



FCC TEST REPORT

REPORT NO.: RF900912R02

MODEL NO.: A2588

RECEIVED: Sept. 12, 2001

TESTED: Sept. 12 ~ Sept. 15, 2001

APPLICANT: EMTAC Technology Corp.

ADDRESS: 1F, No.60, Lane 91, Tong-Mei Road,
Hsinchu, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei,
Taiwan, R.O.C.

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0528



Lab Code: 200102-0



Table of Contents

1	CERTIFICATION	4
2	SUMMARY OF TEST RESULTS.....	5
3	GENERAL INFORMATION	6
3.1	GENERAL DESCRIPTION OF EUT.....	6
3.2	DESCRIPTION OF TEST MODES.....	7
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS.....	7
3.4	DESCRIPTION OF SUPPORT UNITS.....	8
4	TEST TYPES AND RESULTS.....	9
4.1	CONDUCTED EMISSION MEASUREMENT	9
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	9
4.1.2	TEST INSTRUMENTS.....	9
4.1.3	TEST PROCEDURES	10
4.1.4	TEST SETUP	10
4.1.5	EUT OPERATING CONDITIONS.....	11
4.1.6	TEST RESULTS	12
4.2	RADIATED EMISSION MEASUREMENT	18
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	18
4.2.2	TEST INSTRUMENTS.....	19
4.2.3	TEST PROCEDURES	20
4.2.4	TEST SETUP	21
4.2.5	EUT OPERATING CONDITIONS.....	21
4.2.6	TEST RESULTS	22
4.3	6DB BANDWIDTH MEASUREMENT	26
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT.....	26
4.3.2	TEST INSTRUMENTS.....	26
4.3.3	TEST PROCEDURE.....	27
4.3.4	TEST SETUP	27
4.3.5	EUT OPERATING CONDITIONS.....	27
4.3.6	TEST RESULTS	28
4.4	MAXIMUM PEAK OUTPUT POWER	32
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	32
4.4.2	INSTRUMENTS.....	32
4.4.3	TEST PROCEDURES	33
4.4.4	TEST SETUP	33
4.4.5	EUT OPERATING CONDITIONS.....	33
4.4.6	TEST RESULTS	34
4.5	POWER SPECTRAL DENSITY MEASUREMENT.....	35
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	35
4.5.2	TEST INSTRUMENTS.....	35
4.5.3	TEST PROCEDURE.....	36
4.5.4	TEST SETUP	36
4.5.5	EUT OPERATING CONDITION	36
4.5.6	TEST RESULTS	37
4.6	BAND EDGES MEASUREMENT	41



4.6.1	LIMITS OF BAND EDGES MEASUREMENT	41
4.6.2	TEST INSTRUMENTS.....	41
4.6.3	TEST PROCEDURE.....	41
4.6.4	EUT OPERATING CONDITION	42
4.6.5	TEST RESULTS	42
4.7	ANTENNA REQUIREMENT	45
4.7.1	STANDARD APPLICABLE.....	45
4.7.2	ANTENNA CONNECTED CONSTRUCTION	45
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	46
6	INFORMATION ON THE TESTING LABORATORIES	48



1 CERTIFICATION

PRODUCT : Wireless Access Point
BRAND NAME : EMTAC
MODEL NO. : A2588
APPLICANT : EMTAC Technology Corp.
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Sept. 12, 2001 to Sept. 15, 2001. 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.

TESTED BY : Gary Chang · DATE: Sept. 20, 2001
Gary Chang

CHECKED BY : Demi Chen · DATE: Sept. 20, 2001
Demi Chen

APPROVED BY : Alan Lane · DATE: Sept. 20, 2001
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
15.107	AC Power Conducted Emission Limit: 48dBuV	PASS	Meet the requirement of limit Minimum passing margin is -2.25dBuV at 1.562MHz
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 -2.60dBuV at 4125.6 MHz
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



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Access Point
MODEL NO.	A2588
POWER SUPPLY	6VDC from AC adapter
MODULATION TYPE	BPSK, QPSK, CCK
RADIO TECHNOLOGY	DSSS
TRANSFER RATE	1/2/5.5/11Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	16.2dBm
ANTENNA TYPE	Inverted-F antenna
POWER CABLE	NA
I/O PORTS	USB, RJ45 port
ASSOCIATED DEVICES	NA

NOTE:1. The EUT is operated with the following power adapter.

Model No. :	MKD-41061000
Input Power :	120VAC, 60Hz, 0.15A
Output Power :	6VDC, 1000mA

3. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.



3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided in 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.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless Access Point. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR 47 Part 15, Subpart C. (15.247)
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

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	IBM	ThinkPad 380XD	97-84I54	FCC DoC APPROVED
2	LAN CARD	3COM	3CCFE575CT-D	6ZE1316B4E	FCC DoC APPROVED

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	NA

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



4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.45 – 30	48	-

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class 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	834115/016	Feb. 21, 2002
*ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ESH2-Z5	892107/003	July 10, 2002
ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Dec. 12, 2001
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Dec. 3, 2001
*EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	July 10, 2002
*Software	Cond-V2J	NA	NA
*RF cable (JYEBAO)	RG-58A/U	Cable-C03.01	July 11, 2002
Terminator (For EMCO LISN)	NA	E1-01-300	Feb. 20, 2002
Terminator (For EMCO LISN)	NA	E1-01-301	Feb. 20, 2002
Shielded Room	Site 3	ADT-C03	NA
VCCI Site Registration No.	Site 3	C-274	NA

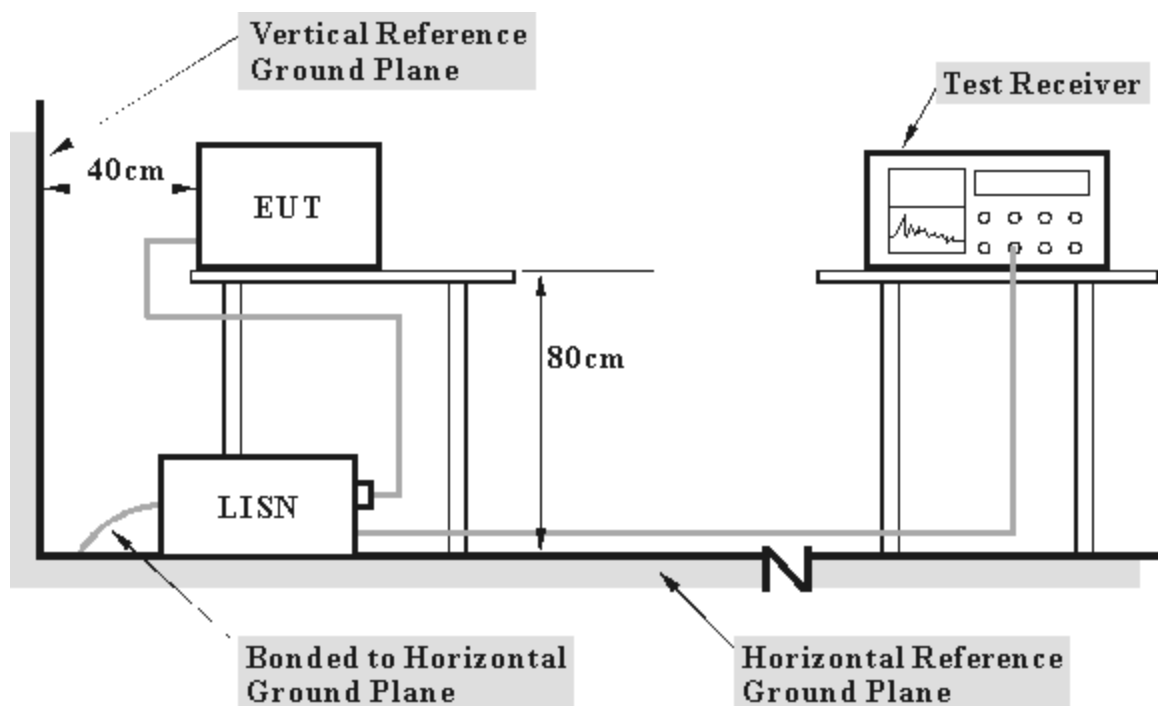
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. “*” = These equipments are used for the final measurement.

4.1.3 TEST PROCEDURES

- 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.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 450 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.4 TEST SETUP



- Note:**
- Support units were connected to second LISN.
 - 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.



4.1.5 EUT OPERATING CONDITIONS

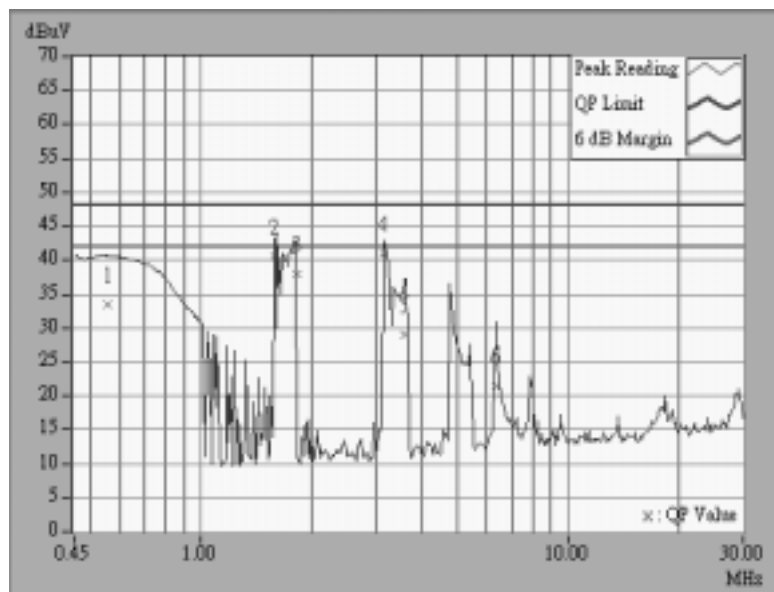
- a. Placed the EUT on the testing table.
- b. Prepared another computer system to act as a communication partner and placed it outside of testing area.
- c. The communication partner run a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency via an RJ 45 cable.
- d. The communication partner sent data to EUT by command "PIN".

4.1.6 TEST RESULTS

EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary 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	0.555	0.13	33.42	-	33.55	-	48.00	-	-14.45	-
2	1.591	0.20	40.60	-	40.80	-	48.00	-	-7.20	-
3	1.819	0.20	37.85	-	38.05	-	48.00	-	-9.95	-
4	3.137	0.26	41.02	-	41.28	-	48.00	-	-6.72	-
5	3.598	0.28	29.10	-	29.38	-	48.00	-	-18.62	-
6	6.332	0.34	21.41	-	21.75	-	48.00	-	-26.25	-

- Remarks:
1. "*" : Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-" : NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

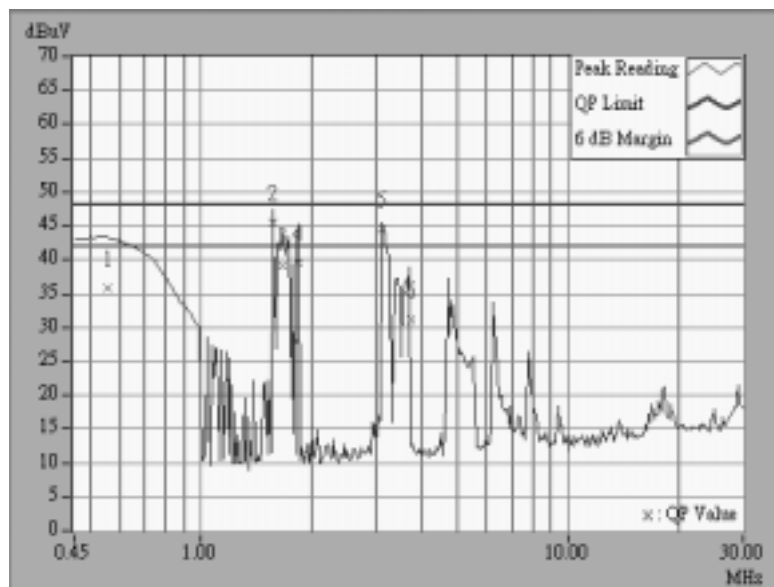




EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 1	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary Chang	

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	0.555	0.13	35.90	-	36.03	-	48.00	-	-11.97	-
2	1.562	0.20	45.55	-	45.75	-	48.00	-	-2.25	-
3	1.661	0.20	39.24	-	39.44	-	48.00	-	-8.56	-
4	1.836	0.20	39.55	-	39.75	-	48.00	-	-8.25	-
5	3.119	0.26	44.53	-	44.79	-	48.00	-	-3.21	-
6	3.712	0.29	31.13	-	31.42	-	48.00	-	-16.58	-

- Remarks:
1. "x": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

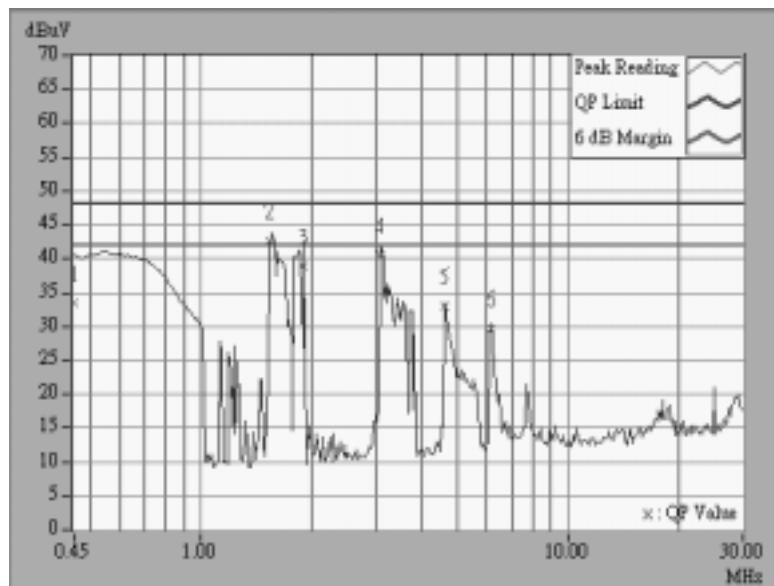




EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary Chang	

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	0.450	0.11	33.50	-	33.61	-	48.00	-	-14.39	-
2	1.539	0.20	42.77	-	42.97	-	48.00	-	-5.03	-
3	1.906	0.20	38.94	-	39.14	-	48.00	-	-8.86	-
4	3.080	0.25	40.64	-	40.89	-	48.00	-	-7.11	-
5	4.625	0.31	32.97	-	33.28	-	48.00	-	-14.72	-
6	6.160	0.34	29.79	-	30.13	-	48.00	-	-17.87	-

- Remarks:
1. "": Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-": NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

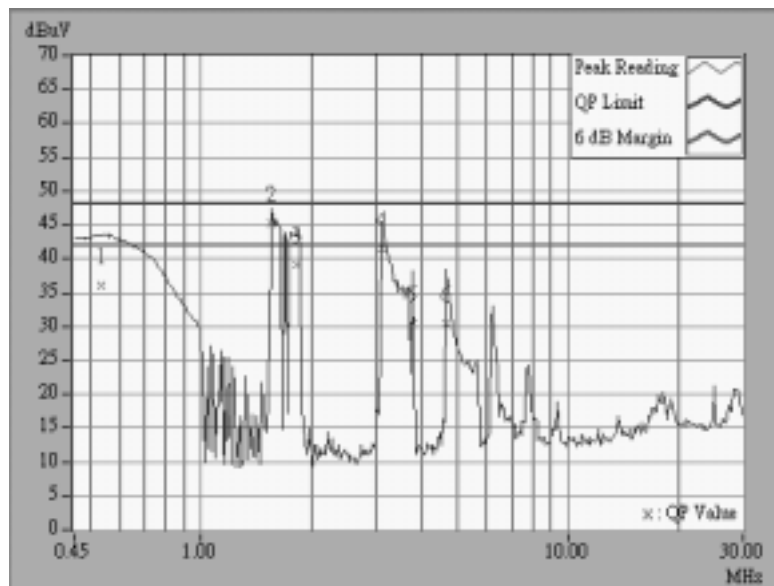




EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 6	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary Chang	

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	0.534	0.12	35.96	-	36.08	-	48.00	-	-11.92	-
2	1.551	0.20	45.32	-	45.52	-	48.00	-	-2.48	-
3	1.822	0.20	39.07	-	39.27	-	48.00	-	-8.73	-
4	3.099	0.25	41.51	-	41.76	-	48.00	-	-6.24	-
5	3.754	0.29	30.40	-	30.69	-	48.00	-	-17.31	-
6	4.664	0.31	30.32	-	30.63	-	48.00	-	-17.37	-

- Remarks:
1. "*" : Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-" : NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

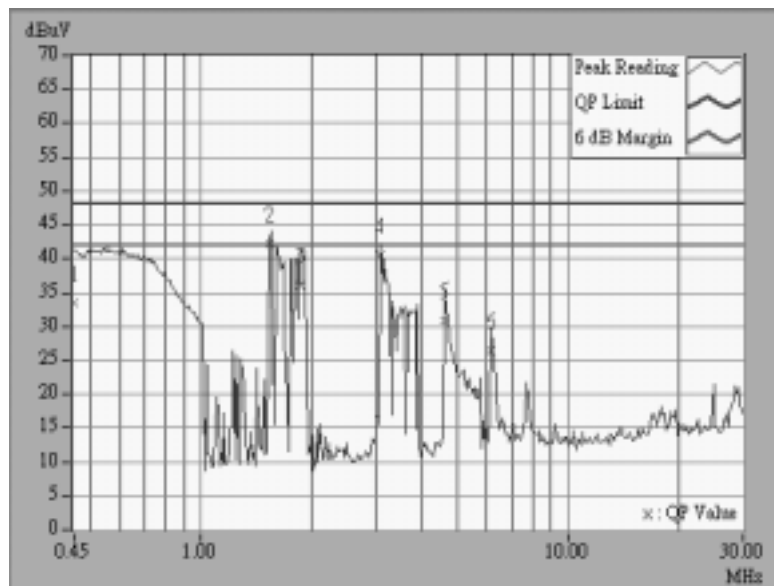




EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary Chang	

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	0.450	0.11	33.46	-	33.57	-	48.00	-	-14.43	-
2	1.541	0.20	42.12	-	42.32	-	48.00	-	-5.68	-
3	1.857	0.20	35.98	-	36.18	-	48.00	-	-11.82	-
4	3.071	0.25	40.50	-	40.75	-	48.00	-	-7.25	-
5	4.625	0.31	30.84	-	31.15	-	48.00	-	-16.85	-
6	6.160	0.34	26.37	-	26.71	-	48.00	-	-21.29	-

- Remarks:
1. "*" : Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-" : NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.

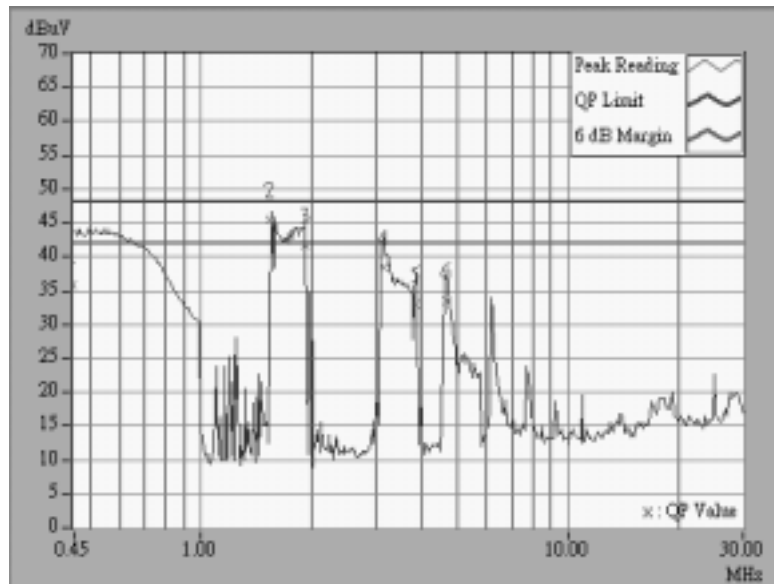




EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 11	6dB BANDWIDTH	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1005 hPa	TESTED BY: Gary Chang	

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	0.4500	0.11	35.91	-	36.02	-	48.00	-	-11.98	-
2	1.536	0.20	45.49	-	45.69	-	48.00	-	-2.31	-
3	1.921	0.20	41.80	-	42.00	-	48.00	-	-6.00	-
4	3.132	0.26	38.45	-	38.71	-	48.00	-	-9.29	-
5	3.848	0.29	33.04	-	33.33	-	48.00	-	-14.67	-
6	4.637	0.31	33.51	-	33.82	-	48.00	-	-14.18	-

- Remarks:
1. "*" : Undetectable
 2. QP. and AV. are abbreviations of quasi-peak and average individually.
 3. "-" : NA
 4. The emission levels of other frequencies were very low against the limit.
 5. Margin value = Emission level - Limit value
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field Strength of Fundamental	
	uV/m	dBuV/m
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

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 7, 2002
* HP Preamplifier	8447D	2944A08485	Nov. 3, 2001
* HP Preamplifier	8449B	3008A01201	Dec. 13, 2001
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 25, 2002
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2001
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 2, 2002
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July 6, 2002
* EMCO Horn Antenna	3115	9312-4192	April 15, 2002
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D4	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Aug. 2, 2002
* TIMES RF cable	LMR-600	CABLE-ST5-01	Aug. 2, 2002
* Antenna (Horn)	BBHA9120-D	D130	July 10, 2002
Open Field Test Site	Site 5	ADT-R05	July 28, 2002
VCCI Site Registration No.	Site 5	R-1039	NA
Site Registration No.	FCC: 90422 Canada IC: IC 3789 VCCI : R-1039		

NOTE: 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.

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

3. "*" = These equipments are used for the final measurement.



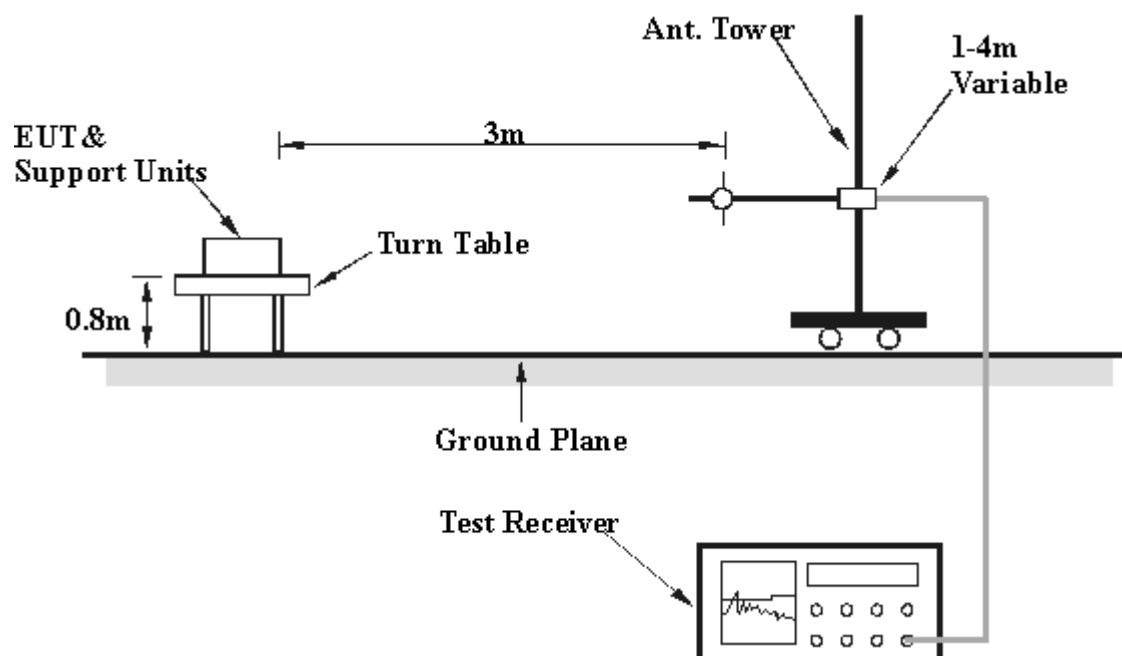
4.2.3 TEST PROCEDURES

- 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 TEST SETUP



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

4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.5.



4.2.6 TEST RESULTS

EUT	Wireless Access Point	MODEL	A2588
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	30deg. C, 70RH, 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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	125.01	31.8 QP	43.50	-11.70	2.50H	302	19.20	11.47	1.10	0.00	-12.57
2	132.40	29.5 QP	43.50	-14.00	1.12H	312	17.20	11.16	1.13	0.00	-12.29
3	150.44	29.6 QP	43.50	-13.90	2.23H	105	18.20	10.16	1.22	0.00	-11.38
4	200.10	34.5 QP	43.50	-9.00	1.63H	63	24.10	8.98	1.42	0.00	-10.40.
5	250.01	39.2 QP	46.00	-6.80	1.66H	36	25.50	12.02	1.66	0.00	-13.69
6	500.05	37.3 QP	46.00	-8.70	2.16H	300	17.50	17.26	2.50	0.00	-19.77
7	650.17	37.5 QP	46.00	-8.50	2.43H	61	15.20	19.23	3.02	0.00	-22.26
8	704.01	37.3 QP	46.00	-8.70	1.33H	57	14.80	19.38	3.16	0.00	-22.55
9	748.02	37.1 QP	46.00	-8.90	1.34H	266	13.70	20.14	3.26	0.00	-23.41
10	750.01	34.2 QP	46.00	-11.80	1.39H	255	10.80	20.18	3.26	0.00	-23.44
11	792.01	34.7 QP	46.00	-11.30	1.46H	152	10.80	20.60	3.31	0.00	-23.91
12	836.70	33.8 QP	46.00	-12.20	1.28H	290	9.80	20.53	3.46	0.00	-23.99

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	125.04	34.0 QP	43.50	-9.50	1.41V	174	21.40	11.47	1.10	0.00	-12.57
2	150.14	34.8 QP	43.50	-8.70	1.30V	279	23.40	10.16	1.22	0.00	-11.38
3	200.02	34.1 QP	43.50	-9.40	1.90V	6	23.70	8.98	1.42	0.00	-10.40.
4	250.00	35.5 QP	46.00	-10.50	1.85V	355	21.80	12.02	1.66	0.00	-13.69
5	500.17	35.0 QP	46.00	-11.00	1.20V	49	15.20	17.26	2.50	0.00	-19.77
6	703.98	34.9 QP	46.00	-11.10	1.11V	345	12.40	19.38	3.16	0.00	-22.54
7	747.14	36.6 QP	46.00	-9.40	1.09V	35	13.20	20.14	3.26	0.00	-23.41
8	750.02	37.6 QP	46.00	-8.40	1.13V	72	14.20	20.18	3.26	0.00	-23.45
9	792.00	36.3 QP	46.00	-9.70	1.06V	298	12.40	20.60	3.31	0.00	-23.91
10	880.14	36.9 QP	46.00	-9.10	1.03V	306	12.70	20.68	3.55	0.00	-24.23
11	924.10	35.1 QP	46.00	-10.90	1.54V	30	10.40	21.00	3.68	0.00	-24.69

- 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	Wireless Access Point	MODEL	A2588
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70RH, 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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2038.2	46.8 PK	74.00	-27.20	1.70H	6	18.20	25.27	3.29	0.00	-28.57
2	*2413.5	102.8 PK	-	-	2.02H	357	71.99	27.19	3.62	0.00	-30.81
3	*2413.5	95.9 AV	-	-	2.02H	357	65.10	27.19	3.62	0.00	-30.81
4	4076.0	49.1 AV	54.00	-4.90	1.68H	251	14.20	30.18	4.77	0.00	-34.95
5	4076.0	52.3 PK	74.00	-21.70	1.68H	251	17.39	30.18	4.77	0.00	-34.95
6	4824.1	50.4 PK	74.00	-23.60	1.49H	90	13.80	31.43	5.21	0.00	-36.65

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2038.1	45.7 PK	74.00	-28.30	1.57V	324	17.10	25.27	3.29	0.00	-28.57
2	*2413.5	97.8 PK	-	-	2.02V	76	67.04	27.19	3.62	0.00	-30.81.
3	*2413.5	92.0 AV	-	-	2.02V	76	61.20	27.19	3.62	0.00	-30.81.
4	4075.6	51.9 PK	74.00	-22.10	1.63V	252	16.91	30.18	4.77	0.00	-34.95
5	4824.1	50.8 PK	74.00	-23.20	1.41V	37	14.20	31.43	5.21	0.00	-36.65

- 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	Wireless Access Point	MODEL	A2588
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70RH, 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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2063.7	46.9 PK	74.00	-27.10	1.75H	330	18.20	25.39	3.31	0.00	-28.70
2	*2438.5	101.3 PK	-	-	1.99H	7	70.39	27.30	3.64	0.00	-30.95
3	*2438.5	93.7 AV	-	-	1.99H	7	62.80	27.30	3.64	0.00	-30.95
4	4125.6	51.8 PK	74.00	-22.20	1.69H	250	16.73	30.28	4.79	0.00	-35.07
5	4874.2	50.8 PK	74.00	-23.20	1.44H	329	14.10	31.47	5.25	0.00	-36.72

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2063.0	46.9 PK	74.00	-27.10	1.00V	75	18.20	25.39	3.31	0.00	-28.70
2	*2438.5	98.3 PK	-	-	1.24V	232	67.40	27.30	3.64	0.00	-30.94
3	*2438.5	90.1 AV	-	-	1.24V	232	59.12	27.30	3.64	0.00	-30.94
4	4125.6	53.0 PK	74.00	-21.00	1.37V	242	17.90	30.28	4.79	0.00	-35.07
5	4125.6	51.4 AV	54.00	-2.60	1.37V	242	16.32	30.28	4.79	0.00	-35.07
6	4875.2	53.4 PK	74.00	-20.60	1.40V	264	16.70	31.47	5.25	0.00	-36.72
7	4875.2	40.1 AV	54.00	-13.90	1.40V	264	3.40	31.47	5.25	0.00	-36.72

- 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	Wireless Access Point	MODEL	A2588
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70RH, 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)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2088.0	46.2 PK	74.00	-27.80	1.52H	225	17.40	25.50	3.33	0.00	-28.83
2	*2463.4	101.2 PK	-	-	1.54H	348	70.16	27.41	3.66	0.00	-31.08
3	*2463.4	92.8 AV	-	-	1.54H	348	61.70	27.41	3.66	0.00	-31.08
4	2483.7	48.7 PK	74.00	-25.30	1.54H	348	17.50	27.52	3.68	0.00	-31.20
5	4175.2	49.5 AV	54.00	-4.50	1.74H	241	14.36	30.38	4.81	0.00	-35.19
6	4175.2	52.6 PK	74.00	-21.40	1.74H	241	17.46	30.38	4.81	0.00	-35.19
7	4924.2	50.0 PK	74.00	-24.00	1.33H	130	13.20	31.51	5.28	0.00	-36.80
8	6263.9	49.9 PK	74.00	-24.10	1.37H	36	10.40	33.46	6.03	0.00	-39.49

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB/m)
1	2088.0	46.4 PK	74.00	-27.60	1.04V	242	17.54	25.50	3.33	0.00	-28.83
2	*2463.5	94.2 PK	-	-	2.09V	83	63.08	27.41	3.66	0.00	-31.07.
3	*2463.5	88.2 AV	-	-	2.09V	83	57.10	27.41	3.66	0.00	-31.07.
4	2483.5	48.4 PK	74.00	-25.60	1.63V	243	17.20	27.52	3.68	0.00	-31.20
5	4175.0	51.3 AV	54.00	-2.70	1.35V	9	16.12	30.38	4.81	0.00	-35.19
6	4175.0	53.0 PK	74.00	-21.00	1.35V	9	17.80	30.38	4.81	0.00	-35.19
7	4924.1	54.0 PK	74.00	-20.00	1.37V	310	17.20	31.51	5.28	0.00	-36.80
8	4924.1	41.9 AV	54.00	-12.10	1.37V	310	5.08	31.51	5.28	0.00	-36.80

- 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
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

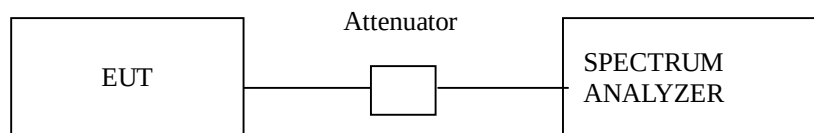
Notes:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 TEST SETUP



4.3.5 EUT OPERATING CONDITIONS

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



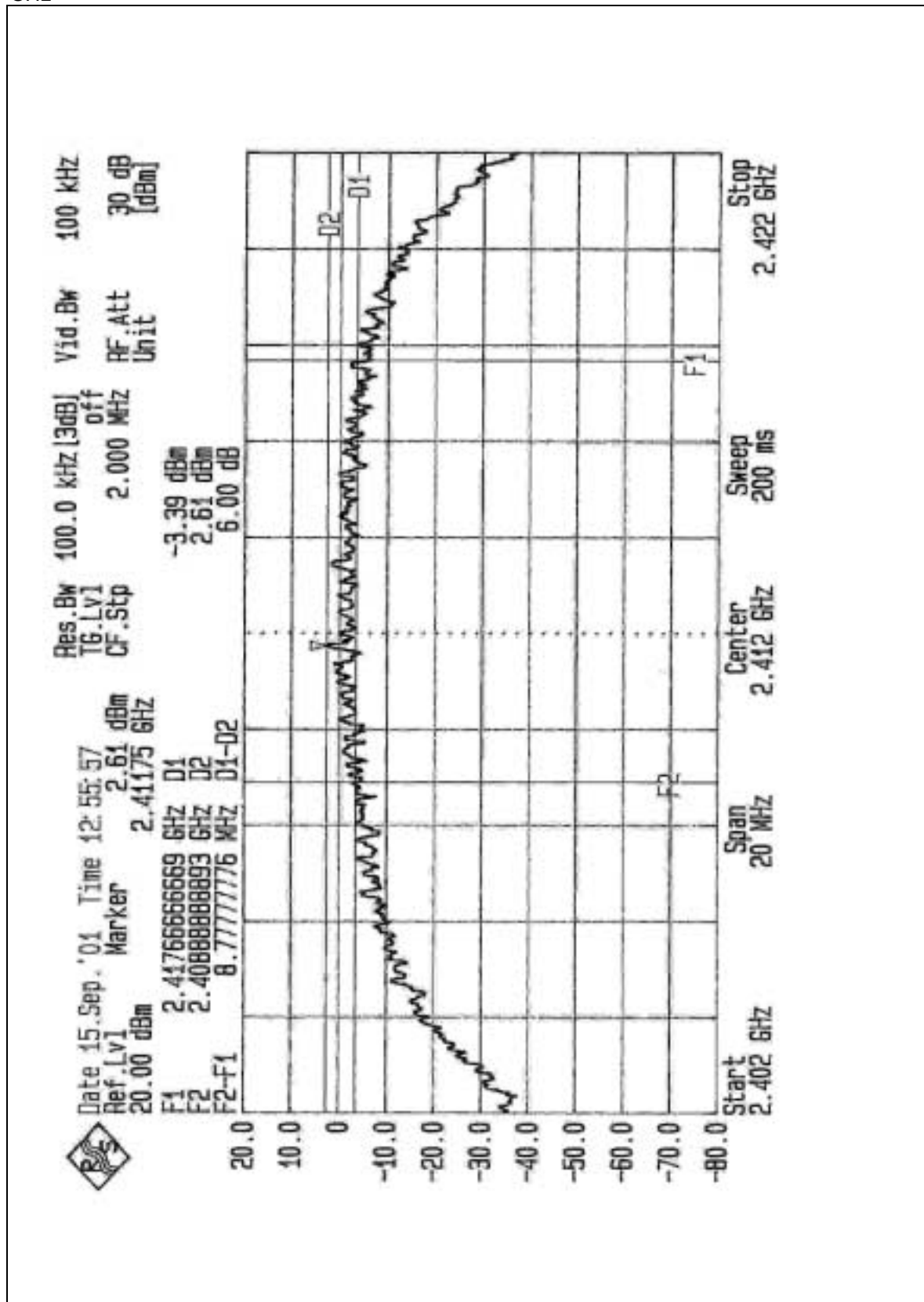
4.3.6 TEST RESULTS

EUT	Wireless Access Point	MODEL	A2588
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 75%RH, 1005 hPa
TESTED BY: James Lee			

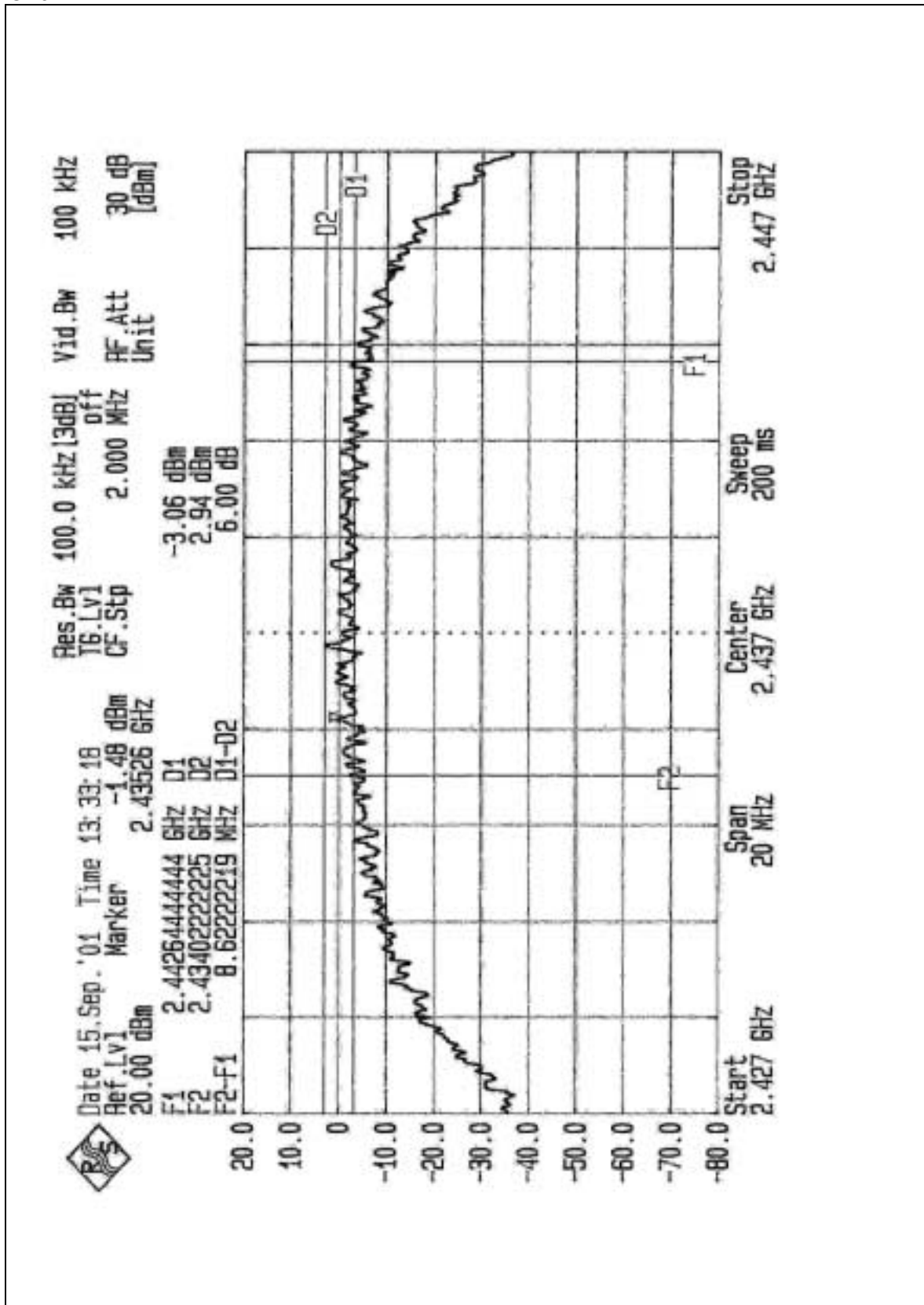
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	8.78	0.5	PASS
6	2437	8.62	0.5	PASS
11	2462	10.00	0.5	PASS



CH1



CH6




 Date 15.Sep.'01 Time 15:03:09
 Ref.Lvl 20.00 dBm
 Marker 1.98 dBm
 2.46175 GHz
 F1 2.46766666664 GHz D1
 F2 2.45766666668 GHz D2
 F2-F1 9.999999996 MHz D1-D2

Res.Bw 100.0 kHz [3dB]
 T6.Lvl Off
 CF.Stp 2.000 MHz
 Vid.Bw 100 kHz
 RF.Att 30 dB
 Unit [dBm]

-4.02 dBm
 1.98 dBm
 6.00 dB



20.0
 10.0
 0
 -10.0
 -20.0
 -30.0
 -40.0
 -50.0
 -60.0
 -70.0
 -80.0

Start 2.452 GHz
 Span 20 MHz
 Center 2.462 GHz
 Sweep 200 ms
 Stop 2.472 GHz



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
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

NOTE:1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

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

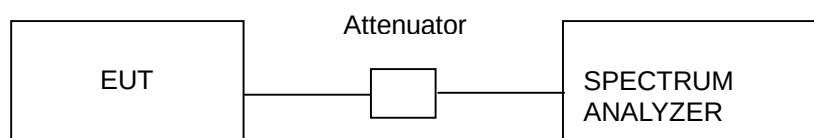


4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. The center frequency of the spectrum analyzer was set to the fundamental frequency and using 3 MHz RBW and 3 MHz VBW.
3. The span of the spectrum analyzer was larger than 6dB BandWidth plus 10MHz.
4. Used Peak Search to read the peak power after Maximum Hold function is activated.
5. Shifted the marker to +/- 3MHz and +/-6MHz, and recorded the reading.
6. The Maximum Peak Output Power is the linear summation of the five readings in 4 and 5.

NOTE: This measurement is the total power of 12MHz bandwidth which is far more wider than 6dB bandwidth.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 3.4.5



4.4.6 TEST RESULTS

EUT	Wireless Access Point	MODEL	A2588
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 75%RH, 1005 hPa
TESTED BY: James Lee			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.21	30	PASS
6	2437	15.63	30	PASS
11	2462	15.14	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
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839379/002	Dec. 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

NOTE:1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.

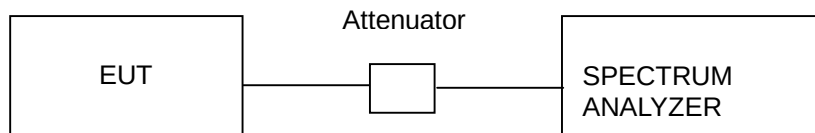
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

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 TEST SETUP



4.5.5 EUT OPERATING CONDITION

Same as Item 3.4.5

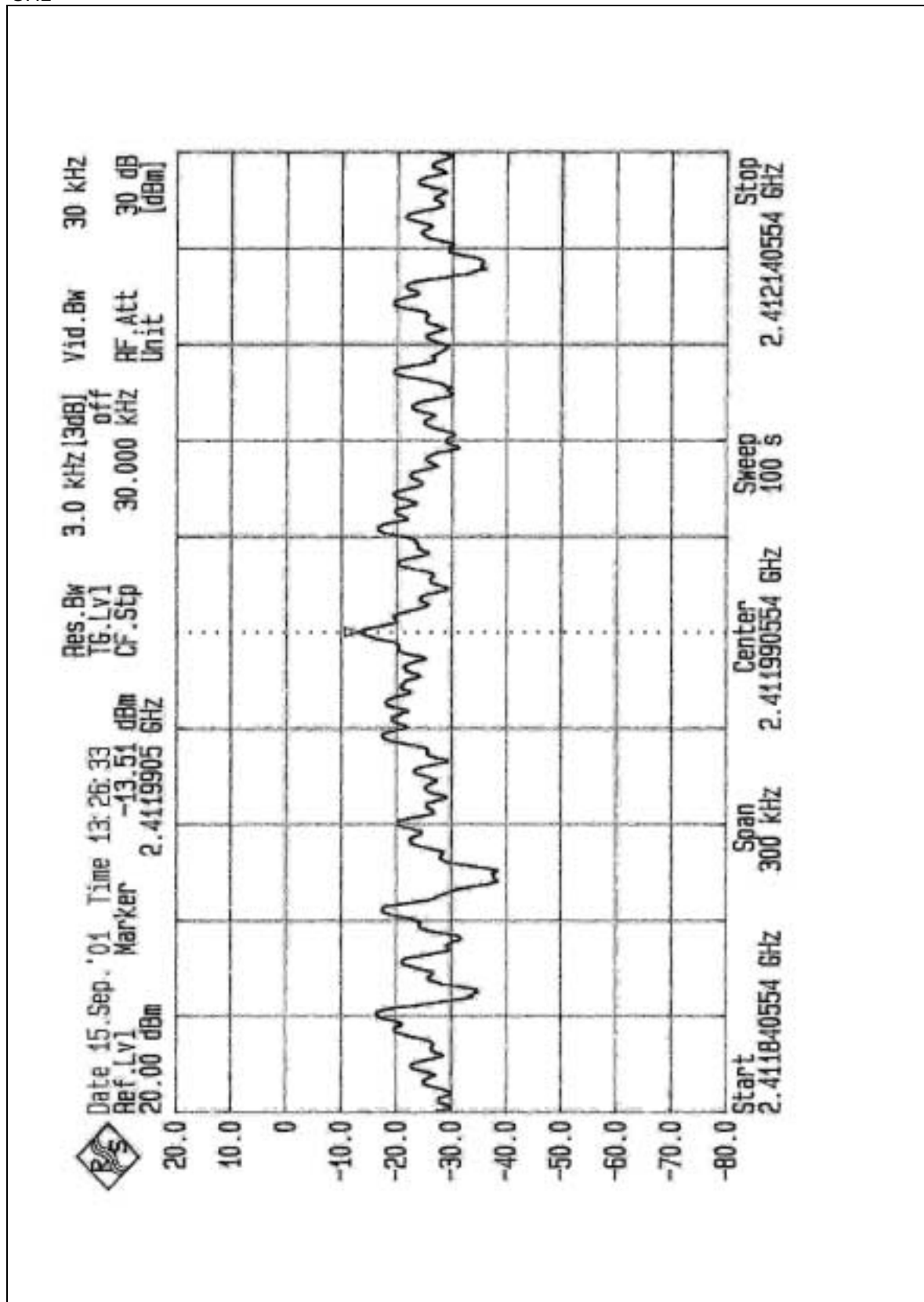


4.5.6 TEST RESULTS

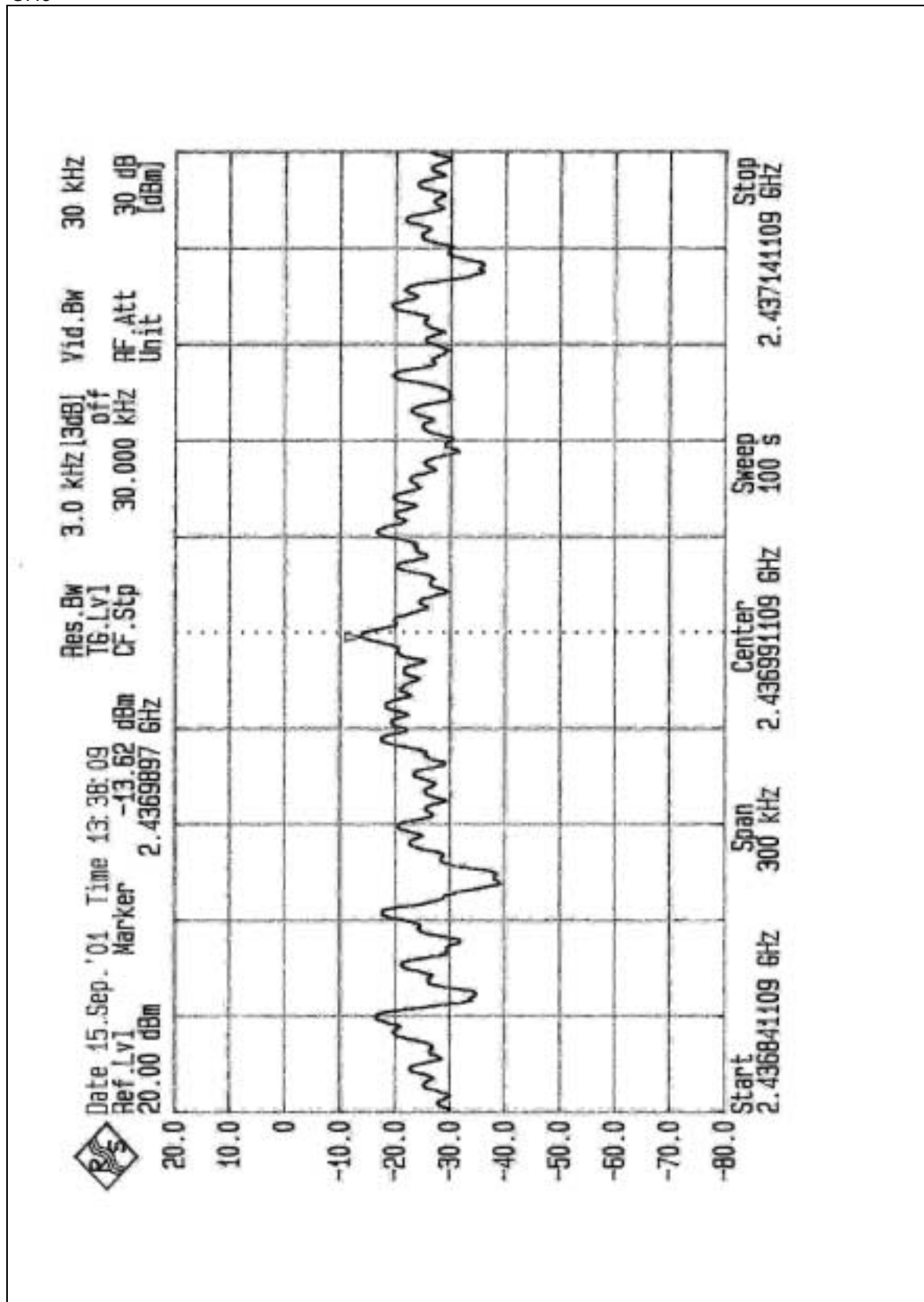
EUT	Wireless Access Point	MODEL	A2588
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	25 deg. C, 75%RH, 1005 hPa
TESTED BY: James Lee			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 kHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-13.51	8	PASS
6	2437	-13.62	8	PASS
11	2462	-13.90	8	PASS

CH1

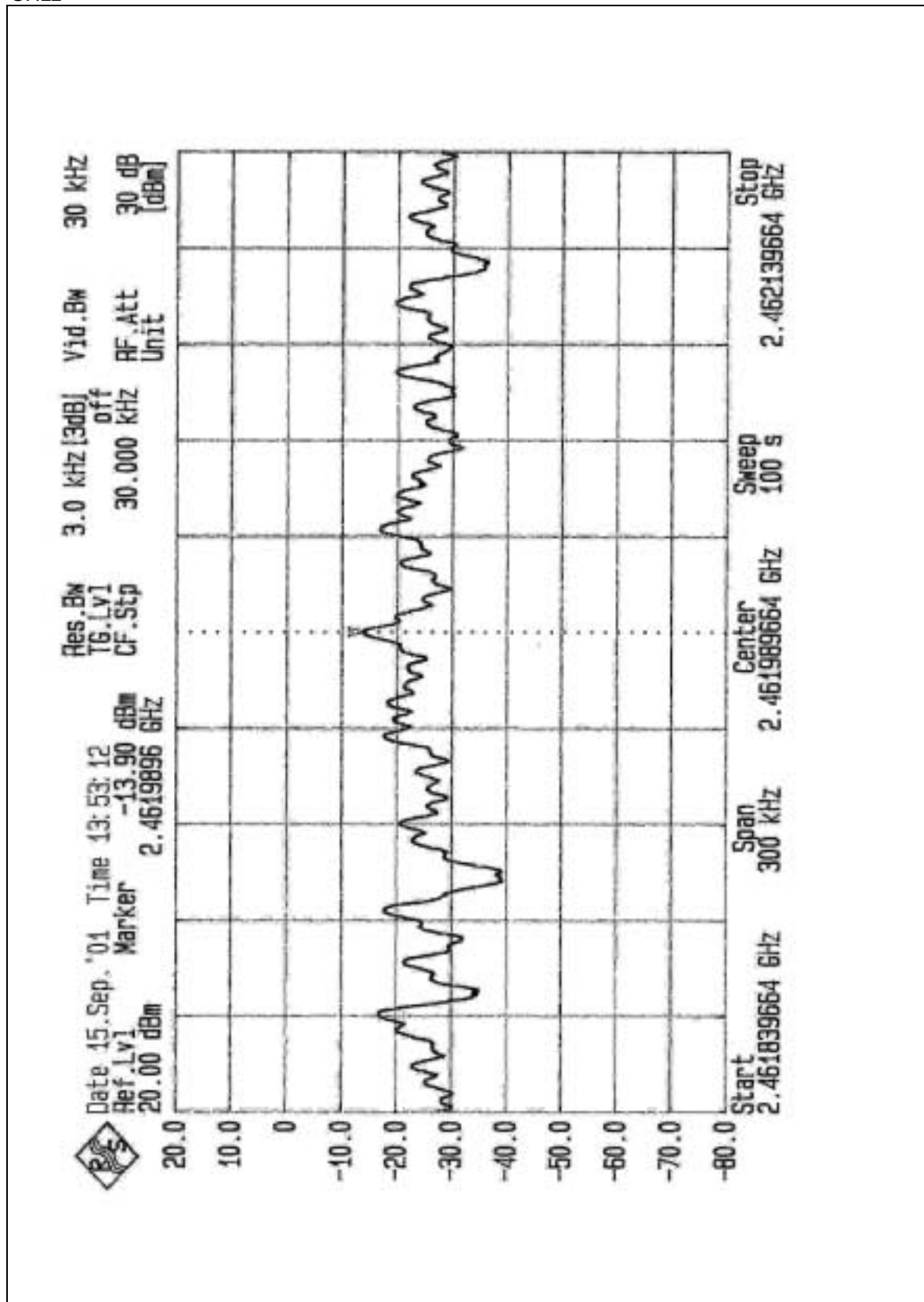


CH6





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
ROHDE & SCHWARZ TEST RECEIVER	ESMI	848926/005 846839/018	Dec 28, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

NOTE:

- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.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.



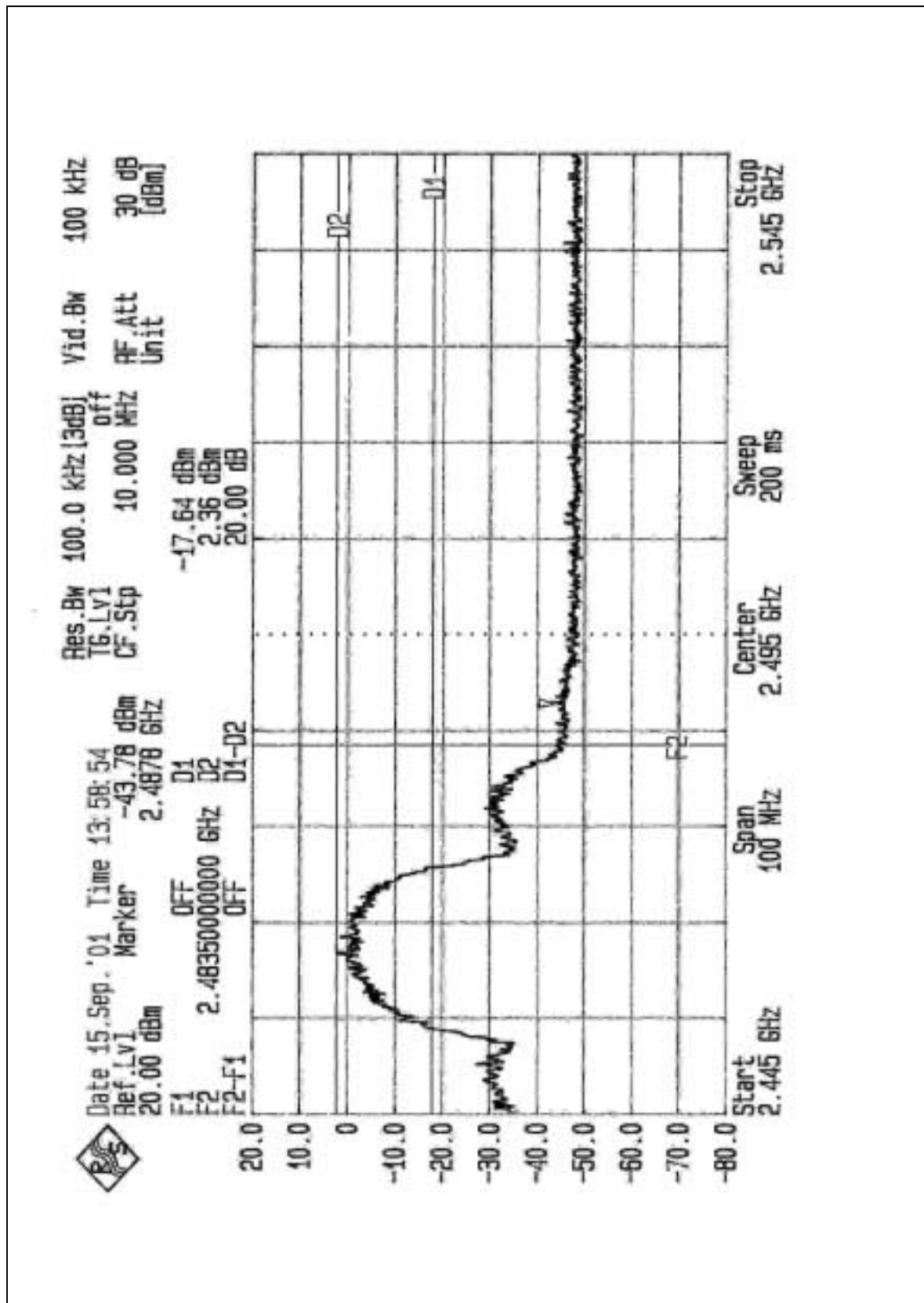
4.6.4 EUT OPERATING CONDITION

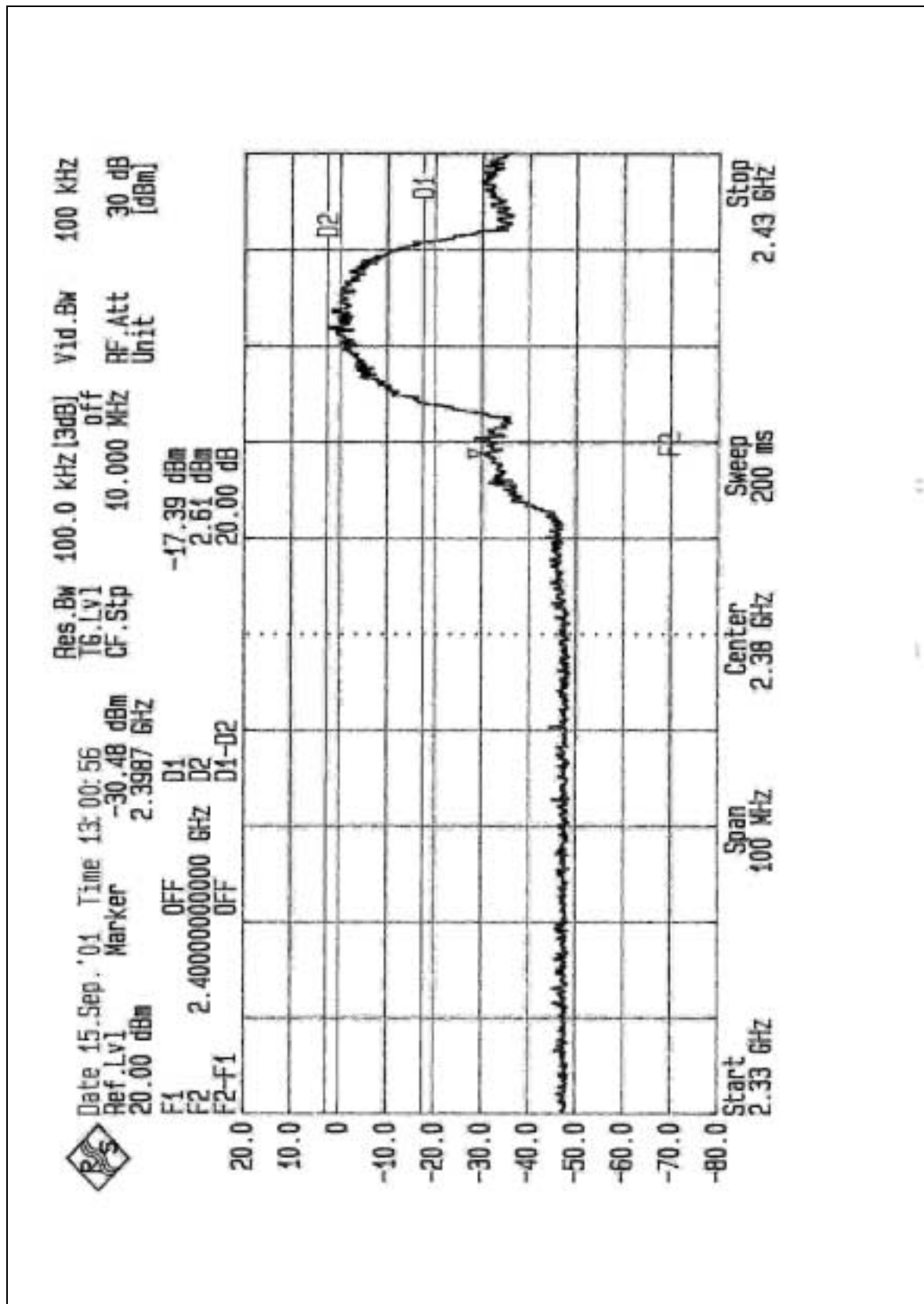
Same as Item 3.4.5

4.6.5 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 following 2 pages shows 46.14dB delta between carrier maximum power and local maximum emission in restrict band (2.4878GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.6 (Page 25) is 92.8dBuV/m, so the maximum field strength in restrict band is $92.8 - 46.14 = 46.66$ 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.

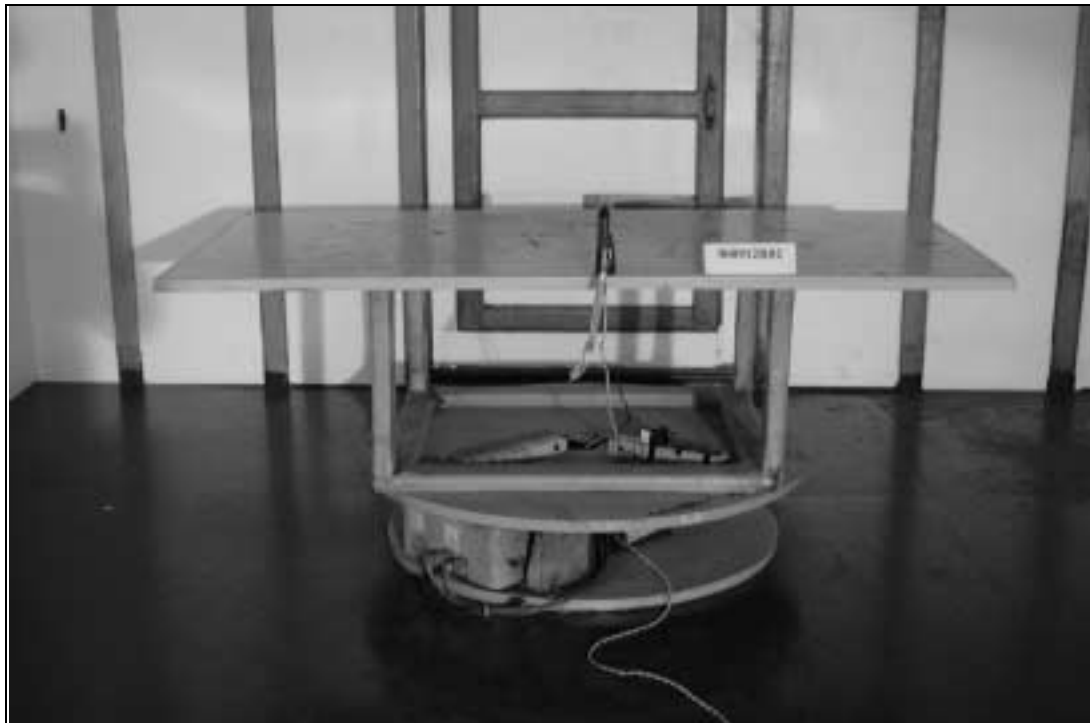
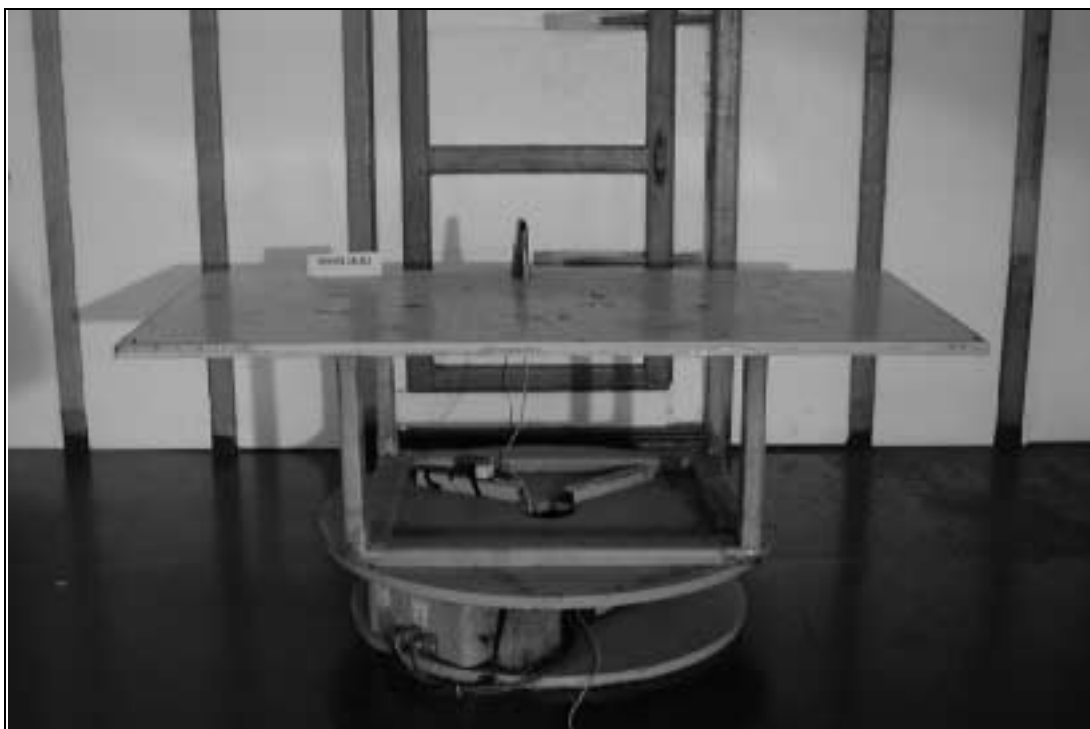
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Inverted-F Antenna and there is no antenna connector. The maximum Gain of the antenna is 0dBi only.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

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.

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