



FCC TEST REPORT

REPORT NO.: RF910814R03

MODEL NO.: DI-764

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TESTED: Feb. 15 ~ Feb. 21, 2003

APPLICANT: D-Link Corporation

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ISSUED BY: Advance Data Technology Corporation

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0528
ILAC MRA



Lab Code: 200102-0



Table of Contents

1	CERTIFICATION	5
2	SUMMARY OF TEST RESULTS.....	6
3	GENERAL INFORMATION	8
3.1	GENERAL DESCRIPTION OF EUT	8
3.2	DESCRIPTION OF TEST MODES	9
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	10
3.4	DESCRIPTION OF SUPPORT UNITS.....	11
4	TEST TYPES AND RESULTS (FOR PART 802.11B).....	12
4.1	CONDUCTED EMISSION MEASUREMENT	12
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	12
4.1.2	TEST INSTRUMENTS	12
4.1.3	TEST PROCEDURES	13
4.1.4	DEVIATION FROM TEST STANDARD	13
4.1.5	TEST SETUP	14
4.1.6	EUT OPERATING CONDITIONS.....	15
4.1.7	TEST RESULTS	16
4.2	RADIATED EMISSION MEASUREMENT	22
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	22
4.2.2	TEST INSTRUMENTS	23
4.2.3	TEST PROCEDURES	24
4.2.4	DEVIATION FROM TEST STANDARD	24
4.2.5	TEST SETUP	25
4.2.6	EUT OPERATING CONDITIONS.....	25
4.2.7	TEST RESULTS	26
4.3	6dB BANDWIDTH MEASUREMENT	31
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	31
4.3.2	TEST INSTRUMENTS	31
4.3.3	TEST PROCEDURE	32
4.3.4	DEVIATION FROM TEST STANDARD	32
4.3.5	TEST SETUP	32
4.3.6	EUT OPERATING CONDITIONS.....	32
4.3.7	TEST RESULTS	33
4.4	MAXIMUM PEAK OUTPUT POWER	37
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	37
4.4.2	INSTRUMENTS.....	37
4.4.3	TEST PROCEDURES	38
4.4.4	DEVIATION FROM TEST STANDARD	38
4.4.5	TEST SETUP	38
4.4.6	EUT OPERATING CONDITIONS.....	38
4.4.7	TEST RESULTS	39
4.5	POWER SPECTRAL DENSITY MEASUREMENT	40



4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	40
4.5.2	TEST INSTRUMENTS	40
4.5.3	TEST PROCEDURE	41
4.5.4	DEVIATION FROM TEST STANDARD	41
4.5.5	TEST SETUP	41
4.5.6	EUT OPERATING CONDITION	41
4.5.7	TEST RESULTS	42
4.6	BAND EDGES MEASUREMENT	46
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	46
4.6.2	TEST INSTRUMENTS	46
4.6.3	TEST PROCEDURE	46
4.6.4	DEVIATION FROM TEST STANDARD	46
4.6.5	EUT OPERATING CONDITION	47
4.6.6	TEST RESULTS	47
4.7	ANTENNA REQUIREMENT	50
4.7.1	STANDARD APPLICABLE	50
4.7.2	ANTENNA CONNECTED CONSTRUCTION	50
5	TEST TYPES AND RESULTS (FOR PART 802.11A)	51
5.1	CONDUCTED EMISSION MEASUREMENT	51
5.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	51
5.1.2	TEST INSTRUMENTS	51
5.1.3	TEST PROCEDURES	52
5.1.4	DEVIATION FROM TEST STANDARD	52
5.1.5	TEST SETUP	53
5.1.6	EUT OPERATING CONDITIONS	53
5.1.7	TEST RESULTS (TRANSMITTING)	54
5.1.8	TEST RESULTS (RECEIVING)	56
5.2	RADIATED EMISSION MEASUREMENT	58
5.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	58
5.2.2	LIMITS OF UNWANTED EMISSION OUT OF THE RESTRICTED BANDS	59
5.2.3	TEST INSTRUMENTS	60
5.2.4	TEST PROCEDURES	61
5.2.5	DEVIATION FROM TEST STANDARD	61
5.2.6	TEST SETUP	62
5.2.7	EUT OPERATING CONDITIONS	62
5.2.8	TEST RESULTS (TRANSMITTING)	63
5.2.9	TEST RESULTS (RECEIVING)	69
5.3	PEAK TRANSMIT POWER MEASUREMENT	75
5.3.1	LIMITS OF PEAK TRANSMIT POWER MEASUREMENT	75
5.3.2	TEST INSTRUMENTS	75
5.3.3	TEST PROCEDURE	76
5.3.4	DEVIATION FROM TEST STANDARD	76
5.3.5	TEST SETUP	76
5.3.6	EUT OPERATING CONDITIONS	76



5.3.7	TEST RESULTS	77
5.4	PEAK POWER EXCURSION MEASUREMENT	86
5.4.1	LIMITS OF PEAK POWER EXCURSION MEASUREMENT	86
5.4.2	TEST INSTRUMENTS	86
5.4.3	TEST PROCEDURE	87
5.4.4	DEVIATION FROM TEST STANDARD	87
5.4.5	TEST SETUP	87
5.4.6	EUT OPERATING CONDITIONS.....	87
5.4.7	TEST RESULTS	88
5.5	PEAK POWER SPECTRAL DENSITY MEASUREMENT	93
5.5.1	LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT	93
5.5.2	TEST INSTRUMENTS	93
5.5.3	TEST PROCEDURES	94
5.5.4	DEVIATION FROM TEST STANDARD	94
5.5.5	TEST SETUP	94
5.5.6	EUT OPERATING CONDITIONS.....	94
5.5.7	TEST RESULTS	95
5.6	FREQUENCY STABILITY	100
5.6.1	LIMITS OF FREQUENCY STABILITY MEASUREMENT	100
5.6.2	TEST INSTRUMENTS	100
5.6.3	TEST PROCEDURE	100
5.6.4	DEVIATION FROM TEST STANDARD	101
5.6.5	TEST SETUP	101
5.6.6	EUT OPERATING CONDITION	101
5.6.7	TEST RESULTS	102
5.7	BAND EDGES MEASUREMENT	103
5.7.1	TEST INSTRUMENTS	103
5.7.2	TEST PROCEDURE	103
5.7.3	EUT OPERATING CONDITION	103
5.7.4	TEST RESULTS	103
5.8	ANTENNA REQUIREMENT	108
5.8.1	STANDARD APPLICABLE	108
5.8.2	ANTENNA CONNECTED CONSTRUCTION	108
6	PHOTOGRAPHS OF THE TEST CONFIGURATION	109
7	INFORMATION ON THE TESTING LABORATORIES	111



1 CERTIFICATION

PRODUCT : Multimode 2.4/5GHz Wireless Router
BRAND NAME : D-Link
MODEL NO. : DI-764
APPLICANT : D-Link Corporation
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
Subpart E (Section 15.407) and Subpart B,
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Feb. 15 ~ Feb. 21, 2003. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

CHECKED BY: Kelsey Chang **DATE:** Feb. 25, 2003
Kelsey Chang

APPROVED BY: Dr. Alan Lane **DATE:** Feb. 25, 2003
Dr. Alan Lane
Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -16.87dBuV at 1.539MHz
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 -2.40dBuV at 431.34MHz
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


APPLIED STANDARD: 47 CFR Part 15, Subpart E and Subpart B

Standard Section	Test Type	Result	REMARK
15.407(b)(5)	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -16.76dBuV at 1.531MHz
15.407(b/1/2/3)(b)(5)	Electric Field Strength Spurious Emissions, 30 MHz – 40000 MHz	PASS	Meet the requirement of limit Minimum passing margin is -1.80dBuV at 10480.00MHz
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



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Multimode 2.4/5GHz Wireless Router
MODEL NO.	DI-764
POWER SUPPLY	5VDC from Power Adapter
MODULATION TYPE	802.11b: DSSS 802.11a: OFDM
TRANSFER RATE	802.11b: 1 / 2 / 5.5 / 11/ 22Mbps 802.11a: 6 to 54Mbps
FREQUENCY RANGE	802.11b: 2412MHz ~ 2462MHz 802.11a: 5.15~5.35GHz
NUMBER OF CHANNEL	802.11b: 11 802.11a: 8 for Normal mode
CHANNEL SPACING	802.11b: 5MHz 802.11a: 20MHz for Normal mode
OUTPUT POWER	802.11b: 17.74dBm 802.11a: 18.23dBm
DATA CABLE	NA
ANTENNA TYPE	Dipole
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

- The EUT was powered by a AC adapter which detail is as following:

BRAND	FAIRWAY
MODEL	WN10A-050U
OUTPUT POWER	+5.0V—2.5A
INPUT POWER	100-240V-1.0A MAX 50-60Hz

- For more detailed features description, please refer to the manufacturer's specifications or user's Manual.



3.2 DESCRIPTION OF TEST MODES

For 802.11b: 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 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.

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

Channel	Frequency	Channel	Frequency
1	5180 MHz	7	5300 MHz
2	5200 MHz	8	5320 MHz
3	5220 MHz		
4	5240 MHz		
5	5260 MHz		
6	5280 MHz		

NOTE:

1. The EUT was transmitting at full power on the specified channel with a duty cycle of 99% (maximum allowed). The EUT was tested in normal mode (channel bandwidth of approximately 30MHz) .
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. Channel 1, 4, 5 and 8 are the closest frequencies to the band edge, were chosen for final test of Normal Mode.



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Multimode 2.4/5GHz Wireless Router. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 15, Subpart C. (15.247),
Subpart E (15.407) and Subpart B.
ANSI C63.4 : 1992**

All tests 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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC APPROVED
2	PERSONAL COMPUTER	HP	Brio BA410	SG12902766	FCC DoC APPROVED
3	MODEM	ACEEX	1414	980020503	IFAXDM1414
4	NOTEBOOK	Dell	PP01L	TW-09C748-12800-190-B220	FCC DoC APPROVED
5	USB MOUSE	Logitech	M-BB48	LZA00354277	FCC DoC APPROVED
6	FAST ETHERNET PC CARD	D-Link	DFE-680TXD	RE1A044413	MQ4FE2K5MX
7	COLOR MONITOR	ADI	CM100	026058T102006 11 A	FCC DoC APPROVED
8	PS/2 KEYBOARD	BTC	5121W	A00801156	E5XKB5121WTH0

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
2	NA
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
4	NA
5	NA
6	NA
7	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core
8	1.6 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.

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

4 TEST TYPES AND RESULTS (FOR PART 802.11b)

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
ROHDE & SCHWARZ Test Receiver	ESCS30	847793/022	Mar. 12, 2003
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH2-Z5	828075/003	July 23, 2003
ROHDE & SCHWARZ 200-A Four-line V-Network	ENV4200	830326/018	Oct. 30, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	90031627	July 23, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C05.01	July 19, 2003
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-305	Feb. 23, 2004
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-306	Feb. 23, 2004

- 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. “*”: These equipment are used for conducted telecom port test only (if tested).
 3. The test was performed in ADT Shielded Room No. 5.
 4. The VCCI Site Registration No. is C-1093.



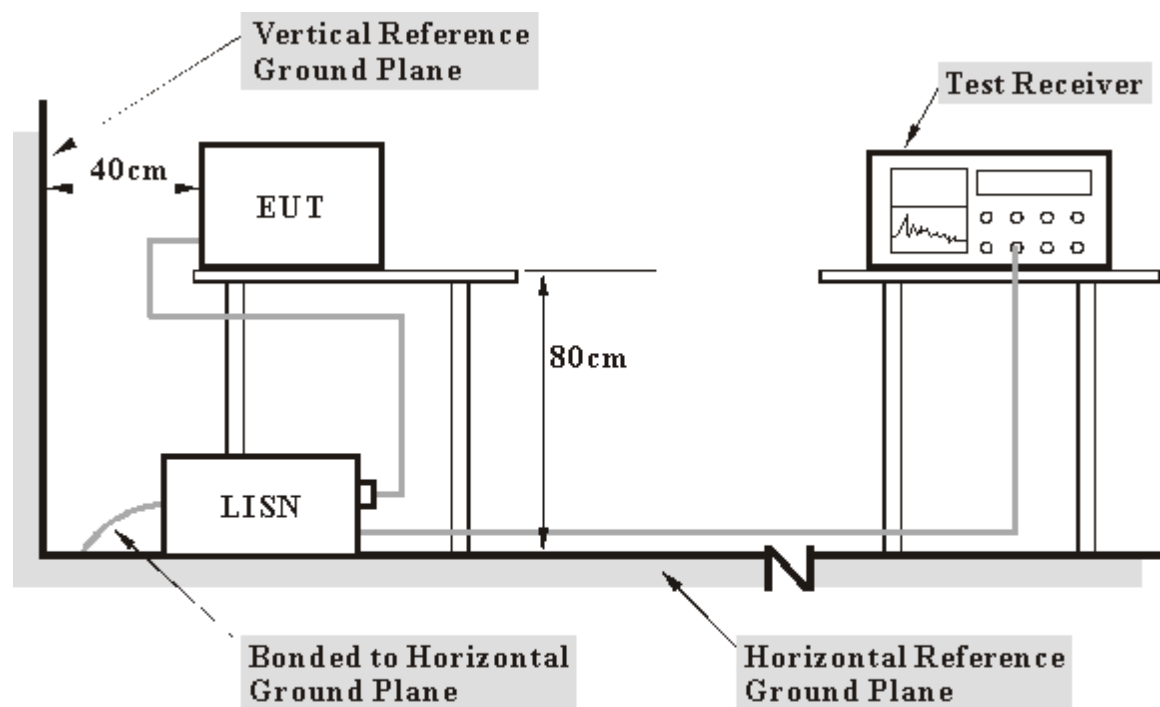
4.1.3 TEST PROCEDURES

- 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 over 10dB under the prescribed limits could not be reported

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. Placed the EUT (with a computer system) on the testing table.
- b. The computer system sent data to EUT by command "PIN" via an RJ 45 cable.
- c. The computer system sent "H" messages to Color Monitor and Monitor displayed "H" patterns on its screen.
- d. The computer system sent "H" messages to modem.
- e. The computer system sent "H" messages to printer, and the printer prints them on paper.
- f. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- g. The communication partner run a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ 45 cable.
- h. The communication partner sent data to EUT by command "PIN".

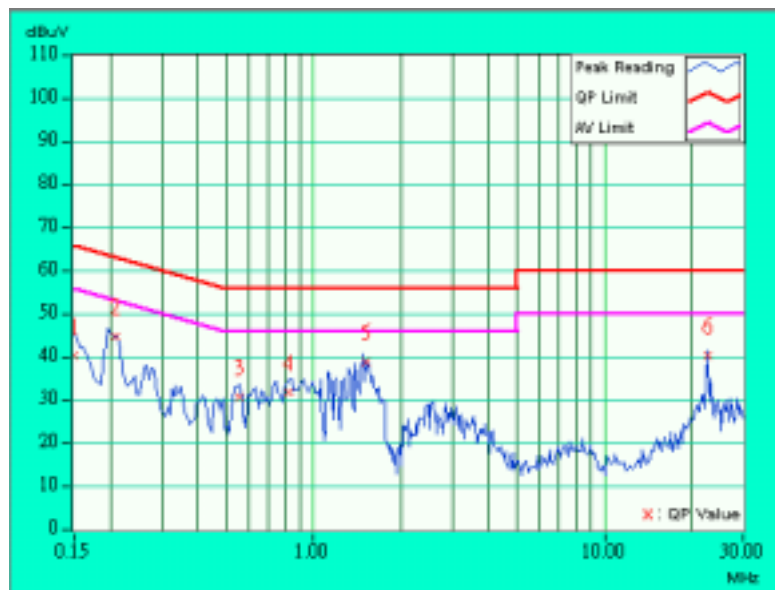
4.1.7 TEST RESULTS

EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	39.24	-	39.34	-	66.00	56.00	-26.66	-
2	0.208	0.10	43.79	-	43.89	-	63.27	53.27	-19.38	-
3	0.556	0.13	29.73	-	29.86	-	56.00	46.00	-26.14	-
4	0.826	0.17	30.88	-	31.05	-	56.00	46.00	-24.95	-
5	1.520	0.20	37.68	-	37.88	-	56.00	46.00	-18.12	-
6	22.568	1.15	39.20	-	40.35	-	60.00	50.00	-19.65	-

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

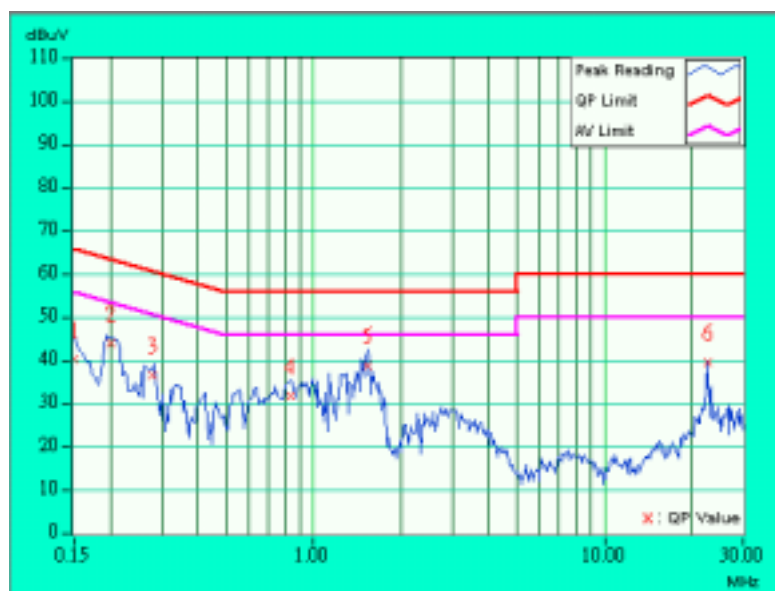


EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	39.76	-	39.86	-	66.00	56.00	-26.14	-
2	0.201	0.10	43.45	-	43.55	-	63.58	53.58	-20.03	-
3	0.279	0.10	35.85	-	35.95	-	60.85	50.85	-24.90	-
4	0.834	0.17	31.19	-	31.36	-	56.00	46.00	-24.64	-
5	1.527	0.20	38.30	-	38.50	-	56.00	46.00	-17.50	-
6	22.570	0.75	39.04	-	39.79	-	60.00	50.00	-20.21	-

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.
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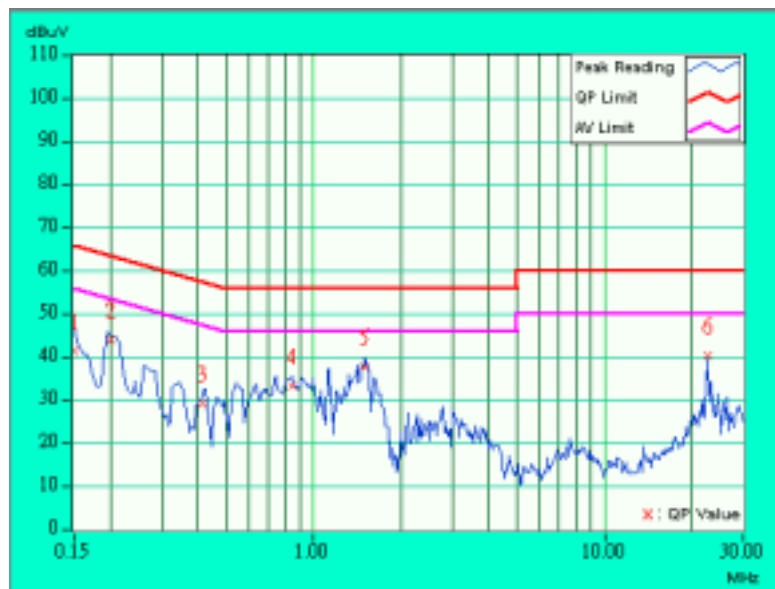


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MODE	Channel 6	6dB BANDWIDTH	9 kHz
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ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	40.34	-	40.44	-	66.00	56.00	-25.56	-
2	0.201	0.10	43.05	-	43.15	-	63.58	53.58	-20.43	-
3	0.416	0.10	28.05	-	28.15	-	57.54	47.54	-29.38	-
4	0.841	0.17	32.33	-	32.50	-	56.00	46.00	-23.50	-
5	1.488	0.20	36.58	-	36.78	-	56.00	46.00	-19.22	-
6	22.570	1.15	39.36	-	40.51	-	60.00	50.00	-19.49	-

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.
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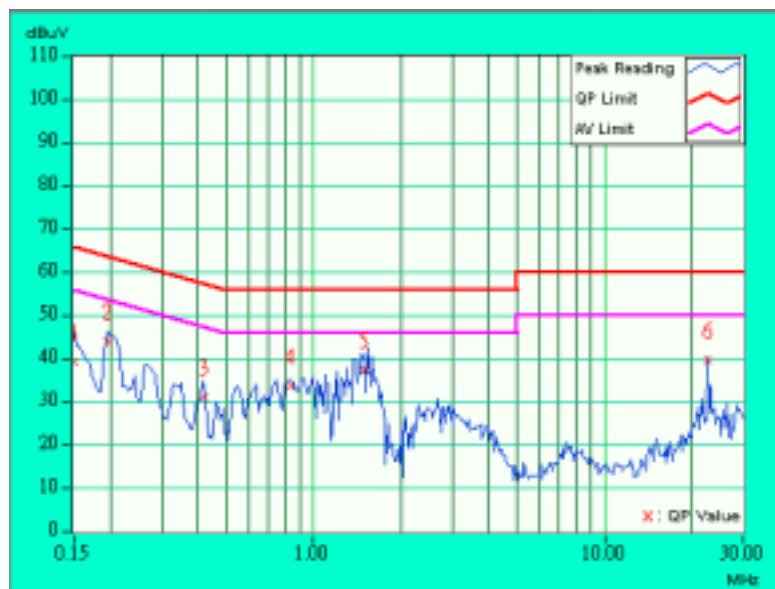


EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	38.45	-	38.55	-	66.00	56.00	-27.45	-
2	0.197	0.10	43.31	-	43.41	-	63.74	53.74	-20.33	-
3	0.420	0.10	30.34	-	30.44	-	57.46	47.46	-27.01	-
4	0.838	0.17	32.83	-	33.00	-	56.00	46.00	-23.00	-
5	1.488	0.20	36.84	-	37.04	-	56.00	46.00	-18.96	-
6	22.570	0.75	39.02	-	39.77	-	60.00	50.00	-20.23	-

Remarks:

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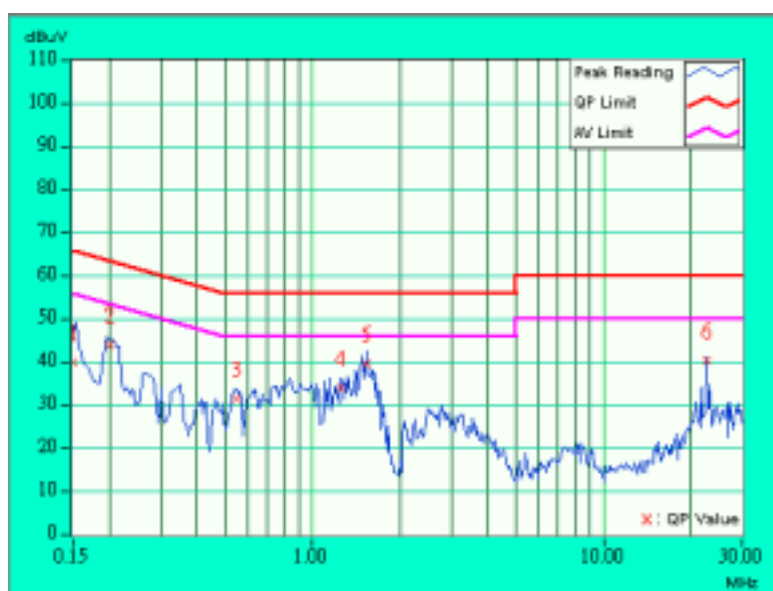


EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq. (MHz)	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	38.98	-	39.08	-	66.00	56.00	-26.92	-
2	0.201	0.10	43.01	-	43.11	-	63.58	53.58	-20.47	-
3	0.548	0.12	30.42	-	30.54	-	56.00	46.00	-25.46	-
4	1.246	0.20	32.90	-	33.10	-	56.00	46.00	-22.90	-
5	1.531	0.20	38.47	-	38.67	-	56.00	46.00	-17.33	-
6	22.570	1.15	39.39	-	40.54	-	60.00	50.00	-19.46	-

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

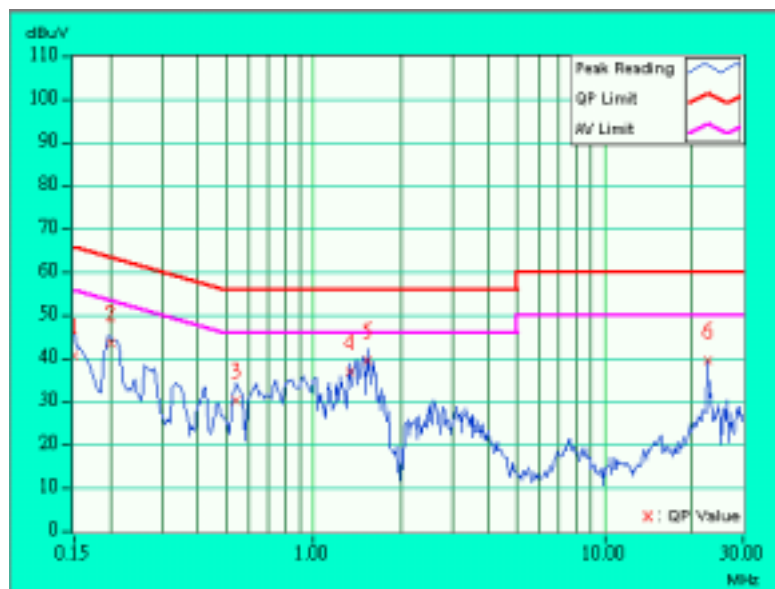


EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	21deg. C, 65%RH, 1005 hPa	TESTED BY: Cody Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	QP.	AV.	QP.	AV.	QP.	AV.	QP.	AV.
1	0.150	0.10	40.04	-	40.14	-	66.00	56.00	-25.86	-
2	0.201	0.10	42.95	-	43.05	-	63.58	53.58	-20.53	-
3	0.541	0.12	29.68	-	29.80	-	56.00	46.00	-26.20	-
4	1.332	0.20	36.23	-	36.43	-	56.00	46.00	-19.57	-
5	1.539	0.20	38.93	-	39.13	-	56.00	46.00	-16.87	-
6	22.570	0.75	38.92	-	39.67	-	60.00	50.00	-20.33	-

Remarks:

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





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
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Apr. 29, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
*Spectrum Analyzer	8593E	3926A04191	Mar. 28, 2003
*Test Receiver	ESI7	838496/016	Feb. 23, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 02, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 03, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 09, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	ADT_Radiated _V5.09	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jul. 11. 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 2003

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. "*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 5.
5. The VCCI Site Registration No. is R-1039.



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

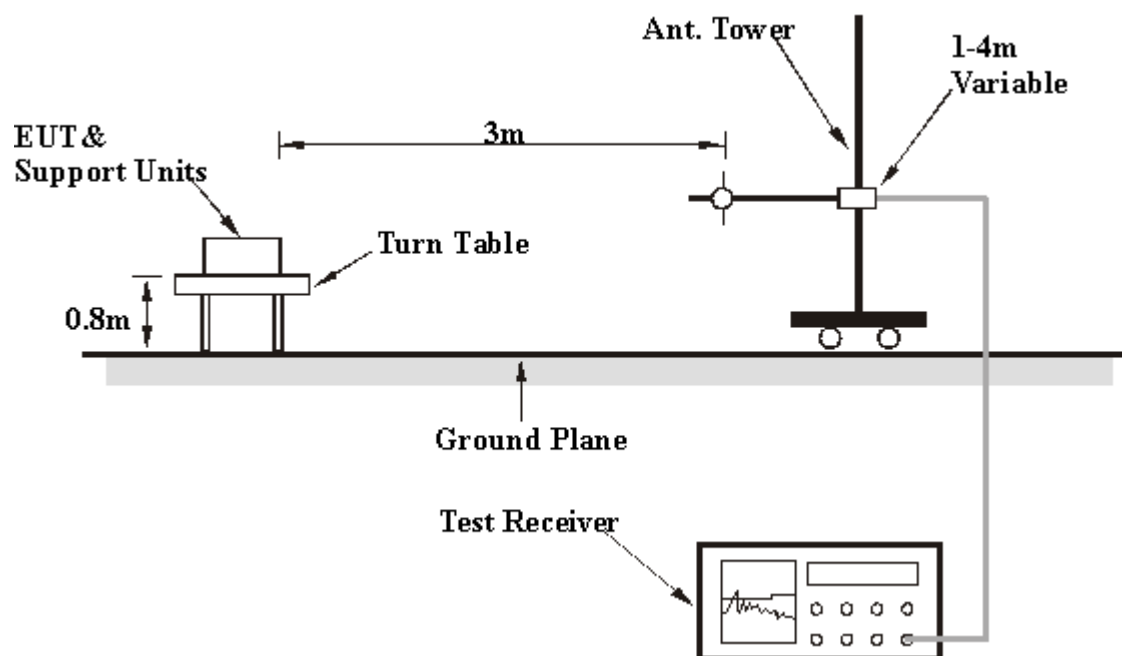
NOTE:

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 300 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	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20eg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	85.59	29.2 QP	40.00	-10.80	1.34 H	96	20.30	8.90
2	125.02	32.2 QP	43.50	-11.30	1.50 H	48	19.00	13.20
3	200.03	32.4 QP	43.50	-11.10	1.03 H	190	21.40	11.00
4	250.03	42.7 QP	46.00	-3.30	1.20 H	197	27.10	15.60
5	331.80	34.4 QP	46.00	-11.60	1.46 H	32	17.10	17.40
6	364.99	38.2 QP	46.00	-7.80	1.15 H	113	20.10	18.10
7	375.04	37.9 QP	46.00	-8.10	1.34 H	317	19.50	18.40
8	398.17	40.9 QP	46.00	-5.10	1.11 H	187	21.80	19.10
9	431.34	43.6 QP	46.00	-2.40	1.06 H	72	24.10	19.50
10	530.87	36.5 QP	46.00	-9.50	1.58 H	225	15.40	21.10
11	550.06	33.1 QP	46.00	-12.90	1.13 H	208	12.00	21.10
12	564.06	40.9 QP	46.00	-5.10	1.63 H	2	19.40	21.50
13	597.24	39.5 QP	46.00	-6.50	1.51 H	85	16.90	22.60
14	630.44	32.7 QP	46.00	-13.30	1.17 H	260	9.90	22.80
15	796.40	43.5 QP	46.00	-2.50	1.12 H	33	18.70	24.80
16	875.07	39.3 QP	46.00	-6.70	1.03 H	276	14.20	25.20
17	995.41	39.8 QP	54.00	-14.20	1.68 H	342	14.60	25.20

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 11	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20eg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

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	65.65	34.0 QP	40.00	-6.00	1.52 V	75	27.10	6.90
2	83.23	34.2 QP	40.00	-5.80	1.42 V	60	25.70	8.50
3	125.02	37.0 QP	43.50	-6.50	1.32 V	45	23.80	13.20
4	150.01	32.8 QP	43.50	-10.70	1.15 V	180	21.30	11.50
5	165.96	40.8 QP	43.50	-2.70	1.08 V	162	30.10	10.80
6	200.00	34.6 QP	43.50	-8.90	1.22 V	284	23.60	11.00
7	240.00	31.8 QP	46.00	-14.20	1.16 V	39	17.20	14.70
8	250.03	38.5 QP	46.00	-7.50	1.38 V	3	22.90	15.60
9	364.96	34.5 QP	46.00	-11.50	1.49 V	121	16.40	18.10
10	398.20	35.8 QP	46.00	-10.20	1.35 V	27	16.80	19.10
11	456.83	37.9 QP	46.00	-8.10	1.36 V	251	17.90	20.00
12	497.73	42.7 QP	46.00	-3.30	1.28 V	155	21.60	21.10
13	524.50	35.3 QP	46.00	-10.70	1.10 V	165	14.20	21.10
14	564.09	34.9 QP	46.00	-11.10	1.04 V	61	13.40	21.50
15	600.07	34.4 QP	46.00	-11.60	1.27 V	3	11.70	22.70
16	630.44	35.4 QP	46.00	-10.60	1.06 V	117	12.60	22.80
17	663.60	36.3 QP	46.00	-9.70	1.00 V	359	13.40	22.90
18	796.35	42.4 QP	46.00	-3.60	1.57 V	117	17.50	24.80
19	895.80	43.2 QP	46.00	-2.80	1.20 V	3	18.00	25.20
20	995.42	44.0 QP	54.00	-10.00	1.60 V	25	18.70	25.20

- NOTE:**
- 1 Emission level = Raw Value - Correction Factor
 - 2 Correction Factor = External Preamplifier Gain - Ant. Factor - Cable loss
(External Preamplifier Gain = 0, when the test receiver is used for the test.)
 - 3 The other emission levels were very low against the limit.
 - 4 Margin value = Emission level - Limit value



EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20eg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	51.7 PK	74.00	-22.30	1.01 H	355	19.80	31.90
1	2038.00	50.7 AV	54.00	-3.30	1.01 H	355	18.80	31.90
2	*2412.00	108.6 PK			1.11 H	244	75.90	32.80
2	*2412.00	99.0 AV			1.11 H	244	66.30	32.80
3	4076.00	44.5 PK	74.00	-29.50	1.45 H	320	9.30	35.20
4	4824.00	44.2 PK	74.00	-29.80	1.21 H	66	7.20	36.90
5	6113.00	47.3 PK	74.00	-26.70	1.52 H	74	8.80	38.50

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	50.7 PK	74.00	-23.30	1.00 V	249	18.70	31.90
2	*2412.00	105.4 PK			1.00 V	254	72.70	32.80
2	*2412.00	97.1 AV			1.00 V	254	64.30	32.80
3	4076.00	44.0 PK	74.00	-30.00	1.22 V	282	8.80	35.20
4	4824.00	50.5 PK	74.00	-23.50	1.47 V	54	13.50	36.90
4	4824.00	41.2 AV	54.00	-12.80	1.47 V	54	4.20	35.20
5	6113.00	46.2 PK	74.00	-27.80	1.25 V	74	7.70	38.50
6	7238.00	51.1 PK	74.00	-22.90	1.39 V	12	9.60	41.40
6	7238.00	41.4 AV	54.00	-12.60	1.39 V	12	-0.10	36.90
7	9648.00	53.4 PK	74.00	-20.60	1.20 V	174	10.00	43.40
7	9648.00	45.0 AV	54.00	-9.00	1.20 V	174	1.60	38.50

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20eg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2063.00	49.9 PK	74.00	-24.10	1.12 H	54	17.90	32.00
2	*2437.00	108.7 PK			1.00 H	283	75.90	32.80
2	*2437.00	98.7 AV			1.00 H	283	65.90	32.00
3	4126.00	42.8 PK	74.00	-31.20	1.39 H	251	7.50	35.30
4	4874.00	52.0 PK	74.00	-22.00	1.37 H	266	14.80	37.10
4	4874.00	44.4 AV	54.00	-9.60	1.37 H	266	7.20	32.80
5	6189.00	46.2 PK	74.00	-27.80	1.25 H	77	7.50	38.70
6	7312.00	51.0 PK	74.00	-23.00	1.22 H	54	9.40	41.60
6	7312.00	41.5 AV	54.00	-12.50	1.22 H	54	-0.10	35.30
7	9748.00	52.6 PK	74.00	-21.40	1.12 H	57	9.30	43.30
7	9748.00	45.9 AV	54.00	-8.10	1.12 H	57	2.60	37.10

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	2063.00	51.9 PK	74.00	-22.10	1.24 V	32	19.90	32.00
2	*2437.00	106.0 PK			1.00 V	24	73.20	32.80
2	*2437.00	95.5 AV			1.00 V	24	62.70	32.80
3	4126.00	44.6 PK	74.00	-29.40	1.52 V	84	9.30	35.30
4	4874.00	51.4 PK	74.00	-22.60	1.38 V	104	14.20	37.10
4	4874.00	42.4 AV	54.00	-11.60	1.38 V	104	5.20	35.30
5	6188.00	47.3 PK	74.00	-26.70	1.11 V	54	8.70	38.70
6	7313.00	52.3 PK	74.00	-21.70	1.37 V	105	10.80	41.60
6	7313.00	43.5 AV	54.00	-10.50	1.37 V	105	1.90	37.10
7	9746.00	52.4 PK	74.00	-21.60	1.16 V	51	9.10	43.30
7	9746.00	44.9 AV	54.00	-9.10	1.16 V	51	1.60	38.70

- NOTE:**
1. Emission level = Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20eg. C, 60%RH, 1005 hPa	TESTED BY: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2088.00	50.9 PK	74.00	-23.10	1.12 H	54	18.90	32.00
2	*2463.00	105.9 PK			1.27 H	2	73.00	32.90
2	*2463.00	96.0 AV			1.27 H	2	63.10	32.90
3	4176.00	43.2 PK	74.00	-30.80	1.34 H	12	7.90	35.30
4	4924.00	52.3 PK	74.00	-21.70	1.52 H	41	14.90	37.30
4	4924.00	42.6 AV	54.00	-11.40	1.52 H	41	5.20	35.30
5	6264.00	47.5 PK	74.00	-26.50	1.26 H	41	8.60	38.90
6	7387.00	51.3 PK	74.00	-22.70	1.35 H	110	9.70	41.70
6	7387.00	42.5 AV	54.00	-11.50	1.35 H	110	0.90	37.30
7	9849.00	51.8 PK	74.00	-22.20	1.14 H	32	8.60	43.20
7	9849.00	44.6 AV	54.00	-9.40	1.14 H	32	1.40	38.90

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	2088.00	51.9 PK	74.00	-22.10	1.12 V	57	19.90	32.00
2	*2463.00	104.9 PK			1.21 V	325	72.10	32.90
2	*2463.00	96.6 AV			1.21 V	325	63.70	32.90
3	4176.00	45.1 PK	74.00	-28.90	1.51 V	47	9.80	35.30
4	4924.00	52.2 PK	74.00	-21.80	1.10 V	74	14.80	37.30
4	4924.00	44.1 AV	54.00	-9.90	1.10 V	74	6.70	35.30
5	6263.00	47.0 PK	74.00	-27.00	1.17 V	25	8.10	38.90
6	7387.00	53.0 PK	74.00	-21.00	1.36 V	54	11.40	41.70
6	7387.00	41.5 AV	54.00	-12.50	1.36 V	54	-0.10	37.30

- NOTE:**
1. Emission level= Raw Value - Correction Factor
 2. Correction Factor = External Preamp. Gain - Ant. Factor - Cable loss
(External Preamp. Gain = 0, when the test receiver is used for the test.)
 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	FSEK30	100049	July 24, 2003

NOTE:

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

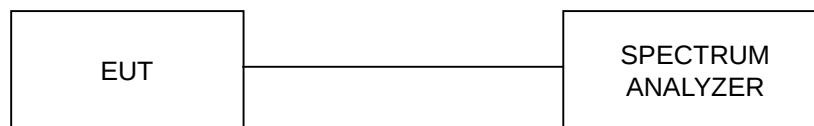
4.3.3 TEST PROCEDURE

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

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

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

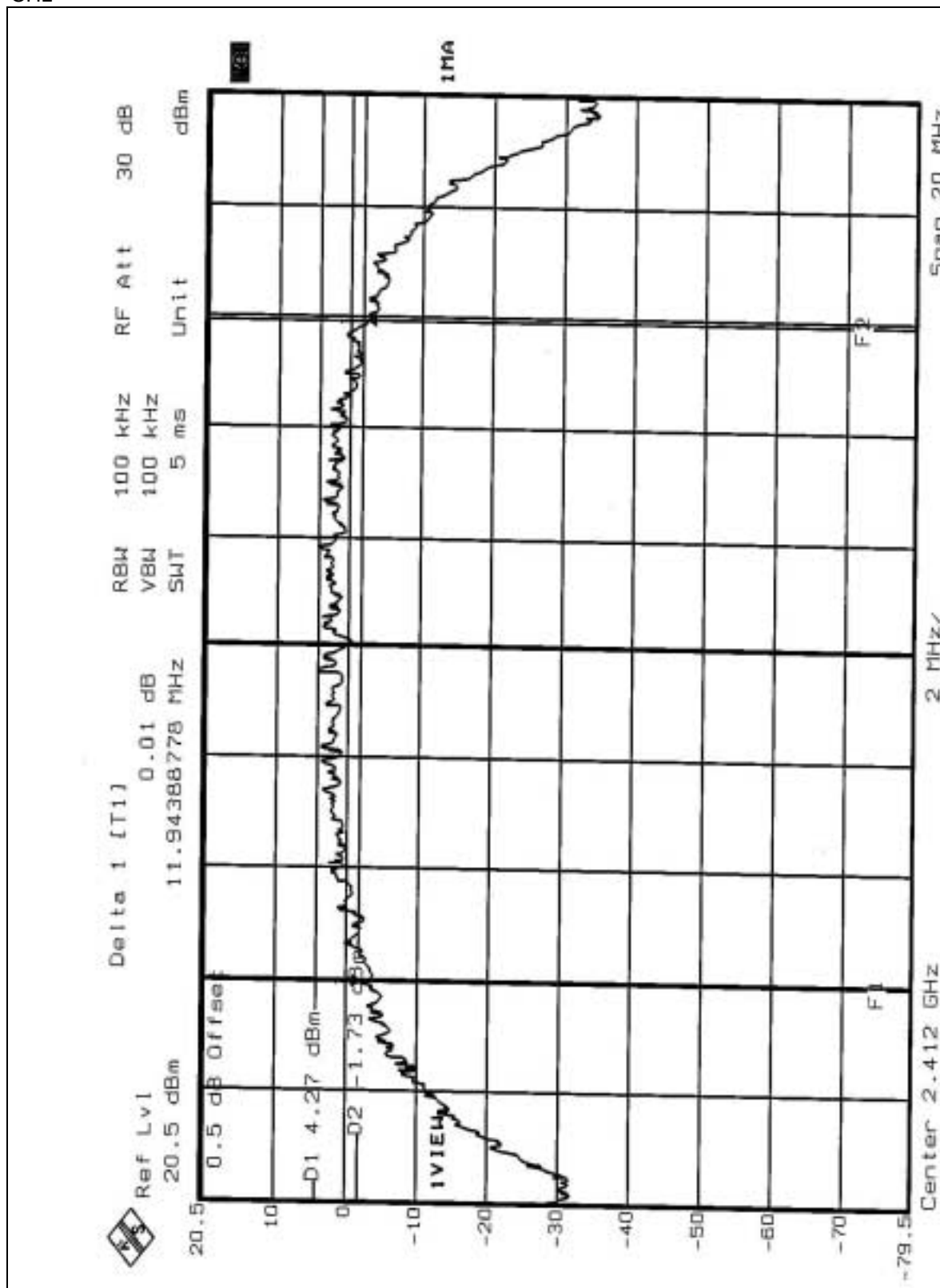


4.3.7 TEST RESULTS

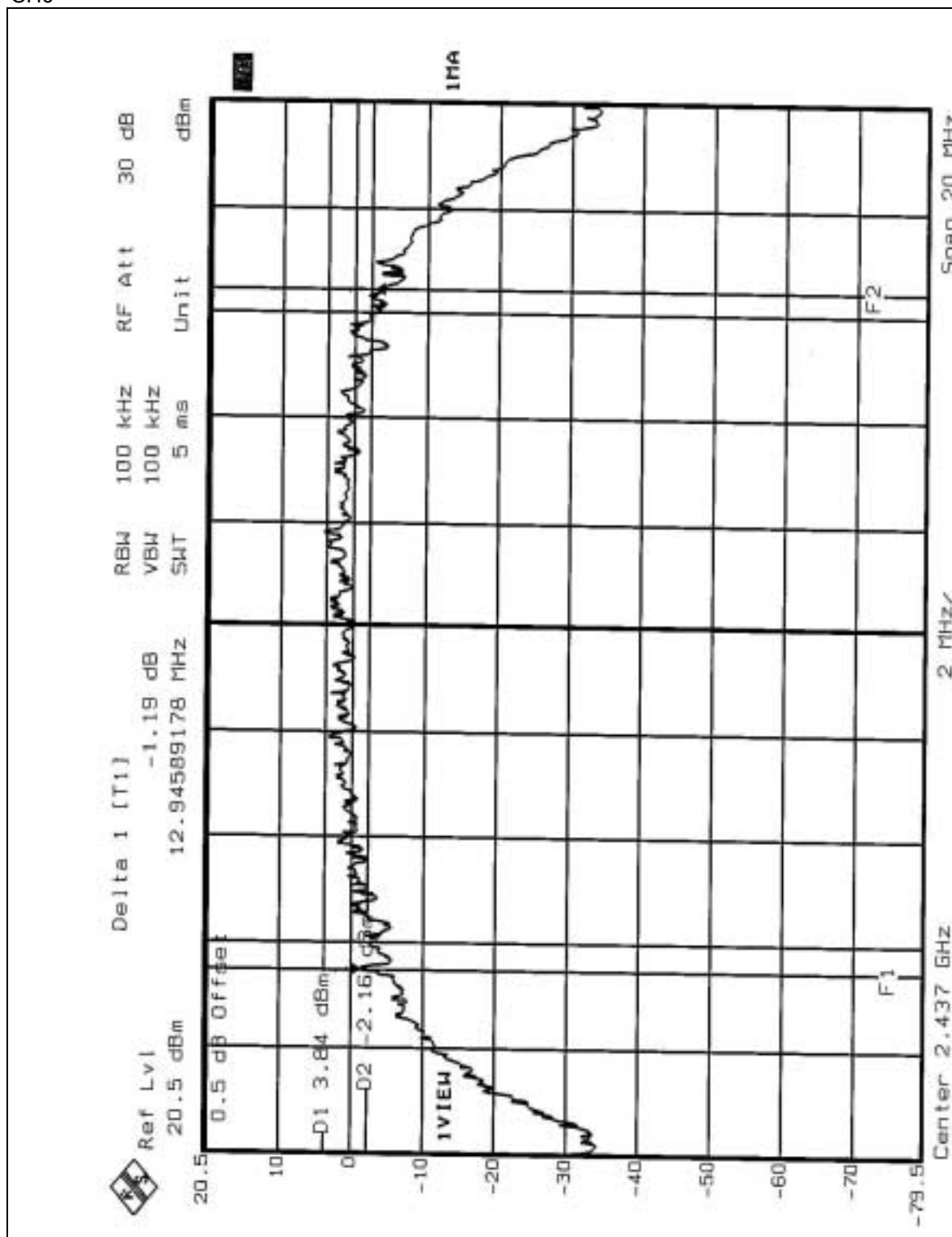
EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.94	0.5	PASS
6	2437	12.95	0.5	PASS
11	2462	11.58	0.5	PASS

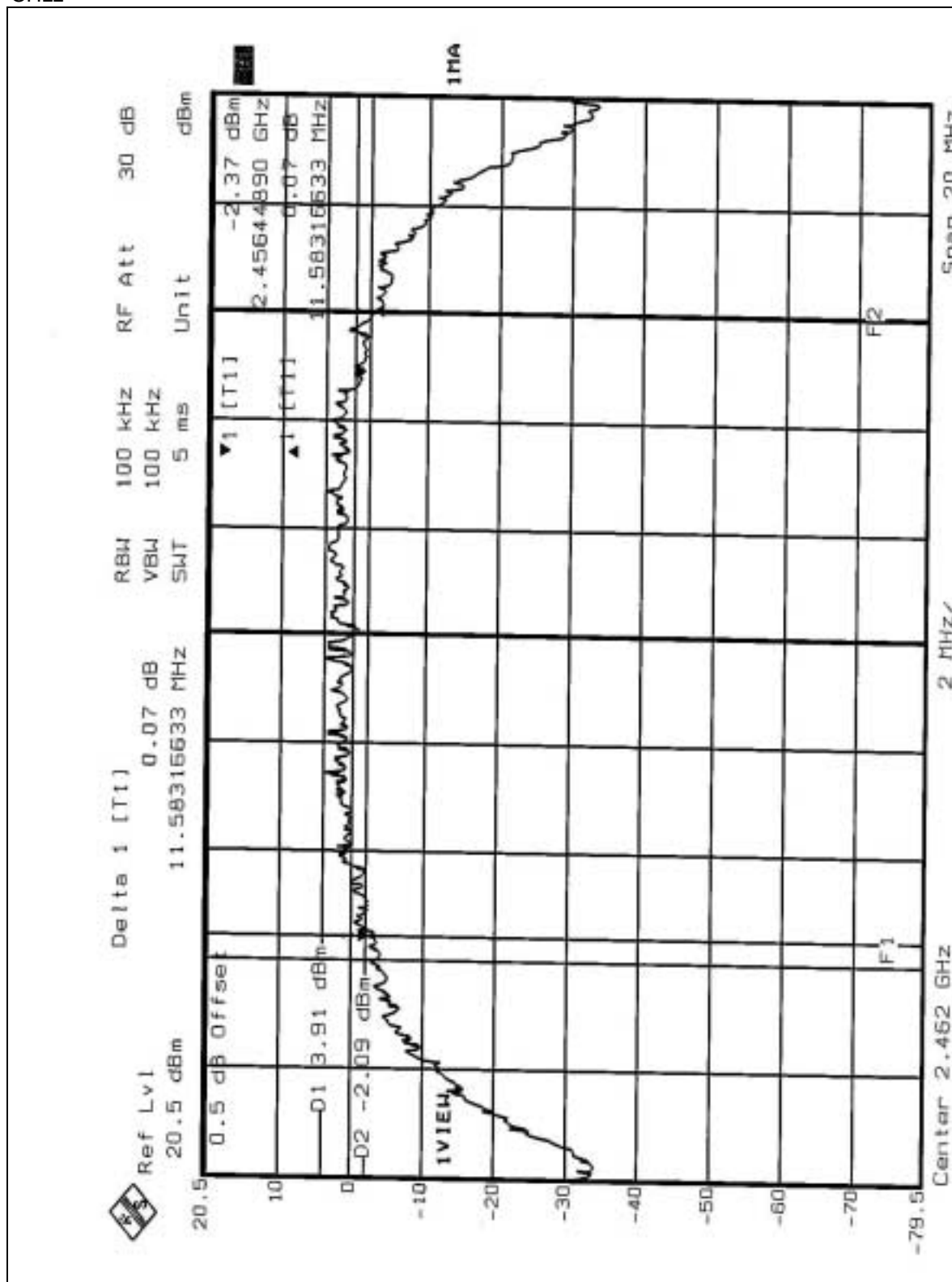
CH1



CH6



CH11





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
POWER METER	E4416A	GB41291118	Jul. 30, 2003
PEAK POWER SENSOR	E9327A	US40440722	Jul. 30, 2003

NOTE:

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

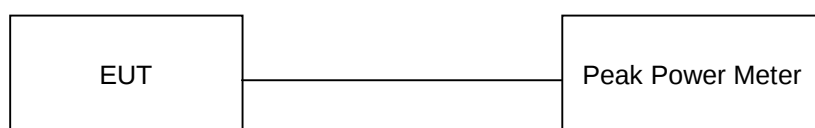
4.4.3 TEST PROCEDURES

The transmitter output was connected to the peak power meter.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



4.4.7 TEST RESULTS

EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	17.74	30	PASS
6	2437	17.45	30	PASS
11	2462	17.72	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	July 23, 2003

NOTE:

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

4.5.3 TEST PROCEDURE

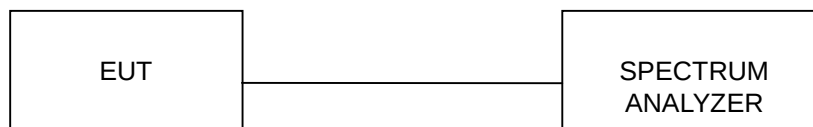
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 30 kHz VBW, set sweep time = span/3 kHz. The power spectral density was measured and recorded.

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

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

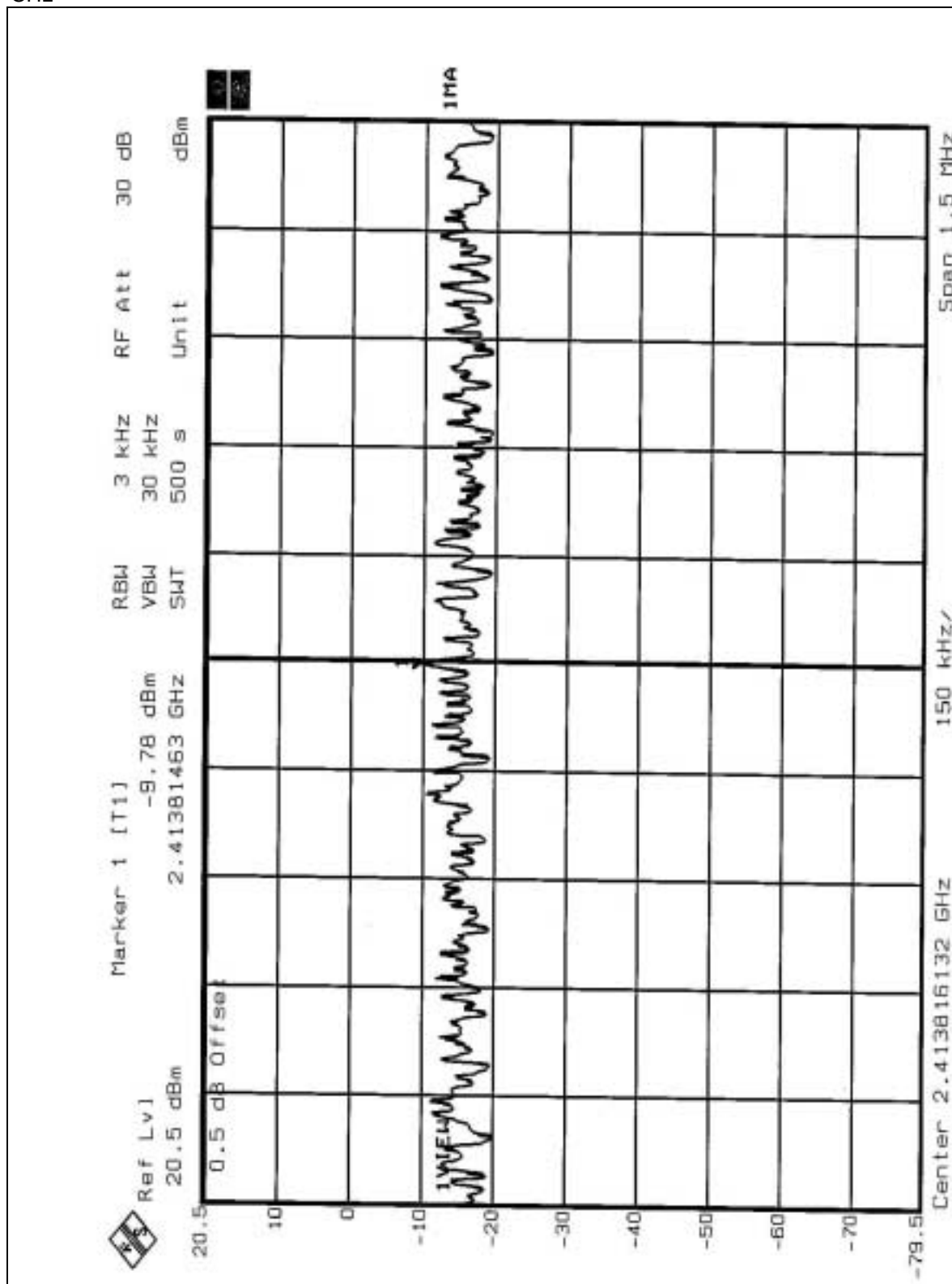


4.5.7 TEST RESULTS

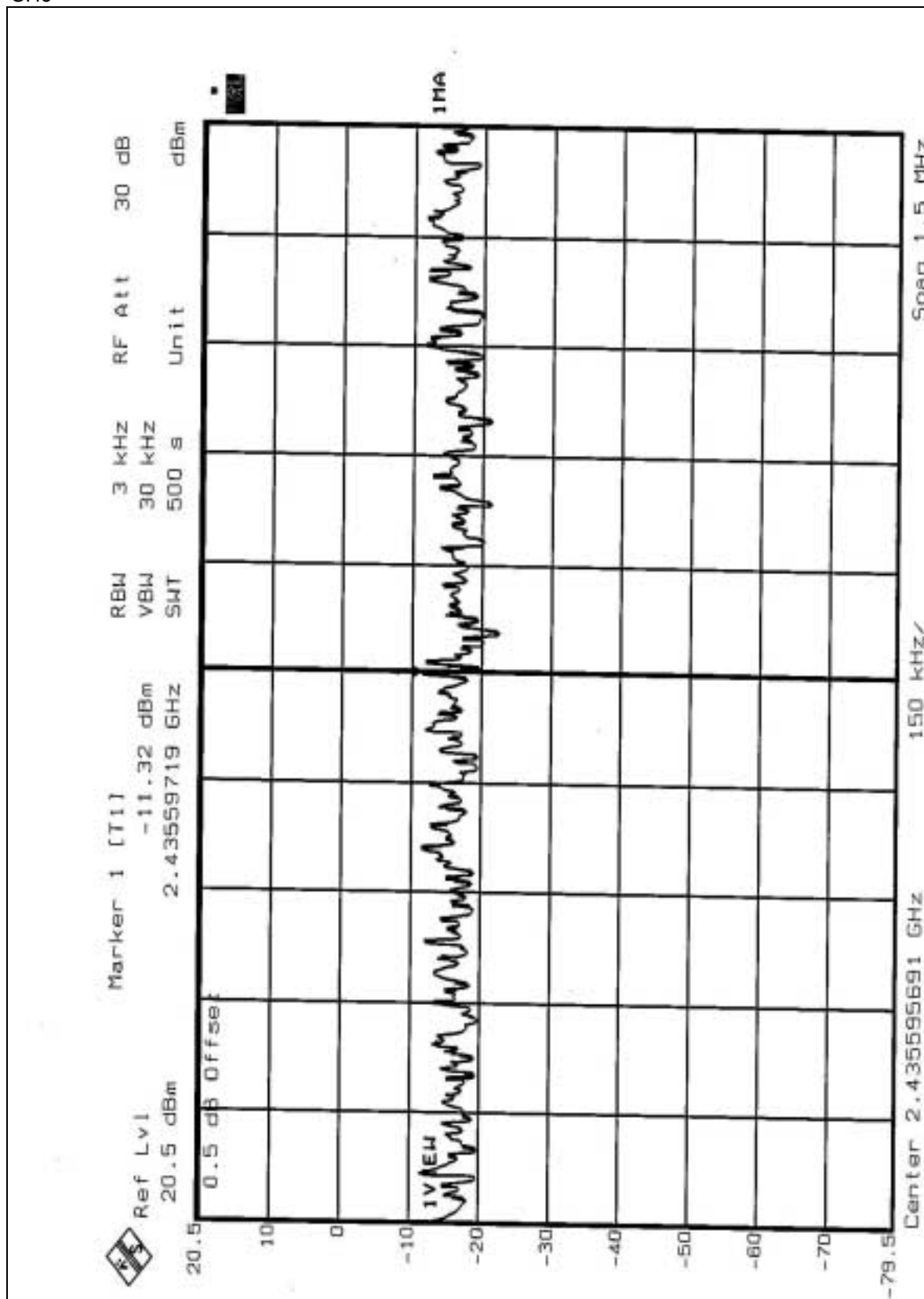
EUT	Multimode 2.4/5GHz Wireless Router	MODEL	DI-764
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	22deg. C, 66%RH 1005 hPa
TESTED BY: Ansen Lei			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-9.78	8	PASS
6	2437	-11.32	8	PASS
11	2462	-8.70	8	PASS

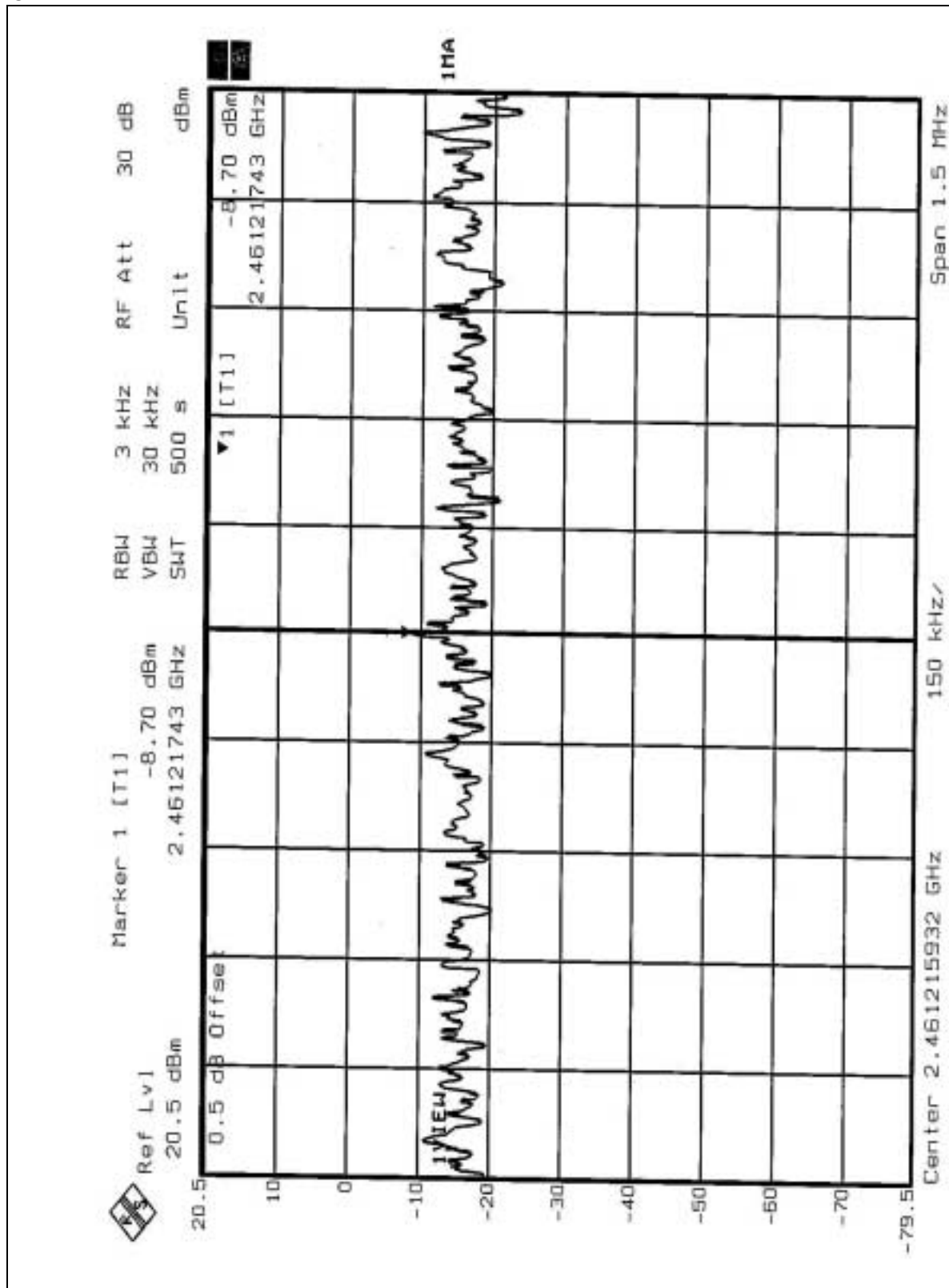
CH1



CH6



CH11





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	July 24, 2003

NOTE:

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

4.6.3 TEST PROCEDURE

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

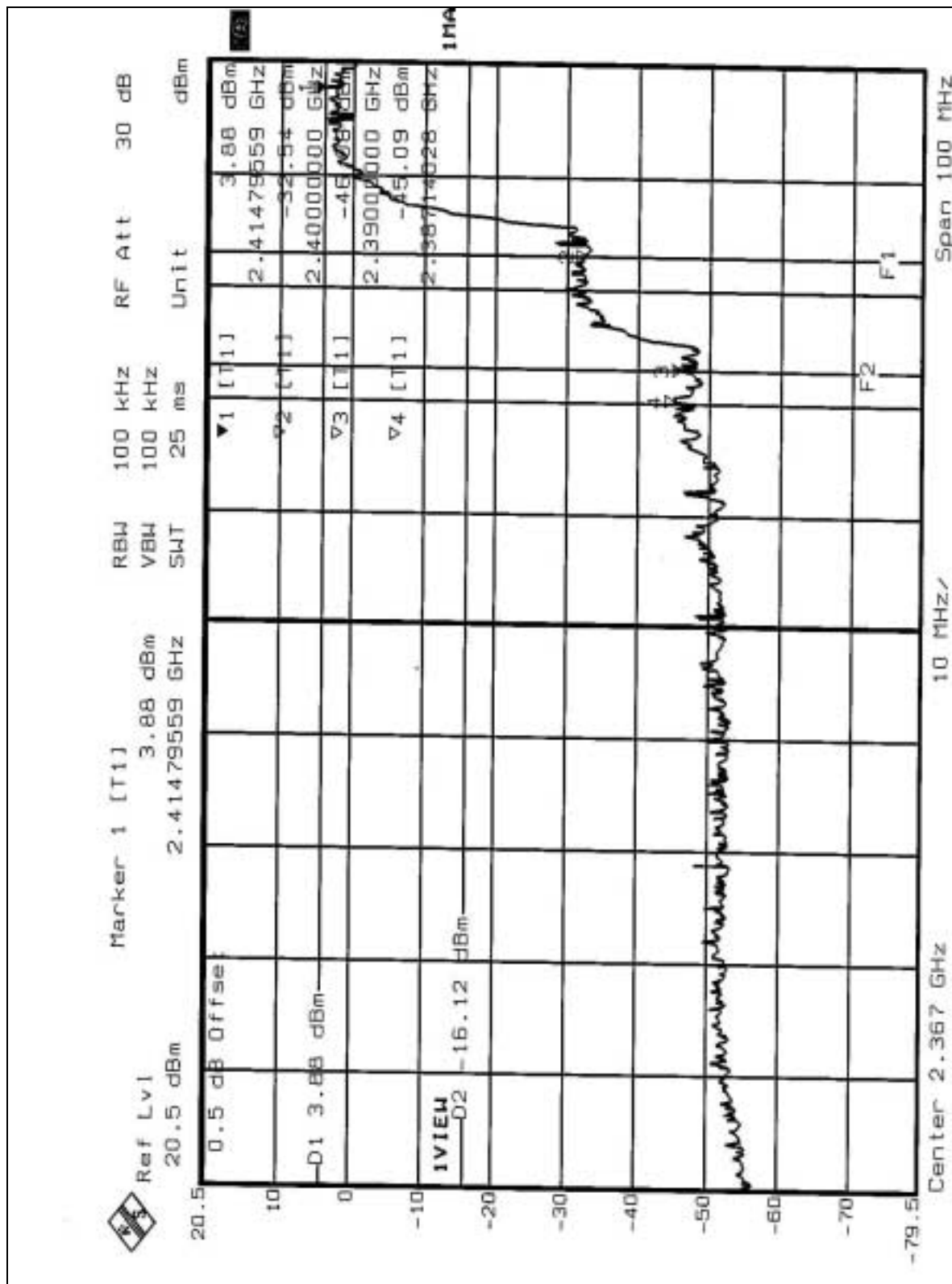
Same as Item 4.3.6

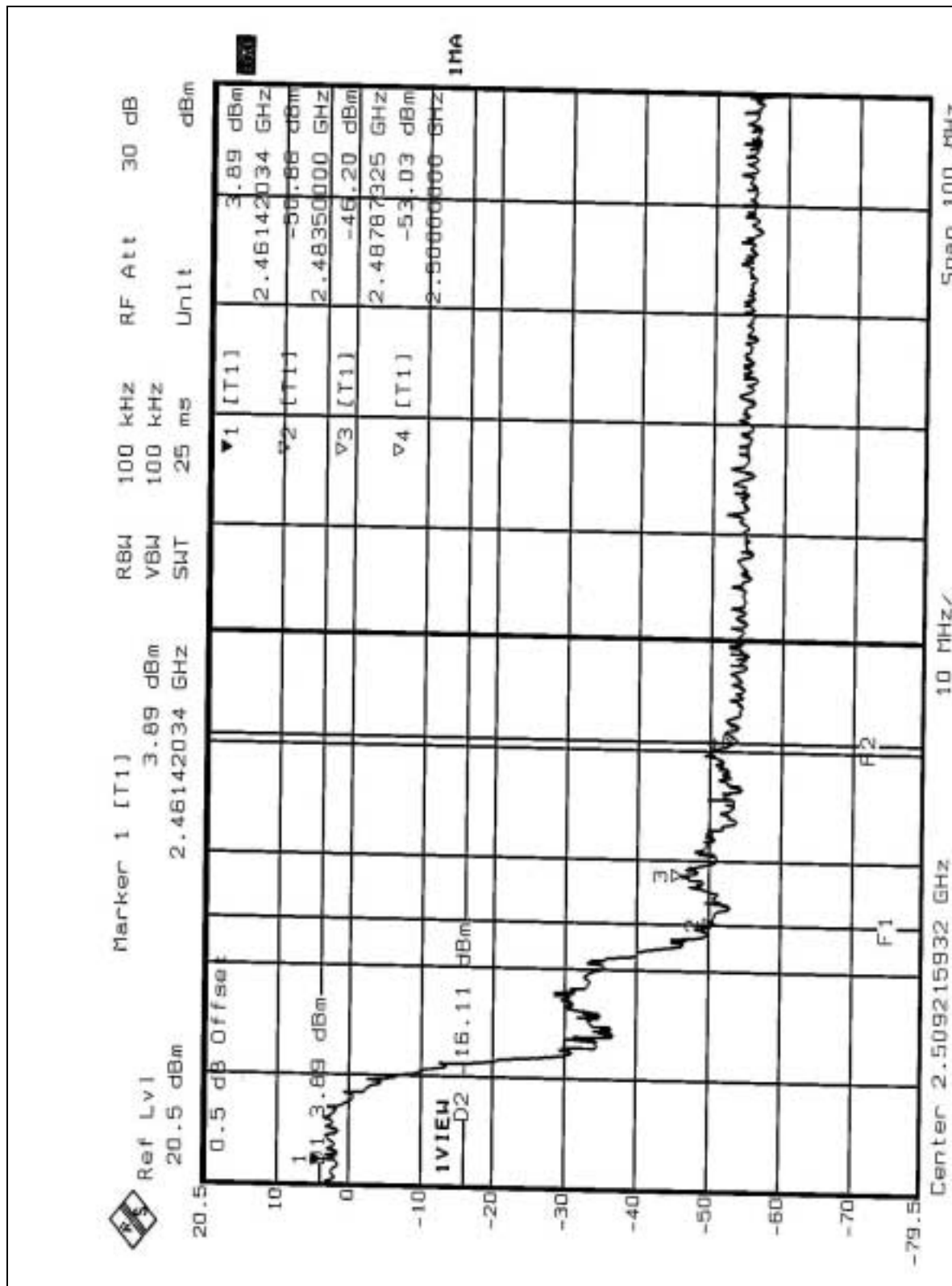
4.6.6 TEST RESULTS

The spectrum plots are attached on the following 2 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 first page shows 48.97dB delta between carrier maximum power and local maximum emission in restrict band (2.3871GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.0dBuV/m, so the maximum field strength in restrict band is $99.0 - 48.97 = 50.03$ dBuV/m which is under 54 dBuV/m limit.

NOTE: The band edge emission plot on the second page shows 50.09dB delta between carrier maximum power and local maximum emission in restrict band (2.4879GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 96.6dBuV/m, so the maximum field strength in restrict band is $96.6 - 50.09 = 46.51$ dBuV/m which is under 54 dBuV/m limit.







4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

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

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Dipole Antenna without connector. The maximum Gain of the antenna is 5dBi only.