FCC TEST REPORT

REPORT NO.: RF930507L02
MODEL NO.: MPI-8540
RECEIVED: May 5, 2004
TESTED: May 5 ~ May 12, 2004

APPLICANT: SendFar Technology Co., Ltd.

ADDRESS: 15FL., No.866-2, JungJeng Rd., Jung He City, Taipei, Taiwan 235, R.O.C.

ISSUED BY: Advance Data Technology Corporation

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1 CERTIFICATION

PRODUCT :	Wireless LAN Card
BRAND NAME :	SendFar
MODEL NO. :	MPI-8540
APPLICANT :	SendFar Technology Co., Ltd.
TESTED :	May 5 ~ May 12, 2004
TEST ITEM :	Engineering Sample
STANDARDS :	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2001

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

PREPARED BY: Windy Chou , **DATE:** May 13, 2004

Windy Chou

APPROVED BY: for **DATE:** May 13, 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			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –15.08dB at 0.177MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –0.09dB at 7311.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

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

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless LAN Card
MODEL NO.	MPI-8540
POWER SUPPLY	3.3Vdc from host equipment
MODULATION TYPE	BPSK, QPSK, CCK, 16QAM, 64QAM
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	20.00dBm
ANTENNA TYPE	Dipole antenna with 2.0dBi gain
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
2. The EUT complies with IEEE 802.11g draft standards and backwards compatible with IEEE 802.11b products.
3. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT.

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

NOTE:

1. Below 1GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, the worst case, was chosen for final test.
2. Above 1GHz, the channel 1, 6, and 11 were tested individually.
3. From our experience and technical viewpoint, we have chosen data rates 11Mbps for CCK technique and 6Mbps for OFDM technique, as the worst cases for the test among other data rates.
4. There are two test results presented in the following sections: The test result A is for CCK technique and the test result B is for OFDM technique.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless LAN Card. According to the specifications of the manufacturer, it must complies with the requirements of the following standards:

FCC Part 15, Subpart C. (15.247)

ANSI C63.4: 2001

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

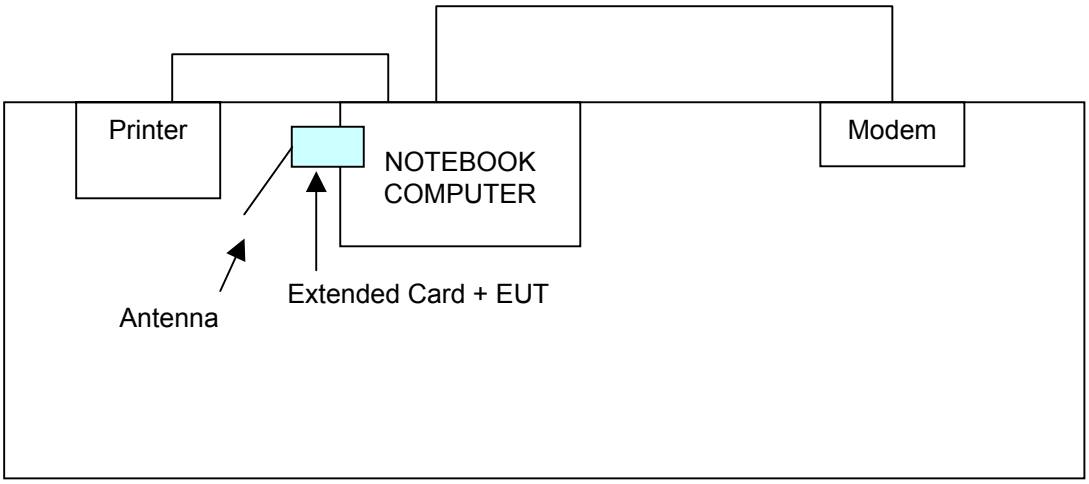
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	COMPAQ	NC6000	NA	FCC DoC Approved
2	MODEM	ACEEX	1414V/3	0401008248	IFAXDM1414
3	PRINTER	EPSON	LQ-300+	DCGY047265	FCC DoC Approved

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

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (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.

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4.1.3 TEST PROCEDURES

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

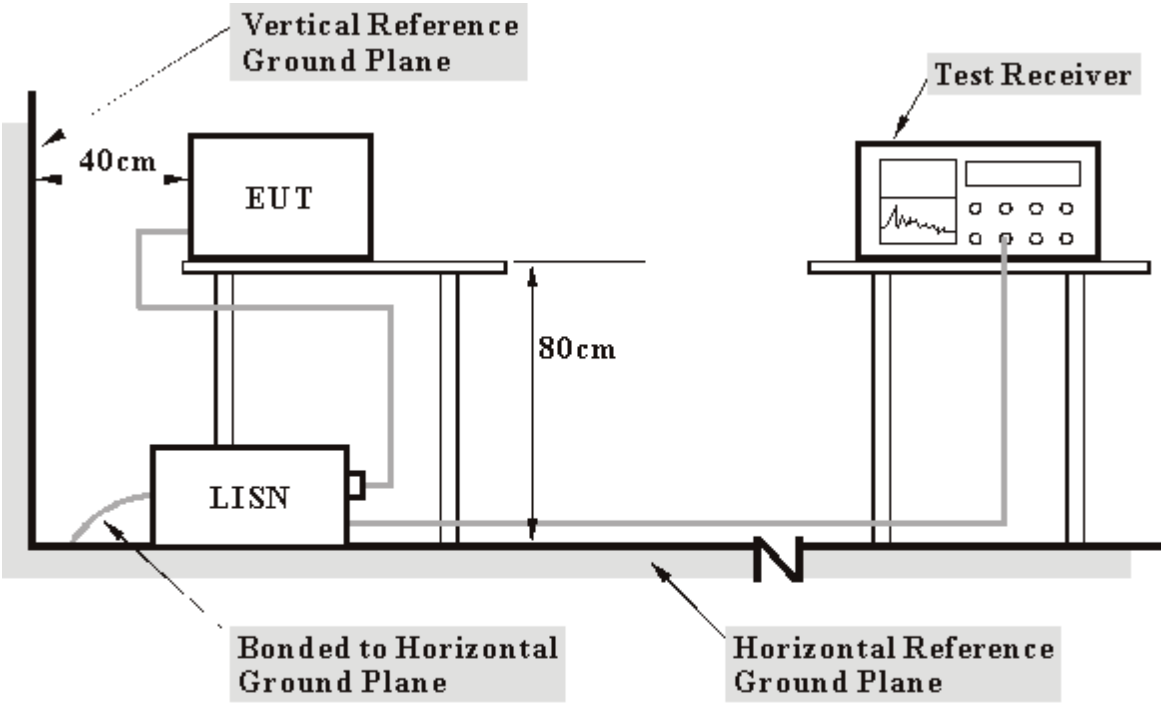
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels (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

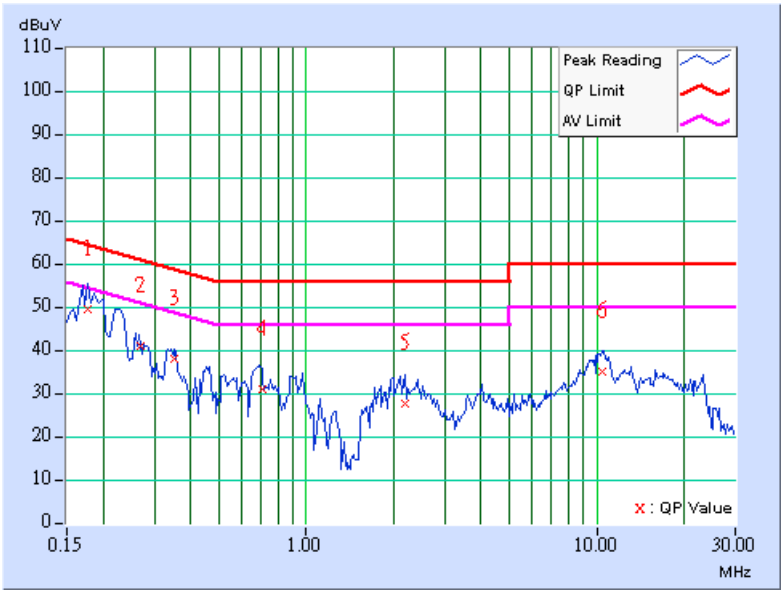
a. Connected the EUT to a notebook system placed on a testing table.
b. The notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The notebook system sent "H" messages to its screen.
d. The notebook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

4.1.7 TEST RESULTS

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 68% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.177**	**0.11**	**49.42**	**-**	**49.53**	**-**	**64.61**	**54.61**	**-15.08**	**-**
2	0.268	0.12	40.95	-	41.07	-	61.20	51.20	-20.12	-
3	0.353	0.13	37.80	-	37.93	-	58.89	48.89	-20.97	-
4	0.705	0.14	30.64	-	30.78	-	56.00	46.00	-25.22	-
5	2.184	0.16	27.53	-	27.69	-	56.00	46.00	-28.31	-
6	10.434	0.34	34.83	-	35.17	-	60.00	50.00	-24.83	-

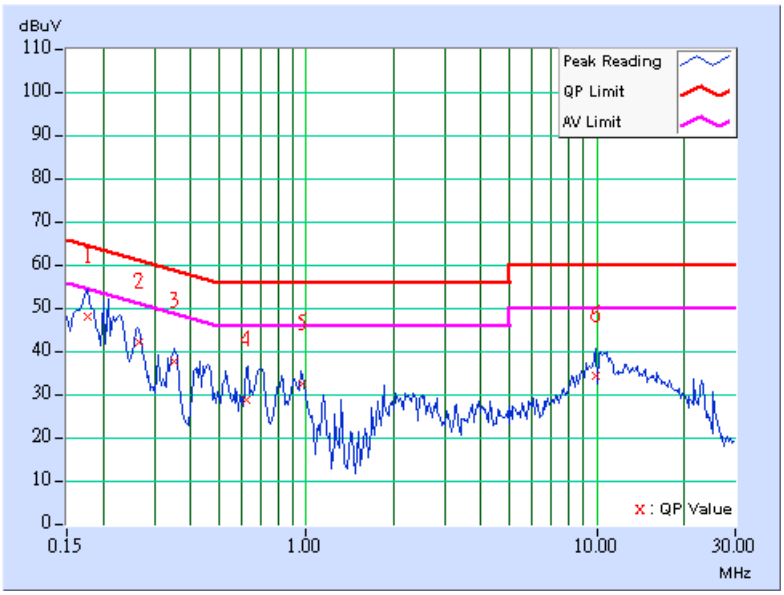
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 68% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	47.74	-	47.85	-	64.61	54.61	-16.76	-
2	0.265	0.11	41.89	-	42.00	-	61.27	51.27	-19.27	-
3	0.353	0.12	37.48	-	37.60	-	58.89	48.89	-21.29	-
4	0.623	0.12	28.52	-	28.64	-	56.00	46.00	-27.36	-
5	0.970	0.15	32.14	-	32.29	-	56.00	46.00	-23.71	-
6	9.957	0.28	34.28	-	34.56	-	60.00	50.00	-25.44	-

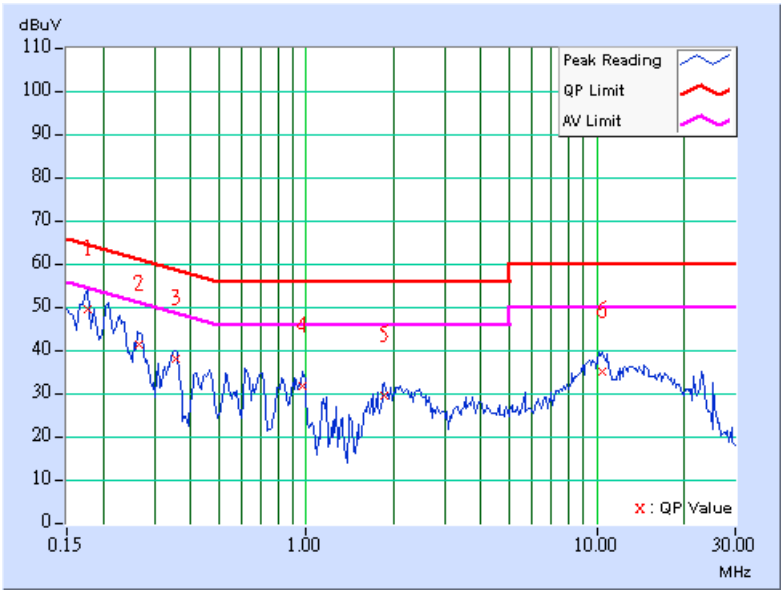
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 68% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	49.42	-	49.53	-	64.61	54.61	-15.08	-
2	0.266	0.12	41.10	-	41.22	-	61.25	51.25	-20.03	-
3	0.356	0.13	37.80	-	37.93	-	58.83	48.83	-20.90	-
4	0.970	0.15	31.33	-	31.48	-	56.00	46.00	-24.52	-
5	1.863	0.16	29.13	-	29.29	-	56.00	46.00	-26.71	-
6	10.453	0.34	34.73	-	35.07	-	60.00	50.00	-24.93	-

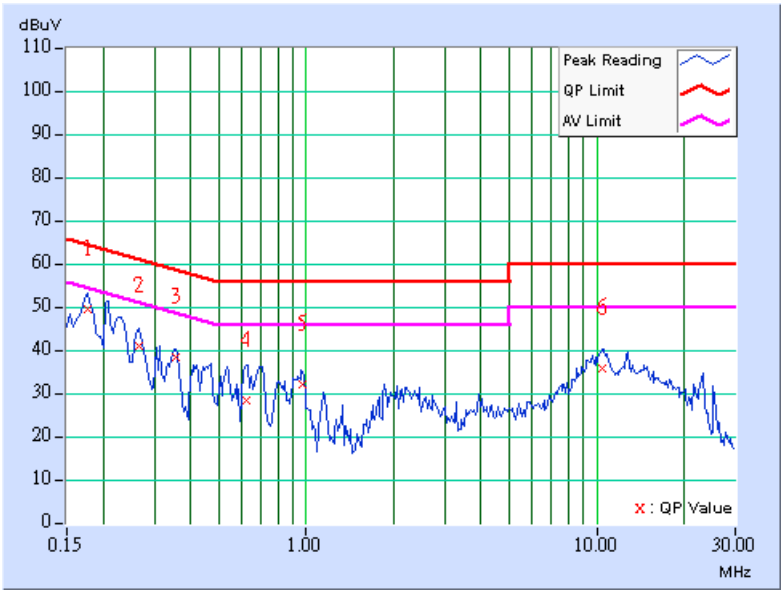
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25deg. C, 70% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	49.26	-	49.37	-	64.61	54.61	-15.24	-
2	0.267	0.11	40.95	-	41.06	-	61.20	51.20	-20.14	-
3	0.357	0.12	38.03	-	38.15	-	58.80	48.80	-20.65	-
4	0.620	0.12	28.23	-	28.35	-	56.00	46.00	-27.65	-
5	0.970	0.15	32.04	-	32.19	-	56.00	46.00	-23.81	-
6	10.410	0.31	35.49	-	35.80	-	60.00	50.00	-24.20	-

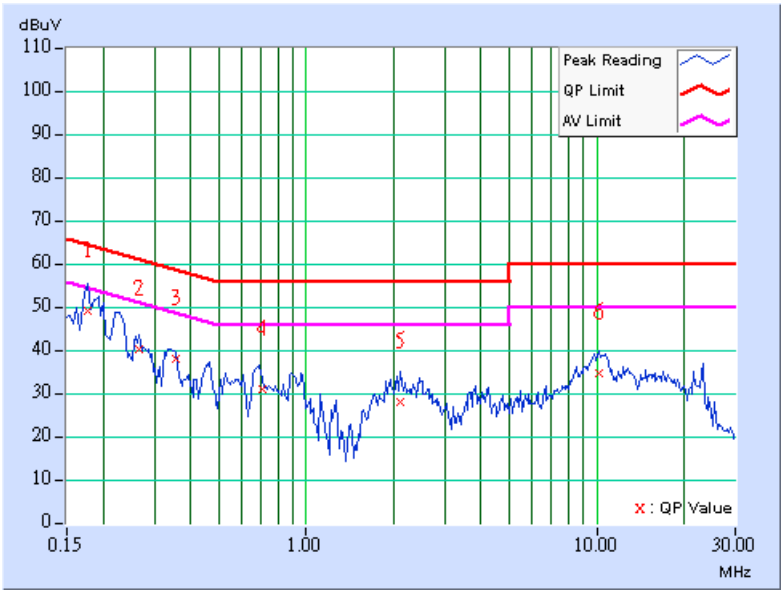
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 68% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	48.77	-	48.88	-	64.61	54.61	-15.73	-
2	0.267	0.12	40.14	-	40.26	-	61.20	51.20	-20.94	-
3	0.356	0.13	37.93	-	38.06	-	58.83	48.83	-20.77	-
4	0.707	0.14	30.74	-	30.88	-	56.00	46.00	-25.12	-
5	2.109	0.16	27.87	-	28.03	-	56.00	46.00	-27.97	-
6	10.219	0.32	34.43	-	34.75	-	60.00	50.00	-25.25	-

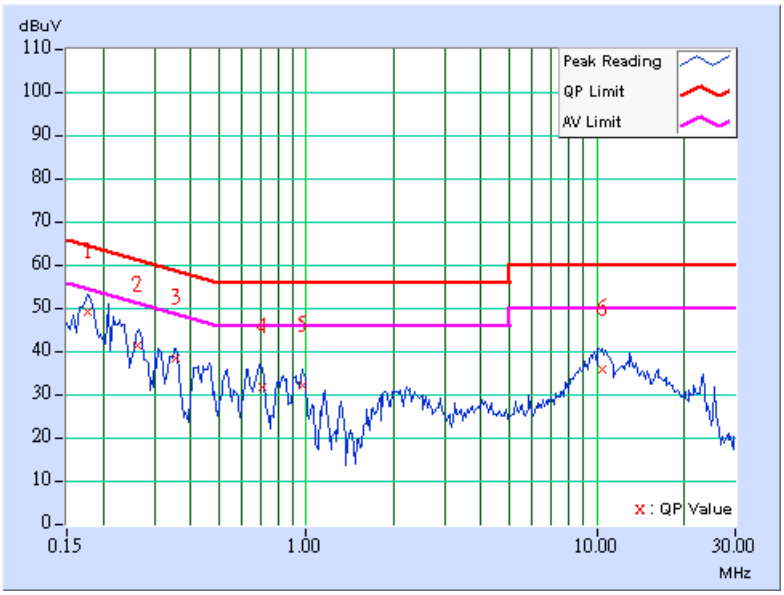
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**PHASE**	Netural (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 68% RH, 991 hPa	**TESTED BY**: Steven Lu	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.177	0.11	48.79	-	48.90	-	64.61	54.61	-15.71	-
2	0.263	0.11	41.18	-	41.29	-	61.33	51.33	-20.04	-
3	0.355	0.12	38.31	-	38.43	-	58.84	48.84	-20.41	-
4	0.709	0.13	31.47	-	31.60	-	56.00	46.00	-24.40	-
5	0.970	0.15	32.06	-	32.21	-	56.00	46.00	-23.79	-
6	10.465	0.31	35.48	-	35.79	-	60.00	50.00	-24.21	-

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 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

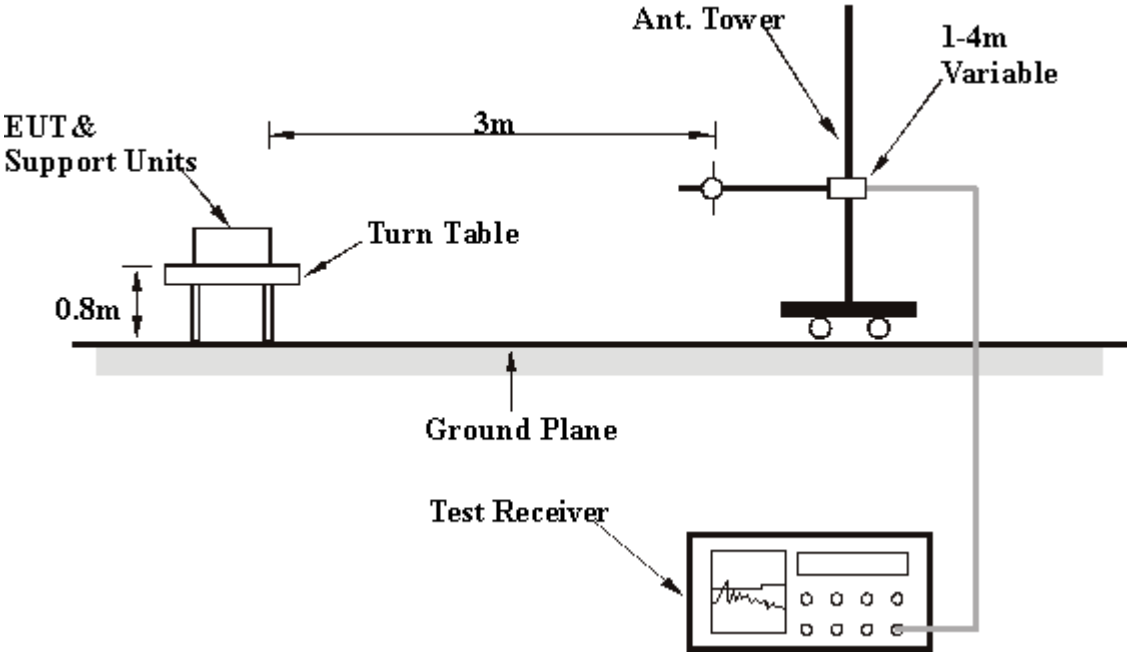
NOTE:

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

4.2.4 DEVIATION FROM TEST STANDARD

No deviation

4.2.5 TEST SETUP



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

4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

4.2.7 TEST RESULTS

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	11	**FREQUENCY RANGE**	Below 1000 MHz
INPUT POWER (SYSTEM)	120 Vac, 60Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	25 deg. C, 60% RH, 991 hPa	**TESTED BY**: Long Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	199.12	34.91 QP	43.50	-8.59	1.00 H	205	23.39	11.53
2	300.20	35.94 QP	46.00	-10.06	1.00 H	232	21.13	14.81
3	333.25	38.83 QP	46.00	-7.17	1.00 H	13	23.32	15.51
4	432.38	40.99 QP	46.00	-5.01	2.00 H	31	23.28	17.70
5	733.69	36.31 QP	46.00	-9.69	2.00 H	121	13.01	23.30
6	828.94	38.52 QP	46.00	-7.48	1.00 H	343	14.47	24.05

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	47.49	31.88 QP	40.00	-8.12	1.00 V	40	16.20	15.68
2	333.25	36.56 QP	46.00	-9.44	1.50 V	235	21.06	15.51
3	366.29	36.91 QP	46.00	-9.09	1.50 V	298	20.70	16.22
4	432.38	39.61 QP	46.00	-6.39	1.00 V	10	21.91	17.70
5	832.83	37.49 QP	46.00	-8.51	2.50 V	106	13.41	24.09
6	865.87	37.08 QP	46.00	-8.92	1.50 V	274	12.51	24.56

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

4.2.8 TEST RESULTS (A)

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	1	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	**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	2374.00	44.73 PK	74.00	-29.27	1.53 H	103	13.62	31.11
1	2374.00	31.67 AV	54.00	-22.33	1.53 H	103	0.56	31.11
2	2390.00	43.22 PK	74.00	-30.78	1.10 H	325	12.08	31.14
2	2390.00	35.40 AV	54.00	-18.60	1.10 H	325	4.26	31.14
3	*2412.00	98.29 PK			1.10 H	325	67.08	31.21
3	*2412.00	90.47 AV			1.10 H	325	59.26	31.21
4	4824.00	52.71 PK	74.00	-21.29	1.29 H	350	14.83	37.88
4	4824.00	44.25 AV	54.00	-9.75	1.29 H	350	6.37	37.88
5	7236.00	59.13 PK	74.00	-14.87	1.31 H	90	15.67	43.46
5	7236.00	46.32 AV	54.00	-7.68	1.31 H	90	2.86	43.46
6	9648.00	59.57 PK	74.00	-14.43	1.53 H	103	13.17	46.40
6	9648.00	47.55 AV	54.00	-6.45	1.53 H	103	1.15	46.40

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/m)
1	2374.00	52.95 PK	74.00	-21.05	1.10 V	116	21.84	31.11
1	2374.00	40.70 AV	54.00	-13.30	1.10 V	116	9.59	31.11
2	2386.00	54.56 PK	74.00	-19.44	1.09 V	126	23.43	31.13
2	2386.00	46.58 AV	54.00	-7.42	1.09 V	126	15.45	31.13
3	*2412.00	109.63 PK			1.09 V	126	78.42	31.21
3	*2412.00	101.65 AV			1.09 V	126	70.44	31.21
4	4824.00	56.15 PK	74.00	-17.85	1.64 V	141	18.27	37.88
4	4824.00	50.17 AV	54.00	-3.83	1.64 V	141	12.29	37.88
5	7236.00	49.00 PK	74.00	-25.00	1.72 V	153	5.54	43.46
5	7236.00	48.40 AV	54.00	-5.60	1.72 V	153	4.94	43.46
6	9648.00	59.03 PK	74.00	-14.97	1.36 V	87	12.63	46.40
6	9648.00	46.44 AV	54.00	-7.56	1.36 V	87	0.04	46.40

REMARKS:

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

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	6	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	**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	2374.00	43.43 PK	74.00	-30.57	1.15 H	162	12.32	31.11
1	2374.00	30.92 AV	54.00	-23.08	1.15 H	162	-0.19	31.11
2	*2437.00	102.03 PK			1.16 H	215	70.69	31.34
2	*2437.00	94.00 AV			1.16 H	215	62.66	31.34
3	4874.00	51.95 PK	74.00	-22.05	1.12 H	360	13.95	37.99
3	4874.00	42.61 AV	54.00	-11.39	1.12 H	360	4.61	37.99
4	7311.00	61.36 PK	74.00	-12.64	1.25 H	74	17.71	43.66
4	7311.00	48.82 AV	54.00	-5.18	1.25 H	74	5.17	43.66
5	9748.00	60.43 PK	74.00	-13.57	1.55 H	103	14.05	46.38
5	9748.00	49.18 AV	54.00	-4.82	1.55 H	103	2.80	46.38

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2374.00	50.28 PK	74.00	-23.72	1.15 V	153	19.17	31.11
1	2374.00	37.79 AV	54.00	-16.21	1.15 V	153	6.68	31.11
2	*2437.00	112.88 PK			1.19 V	220	81.54	31.34
2	*2437.00	104.88 AV			1.19 V	220	73.54	31.34
3	4874.00	55.03 PK	74.00	-18.97	1.46 V	140	17.03	37.99
3	4874.00	49.58 AV	54.00	-4.42	1.46 V	140	11.58	37.99
4	7311.00	64.60 PK	74.00	-9.40	1.44 V	14	20.95	43.66
4	**7311.00**	**53.91 AV**	**54.00**	**-0.09**	**1.44 V**	**14**	**10.26**	**43.66**
5	9748.00	59.96 PK	74.00	-14.04	1.22 V	318	13.58	46.38
5	9748.00	47.15 AV	54.00	-6.85	1.22 V	318	0.77	46.38

REMARKS:

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

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	11	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	24 deg. C, 64% RH, 991 hPa	**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	2437.00	43.78 PK	74.00	-30.22	1.11 H	322	12.44	31.34
1	2437.00	31.44 AV	54.00	-22.56	1.11 H	322	0.10	31.34
2	2438.50	36.66 PK	74.00	-37.34	1.19 H	220	5.32	31.34
2	2438.50	28.70 AV	54.00	-25.30	1.19 H	220	-2.64	31.34
3	*2462.00	95.38 PK			1.19 H	220	63.92	31.46
3	*2462.00	87.42 AV			1.19 H	220	55.96	31.46
4	4924.00	52.51 PK	74.00	-21.49	1.11 H	58	14.40	38.11
4	4924.00	43.14 AV	54.00	-10.86	1.11 H	58	5.03	38.11
5	7386.00	56.03 PK	74.00	-17.97	1.00 H	87	12.12	43.91
5	7386.00	42.81 AV	54.00	-11.19	1.00 H	87	-1.10	43.91
6	9848.00	59.74 PK	74.00	-14.26	1.47 H	144	13.24	46.51
6	9848.00	47.47 AV	54.00	-6.53	1.47 H	144	0.97	46.51

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	*2462.00	107.48 PK			1.51 V	256	76.02	31.46
1	*2462.00	99.48 AV			1.51 V	256	68.02	31.46
2	2483.50	48.76 PK	74.00	-25.24	1.51 V	256	17.19	31.57
2	2483.50	40.76 AV	54.00	-13.24	1.51 V	256	9.19	31.57
3	4924.00	57.28 PK	74.00	-16.72	1.49 V	251	19.17	38.11
3	4924.00	49.48 AV	54.00	-4.52	1.49 V	251	11.37	38.11
4	7386.00	58.71 PK	74.00	-15.29	1.19 V	313	14.80	43.91
4	7386.00	46.36 AV	54.00	-7.64	1.19 V	313	2.45	43.91
5	9848.00	60.53 PK	74.00	-13.47	1.19 V	95	14.03	46.51
5	9848.00	48.71 AV	54.00	-5.29	1.19 V	95	2.21	46.51

REMARKS:

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

4.2.9 TEST RESULTS (B)

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	1	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	**TESTED BY**: Long Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	57.85 PK	74.00	-16.15	1.15 H	331	26.71	31.14
1	2390.00	47.95 AV	54.00	-6.05	1.15 H	331	16.81	31.14
2	*2412.00	105.02 PK			1.15 H	331	73.81	31.21
2	*2412.00	95.12 AV			1.15 H	331	63.91	31.21
3	4824.00	54.78 PK	74.00	-19.22	1.14 H	300	16.90	37.88
3	4824.00	49.56 AV	54.00	-4.44	1.14 H	300	11.68	37.88
4	7236.00	57.01 PK	74.00	-16.99	1.11 H	245	13.56	43.46
4	7236.00	43.20 AV	54.00	-10.80	1.11 H	245	-0.25	43.46
5	9648.00	58.35 PK	74.00	-15.65	1.60 H	298	11.95	46.40
5	9648.00	49.18 AV	54.00	-4.82	1.60 H	298	2.78	46.40

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/m)
1	2390.00	61.74 PK	74.00	-12.26	1.38 V	148	30.60	31.14
1	2390.00	52.17 AV	54.00	-1.83	1.38 V	148	21.03	31.14
2	*2412.00	108.91 PK			1.38 V	148	77.70	31.21
2	*2412.00	99.31 AV			1.38 V	148	68.10	31.21
3	4824.00	56.55 PK	74.00	-17.45	1.03 V	35	18.67	37.88
3	4824.00	51.38 AV	54.00	-2.62	1.03 V	35	13.50	37.88
4	7236.00	59.14 PK	74.00	-14.86	1.90 V	343	15.69	43.46
4	7236.00	45.56 AV	54.00	-8.44	1.90 V	343	2.11	43.46
5	9648.00	58.80 PK	74.00	-15.20	1.56 V	316	12.40	46.40
5	9648.00	48.05 AV	54.00	-5.95	1.56 V	316	1.65	46.40

REMARKS:

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

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	6	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	**TESTED BY**: Long Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	108.02 PK			1.40 H	342	76.69	31.34
1	*2437.00	98.34 AV			1.40 H	342	67.00	31.34
2	4874.00	52.78 PK	74.00	-21.22	1.03 H	30	14.79	37.99
2	4874.00	47.14 AV	54.00	-6.86	1.03 H	30	9.15	37.99
3	7311.00	64.93 PK	74.00	-9.07	1.58 H	316	21.28	43.66
3	7311.00	51.52 AV	54.00	-2.48	1.58 H	316	7.87	43.66
4	9748.00	58.76 PK	74.00	-15.24	1.60 H	298	12.38	46.38
4	9748.00	49.50 AV	54.00	-4.50	1.60 H	298	3.12	46.38

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	113.03 PK			1.14 V	3	81.69	31.34
1	*2437.00	102.69 AV			1.14 V	3	71.36	31.34
2	4874.00	59.18 PK	74.00	-14.82	1.08 V	226	21.19	37.99
2	4874.00	51.82 AV	54.00	-2.18	1.08 V	226	13.83	37.99
3	7311.00	56.45 PK	74.00	-17.55	1.03 V	181	12.79	43.66
3	7311.00	53.38 AV	54.00	-0.62	1.03 V	181	9.72	43.66
4	9748.00	58.61 PK	74.00	-15.39	1.08 V	226	12.23	46.38
4	9748.00	47.16 AV	54.00	-6.84	1.08 V	226	0.78	46.38

REMARKS:

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

EUT	Wireless LAN Card	**MODEL**	MPI-8540
CHANNEL	11	**FREQUENCY RANGE**	1~25 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	25 deg. C, 65% RH, 991 hPa	**TESTED BY**: Long Chen	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.79 PK			1.65 H	54	72.33	31.46
1	*2462.00	93.92 AV			1.65 H	54	62.46	31.46
2	2483.50	54.78 PK	74.00	-19.22	1.65 H	54	23.21	31.57
2	2483.50	44.91 AV	54.00	-9.09	1.65 H	54	13.34	31.57
3	4924.00	53.74 PK	74.00	-20.26	1.56 H	316	15.63	38.11
3	4924.00	48.83 AV	54.00	-5.17	1.56 H	316	10.72	38.11
4	7386.00	57.82 PK	74.00	-16.18	1.56 H	316	13.91	43.91
4	7386.00	44.67 AV	54.00	-9.33	1.56 H	316	0.76	43.91
5	9848.00	58.35 PK	74.00	-15.65	1.96 H	313	11.84	46.51
5	9848.00	48.89 AV	54.00	-5.11	1.96 H	313	2.38	46.51

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	*2462.00	106.82 PK			1.12 V	68	75.36	31.46
1	*2462.00	97.16 AV			1.12 V	68	65.70	31.46
2	2483.50	57.81 PK	74.00	-16.19	1.12 V	68	26.24	31.57
2	2483.50	48.10 AV	54.00	-5.90	1.12 V	68	16.53	31.57
3	4924.00	56.17 PK	74.00	-17.83	1.77 V	0	18.06	38.11
3	4924.00	51.89 AV	54.00	-2.11	1.77 V	0	13.78	38.11
4	7386.00	59.34 PK	74.00	-14.66	1.57 V	360	15.43	43.91
4	7386.00	45.46 AV	54.00	-8.54	1.57 V	360	1.55	43.91
5	9848.00	58.04 PK	74.00	-15.96	1.57 V	322	11.53	46.51
5	9848.00	47.94 AV	54.00	-6.06	1.57 V	322	1.43	46.51

REMARKS:

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

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.3.2 TEST INSTRUMENTS

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

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

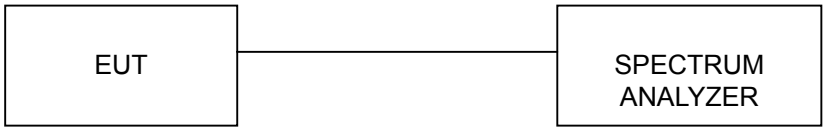
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



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

4.3.6 EUT OPERATING CONDITIONS

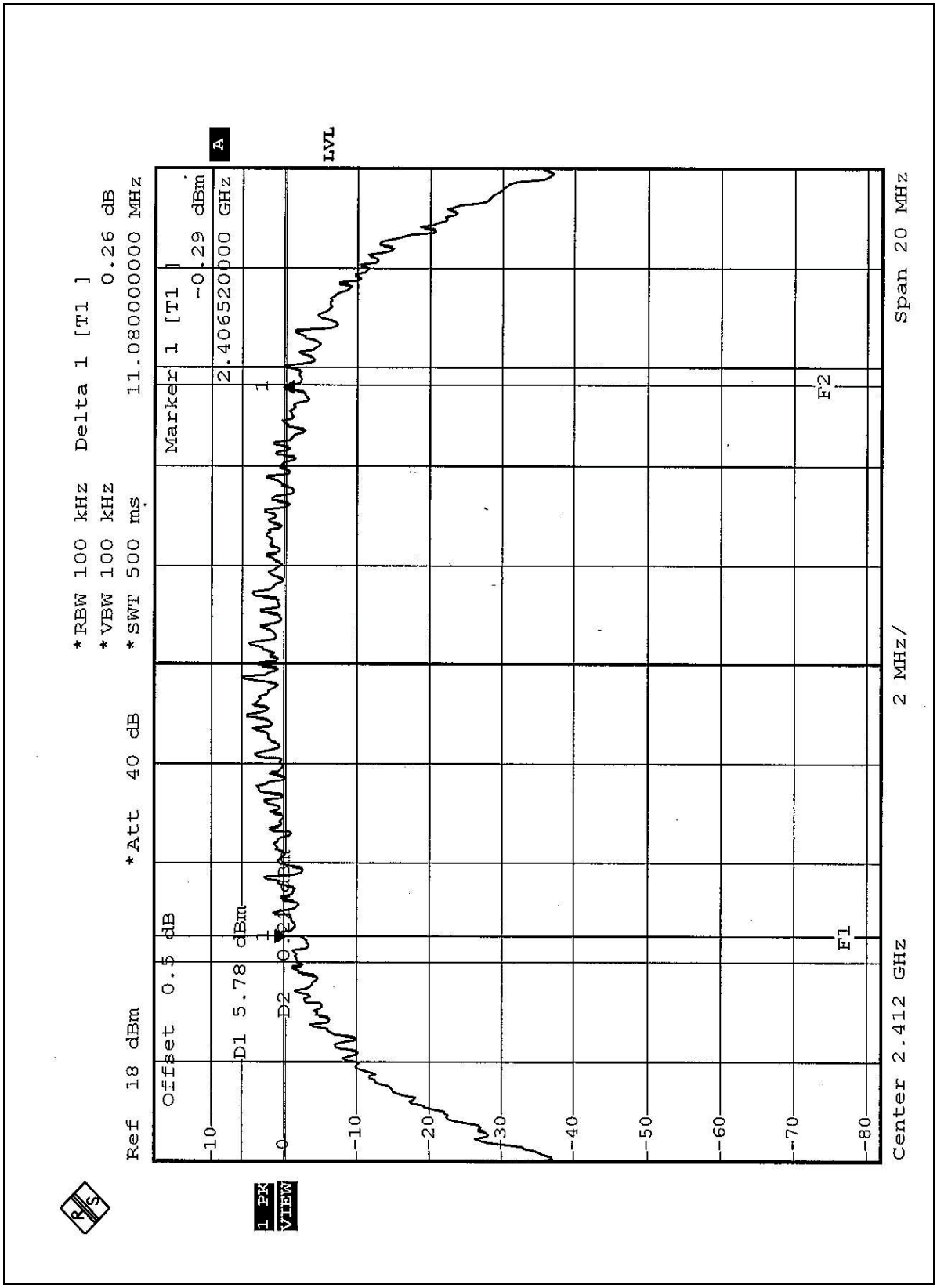
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS (A)

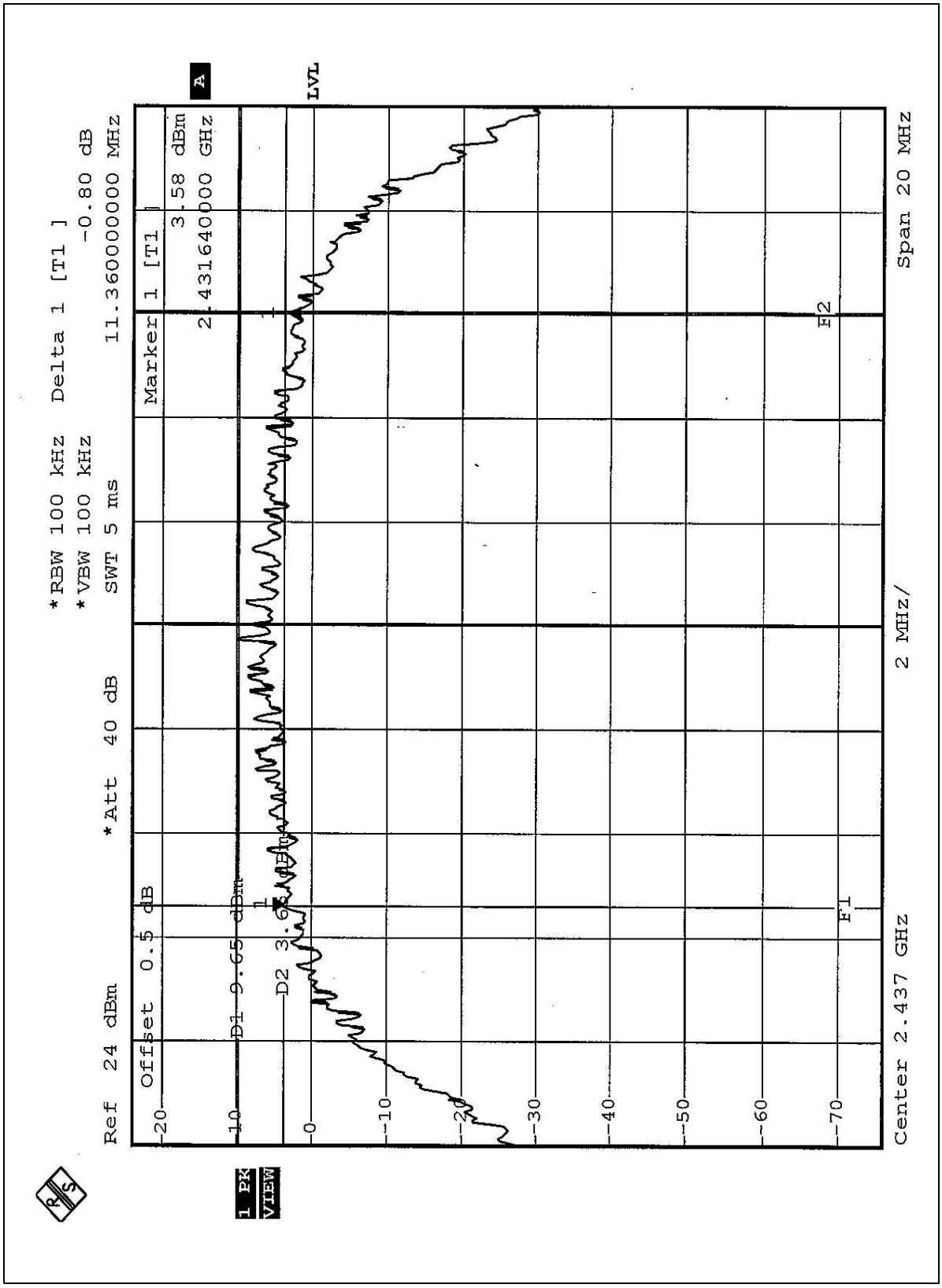
EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.08	0.5	PASS
6	2437	11.36	0.5	PASS
11	2462	11.44	0.5	PASS

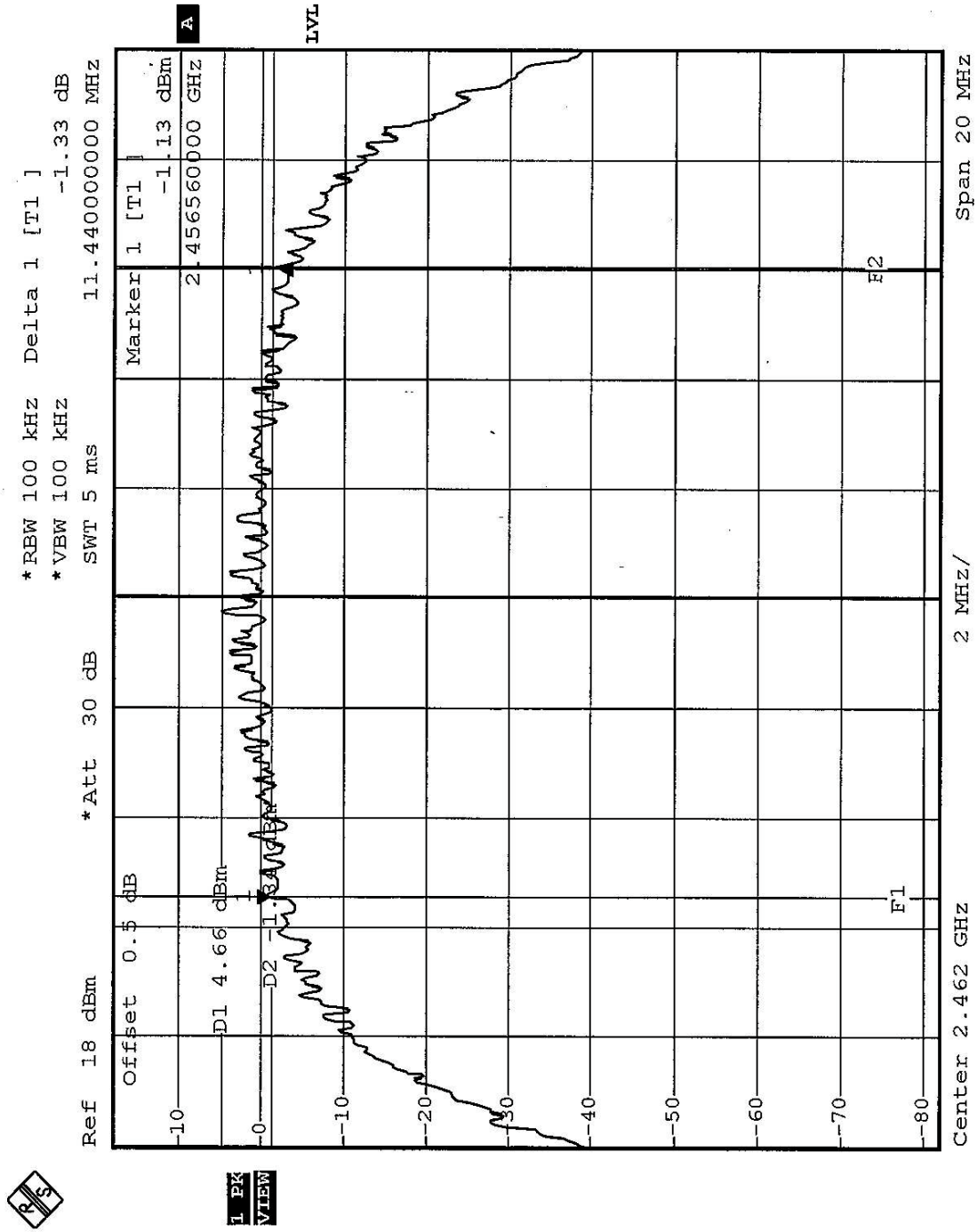
CH1


Ref 18 dBm
Offset 0.5 dB
*Att 40 dB
*RBW 100 kHz
*VBW 100 kHz
*SWT 500 ms
Delta 1 [T1]
0.26 dB
11.08000000 MHz
Marker 1 [T1]
2.40652000 GHz
-0.29 dBm
D1 5.78 dBm
D2 0.00 dBm
LVL
A
1 PK
VIEW
F1
F2
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


Ref 24 dBm
Offset 0.5 dB
*Att 40 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.80 dB
11.360000000 MHz
Marker 1 [T1]
3.58 dBm
2.431640000 GHz
D1 9.65 dBm
D2 3.65 dBm
LVL
A
1 PK
VIEW
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz

CH11

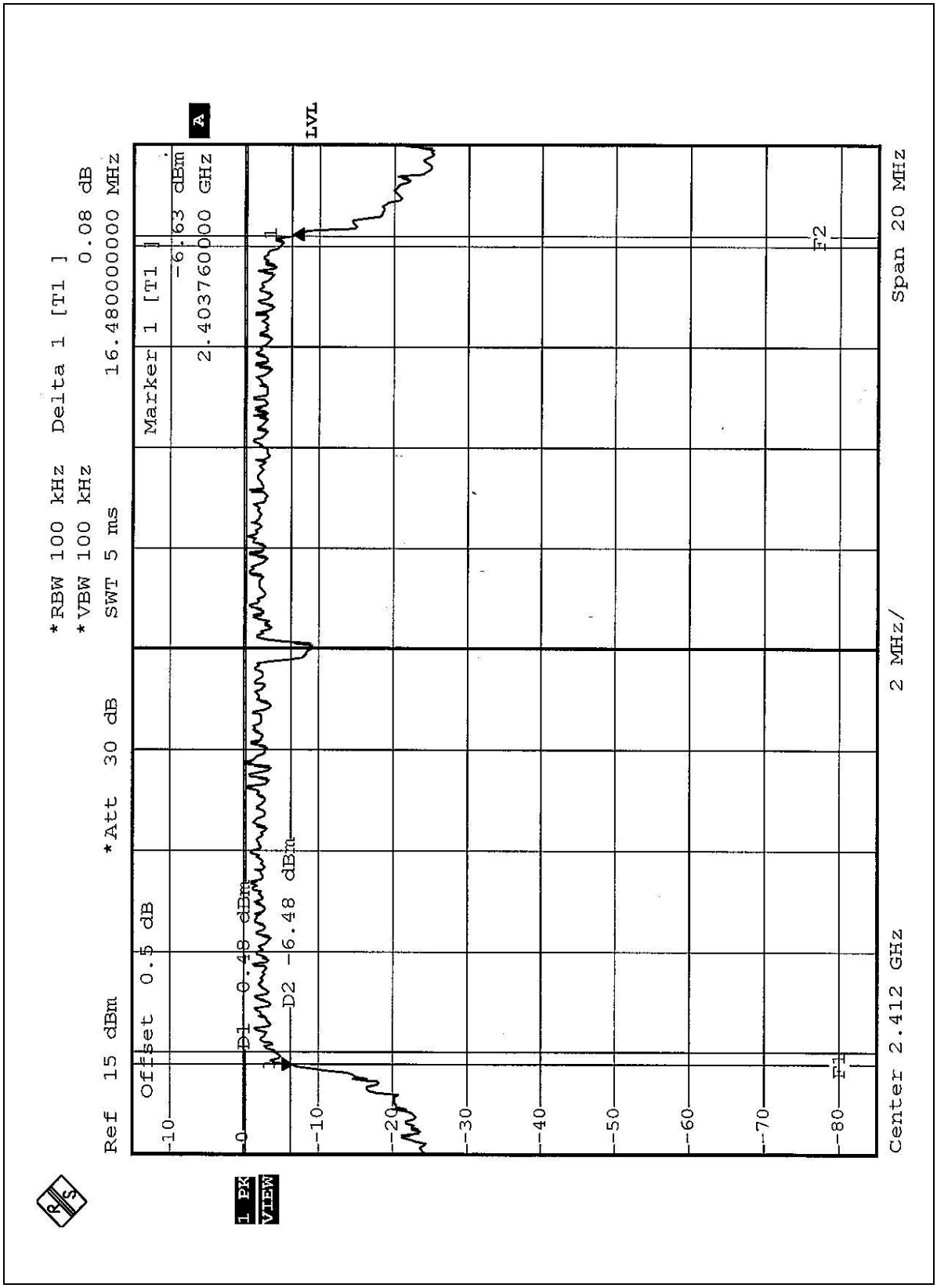

Ref 18 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-1.33 dB
11.440000000 MHz
Marker 1 [T1]
-1.13 dBm
2.456560000 GHz
D1 4.66 dBm
D2 -1.34 dBm
F1
F2
LVL
A
1 PK
VIEW
Center 2.462 GHz
2 MHz/
Span 20 MHz

4.3.8 TEST RESULTS (B)

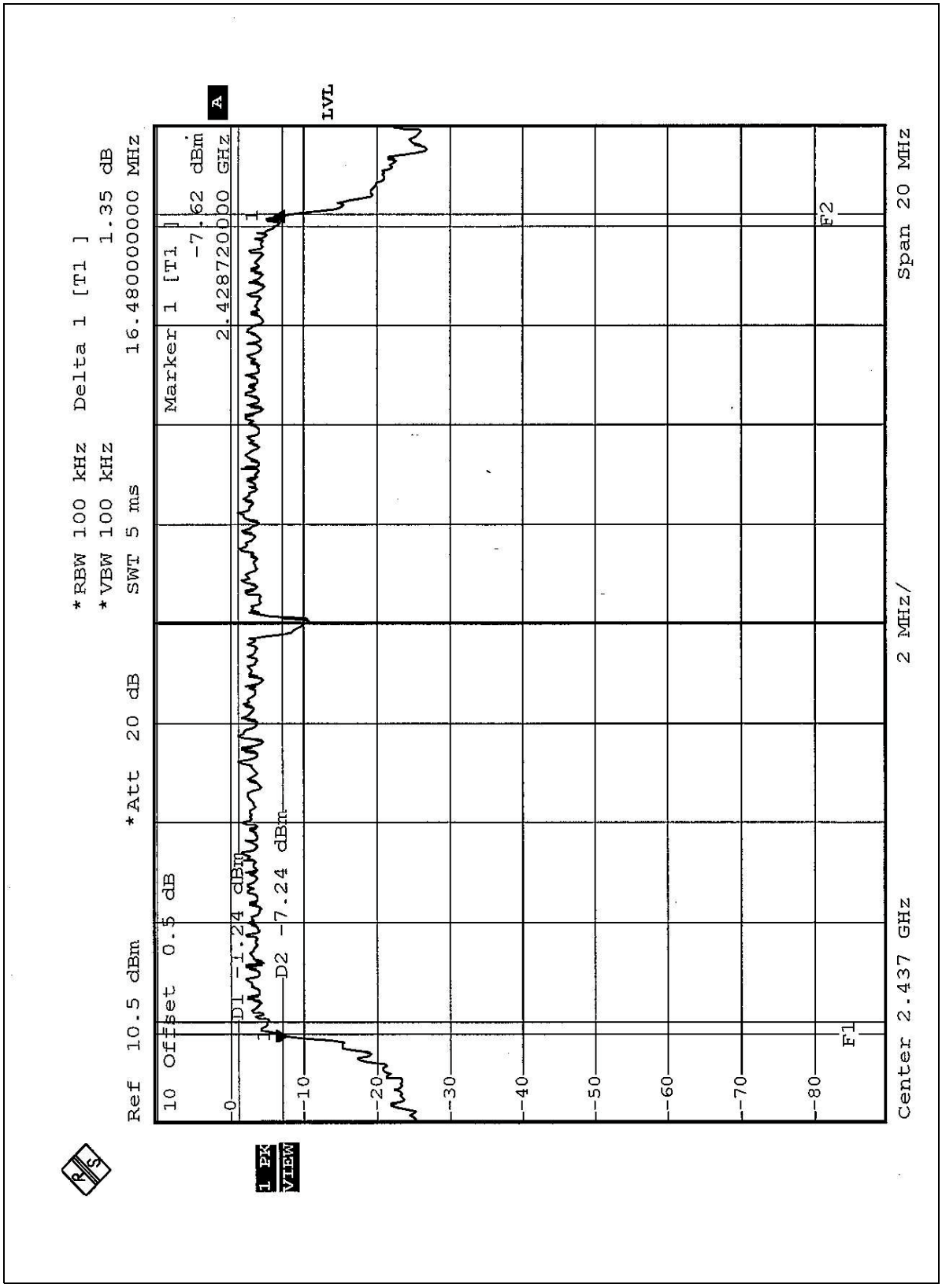
EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

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

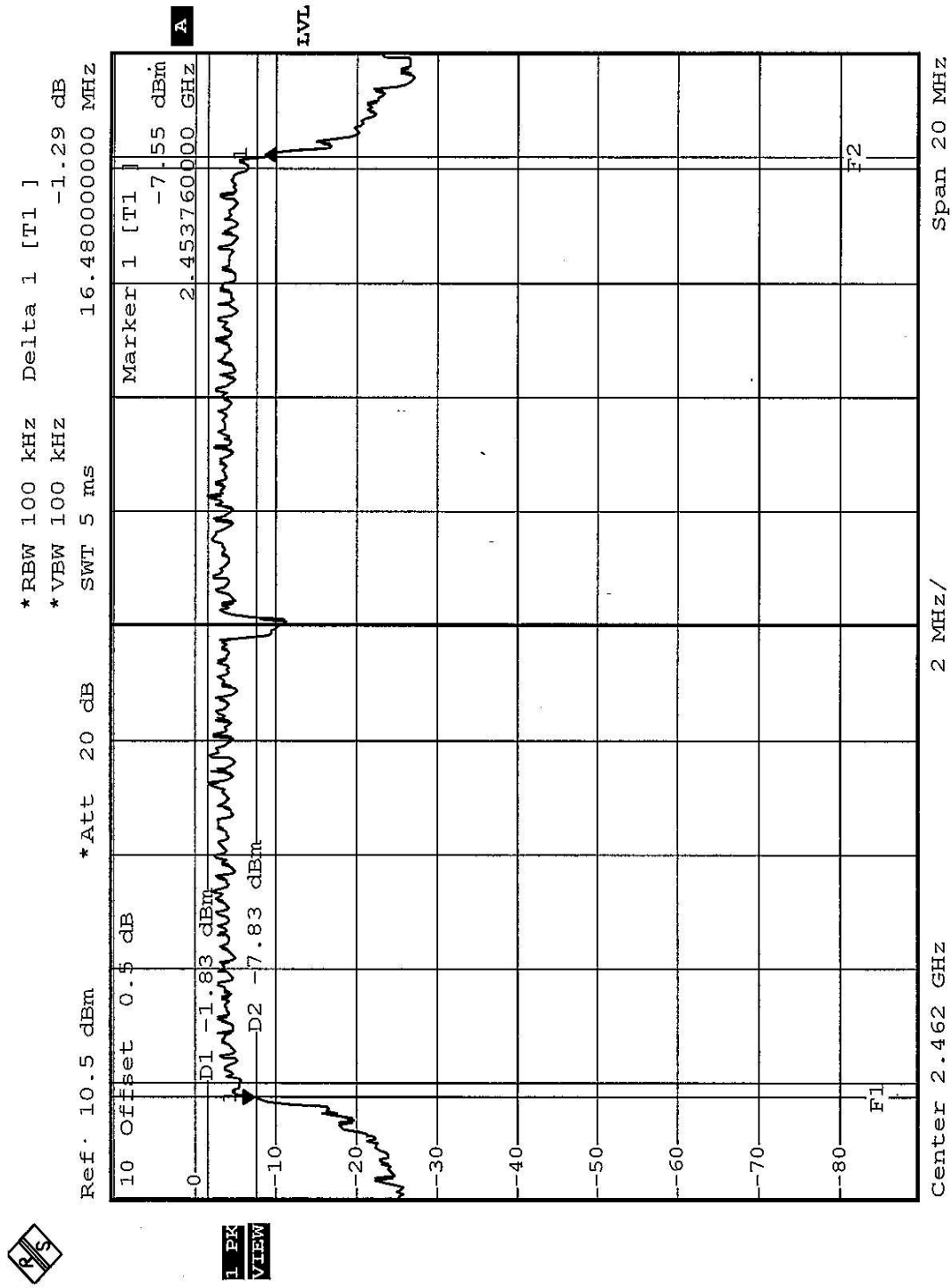
CH1


Ref 15 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.08 dB
16.480000000 MHz
Marker 1 [T1]
-6.63 dBm
2.403760000 GHz
D1 0.48 dBm
D2 -6.48 dBm
LVL
A
1 PK
VIEW
Center 2.412 GHz
2 MHz/
Span 20 MHz

CH6


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
1.35 dB
16.48000000 MHz
Marker 1 [T1]
-7.62 dBm
2.428720000 GHz
D1 -1.24 dBm
D2 -7.24 dBm
A
LVL
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
1 PK
VIEW

CH11


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-1.29 dB
16.480000000 MHz
Marker 1 [T1]
-7.55 dBm
2.453760000 GHz
D1 -1.83 dBm
D2 -7.83 dBm
LVL
A
1 PK
VIEW
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	C019167	Feb. 01, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

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

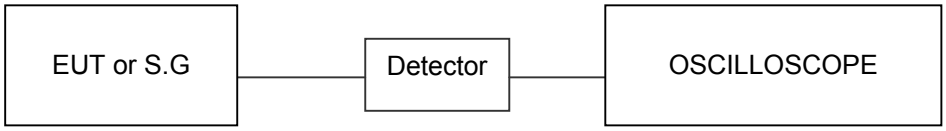
4.4.3 TEST PROCEDURES

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6

4.4.7 TEST RESULTS (A)

EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.50	30	PASS
6	2437	20.00	30	PASS
11	2462	15.50	30	PASS

4.4.8 TEST RESULTS (B)

EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.25	30	PASS
6	2437	19.00	30	PASS
11	2462	16.25	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

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

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

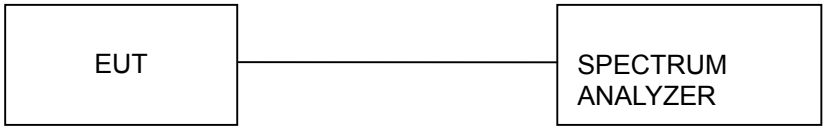
4.5.3 TEST PROCEDURE

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

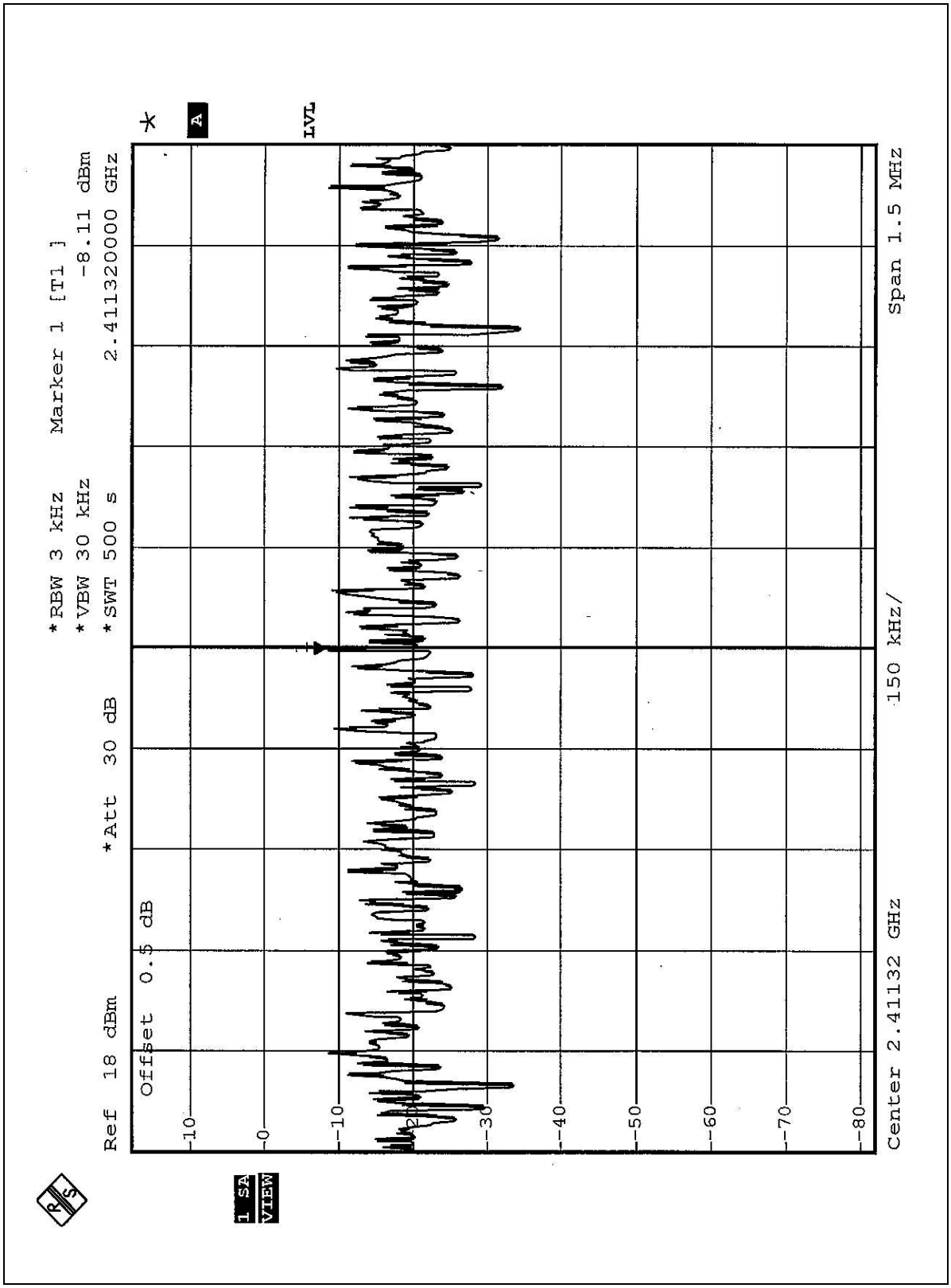
Same as 4.3.6

4.5.7 TEST RESULTS (A)

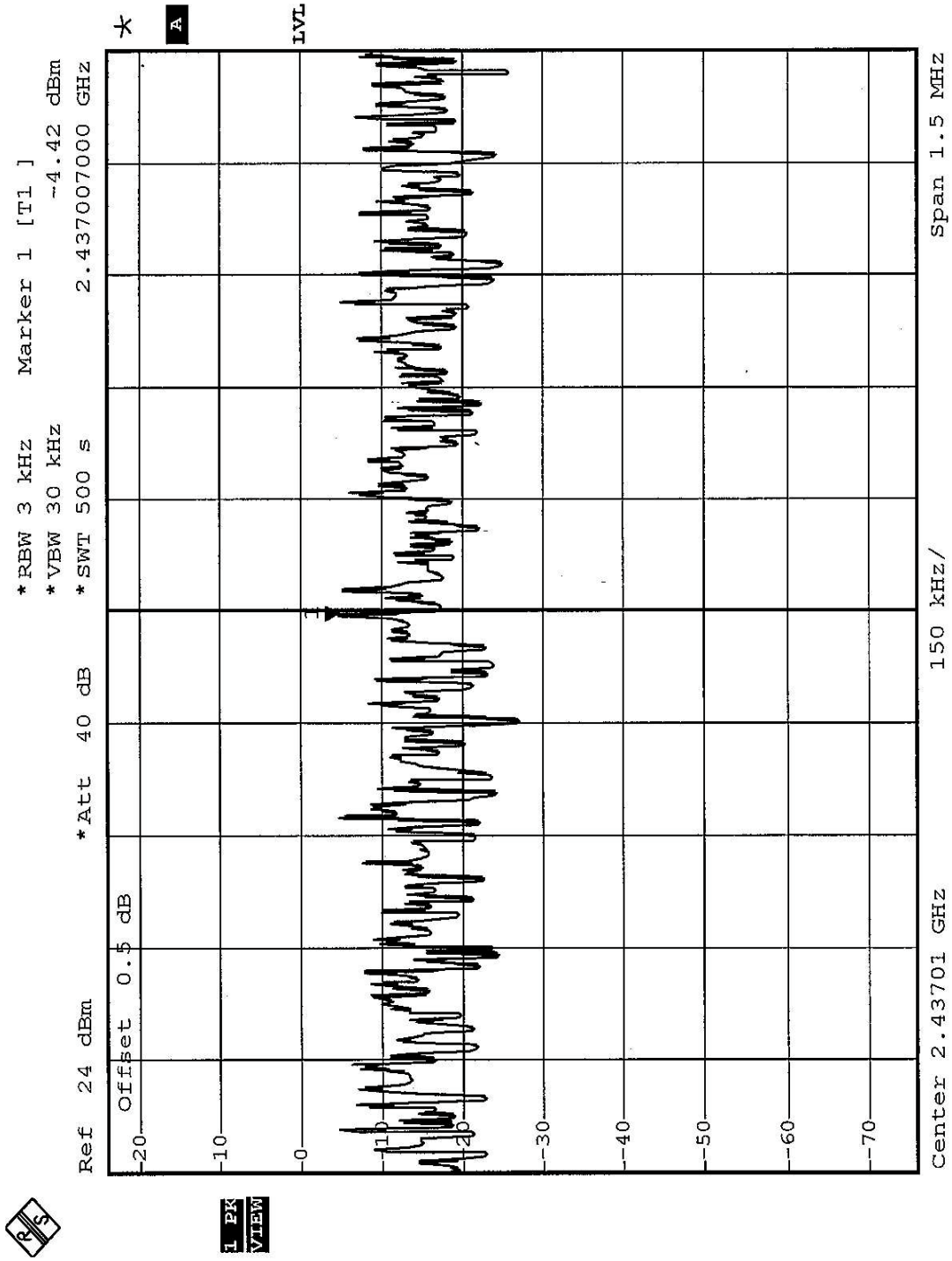
EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-8.11	8	PASS
6	2437	-4.42	8	PASS
11	2462	-9.16	8	PASS

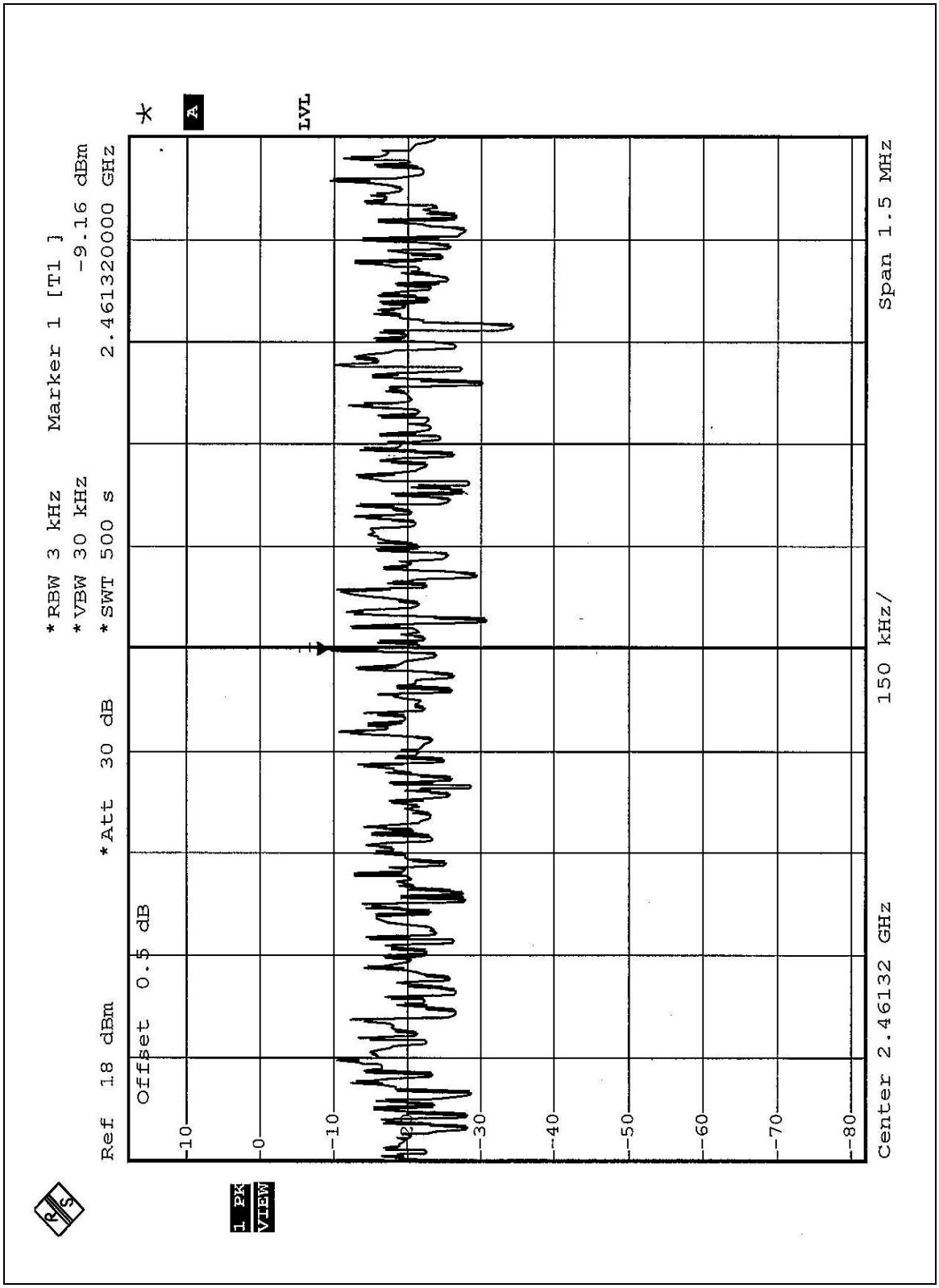
CH1


Ref 18 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-8.11 dBm
2.411320000 GHz
Center 2.41132 GHz
150 kHz/
Span 1.5 MHz
LVL
A
1 SA
VIEW
-10
0
-10
-20
-30
-40
-50
-60
-70
-80

CH6


Ref 24 dBm
Offset 0.5 dB
*Att 40 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-4.42 dBm
2.43700700 0 GHz
A
LVL
1 PK
VIEW
Center 2.43701 GHz
150 kHz/
Span 1.5 MHz

CH11

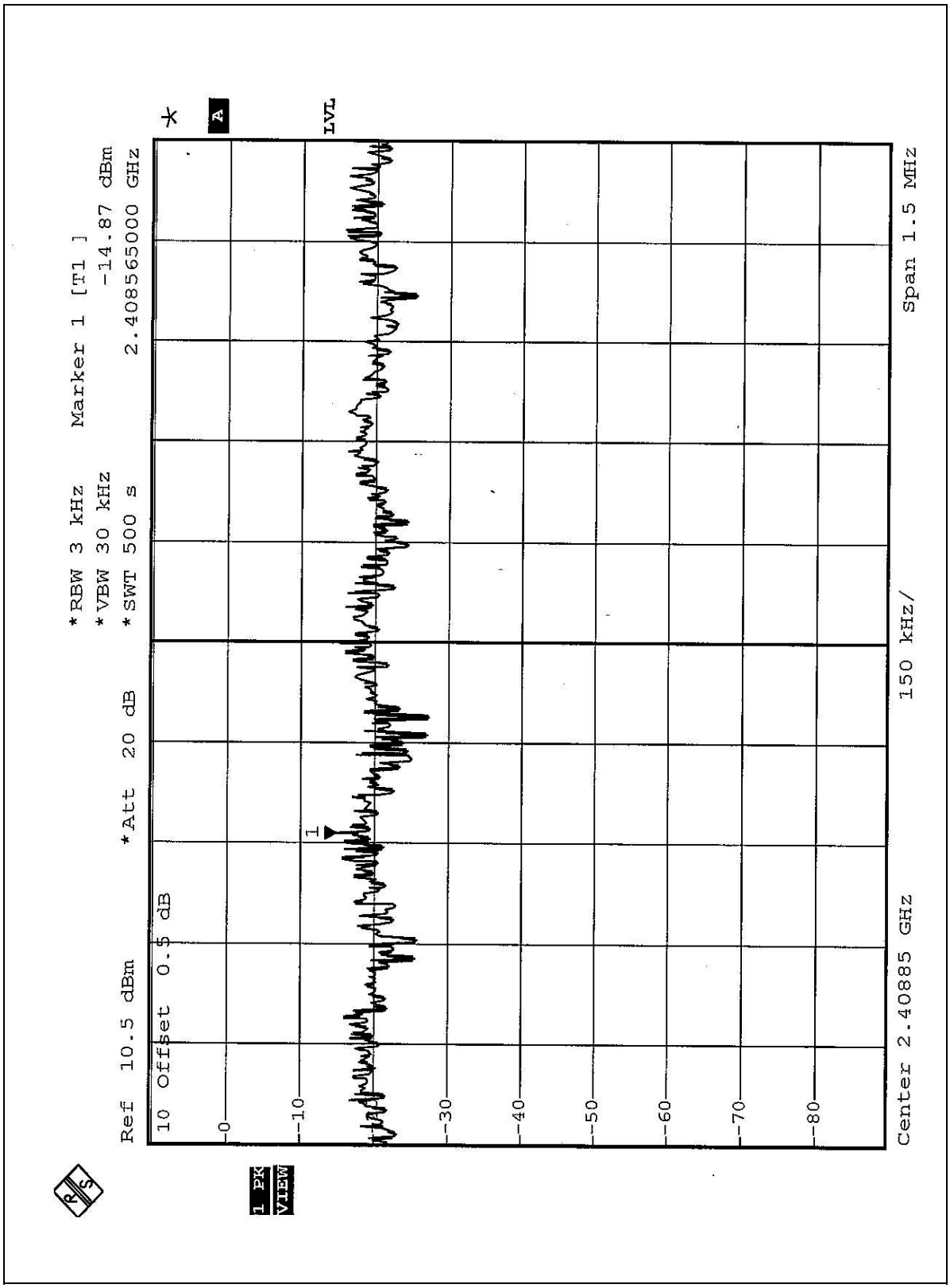

Ref 18 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-9.16 dBm
2.461320000 GHz
LVL
A
1 PK
VIEW
Center 2.46132 GHz
150 kHz/
Span 1.5 MHz

4.5.8 TEST RESULTS (B)

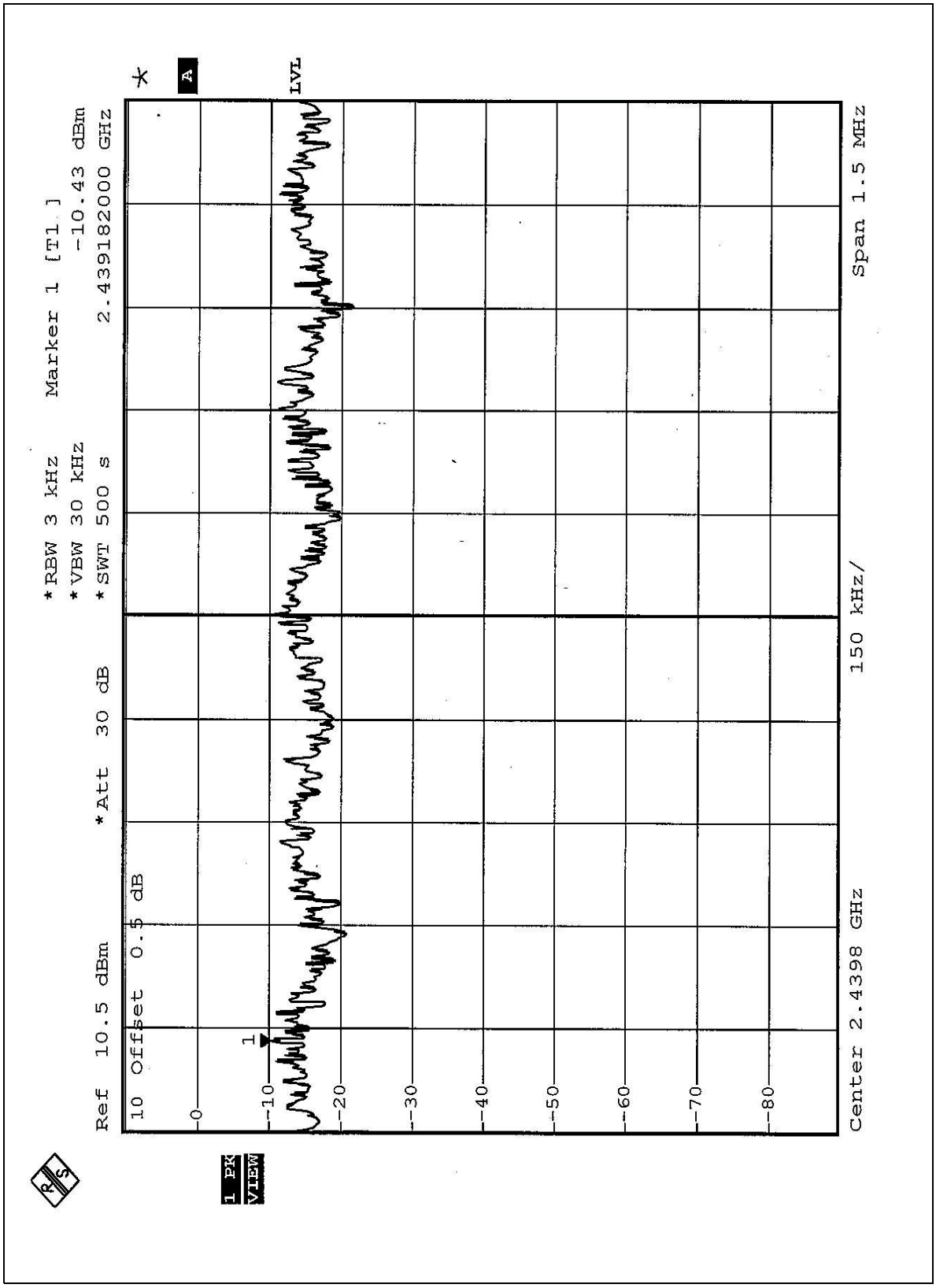
EUT	Wireless LAN Card	**MODEL**	MPI-8540
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 60% RH, 991 hPa
TESTED BY	Steven Lu		

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-14.87	8	PASS
6	2437	-10.43	8	PASS
11	2462	-16.20	8	PASS

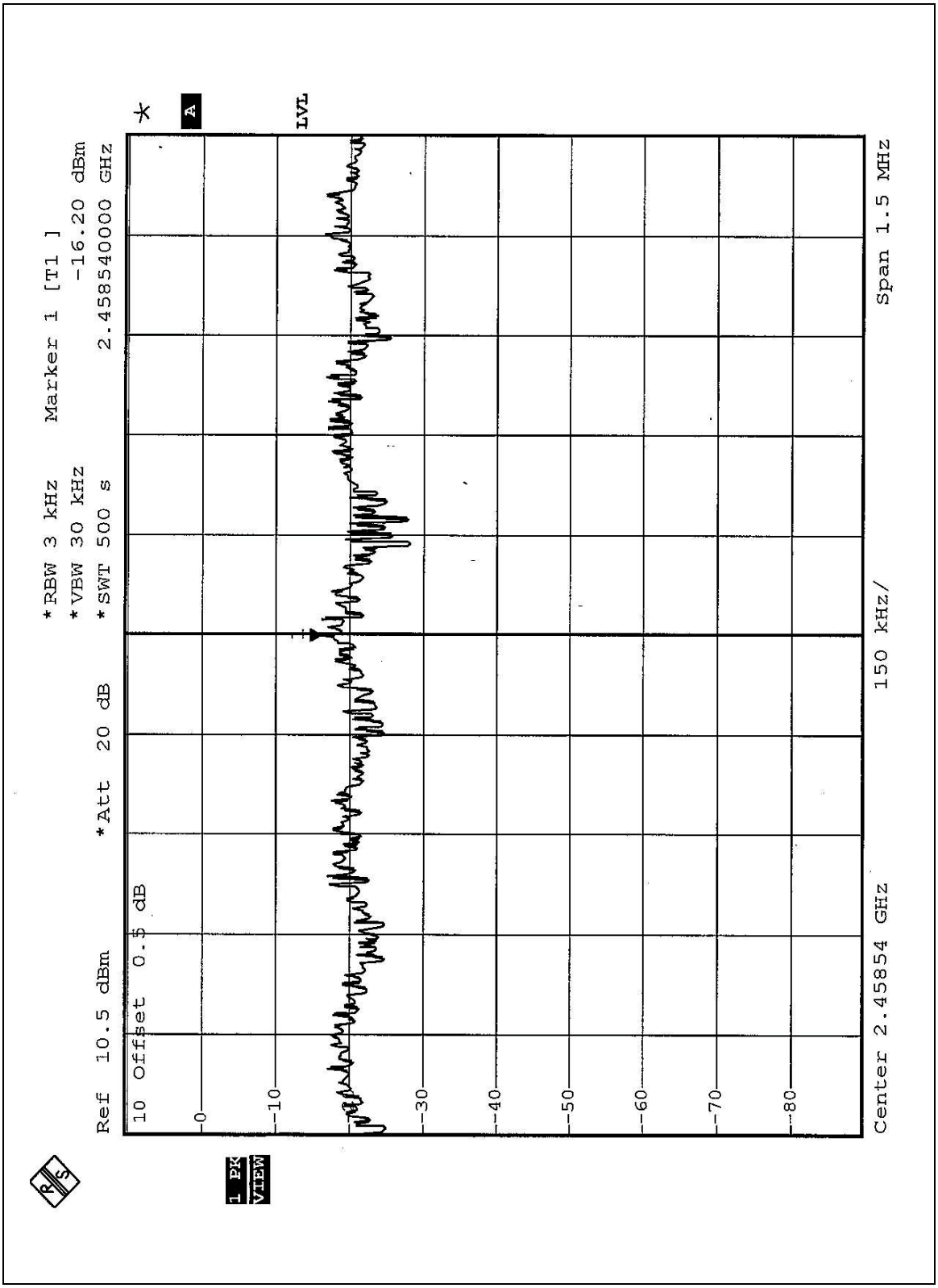
CH1


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-14.87 dBm
2.40856500 GHz
1 PK
VIEW
A
LVL
1
0
-10
-30
-40
-50
-60
-70
-80
Center 2.40885 GHz
150 kHz/
Span 1.5 MHz

CH6


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.43 dBm
2.439182000 GHz
1 PK
MAXH
A
LVL
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.4398 GHz
150 kHz/
Span 1.5 MHz

CH11


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-16.20 dBm
2.458540000 GHz
A
LVL
1 PK
VIEW
0
-10
-30
-40
-50
-60
-70
-80
Center 2.45854 GHz
150 kHz/
Span 1.5 MHz

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.6.2 TEST INSTRUMENTS

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

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

4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 1MHz and 10Hz with suitable frequency span including 1MHz and 10Hz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

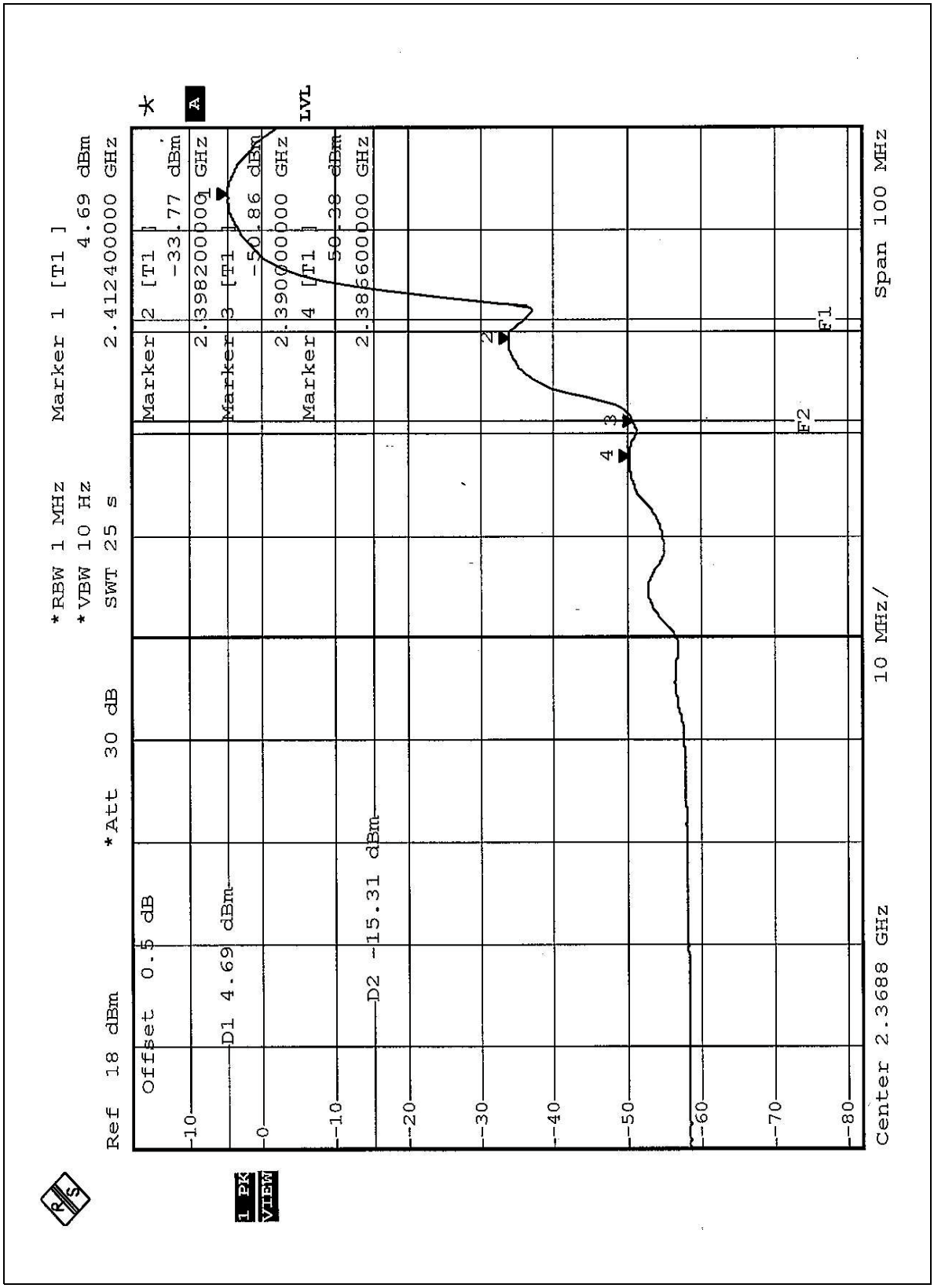
4.6.6 TEST RESULTS (A)

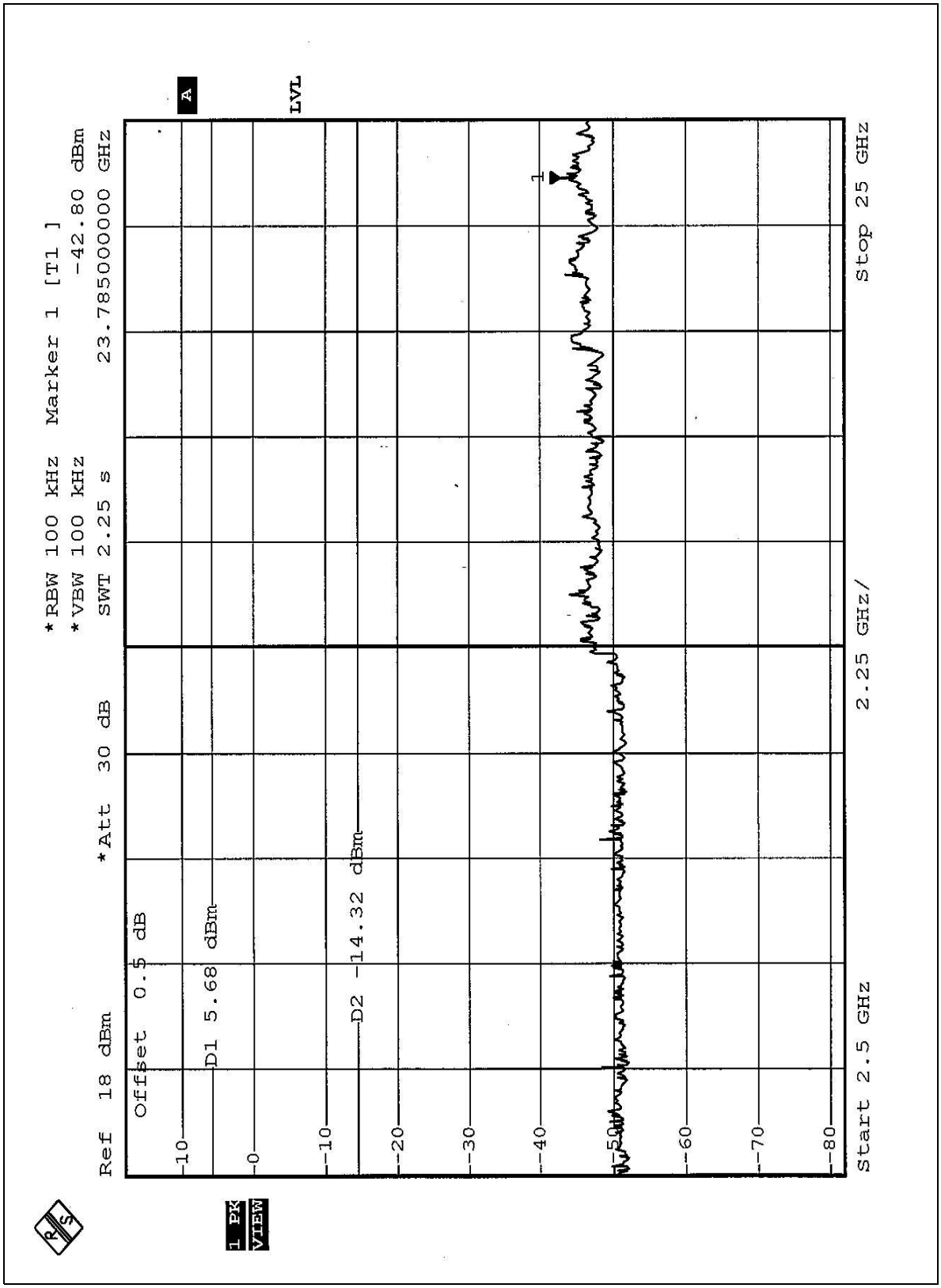
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

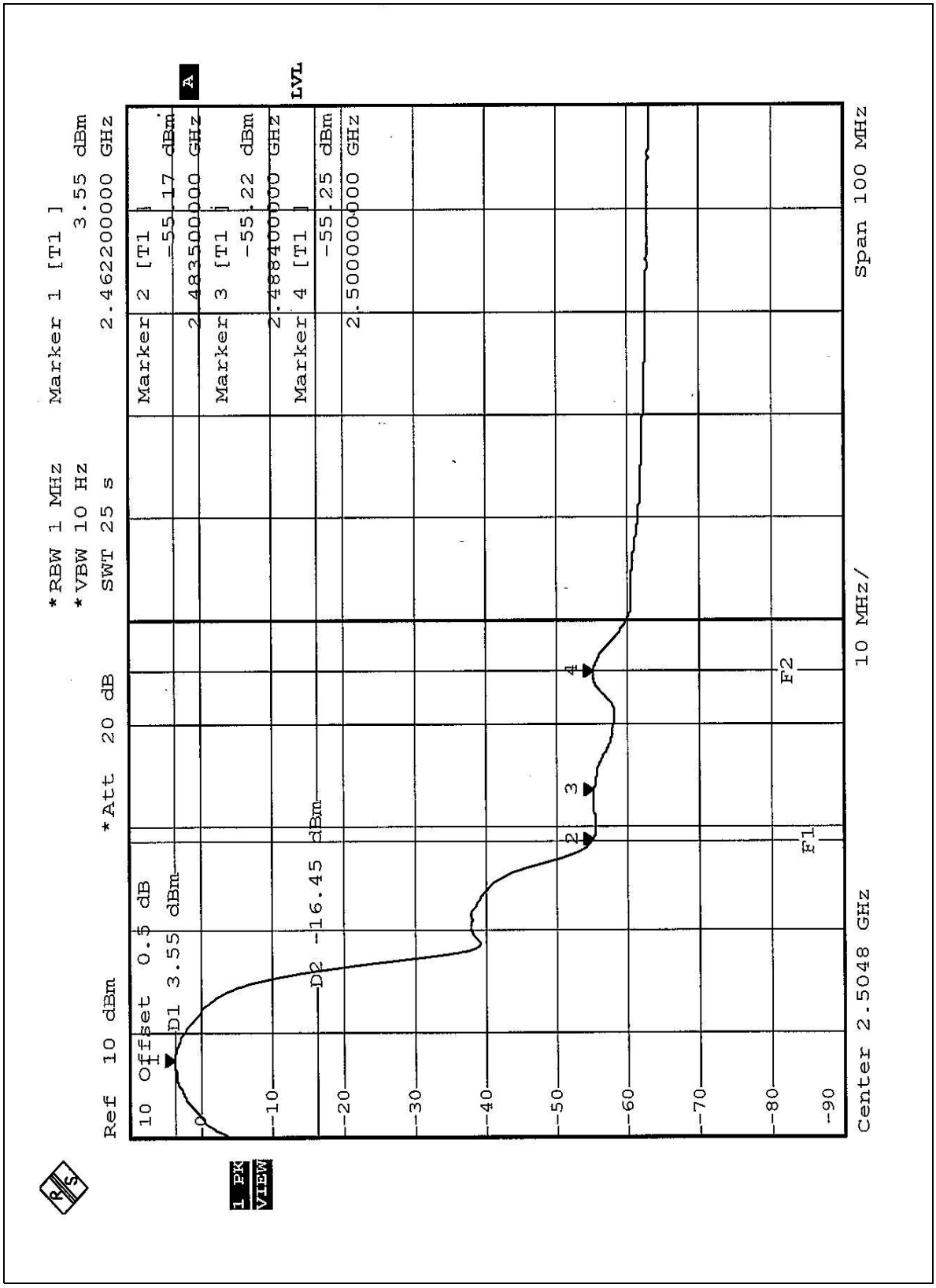
NOTE:

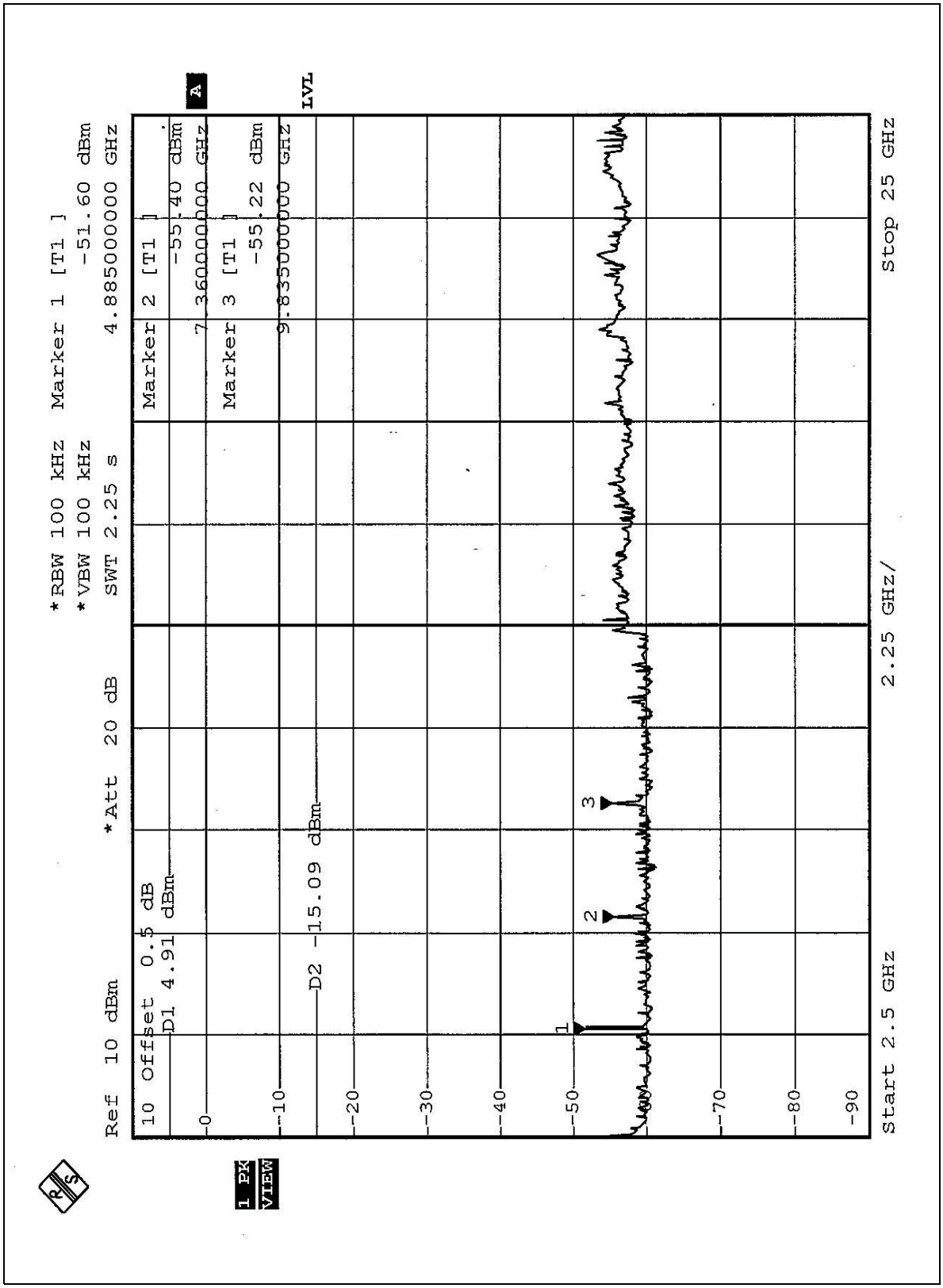
The band edge emission plot on the following 1~2 pages show 55.07dB delta between carrier maximum power and local maximum emission in restrict band (2.3866GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 101.65dBuV/m, so the maximum field strength in restrict band is 101.65-55.07=46.58dBuV/m which is under 54dBuV/m limit.

The band edge emission plot on the following 3~4 pages show 58.72dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 99.48dBuV/m, so the maximum field strength in restrict band is 99.48-58.72=40.76dBuV/m which is under 54dBuV/m limit.


Ref 18 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
4.69 dBm
2.412400000 GHz
Marker 2 [T1]
-33.77 dBm
2.398200000 GHz
Marker 3 [T1]
-50.86 dBm
2.390000000 GHz
Marker 4 [T1]
-50.38 dBm
2.386600000 GHz
D1 4.69 dBm
D2 -15.31 dBm
LVL
A
1 PK
VIEW
Center 2.3688 GHz
10 MHz/
Span 100 MHz
F1
F2


Ref 18 dBm
Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-42.80 dBm
23.785000000 GHz
D1 5.68 dBm
D2 -14.32 dBm
A
LVL
1 PK
VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


Ref 10 dBm
10 Offset 0.5 dB
D1 3.55 dBm
D2 -16.45 dBm
*Att 20 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
3.55 dBm
2.462200000 GHz
Marker 2 [T1]
-55.17 dBm
2.483500000 GHz
Marker 3 [T1]
-55.22 dBm
2.488400000 GHz
Marker 4 [T1]
-55.25 dBm
2.500000000 GHz
A
LVL
1 PK
VIEW
Center 2.5048 GHz
10 MHz/
Span 100 MHz
F1
F2

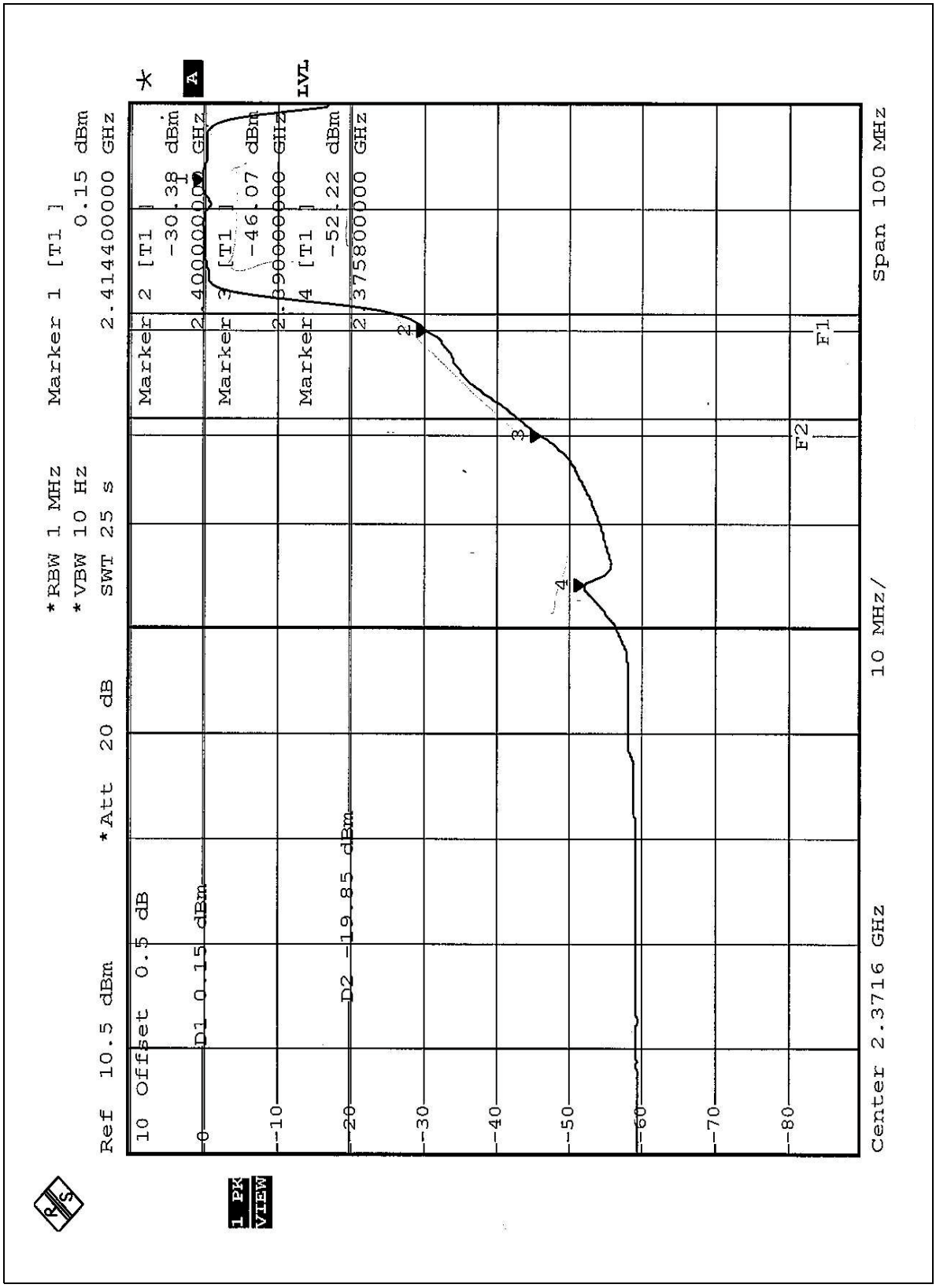

Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-51.60 dBm
4.88500000 GHz
10 Offset 0.5 dB
D1 4.91 dBm
D2 -15.09 dBm
Marker 2 [T1]
-55.40 dBm
7.36000000 GHz
Marker 3 [T1]
-55.22 dBm
9.83500000 GHz
A
LVL
1 PK
VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

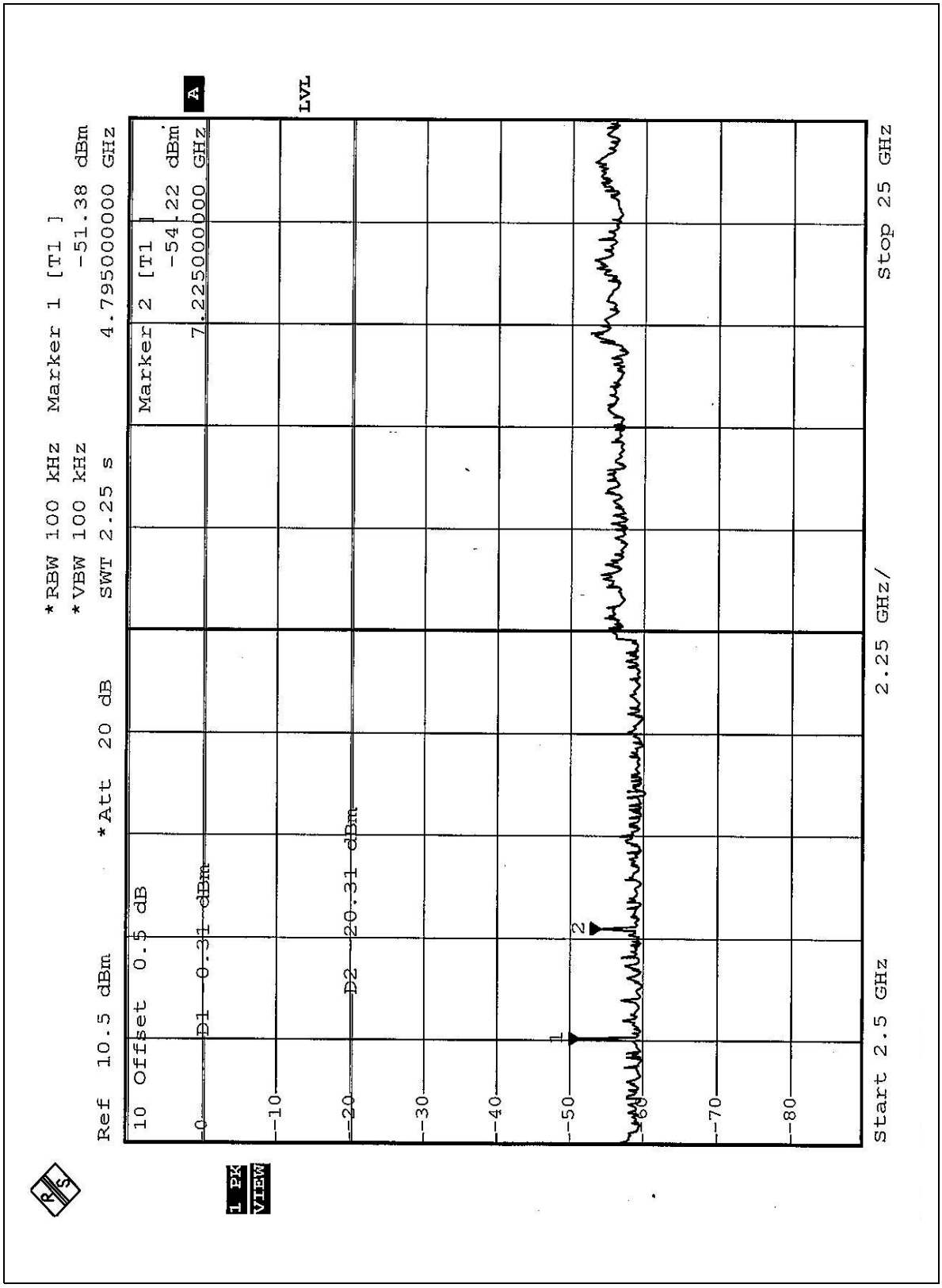
4.6.7 TEST RESULTS (B)

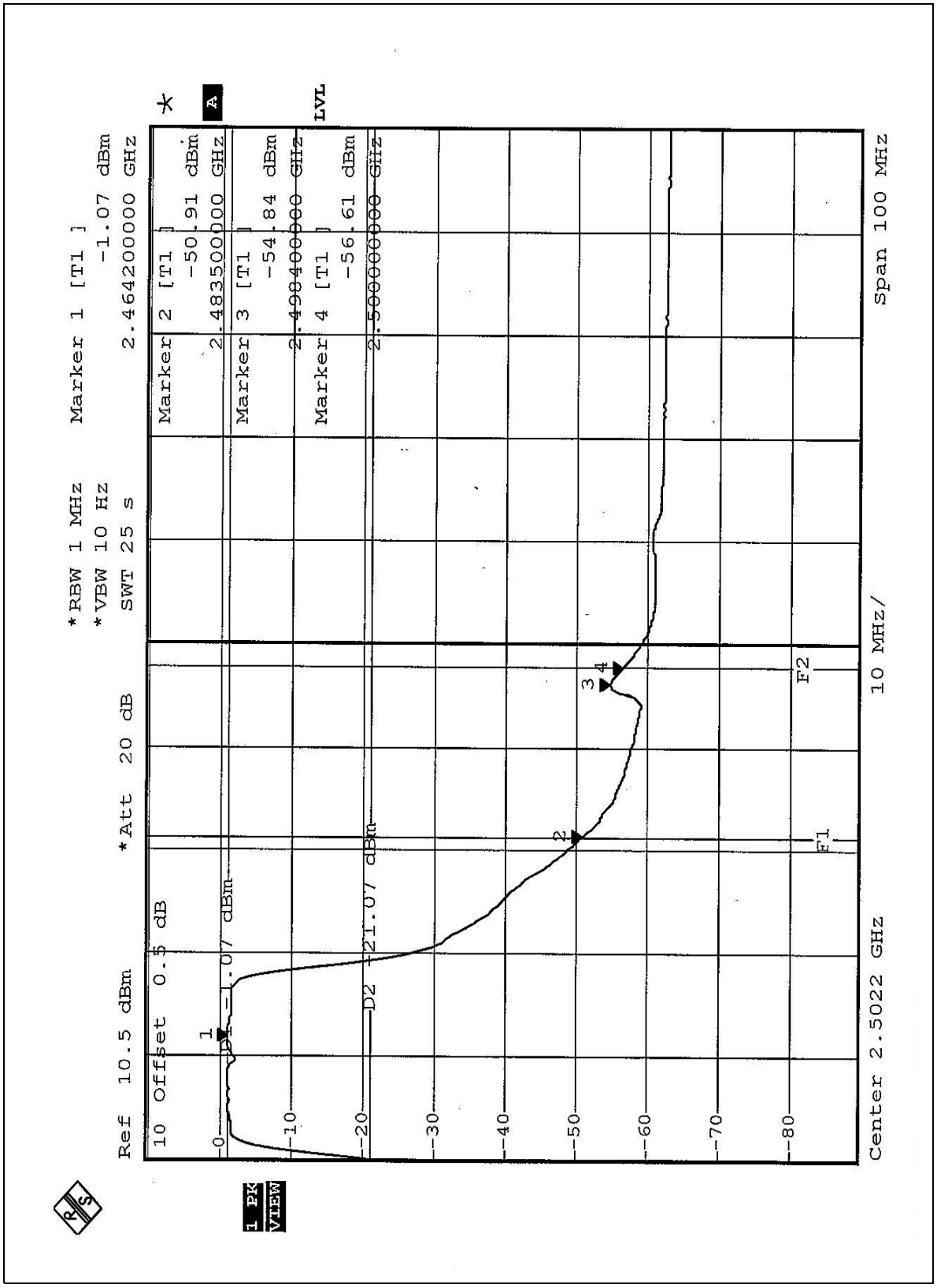
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

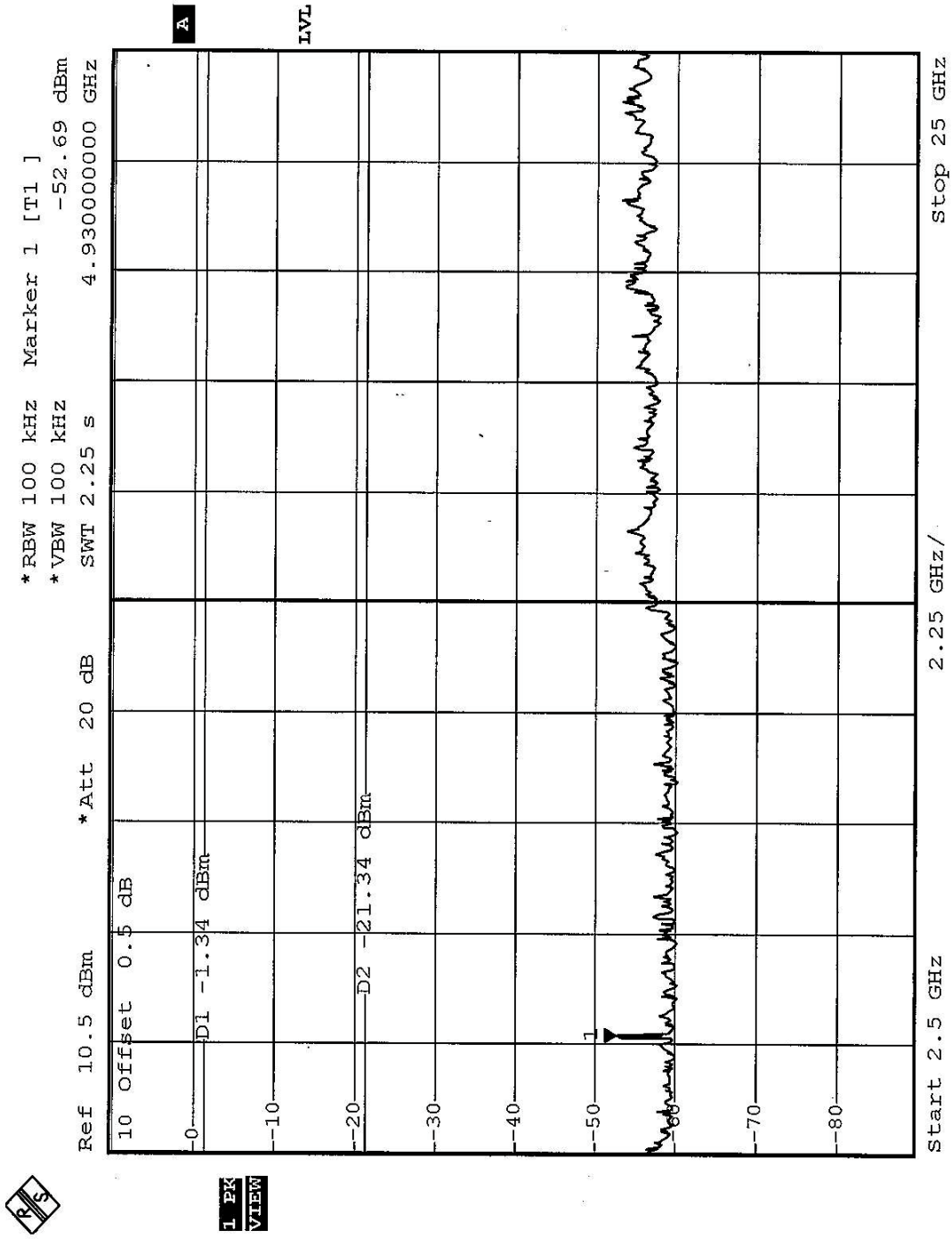
NOTE:
The band edge emission plot on the following 1~2 pages show 46.22dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 99.31dBuV/m, so the maximum field strength in restrict band is 99.31-46.07=53.24dBuV/m which is under 54dBuV/m limit.

The band edge emission plot on the following 3~4 pages show 49.84dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.9 is 97.16dBuV/m, so the maximum field strength in restrict band is 97.16-49.84=47.32dBuV/m which is under 54dBuV/m limit.


Ref 10.5 dBm
10 Offset 0.5 dB
D1 0.15 dBm
D2 -19.85 dBm
*Att 20 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1] 0.15 dBm 2.414400000 GHz
Marker 2 [T1] -30.38 dBm 2.400000000 GHz
Marker 3 [T1] -46.07 dBm 2.390000000 GHz
Marker 4 [T1] -52.22 dBm 2.375800000 GHz
A
LVL
1 PK VIEW
Center 2.3716 GHz
10 MHz/
Span 100 MHz
F1
F2


Ref 10.5 dBm
10 Offset 0.5 dB
D1 -0.31 dBm
D2 -20.31 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-51.38 dBm
4.79500000 GHz
Marker 2 [T1]
-54.22 dBm
7.22500000 GHz
A
LVL
1 PK
VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-1.07 dBm
2.464200000 GHz
Marker 2 [T1]
-50.91 dBm
2.483500000 GHz
Marker 3 [T1]
-54.84 dBm
2.498400000 GHz
Marker 4 [T1]
-56.61 dBm
2.500000000 GHz
D1 -1.07 dBm
D2 -21.07 dBm
F1
F2
Center 2.5022 GHz
10 MHz/
Span 100 MHz
1 PK
VIEW
LVL
A


Ref 10.5 dBm
10 Offset 0.5 dB
D1 -1.34 dBm
D2 -21.34 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-52.69 dBm
4.93000000 GHz
A
LVL
1 PK
VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

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

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole antenna with UFL connector. And the maximum Gain of this antenna is 2.0dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

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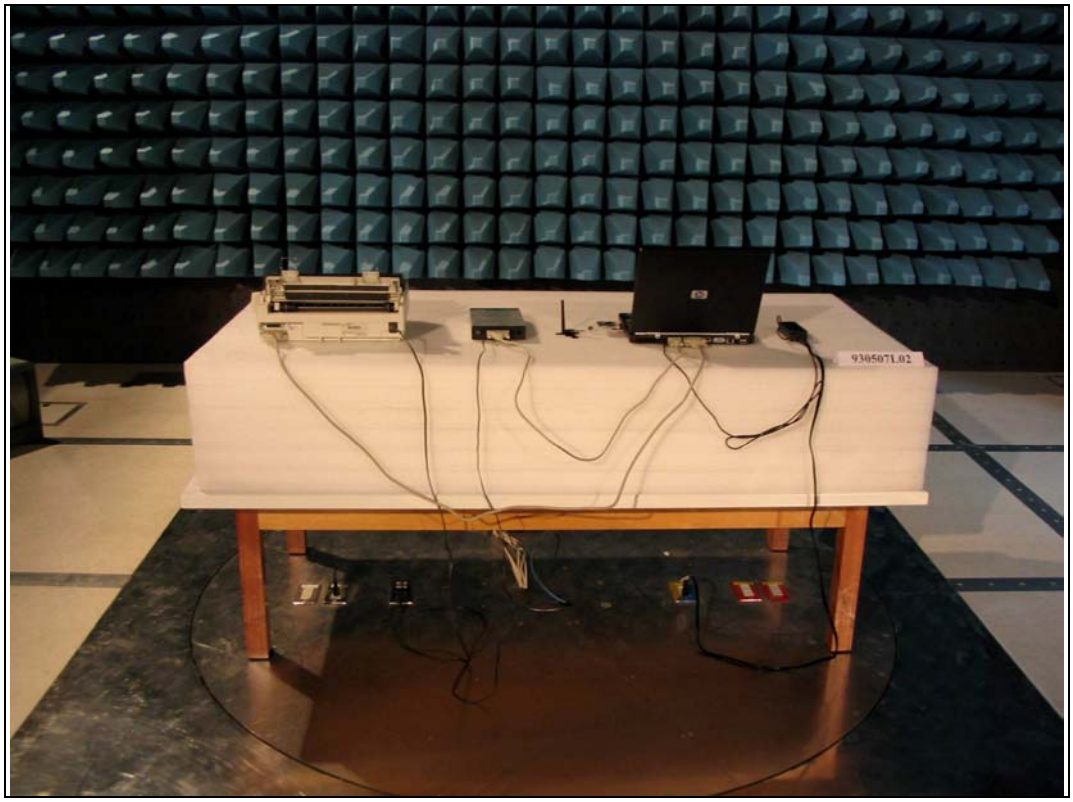
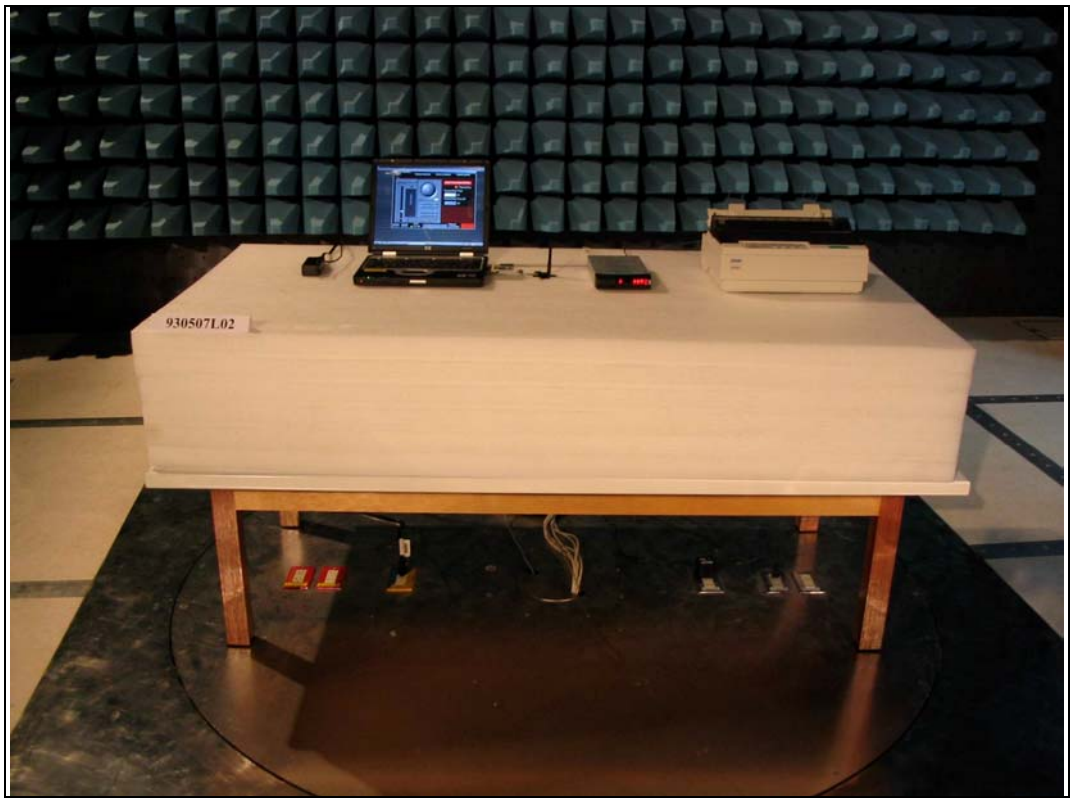
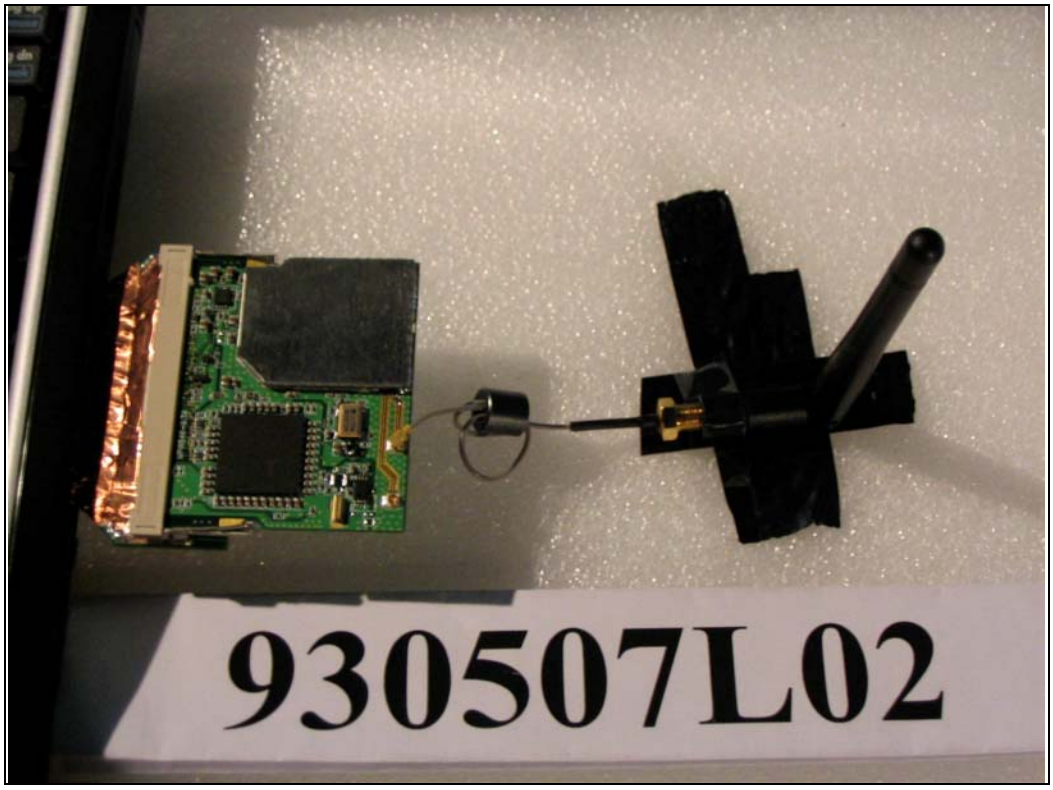
RADIATED EMISSION TEST



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6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP, UL
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R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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

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

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