



FCC TEST REPORT

REPORT NO.: RF930726L10

MODEL NO.: WMIA-112AG

RECEIVED: July 16, 2004

TESTED: July 16 ~ July 21, 2004

APPLICANT: Gemtek Technology Co., Ltd.

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ILAC MRA



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1. CERTIFICATION

PRODUCT: Wireless A+G Mini PCI Card
BRAND NAME: Gemtek
MODEL NO.: WMIA-112AG
APPLICANT: Gemtek Technology Co., Ltd.
TEST ITEM: Engineering Sample
TESTED: July 16 ~ July 21, 2004
STANDARDS: FCC Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407), ANSI C63.4-2001

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

PREPARED BY : Windy Chou , **DATE:** Aug. 03, 2004
(Windy Chou)

TECHNICAL
ACCEPTANCE : Gary Chang , **DATE:** Aug. 03, 2004
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang , **DATE:** Aug. 03, 2004
(Cody Chang, Supervisor)

2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -24.87dB at 1.484MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -2.94dB at 166.20MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.



For Freq. 5.15 ~ 5.35GHz:

APPLIED STANDARD: FCC Part 15, Subpart E (Section 15.407)			
Standard Section	Test Type	Result	Remark
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -21.69dB at 1.684MHz
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 -0.85dB at 10360.00MHz
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 (Section 15.247)			
Standard Section	Test Type and Limit	Result	Remark
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -21.60dB at 1.684MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit.
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit.
15.247(c)	Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -2.63dB at 11570.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit.
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit.

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	9k~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.65 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	Wireless A+G Mini PCI Card
MODEL NO.	WMIA-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: 15.50dBm 802.11g: 13.50dBm 802.11a: 11.57dBm
DATA CABLE	NA
ANTENNA TYPE	External Antenna: Dipole antenna with 4.0dBi gain for 2412 ~ 2462MHz PIFA antenna with 5.0dBi gain for 5.15 ~ 5.35GHz PIFA antenna with 4.5dBi gain for 5.725 ~ 5.850GHz Internal Antenna: Dipole antenna with 2.44dBi gain for 2412 ~ 2462MHz PIFA antenna with 1.65dBi gain for 5.15 ~ 5.35GHz PIFA antenna with 0.67dBi gain for 5.725 ~ 5.850GHz
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:

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

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:

1. The EUT was tested in both normal mode (channel bandwidth of approximately 30MHz) and turbo mode (channel bandwidth of approximately 60MHz).
2. "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).
3. "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).
4. Channel 1, 4, 5, 8, 9, 11, 12 and 13 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.
5. 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 Mini PCI 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 : 2001**

All test items have been performed and recorded as per the above standards.

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.4 DESCRIPTION OF SUPPORT UNITS

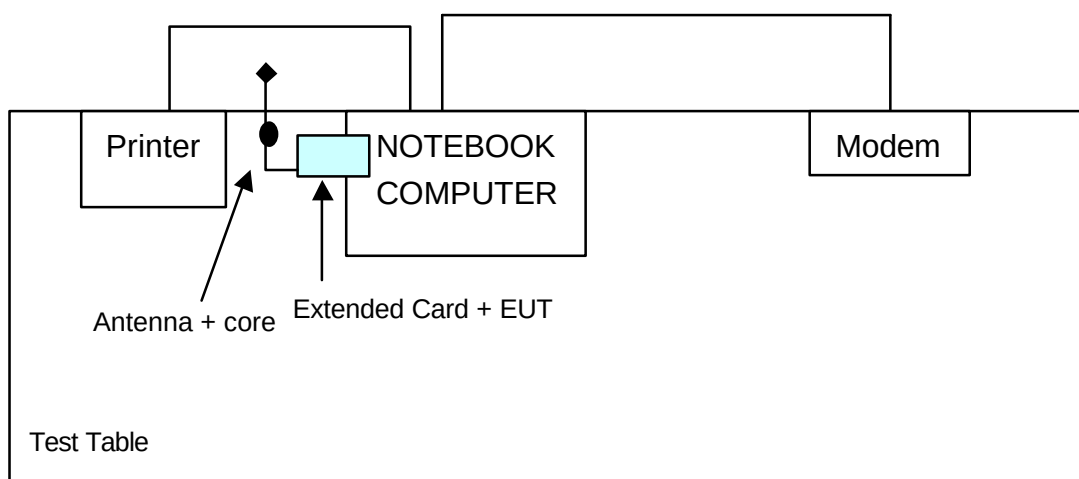
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	16484462992	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY054146	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008260	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2m shielded without core

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST





4. TEST TYPES AND RESULTS (FOR PART 802.11b & 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	847265/023	Oct. 22, 2004
LISN ROHDE & SCHWARZ	ESH3-Z5	100220	Dec. 10, 2004
Software ADT	ADT_Cond_V3	NA	NA

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



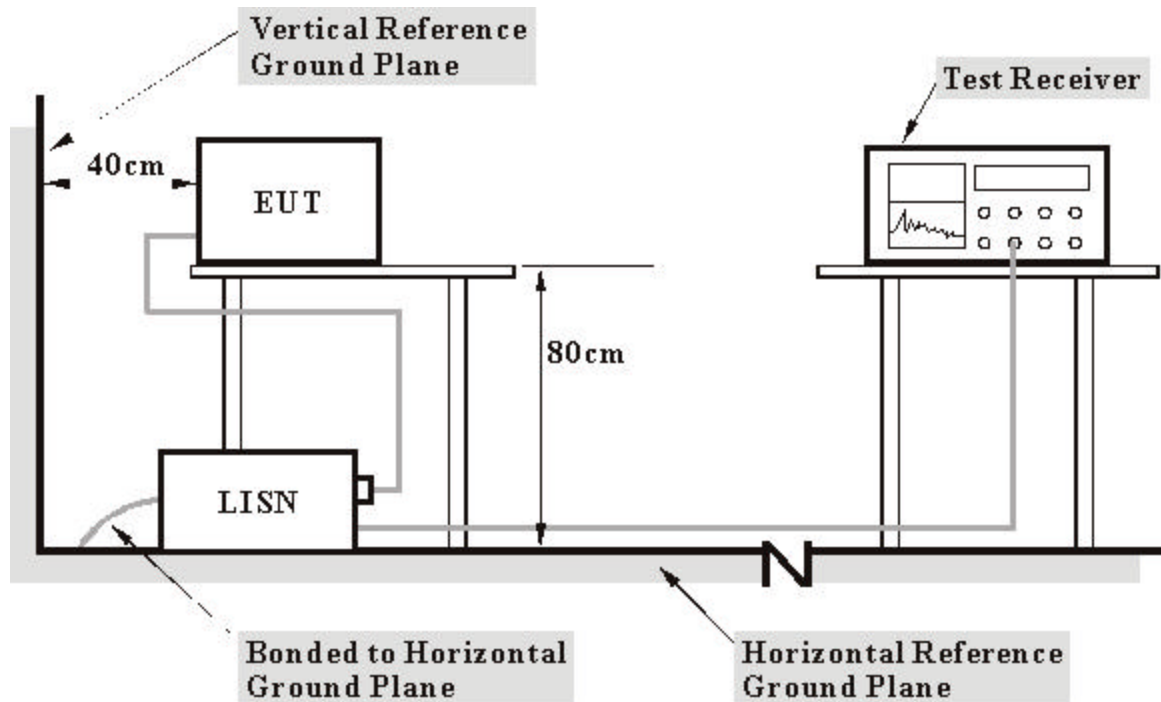
4.1.3 TEST PROCEDURES

- 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

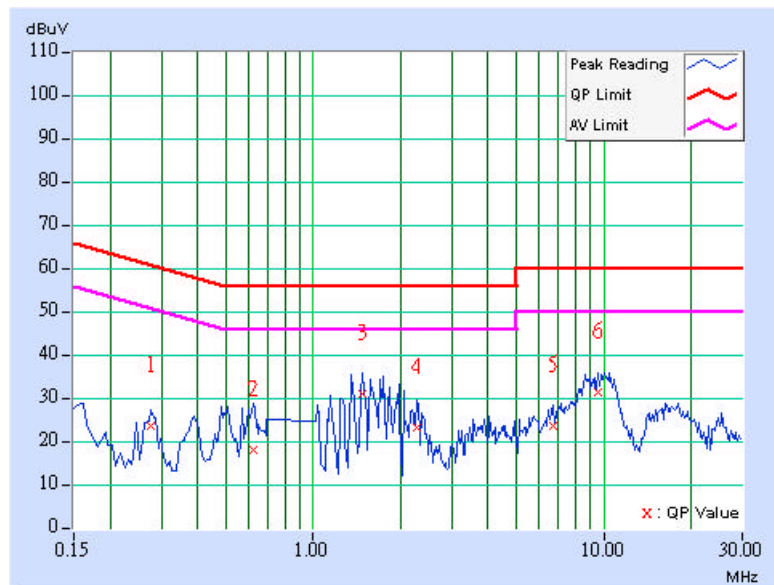
- a. Connected the EUT to a notebook system placed on a testing table.
- b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The notebook system sent "H" messages to its screen.
- d. 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 Mini PCI Card	MODEL	WMIA-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.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.275	0.12	23.42	-	23.54	-	60.97	50.97	-37.42	-
2	0.619	0.13	17.67	-	17.80	-	56.00	46.00	-38.20	-
3	1.484	0.15	30.98	-	31.13	-	56.00	46.00	-24.87	-
4	2.289	0.17	23.05	-	23.22	-	56.00	46.00	-32.78	-
5	6.695	0.29	23.26	-	23.55	-	60.00	50.00	-36.45	-
6	9.563	0.30	31.33	-	31.63	-	60.00	50.00	-28.37	-

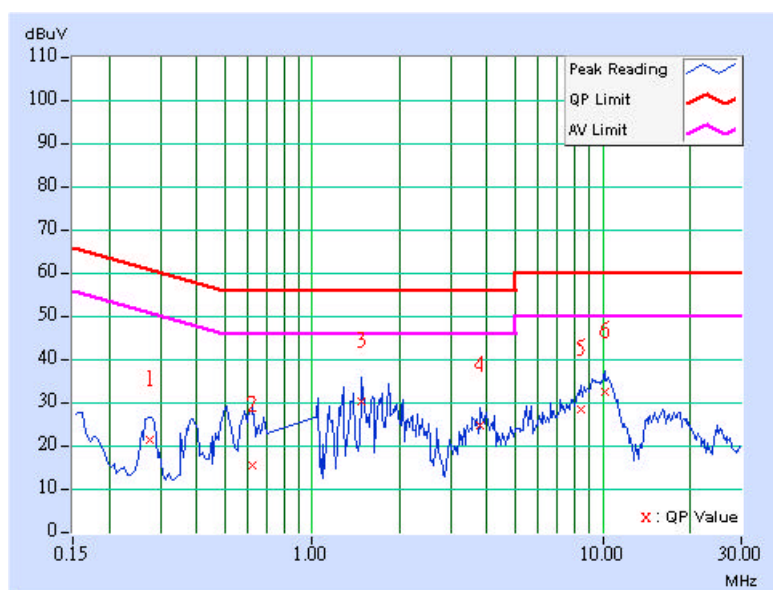
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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	0.275	0.11	21.22	-	21.33	-	60.97	50.97	-39.63	-
2	0.619	0.12	15.23	-	15.35	-	56.00	46.00	-40.65	-
3	1.480	0.15	29.99	-	30.14	-	56.00	46.00	-25.86	-
4	3.797	0.20	24.34	-	24.54	-	56.00	46.00	-31.46	-
5	8.367	0.28	28.13	-	28.41	-	60.00	50.00	-31.59	-
6	10.137	0.29	32.34	-	32.63	-	60.00	50.00	-27.37	-

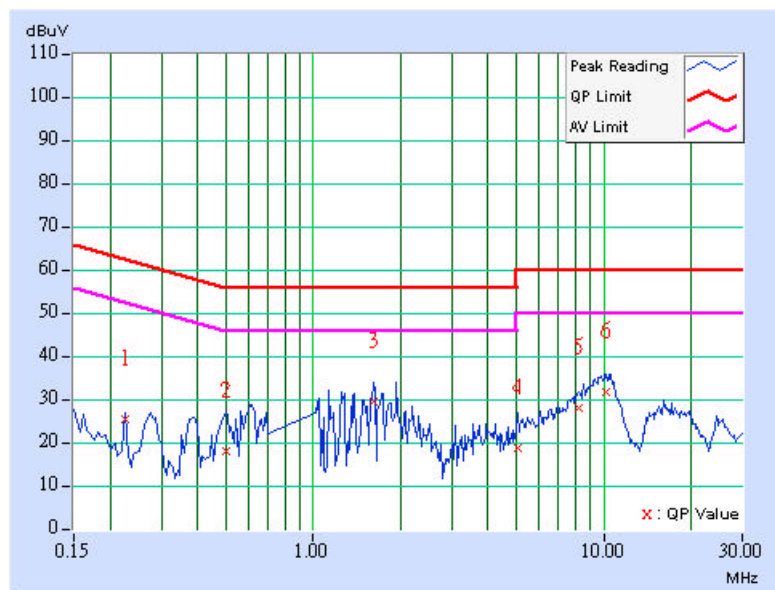
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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 [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.224	0.12	25.28	-	25.40	-	62.66	52.66	-37.26	-
2	0.502	0.13	17.79	-	17.92	-	56.00	46.00	-38.08	-
3	1.613	0.16	29.43	-	29.59	-	56.00	46.00	-26.41	-
4	5.047	0.23	18.73	-	18.96	-	60.00	50.00	-41.04	-
5	8.176	0.30	28.01	-	28.31	-	60.00	50.00	-31.69	-
6	10.230	0.32	31.61	-	31.93	-	60.00	50.00	-28.07	-

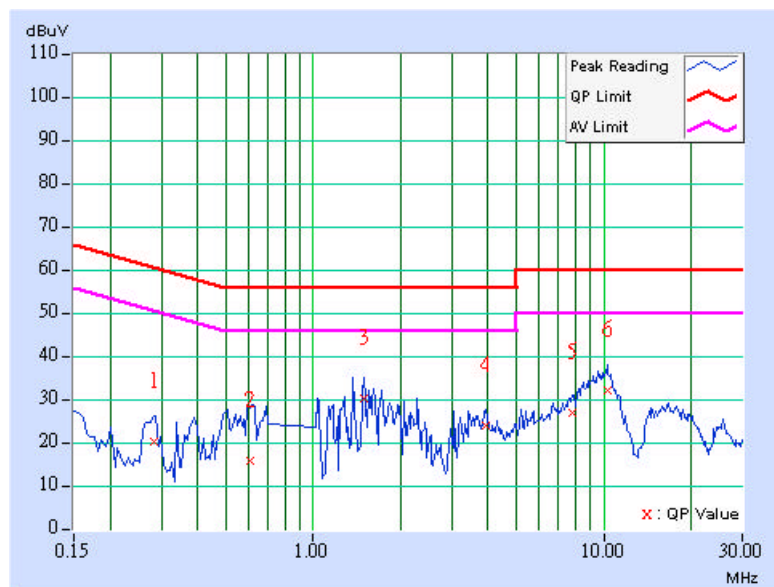
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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 [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.283	0.11	19.99	-	20.10	-	60.73	50.73	-40.63	-
2	0.607	0.12	15.47	-	15.59	-	56.00	46.00	-40.41	-
3	1.492	0.15	30.13	-	30.28	-	56.00	46.00	-25.72	-
4	3.941	0.20	23.83	-	24.03	-	56.00	46.00	-31.97	-
5	7.797	0.28	26.68	-	26.96	-	60.00	50.00	-33.04	-
6	10.266	0.30	31.99	-	32.29	-	60.00	50.00	-27.71	-

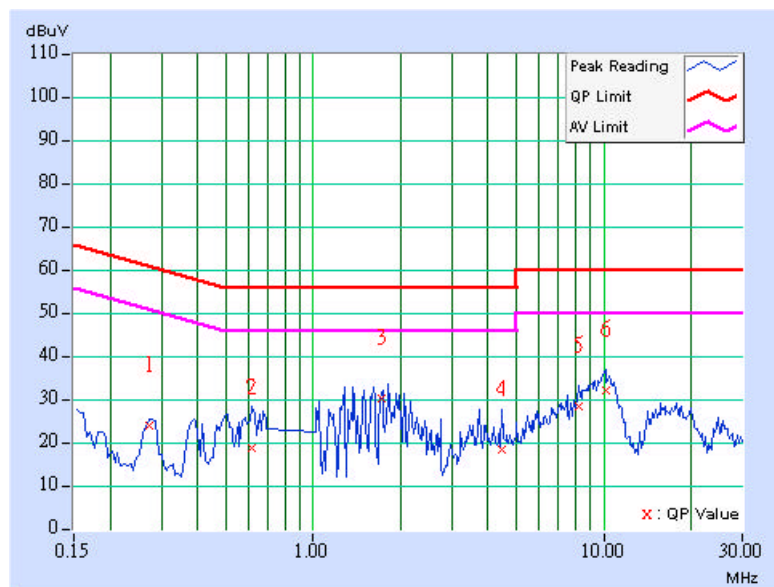
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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	0.271	0.12	23.66	-	23.78	-	61.08	51.08	-37.30	-
2	0.611	0.13	18.45	-	18.58	-	56.00	46.00	-37.42	-
3	1.723	0.16	30.03	-	30.19	-	56.00	46.00	-25.81	-
4	4.461	0.22	18.06	-	18.28	-	56.00	46.00	-37.72	-
5	8.180	0.30	28.03	-	28.33	-	60.00	50.00	-31.67	-
6	10.133	0.31	31.83	-	32.14	-	60.00	50.00	-27.86	-

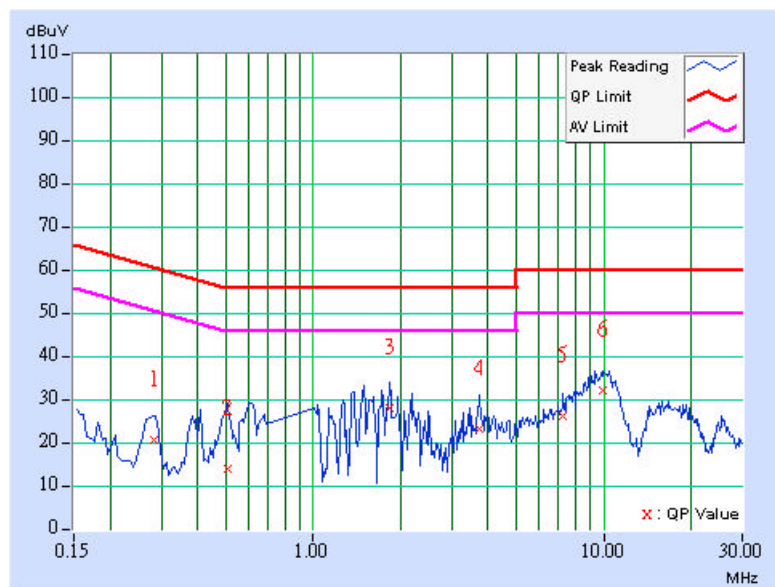
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	23deg. C, 65%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	0.283	0.11	20.47	-	20.58	-	60.73	50.73	-40.15	-
2	0.509	0.12	13.71	-	13.83	-	56.00	46.00	-42.17	-
3	1.824	0.16	28.03	-	28.19	-	56.00	46.00	-27.81	-
4	3.746	0.19	22.87	-	23.06	-	56.00	46.00	-32.94	-
5	7.258	0.28	26.03	-	26.31	-	60.00	50.00	-33.69	-
6	9.934	0.28	32.07	-	32.35	-	60.00	50.00	-27.65	-

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





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

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

NOTE:

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



4.2.2 TEST INSTRUMENTS

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

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 3.
 3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
 4. The IC Site Registration No. is IC4924-4.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic. 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.

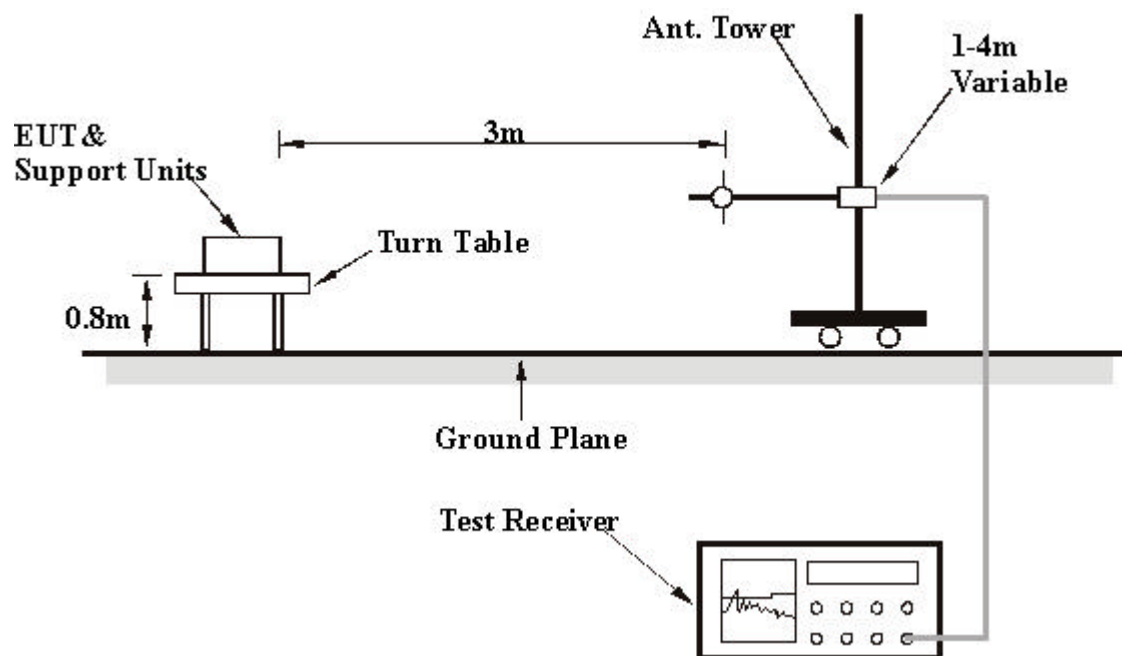
NOTE:

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 Mini PCI Card	MODEL	WMIA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. 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	66.93	29.59 QP	40.00	-10.41	1.50 H	121	16.67	12.93
2	90.26	33.04 QP	43.50	-10.46	1.75 H	157	22.82	10.22
3	117.47	37.58 QP	43.50	-5.92	1.50 H	145	24.81	12.77
4	166.20	40.56 QP	43.50	-2.94	1.52 H	173	26.26	14.29
5	181.62	36.31 QP	43.50	-7.19	1.50 H	136	23.48	12.83
6	199.12	38.77 QP	43.50	-4.73	1.50 H	67	27.31	11.46
7	232.16	32.65 QP	46.00	-13.35	1.50 H	31	20.06	12.59
8	265.21	39.55 QP	46.00	-6.45	1.00 H	139	25.97	13.58
9	298.26	32.92 QP	46.00	-13.08	1.00 H	130	18.44	14.47
10	331.30	40.41 QP	46.00	-5.59	1.00 H	136	25.19	15.22
11	354.63	33.07 QP	46.00	-12.93	1.00 H	52	17.32	15.75
12	440.16	30.37 QP	46.00	-15.63	1.50 H	37	12.56	17.81
13	455.71	33.25 QP	46.00	-12.75	1.50 H	61	15.10	18.15
14	465.43	32.84 QP	46.00	-13.16	1.75 H	157	14.56	18.27
15	640.38	28.74 QP	46.00	-17.26	1.25 H	313	7.19	21.55

- 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 Mini PCI Card	MODEL	WMIA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	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	31.94	27.61 QP	40.00	-12.39	1.25 V	208	13.68	13.93
2	45.55	27.52 QP	40.00	-12.48	1.00 V	130	12.29	15.23
3	64.99	30.33 QP	40.00	-9.67	1.00 V	223	17.18	13.15
4	98.04	28.69 QP	43.50	-14.81	1.75 V	295	17.87	10.83
5	133.03	33.43 QP	43.50	-10.07	1.00 V	46	19.49	13.94
6	168.02	32.65 QP	43.50	-10.85	2.00 V	82	18.54	14.12
7	189.40	28.96 QP	43.50	-14.54	1.00 V	49	16.74	12.22
8	199.12	33.25 QP	43.50	-10.25	2.00 V	76	21.79	11.46
9	265.21	27.63 QP	46.00	-18.37	2.00 V	172	14.05	13.58
10	333.25	34.03 QP	46.00	-11.97	1.25 V	94	18.77	15.26
11	397.39	30.57 QP	46.00	-15.43	1.25 V	118	13.87	16.69
12	440.16	28.32 QP	46.00	-17.68	1.00 V	10	10.51	17.81
13	455.71	30.93 QP	46.00	-15.07	1.00 V	121	12.79	18.15
14	467.37	30.82 QP	46.00	-15.18	1.00 V	178	12.52	18.30
15	533.47	26.77 QP	46.00	-19.23	1.00 V	133	7.40	19.37
16	603.45	28.10 QP	46.00	-17.90	1.25 V	295	7.05	21.06

- 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 Mini PCI Card	MODEL	WMIA-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: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	41.37 PK	74.00	-32.63	1.07 H	215	9.41	31.96
1	2016.00	44.73 AV	54.00	-20.72	1.07 H	215	1.32	31.96
2	2360.00	53.34 PK	74.00	-20.66	1.39 H	116	19.66	33.68
2	2360.00	44.73 AV	54.00	-9.27	1.39 H	116	11.05	33.68
3	*2412.00	105.76 PK			1.39 H	116	71.83	33.93
3	*2412.00	97.15 AV			1.39 H	116	63.22	33.93
4	2688.00	45.56 PK	74.00	-28.44	1.02 H	154	10.70	34.86
5	4824.00	51.07 PK	74.00	-22.93	1.31 H	114	10.41	40.66

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	2016.00	45.68 PK	74.00	-28.32	1.06 V	19	13.72	31.96
1	2016.00	42.56 AV	54.00	-11.44	1.06 V	19	13.72	31.96
2	2360.00	57.75 PK	74.00	-16.25	1.07 V	274	24.07	33.68
2	2360.00	48.06 AV	54.00	-5.94	1.07 V	274	14.38	33.68
3	*2412.00	110.17 PK			1.07 V	274	76.24	33.93
3	*2412.00	100.48 AV			1.07 V	274	66.55	33.93
4	2688.00	45.40 PK	74.00	-28.60	1.06 V	276	10.54	34.86
4	2688.00	32.84 AV	54.00	-21.16	1.06 V	276	10.54	34.86
5	4824.00	54.16 PK	74.00	-19.84	1.07 V	298	13.50	40.66

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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	44.48 PK	74.00	-29.52	1.00 H	85	12.52	31.96
1	2016.00	38.93 AV	54.00	-15.07	1.00 H	85	6.97	31.96
2	*2437.00	102.57 PK			1.42 H	154	68.52	34.05
2	*2437.00	94.19 AV			1.42 H	154	60.14	34.05
3	2688.00	44.89 PK	74.00	-29.11	1.00 H	352	10.03	34.86
4	4874.00	50.86 PK	74.00	-23.14	1.11 H	70	10.17	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	46.17 PK	74.00	-27.83	1.02 V	4	14.21	31.96
1	2016.00	42.74 AV	54.00	-11.26	1.02 V	4	10.78	31.96
2	*2437.00	109.45 PK			1.07 V	79	75.40	34.05
2	*2437.00	100.91 AV			1.07 V	79	66.86	34.05
3	2688.00	46.15 PK	74.00	-27.85	1.02 V	140	11.29	34.86
4	4874.00	54.08 PK	74.00	-19.92	1.00 V	334	13.39	40.69

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

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	46.40 PK	74.00	-27.60	1.00 H	331	14.44	31.96
1	2016.00	39.21 AV	54.00	-14.79	1.00 H	331	7.25	31.96
2	*2462.00	103.43 PK			1.39 H	157	69.27	34.16
2	*2462.00	95.16 AV			1.39 H	157	61.00	34.16
3	2486.80	47.60 PK	74.00	-26.40	1.39 H	157	13.32	34.28
4	2688.00	45.74 PK	74.00	-28.26	1.00 H	305	10.88	34.86
5	4924.00	53.67 PK	74.00	-20.33	1.02 H	285	12.81	40.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	48.58 PK	74.00	-25.42	1.00 V	207	16.62	31.96
1	2016.00	44.55 AV	54.00	-9.45	1.00 V	207	12.59	31.96
2	*2462.00	112.15 PK			1.05 V	309	77.99	34.16
2	*2462.00	103.64 AV			1.05 V	309	69.48	34.16
3	2486.80	56.32 PK	74.00	-17.68	1.05 V	309	22.04	34.28
3	2486.80	47.81 AV	54.00	-6.19	1.05 V	309	13.53	34.28
4	2688.00	46.82 PK	74.00	-27.18	1.00 V	312	11.96	34.86
4	2688.00	36.49 AV	54.00	-17.51	1.00 V	312	1.63	34.86
5	4924.00	54.21 PK	74.00	-19.79	1.00 V	1	13.35	40.86

- 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 Mini PCI Card	MODEL	WMIA-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, 64%RH, 991hPa	TESTED BY: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	43.46 PK	74.00	-30.54	1.03 H	127	11.50	31.96
1	2016.00	36.38 AV	54.00	-17.62	1.03 H	127	4.42	31.96
2	2360.00	50.94 PK	74.00	-23.06	1.20 H	244	17.26	33.68
2	2360.00	40.32 AV	54.00	-13.68	1.20 H	244	6.64	33.68
3	*2412.00	98.33 PK			1.20 H	244	64.40	33.93
3	*2412.00	87.71 AV			1.20 H	244	53.78	33.93
4	2688.00	43.91 PK	74.00	-30.09	1.03 H	246	9.05	34.86
5	4824.00	51.08 PK	74.00	-22.92	1.06 H	29	10.42	40.66
6	9648.00	63.22 PK	74.00	-10.78	1.00 H	213	9.71	53.51

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	1880.00	58.53 PK	74.00	-15.47	1.06 V	245	27.49	31.04
1	1880.00	42.29 AV	54.00	-11.71	1.06 V	245	11.25	31.04
2	2016.00	45.16 PK	74.00	-28.84	1.00 V	0	13.20	31.96
2	2016.00	40.60 AV	54.00	-13.40	1.00 V	0	8.64	31.96
3	2360.00	58.41 PK	74.00	-15.59	1.06 V	246	24.73	33.68
3	2360.00	47.02 AV	54.00	-6.98	1.06 V	246	13.34	33.68
4	*2412.00	105.80 PK			1.06 V	246	71.87	33.93
4	*2412.00	94.41 AV			1.06 V	246	60.48	33.93
5	2688.00	46.24 PK	74.00	-27.76	1.00 V	349	11.38	34.86
6	4824.00	51.23 PK	74.00	-22.77	1.11 V	25	10.57	40.66
7	9648.00	62.94 PK	74.00	-11.06	1.00 V	335	9.43	53.51

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

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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, 64%RH, 991hPa	TESTED BY: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	42.33 PK	74.00	-31.67	1.00 H	136	10.37	31.96
1	2016.00	35.36 AV	54.00	-18.64	1.00 H	136	3.40	31.96
2	*2437.00	97.06 PK			1.00 H	20	63.01	34.05
2	*2437.00	86.40 AV			1.00 H	20	52.35	34.05
3	2688.00	44.68 PK	74.00	-29.32	1.04 H	192	9.82	34.86
4	4874.00	51.07 PK	74.00	-22.93	1.00 H	26	10.38	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	45.85 PK	74.00	-28.15	1.29 V	11	13.89	31.96
1	2016.00	41.18 AV	54.00	-12.82	1.29 V	11	9.22	31.96
2	*2437.00	105.07 PK			1.07 V	80	71.02	34.05
2	*2437.00	94.44 AV			1.07 V	80	60.39	34.05
3	2688.00	45.39 PK	74.00	-28.61	1.03 V	173	10.53	34.86
4	4874.00	51.26 PK	74.00	-22.74	1.00 V	240	10.57	40.69

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

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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, 64%RH, 991hPa	TESTED BY: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	44.53 PK	74.00	-29.47	1.00 H	97	12.57	31.96
1	2016.00	37.77 AV	54.00	-16.23	1.00 H	97	5.81	31.96
2	*2462.00	96.20 PK			1.00 H	20	62.04	34.16
2	*2462.00	85.61 AV			1.00 H	20	51.45	34.16
3	2483.50	44.62 PK	74.00	-29.38	1.00 H	20	10.36	34.26
4	2688.00	44.64 PK	74.00	-29.36	1.08 H	332	9.78	34.86
5	4924.00	51.05 PK	74.00	-22.95	1.00 H	221	10.19	40.86

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	47.06 PK	74.00	-26.94	1.01 V	7	15.10	31.96
1	2016.00	42.63 AV	54.00	-11.37	1.01 V	7	10.67	31.96
2	*2462.00	106.51 PK			1.12 V	134	72.35	34.16
2	*2462.00	96.34 AV			1.12 V	134	62.18	34.16
3	2483.50	54.93 PK	74.00	-19.07	1.12 V	134	20.67	34.26
3	2483.50	44.76 AV	54.00	-9.24	1.12 V	134	10.50	34.26
4	2688.00	46.43 PK	74.00	-27.57	1.03 V	182	11.57	34.86
5	4924.00	50.94 PK	74.00	-23.06	1.08 V	91	10.08	40.86

- 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 Mini PCI Card	MODEL	WMIA-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: Allen Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	44.44 PK	74.00	-29.56	1.00 H	101	12.48	31.96
1	2016.00	36.44 AV	54.00	-17.56	1.00 H	101	4.48	31.96
2	2359.90	49.64 PK	74.00	-24.36	1.08 H	170	15.96	33.68
2	2359.90	39.53 AV	54.00	-14.47	1.08 H	170	5.85	33.68
3	*2437.00	94.69 PK			1.08 H	170	60.64	34.05
3	*2437.00	84.58 AV			1.08 H	170	50.53	34.05
4	2483.50	43.41 PK	74.00	-30.59	1.08 H	170	9.15	34.26
5	2688.00	44.48 PK	74.00	-29.52	1.02 H	293	9.62	34.86
6	4874.00	50.21 PK	74.00	-23.79	1.02 H	32	9.52	40.69

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2016.00	46.38 PK	74.00	-27.62	1.34 V	20	14.42	31.96
1	2016.00	41.04 AV	54.00	-12.96	1.34 V	20	9.08	31.96
2	2359.90	59.11 PK	74.00	-14.89	1.11 V	0	25.43	33.68
2	2359.90	48.30 AV	54.00	-5.70	1.11 V	0	14.62	33.68
3	*2437.00	104.16 PK			1.11 V	0	70.11	34.05
3	*2437.00	93.35 AV			1.11 V	0	59.30	34.05
4	2483.50	52.88 PK	74.00	-21.12	1.11 V	0	18.62	34.26
4	2483.50	42.07 AV	54.00	-11.93	1.11 V	0	7.81	34.26
5	2688.00	46.65 PK	74.00	-27.35	1.00 V	50	11.79	34.86
6	4874.00	55.59 PK	74.00	-18.41	1.01 V	269	14.90	40.69
6	4874.00	42.62 AV	54.00	-11.38	1.01 V	269	1.93	40.69

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
 2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
 3. The other emission levels were very low against the limit.
 4. Margin value = Emission level – Limit value.
 5. 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, 2004

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

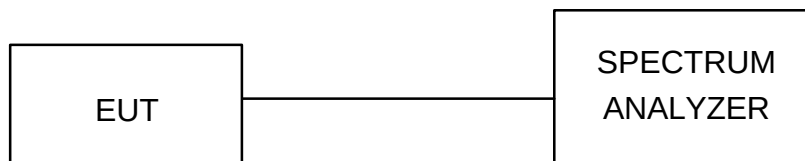
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



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.

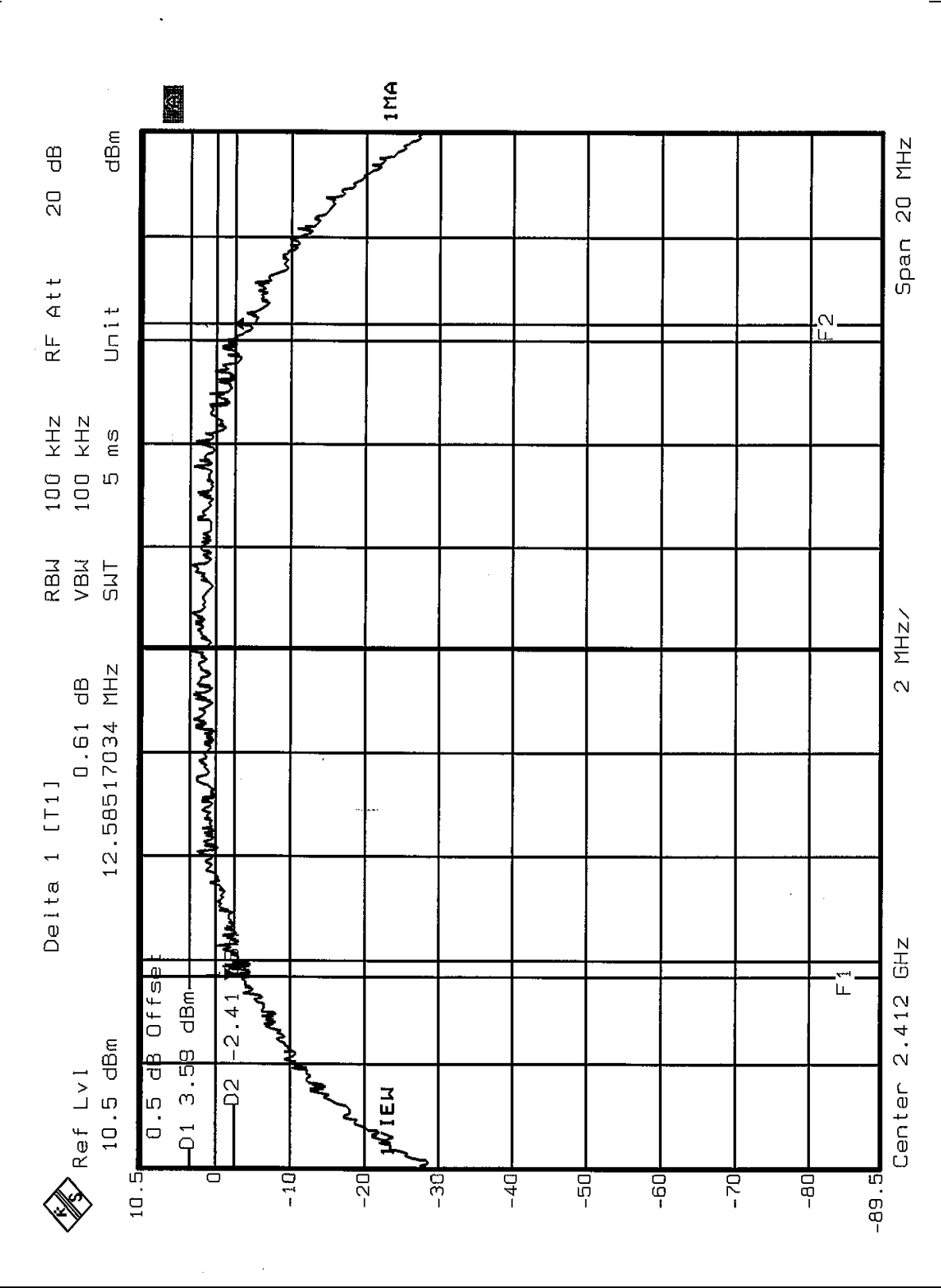
4.3.7 TEST RESULTS

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	CCK	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	12.585	0.5	PASS
6	2437	12.384	0.5	PASS
11	2462	12.665	0.5	PASS

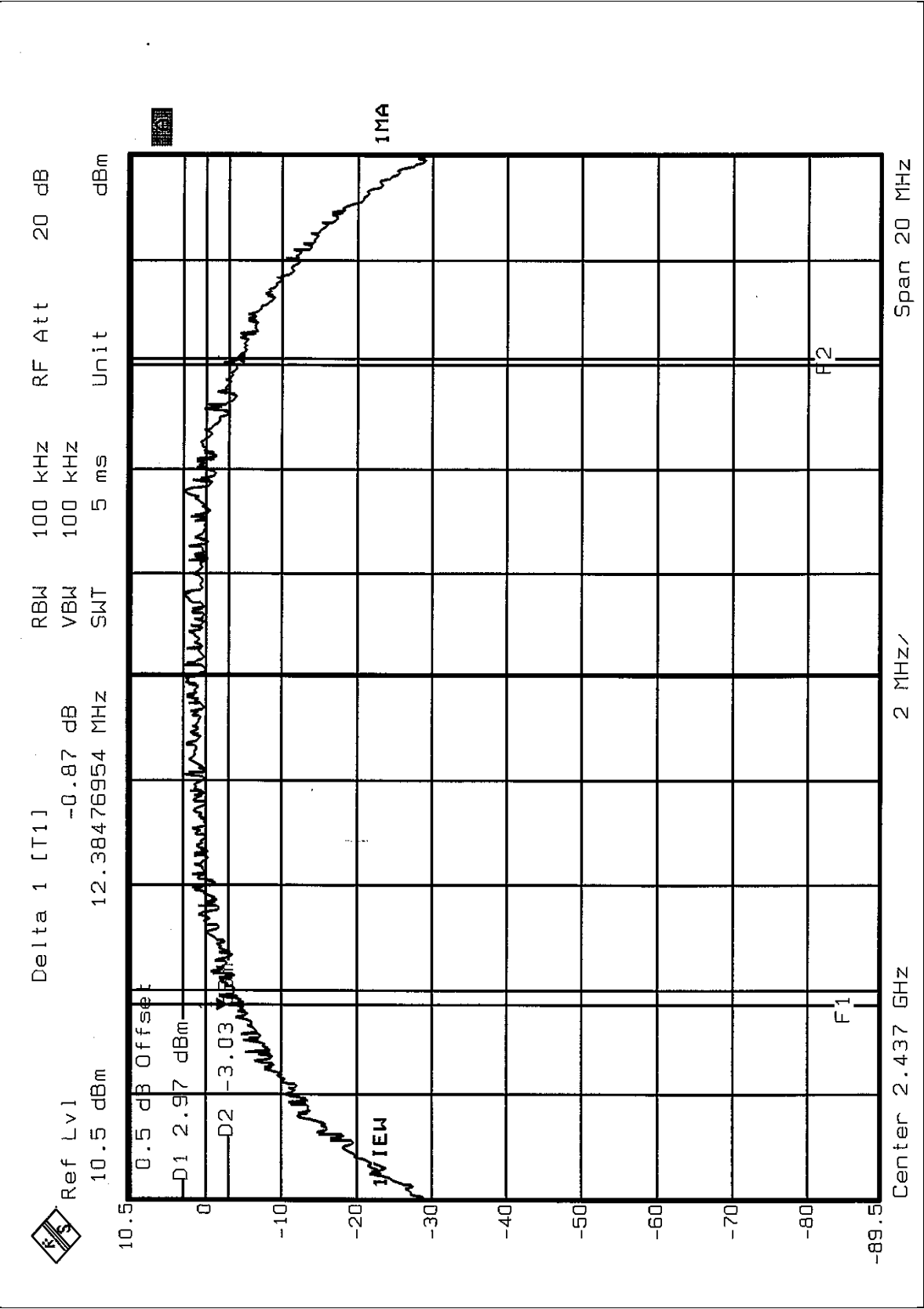


CH1



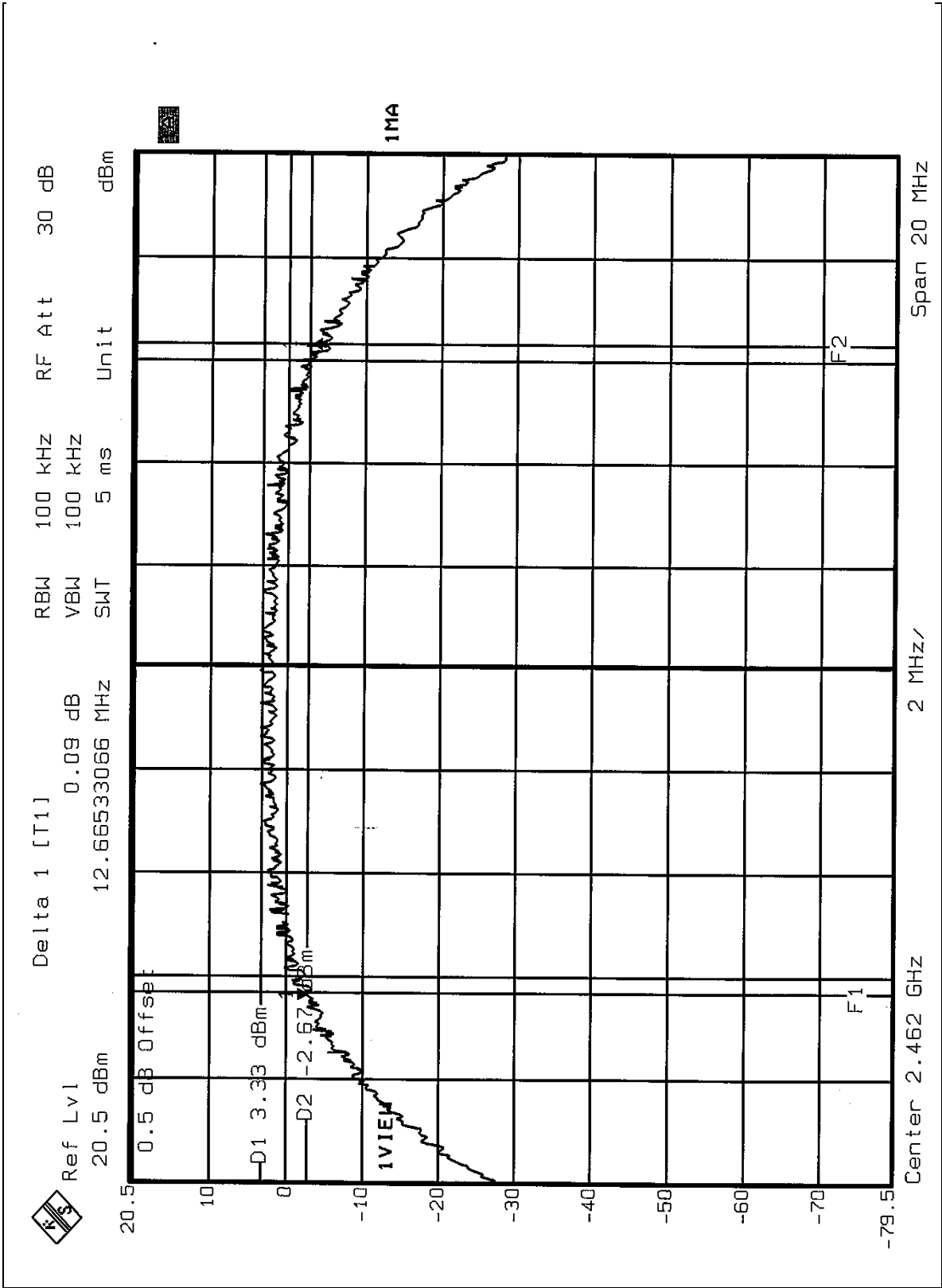


CH6





CH11



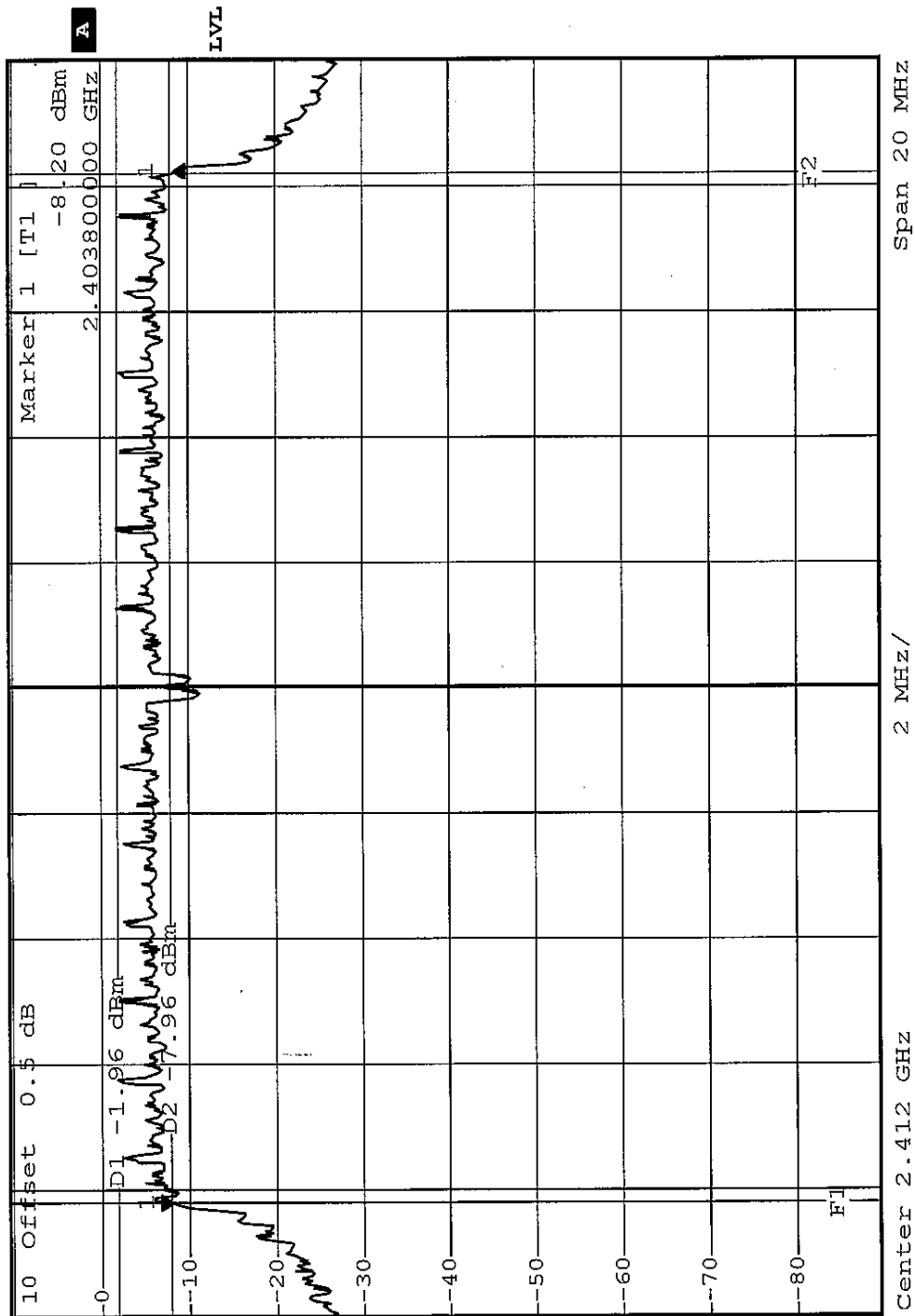
**Normal mode**

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY	Steven Lu

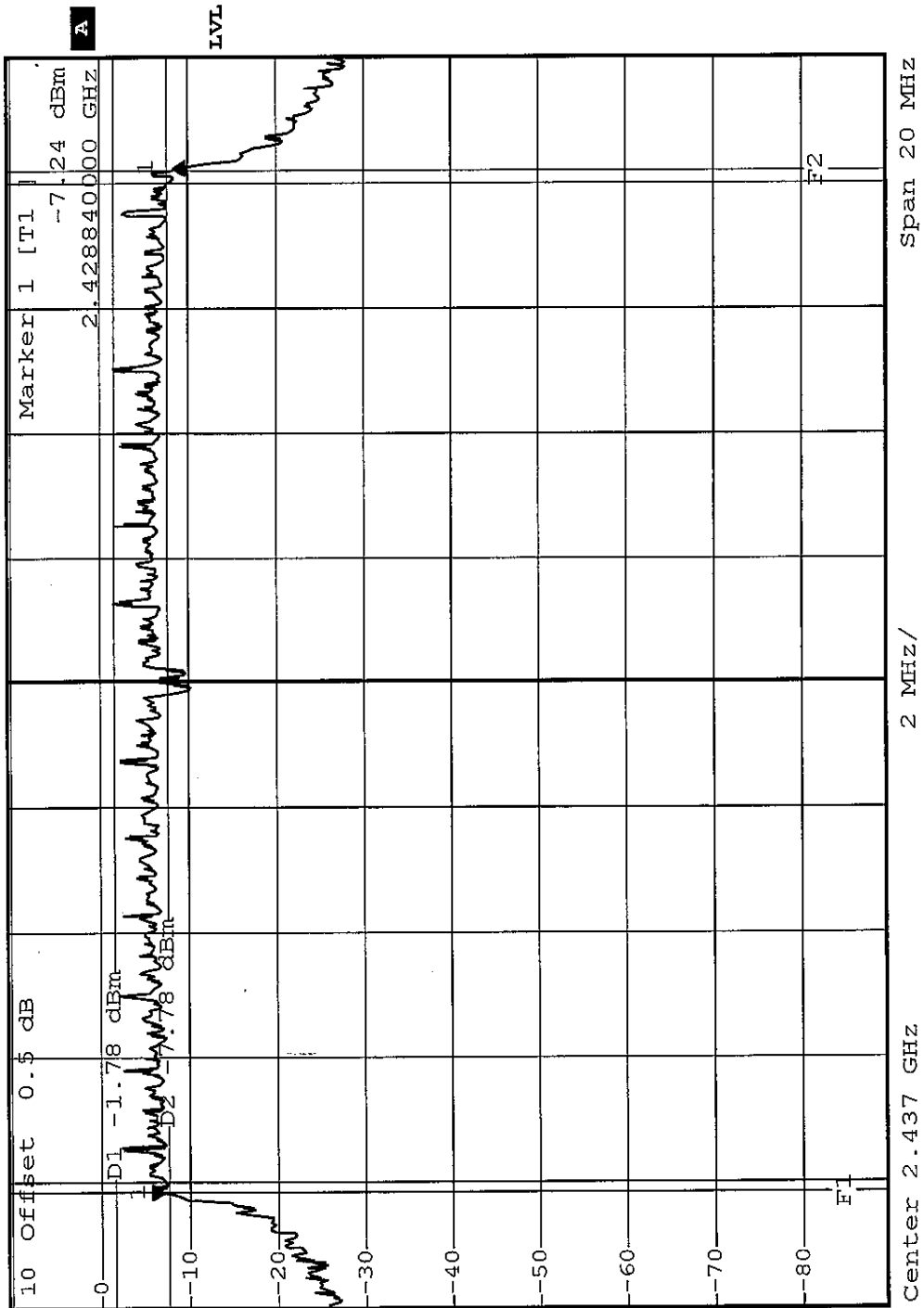
CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.440	0.5	PASS
6	2437	16.400	0.5	PASS
11	2462	16.400	0.5	PASS

CH1

*RBW 100 kHz Delta 1 [T1] -0.41 dB
 *VBW 100 kHz
 Ref 10.5 dBm *Att 20 dB SWT 5 ms 16.44000000 MHz

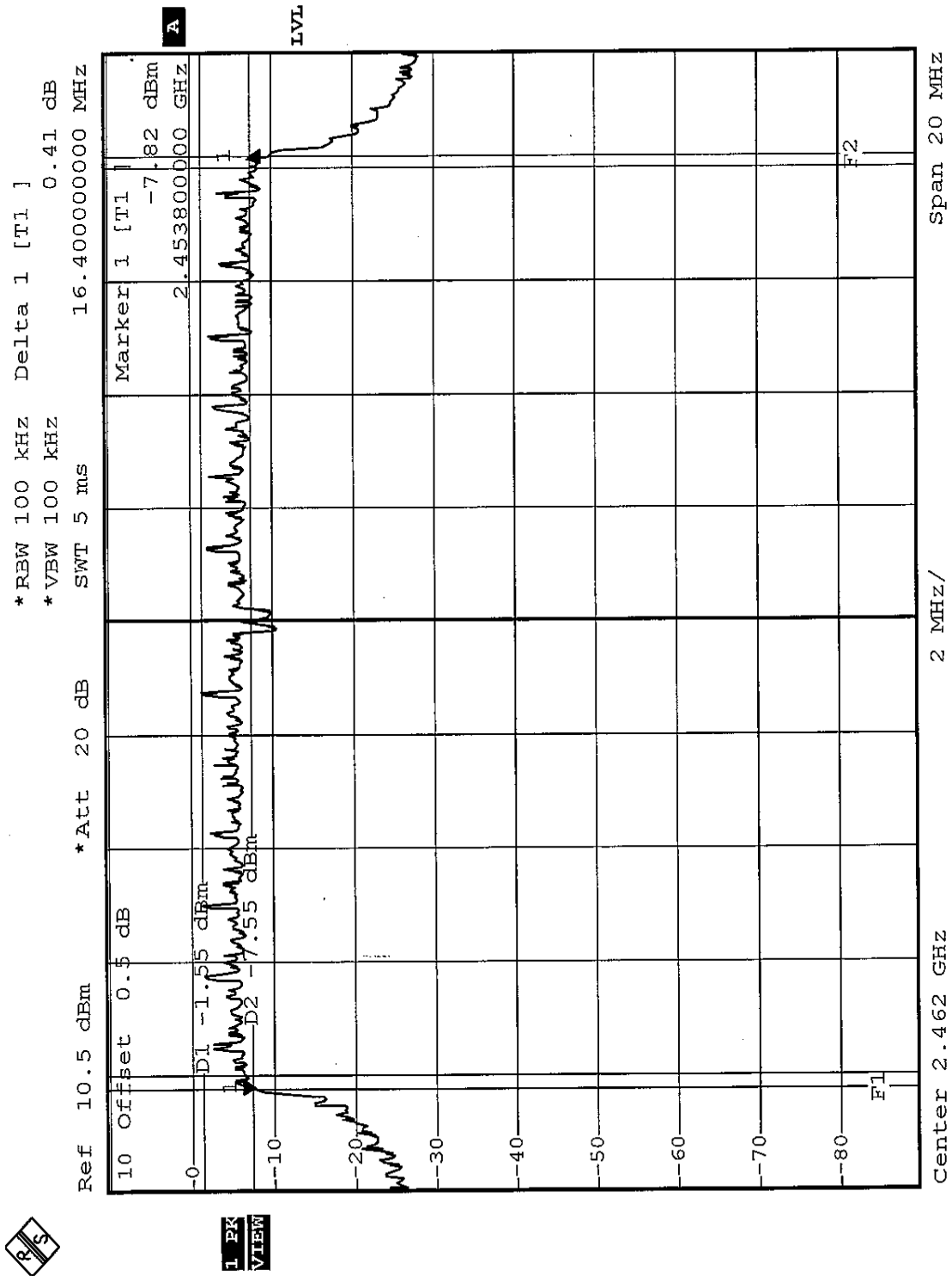

 1 PK
 VIEW

*RBW 100 kHz	Delta 1 [T1]
*VBW 100 kHz	-1.16 dB
*Att 20 dB	SWT 5 ms
Ref 10.5 dBm	16.40000000 MHz





CH11



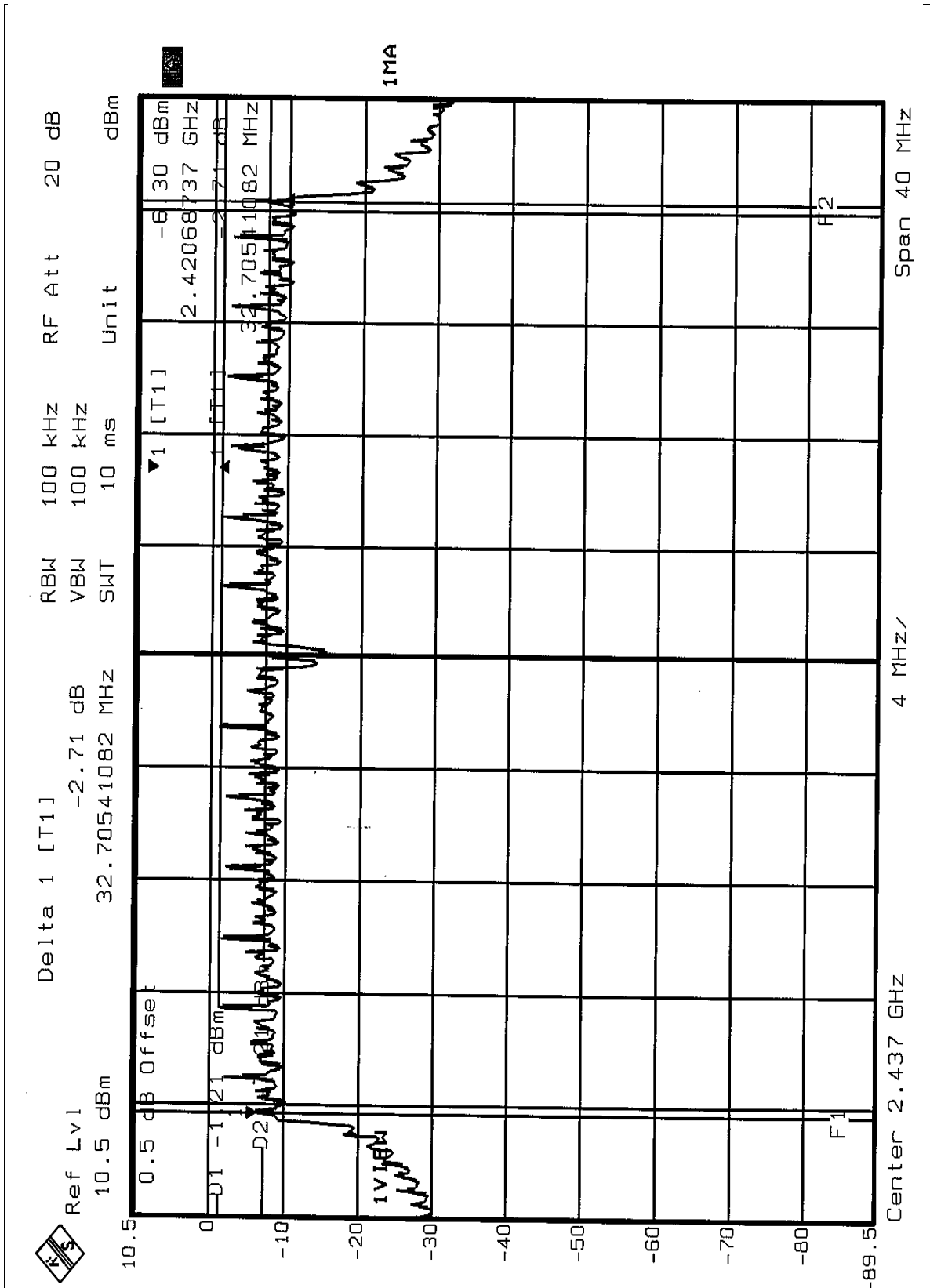
**Turbo mode**

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	OFDM	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
6	2437	32.705	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, 2004
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..

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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 Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	CCK	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.50	30	PASS
6	2437	15.50	30	PASS
11	2462	15.50	30	PASS

Normal mode

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	OFDM	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	13.50	30	PASS
6	2437	13.50	30	PASS
11	2462	13.50	30	PASS

Turbo mode

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	OFDM	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
6	2437	13.47	30	PASS



4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

NOTE:

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

4.5.3 TEST PROCEDURE

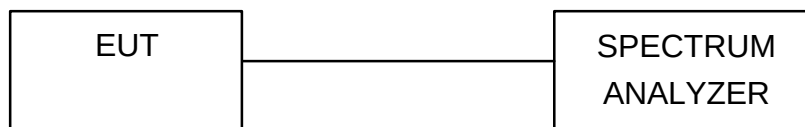
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

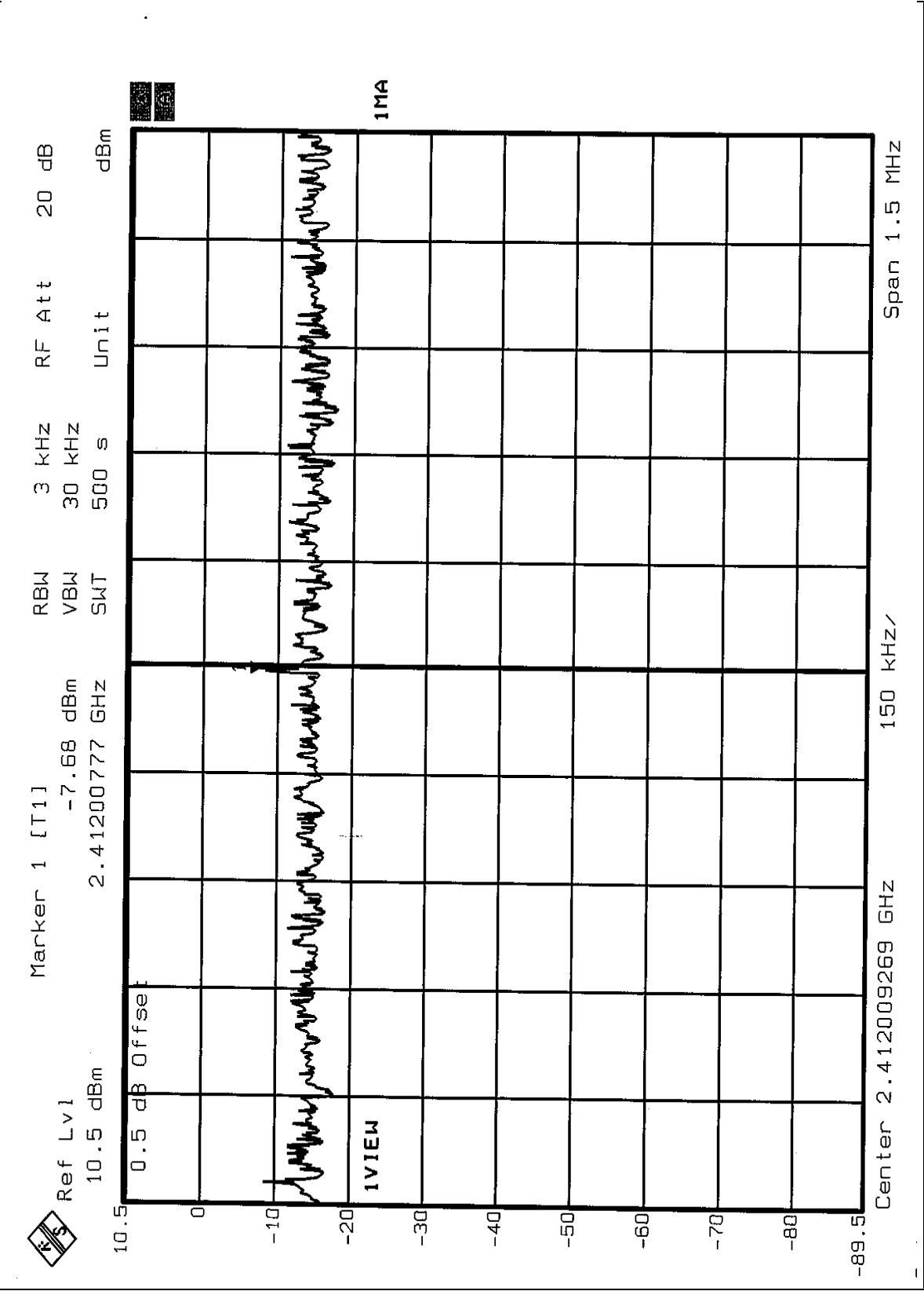
4.5.7 TEST RESULTS

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	CCK	TESTED BY	Steven Lu

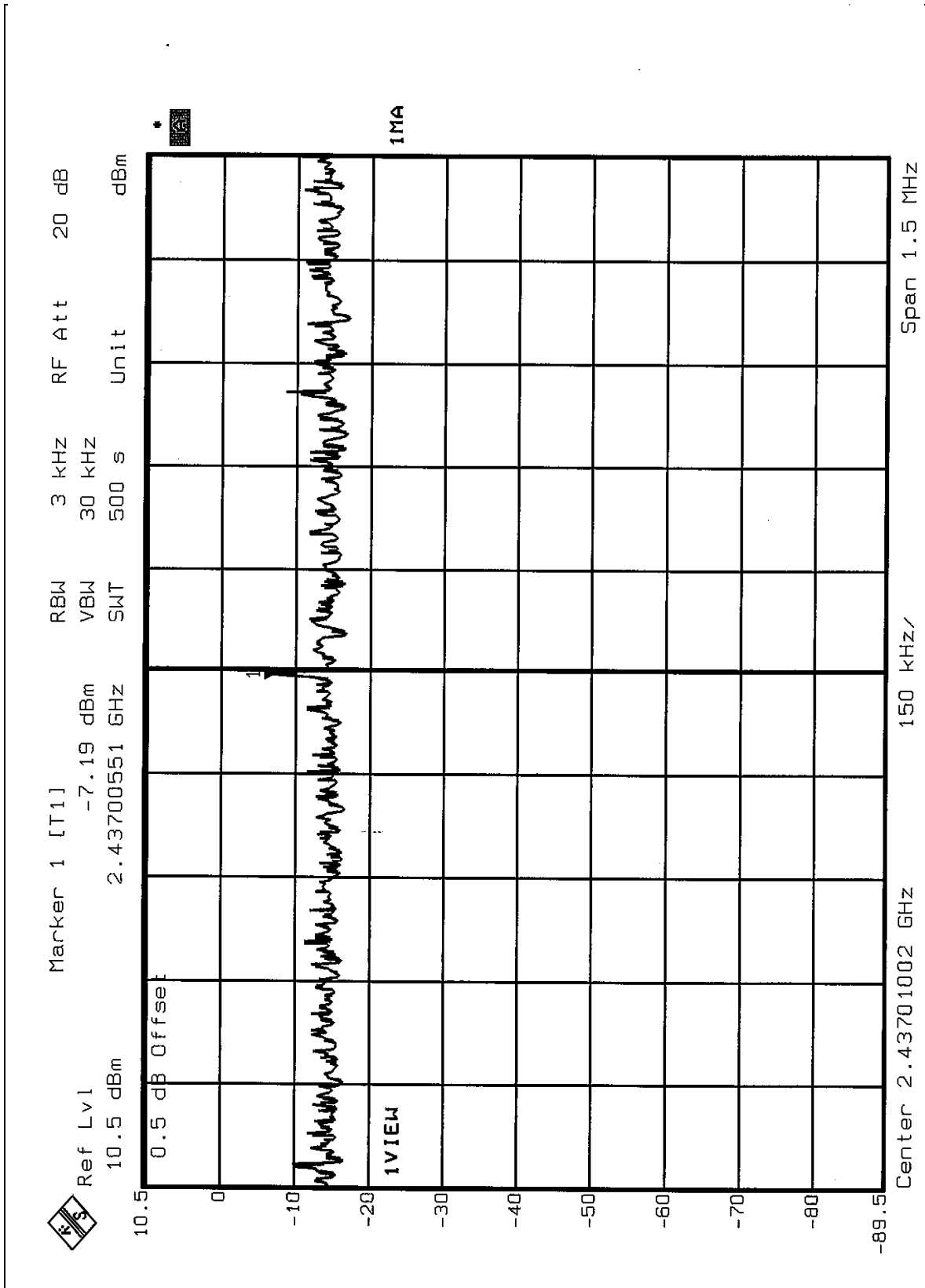
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-7.68	8	PASS
6	2437	-7.19	8	PASS
11	2462	-7.05	8	PASS



CH1

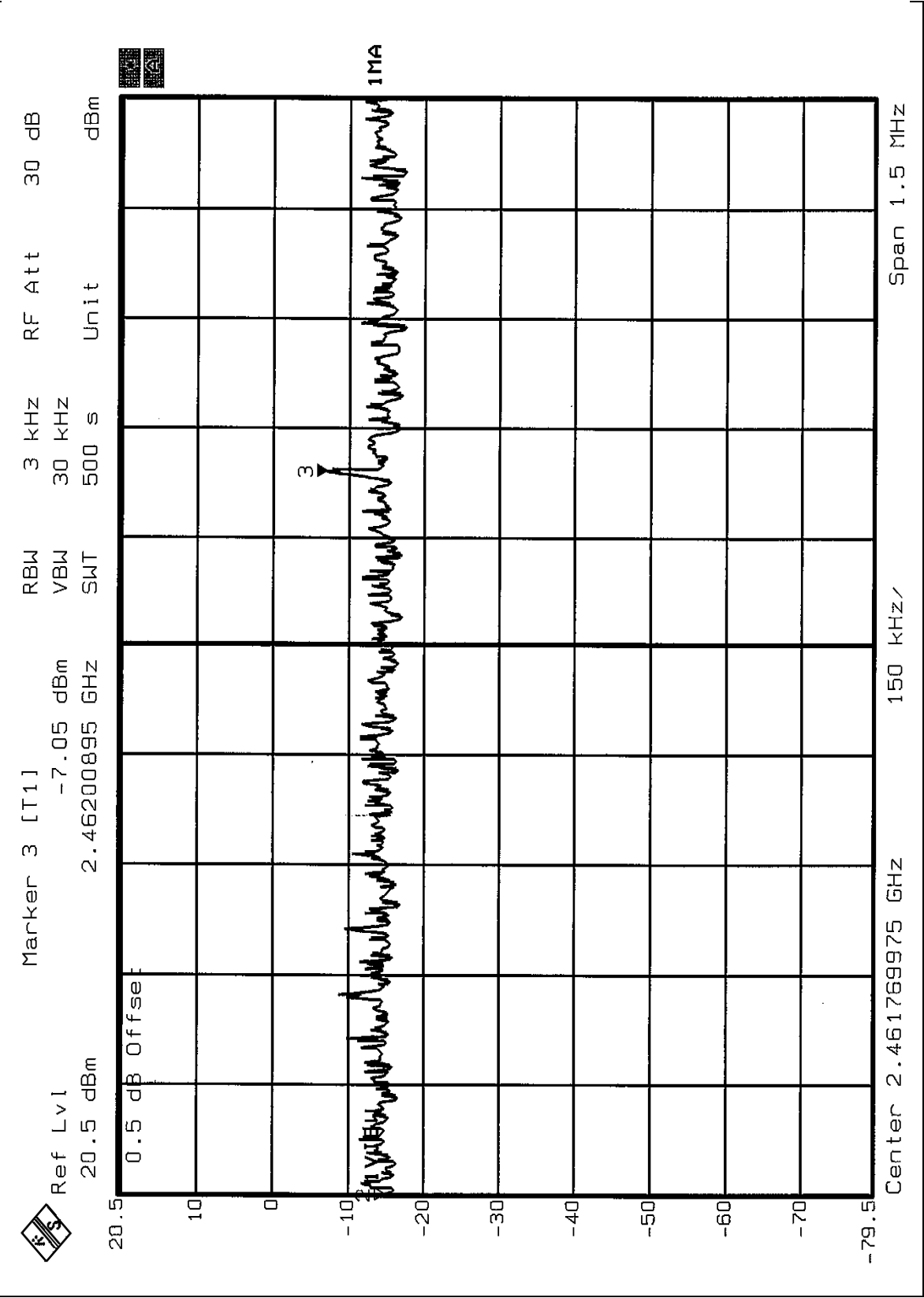


CH6





CH11



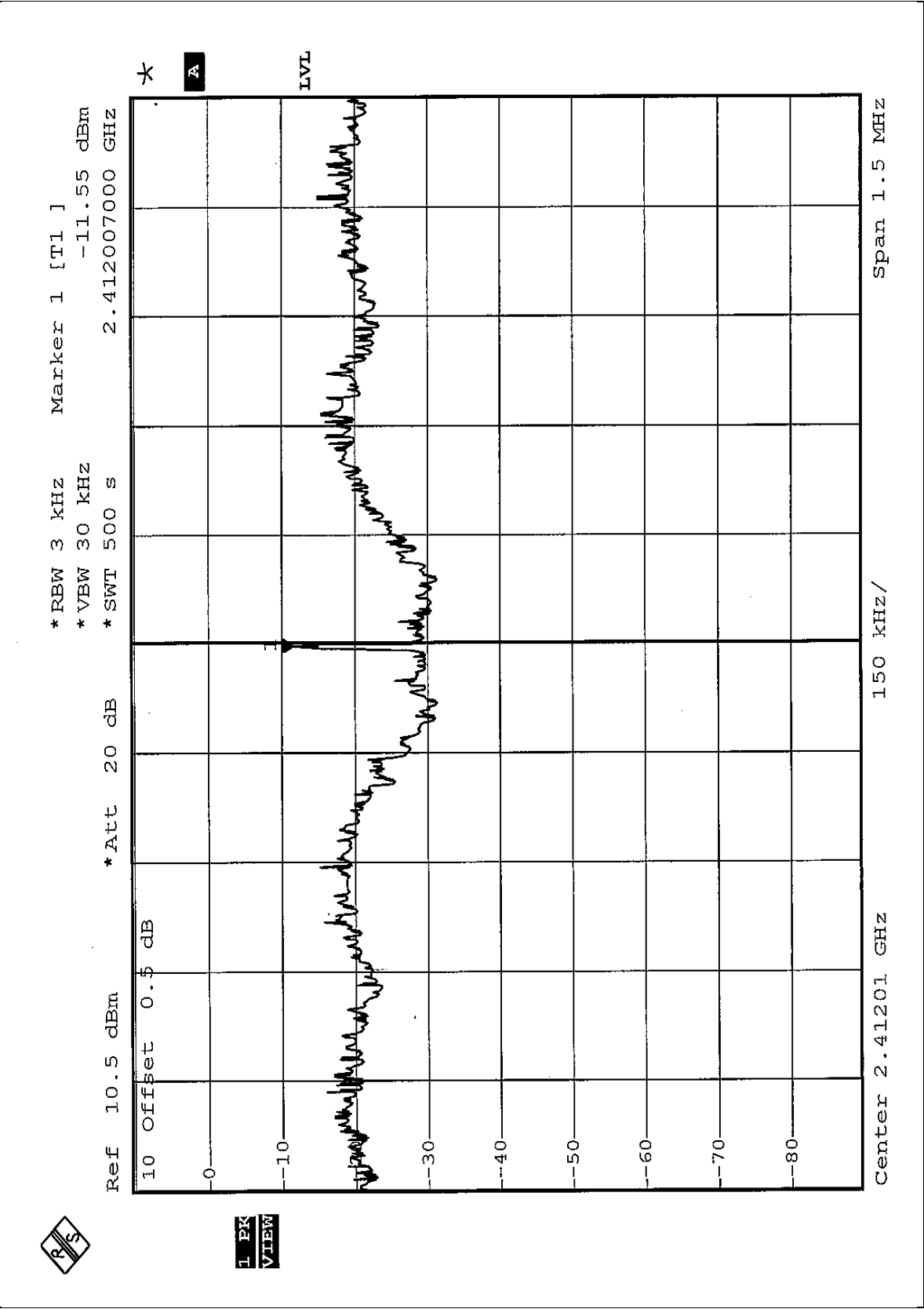
**Normal mode**

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	OFDM	TESTED BY	Steven Lu

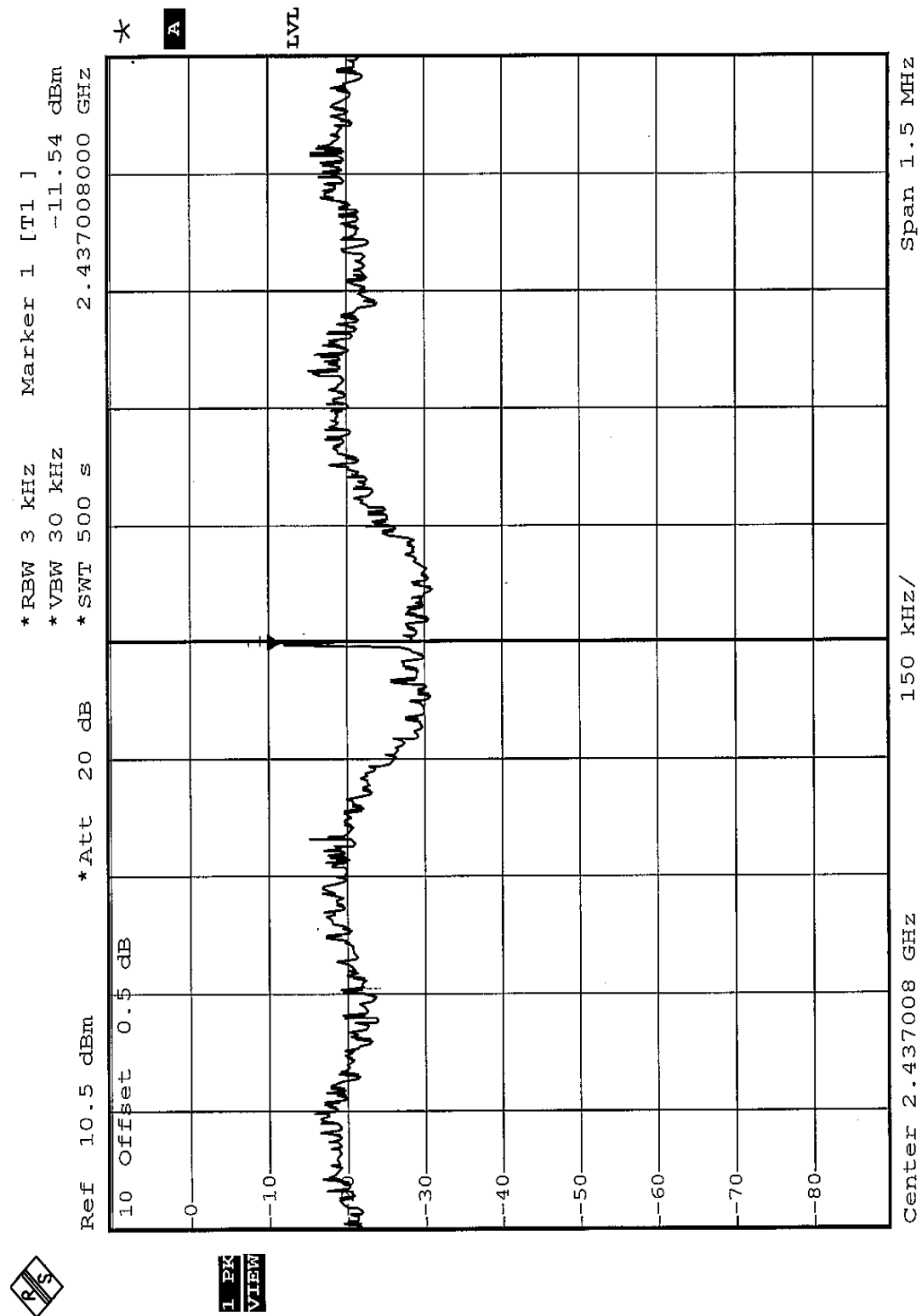
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.55	8	PASS
6	2437	-11.54	8	PASS
11	2462	-11.87	8	PASS



CH1

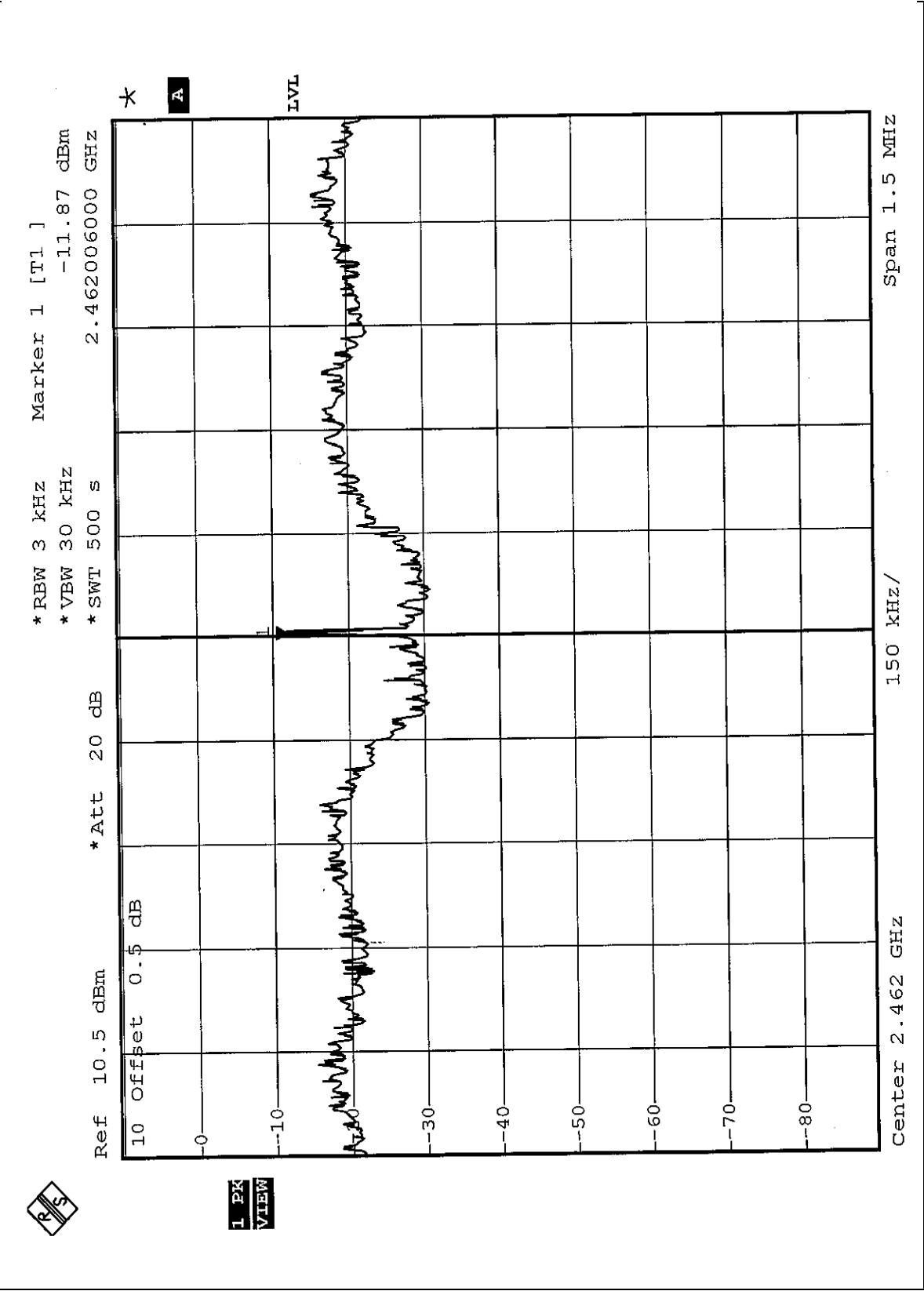


CH6





CH11



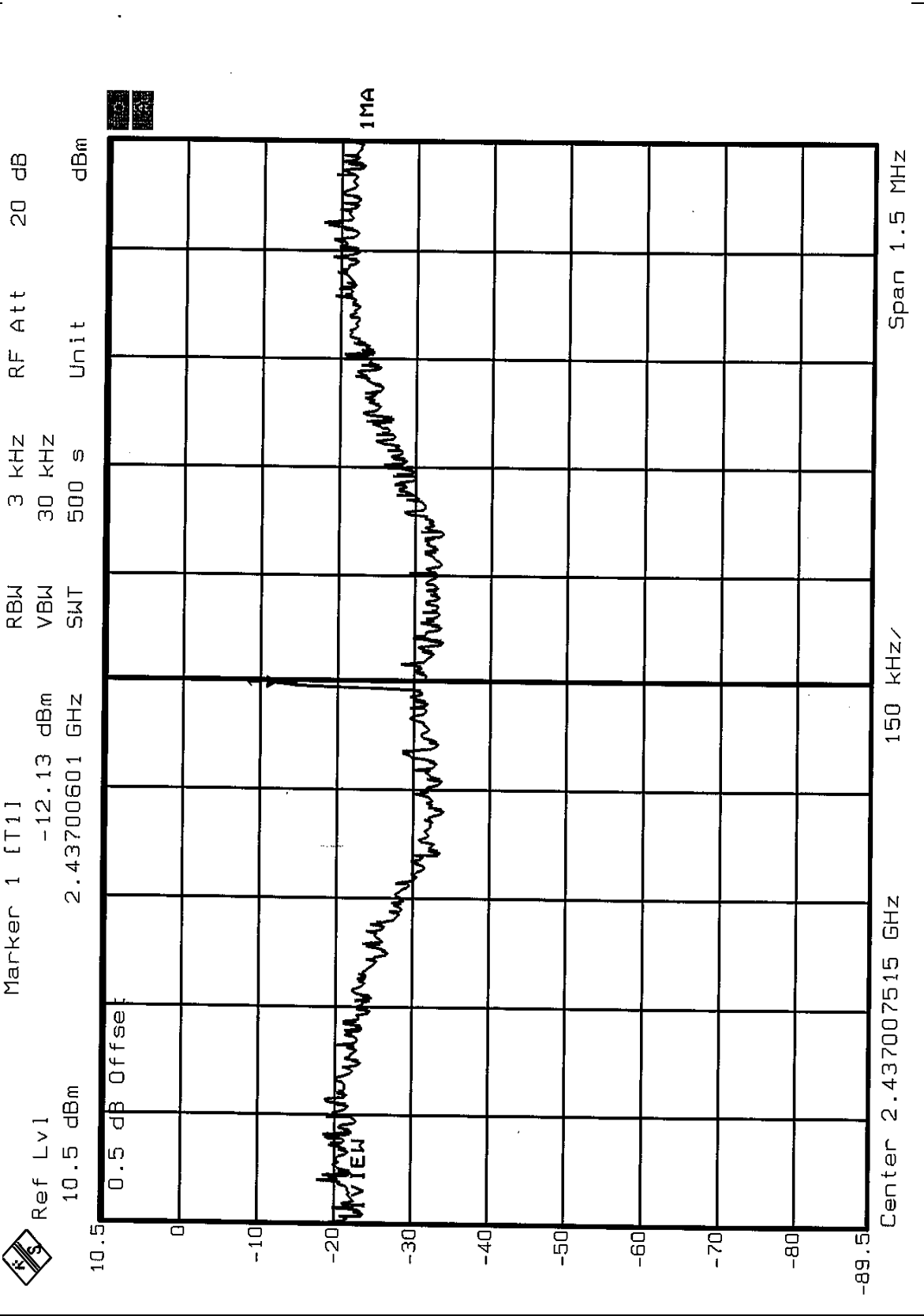
**Turbo mode**

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25deg.C, 60%RH, 991hPa
MODE	OFDM	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
6	2437	-12.13	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, 2004

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 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(C).

NOTE 1: The band edge emission plot of CCK technique on page 66 show 51.72dB delta between carrier maximum power and local maximum emission in restrict band (2.3599GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 100.48dBuV/m, so the maximum field strength in restrict band is $100.48 - 51.72 = 48.76$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of CCK technique on page 68 show 54.93dB delta between carrier maximum power and local maximum emission in restrict band (2.4881GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 103.64dBuV/m, so the maximum field strength in restrict band is $103.64 - 54.93 = 48.71$ dBuV/m which is under 54dBuV/m limit.

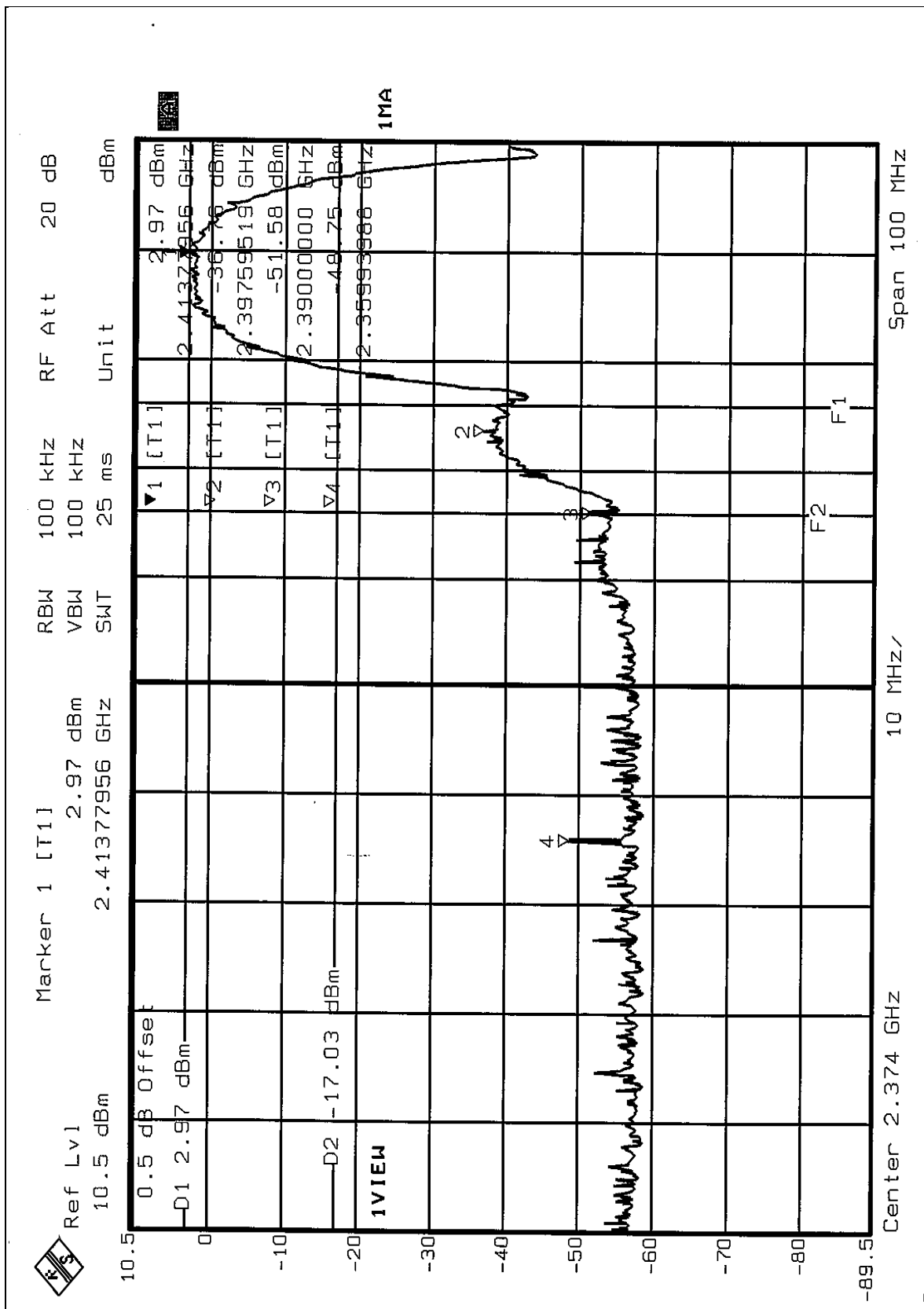
NOTE 3: The band edge emission plot of OFDM technique with Normal mode on page 70 show 45.80dB delta between carrier maximum power and local maximum emission in restrict band (2.3602GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.41dBuV/m, so the maximum field strength in restrict band is $99.41 - 45.80 = 48.61$ dBuV/m which is under 54dBuV/m limit.

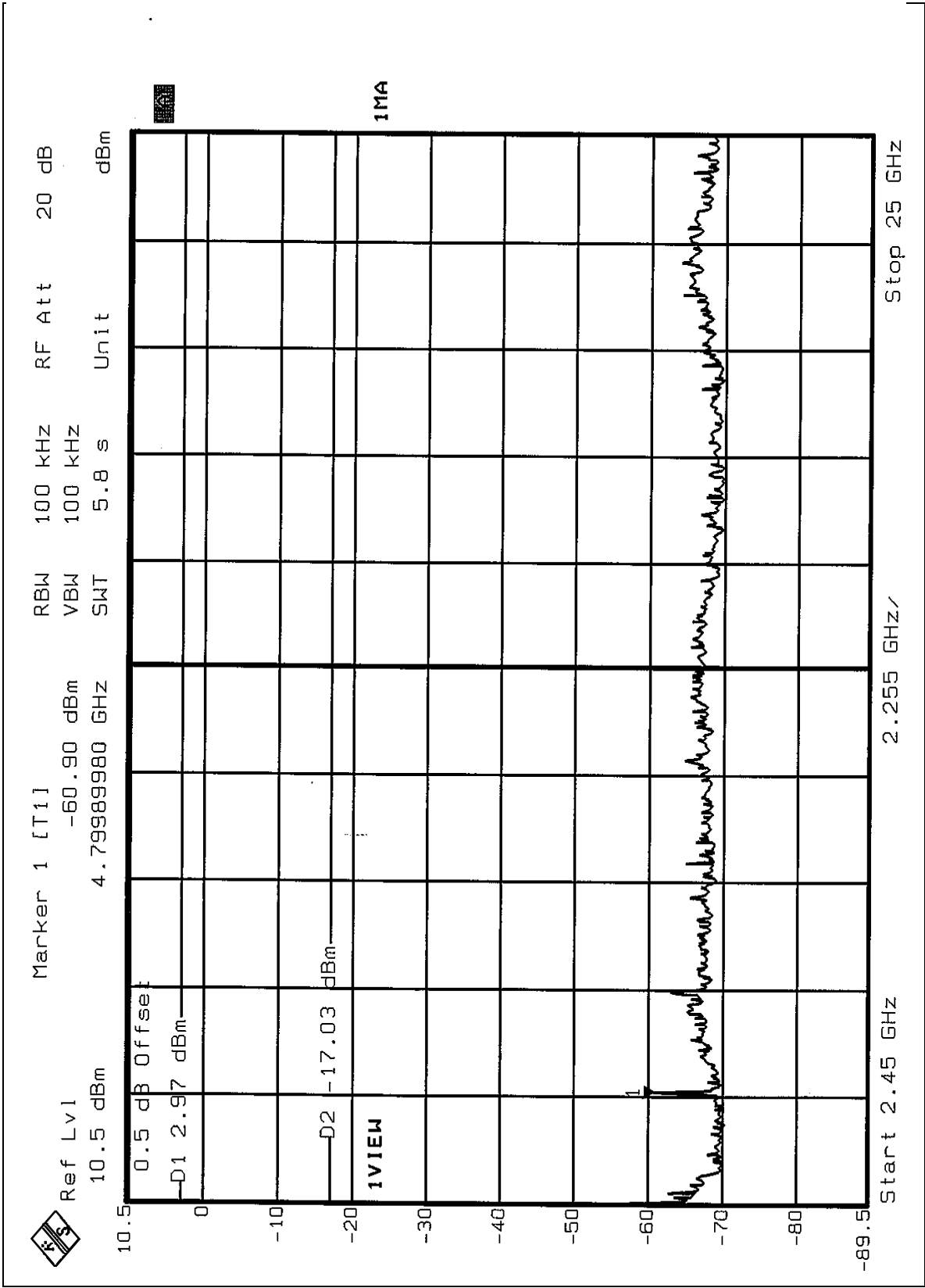
NOTE 4: The band edge emission plot of OFDM technique with Normal mode on page 72 show 50.61dB delta between carrier maximum power and local maximum emission in restrict band (2.4841GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 96.34dBuV/m, so the maximum field strength in restrict band is $96.34 - 50.61 = 45.73$ dBuV/m which is under 54dBuV/m limit.

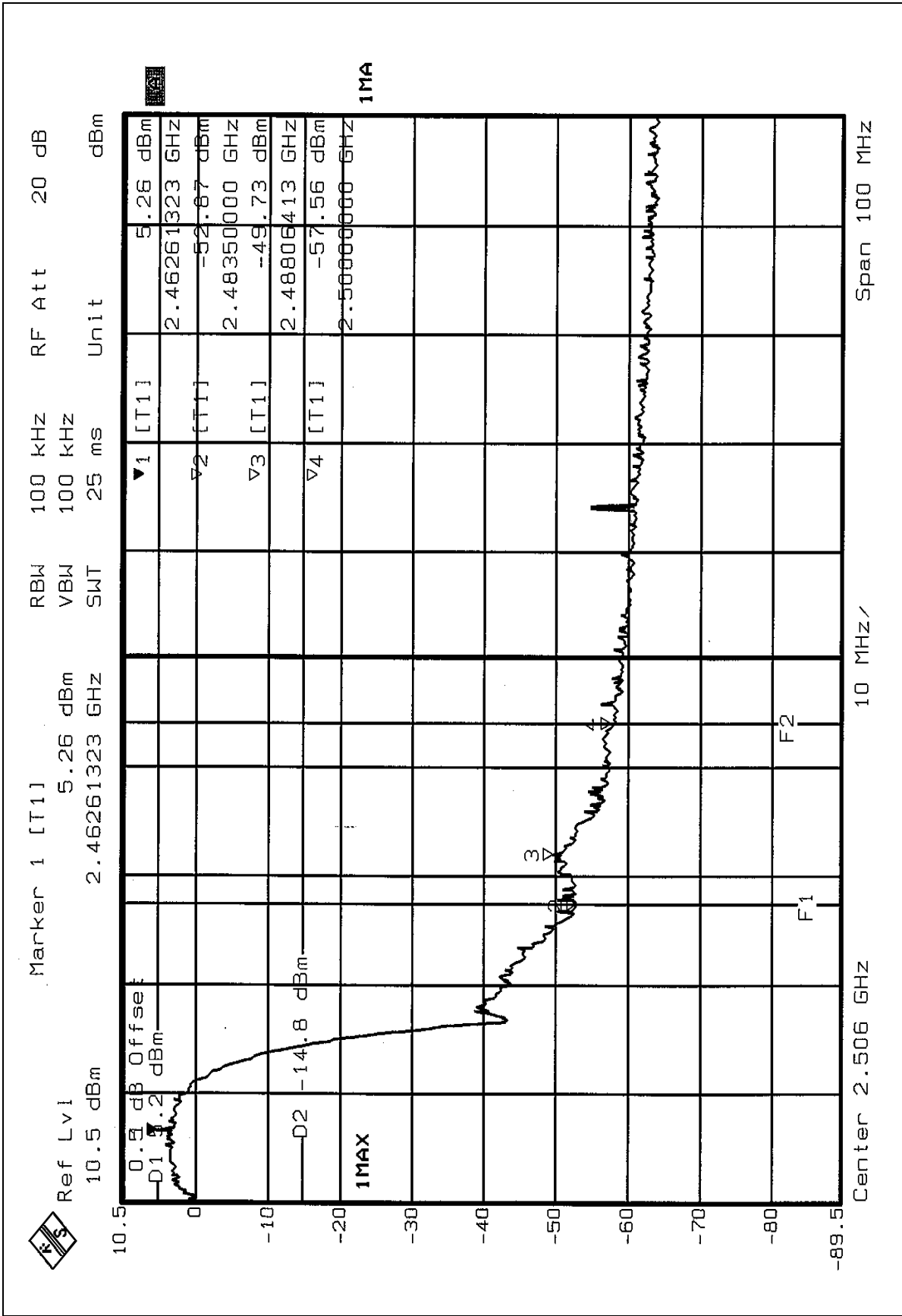
NOTE 5: The band edge emission plot of OFDM technique with Turbo mode on page 74 shows 48.11dB delta between carrier maximum power and local maximum emission in restrict band (2.3599GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 84.58dBuV/m, so the maximum field strength in restrict band is $84.58 - 48.11 = 36.47$ dBuV/m which is under 54dBuV/m limit.

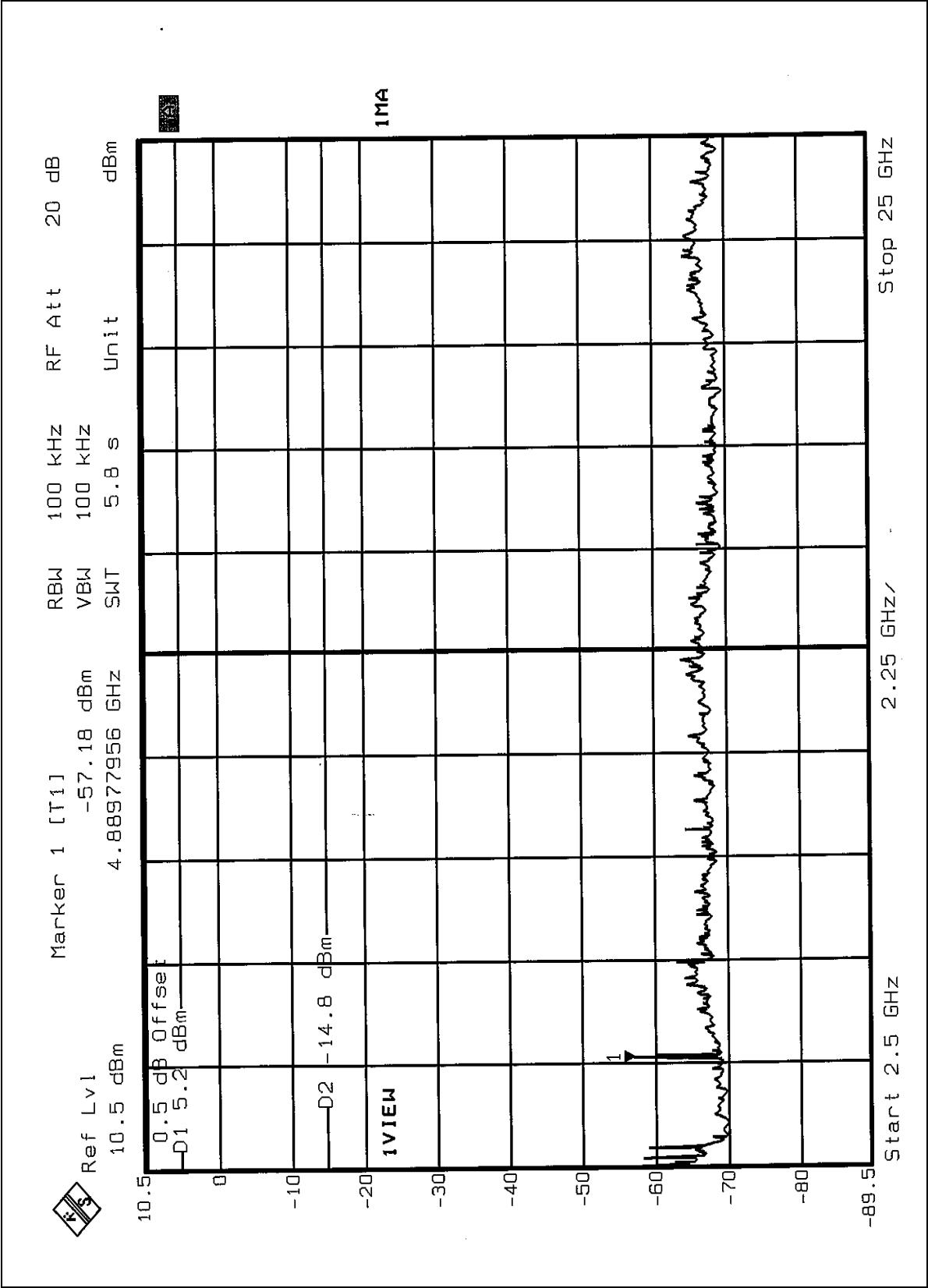
NOTE 6: The band edge emission plot of OFDM technique with Turbo mode on page 76 shows 54.92dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 6 at the item 4.2.7 is 93.35dBuV/m, so the maximum field strength in restrict band is $93.35 - 54.92 = 38.43$ dBuV/m which is under 54dBuV/m limit.

CCK mode:

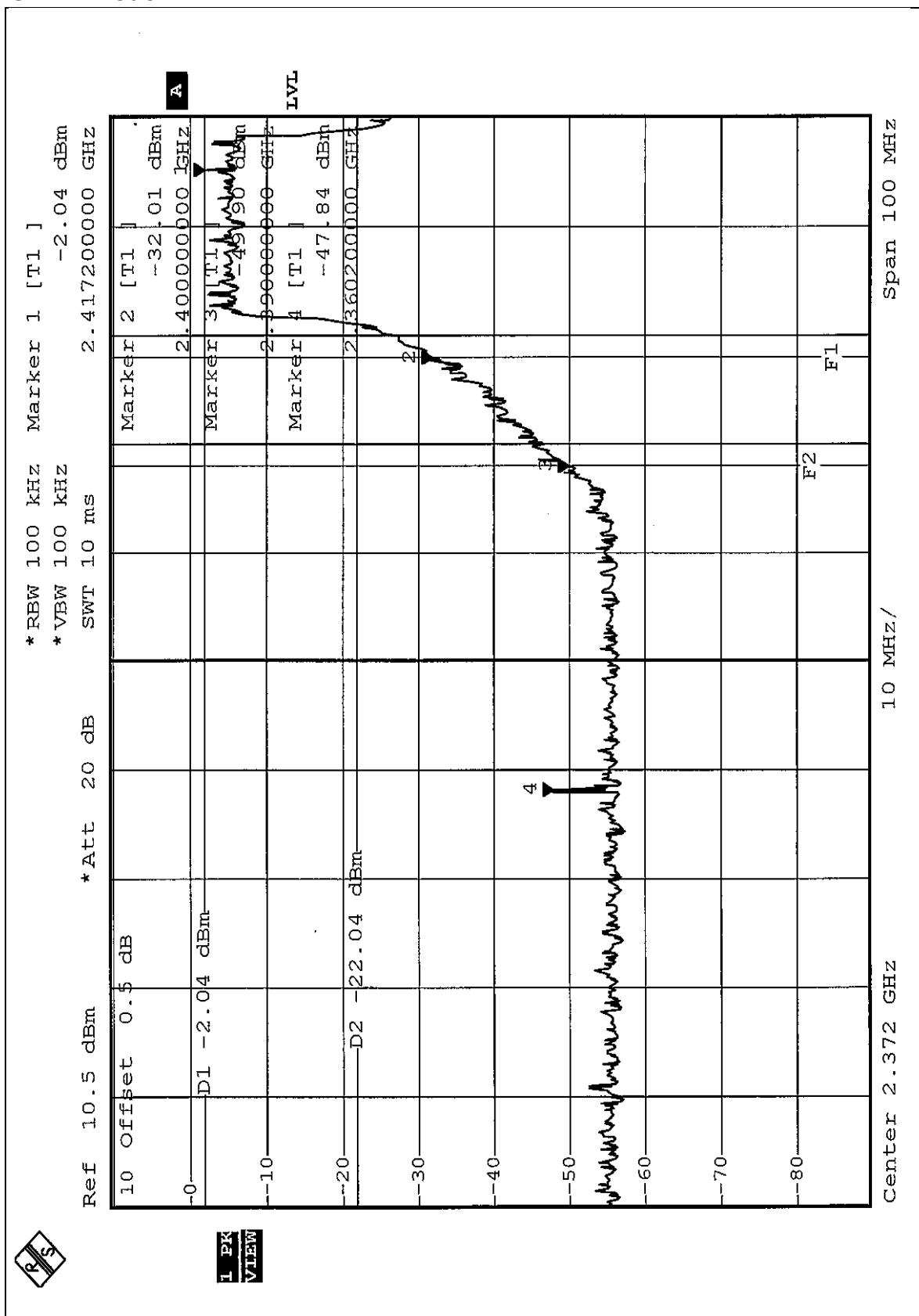


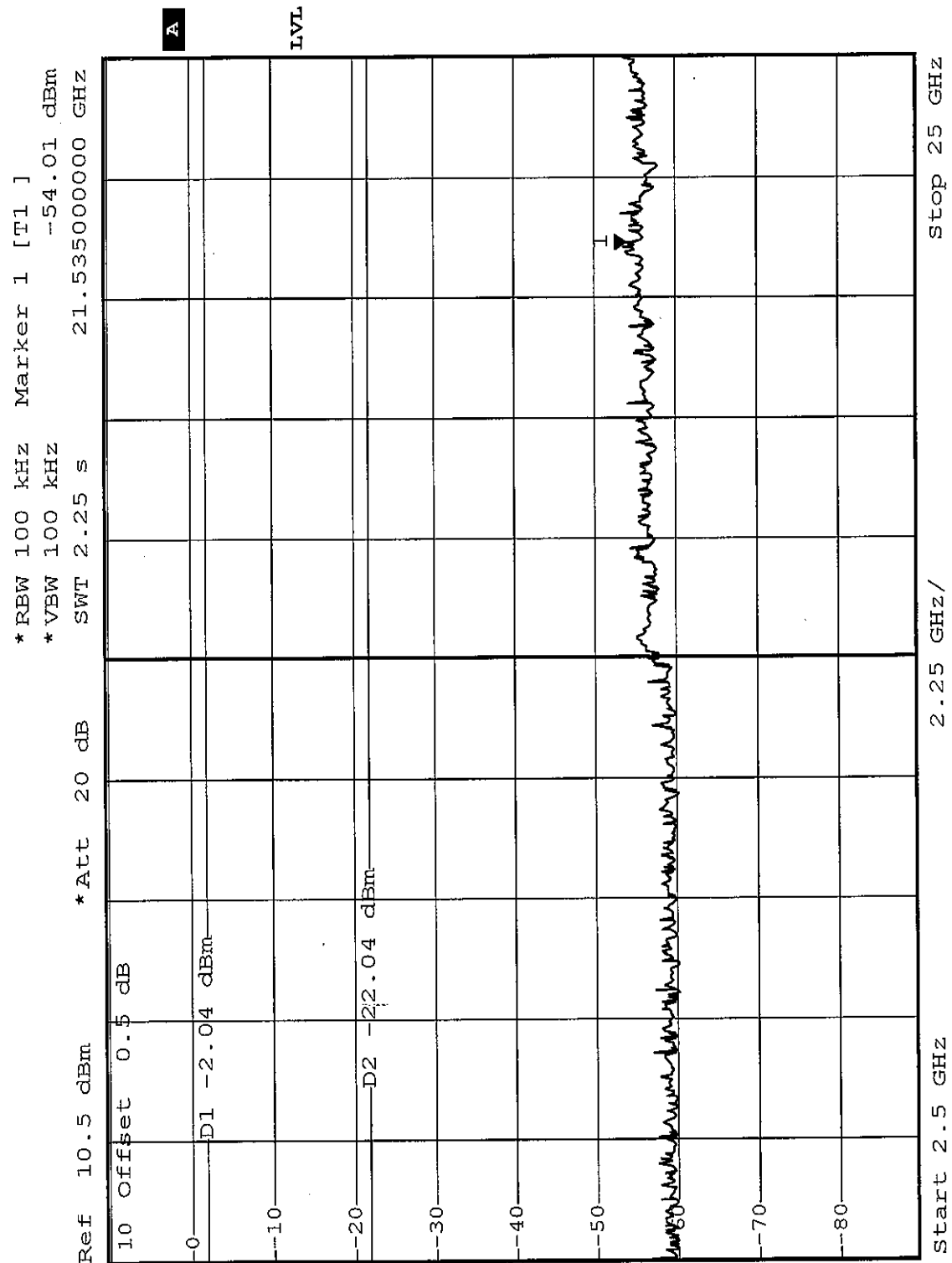




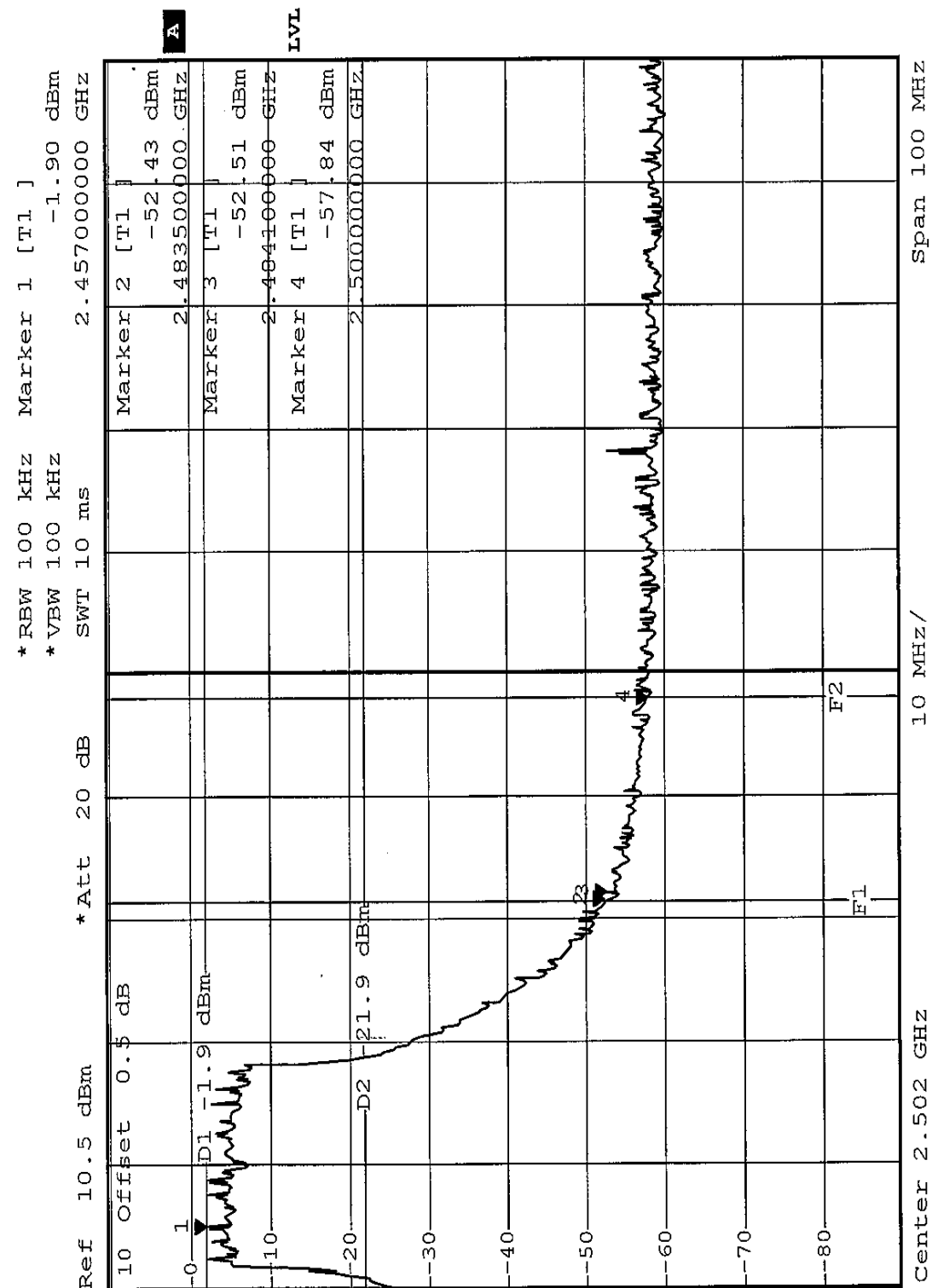


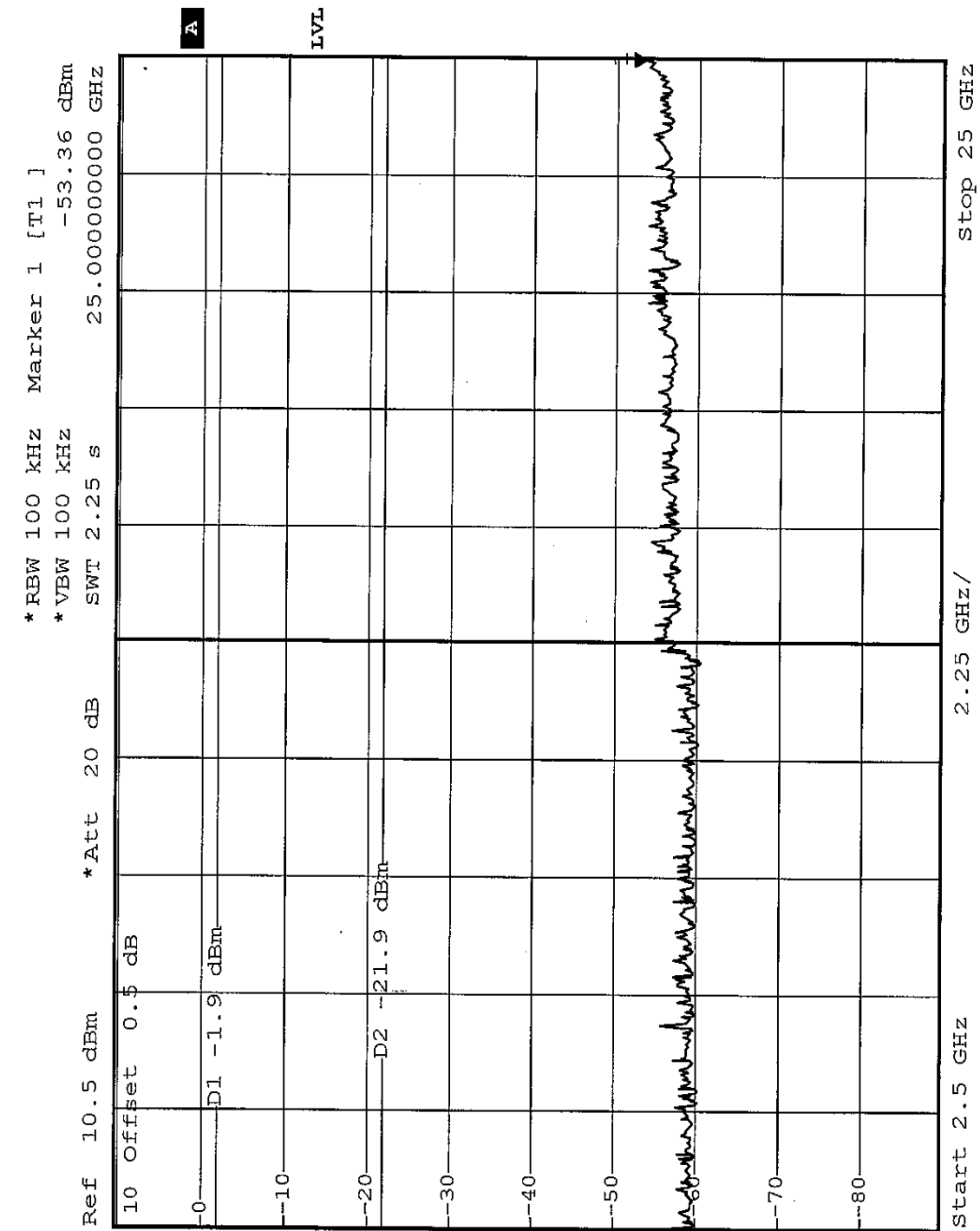
OFDM mode:



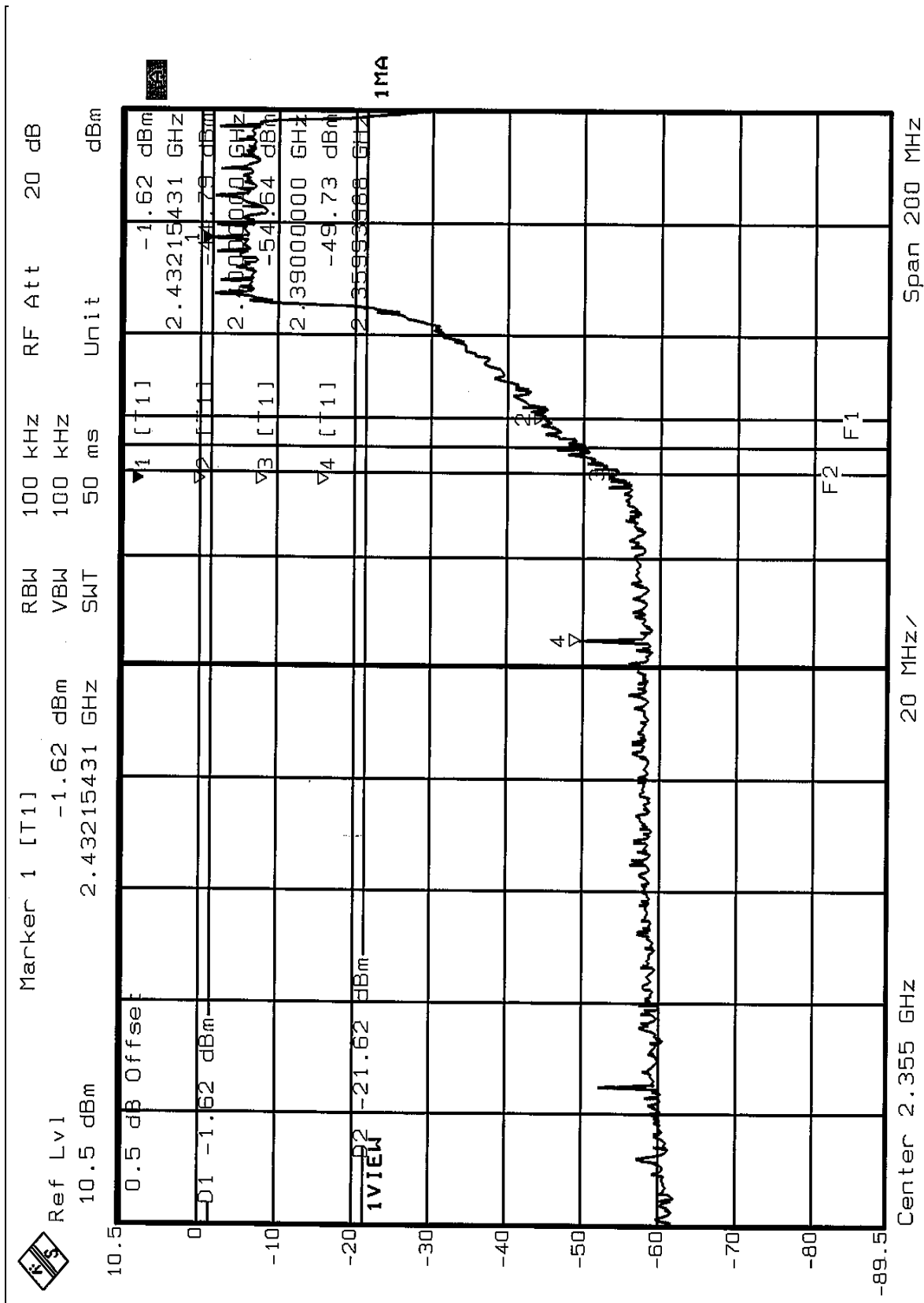


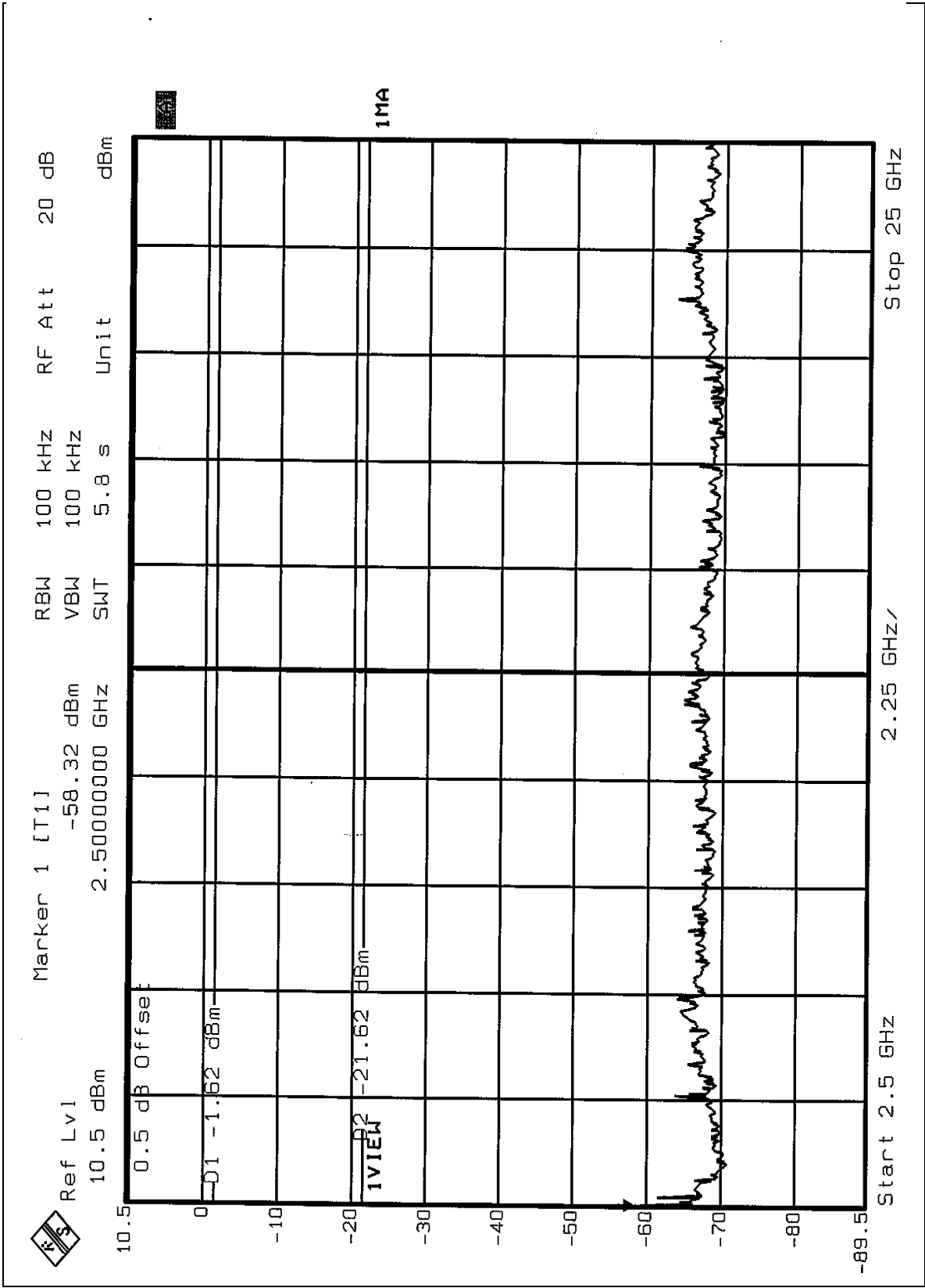
1 PK
MAXH

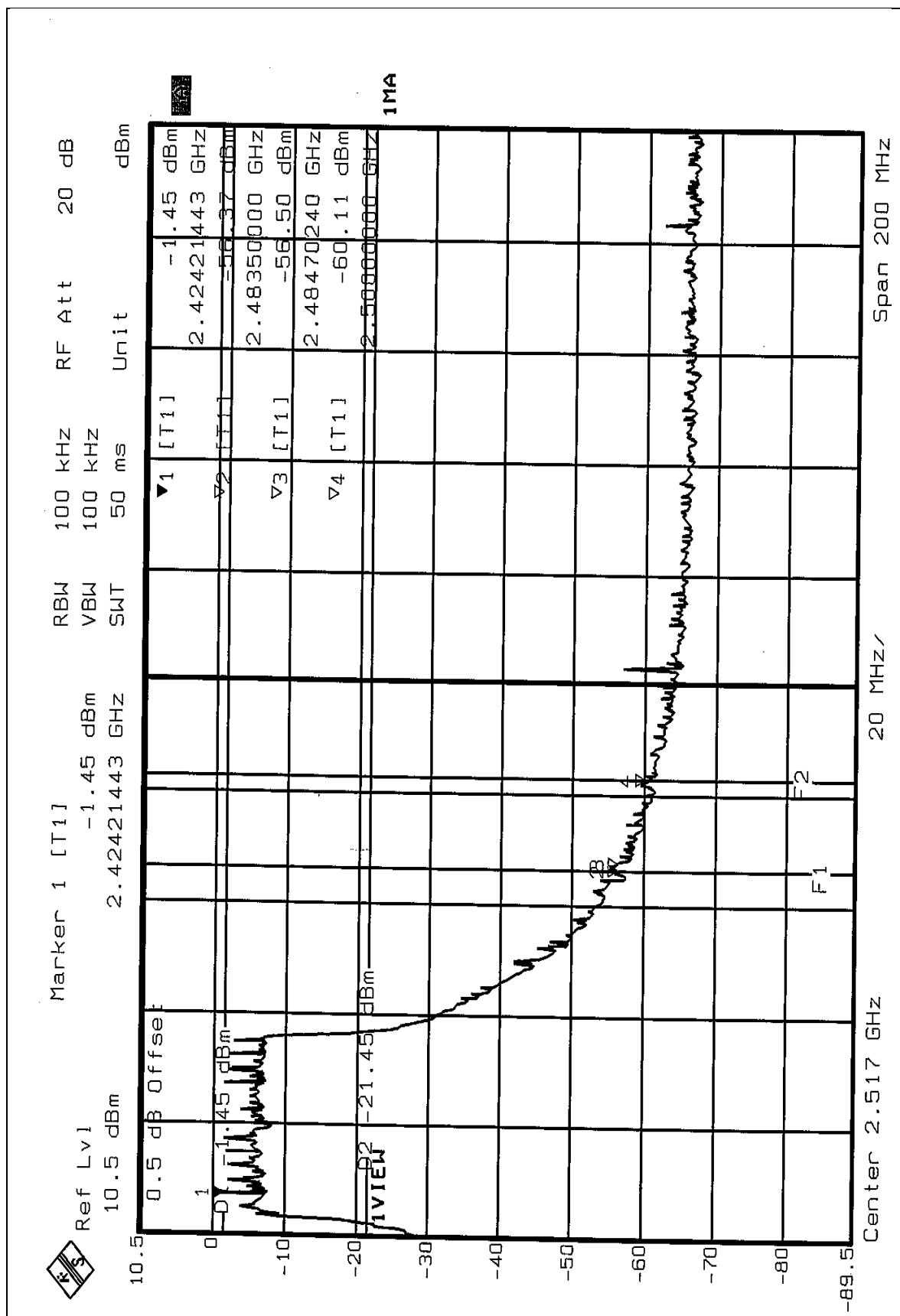


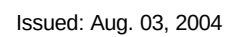


OFDM Turbo mode:











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 Dipole antenna with UFL connector. The maximum Gain of the antenna is 4dBi.



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

5.1 CONDUCTED EMISSION MEASUREMENT

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	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	847265/023	Oct. 22, 2004
LISN ROHDE & SCHWARZ	ESH3-Z5	100220	Dec. 10, 2004
Software ADT	ADT_Cond_V3	NA	NA

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



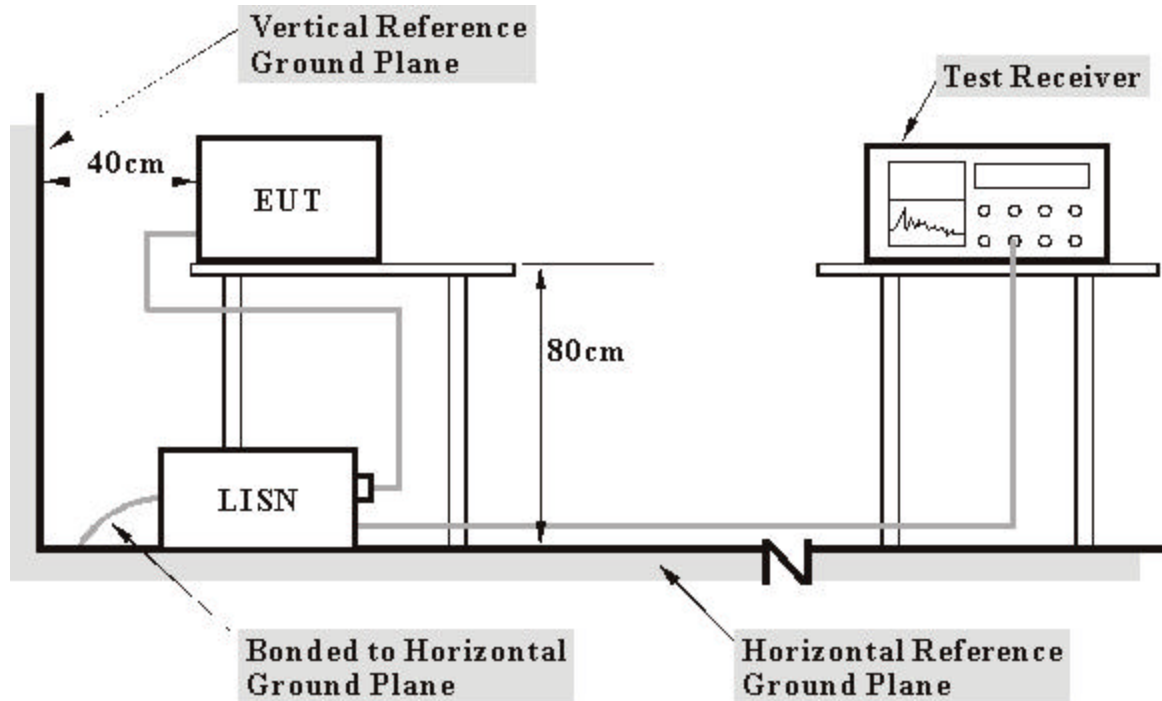
5.1.3 TEST PROCEDURES

- 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

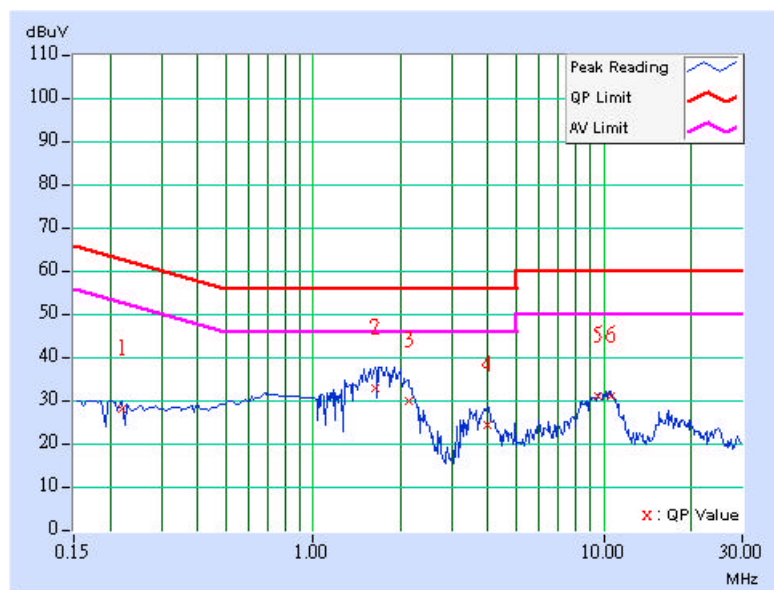
Same as 4.1.6

5.1.7 TEST RESULTS

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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 [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.220	0.12	27.68	-	27.80	-	62.81	52.81	-35.01	-
2	1.633	0.16	32.65	-	32.81	-	56.00	46.00	-23.19	-
3	2.125	0.16	29.56	-	29.72	-	56.00	46.00	-26.28	-
4	3.957	0.21	24.26	-	24.47	-	56.00	46.00	-31.53	-
5	9.570	0.30	30.65	-	30.95	-	60.00	50.00	-29.05	-
6	10.523	0.35	30.69	-	31.04	-	60.00	50.00	-28.96	-

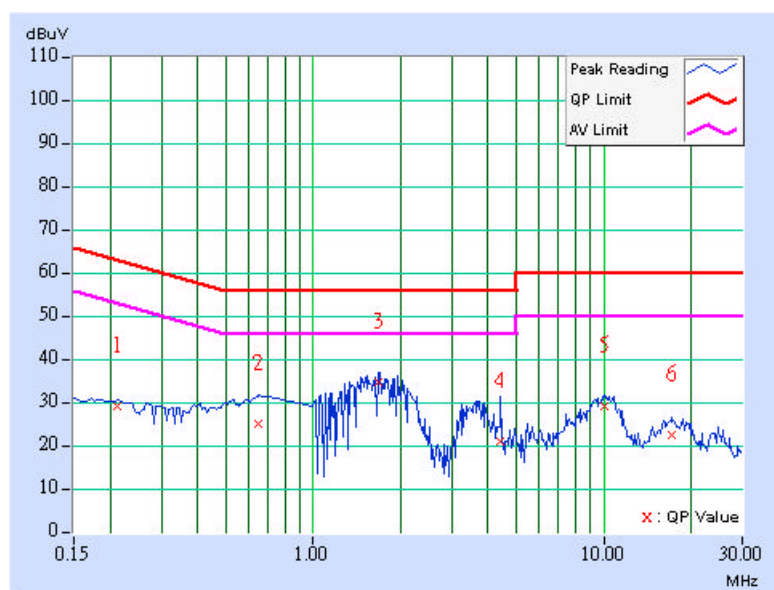
- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value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



EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-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.	Corr.	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.213	0.11	28.67	-	28.78	-	63.11	53.11	-34.33	-
2	0.646	0.12	24.37	-	24.49	-	56.00	46.00	-31.51	-
3	1.684	0.16	34.15	-	34.31	-	56.00	46.00	-21.69	-
4	4.395	0.21	20.36	-	20.57	-	56.00	46.00	-35.43	-
5	10.063	0.28	28.51	-	28.79	-	60.00	50.00	-31.21	-
6	17.211	0.67	21.95	-	22.62	-	60.00	50.00	-37.38	-

- 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.





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	Jan. 22, 2005
Preamplifier Agilent	8447D	2944A10629	Jan. 14, 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.

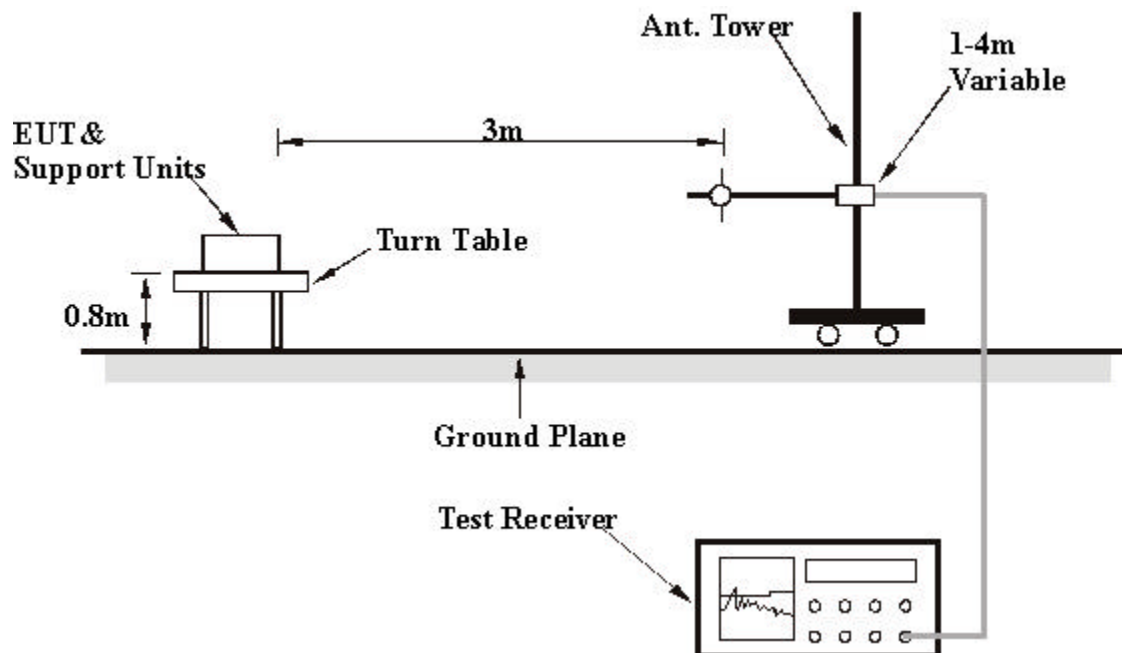
NOTE:

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 Mini PCI Card	MODEL	WMIA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. 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	66.93	29.59 QP	40.00	-10.41	1.50 H	121	16.67	12.93
2	90.26	33.04 QP	43.50	-10.46	1.75 H	157	22.82	10.22
3	117.47	37.58 QP	43.50	-5.92	1.50 H	145	24.81	12.77
4	166.20	40.56 QP	43.50	-2.94	1.52 H	173	26.26	14.29
5	181.62	36.31 QP	43.50	-7.19	1.50 H	136	23.48	12.83
6	199.12	38.77 QP	43.50	-4.73	1.50 H	67	27.31	11.46
7	232.16	32.65 QP	46.00	-13.35	1.50 H	31	20.06	12.59
8	265.21	39.55 QP	46.00	-6.45	1.00 H	139	25.97	13.58
9	298.26	32.92 QP	46.00	-13.08	1.00 H	130	18.44	14.47
10	331.30	40.41 QP	46.00	-5.59	1.00 H	136	25.19	15.22
11	354.63	33.07 QP	46.00	-12.93	1.00 H	52	17.32	15.75
12	440.16	30.37 QP	46.00	-15.63	1.50 H	37	12.56	17.81
13	455.71	33.25 QP	46.00	-12.75	1.50 H	61	15.10	18.15
14	465.43	32.84 QP	46.00	-13.16	1.75 H	157	14.56	18.27
15	640.38	28.74 QP	46.00	-17.26	1.25 H	313	7.19	21.55

- 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 Mini PCI Card	MODEL	WMIA-112AG
CHANNEL	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25deg. C, 60%RH, 991hPa	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	31.94	27.61 QP	40.00	-12.39	1.25 V	208	13.68	13.93
2	45.55	27.52 QP	40.00	-12.48	1.00 V	130	12.29	15.23
3	64.99	30.33 QP	40.00	-9.67	1.00 V	223	17.18	13.15
4	98.04	28.69 QP	43.50	-14.81	1.75 V	295	17.87	10.83
5	133.03	33.43 QP	43.50	-10.07	1.00 V	46	19.49	13.94
6	168.02	32.65 QP	43.50	-10.85	2.00 V	82	18.54	14.12
7	189.40	28.96 QP	43.50	-14.54	1.00 V	49	16.74	12.22
8	199.12	33.25 QP	43.50	-10.25	2.00 V	76	21.79	11.46
9	265.21	27.63 QP	46.00	-18.37	2.00 V	172	14.05	13.58
10	333.25	34.03 QP	46.00	-11.97	1.25 V	94	18.77	15.26
11	397.39	30.57 QP	46.00	-15.43	1.25 V	118	13.87	16.69
12	440.16	28.32 QP	46.00	-17.68	1.00 V	10	10.51	17.81
13	455.71	30.93 QP	46.00	-15.07	1.00 V	121	12.79	18.15
14	467.37	30.82 QP	46.00	-15.18	1.00 V	178	12.52	18.30
15	533.47	26.77 QP	46.00	-19.23	1.00 V	133	7.40	19.37
16	603.45	28.10 QP	46.00	-17.90	1.25 V	295	7.05	21.06

- 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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	1
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	41.70 PK	74.00	-32.30	1.50 H	279	13.80	27.89
1	#1055.90	29.88 AV	54.00	-24.12	1.50 H	279	1.98	27.89
2	#5150.00	46.93 PK	74.00	-27.07	1.00 H	345	8.10	38.83
3	*5180.00	98.21 PK			1.00 H	345	59.32	38.89
3	*5180.00	88.21 AV			1.00 H	345	49.32	38.89
4	10360.00	63.03 PK	68.30	-5.27	1.16 H	326	12.87	50.16

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)
1	#1055.90	42.33 PK	74.00	-31.67	1.02 V	229	14.43	27.89
1	#1055.90	32.13 AV	54.00	-21.87	1.02 V	229	4.23	27.89
2	#5150.00	58.61 PK	74.00	-15.39	1.46 V	228	19.78	38.83
2	#5150.00	47.61 AV	54.00	-6.39	1.46 V	228	8.78	38.83
3	*5180.00	109.09 PK			1.46 V	228	70.20	38.89
3	*5180.00	98.89 AV			1.46 V	228	60.00	38.89
4	10360.00	67.45 PK	68.30	-0.85	1.82 V	352	17.29	50.16

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	4
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	41.33 PK	74.00	-32.67	1.44 H	133	13.43	27.89
1	#1055.90	30.27 AV	54.00	-23.73	1.44 H	133	2.37	27.89
2	*5240.00	99.22 PK			1.29 H	241	60.27	38.95
2	*5240.00	89.38 AV			1.29 H	241	50.43	38.95
3	10480.00	61.65 PK	68.30	-6.65	1.53 H	273	12.00	49.65

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)
1	#1055.90	42.02 PK	74.00	-31.98	1.00 V	198	14.12	27.89
1	#1055.90	31.74 AV	54.00	-22.26	1.00 V	198	3.84	27.89
2	*5240.00	110.77 PK			1.06 V	180	71.82	38.95
2	*5240.00	99.99 AV			1.06 V	180	61.04	38.95
3	10480.00	65.08 PK	68.30	-3.22	1.59 V	333	15.42	49.65

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	5
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	41.80 PK	74.00	-32.20	1.50 H	290	13.90	27.89
1	#1055.90	30.40 AV	54.00	-23.60	1.50 H	290	2.50	27.89
2	*5260.00	100.29 PK			1.53 H	264	61.33	38.96
2	*5260.00	90.72 AV			1.53 H	264	51.76	38.96
3	10520.00	62.65 PK	68.30	-5.65	1.83 H	85	13.17	49.48

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)
1	#1055.90	42.49 PK	74.00	-31.51	1.00 V	163	14.59	27.89
1	#1055.90	31.02 AV	54.00	-22.98	1.00 V	163	3.12	27.89
2	*5260.00	110.59 PK			1.33 V	182	71.63	38.96
2	*5260.00	100.51 AV			1.33 V	182	61.55	38.96
3	10520.00	65.12 PK	68.30	-3.18	1.70 V	353	15.64	49.48
4	#15780.00	62.20 PK	74.00	-11.80	1.62 V	28	11.04	51.16
4	#15780.00	51.24 AV	54.00	-2.76	1.62 V	28	11.04	51.16

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	8
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB)
1	#1055.92	41.13 PK	74.00	-32.87	1.48 H	110	13.23	27.89
1	#1055.92	29.49 AV	54.00	-24.51	1.48 H	110	1.59	27.89
2	*5320.00	96.15 PK			1.98 H	286	57.18	38.97
2	*5320.00	86.93 AV			1.98 H	286	47.96	38.97
3	#5350.00	40.46 PK	74.00	-33.54	1.98 H	286	1.51	38.95
4	#10640.00	62.60 PK	74.00	-11.40	1.37 H	20	13.09	49.51
4	#10640.00	60.07 PK	54.00	-6.07	1.37 H	20	10.56	49.51

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)	Antenna Factor (dB)
1	#1055.73	41.08 PK	74.00	-32.92	1.30 V	352	13.18	27.89
1	#1055.73	29.25 AV	54.00	-24.75	1.30 V	352	1.35	27.89
2	*5320.00	110.58 PK			1.29 V	148	71.61	38.97
2	*5320.00	100.40 AV			1.29 V	148	61.43	38.97
3	#5350.00	54.89 PK	74.00	-19.11	1.29 V	148	15.94	38.95
3	#5350.00	44.71 AV	54.00	-9.29	1.29 V	148	5.76	38.95
4	#10640.00	63.24 PK	74.00	-10.76	1.62 V	2	13.73	49.51
4	#10640.00	58.53 PK	54.00	-4.53	1.62 V	2	9.02	49.51

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	9
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 62%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	*5745.00	108.22 PK			1.13 H	322	69.32	38.90
1	*5745.00	97.11 AV			1.13 H	322	58.21	38.90
2	#7660.00	54.17 PK	74.00	-19.83	1.18 H	357	10.69	43.49
2	#7660.00	41.05 AV	54.00	-12.95	1.18 H	357	-2.43	43.49
3	#11490.00	58.86 PK	74.00	-15.14	1.05 H	258	10.72	48.14
3	#11490.00	46.15 AV	54.00	-7.85	1.05 H	258	-1.99	48.14

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	*5745.00	106.51 PK			1.00 V	29	67.61	38.90
1	*5745.00	95.43 AV			1.00 V	29	56.53	38.90
2	#7660.00	56.05 PK	74.00	-17.95	1.24 V	324	12.57	43.49
2	#7660.00	42.70 AV	54.00	-11.30	1.24 V	324	-0.78	43.49
3	#11490.00	59.98 PK	74.00	-14.02	1.32 V	334	11.84	48.14
3	#11490.00	45.81 AV	54.00	-8.19	1.32 V	334	-2.33	48.14

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	11
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Leo Hung		

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	#1055.00	38.99 PK	74.00	-35.01	1.00 H	13	12.29	26.70
2	*5785.00	103.84 PK			1.00 H	144	64.78	39.06
2	*5785.00	93.68 AV			1.00 H	144	54.62	39.06
3	#11570.00	66.83 PK	74.00	-7.17	1.00 H	145	18.77	48.06
3	#11570.00	51.37 AV	54.00	-2.63	1.00 H	145	3.31	48.06

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	#1055.00	39.50 PK	74.00	-34.50	1.00 V	228	12.80	26.70
2	*5785.00	106.26 PK			1.18 V	1	67.20	39.06
2	*5785.00	95.61 AV			1.18 V	1	56.55	39.06
3	#11570.00	59.52 PK	74.00	-14.48	1.06 V	26	11.46	48.06
3	#11570.00	45.74 AV	54.00	-8.26	1.06 V	26	-2.32	48.06

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	12
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Leo Hung		

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	#1055.00	38.91 PK	74.00	-35.09	1.22 H	239	12.21	26.70
2	*5805.00	104.46 PK			1.35 H	143	65.36	39.10
2	*5805.00	94.13 AV			1.35 H	143	55.03	39.10
3	#11610.00	59.06 PK	74.00	-14.94	1.07 H	28	11.02	48.04
3	#11610.00	45.37 AV	54.00	-8.63	1.07 H	28	-2.67	48.04

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	#1055.00	38.42 PK	74.00	-35.58	1.00 V	244	11.72	26.70
2	*5805.00	106.34 PK			1.06 V	360	67.24	39.10
2	*5805.00	95.23 AV			1.06 V	360	56.13	39.10
3	#11610.00	60.04 PK	74.00	-13.96	1.11 V	48	12.00	48.04
3	#11610.00	46.06 AV	54.00	-7.94	1.07 H	28	-1.98	48.04

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal Mode	CHANNEL	13
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Leo Hung		

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	#1055.00	38.41 PK	74.00	-35.59	1.03 H	292	11.71	26.70
2	*5825.00	93.23 PK			1.15 H	8	54.25	38.98
2	*5825.00	92.50 AV			1.15 H	8	53.52	38.98
3	#11650.00	58.87 PK	74.00	-15.13	1.00 H	348	10.74	48.13
3	#11650.00	45.23 AV	54.00	-8.77	1.00 H	348	-2.90	48.13

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	#1055.00	40.13 PK	74.00	-33.87	1.12 V	123	13.43	26.70
2	*5825.00	105.66 PK	74.00		1.05 V	360	66.68	38.98
2	*5825.00	94.68 AV	54.00		1.05 V	360	55.70	38.98
3	#11650.00	59.85 PK	74.00	-14.15	1.02 V	92	11.72	48.13
3	#11650.00	46.50 AV	54.00	-7.50	1.02 V	92	-1.63	48.13

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo Mode	CHANNEL	1
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	39.77 PK	74.00	-34.23	1.32 H	289	11.87	27.89
2	#5150.00	46.22 PK	74.00	-27.78	1.73 H	212	7.39	38.83
3	*5210.00	96.25 PK			1.73 H	212	57.32	38.93
3	*5210.00	86.12 AV			1.73 H	212	47.19	38.93
4	10420.00	63.33 PK	68.30	-4.97	1.24 H	320	13.24	50.09

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)
1	#1055.90	41.17 PK	74.00	-32.83	1.00 V	260	13.27	27.89
1	#1055.90	29.84 AV	54.00	-24.16	1.00 V	260	1.94	27.89
2	#5150.00	56.79 PK	74.00	-17.21	1.31 V	180	17.96	38.83
2	#5150.00	47.30 AV	54.00	-6.70	1.31 V	180	8.47	38.83
3	*5210.00	106.82 PK			1.31 V	180	67.89	38.93
3	*5210.00	97.33 AV			1.31 V	180	58.40	38.93
4	10420.00	63.38 PK	68.30	-4.92	1.80 V	350	13.29	50.09

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo Mode	CHANNEL	2
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	39.07 PK	74.00	-34.93	1.33 H	292	11.17	27.89
2	*5260.00	94.82 PK			1.00 H	289	55.86	38.96
2	*5260.00	84.59 AV			1.00 H	289	45.63	38.96
3	10500.00	62.40 PK	68.30	-5.90	1.22 H	254	12.89	49.51

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)
1	#1055.90	40.46 PK	74.00	-33.54	1.00 V	262	12.56	27.89
1	#1055.90	28.49 AV	54.00	-25.51	1.00 V	262	0.59	27.89
2	*5250.00	106.30 PK			1.46 V	185	67.35	38.95
2	*5250.00	96.56 AV			1.46 V	185	57.60	38.95
3	10500.00	63.39 PK	68.30	-4.91	1.15 V	273	13.88	49.51

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo Mode	CHANNEL	3
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	26deg. C, 60%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Steven Lu		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB)
1	#1055.90	40.44 PK	74.00	-33.56	1.54 H	311	12.54	27.89
2	*5290.00	95.32 PK			1.54 H	242	56.34	38.98
2	*5290.00	85.80 AV			1.54 H	242	46.82	38.98
3	#5350.00	41.64 PK	74.00	-32.36	1.54 H	242	2.69	38.95
4	10580.00	61.90 PK	68.30	-6.40	1.44 H	300	12.50	49.40

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)
1	#1055.96	40.37 PK	74.00	-33.63	1.02 V	233	12.47	27.89
1	#1055.96	28.44 AV	54.00	-25.56	1.02 V	233	0.54	27.89
2	*5290.00	106.19 PK			1.55 V	227	67.21	38.98
2	*5290.00	96.65 AV			1.55 V	227	57.67	38.98
3	#5350.00	52.51 PK	74.00	-21.49	1.55 V	227	13.56	38.95
3	#5350.00	42.97 AV	54.00	-11.03	1.55 V	227	4.02	38.95
4	10580.00	63.28 PK	68.30	-5.02	1.27 V	272	13.88	49.40

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo Mode	CHANNEL	4
FREQUENCY RANGE	1 ~40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Leo Hung		

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)
1	#1150.00	47.49 PK	74.00	-26.51	1.16 H	89	20.37	27.12
1	#1150.00	28.51 AV	54.00	-15.49	1.16 H	89	1.39	27.12
2	*5760.00	100.05 PK			1.62 H	291	61.09	38.96
2	*5760.00	90.67 AV			1.62 H	291	51.71	38.96
3	#11520.00	58.33 PK	74.00	-15.67	1.02 H	266	10.21	48.12
3	#11520.00	45.82 AV	54.00	-8.18	1.02 H	266	-2.30	48.12

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)
1	#1150.00	40.12 PK	74.00	-33.88	1.24 V	53	13.00	27.12
2	*5760.00	100.25 PK			1.29 V	8	61.29	38.96
2	*5760.00	90.61 AV			1.29 V	8	51.65	38.96
3	#11520.00	59.09 PK	74.00	-14.91	1.03 V	154	10.97	48.12
3	#11520.00	45.33 AV	54.00	-8.67	1.03 V	154	-2.79	48.12

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 Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo Mode	CHANNEL	5
FREQUENCY RANGE	1 ~ 40 GHz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24deg. C, 64%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
TESTED BY	Leo Hung		

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)
1	#1150.00	38.28 PK	74.00	-35.72	1.03 H	217	11.16	27.12
2	*5800.00	99.79 PK			1.00 H	302	60.66	39.13
2	*5800.00	89.89 AV			1.00 H	302	50.76	39.13
3	#11600.00	58.25 PK	74.00	-15.75	1.00 H	280	10.23	48.02
3	#11600.00	44.98 AV	54.00	-9.02	1.00 H	280	-3.04	48.02

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)
1	#1150.00	39.01 PK	74.00	-34.99	1.00 V	125	11.89	27.12
2	*5800.00	100.59 PK			1.44 V	334	61.46	39.13
2	*5800.00	91.13 AV			1.44 V	334	52.00	39.13
3	#11600.00	58.61 PK	74.00	-15.39	1.13 V	224	10.59	48.02
3	#11600.00	45.86 AV	54.00	-8.14	1.13 V	224	-2.16	48.02

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, 2004

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

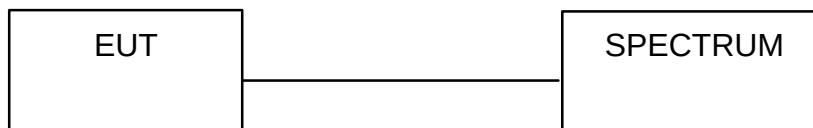
5.3.3 TEST PROCEDURE

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.



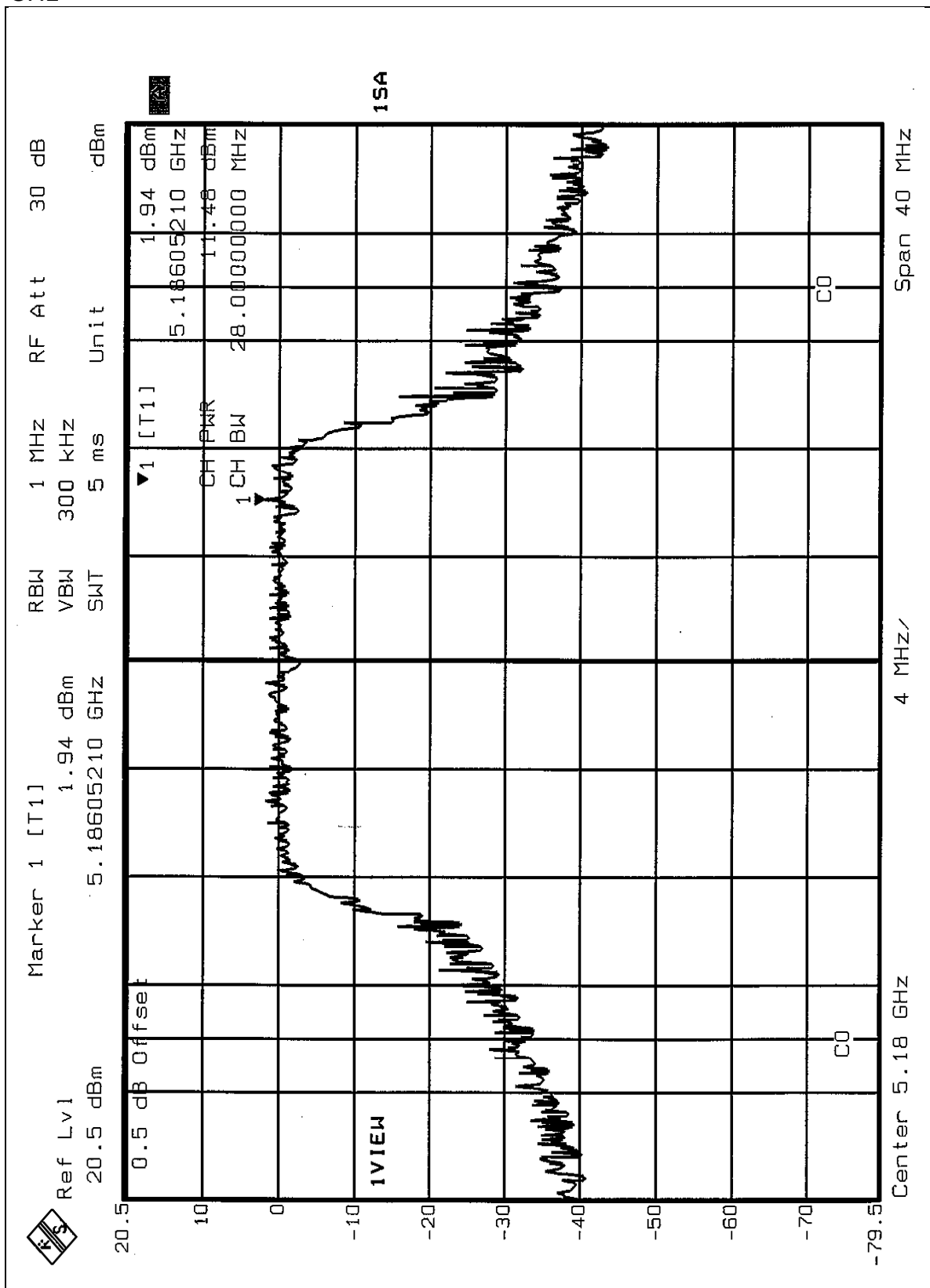
5.3.7 TEST RESULTS

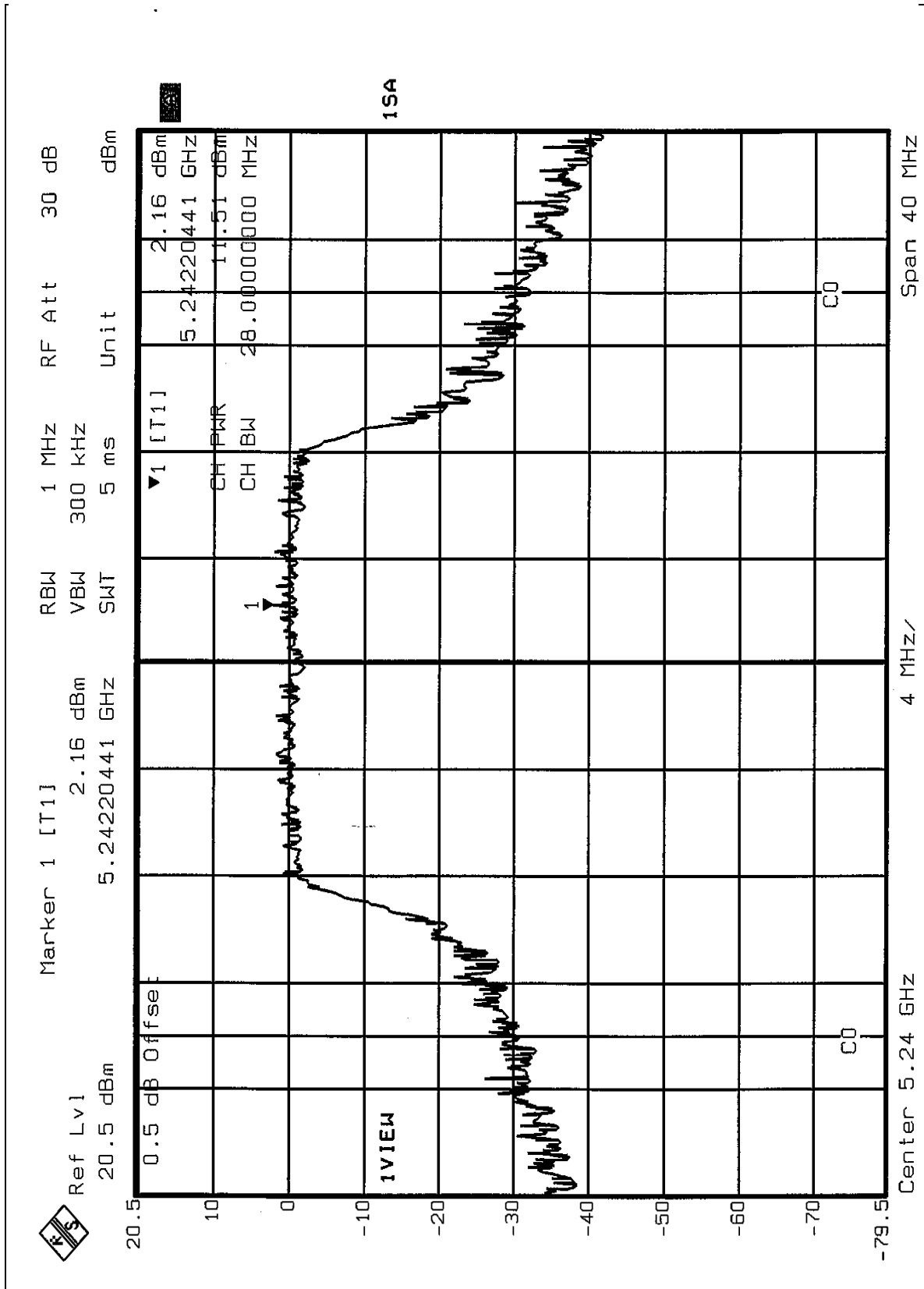
EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5180	11.48	17.00	26.77	PASS
4	5240	11.51	17.00	25.49	PASS
5	5260	11.55	24.00	25.25	PASS
8	5320	11.55	24.00	25.25	PASS

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

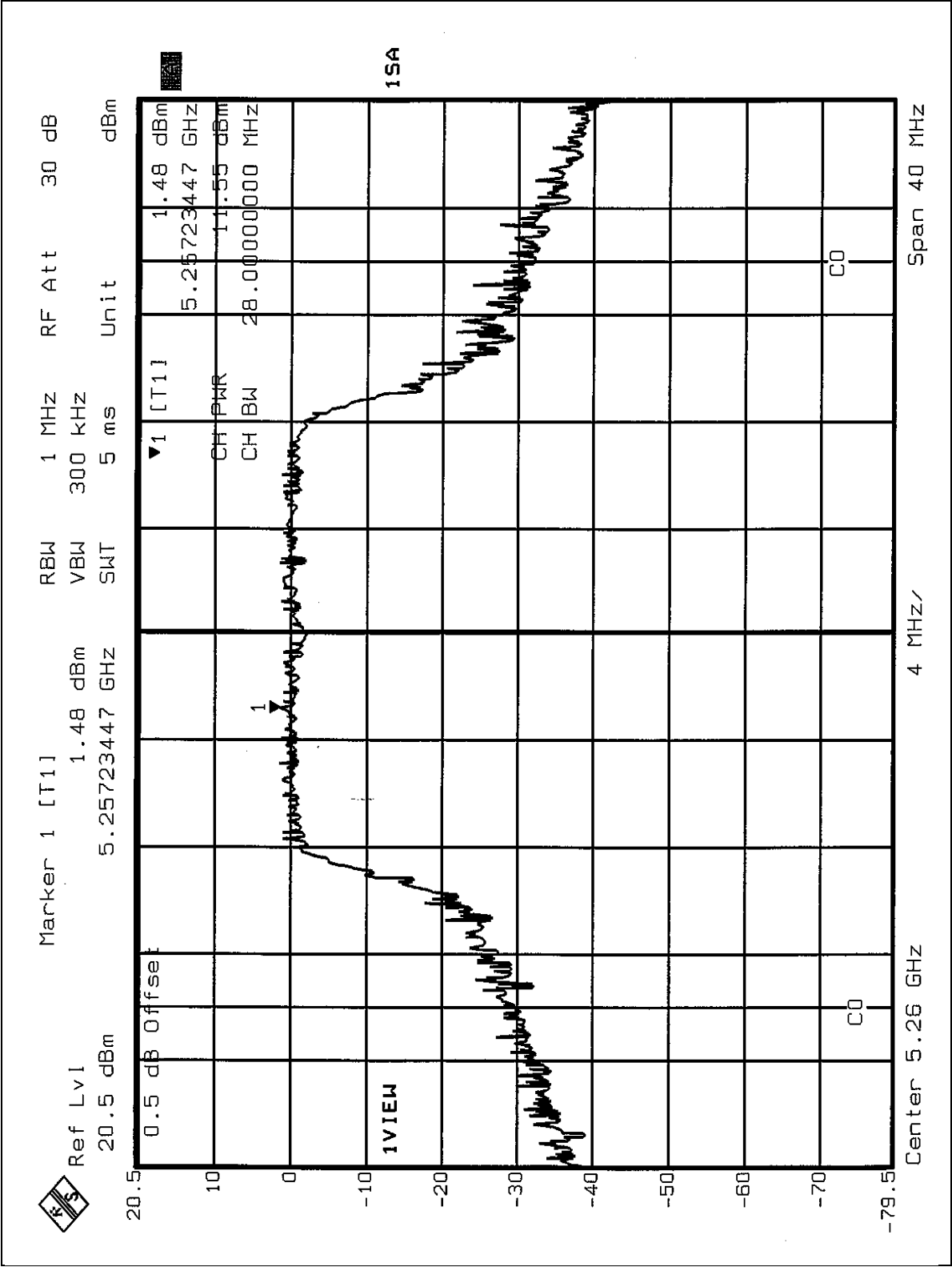
Peak Power Output: CH1



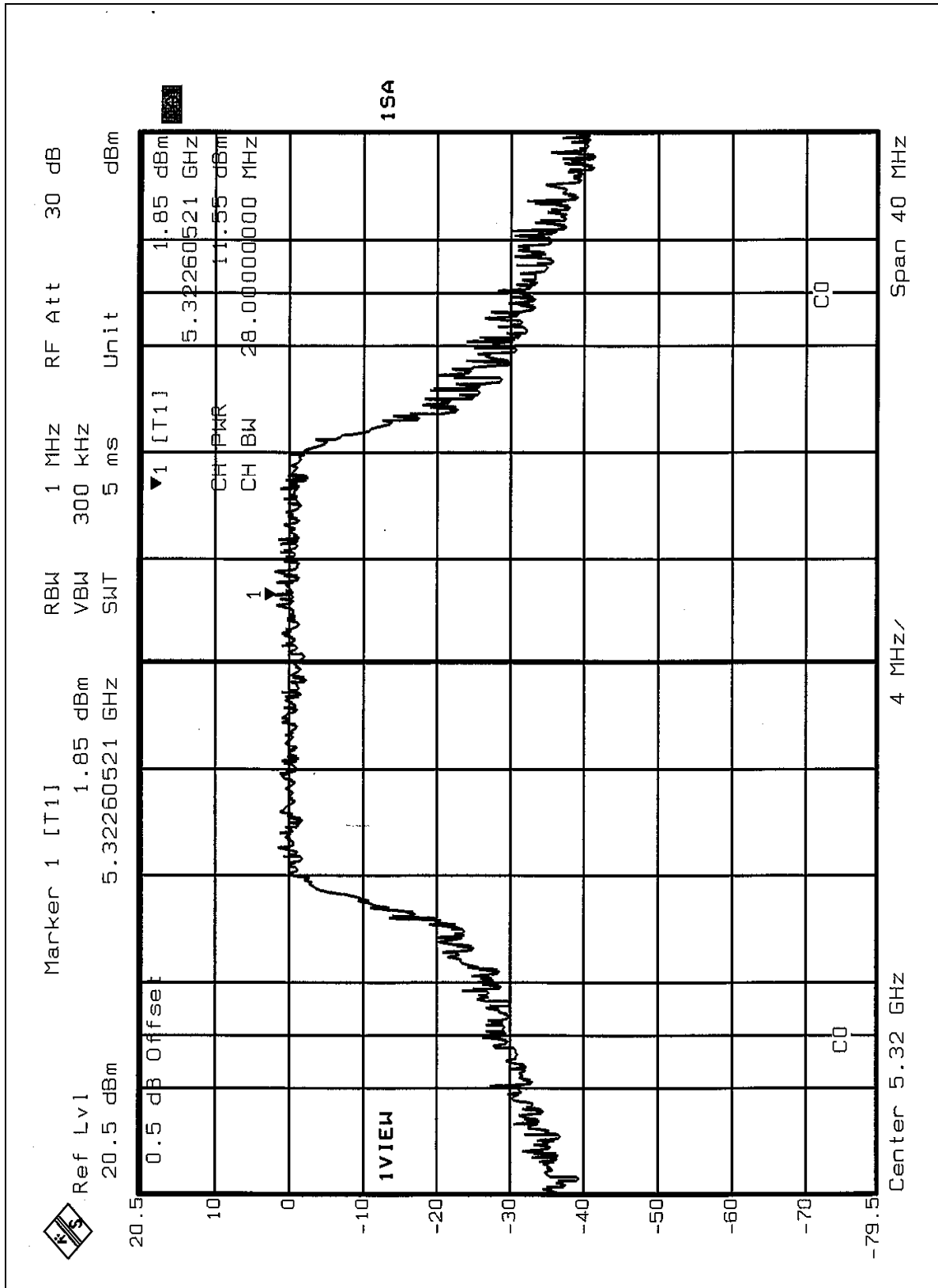
CH₄



CH5

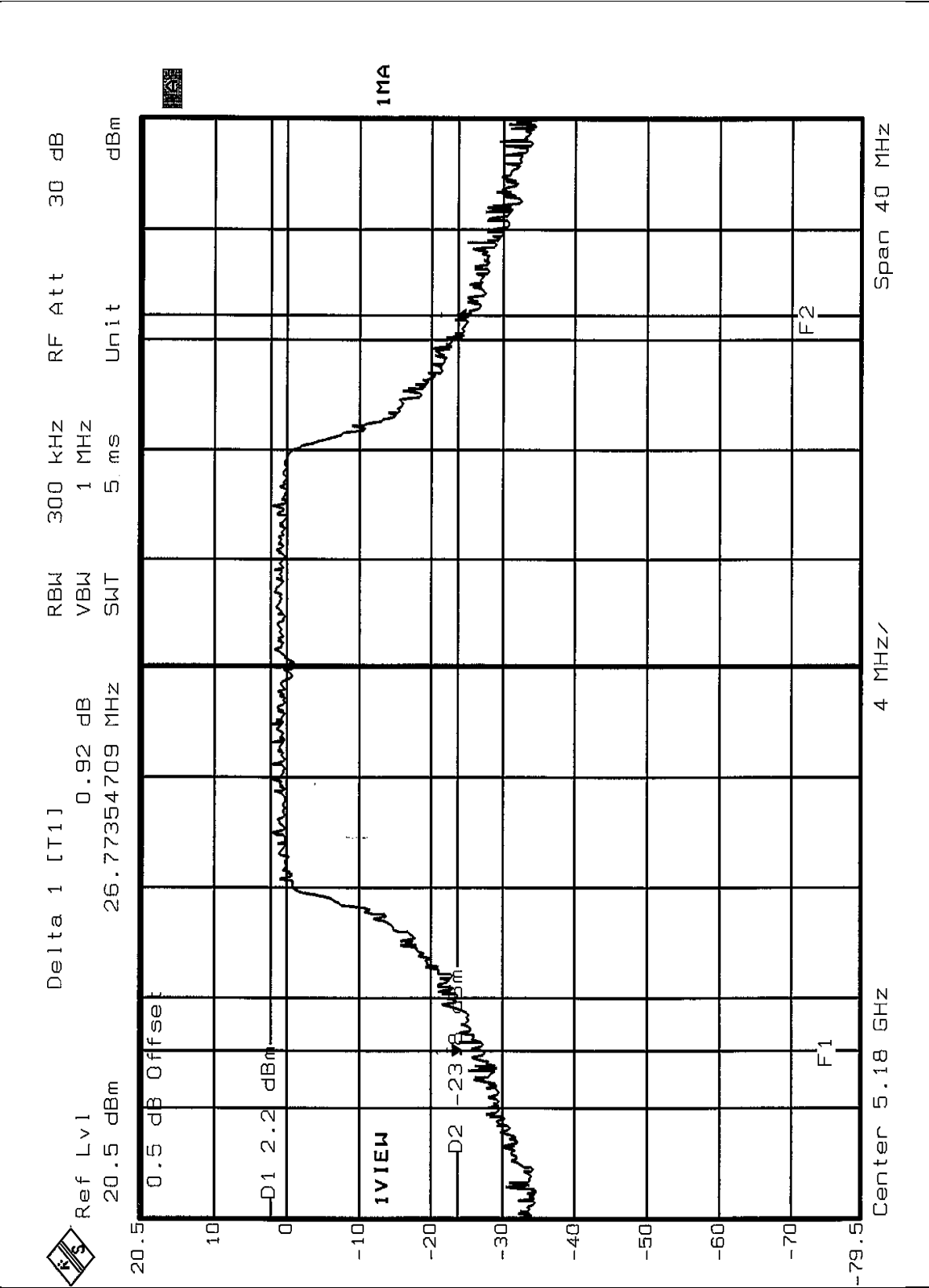


CH8



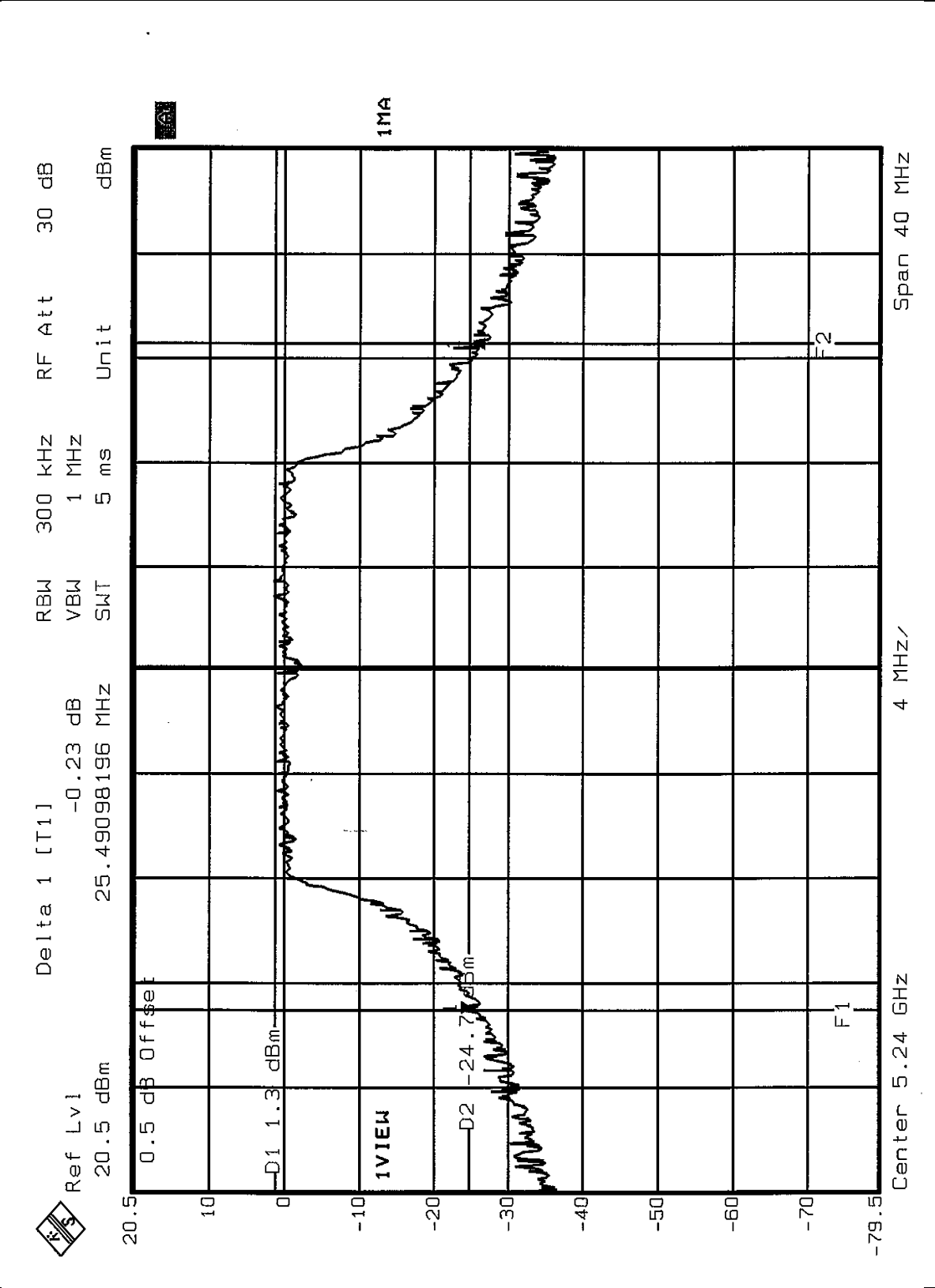


26dB Occupied Bandwidth:
CH1



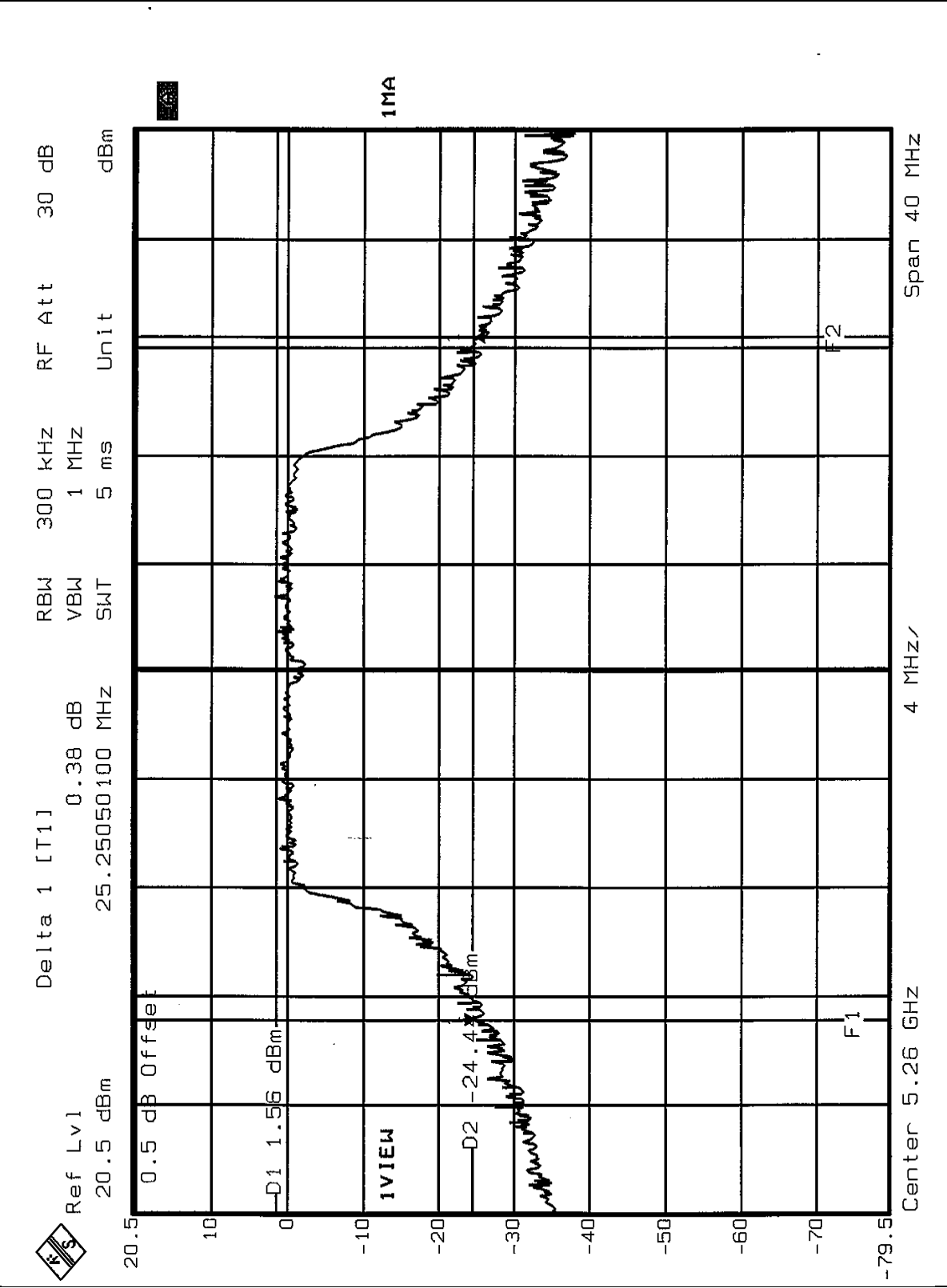


CH4



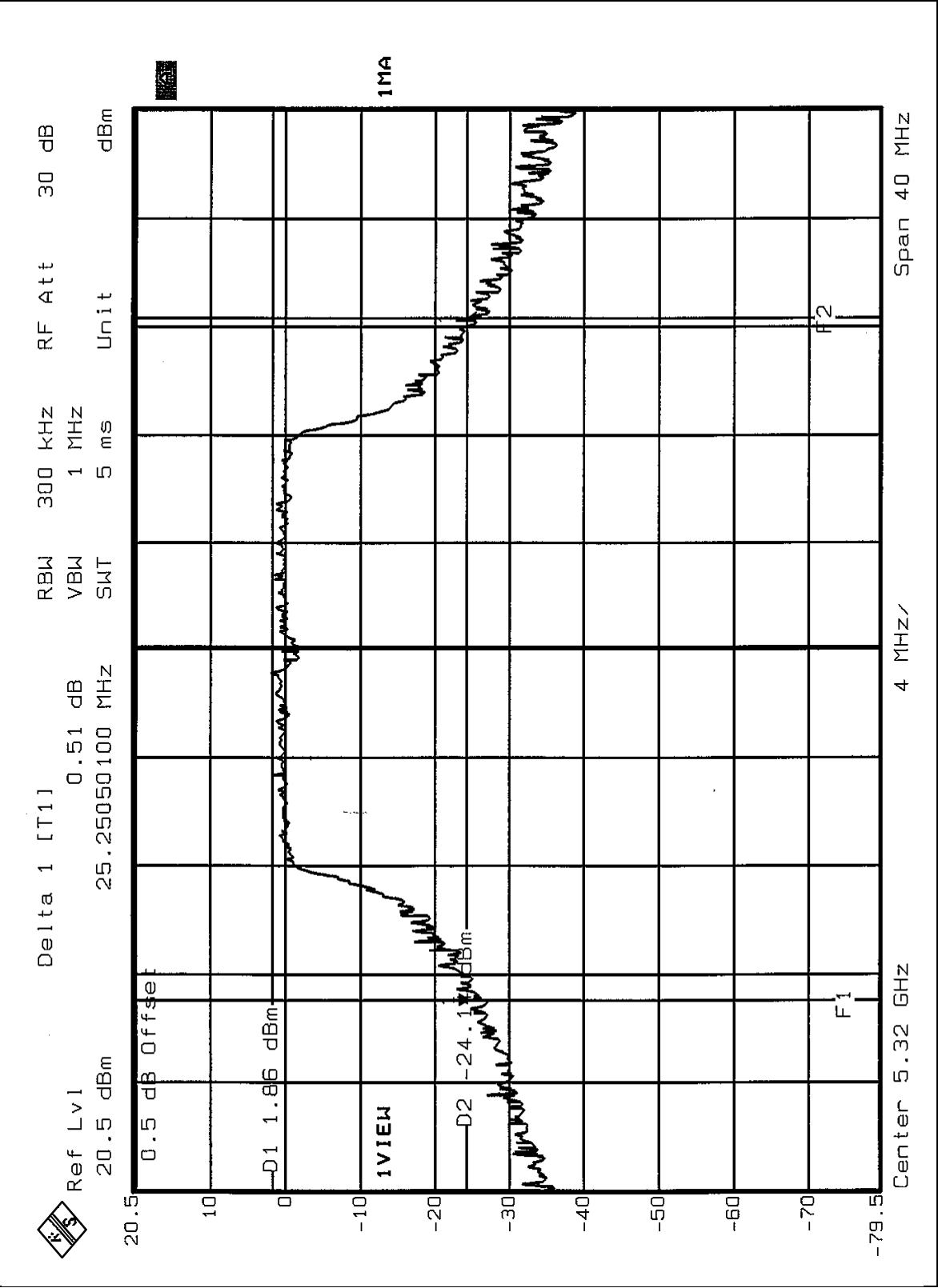


CH5





CH8





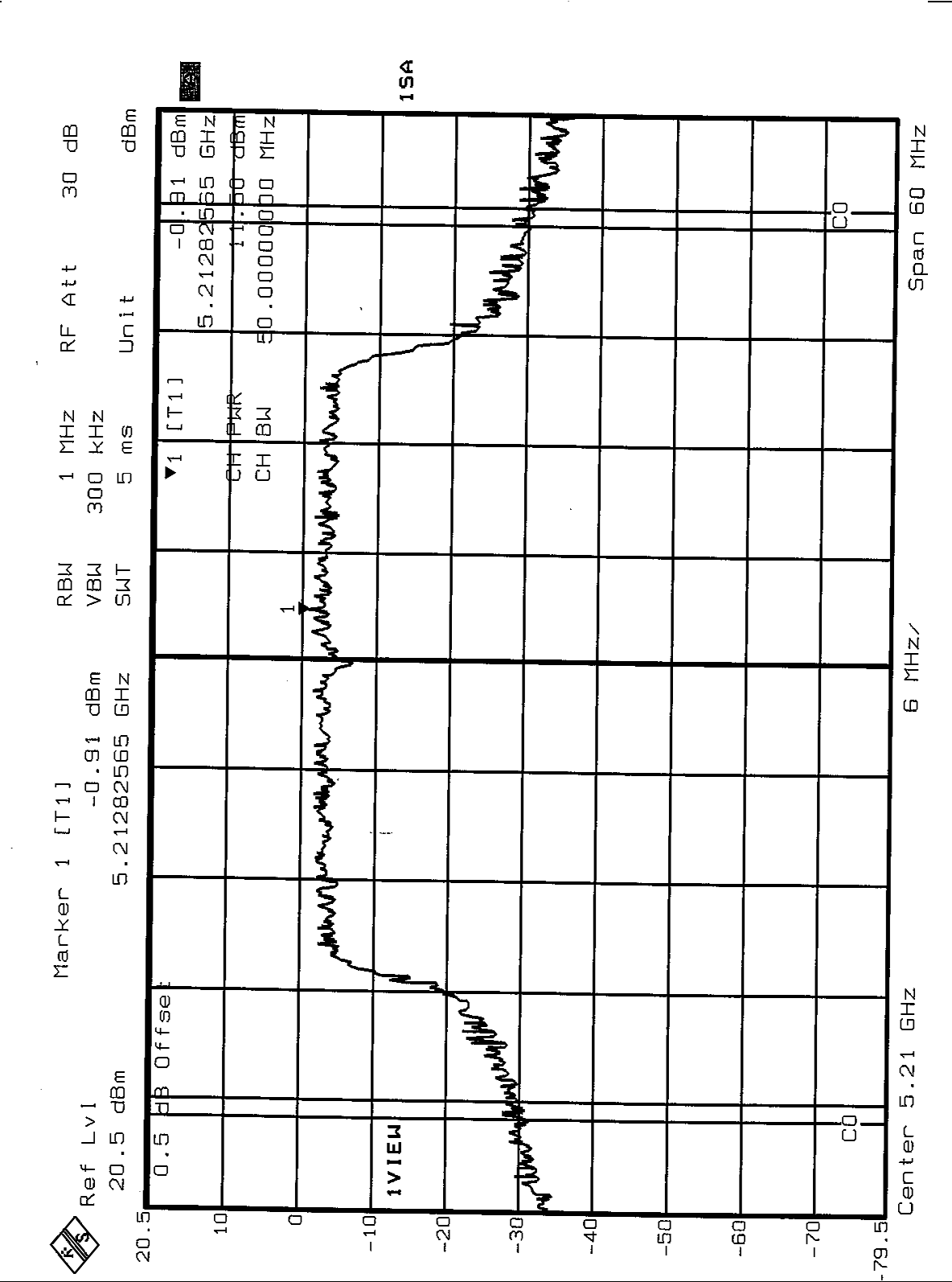
EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	26dBc Occupied Bandwidth (MHz)	PASS/FAIL
1	5210	11.50	17.00	47.73	PASS
2	5250	11.54	17.00	47.25	PASS
3	5290	11.57	24.00	48.21	PASS

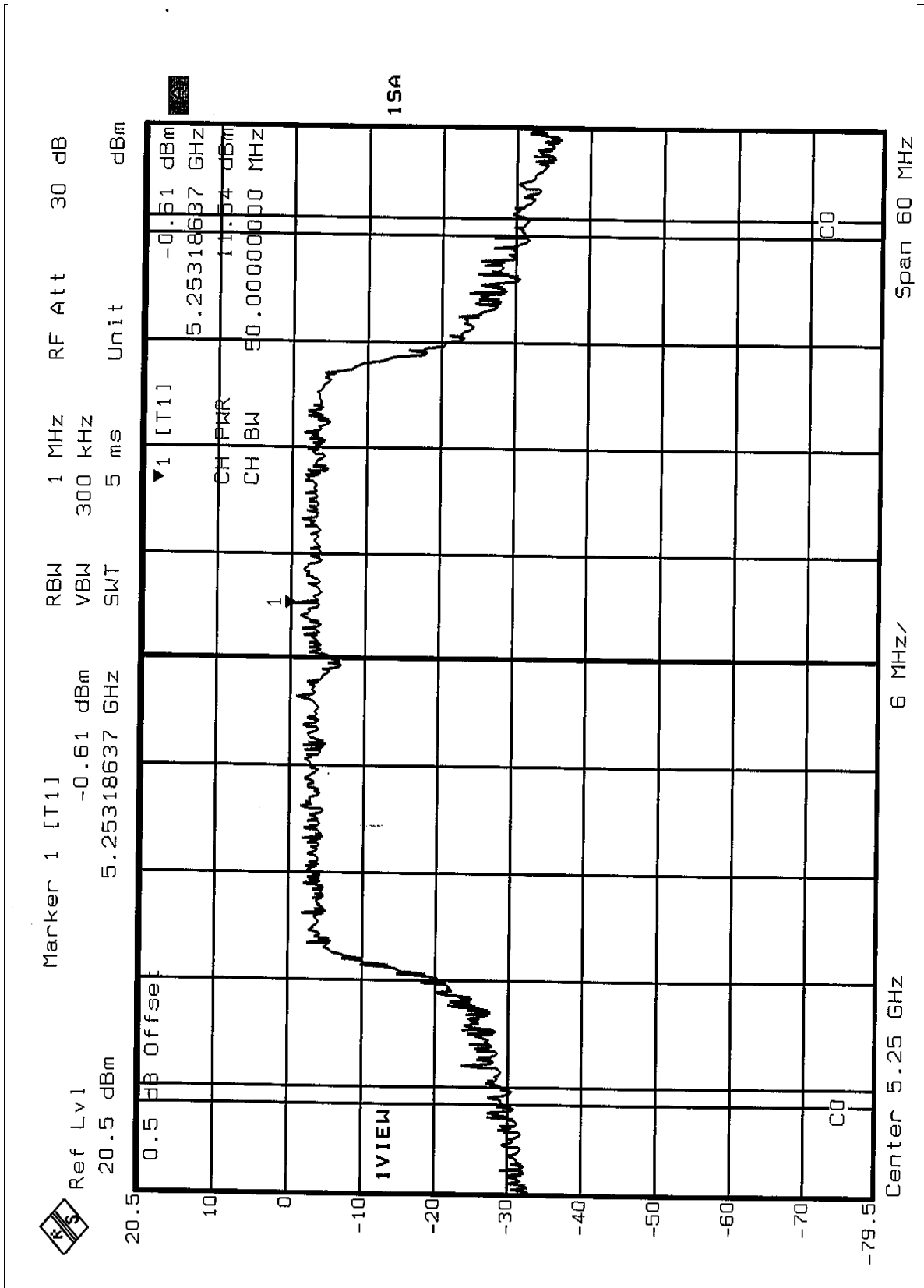
NOTE: The 26dBc Occupied Bandwidth plot, please refer to the following pages.



Peak Power Output:
CH1

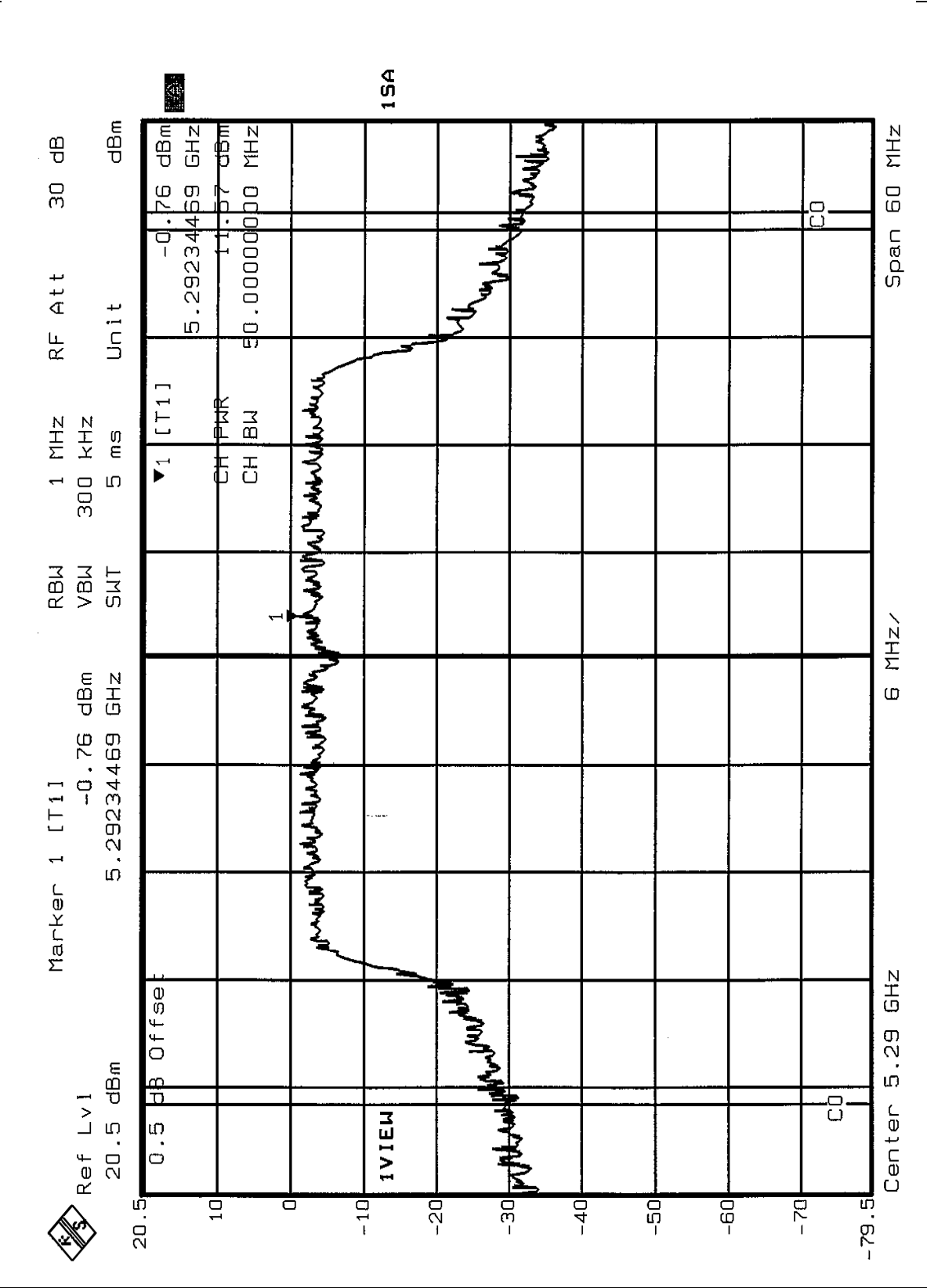


CH2





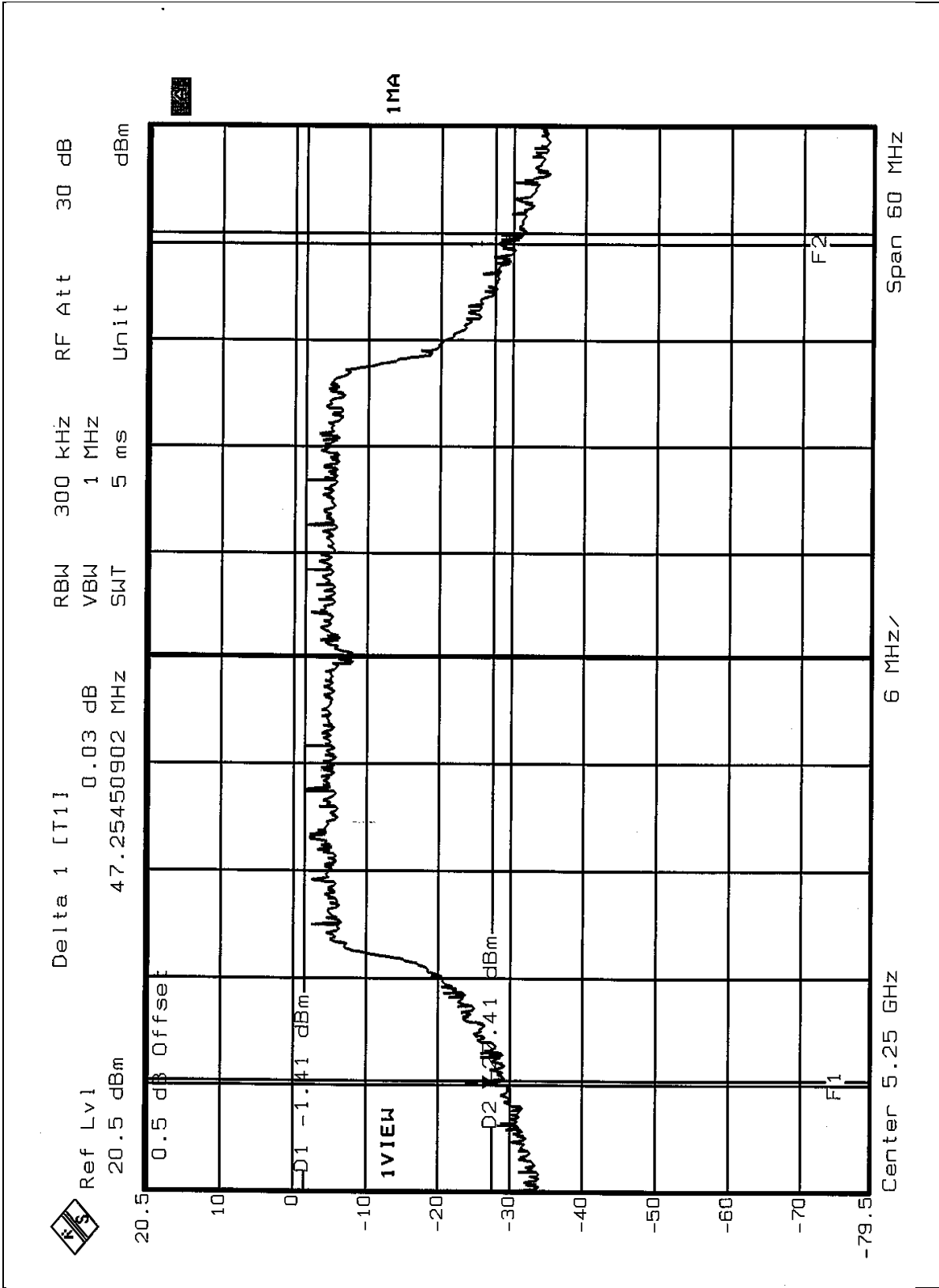
CH3



[illegible]



CH2





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, 2004

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

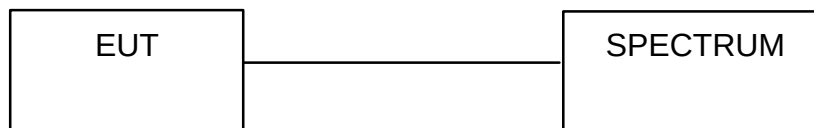
5.4.3 TEST PROCEDURE

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

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

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



5.4.7 TEST RESULTS

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	5.75	13	PASS
4	5240	6.93	13	PASS
5	5260	6.96	13	PASS
8	5320	5.34	13	PASS

Delta 1 [T1]

Ref Lvl 20.5 dBm

5.75 dB

2.56513026 MHz

1 MHz

300 KHz

5 ms

Unit dBm

0.5 dB Offset

1VIEW

2MAX

1MA

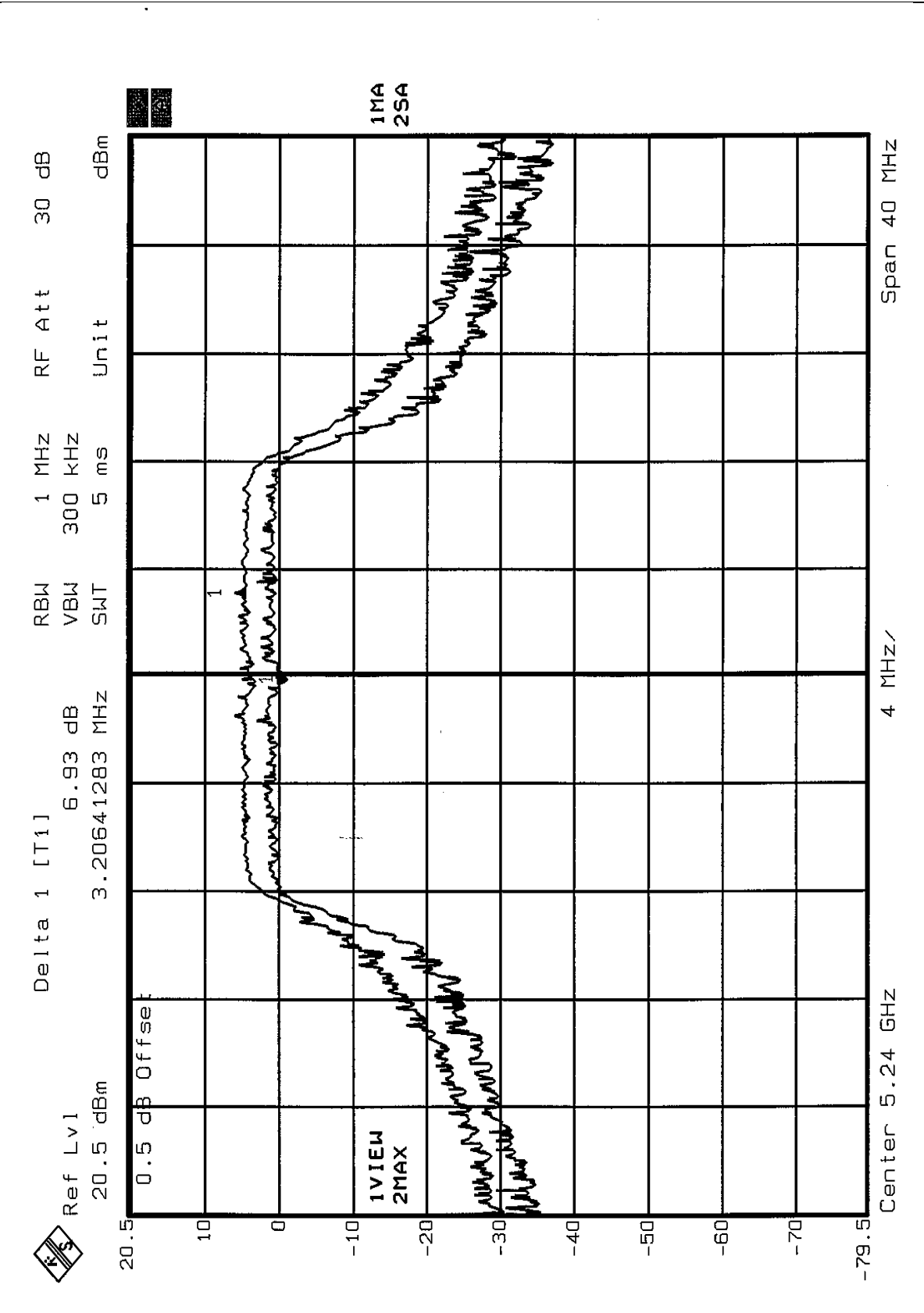
2SA

Center 5.18 GHz

Span 40 MHz

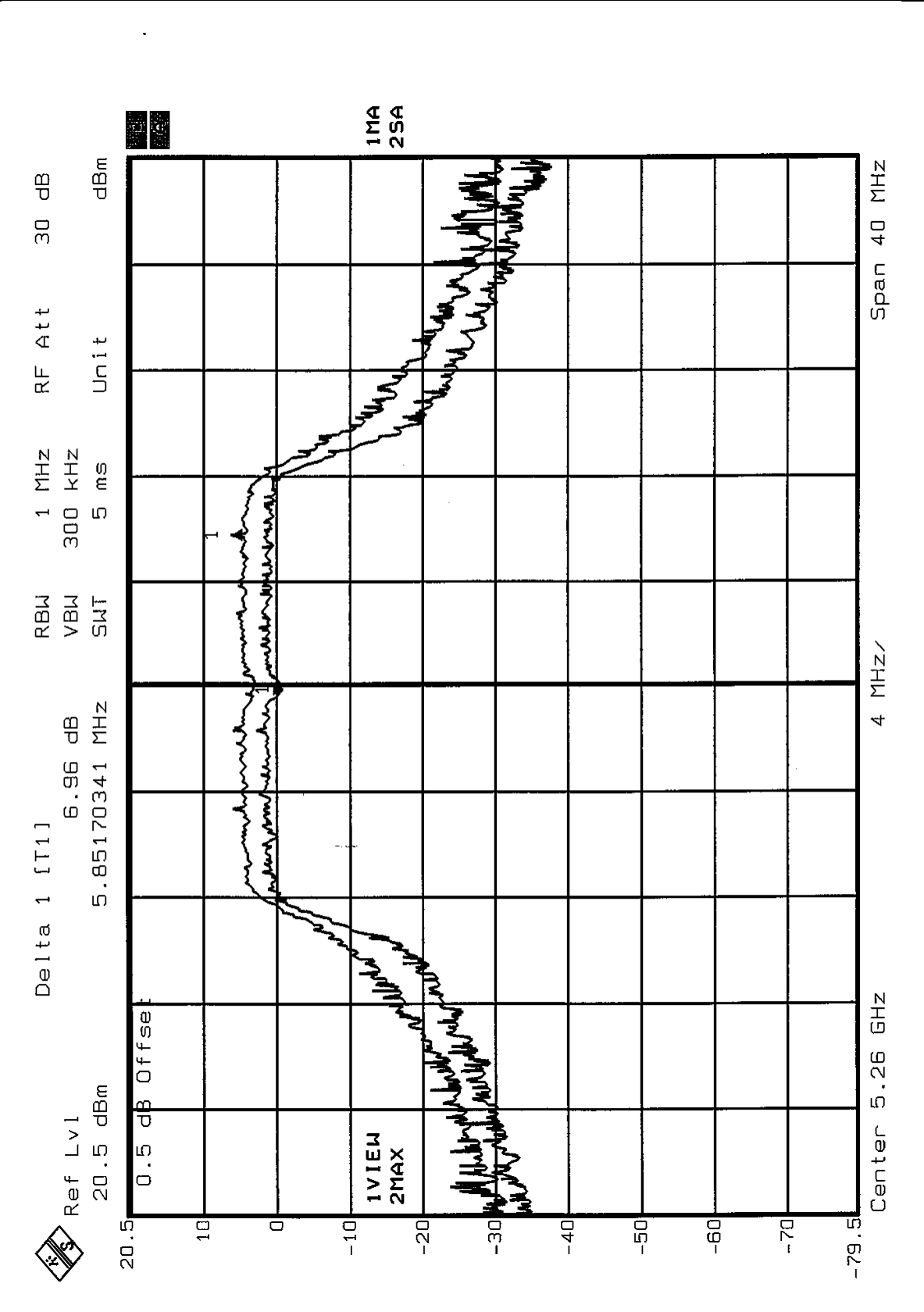


CH4

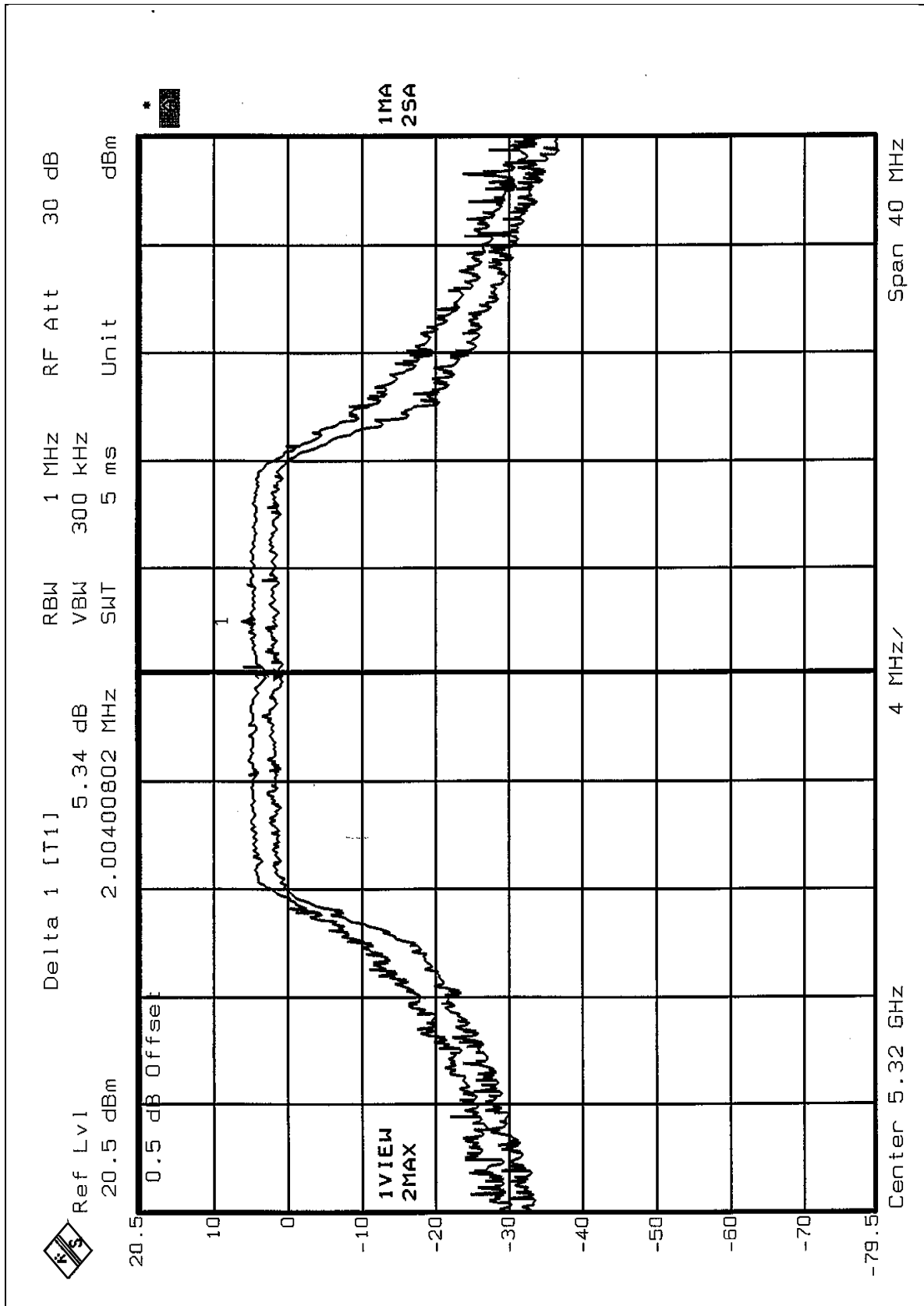




CH5



CH8



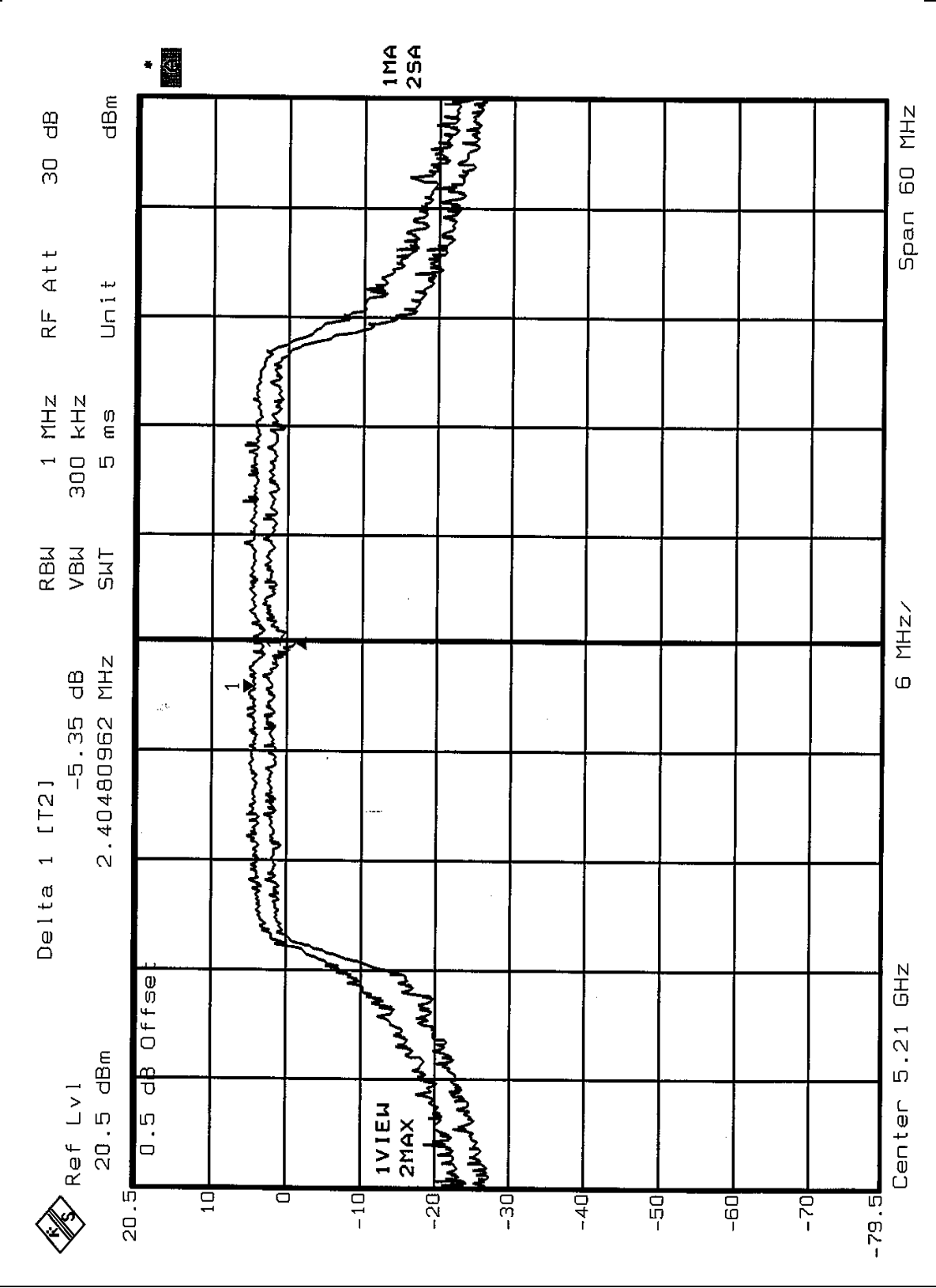


EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	-5.35	13	PASS
2	5250	-6.09	13	PASS
3	5290	-6.26	13	PASS

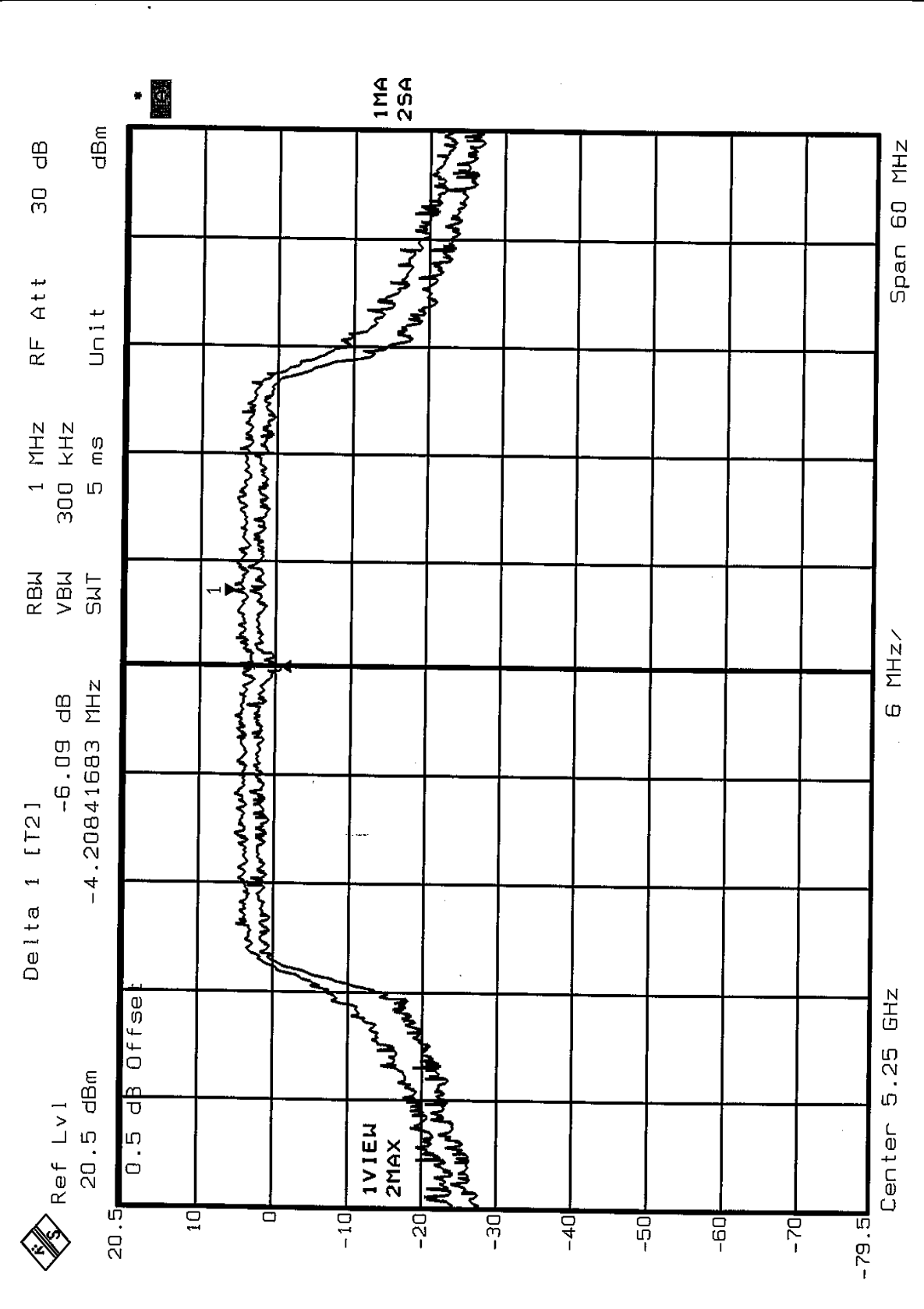


CH1



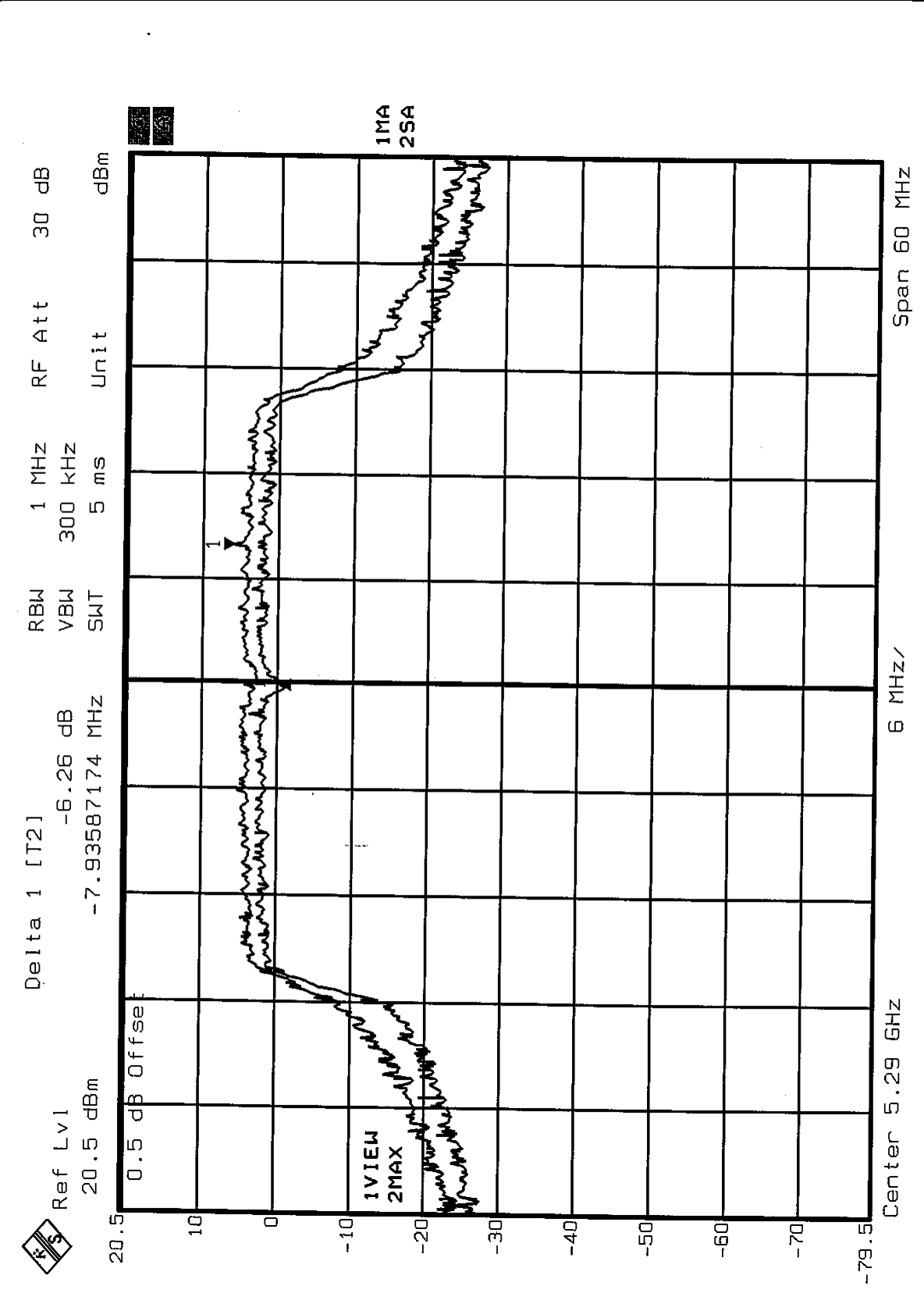


CH2





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, 2004

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

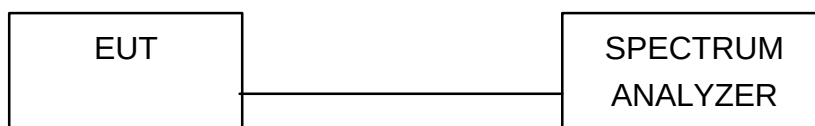
5.5.3 TEST PROCEDURES

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

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6



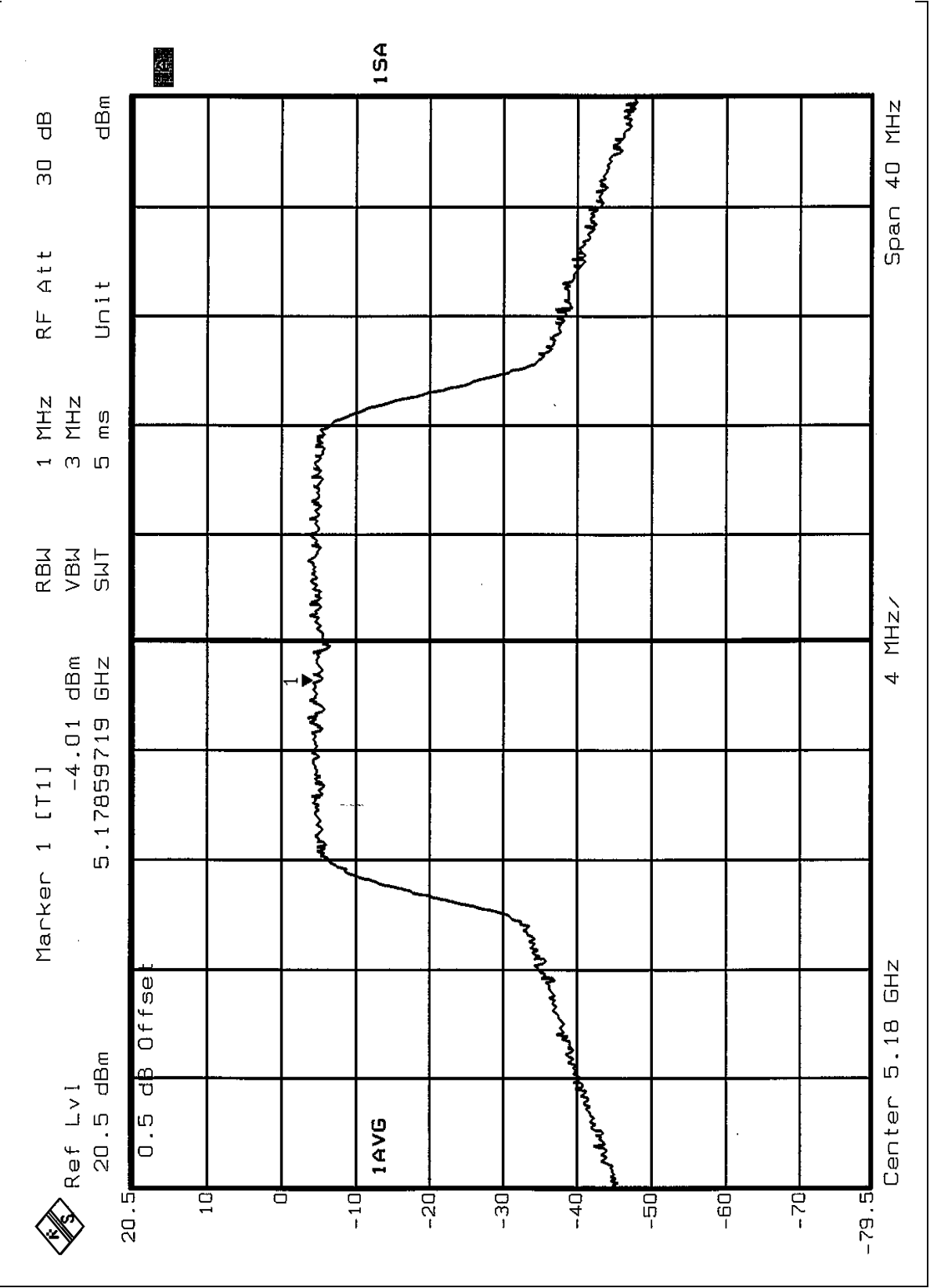
5.5.7 TEST RESULTS

EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-4.01	4	PASS
4	5240	-3.95	4	PASS
5	5260	-4.10	11	PASS
8	5320	-4.07	11	PASS

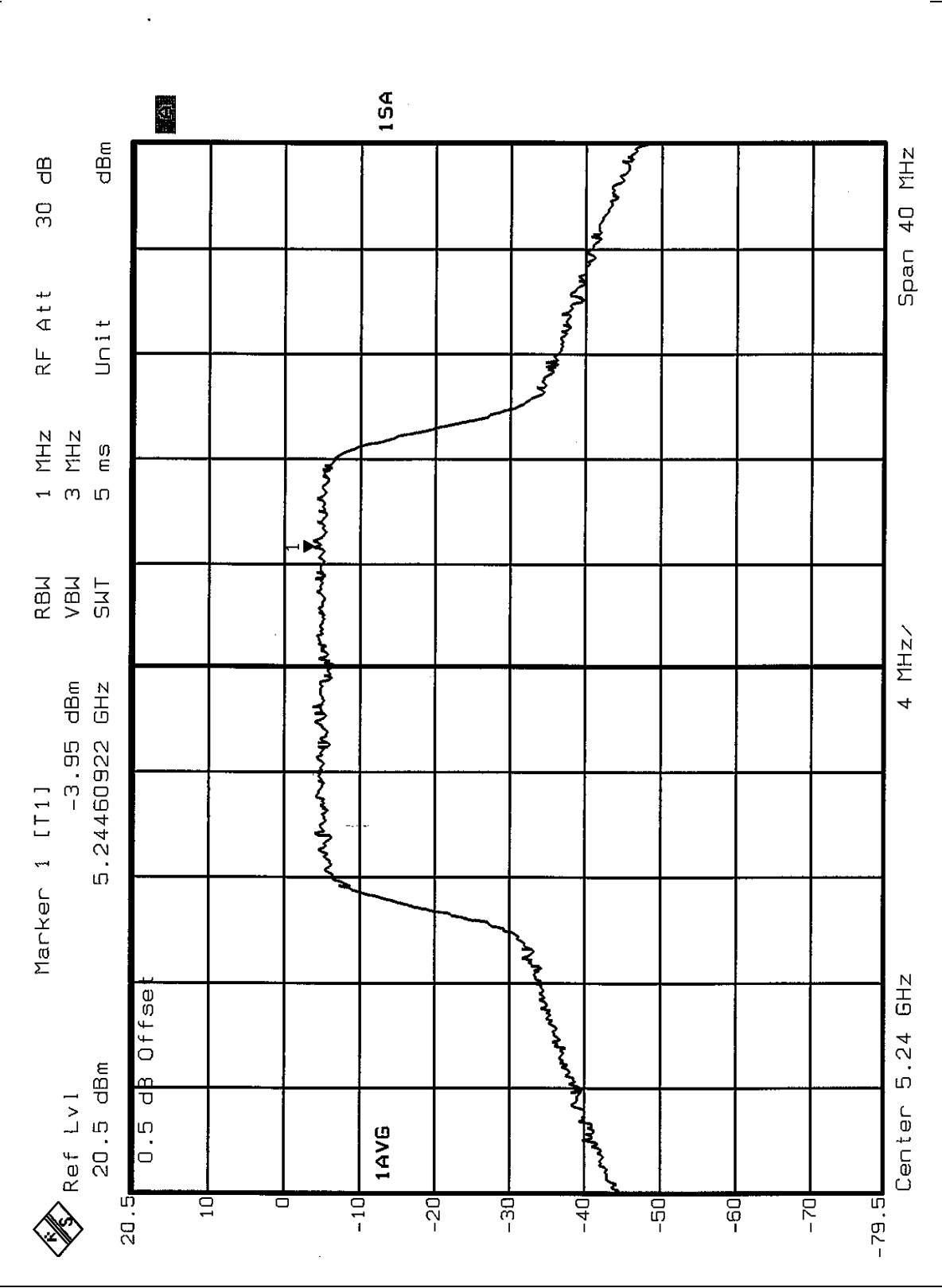


CH1





CH4



Marker 1 [T1]
 -4.10 dBm
 5.25795591 GHz

Ref Lvl
 20.5 dBm

RBW
 1 MHz

VBW
 3 MHz

SWT
 5 ms

RF Att
 30 dB

Unit
 dBm

0.5 dB Offset

1AVG

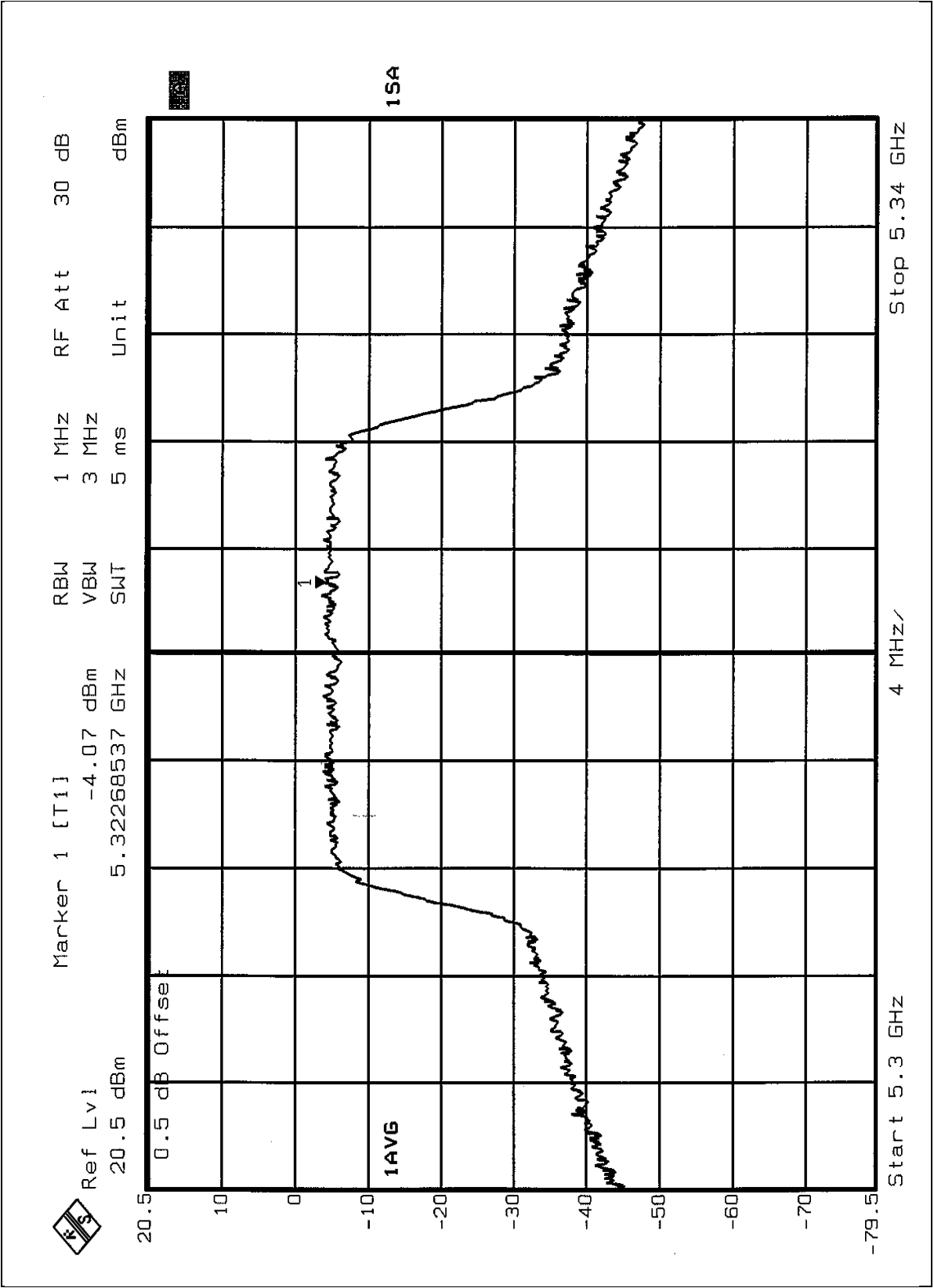
1SA

Center 5.26 GHz

Span 40 MHz



CH8



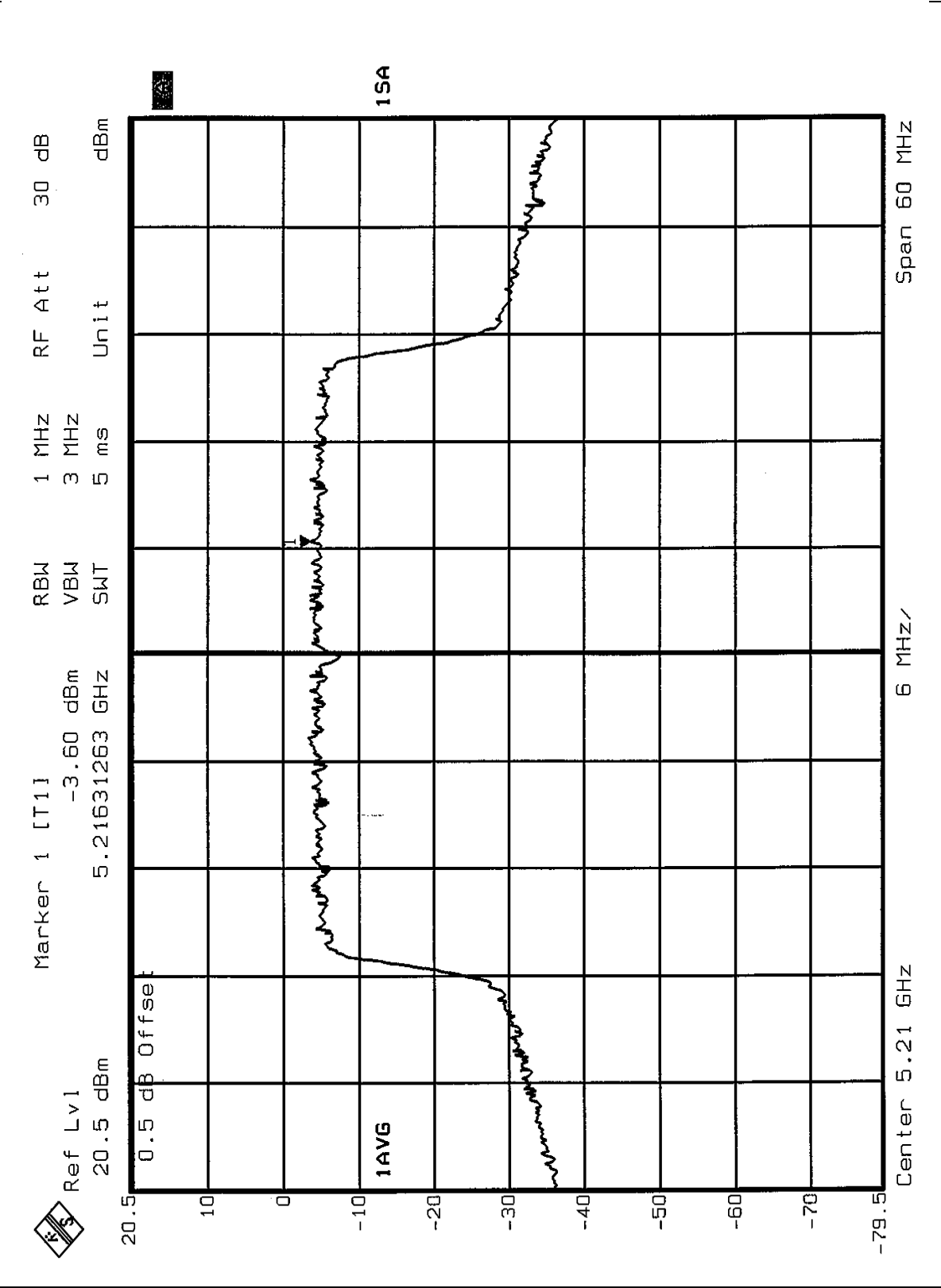


EUT	Wireless A+G Mini PCI Card	MODEL	WMIA-112AG
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	24deg. C, 65%RH, 991hPa	TESTED BY	Leo Hung

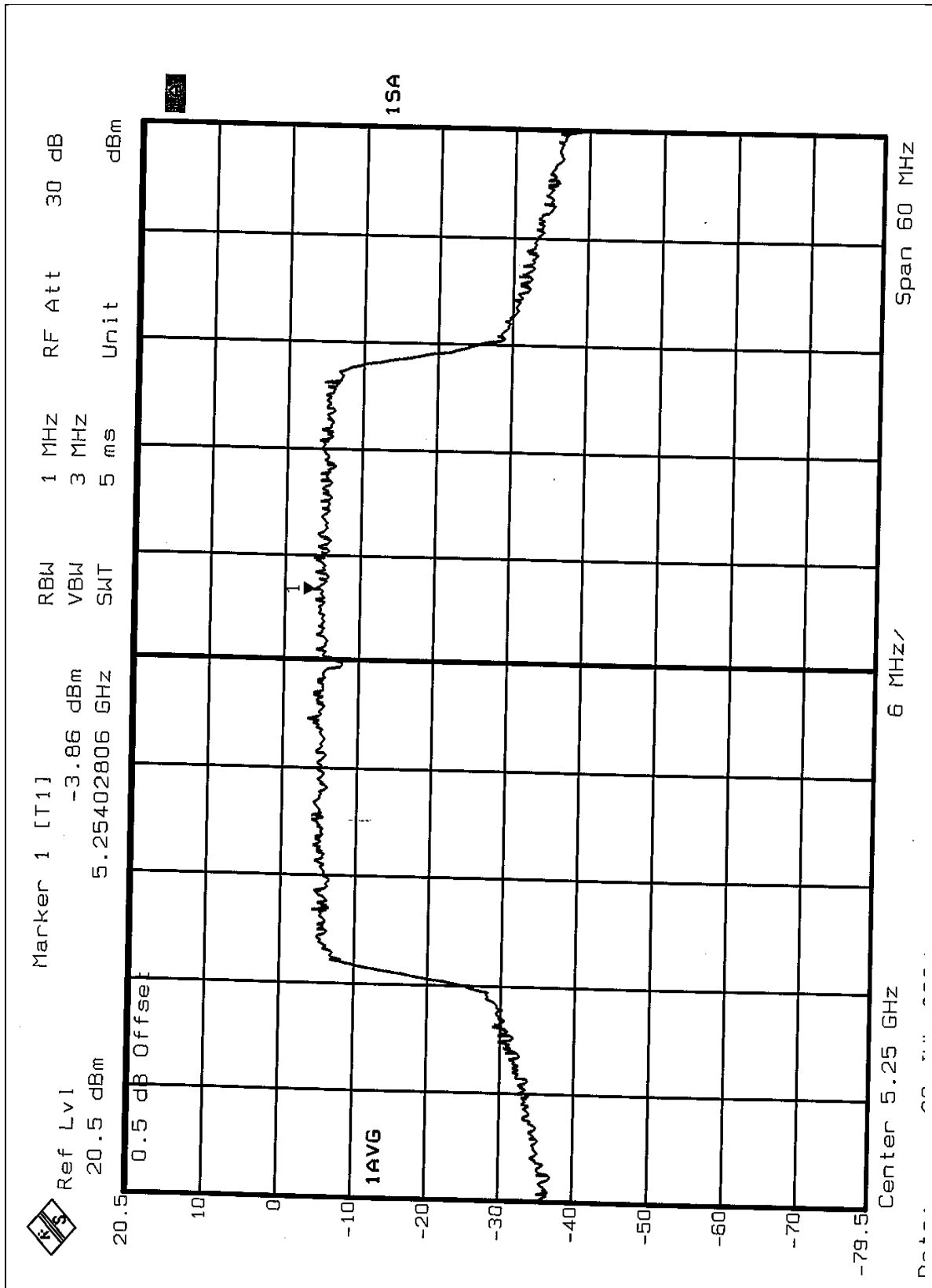
CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-3.60	4	PASS
2	5250	-3.86	4	PASS
3	5290	-4.12	11	PASS



CH1

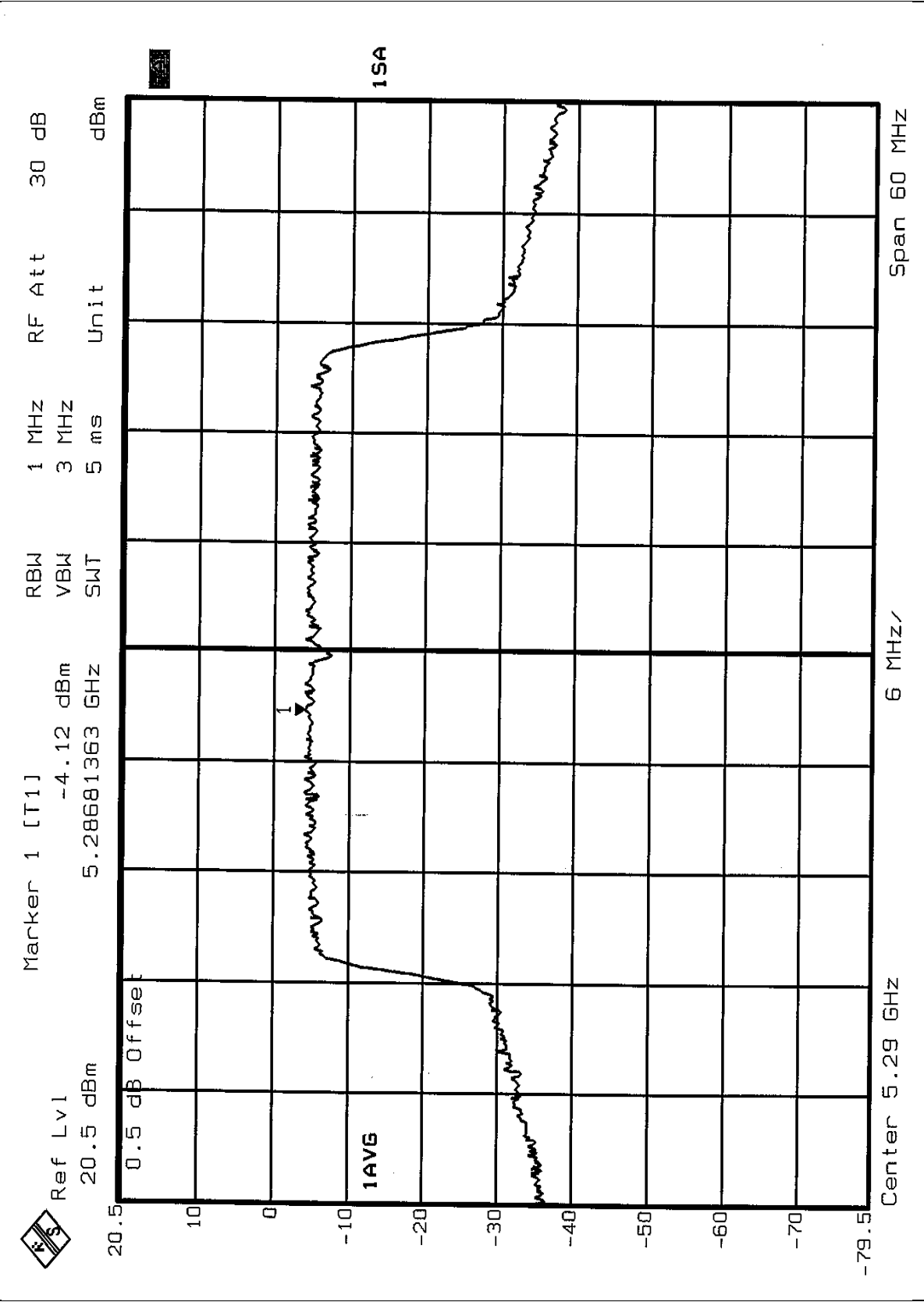


CH2





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, 2004
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Aug. 12, 2004

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

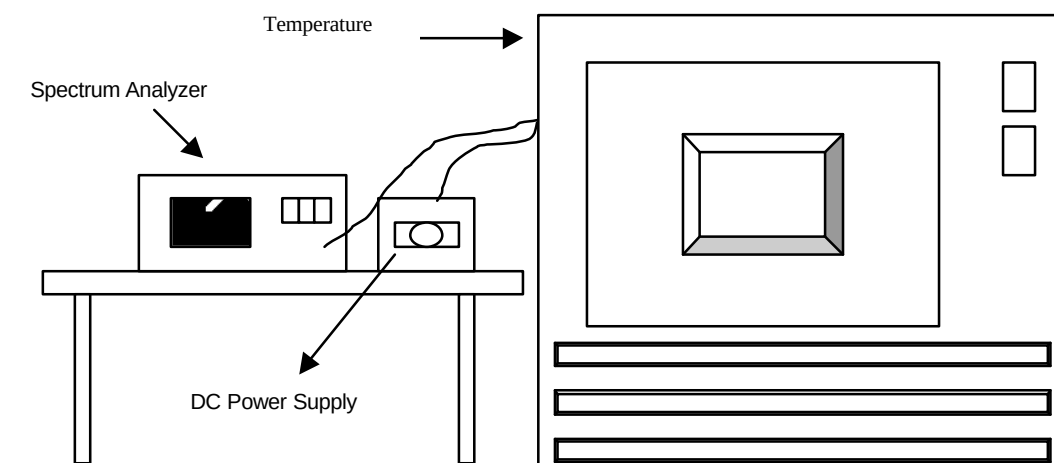
5.6.3 TEST PROCEDURE

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

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5320MHz				Limit : $\pm 0.01\%$			
Temp. (°C)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	93.5	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
	110.0	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
	126.5	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
40	93.5	5320.0082	0.0001541	5320.0062	0.0001165	5320.0062	0.0001165
	110.0	5320.0062	0.0001165	5320.0062	0.0001165	5320.0062	0.0001165
	126.5	5320.0082	0.0001541	5320.0062	0.0001165	5320.0062	0.0001165
30	93.5	5320.0162	0.0003045	5320.0162	0.0003045	5320.0122	0.0002293
	110.0	5320.0162	0.0003045	5320.0162	0.0003045	5320.0122	0.0002293
	126.5	5320.0122	0.0002293	5320.0122	0.0002293	5320.0122	0.0002293
20	93.5	5320.0222	0.0004173	5320.0222	0.0004173	5320.0222	0.0004173
	110.0	5320.0222	0.0004173	5320.0222	0.0004173	5320.0222	0.0004173
	126.5	5320.0222	0.0004173	5320.0222	0.0004173	5320.0222	0.0004173
10	93.5	5320.0322	0.0006053	5320.0322	0.0006053	5320.0362	0.0006805
	110.0	5320.0322	0.0006053	5320.0322	0.0006053	5320.0362	0.0006805
	126.5	5320.0322	0.0006053	5320.0322	0.0006053	5320.0362	0.0006805
0	93.5	5320.0482	0.0009060	5320.0482	0.0009060	5320.0482	0.0009060
	110.0	5320.0482	0.0009060	5320.0482	0.0009060	5320.0482	0.0009060
	126.5	5320.0482	0.0009060	5320.0482	0.0009060	5320.0482	0.0009060
-10	93.5	5320.0582	0.0010940	5320.0582	0.0010940	5320.0582	0.0010940
	110.0	5320.0602	0.0011316	5320.0582	0.0010940	5320.0602	0.0011316
	126.5	5320.0582	0.0010940	5320.0602	0.0011316	5320.0602	0.0011316
-20	93.5	5320.0702	0.0013195	5320.0702	0.0013195	5320.0702	0.0013195
	110.0	5320.0682	0.0012820	5320.0682	0.0012820	5320.0702	0.0013195
	126.5	5320.0682	0.0012820	5320.0682	0.0012820	5320.0702	0.0013195
-30	93.5	5320.0742	0.0013947	5320.0742	0.0013947	5320.0742	0.0013947
	110.0	5320.0722	0.0013571	5320.0742	0.0013947	5320.0742	0.0013947
	126.5	5320.0742	0.0013947	5320.0742	0.0013947	5320.0742	0.0013947



5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

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

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

5.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low 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 150 ~ 151 shows 45.99dBc (Peak) / 50.53Bc (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 98.89dBuV/m, so the maximum field strength in restrict band is $98.89 - 50.53 = 48.36$ dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320MHz)

The band edge emission plot on the pages 153 ~ 154 shows 50.11dBc (Peak) / 52.32dBc (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 100.40dBuV/m, so the maximum field strength in restrict band is $100.40 - 52.32 = 48.08$ dBuV/m which is under 54dBuV/m limit.

Turbo Mode:

Channel 1 (5210MHz)

The band edge emission plot on the pages 156 ~157 shows 42.48dBc (Peak) / 48.75dBc (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 97.33dBuV/m, so the maximum field strength in restrict band is $97.33 - 48.75 = 49.00$ dBuV/m which is under 54dBuV/m limit.

Channel 3 (5290MHz)

The band edge emission plot on the pages 159~160 shows 45.98dBc (Peak) / 50.50dBc (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 96.65dBuV/m, so the maximum field strength in restrict band is $96.65 - 50.50 = 46.15$ dBuV/m which is under 54dBuV/m limit.

