23	1.26 H	10	14.35	35.72
2	*5250.00	109.96 PK			1.43 H	53	70.79	39.17
2	*5250.00	100.00 AV			1.43 H	53	60.83	39.17
3	7000.00	53.41 PK	68.30	-14.89	1.37 H	354	11.67	41.74
4	10500.00	60.57 PK	68.30	-7.73	1.47 H	360	14.38	46.19

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	3500.00	48.64 PK	68.30	-19.66	1.04 V	94	12.92	35.72
2	*5250.00	106.01 PK			1.13 V	305	66.84	39.17
2	*5250.00	96.53 AV			1.13 V	305	57.36	39.17
3	7000.00	53.18 PK	68.30	-15.12	1.01 V	316	11.44	41.74
4	10500.00	65.28 PK	68.30	-3.02	1.68 V	77	19.09	46.19

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. “#”The radiated frequency falling in the restricted band.

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo Mode	CHANNEL	3
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	3526.00	49.31 PK	68.30	-18.99	1.09 H	360	13.52	35.79
2	*5290.00	107.84 PK			1.04 H	44	68.71	39.13
2	*5290.00	98.47 AV			1.04 H	44	59.34	39.13
3	#5350.00	63.00 PK	74.00	-11.00	1.04 H	44	23.80	39.20
3	#5350.00	53.00 AV	54.00	-1.00	1.04 H	44	13.80	39.20
4	7053.00	54.47 PK	68.30	-13.83	1.60 H	12	12.29	42.18
5	10580.00	58.43 PK	68.30	-9.87	1.33 H	160	12.36	46.07

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	3526.00	50.28 PK	68.30	-18.02	1.42 V	209	14.49	35.79
2	*5290.00	107.33 PK			1.55 V	256	68.20	39.13
2	*5290.00	97.84 AV			1.55 V	256	58.71	39.13
3	#5350.00	62.44 PK	68.30	-5.86	1.55 V	256	23.24	39.20
3	#5350.00	52.95 AV	54.00	-1.05	1.55 V	256	13.75	39.20
4	7053.00	54.32 PK	68.30	-13.98	1.38 V	55	12.14	42.18
5	10580.00	62.74 PK	68.30	-5.56	1.37 V	96	16.67	46.07

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.
5. "*" : Fundamental frequency
6. "#" The radiated frequency falling in the restricted band.

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo Mode	CHANNEL	4
FREQUENCY RANGE	1 ~40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	#3840.00	52.77 PK	74.00	-21.23	1.25 H	350	16.39	36.38
1	#3840.00	46.28 AV	54.00	-7.72	1.25 H	350	9.90	36.38
2	*5760.00	107.84 PK			1.29 H	33	66.88	40.96
2	*5760.00	98.47 AV			1.29 H	33	57.51	40.96
3	#7680.00	54.11 PK	74.00	-19.89	1.01 H	350	10.77	43.34
3	#7680.00	42.17 AV	54.00	-11.83	1.01 H	350	-1.17	43.34
4	#11520.00	61.54 PK	74.00	-12.46	1.15 H	150	14.13	47.41
4	#11520.00	48.55 AV	54.00	-5.45	1.15 H	150	1.14	47.41

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	#3840.00	51.57 PK	74.00	-22.43	1.56 V	286	15.20	36.38
1	#3840.00	45.54 AV	54.00	-8.46	1.56 V	286	9.17	36.38
2	*5760.00	105.35 PK			1.55 V	265	64.39	40.96
2	*5760.00	95.75 AV			1.55 V	265	54.79	40.96
3	#7680.00	53.98 PK	74.00	-20.02	1.44 V	75	10.64	43.34
3	#7680.00	41.97 AV	54.00	-12.03	1.44 V	75	-1.37	43.34
4	#11520.00	64.96 PK	74.00	-9.04	1.45 V	118	17.54	47.41
4	#11520.00	51.91 AV	54.00	-2.09	1.45 V	118	4.49	47.41

NOTE:

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.
7. The limit value is defined as per 15.247

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo Mode	CHANNEL	5
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25deg. C, 55%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Match Tsui		

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	#3866.00	51.78 PK	74.00	-22.22	1.25 H	100	15.32	36.46
1	#3866.00	45.88 AV	54.00	-8.12	1.25 H	100	9.42	36.46
2	*5800.00	108.01 PK			1.28 H	350	66.90	41.11
2	*5800.00	99.70 AV			1.28 H	350	58.59	41.11
3	#7732.00	55.01 PK	74.00	-18.99	1.04 H	360	11.61	43.40
3	#7732.00	43.18 AV	54.00	-10.82	1.04 H	360	-0.22	43.40
4	#11600.00	60.28 PK	74.00	-13.72	1.15 H	200	12.78	47.50
4	#11600.00	49.10 AV	54.00	-4.90	1.15 H	200	1.60	47.50

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	#3866.00	50.79 PK	74.00	-23.21	1.60 V	260	14.33	36.46
1	#3866.00	44.88 AV	54.00	-9.12	1.60 V	260	8.42	36.46
2	*5800.00	106.11 PK			1.50 V	300	65.00	41.11
2	*5800.00	96.75 AV			1.50 V	300	55.64	41.11
3	#7732.00	52.49 PK	74.00	-21.51	1.40 V	100	9.09	43.40
3	#7732.00	40.61 AV	54.00	-13.39	1.40 V	100	-2.79	43.40
4	#11600.00	65.09 PK	74.00	-8.91	1.45 V	112	17.59	47.50
4	#11600.00	52.01 AV	54.00	-1.99	1.45 V	112	4.51	47.50

NOTE:

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.
7. The limit value is defined as per 15.247

FOR FREQUENCY 5.15~5.35GHz**5.3 PEAK TRANSMIT POWER MEASUREMENT****5.3.1 LIMITS OF PEAK TRANSMIT POWER MEASUREMENT**

Frequency Band	Limit
5.15 – 5.25GHz	The lesser of 50mW (17dBm) or 4dBm + 10logB
5.25 – 5.35GHz	The lesser of 250mW (24dBm) or 11dBm + 10logB
5.725 – 5.825GHz	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
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

1. The transmitter output was connected to the spectrum analyzer.
2. Set span to encompass the entire emission bandwidth of the signal.
3. Set RBW to 1MHz, VBW to 300kHz.
4. 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

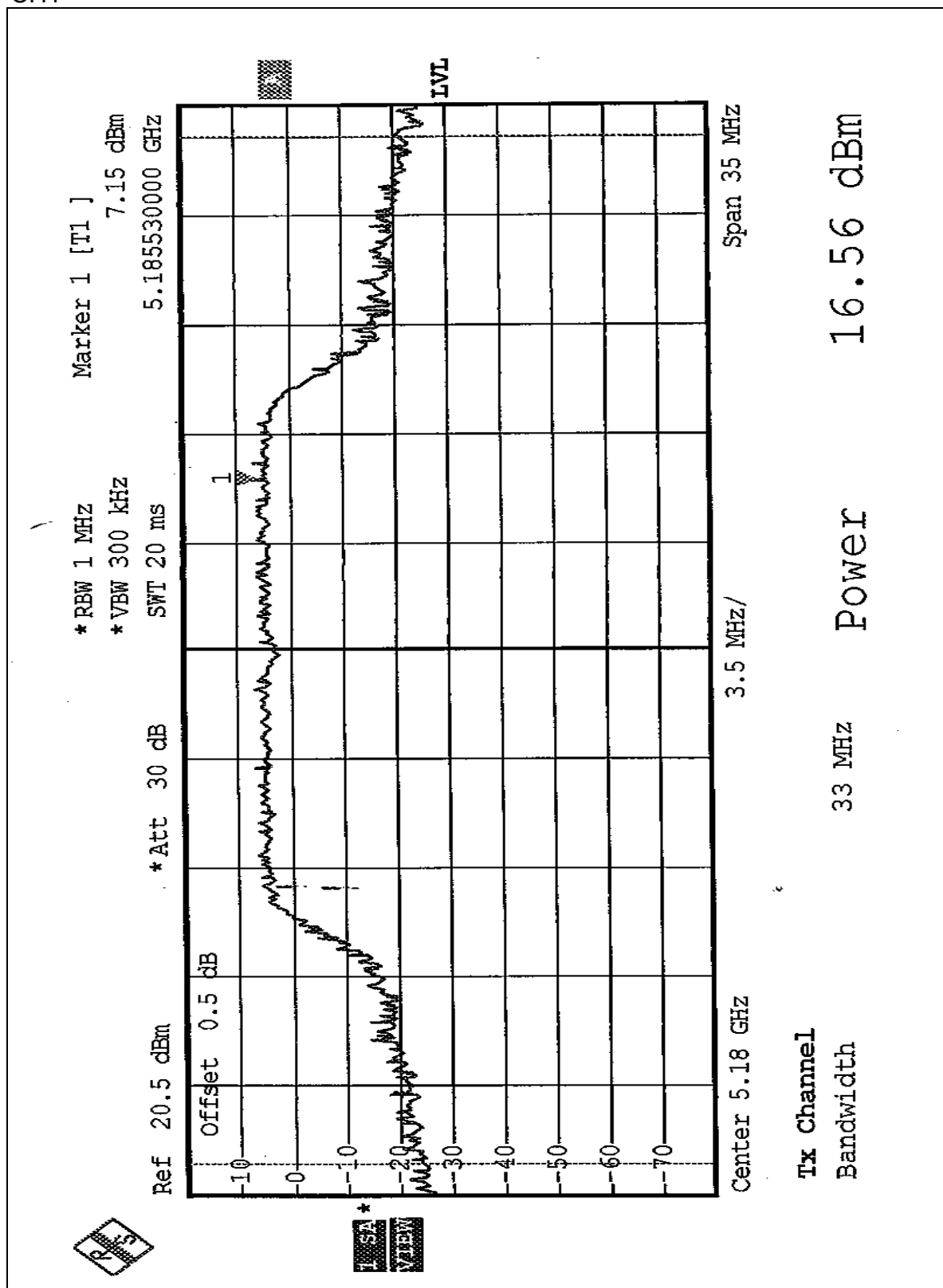
EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	45.290	16.56	17.00	32.76	PASS
4	5240	35.481	15.50	17.00	33.67	PASS
5	5260	35.892	15.55	24.00	33.11	PASS
8	5320	25.119	14.00	24.00	27.51	PASS

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

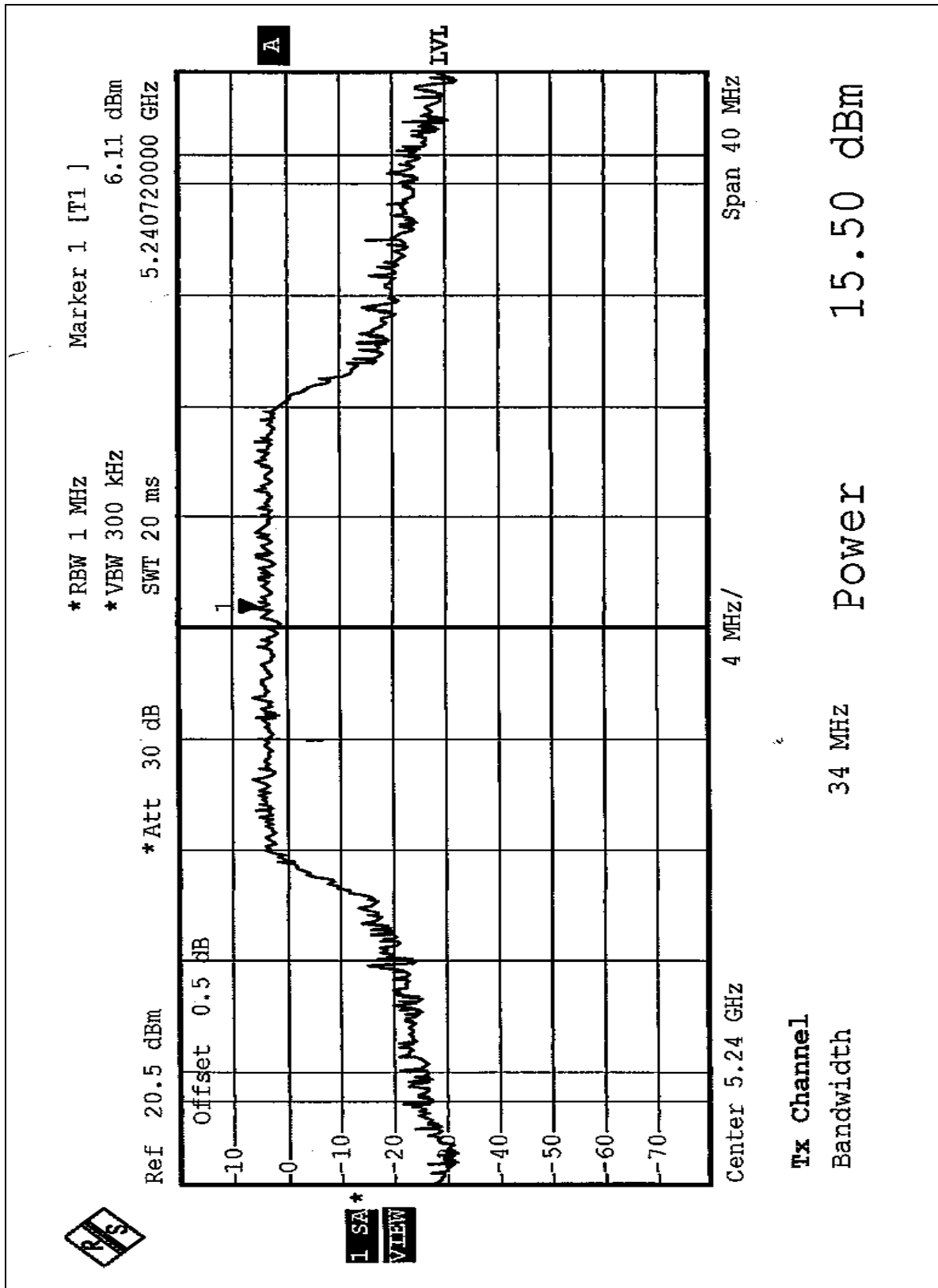


Peak Power Output:
CH1



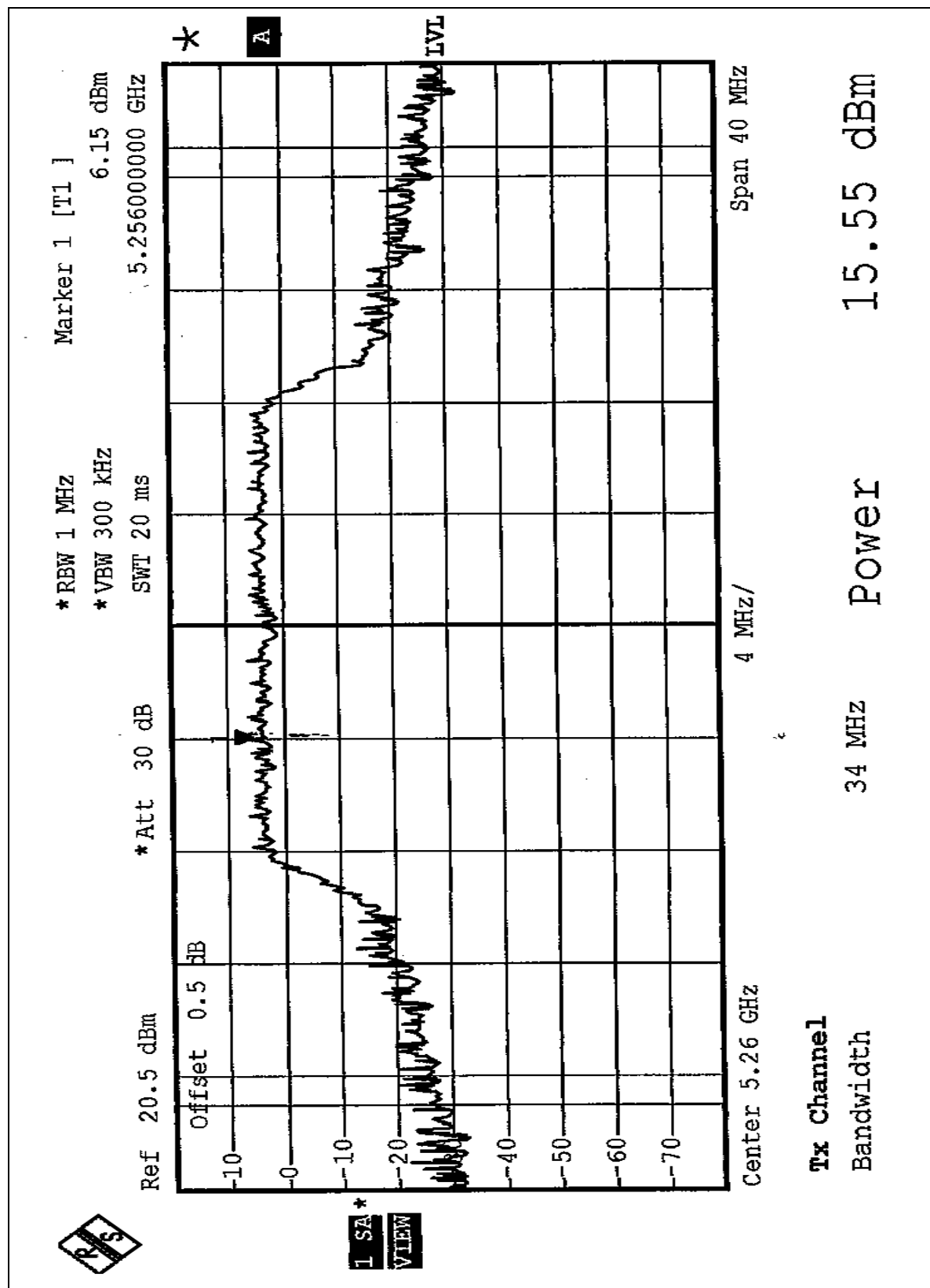


CH4

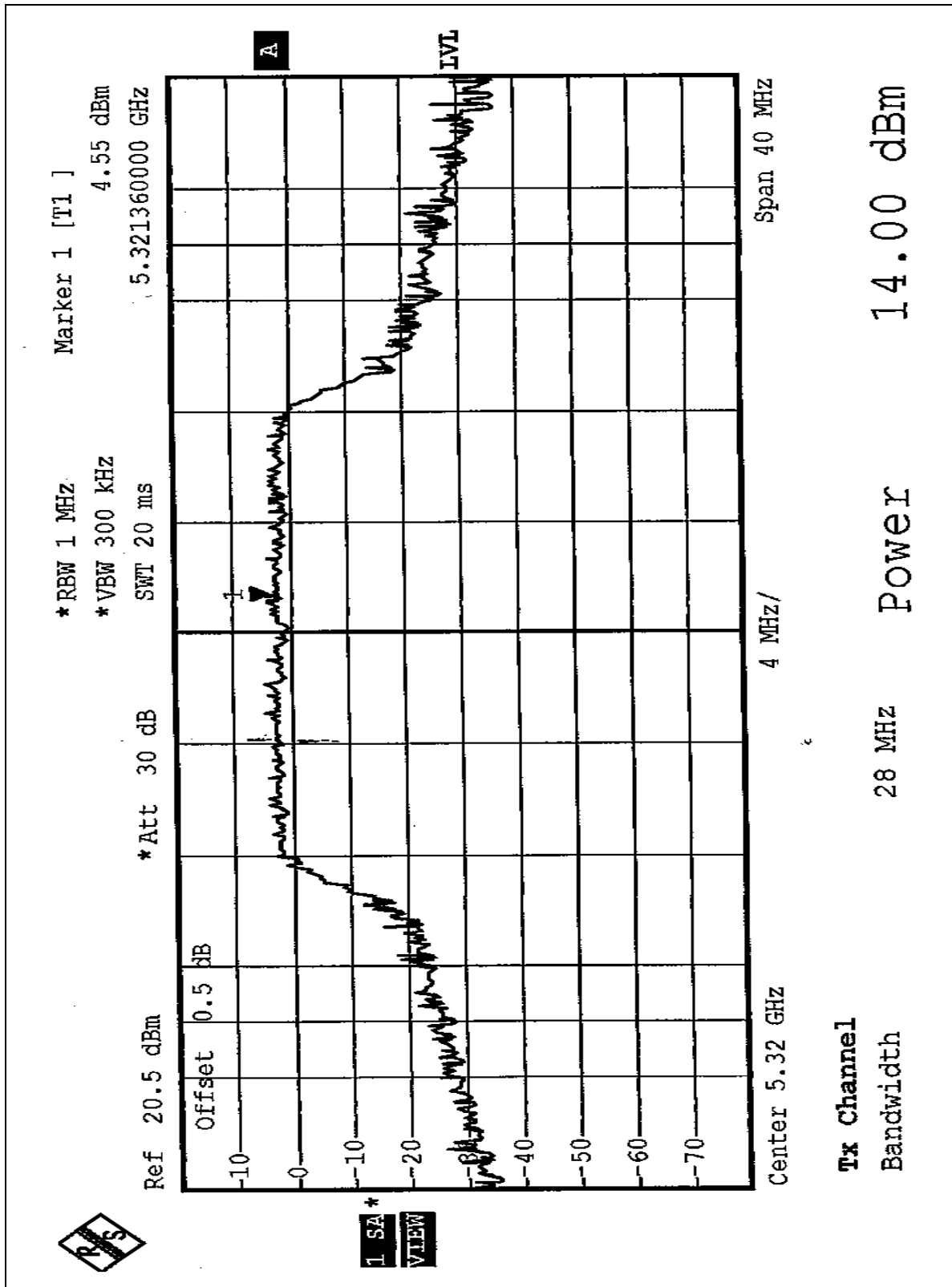




CH5

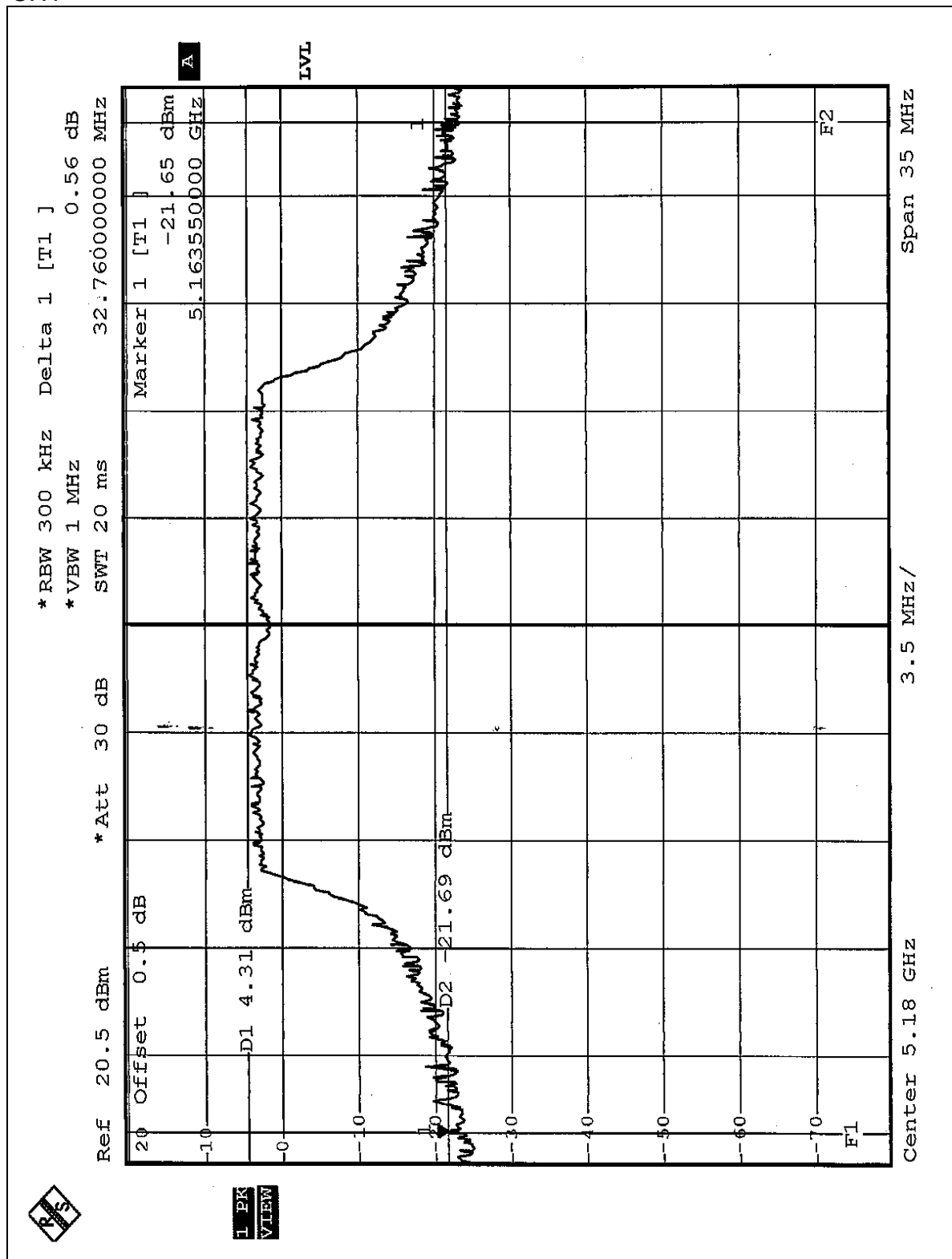


CH8

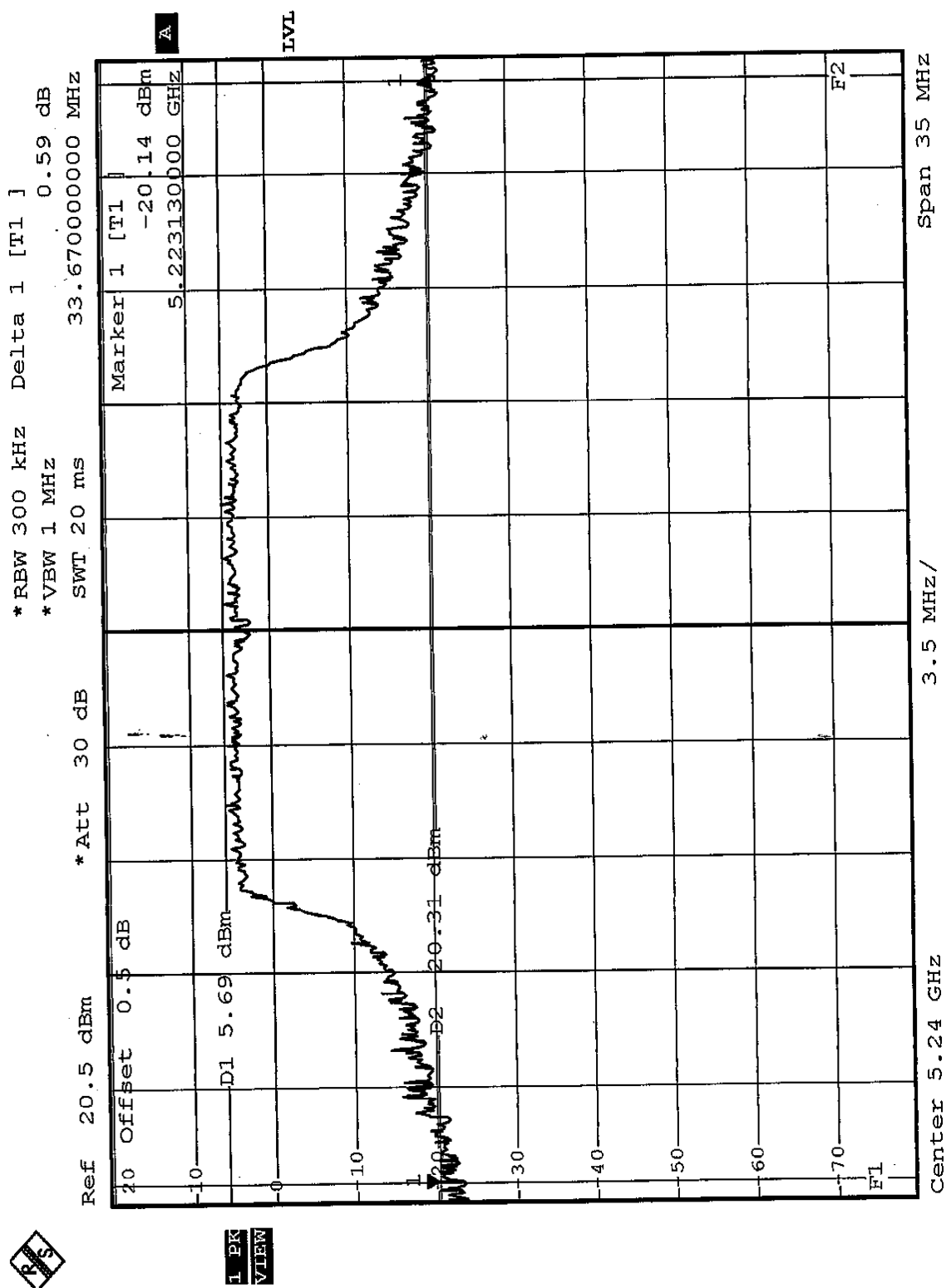


26dB Occupied Bandwidth:

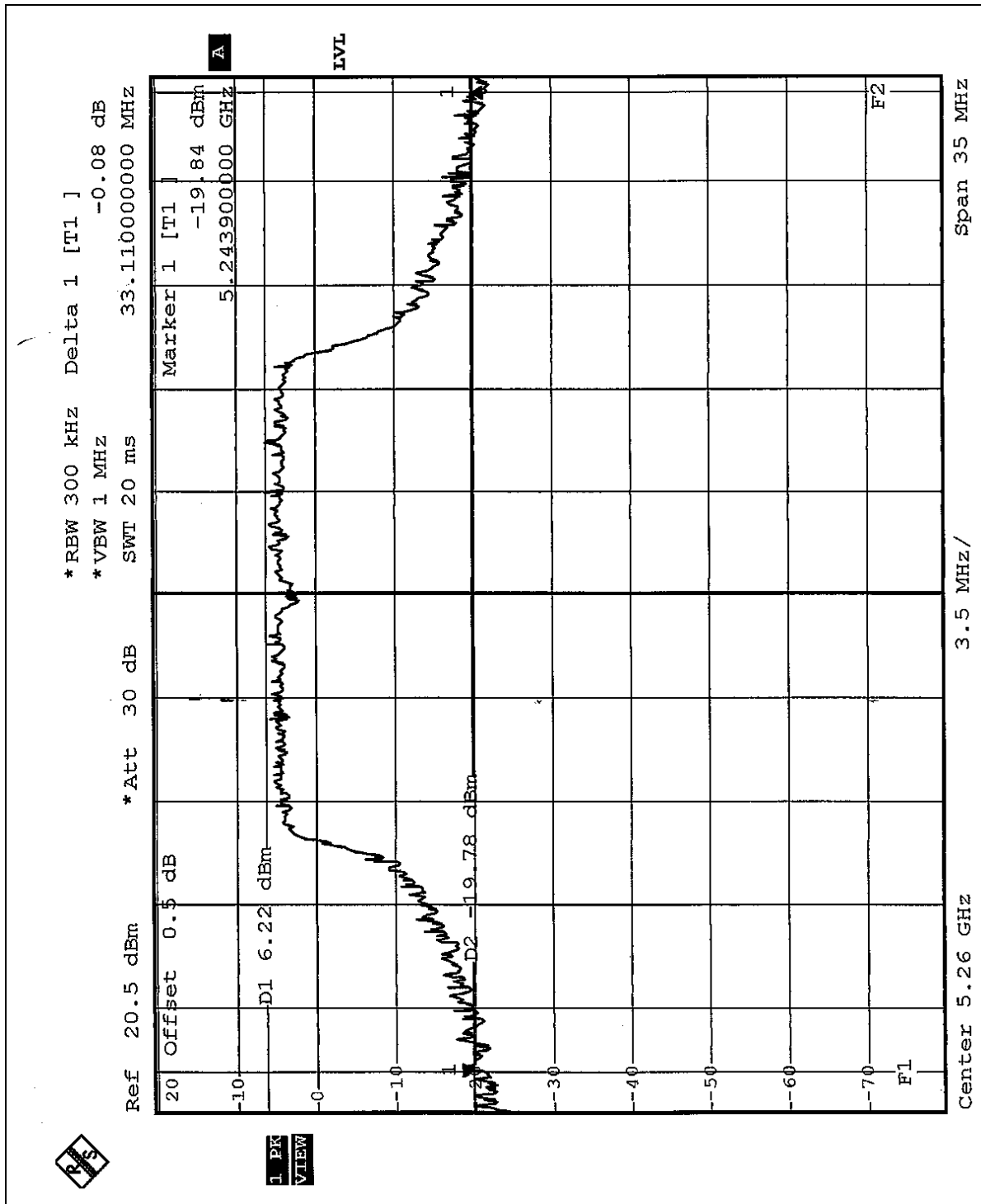
CH1



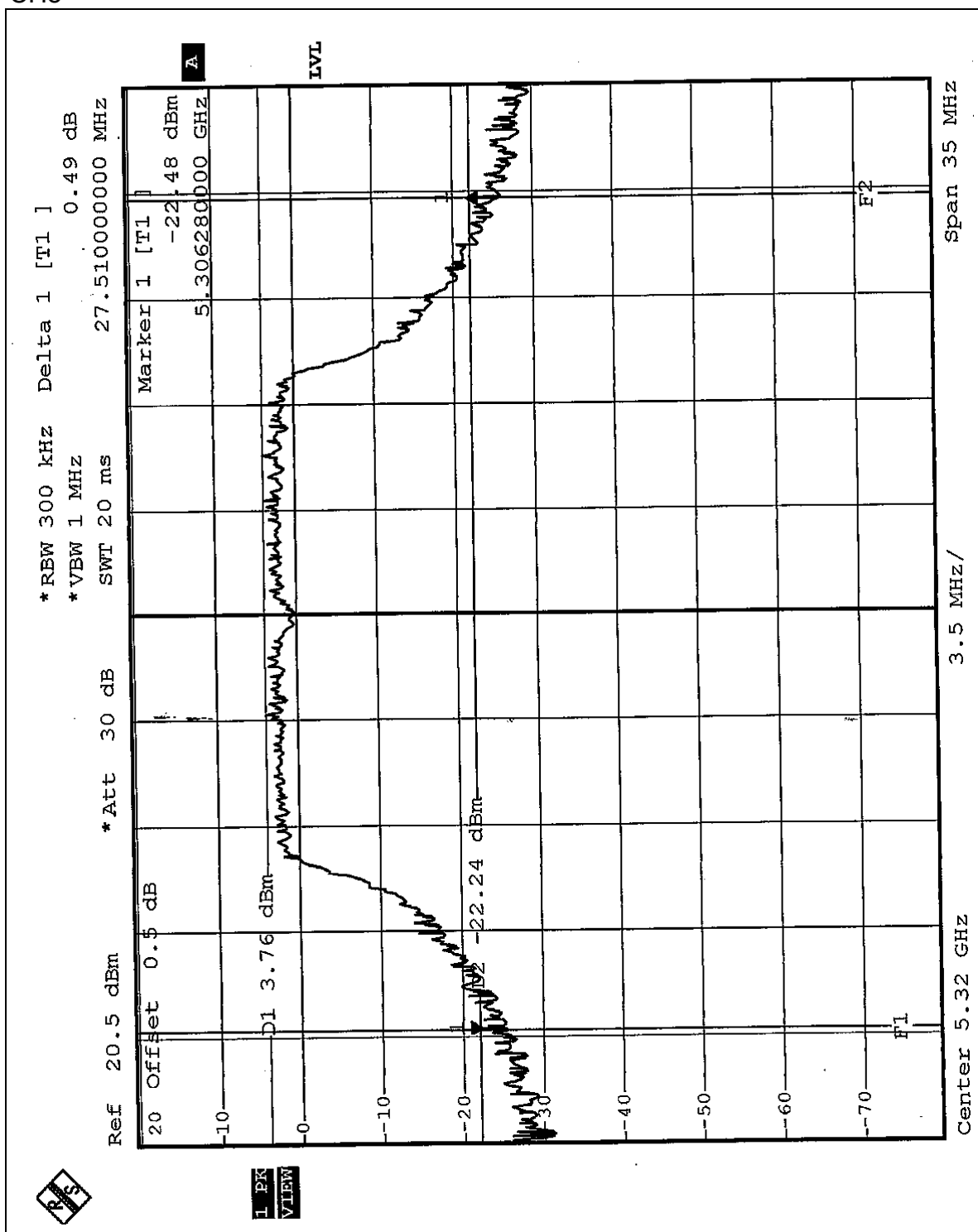
```
*RBW 300 kHz Delta 1 [T1]
*VBW 1 MHz 0.59 dB
SWT 20 ms 33.67000000 MHz
```



CH5



CH8





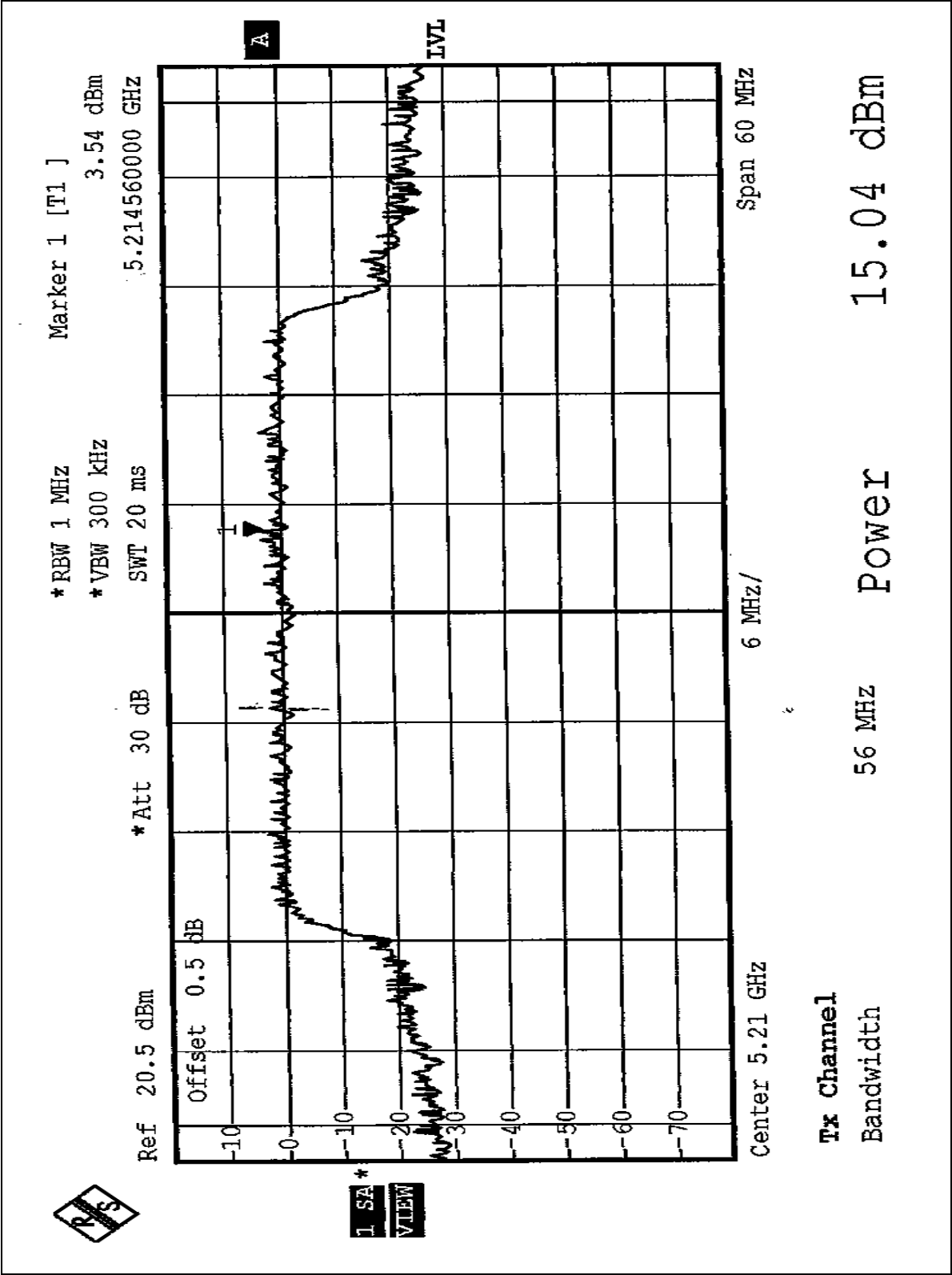
EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY	Gary Chang

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	31.915	15.04	17.00	55.08	PASS
2	5250	47.863	16.80	17.00	56.76	PASS
3	5290	25.351	14.04	24.00	53.52	PASS

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

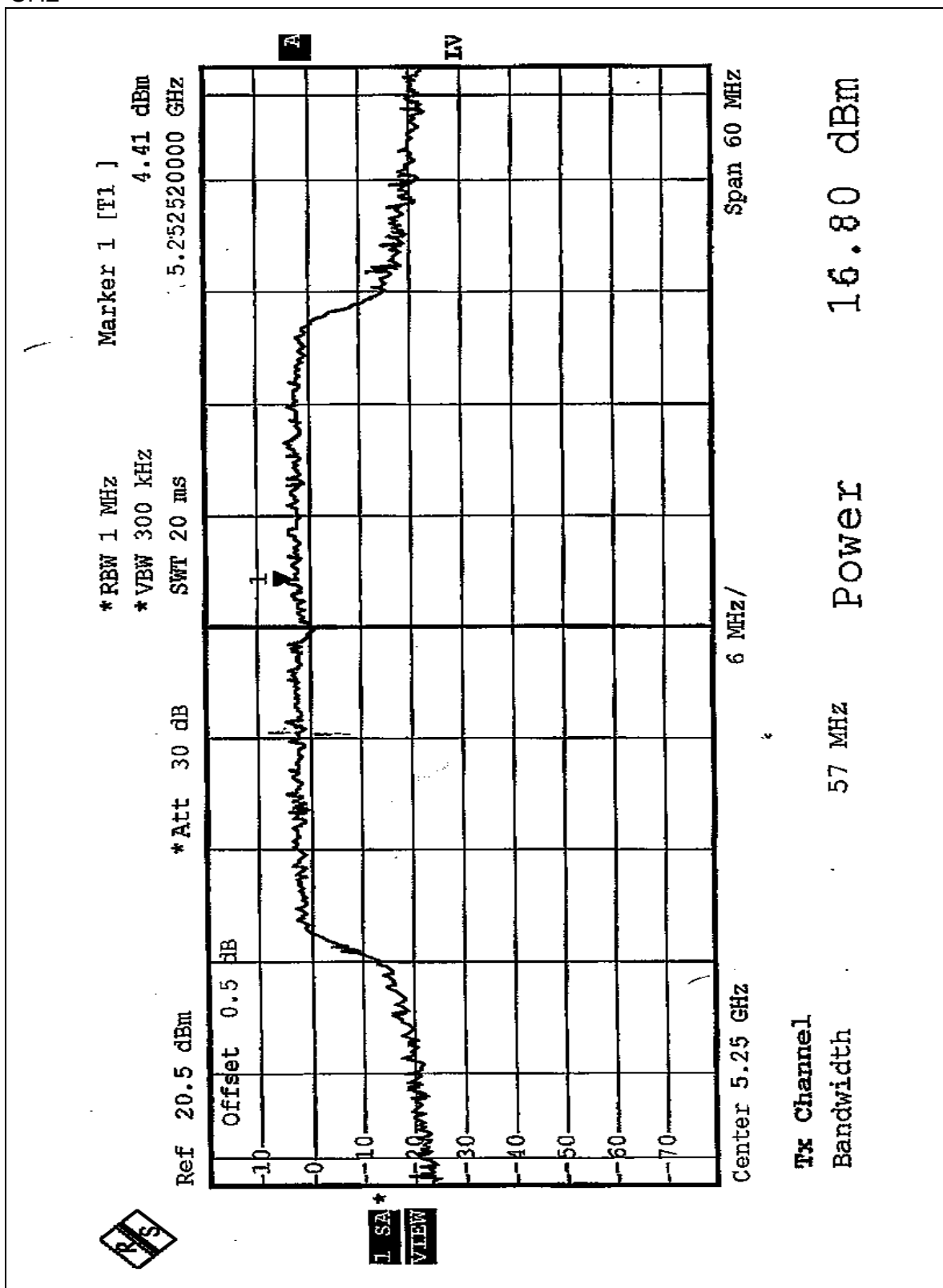


Peak Power Output:
CH1

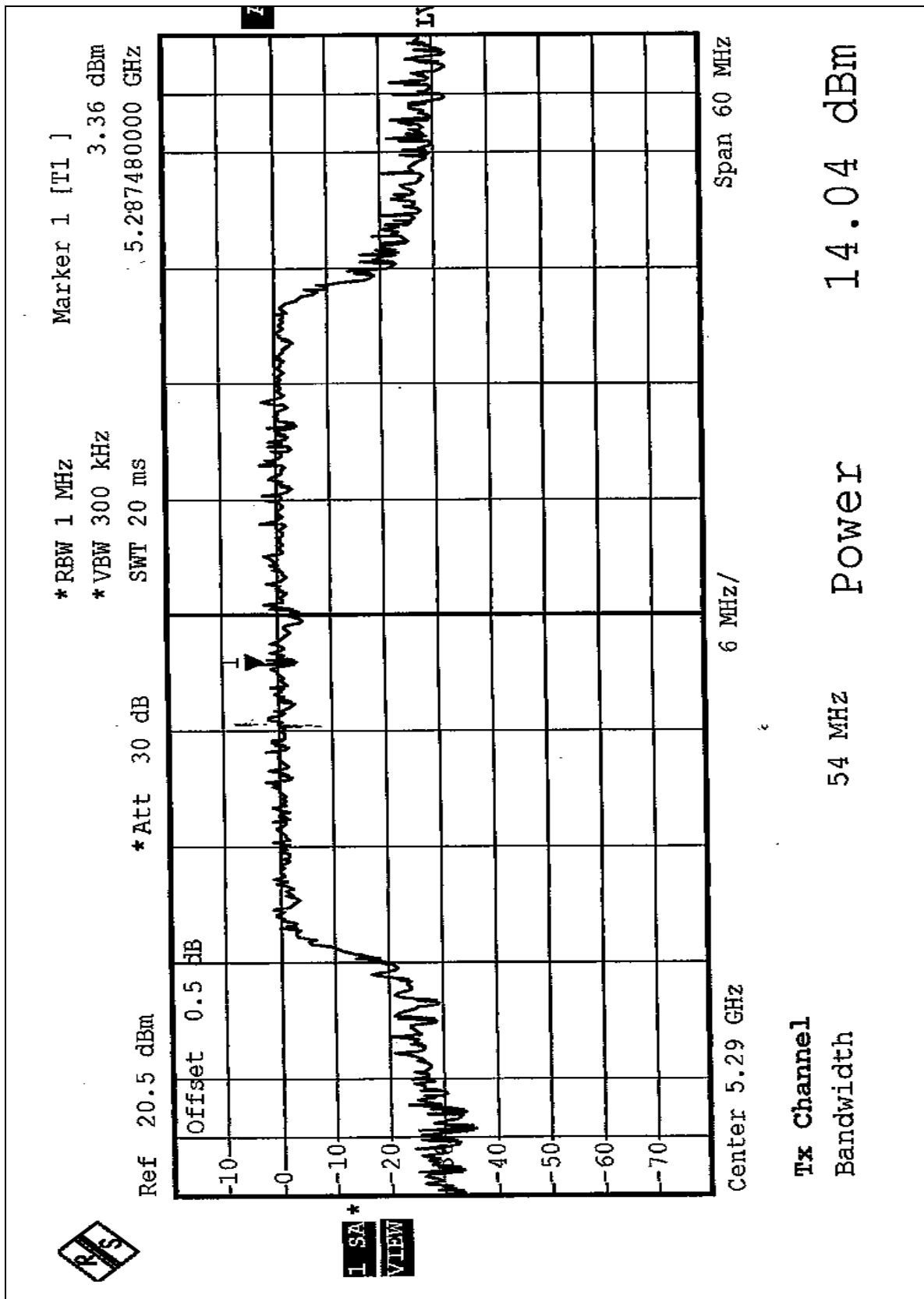




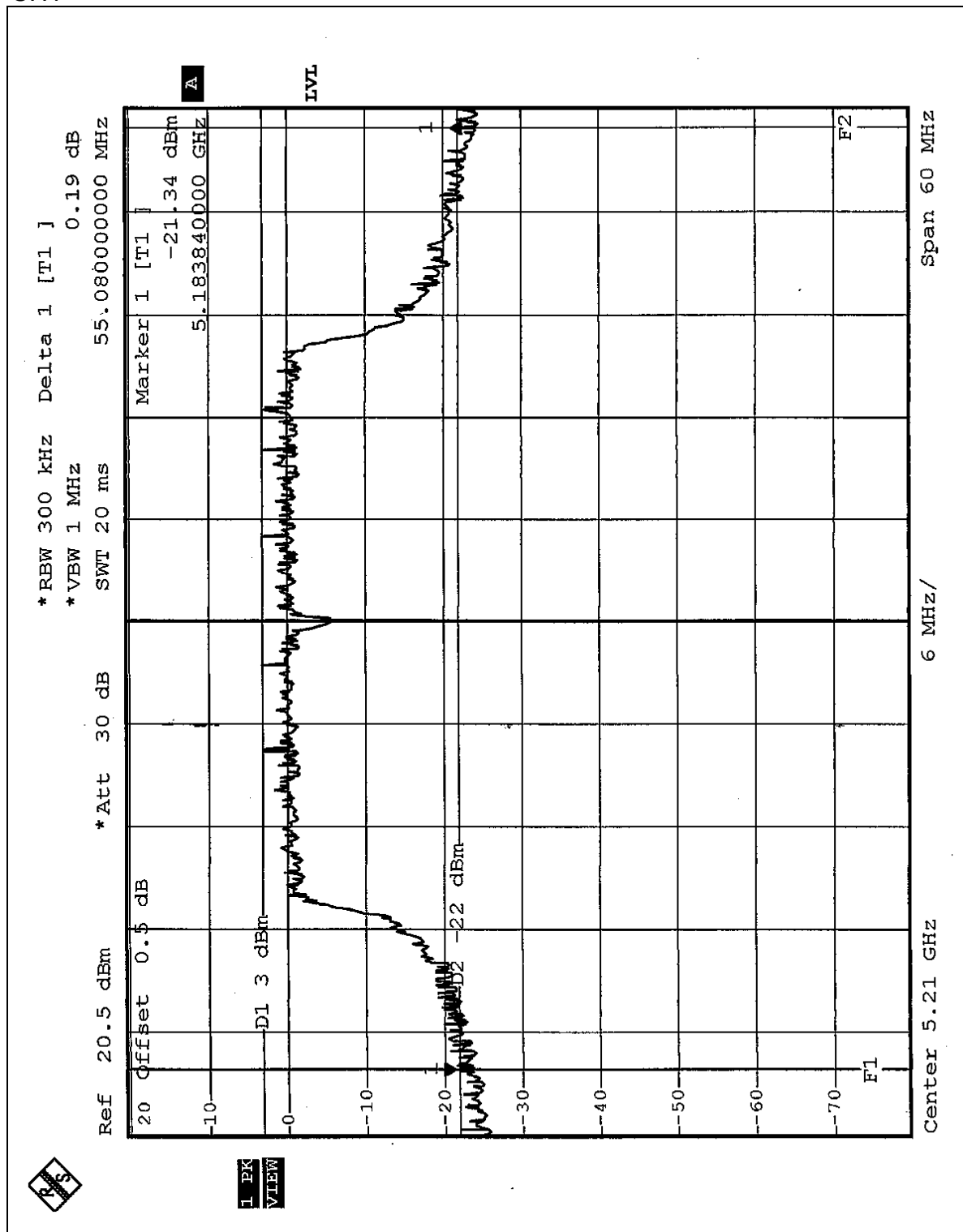
CH2



CH3

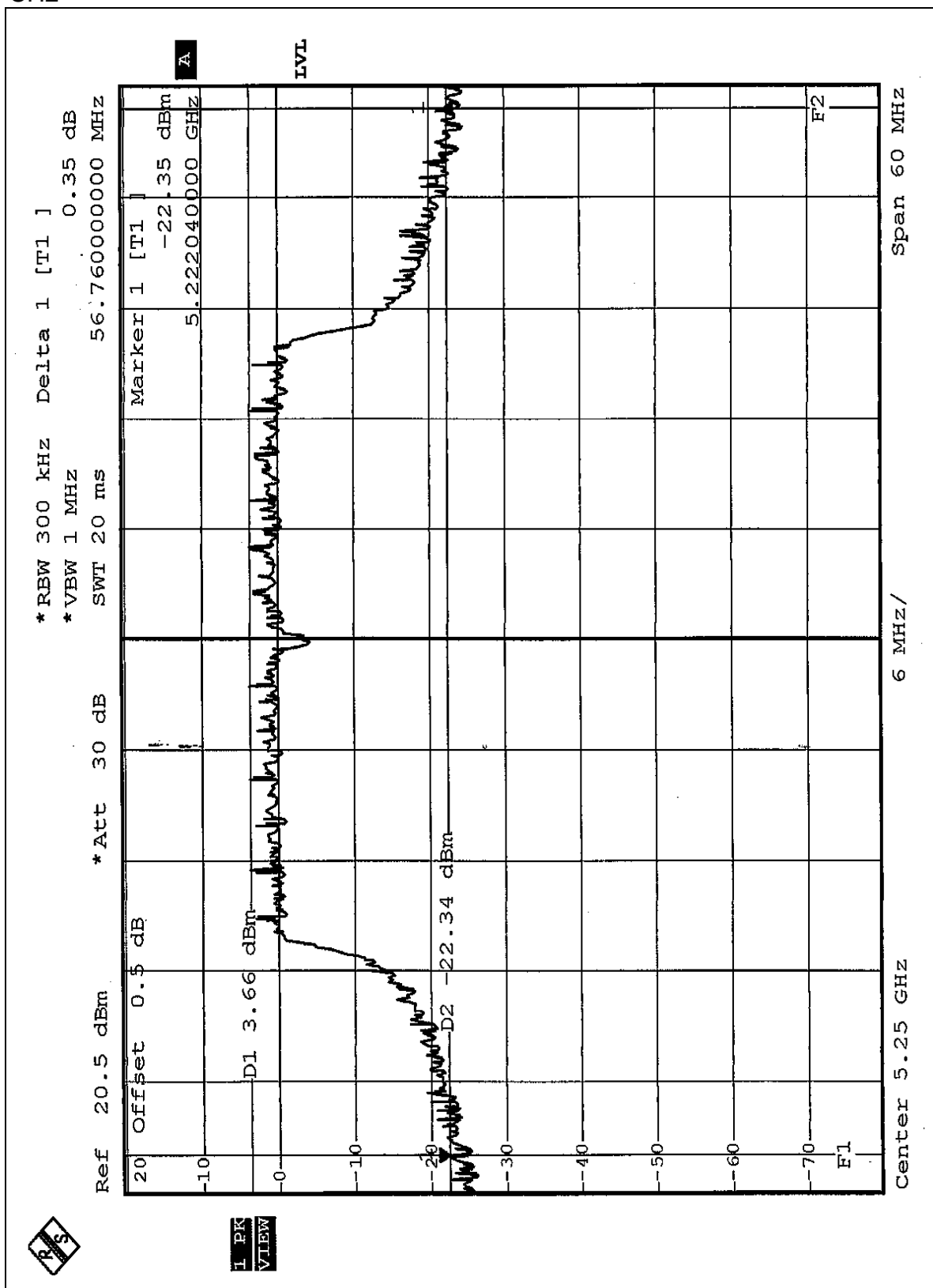


26dB Occupied Bandwidth:
CH1

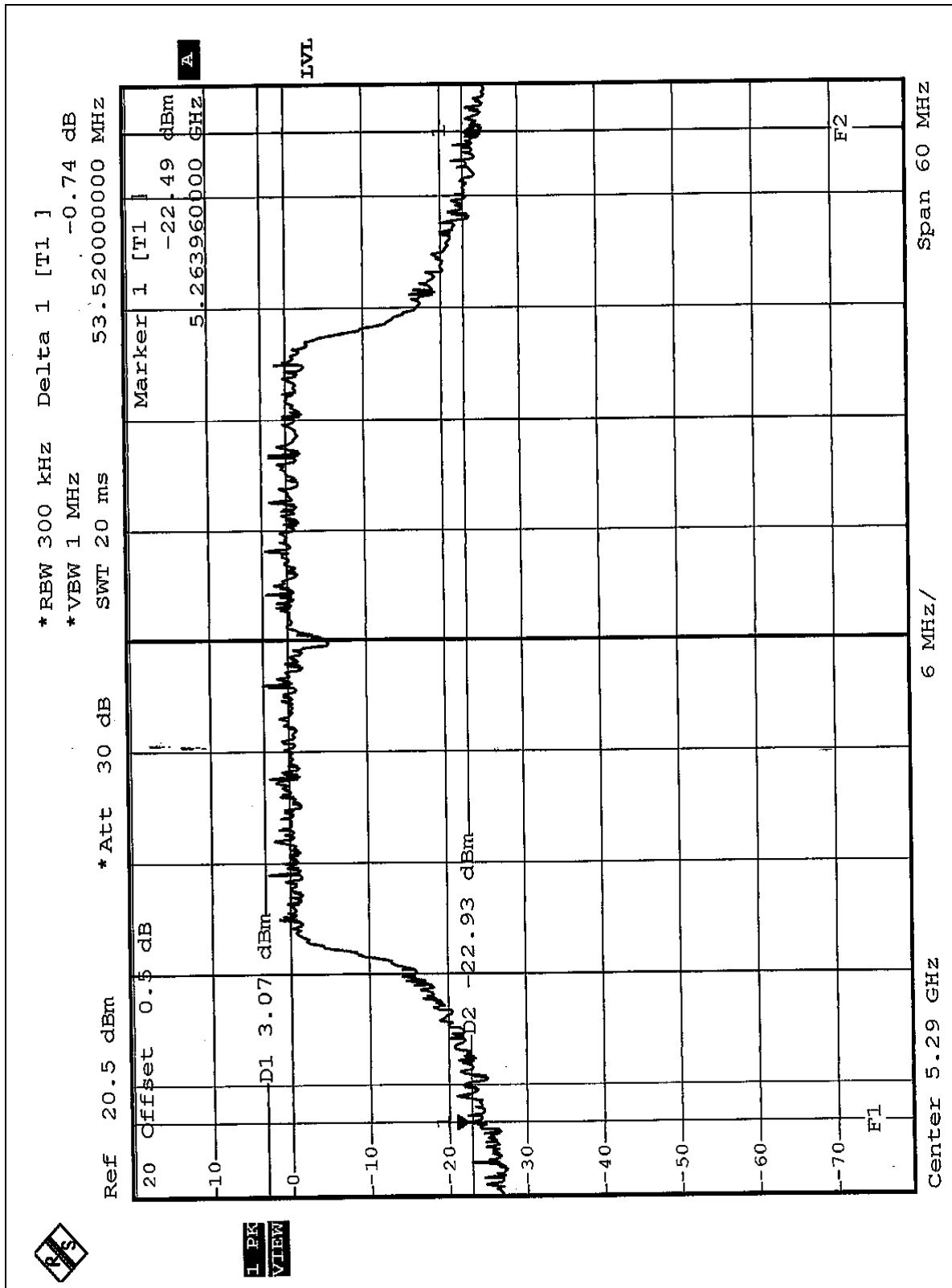




CH2



CH3



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
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

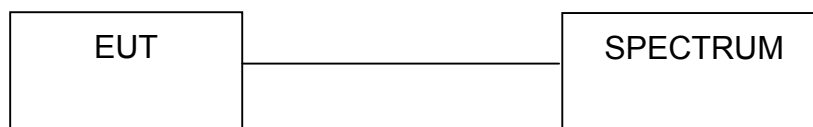
5.4.3 TEST PROCEDURE

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.



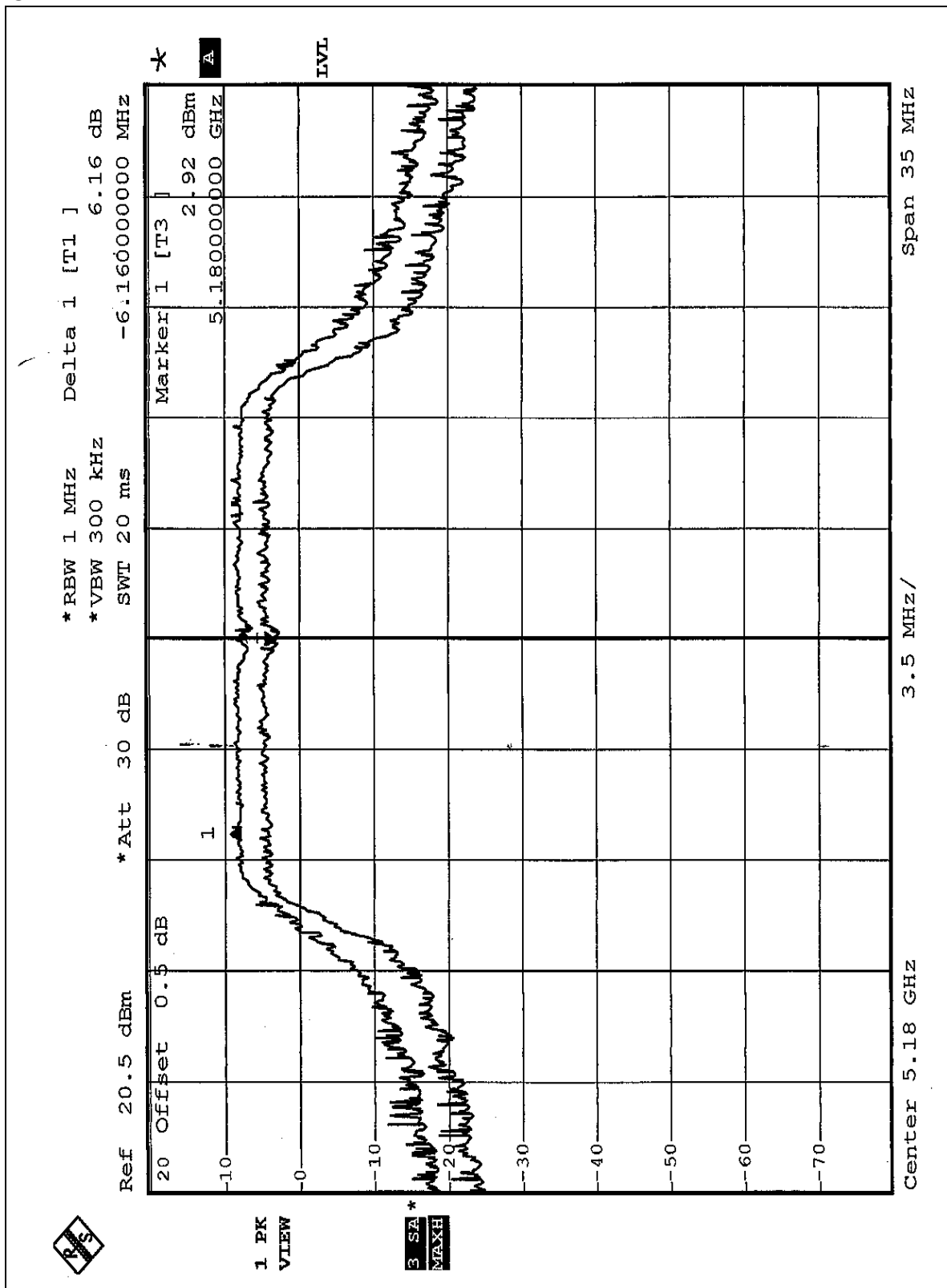
5.4.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	6.16	13	PASS
4	5240	6.81	13	PASS
5	5260	6.85	13	PASS
8	5320	6.86	13	PASS

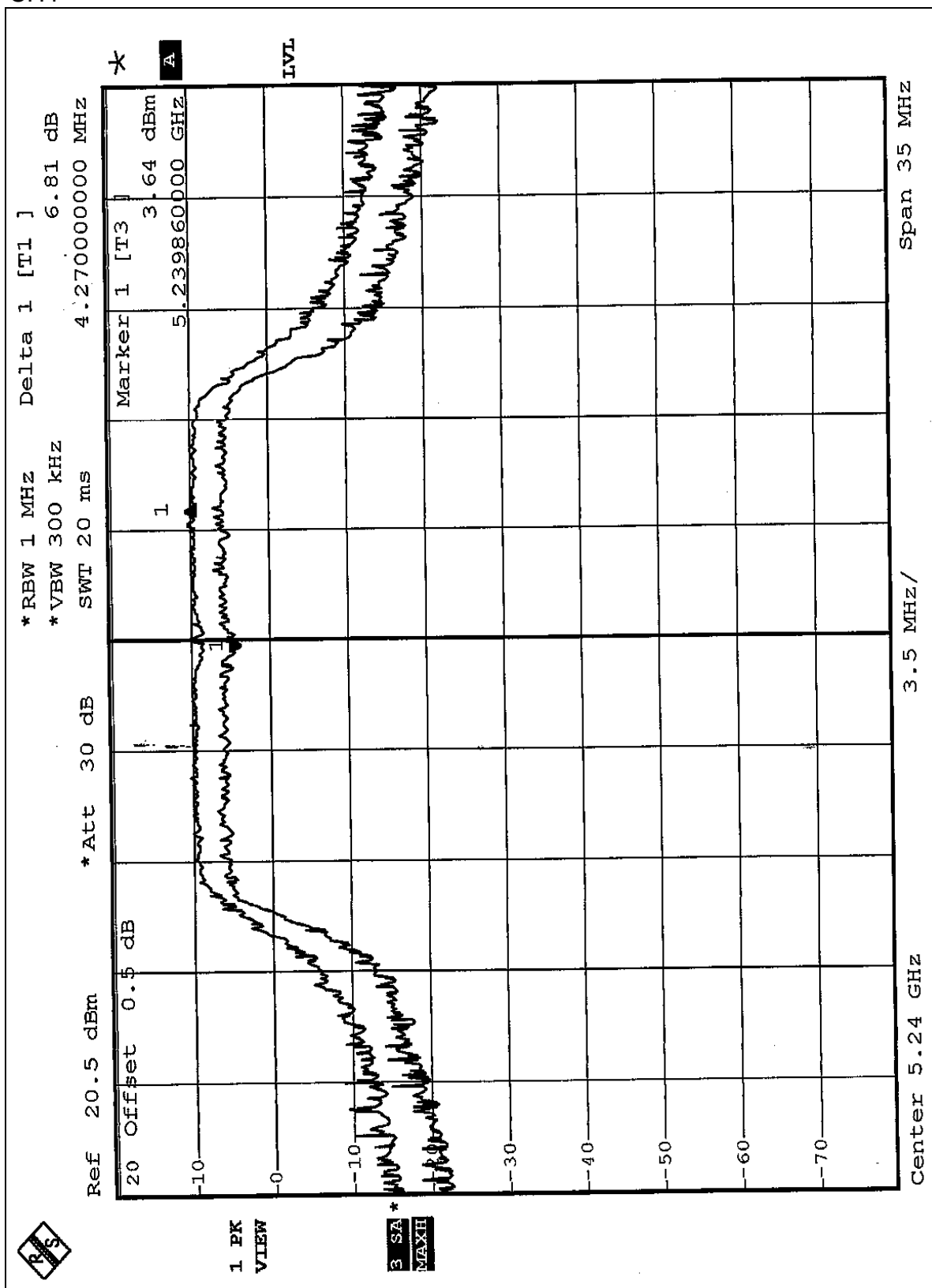


CH1



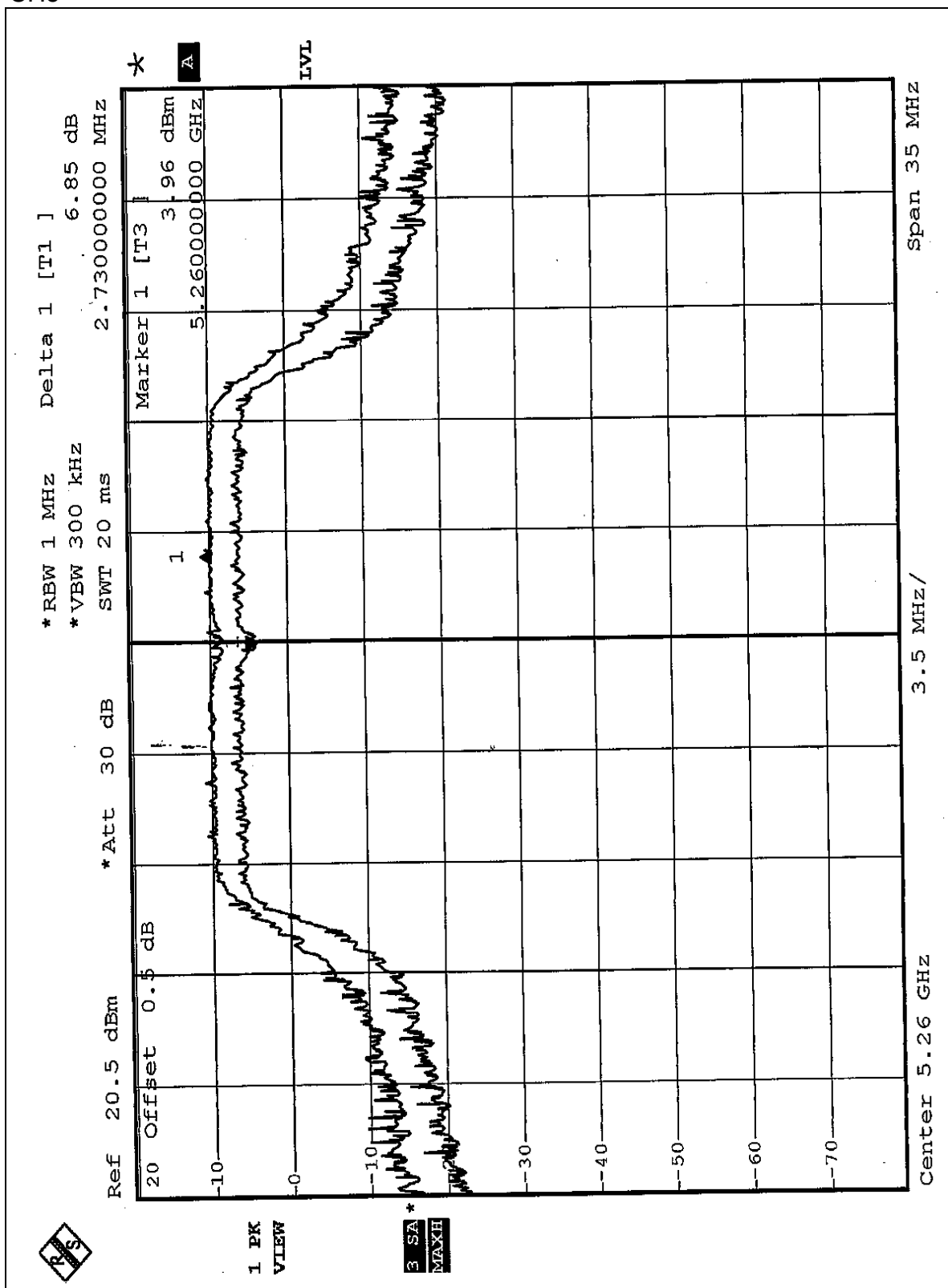


CH4

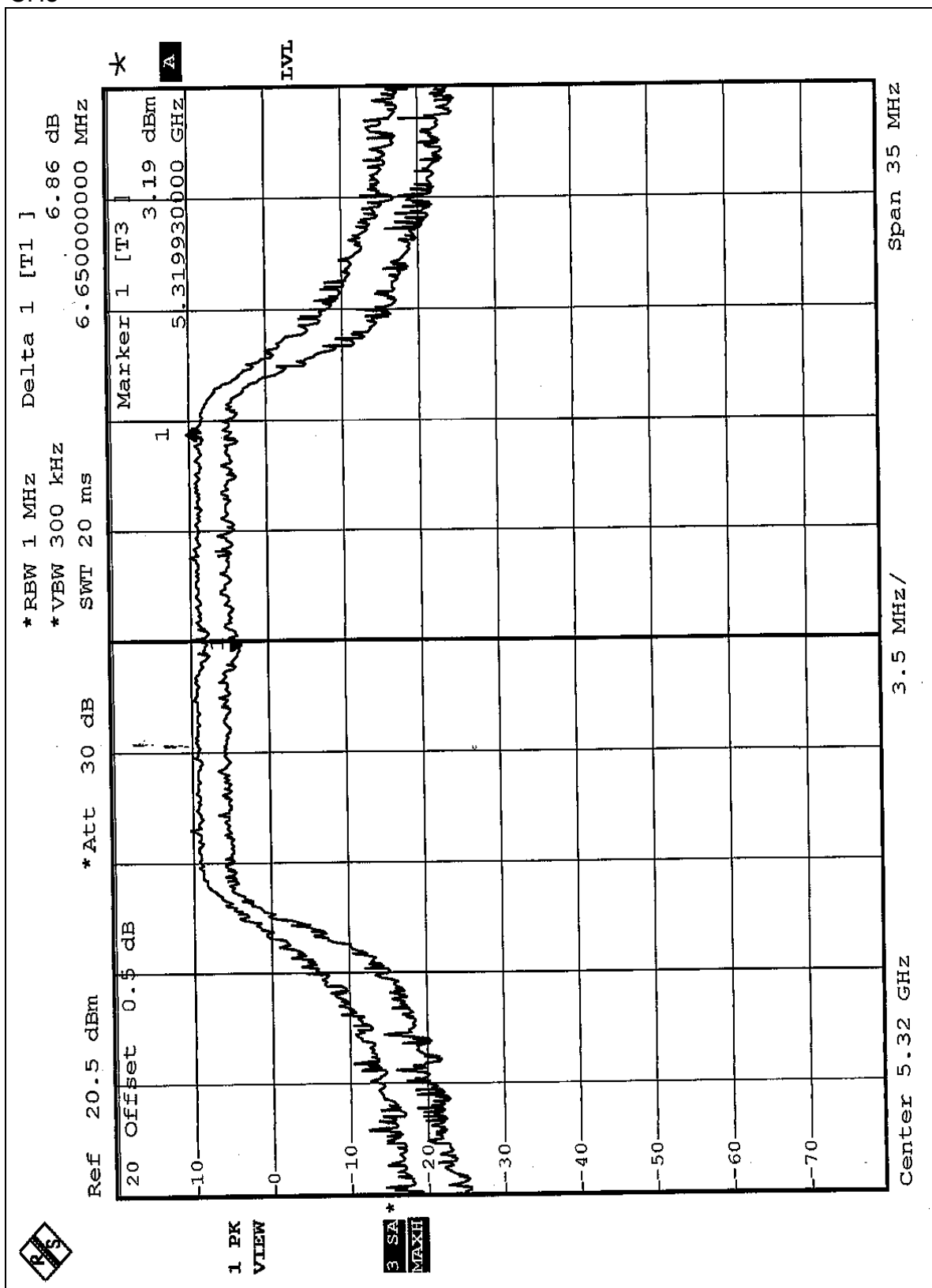




CH5



CH8

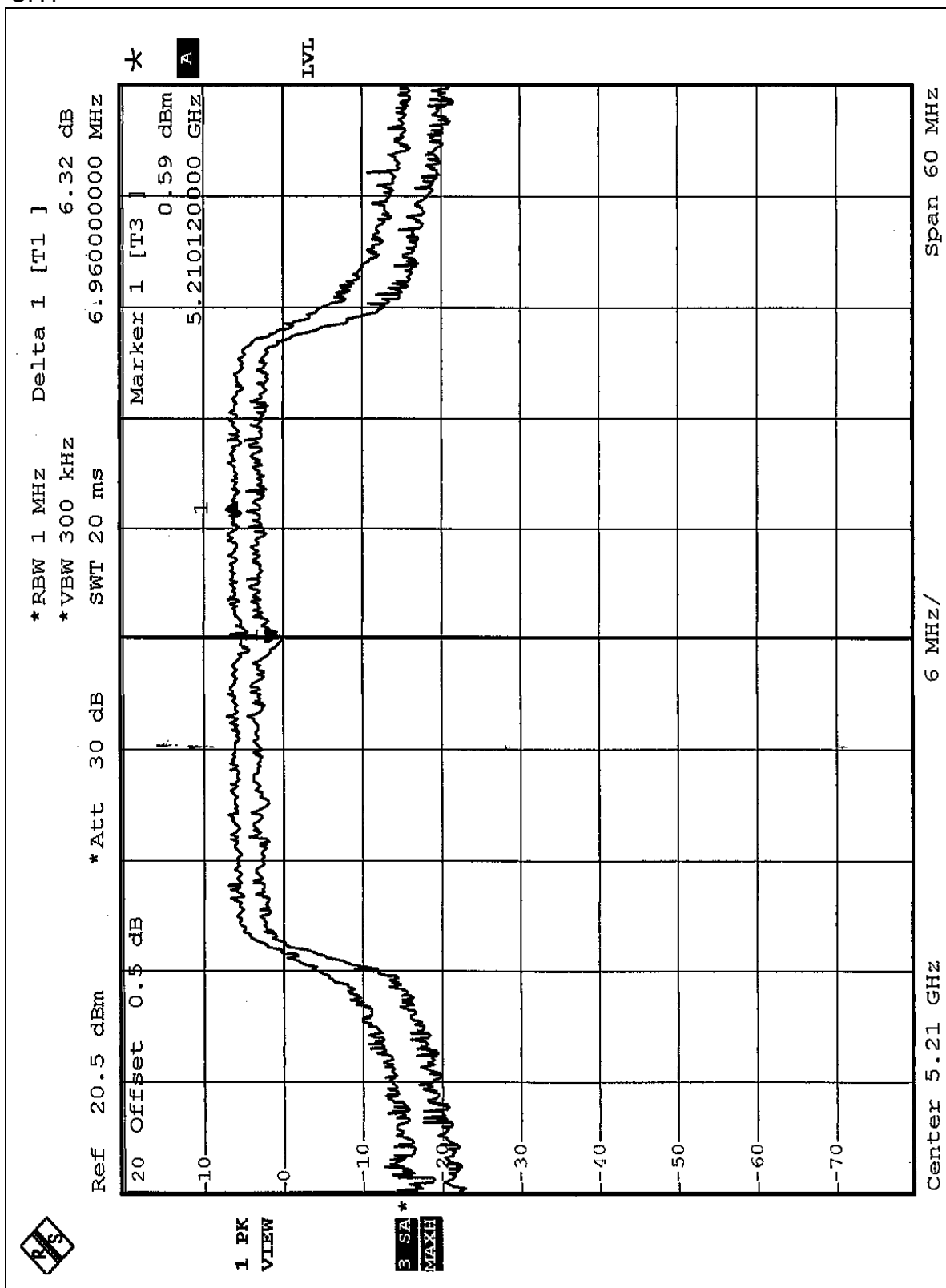




EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY	Leo Hung

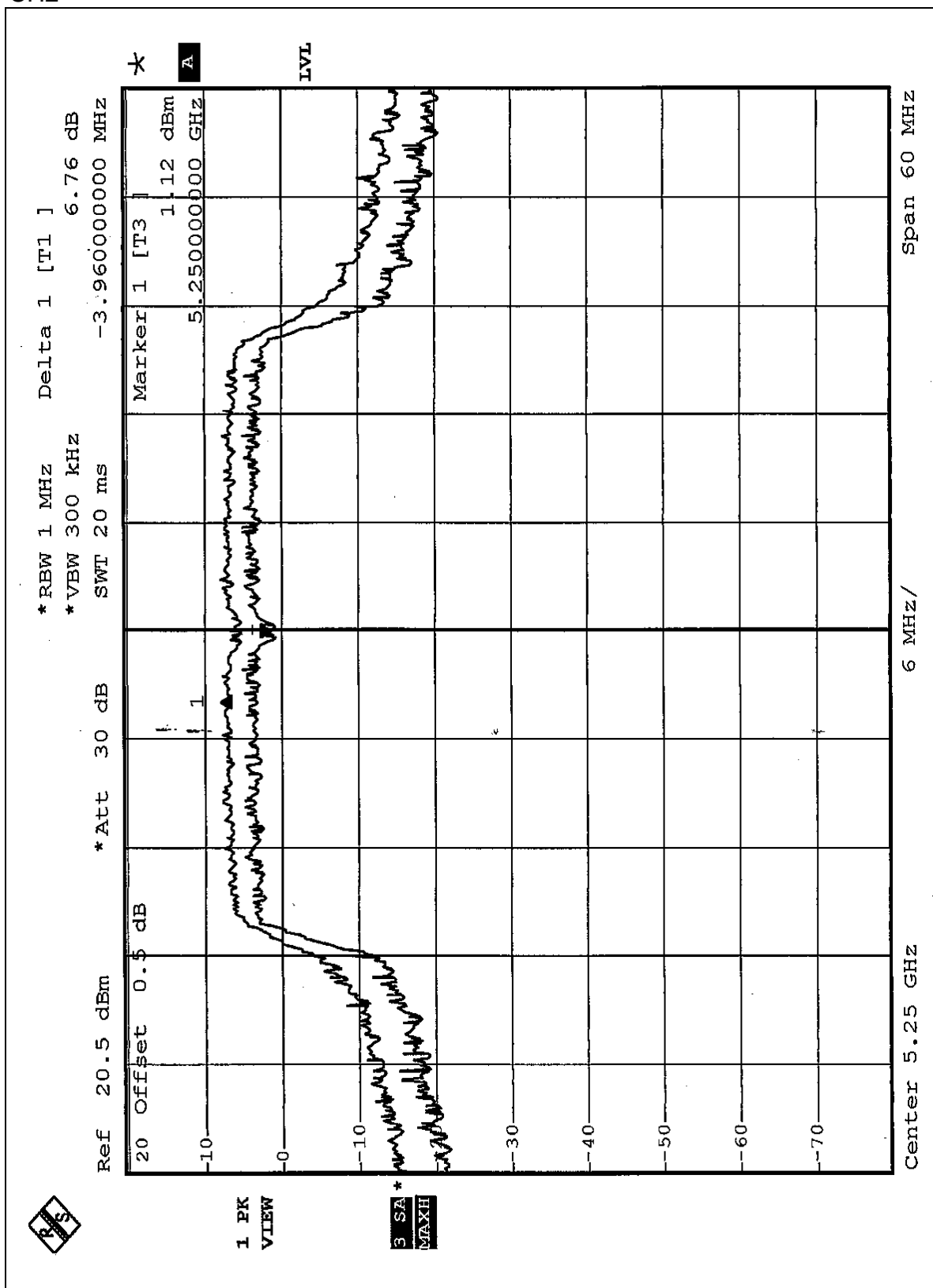
CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	6.32	13	PASS
2	5250	6.76	13	PASS
3	5290	7.60	13	PASS

CH1

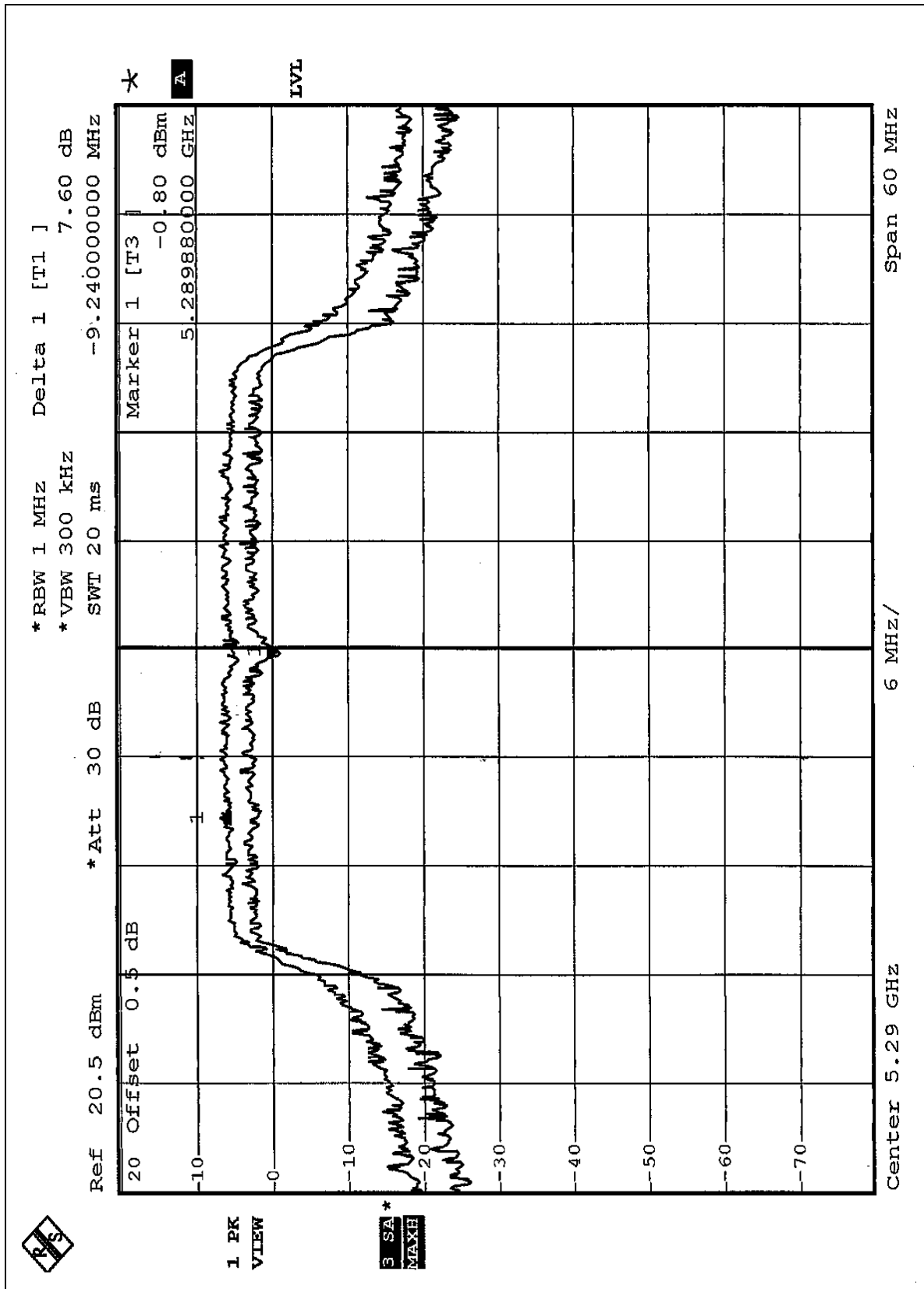




CH2



CH3



5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

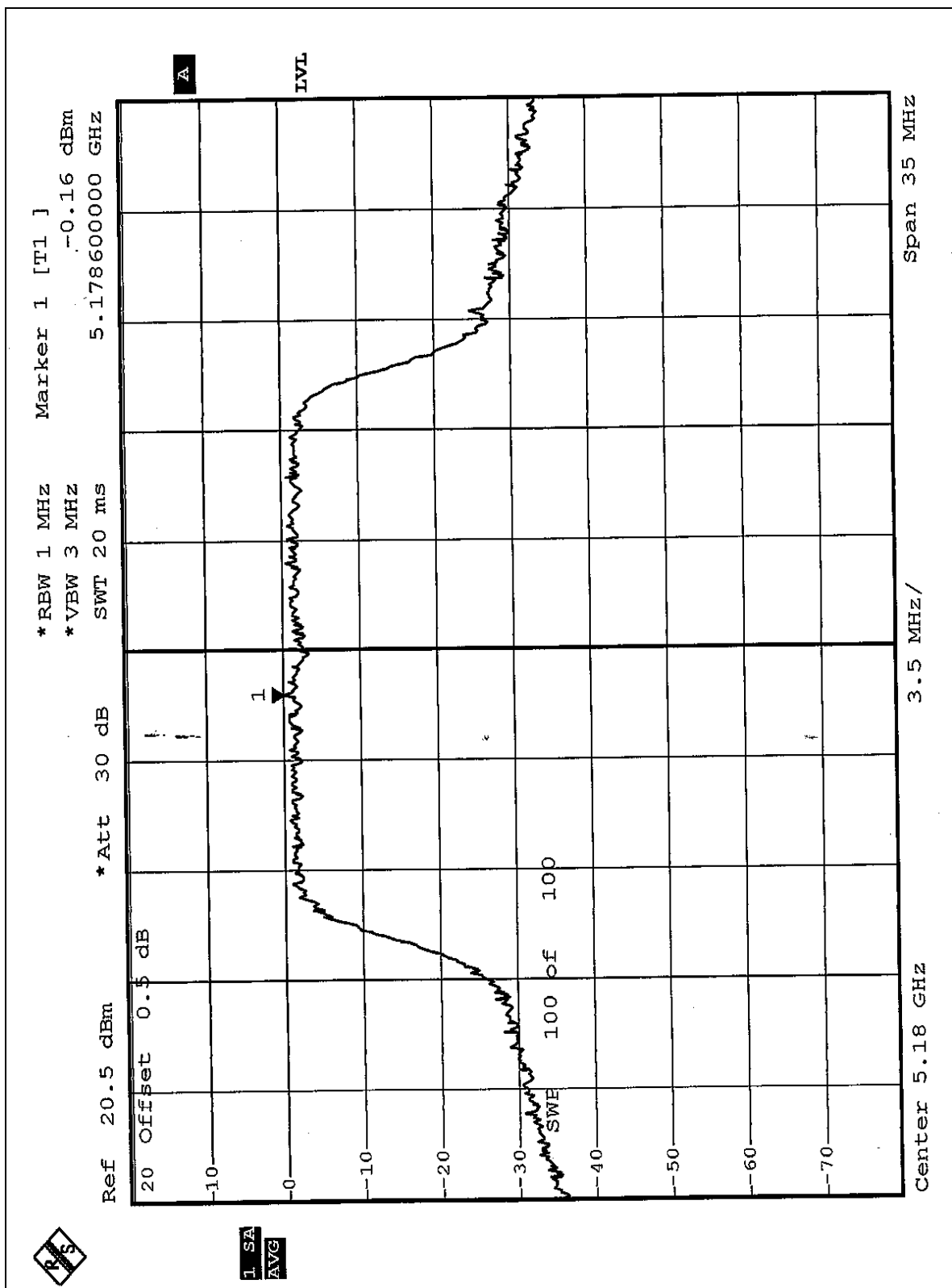
5.5.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY	Leo Hung

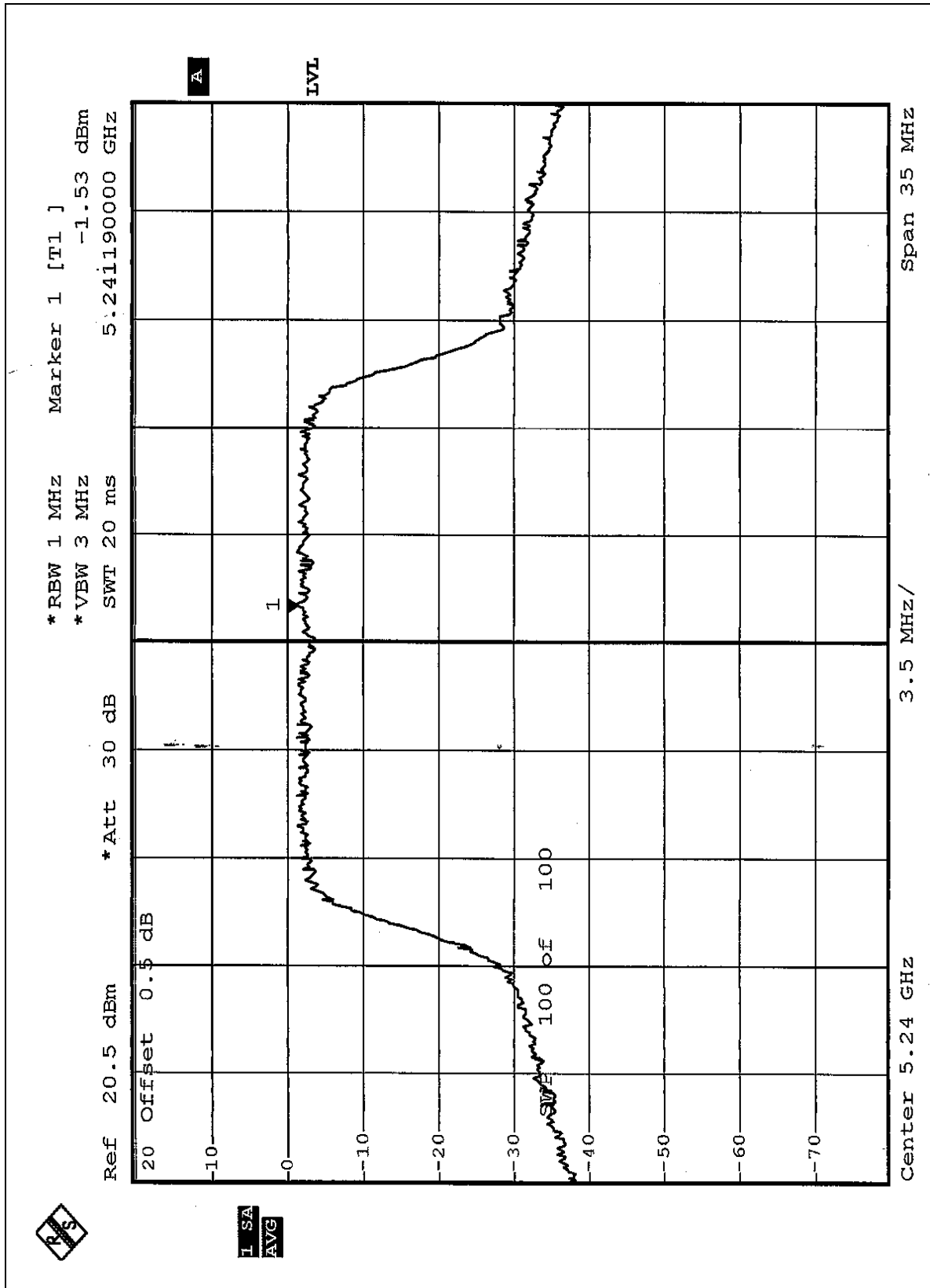
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.16	4	PASS
4	5240	-1.53	4	PASS
5	5260	-1.93	11	PASS
8	5320	-3.05	11	PASS



CH1

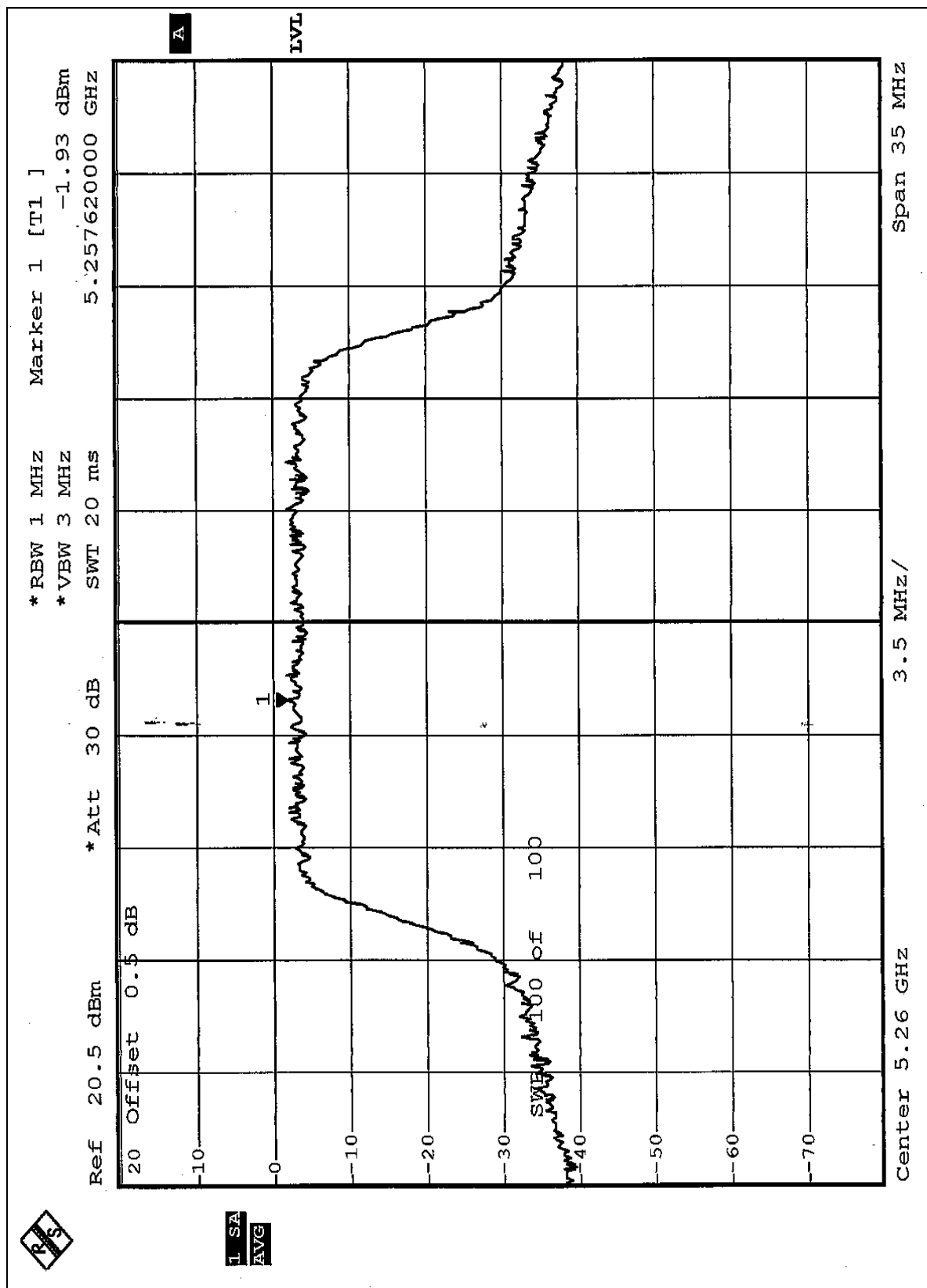


CH4



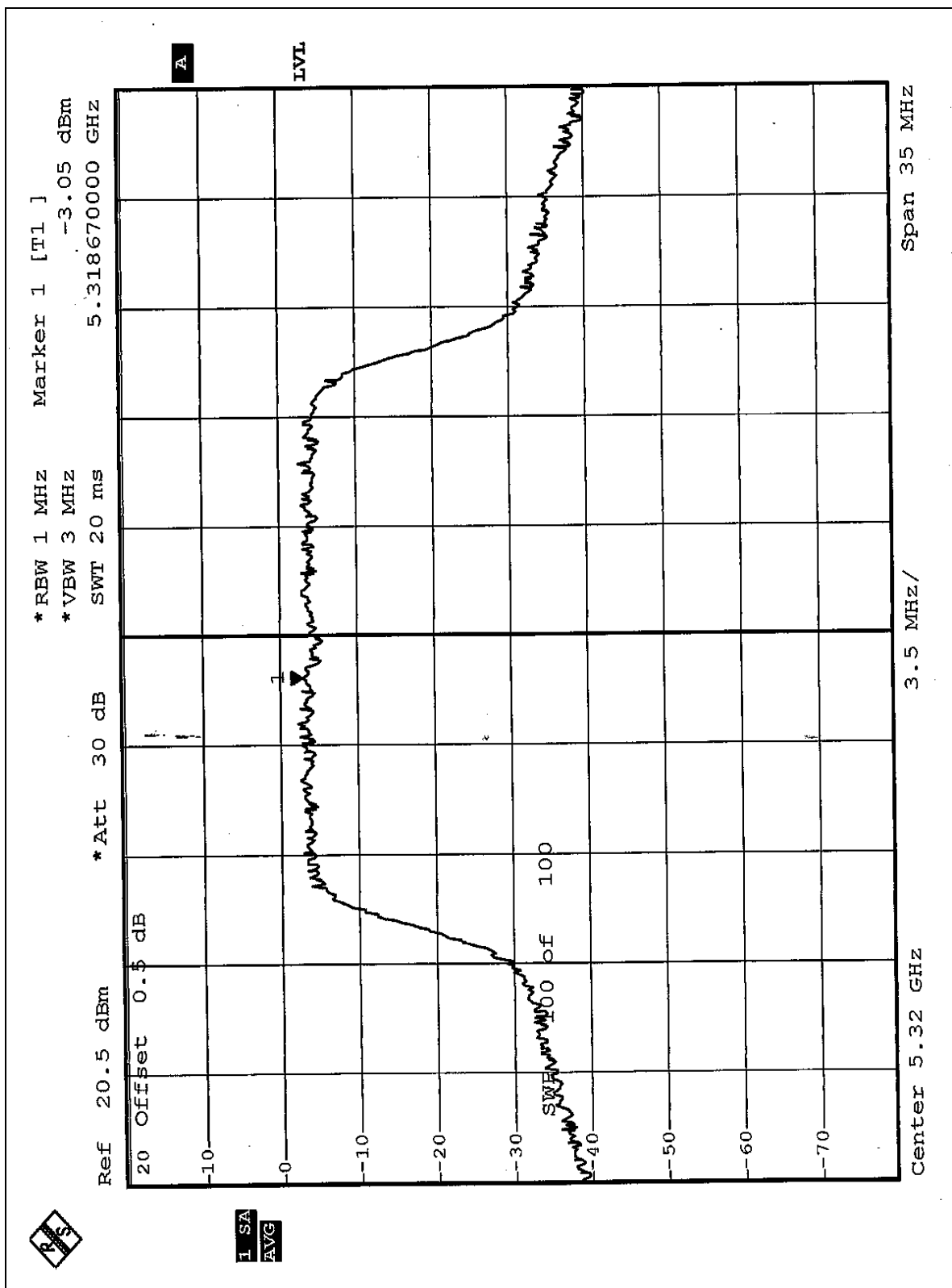


CH5





CH8

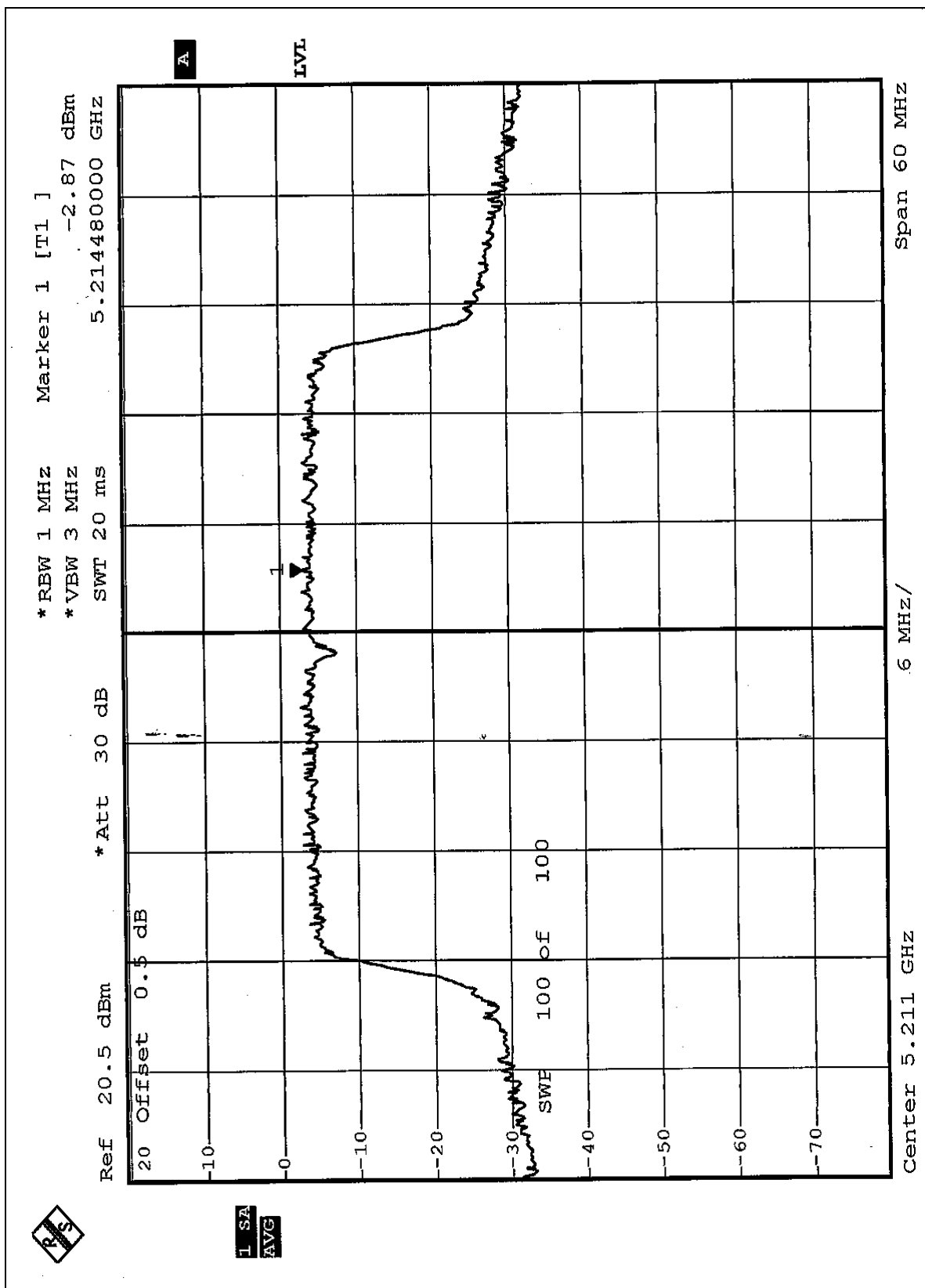




EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	TESTED BY	Leo Hung

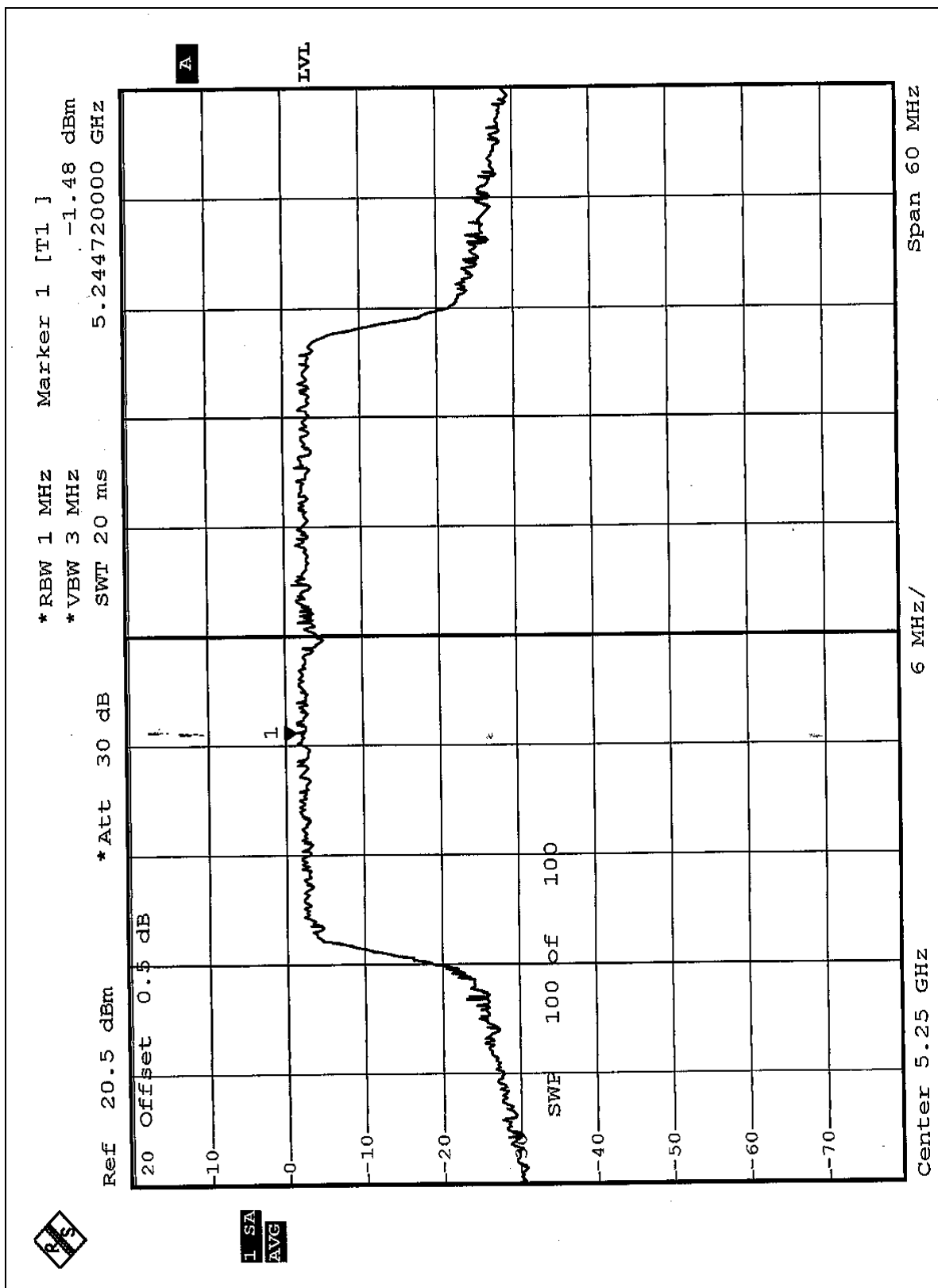
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-2.87	4	PASS
2	5250	-1.48	4	PASS
3	5290	-3.61	11	PASS

CH1

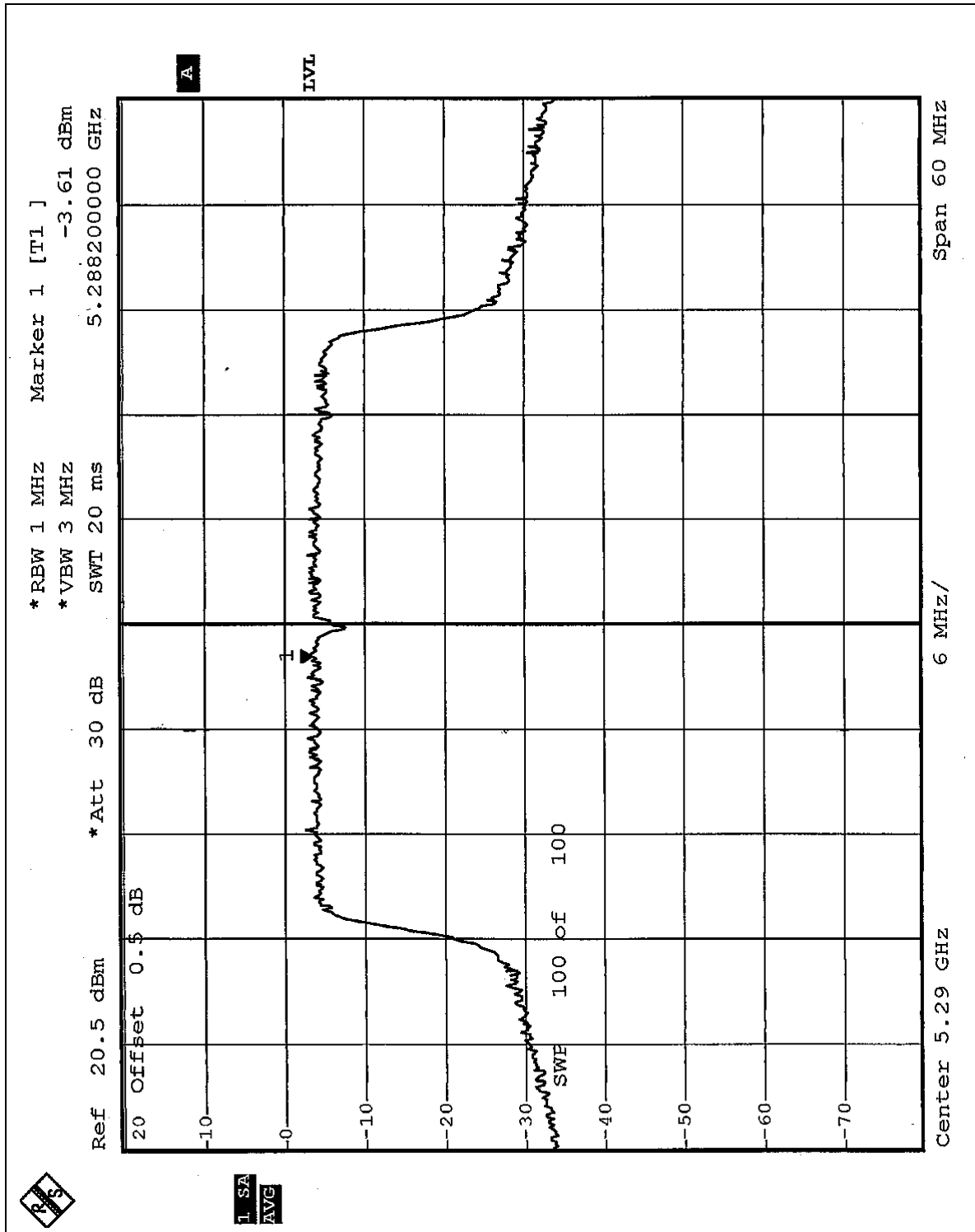




CH2



CH3





5.6 FREQUENCY STABILITY

5.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.02\%$ 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, 2005
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Aug. 12, 2005

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

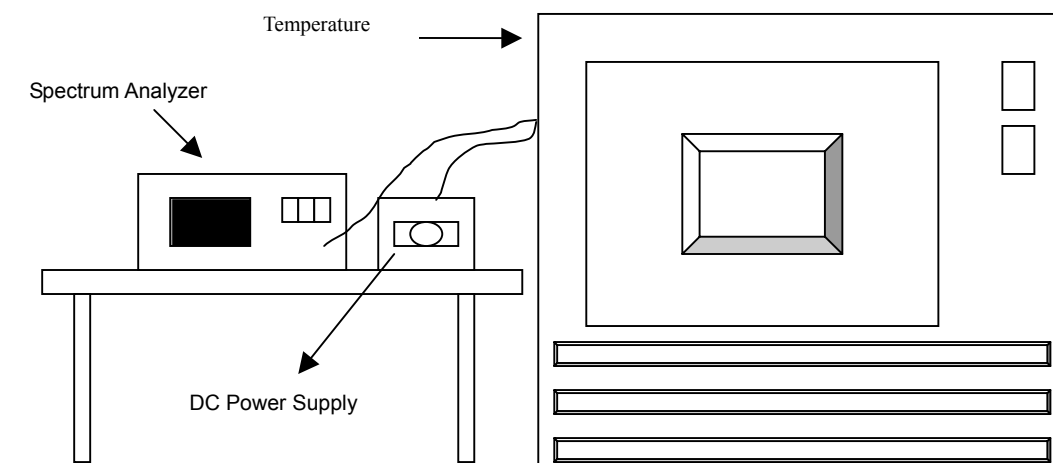
5.6.3 TEST PROCEDURE

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 : $\pm 0.01\%$			
Temp. (°C)	Power supply (Vac)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	102	5319.9715	-0.0005357	5309.9719	-0.1884981	5319.9724	-0.0005188
	120	5319.9718	-0.0005301	5319.9723	-0.0005207	5319.9725	-0.0005169
	138	5319.9718	-0.0005301	5319.9724	-0.0005188	5319.9725	-0.0005169
40	102	5319.9704	-0.0005564	5319.9706	-0.0005526	5319.9707	-0.0005508
	120	5319.9705	-0.0005545	5319.9705	-0.0005545	5319.9708	-0.0005489
	138	5319.9705	-0.0005545	5319.9706	-0.0005526	5319.9708	-0.0005489
30	102	5319.9720	-0.0005263	5319.9700	-0.0005639	5319.9701	-0.0005620
	120	5319.9720	-0.0005263	5319.9680	-0.0006015	5319.9700	-0.0005639
	138	5319.9700	-0.0005639	5319.9680	-0.0006015	5319.9701	-0.0005620
20	102	5319.9720	-0.0005263	5319.9720	-0.0005263	5319.9720	-0.0005263
	120	5319.9700	-0.0005639	5319.9720	-0.0005263	5319.9700	-0.0005639
	138	5319.9720	-0.0005263	5319.9740	-0.0004887	5319.9720	-0.0005263
10	102	5319.9737	-0.0004944	5319.9743	-0.0004831	5319.9745	-0.0004793
	120	5319.9740	-0.0004887	5319.9745	-0.0004793	5319.9749	-0.0004718
	138	5319.9741	-0.0004868	5319.9747	-0.0004756	5319.9751	-0.0004680
0	102	5319.9802	-0.0003722	5319.9812	-0.0003534	5319.9817	-0.0003440
	120	5319.9807	-0.0003628	5319.9814	-0.0003496	5319.9820	-0.0003383
	138	5319.9810	-0.0003571	5319.9816	-0.0003459	5319.9822	-0.0003346
-10	102	5319.9967	-0.0000620	5319.9974	-0.0000489	5319.9980	-0.0000376
	120	5319.9971	-0.0000545	5319.9976	-0.0000451	5319.9983	-0.0000320
	138	5319.9972	-0.0000526	5319.9976	-0.0000451	5319.9984	-0.0000301
-20	102	5320.0076	0.0001429	5320.0080	0.0001504	5320.0086	0.0001617
	120	5320.0078	0.0001466	5320.0084	0.0001579	5320.0088	0.0001654
	138	5320.0080	0.0001504	5320.0084	0.0001579	5320.0088	0.0001654
-30	102	5320.0138	0.0002594	5320.0136	0.0002556	5320.0134	0.0002519
	120	5320.0136	0.0002556	5320.0136	0.0002556	5320.0132	0.0002481
	138	5320.0136	0.0002556	5320.0134	0.0002519	5320.0132	0.0002481

5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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 loss 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 were 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 5.35GHz 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 field 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 pages.

**Normal Mode:**

Channel 1 (5180MHz)

The band edge emission plot on the pages 148 ~ 151 shows 45.94dBc (Peak) / 50.8Bc (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 100.04dBuV/m, so the maximum field strength in restrict band is $100.04 - 50.8 = 49.24$ dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320MHz)

The band edge emission plot on the pages 152 ~ 153 shows 42.72dBc (Peak) / 51.45dBc (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 100.06BuV/m, so the maximum field strength in restrict band is $100.06 - 51.45 = 48.56$ dBuV/m which is under 54dBuV/m limit.

Turbo Mode:

Channel 1 (5210MHz)

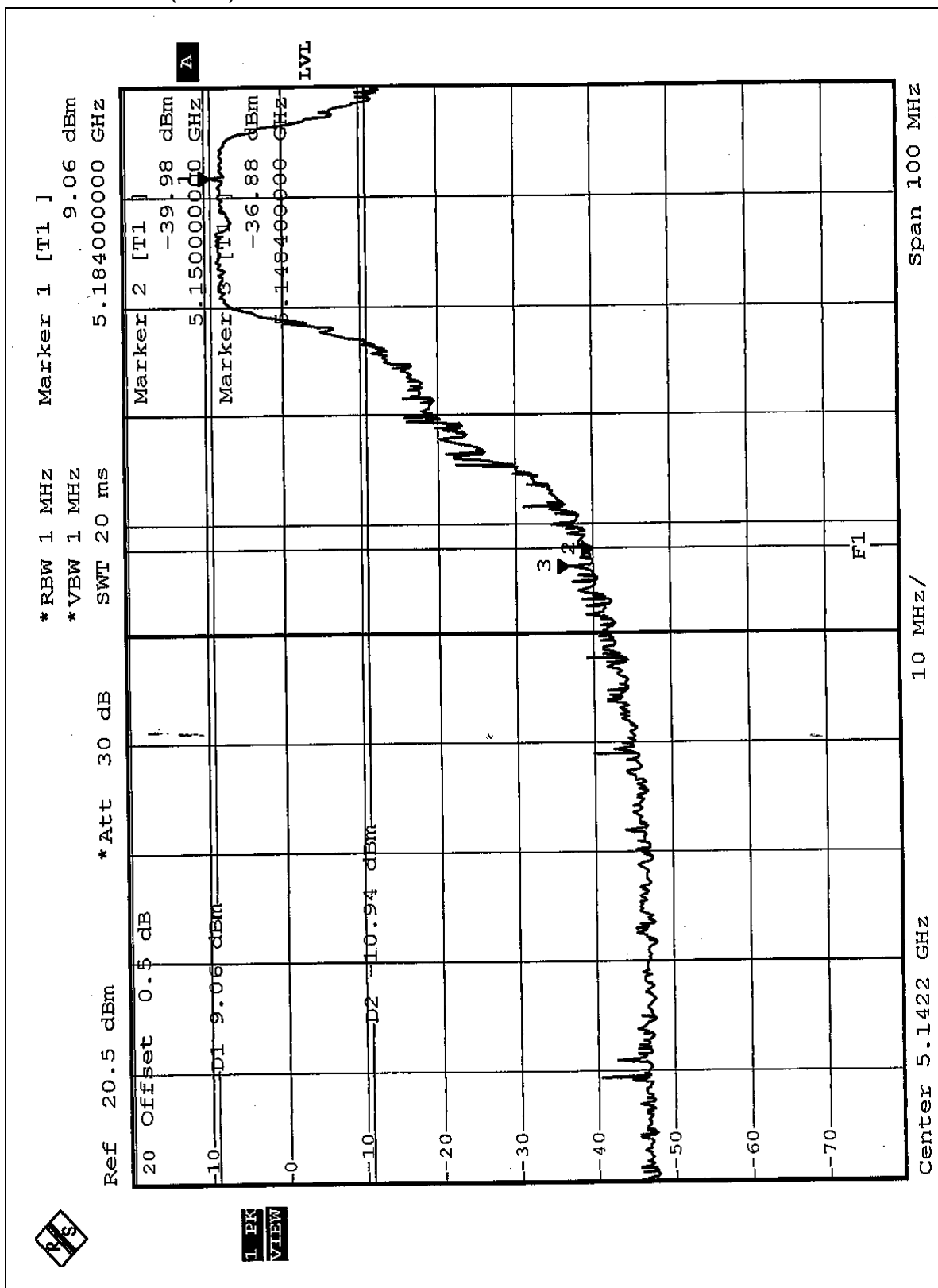
The band edge emission plot on the pages 155 ~156 shows 40.82dBc (Peak) / 45.52dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 97.93dBuV/m, so the maximum field strength in restrict band is $97.93 - 45.52 = 52.41$ dBuV/m which is under 54dBuV/m limit.

Channel 3 (5290MHz)

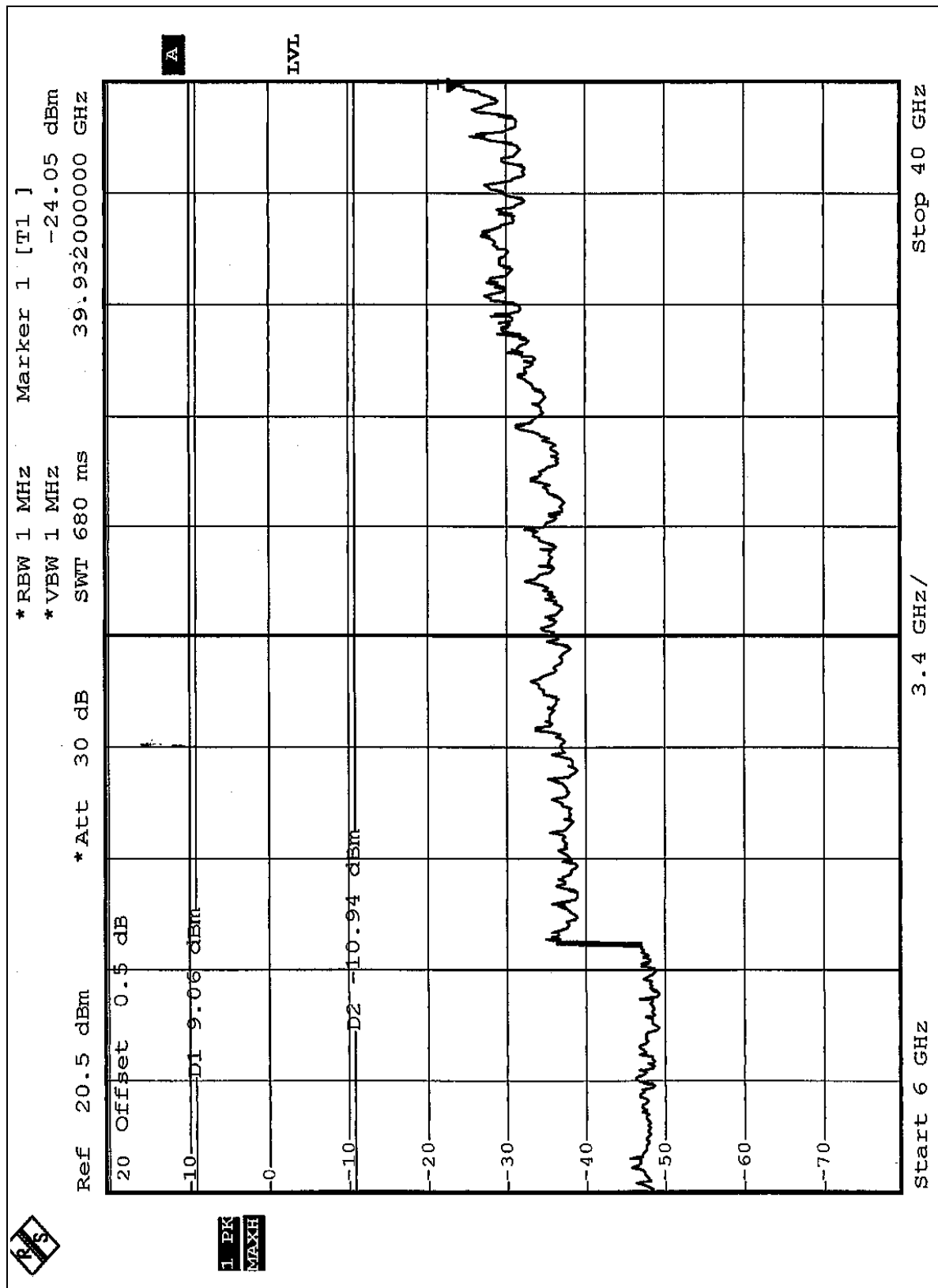
The band edge emission plot on the pages 158~159 shows 43.89dBc (Peak) / 48.51dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 3 is 98.47dBuV/m, so the maximum field strength in restrict band is $98.47 - 48.51 = 49.96$ dBuV/m which is under 54dBuV/m limit.



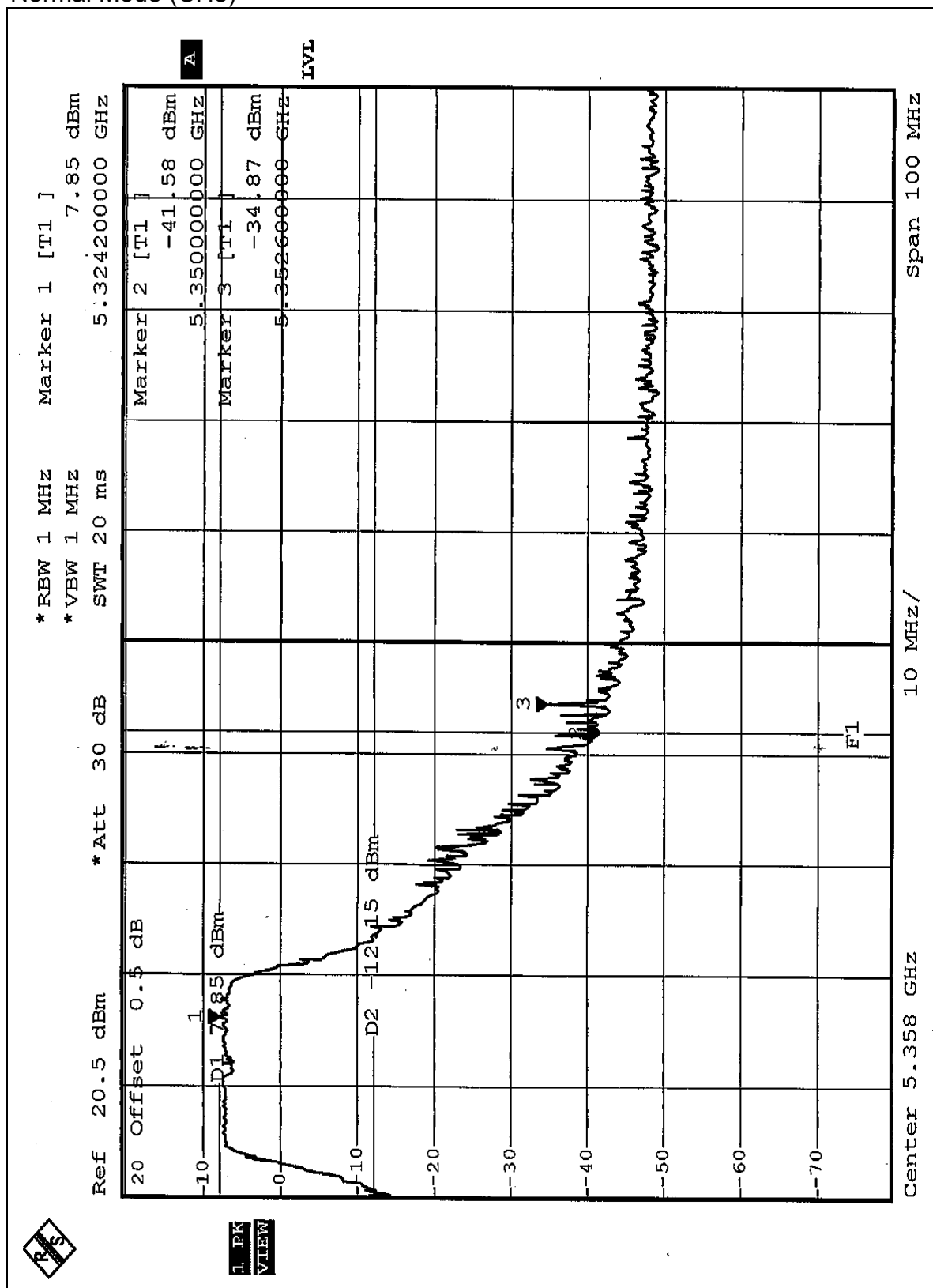
Normal Mode (CH1)

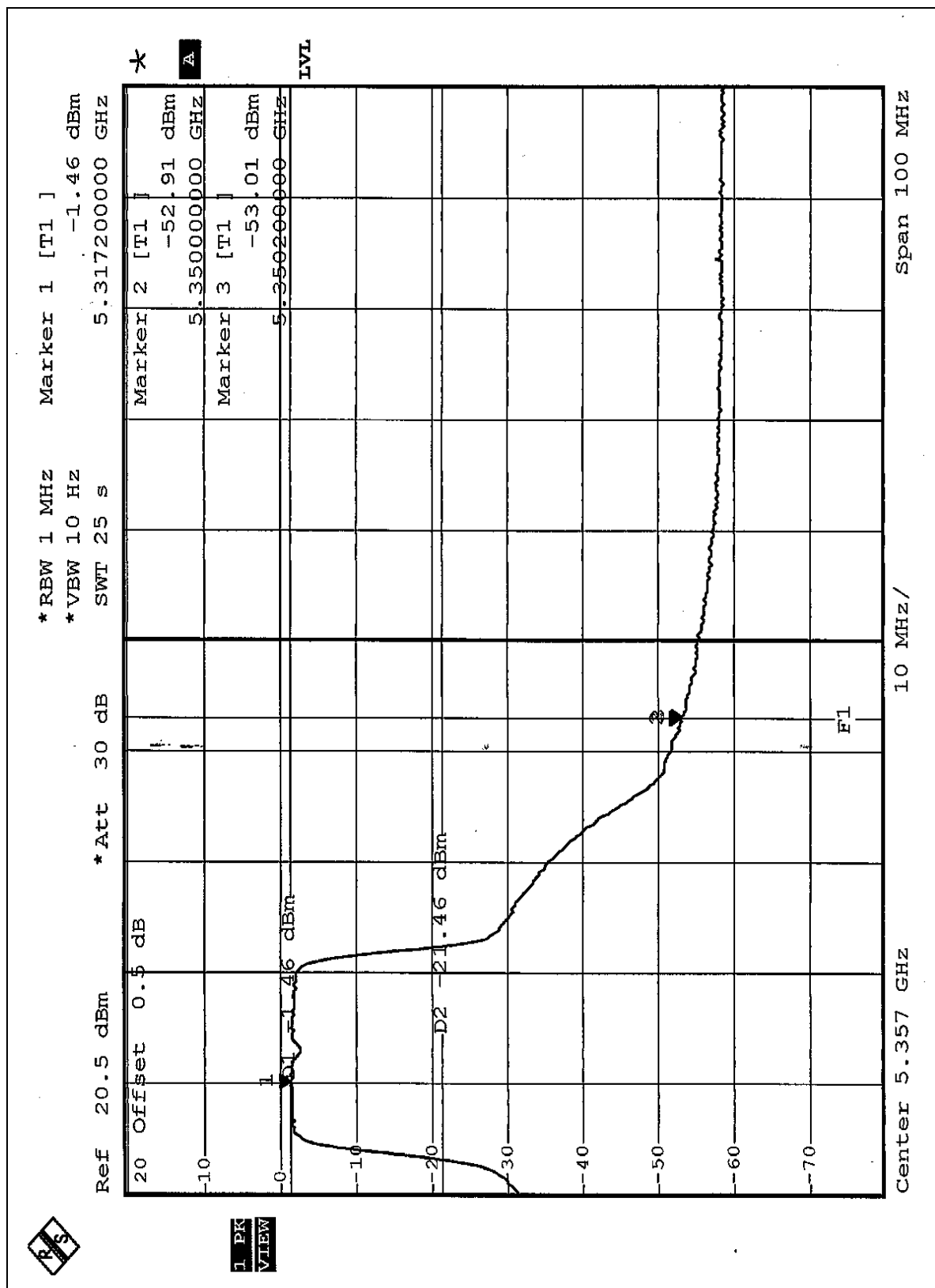


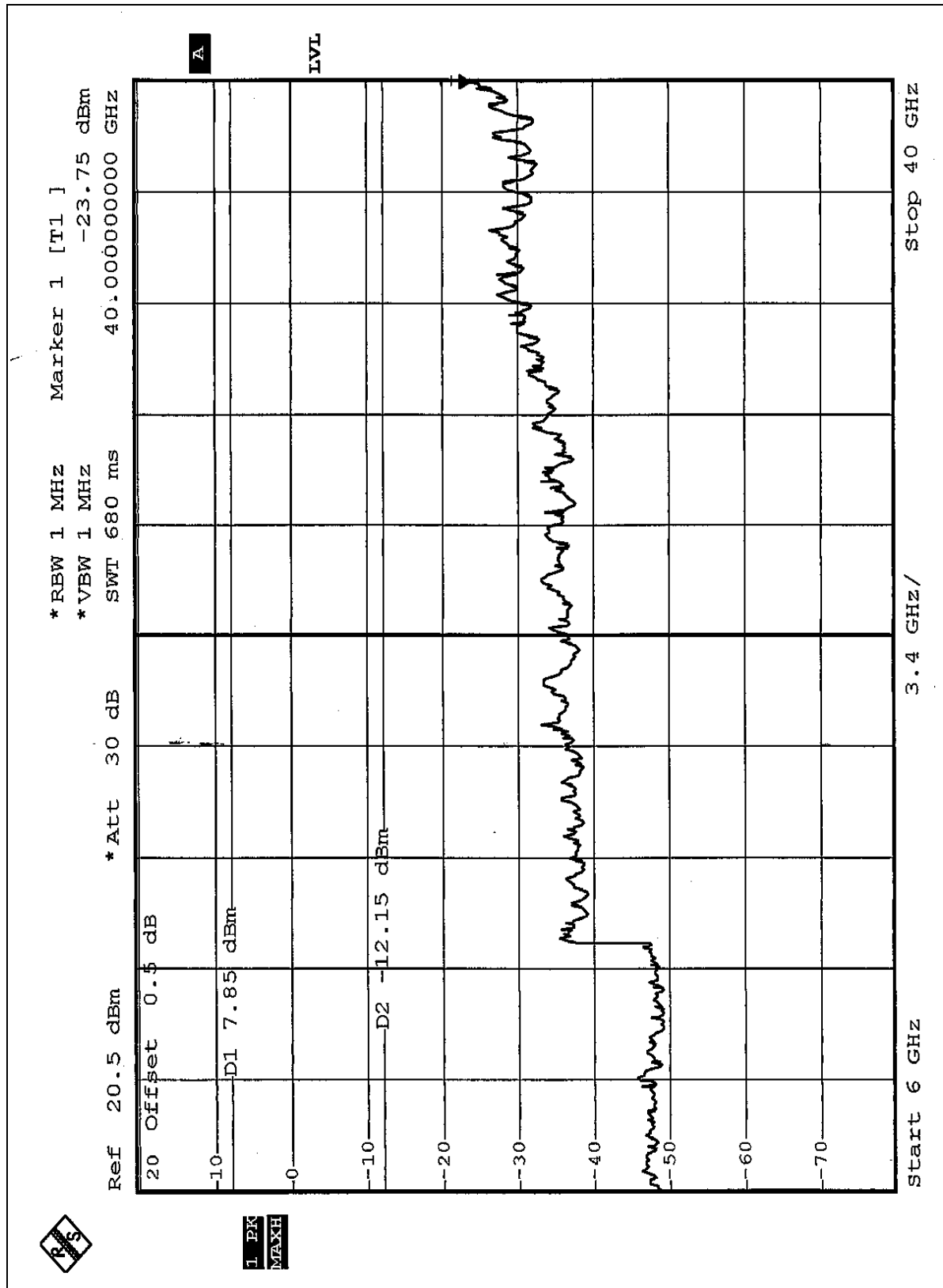




Normal Mode (CH8)

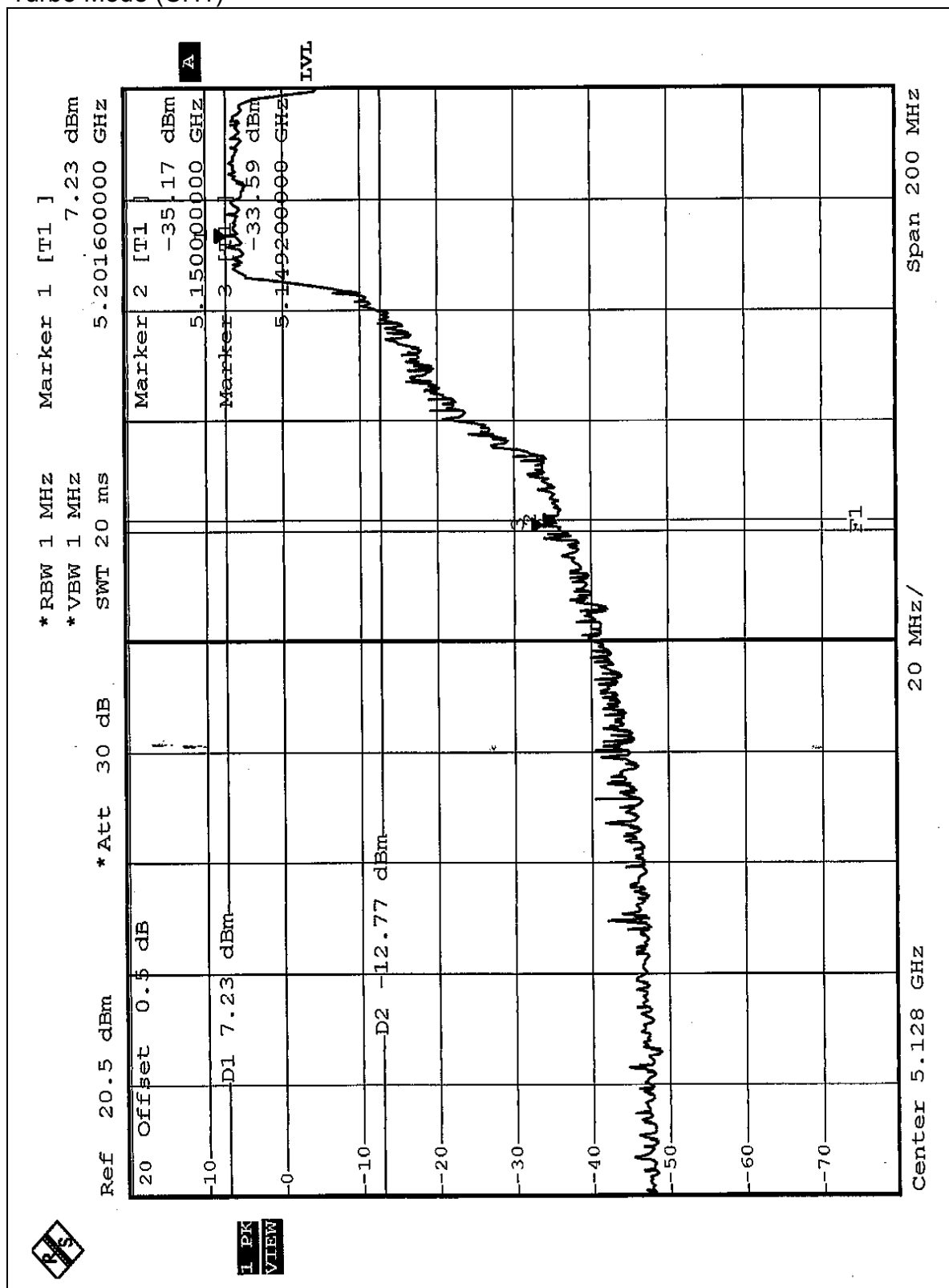


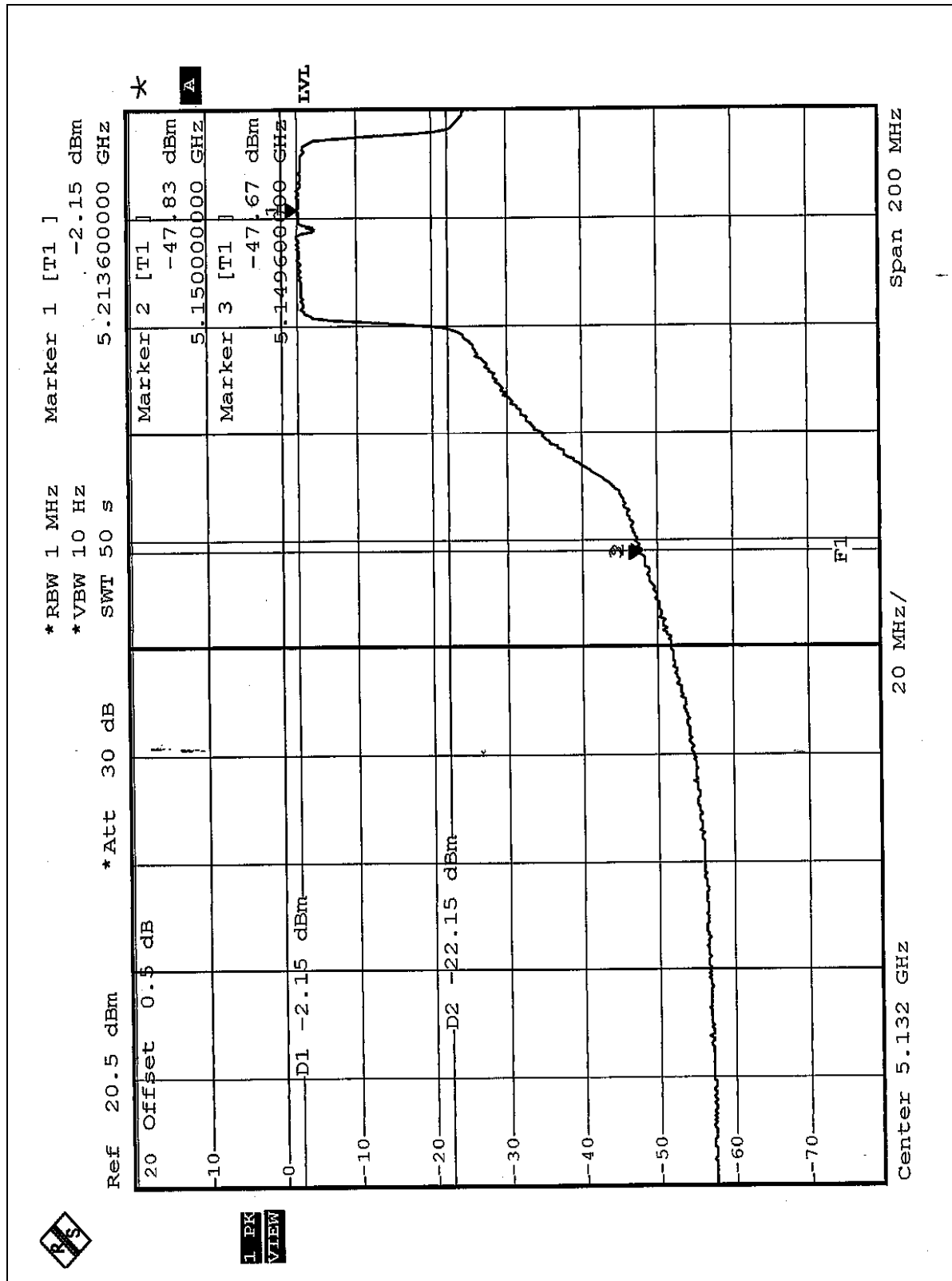


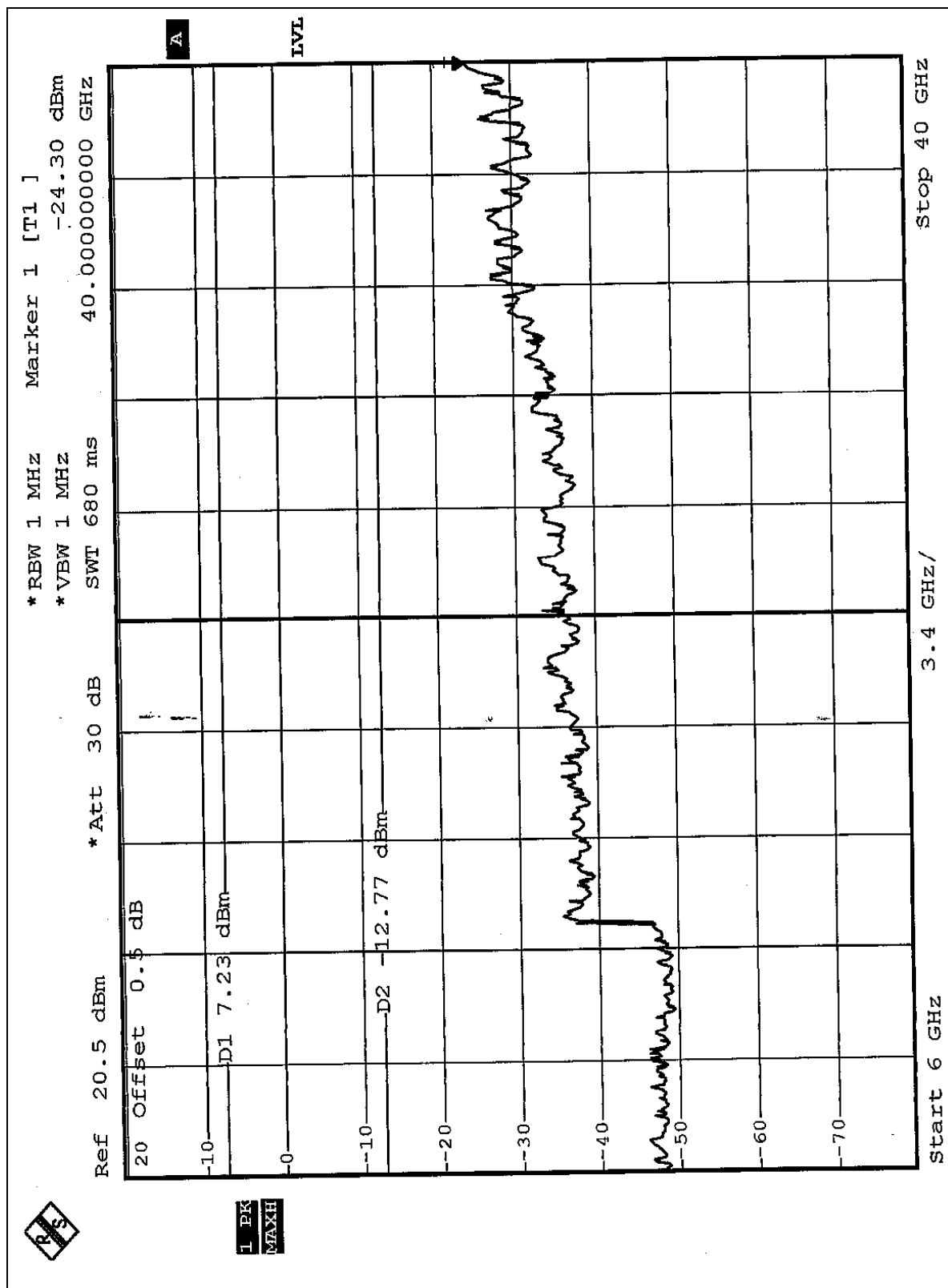




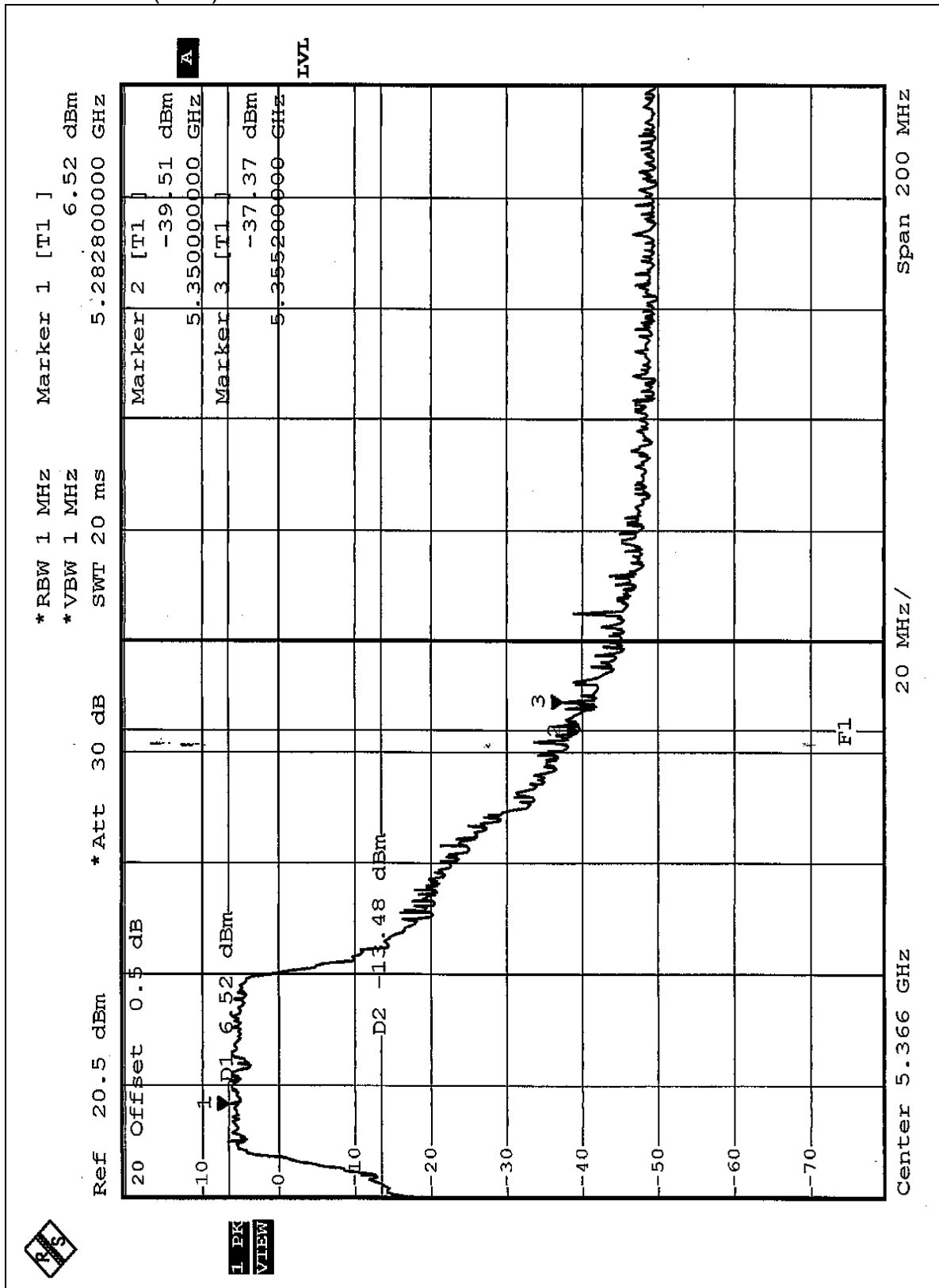
Turbo Mode (CH1)

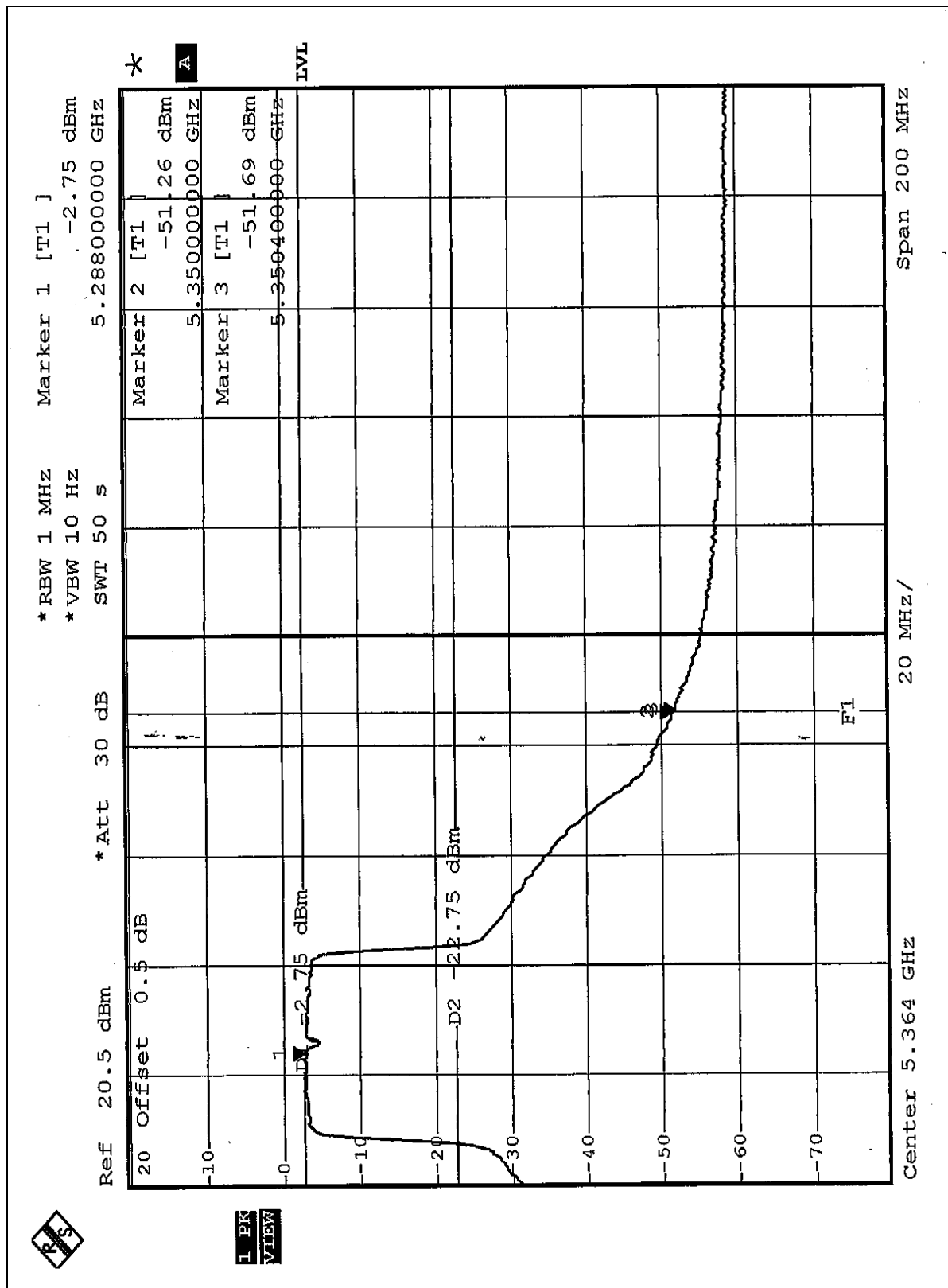


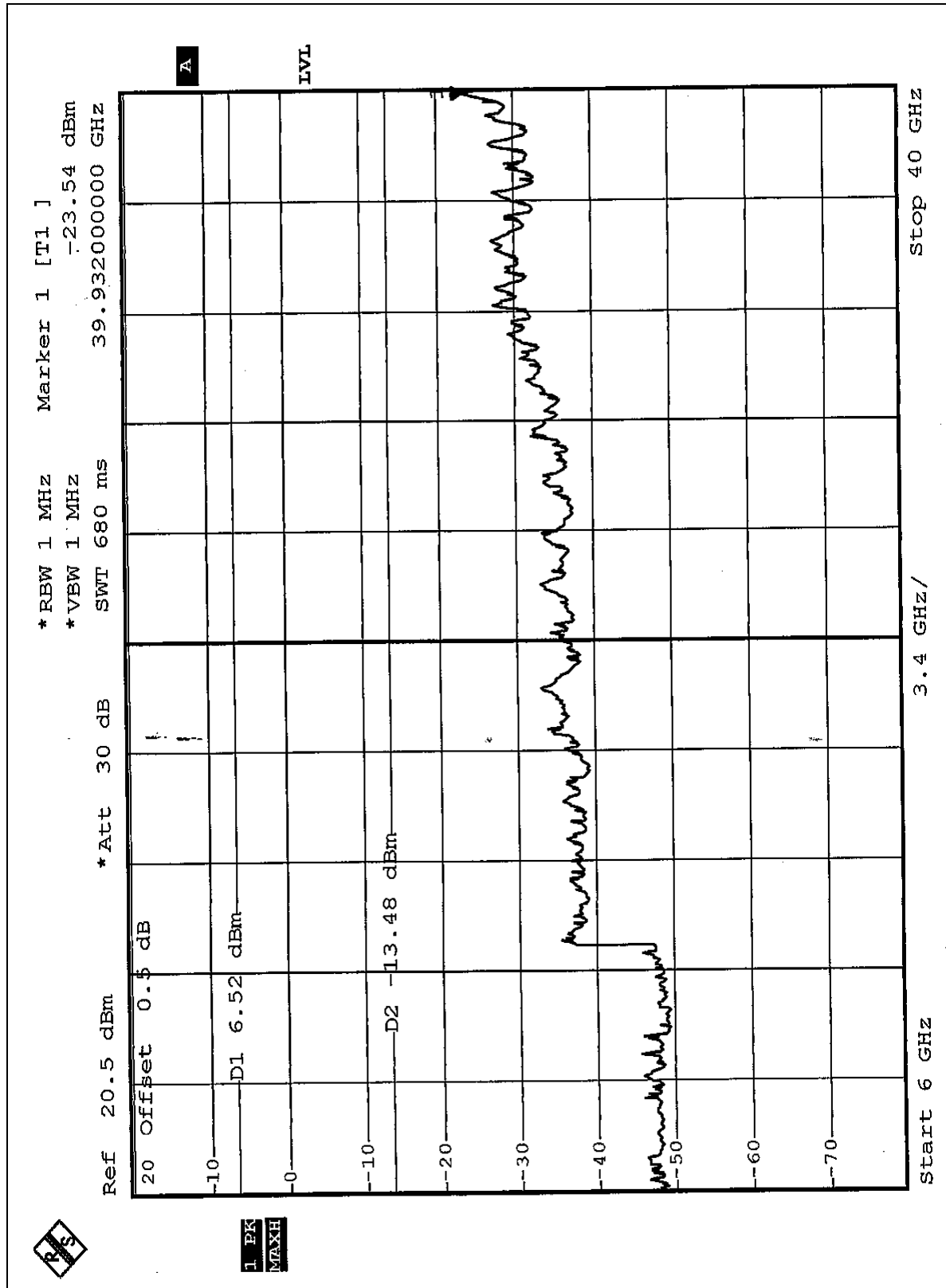




Turbo Mode (CH3)









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 Printed antenna without antenna connector. The maximum Gain of the antenna is 1.5dBi.

FOR FREQUENCY 5.725~5.850GHz**5.9 6dB BANDWIDTH MEASUREMENT****5.9.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT**

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

5.9.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

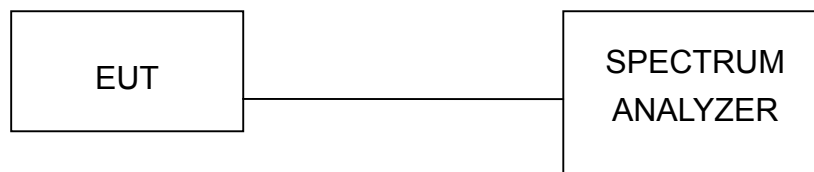
5.9.3 TEST PROCEDURE

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

5.9.4 DEVIATION FROM TEST STANDARD

No deviation

5.9.5 TEST SETUP



5.9.6 EUT OPERATING CONDITIONS

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

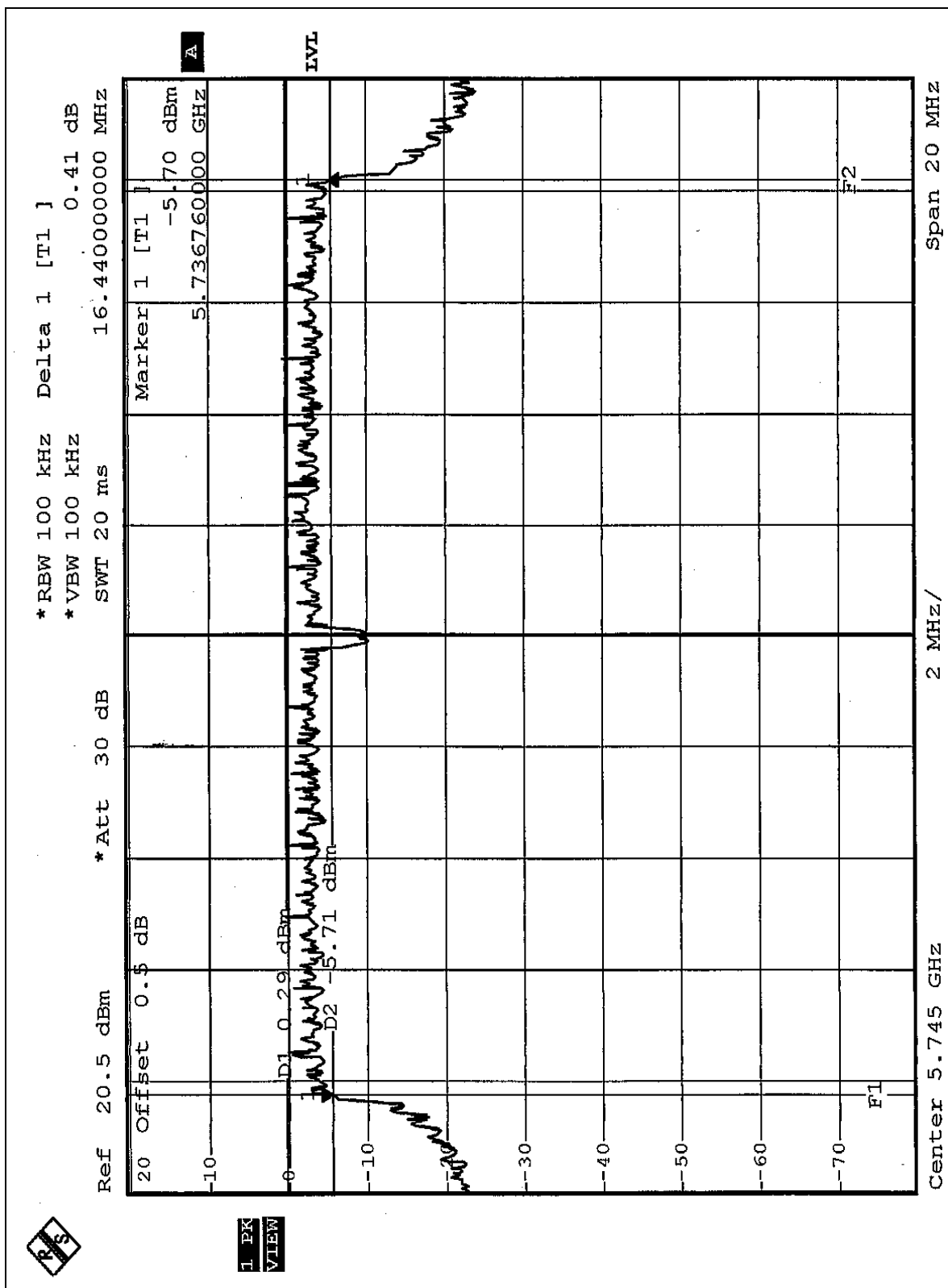
5.9.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
9	5745	16.44	0.5	PASS
11	5785	16.44	0.5	PASS
13	5825	16.44	0.5	PASS

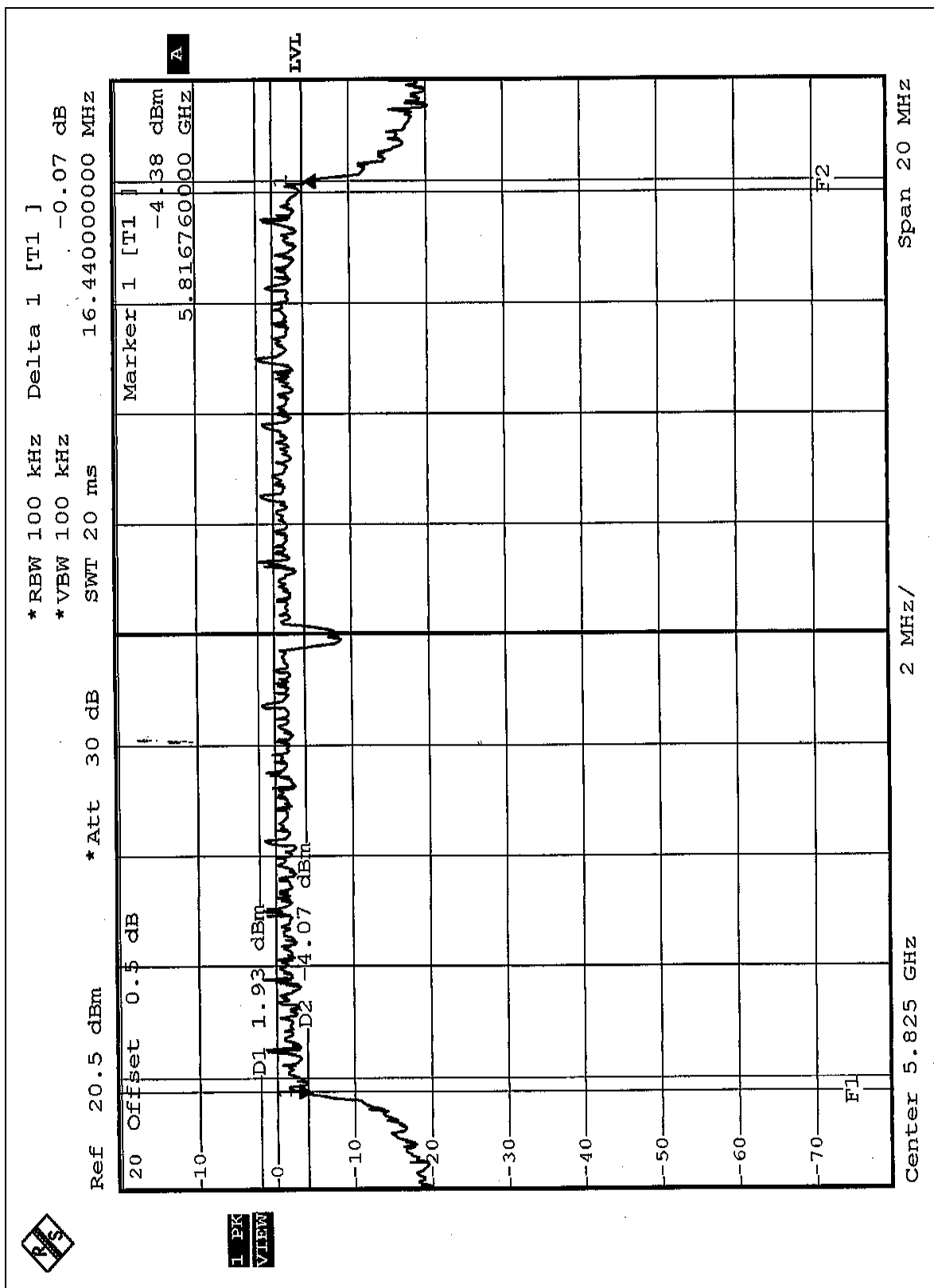


CH9

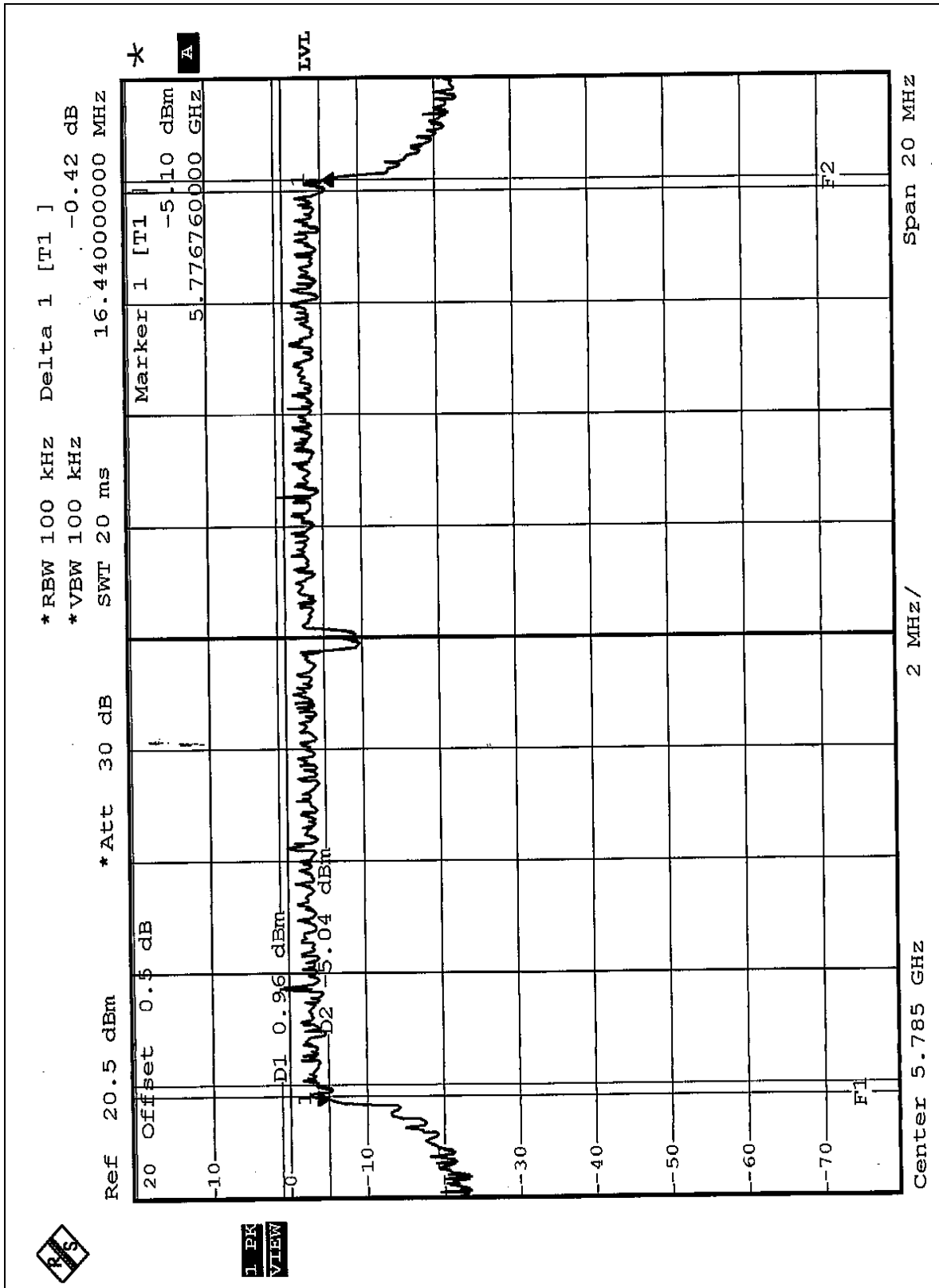




CH11



CH13



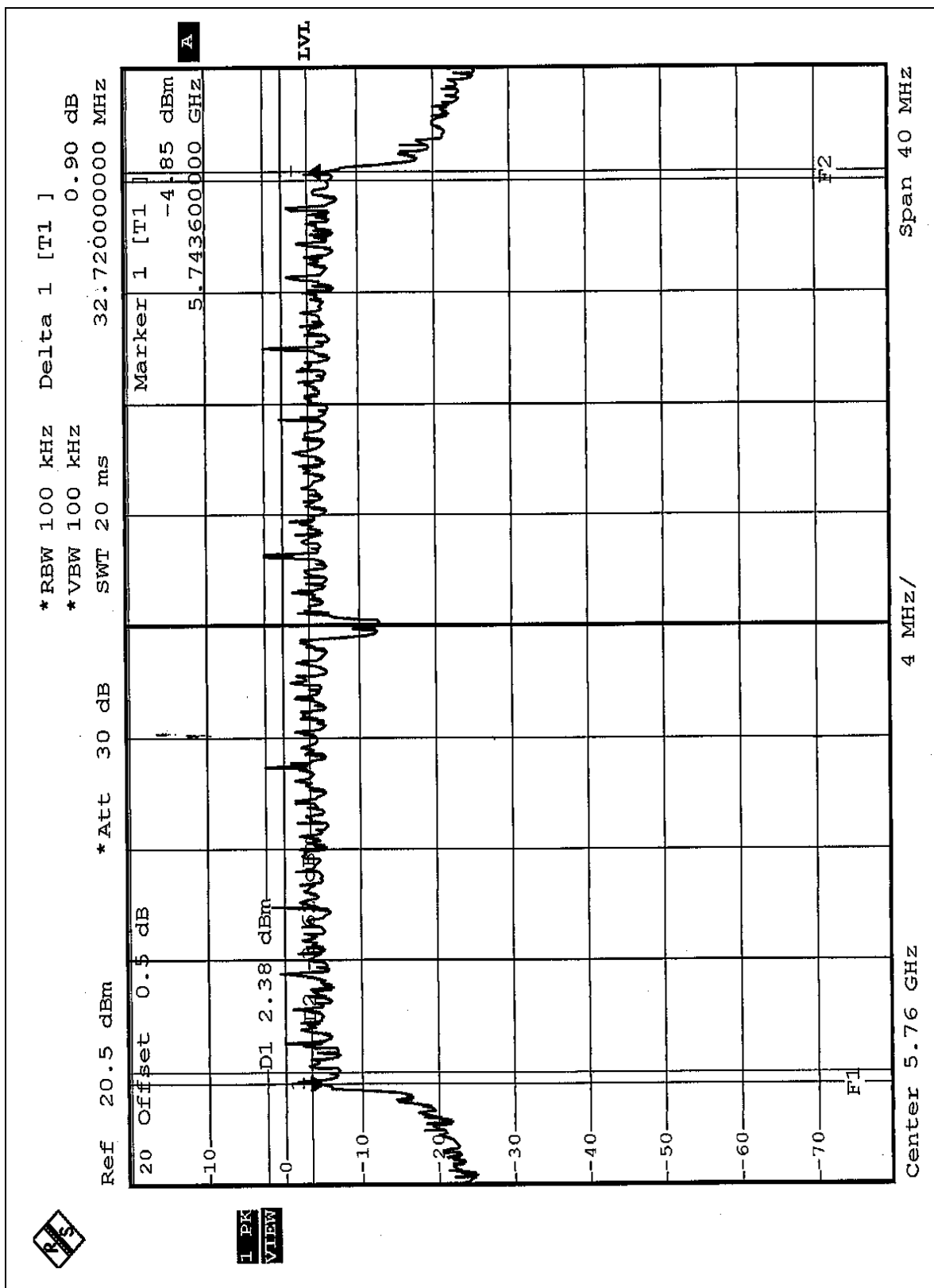


EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
4	5760	32.72	0.5	PASS
5	5800	32.64	0.5	PASS

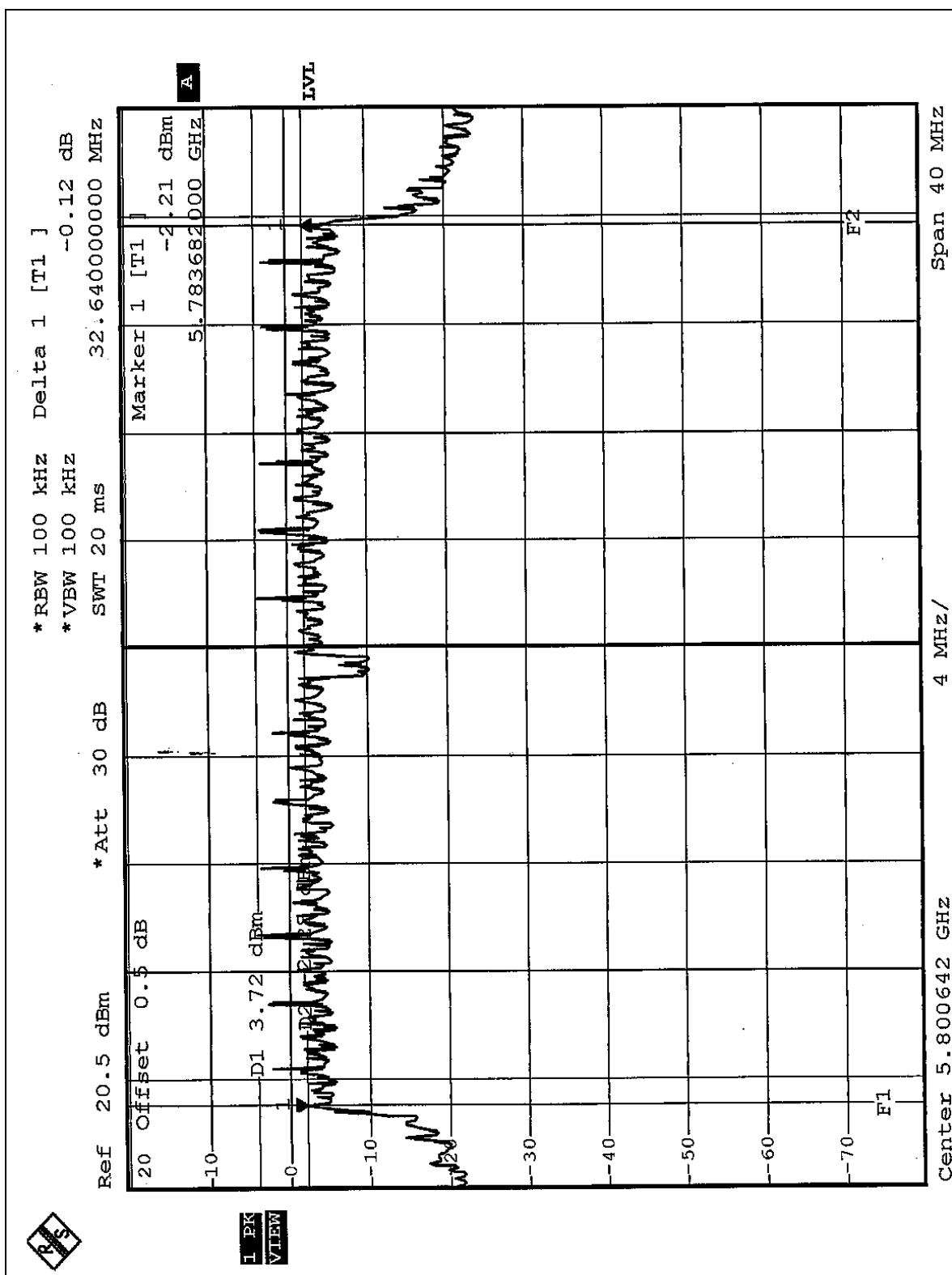


CH4





CH5



5.10 MAXIMUM PEAK OUTPUT POWER

5.10.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

5.10.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005
AGILENT SIGNAL GENERATOR	E8257C	MY43320668	Dec. 31, 2004
TEKTRONIX OSCILLOSCOPE	TDS 1012	C019167	Feb. 01, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

NOTE:

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

5.10.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

5.10.4 DEVIATION FROM TEST STANDARD

No deviation

5.10.5 TEST SETUP



5.10.6 EUT OPERATING CONDITIONS

Same as Item 5.9.6

5.10.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
9	5745	40.365	16.06	30	PASS
11	5785	39.902	16.01	30	PASS
13	5825	44.875	16.52	30	PASS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
4	5760	39.994	16.02	30	PASS
5	5800	39.811	16.00	30	PASS

5.11 POWER SPECTRAL DENSITY MEASUREMENT

5.11.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

5.11.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTES:

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

5.11.3 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.

5.11.4 DEVIATION FROM TEST STANDARD

No deviation

5.11.5 TEST SETUP



5.11.6 EUT OPERATING CONDITION

Same as Item 5.9.6

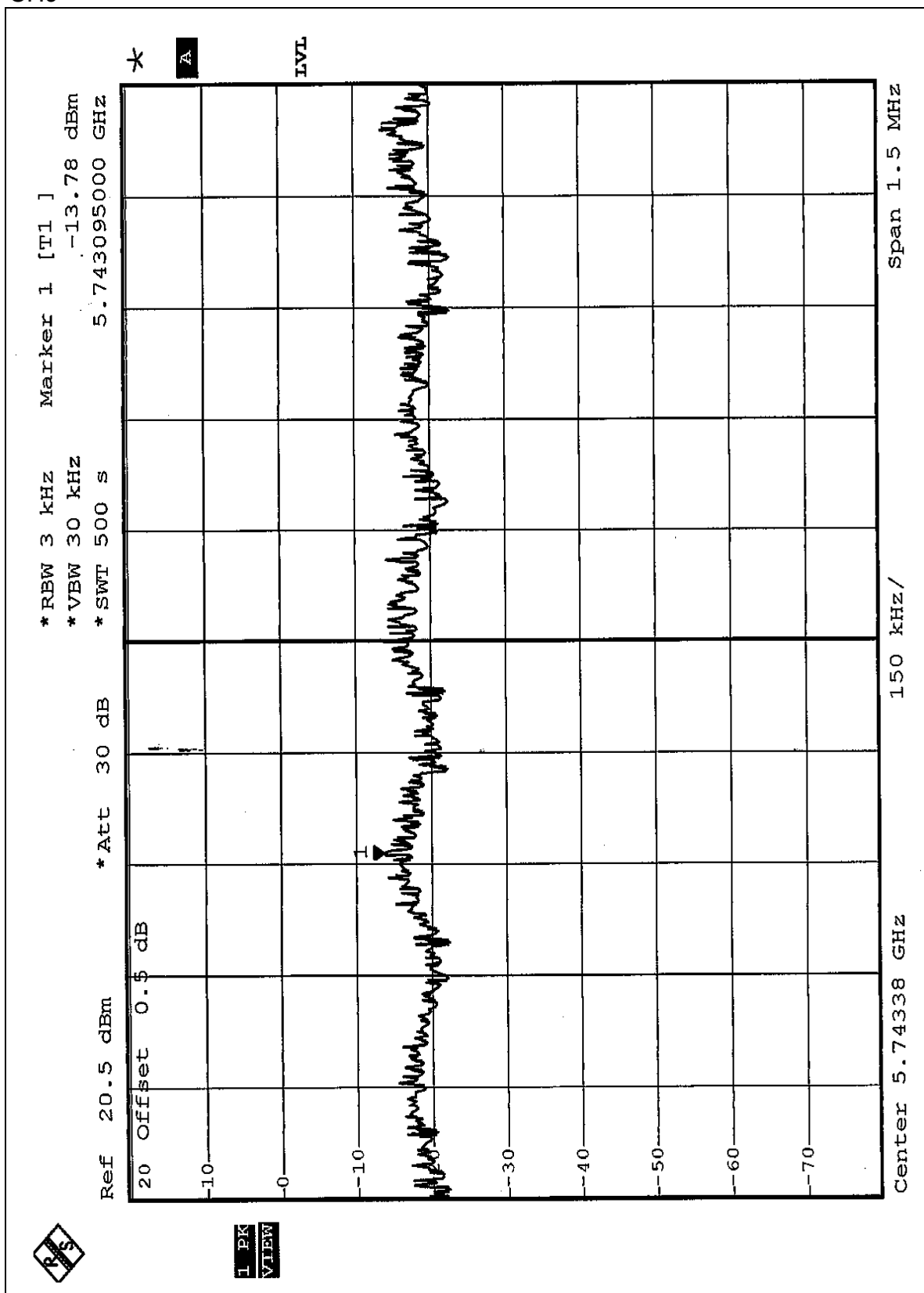
5.11.7 TEST RESULTS

EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
9	5745	-13.78	8	PASS
11	5785	-13.85	8	PASS
13	5825	-11.75	8	PASS

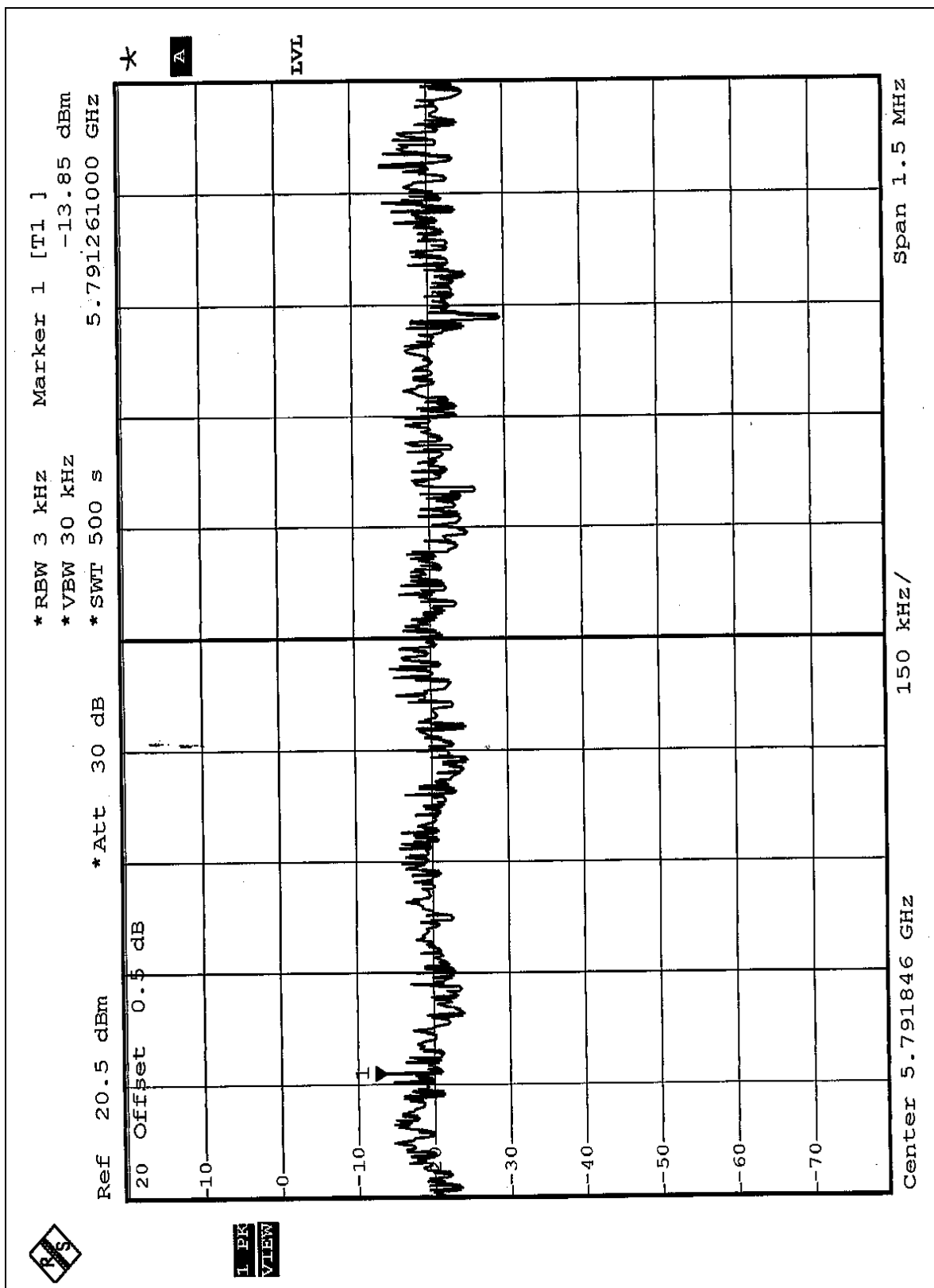


CH9



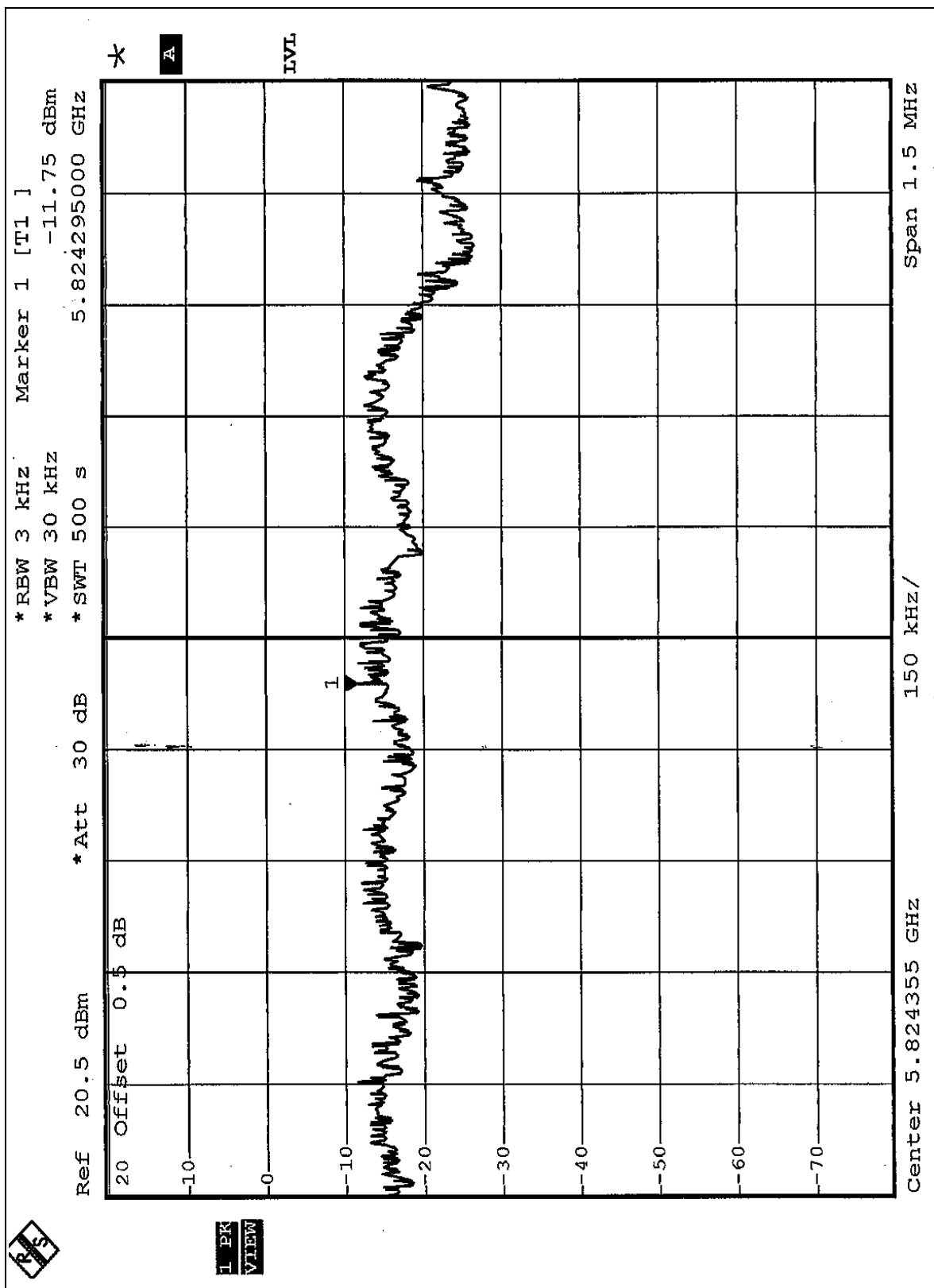


CH11





CH13



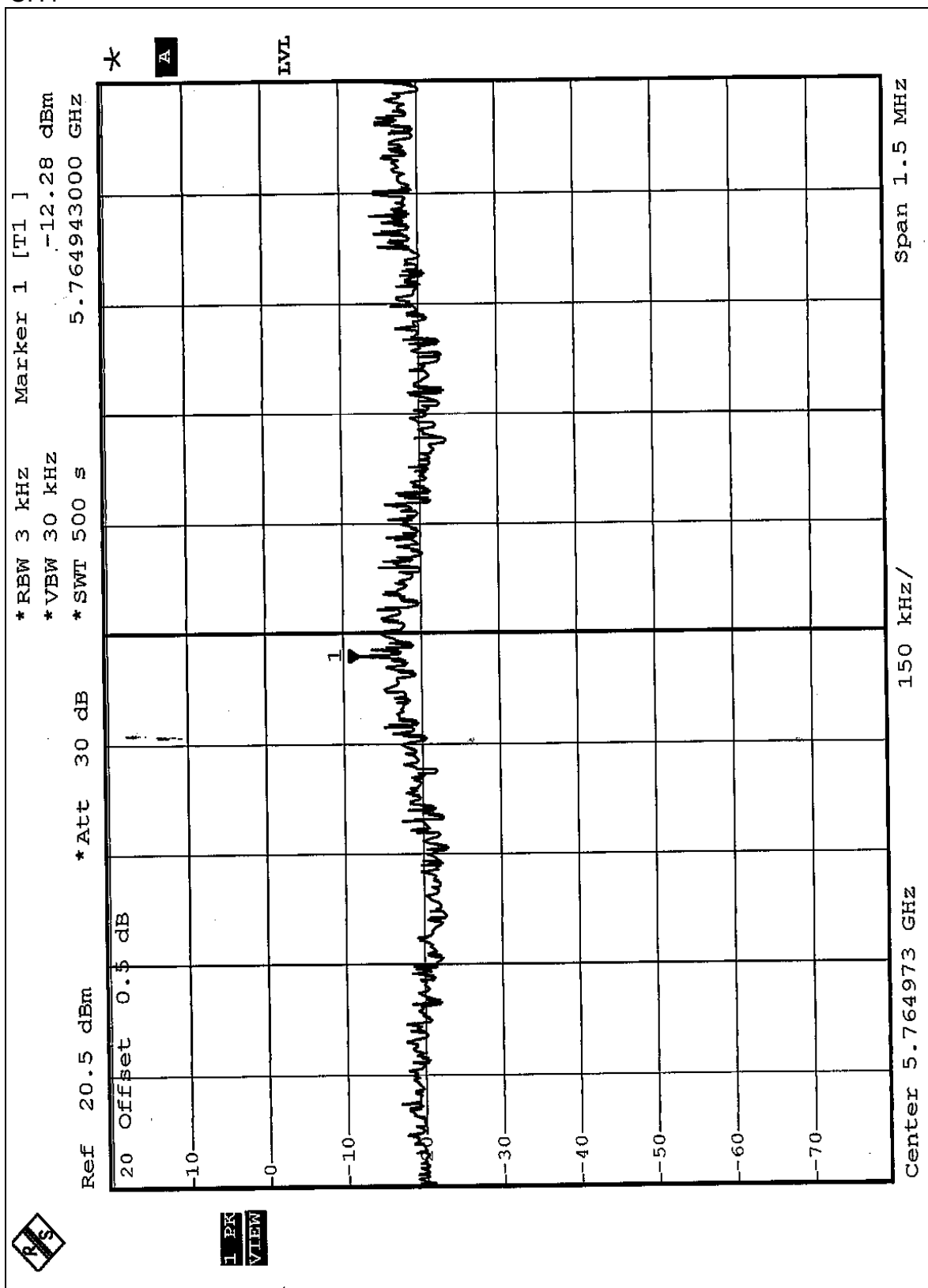


EUT	Wireless A/G CardBus Network Card	MODEL	WPCA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991 hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
4	5760	-12.28	8	PASS
5	5800	-12.34	8	PASS

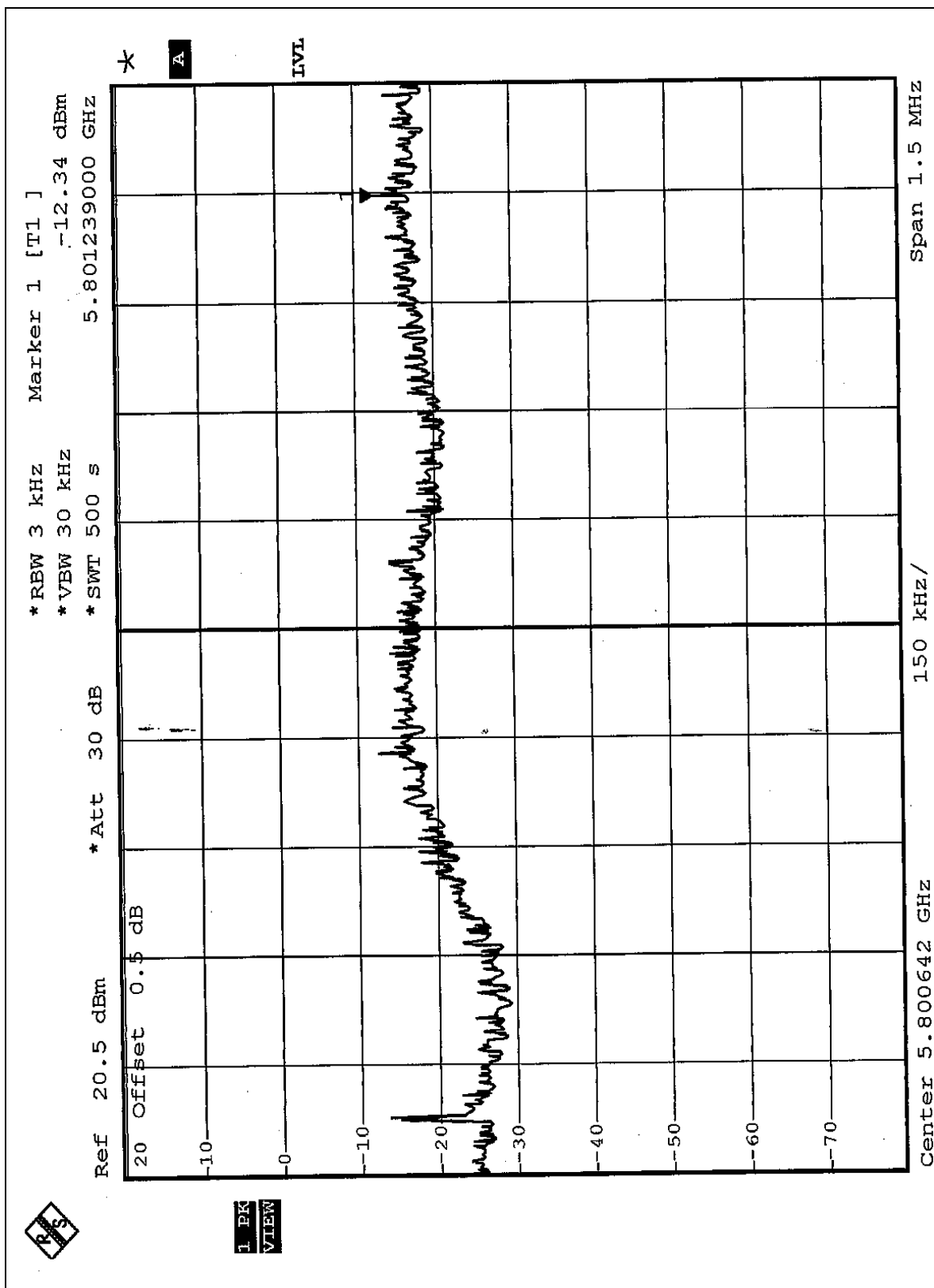


CH4





CH5



5.12 BAND EDGES MEASUREMENT

5.12.1 LIMITS OF BAND EDGES MEASUREMENT

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

5.12.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

NOTES:

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

5.12.3 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.

5.12.4 DEVIATION FROM TEST STANDARD

No deviation



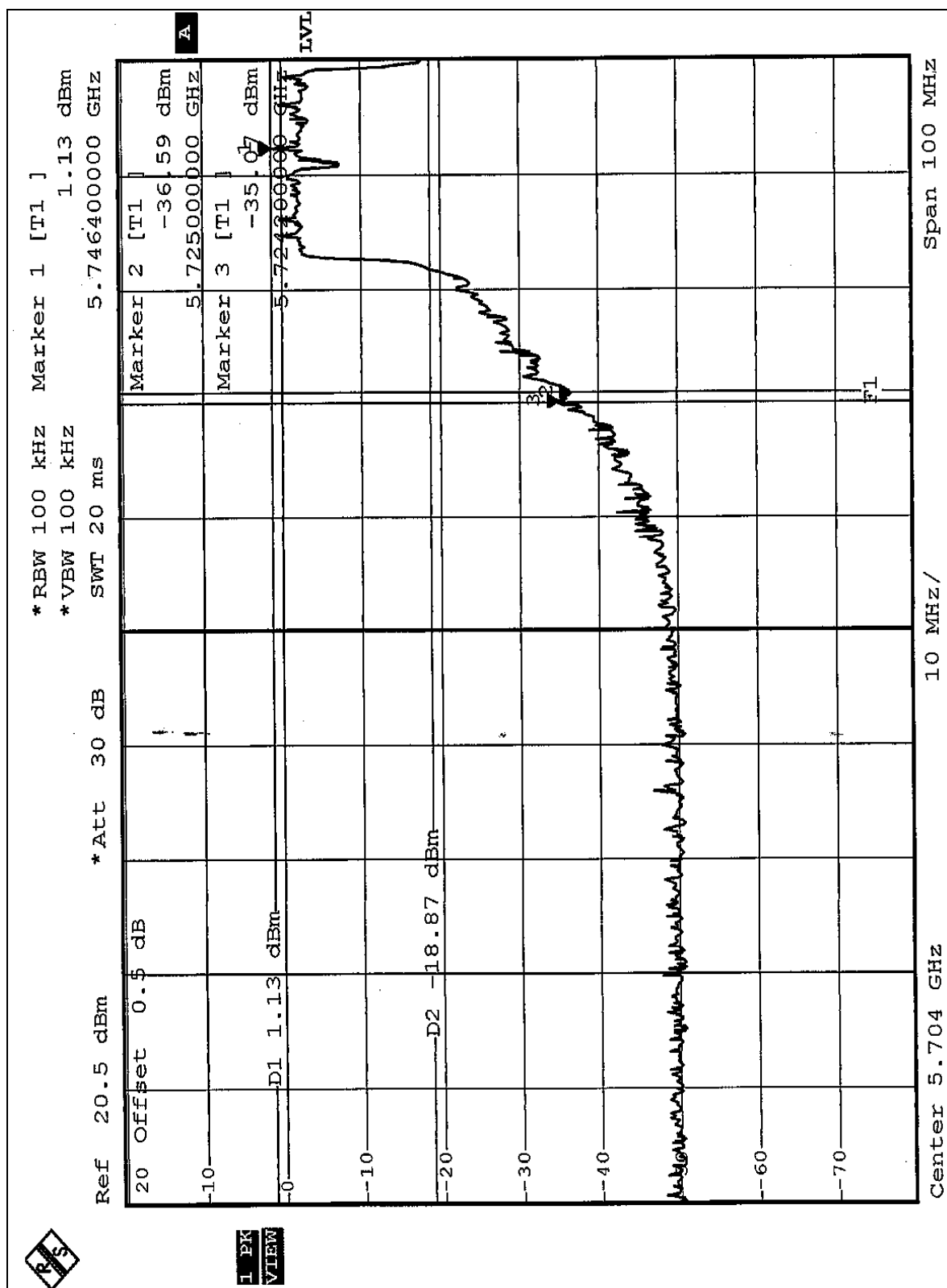
5.12.5 EUT OPERATING CONDITION

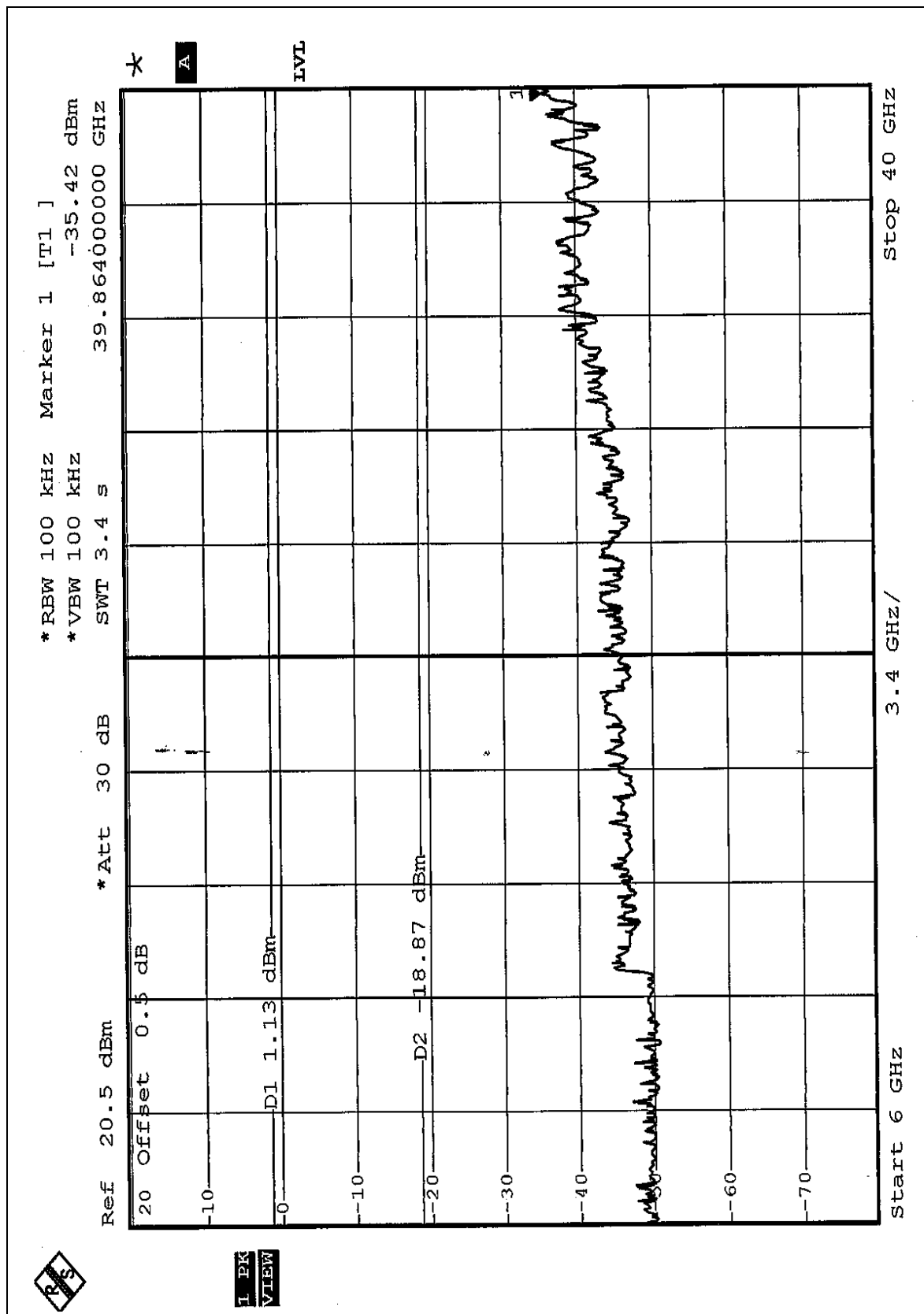
Same as Item 5.9.6

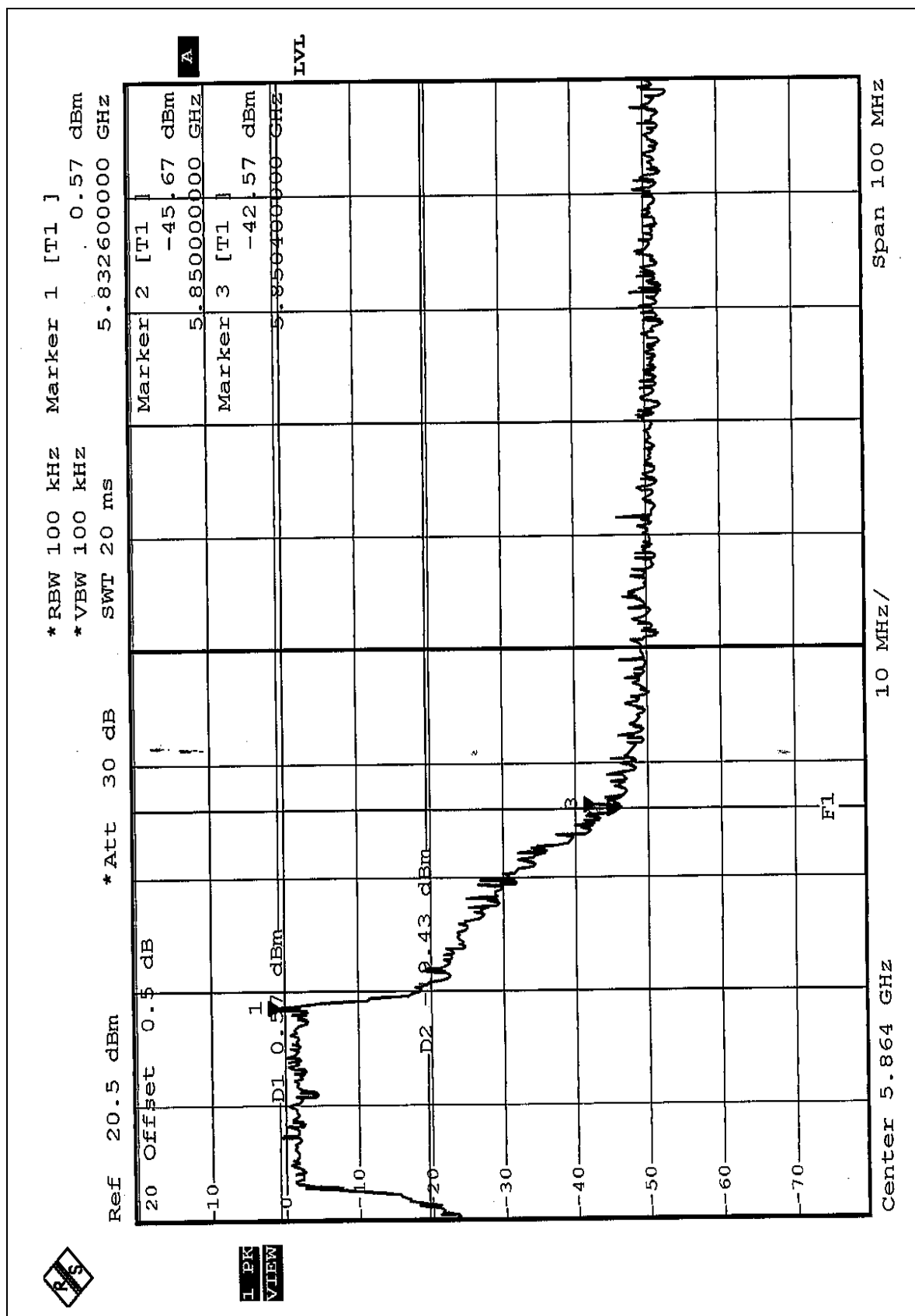
5.12.6 TEST RESULTS

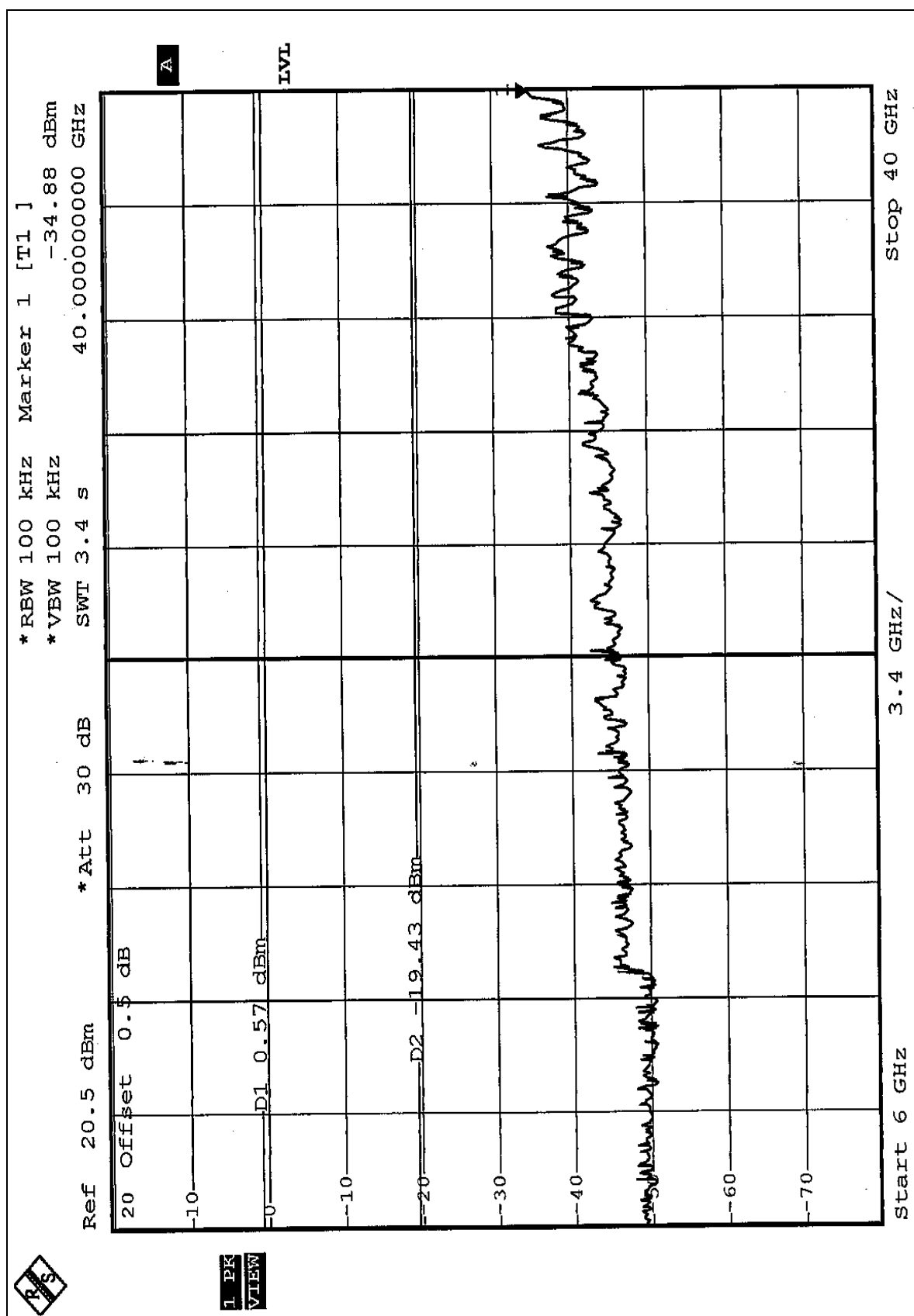
The spectrum plots are attached on the following pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(d).

Normal Mode

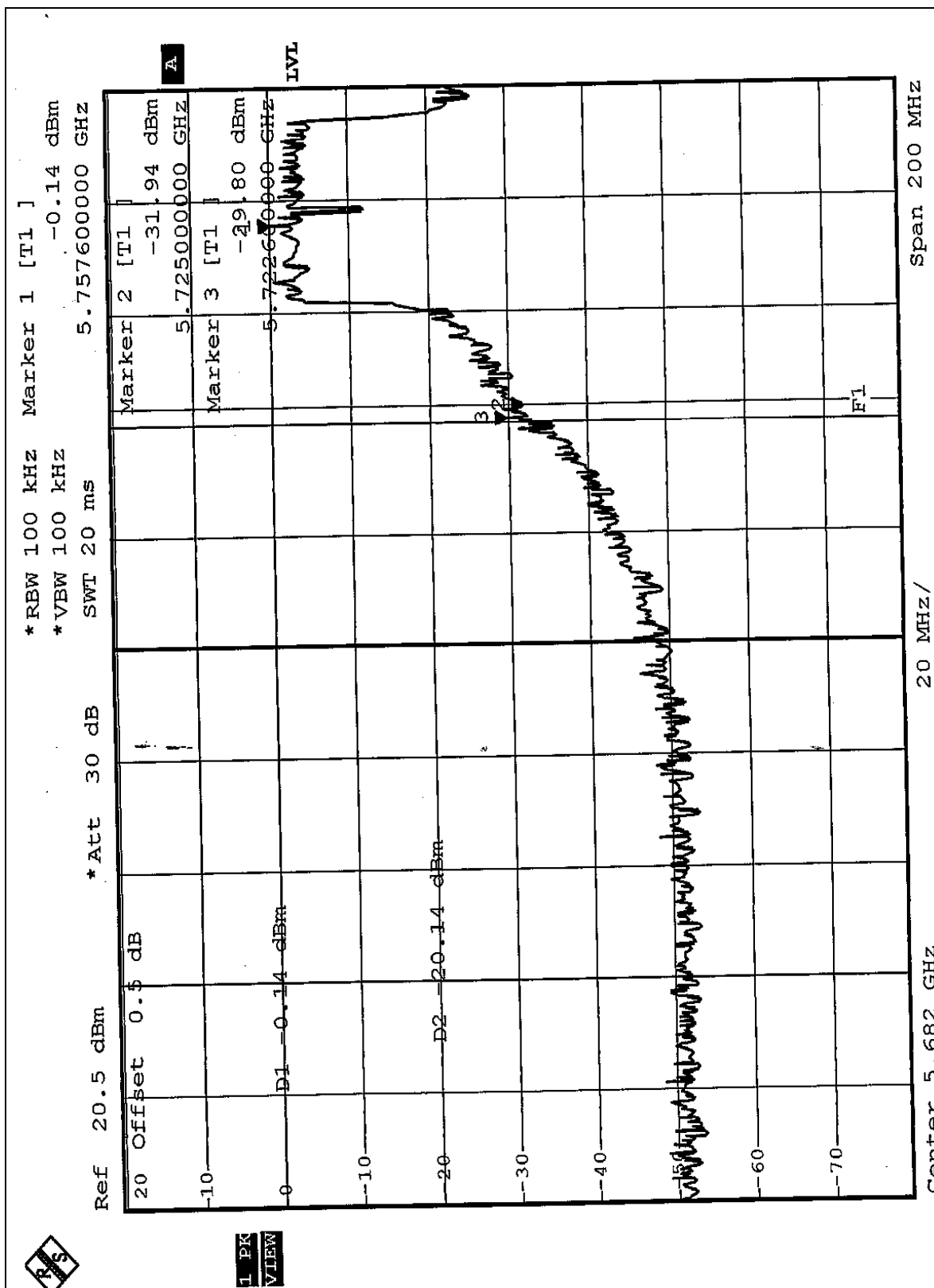


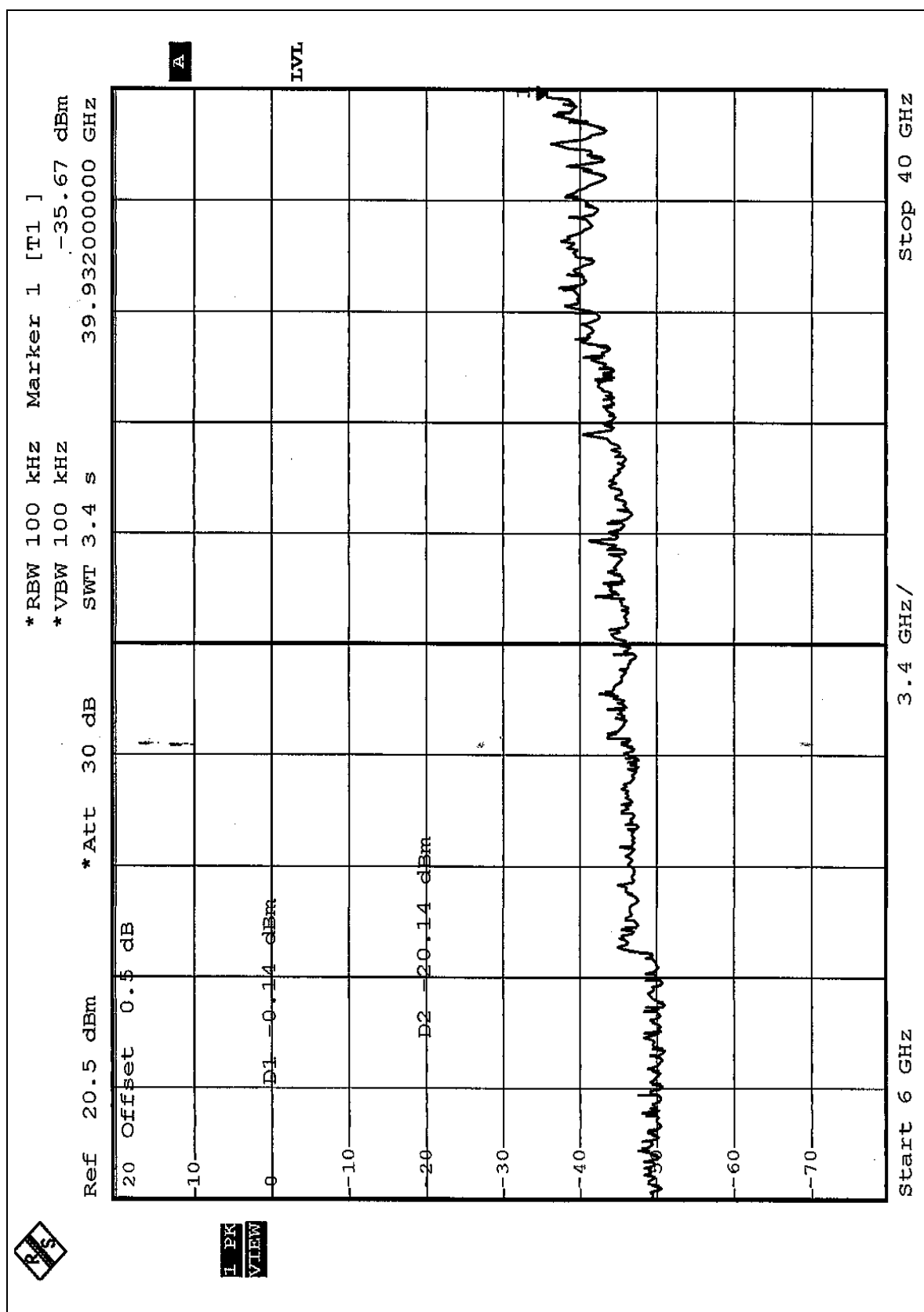


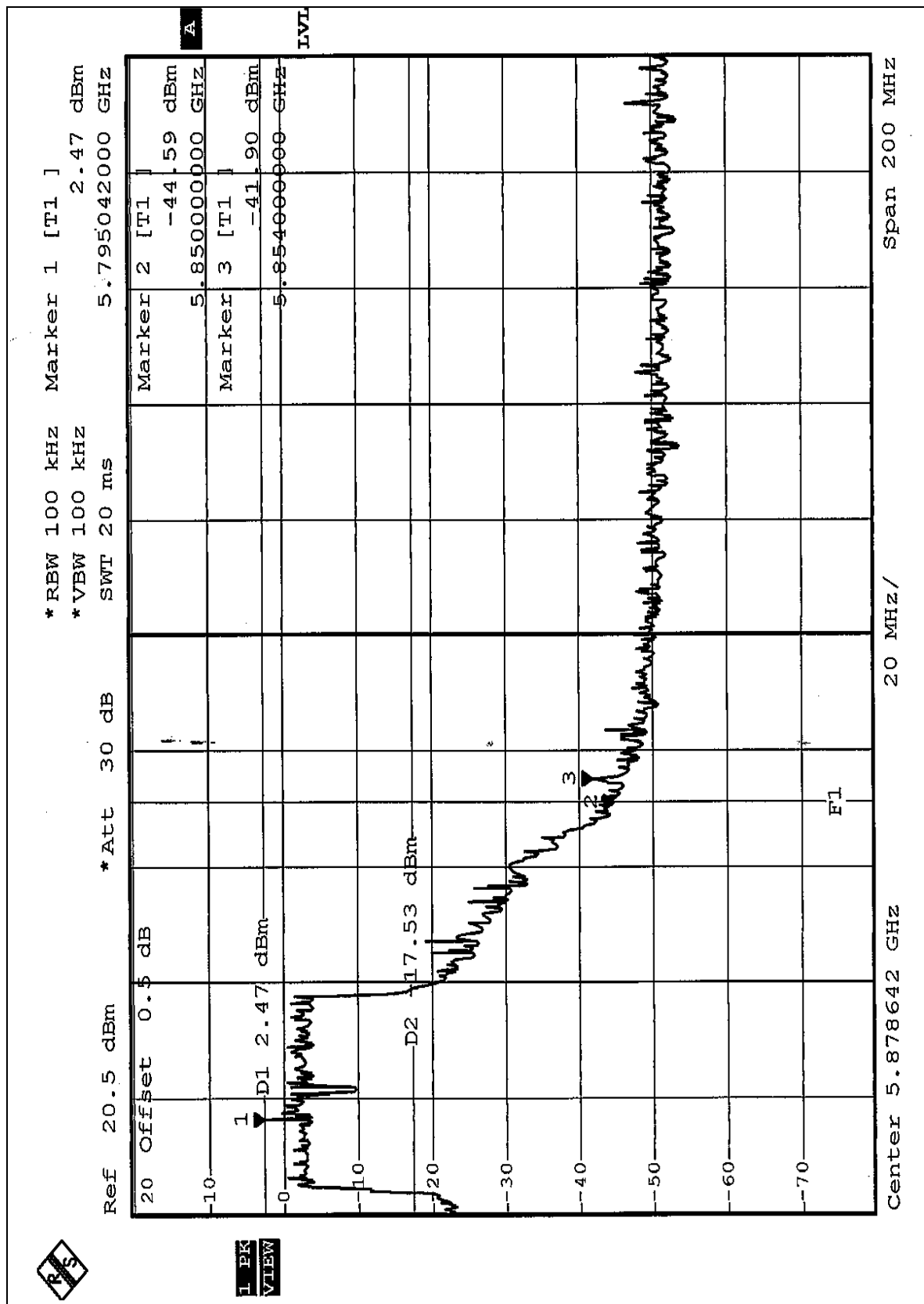


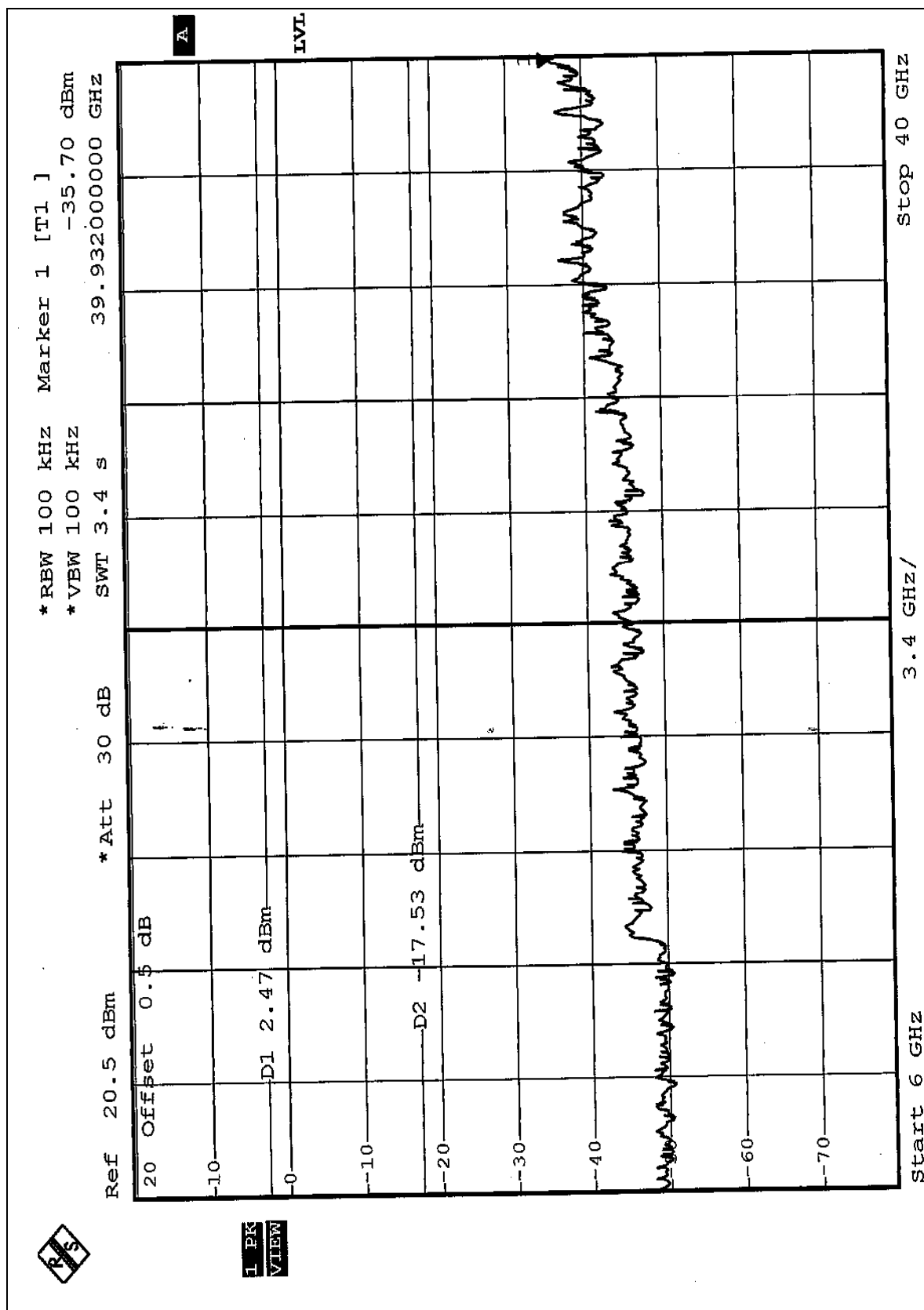


Turbo Mode











5.13 ANTENNA REQUIREMENT

5.13.1 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.

5.13.2 ANTENNA CONNECTED CONSTRUCTION

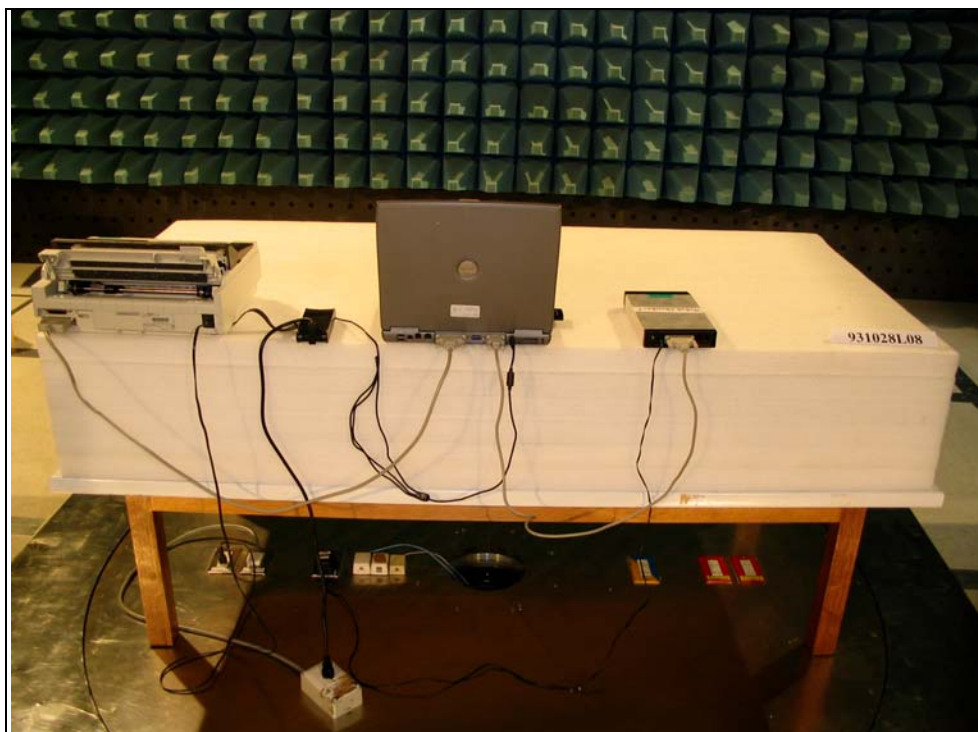
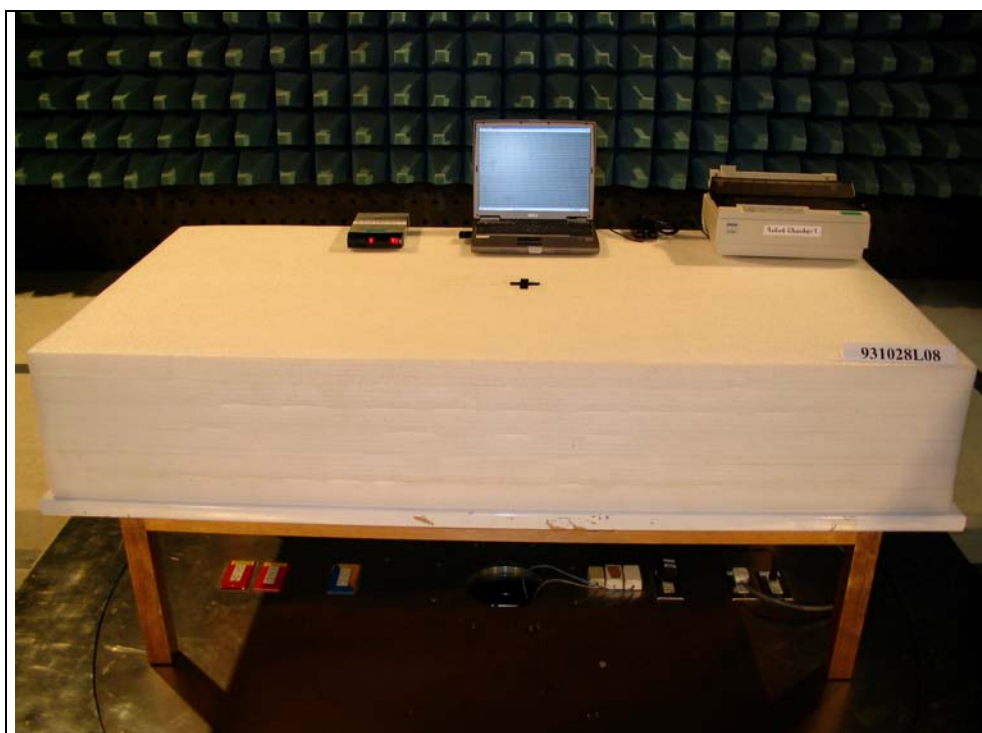
The antenna used in this product is Printed antenna without antenna connector. The maximum Gain of the antenna is 1.5dBi.

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, A2LA
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

Report Format Version 1.5