ADT CORP.

FCC TEST REPORT

REPORT NO.: RF90011014B
MODEL NO.: J7801A
RECEIVED: NA
TESTED: January 18, 2001

APPLICANT: The Linksys Group, Inc.

ADDRESS: 17401 Armstrong Ave. Irvine, CA 92614

ISSUED BY: Advance Data Technology Corporation

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

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Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT :	hp wireless USB network adapter
BRAND NAME :	Hewlett-Packard
MODEL NO. :	J7801A
APPLICANT :	The Linksys Group, Inc.
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 on January 18, 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 (Gary Chang), DATE: Sep. 5, 2001

CHECKED BY : Demi Chen (Demi Chen), DATE: Sep. 5, 2001

APPROVED BY : Alan Lane (Dr. Alan Lane, Manager), DATE: Sep. 5, 2001

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 –2.4dBuV at 0.54884MHz
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 –1.0dBuV at 2062.9 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	hp wireless USB network adapter
MODEL NO.	J7801A
POWER SUPPLY	5.0VDC from notebook
MODULATION TYPE	CCK, BPSK, QPSK
RADIO TECHNOLOGY	DSSS
TRANSFER RATE	1/2/5.5/11Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	12dBm
ANTENNA TYPE	Ceramic Patch Antenna
DATA CABLE	2.1m (shielded)
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE: For a 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 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 hp wireless USB network adapter. 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.	I/O Cable
1	PC	DELL	PPL	1421C	Nonshielded Power (1.8m)
2	PRINTER	HP	C2145A	SG5N1601K	Nonshielded Power (1.8m) Shielded Signal(1.2m)
3	MODEM	GVC	F-1128V1R6	96-191-113004	Nonshielded Power (1.9m) Shielded Signal(1.2m)

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.

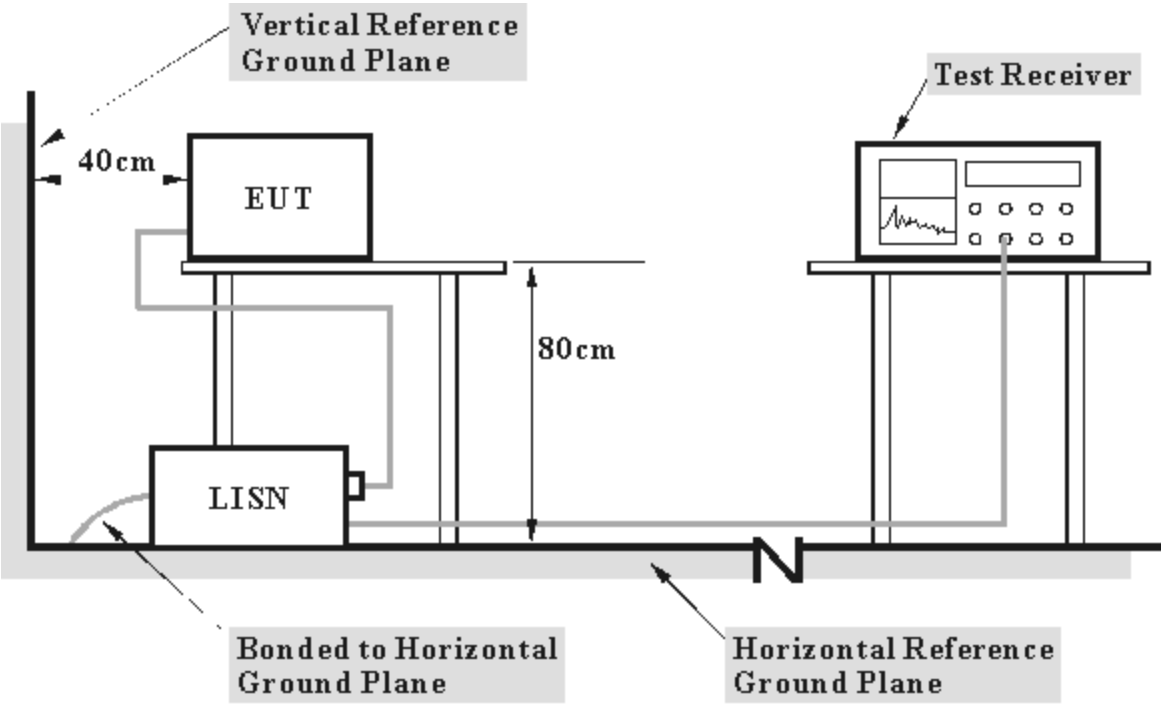
4.1.3 TEST PROCEDURES

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 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: 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.

4.1.5 EUT OPERATING CONDITIONS

a. Connected the EUT to a computer system placed on a testing table.
b. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
c. The computer system sent "H" messages to 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.

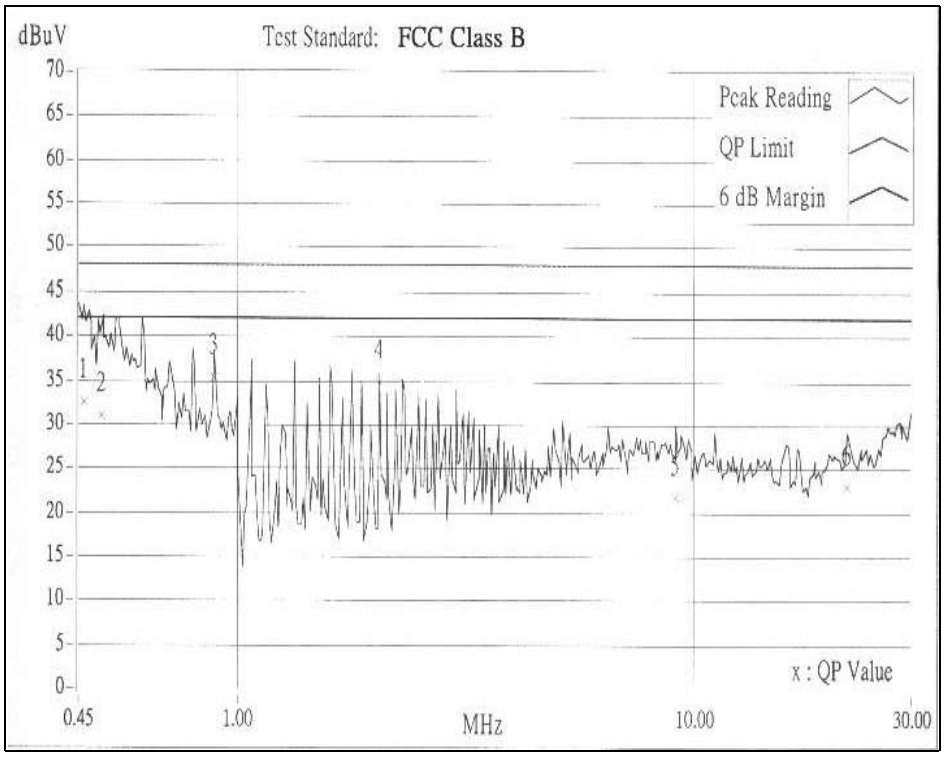
4.1.6 TEST RESULTS

EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 1	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%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)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.46170	0.21	32.45	-	32.66	-	48.00	-	-15.34	-
2	0.50787	0.22	30.92	-	31.14	-	48.00	-	-16.86	-
3	0.89141	0.28	35.31	-	35.59	-	48.00	-	-12.41	-
4	2.04607	0.30	34.83	-	35.13	-	48.00	-	-12.87	-
5	9.18617	0.57	21.69	-	22.26	-	48.00	-	-25.74	-
6	21.73570	1.07	22.99	-	24.06	-	48.00	-	-23.94	-

NOTE:

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

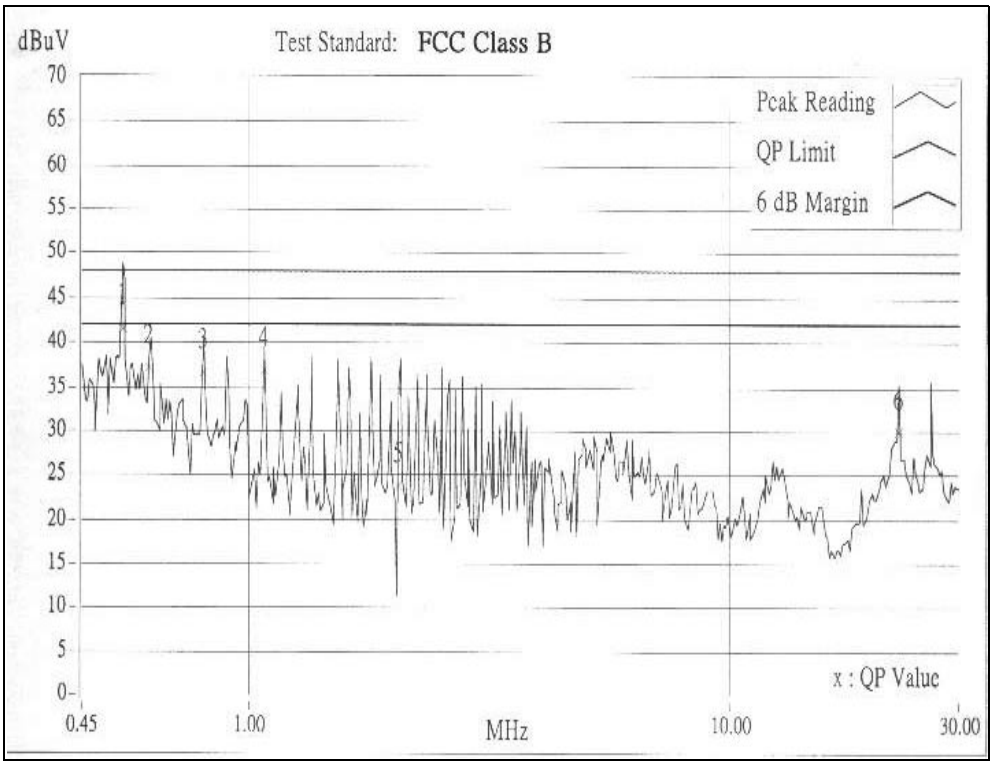


EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 1	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%RH, 1005 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.54995	0.22	41.56	-	41.78	-	48.00	-	-6.22	-
2	0.62336	0.24	37.10	-	37.34	-	48.00	-	-10.66	-
3	0.80293	0.27	36.59	-	36.86	-	48.00	-	-11.14	-
4	1.07171	0.30	37.05	-	37.35	-	48.00	-	-10.65	-
5	2.05881	0.30	23.88	-	24.18	-	48.00	-	-23.82	-
6	22.57156	0.75	29.89	-	30.64	-	48.00	-	-17.36	-

NOTE:

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

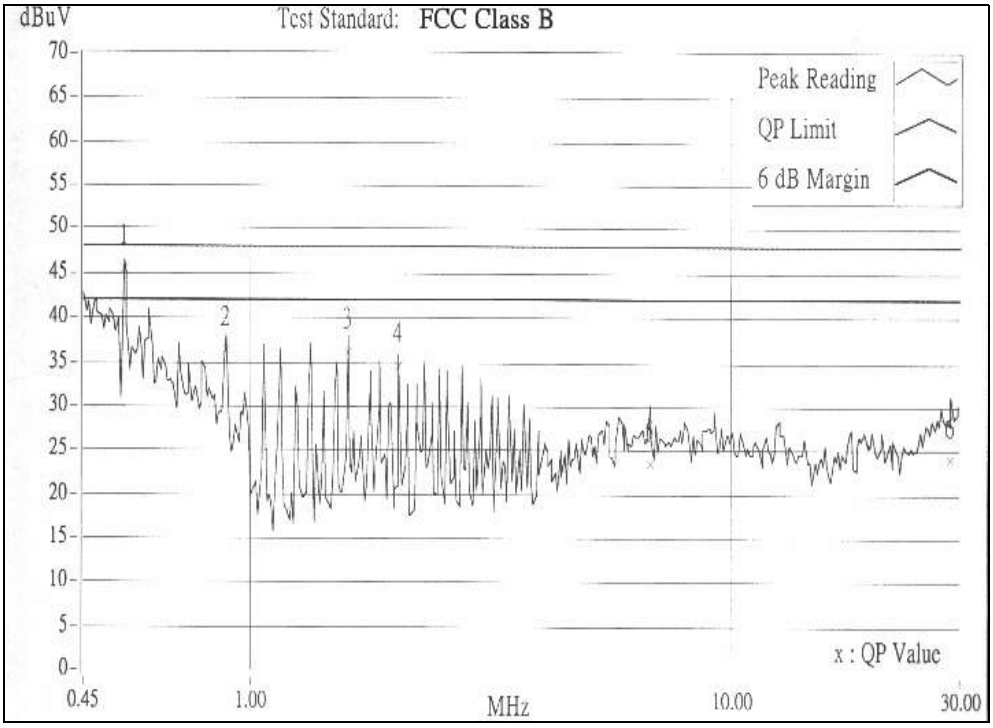


EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 6	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%RH, 1005 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.54884	0.22	45.37	-	42.59	-	48.00	-	-2.41	-
2	0.88634	0.28	36.34	-	36.62	-	48.00	-	-11.38	-
3	1.59638	0.30	36.17	-	36.47	-	48.00	-	-11.53	-
4	2.03652	0.30	34.67	-	34.97	-	48.00	-	-13.03	-
5	6.82667	0.49	23.52	-	24.01	-	48.00	-	-23.99	-
6	28.77477	1.34	24.13	-	25.48	-	48.00	-	-22.52	-

NOTE:

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

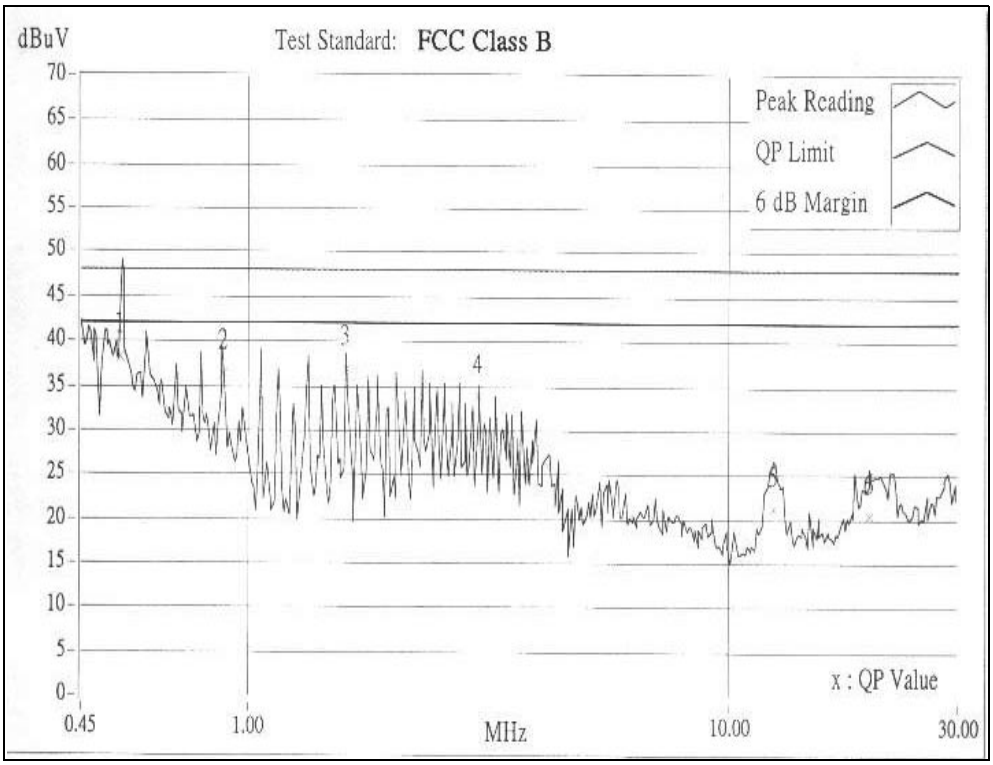


EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 6	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%RH, 1005 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (Uv)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.54514	0.22	38.21	-	38.43	-	48.00	-	-9.57	-
2	0.88664	0.28	36.49	-	36.77	-	48.00	-	-11.23	-
3	1.59258	0.30	36.86	-	37.16	-	48.00	-	-10.84	-
4	3.00920	0.34	33.82	-	34.17	-	48.00	-	-13.83	-
5	12.48828	0.50	21.26	-	21.76	-	48.00	-	-26.24	-
6	19.75293	0.69	20.49	-	21.18	-	48.00	-	-26.82	-

NOTE:

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

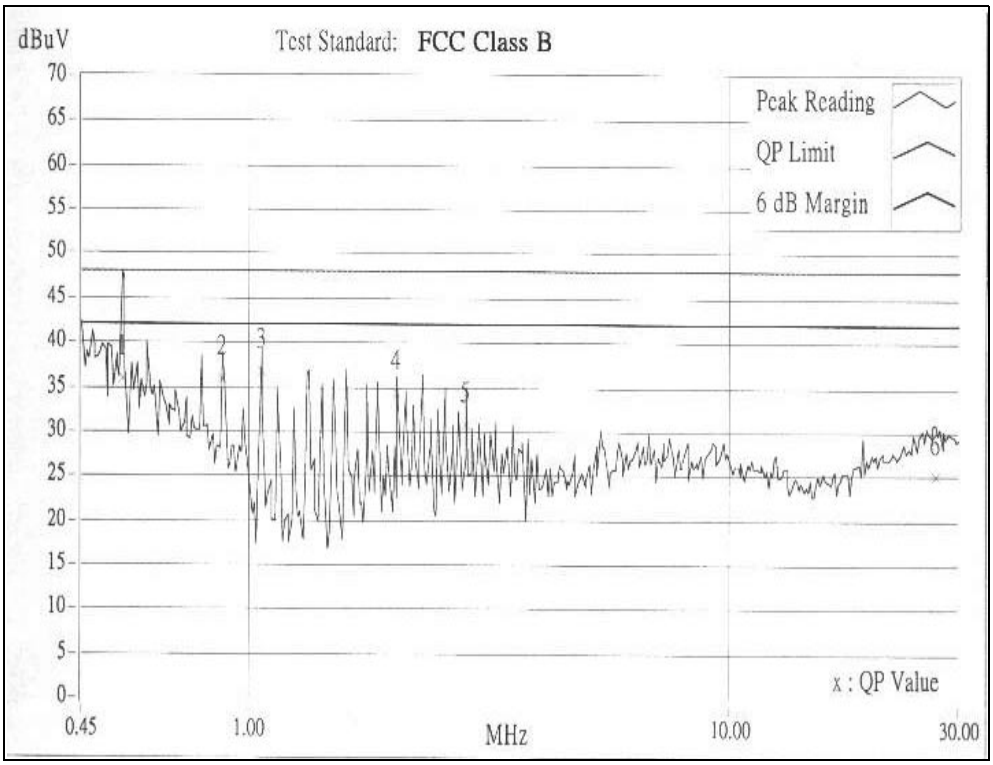


EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 11	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%RH, 1005 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.54775	0.22	35.88	-	36.10	-	48.00	-	-11.90	-
2	0.88359	0.28	35.94	-	36.22	-	48.00	-	-11.78	-
3	1.06123	0.30	36.56	-	36.86	-	48.00	-	-11.14	-
4	2.03514	0.30	34.45	-	34.75	-	48.00	-	-13.25	-
5	2.83068	0.34	30.76	-	31.10	-	48.00	-	-16.90	-
6	26.86977	1.27	24.93	-	26.20	-	48.00	-	-21.80	-

NOTE:

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

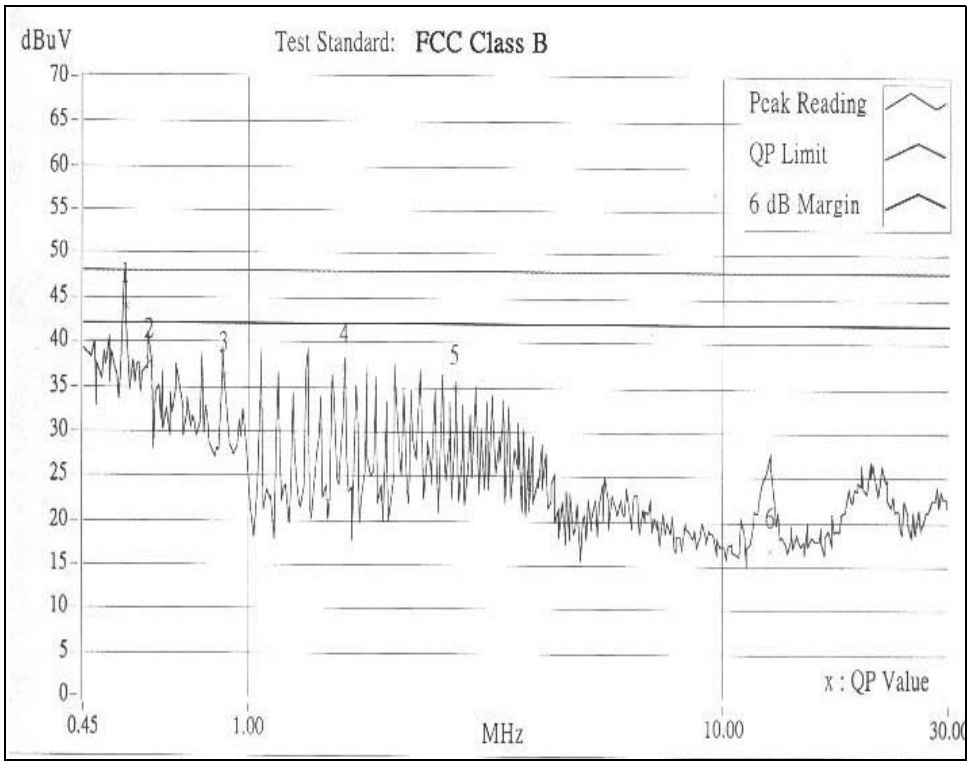


EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 11	**6dB BANDWIDTH**	10 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Netural (N)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60%RH, 1005 hPa	**TESTED BY**: Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.55156	0.23	43.80	-	44.03	-	48.00	-	-3.97	-
2	0.62052	0.24	37.64	-	37.88	-	48.00	-	-10.12	-
3	0.88739	0.28	36.26	-	36.54	-	48.00	-	-11.46	-
4	1.59121	0.30	37.31	-	37.61	-	48.00	-	-10.39	-
5	2.74218	0.34	34.88	-	35.22	-	48.00	-	-12.78	-
6	12.66812	0.50	16.70	-	17.20	-	48.00	-	-30.80	-

NOTE:

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



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.

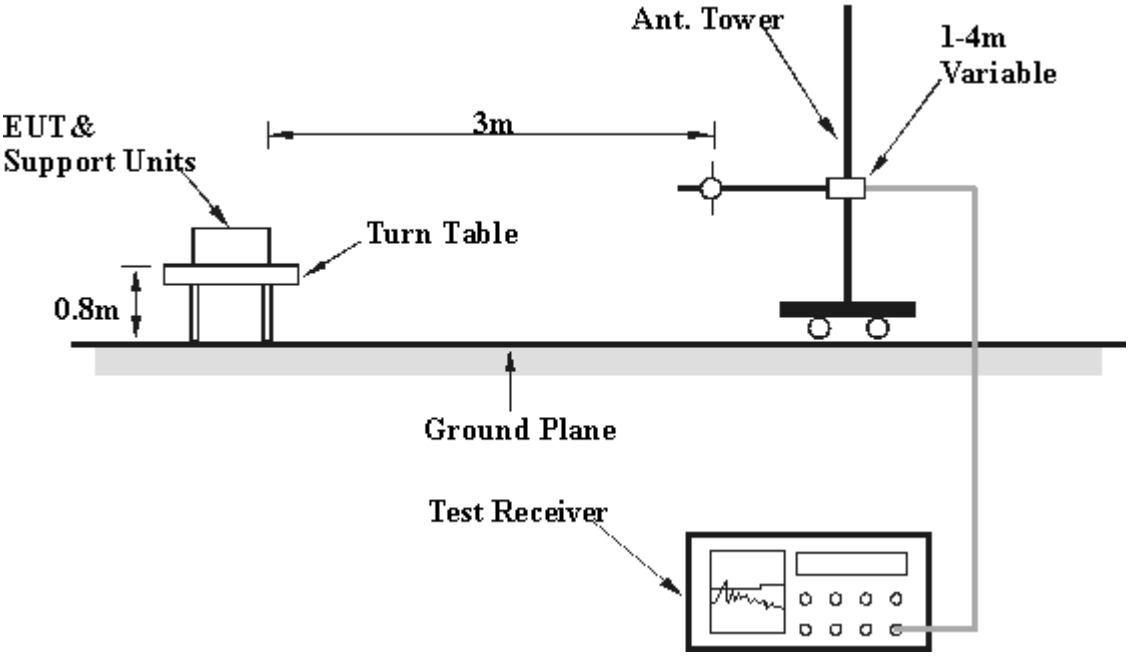
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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 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 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	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 11	**FREQUENCY RANGE**	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	20 deg. C, 60% RH, 1050 hPa	**TESTED BY**: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
321.80	10.71	20.59	31.3	46.0	-14.7	99	346
355.65	9.67	24.53	34.2	46.0	-11.8	123	195
372.60	9.11	26.09	35.2	46.0	-10.8	99	0
457.28	7.52	31.18	38.7	46.0	-7.3	106	186
558.89	6.16	26.04	32.2	46.0	-13.8	137	216
880.16	2.83	23.67	26.5	46.0	-19.5	108	101

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
321.80	10.71	19.99	30.7	46.0	-15.3	220	1
355.66	9.67	22.93	32.6	46.0	-13.4	107	358
372.60	9.11	12.99	22.1	46.0	-23.9	193	176
457.28	7.52	25.98	33.5	46.0	-12.5	154	238
558.91	6.16	26.44	32.6	46.0	-13.4	99	353
880.16	2.83	23.17	26.0	46.0	-20.0	182	221

NOTE:

1. Emission level = Raw value - Correction Factor
2. Margin value = Emission level - Limit value
3. The other emission levels were very low against the limit.

EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60% RH, 1050 hPa	**TESTED BY**: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2037.9	34.57	17.3	-	51.9	-	74.0	54.0	-22.1	-	99	203
*2412.0	36.09	65.0	53.4	101.1	89.5	-	-	-	-	99	28
4076.0	43.10	11.4	2.5	54.5	45.6	74.0	54.0	-19.5	-8.4	99	160
4824.2	43.73	7.3	-	51.0	-	74.0	54.0	-23.0	-	99	16

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2037.9	34.57	17.1	-	51.7	-	74.0	54.0	-22.3	-	99	171
*2412.4	36.09	66.8	58.6	102.9	94.7	-	-	-	-	100	9
4076.0	43.10	11.3	4.7	54.4	47.8	74.0	54.0	-19.6	-6.2	99	345
4823.9	43.73	7.1	-	50.8	-	74.0	54.0	-23.2	-	99	18

NOTE:

1. Emission level = Reading value + Correction Factor
2. Margin value = Emission level - Limit value
3. " * " : Fundamental frequency
4. The other emission levels were very low against the limit.

EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60% RH, 1050 hPa	**TESTED BY**: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2062.9	34.78	18.2	16.0	53.0	50.8	74.0	54.0	-21.0	-3.2	99	204
*2437.0	36.37	67.7	60.1	104.1	96.5	-	-	-	-	108	66
4126.0	42.71	9.6	-	52.3	-	74.0	54.0	-21.7	-	99	311
4874.7	43.75	7.6	-	51.3	-	74.0	54.0	-22.7	-	112	75

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2062.8	34.78	17.0	-	51.8	-	74.0	54.0	-22.2	-	126	97
*2437.0	36.40	67.5	58.3	103.9	94.7	-	-	-	-	126	326
4126.0	42.71	7.8	-	50.5	-	74.0	54.0	-23.5	-	99	347
4874.2	43.75	7.9	-	51.6	-	74.0	54.0	-22.4	-	100	111

NOTE:

1. Emission level = Reading value + Correction Factor
2. Margin value = Emission level - Limit value
3. " * " : Fundamental frequency
4. The other emission levels were very low against the limit.

EUT	hp wireless USB network adapter	**MODEL**	J7801A
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	20 deg. C, 60% RH, 1050 hPa	**TESTED BY**: Gary Chang	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2088.1	35.07	15.1	-	50.2	-	74.0	54.0	-23.8	-	107	338
*2462.3	36.44	67.3	58.1	103.7	94.5	-	-	-	-	107	25
4176.3	42.76	7.0	-	49.7	-	74.0	54.0	-24.3	-	103	218
4924.4	43.27	6.6	-	49.9	-	74.0	54.0	-24.1	-	103	142

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M											
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)		Antenna Height (cm)	Table Angle (Degree)
		P.K.	A.V.	P.K.	A.V.	P.K.	A.V.	P.K	A.V.		
2088.1	35.07	20.3	17.5	55.4	52.6	74.0	54.0	-18.6	-1.4	101	177
*2462.9	36.42	65.5	58.0	101.9	94.4	-	-	-	-	101	2
4175.9	42.76	10.0	-	52.7	-	74.0	54.0	-21.3	-	104	14
4923.6	43.27		-	39.0	-	74.0	54.0	-35.0	-	101	248

NOTE:

1. Emission level = Reading value + Correction Factor
2. Margin value = Emission level - Limit value
3. " * " : Fundamental frequency
4. The other emission levels were very low against the limit.

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

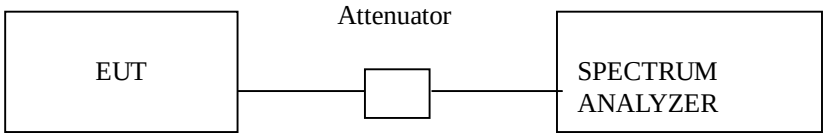
NOTE:

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.

4.3.3 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



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

4.3.5 EUT OPERATING CONDITIONS

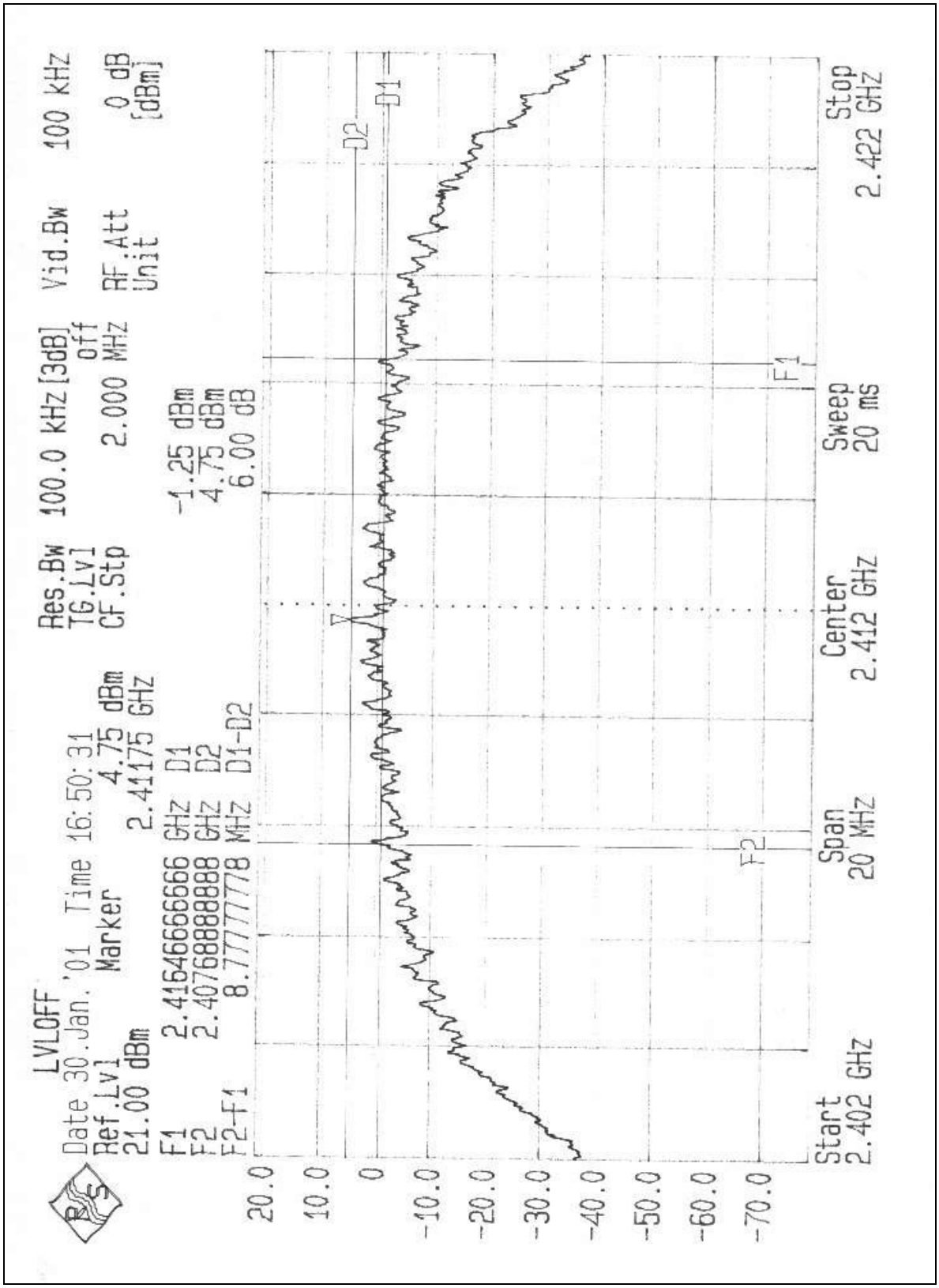
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.6 TEST RESULTS

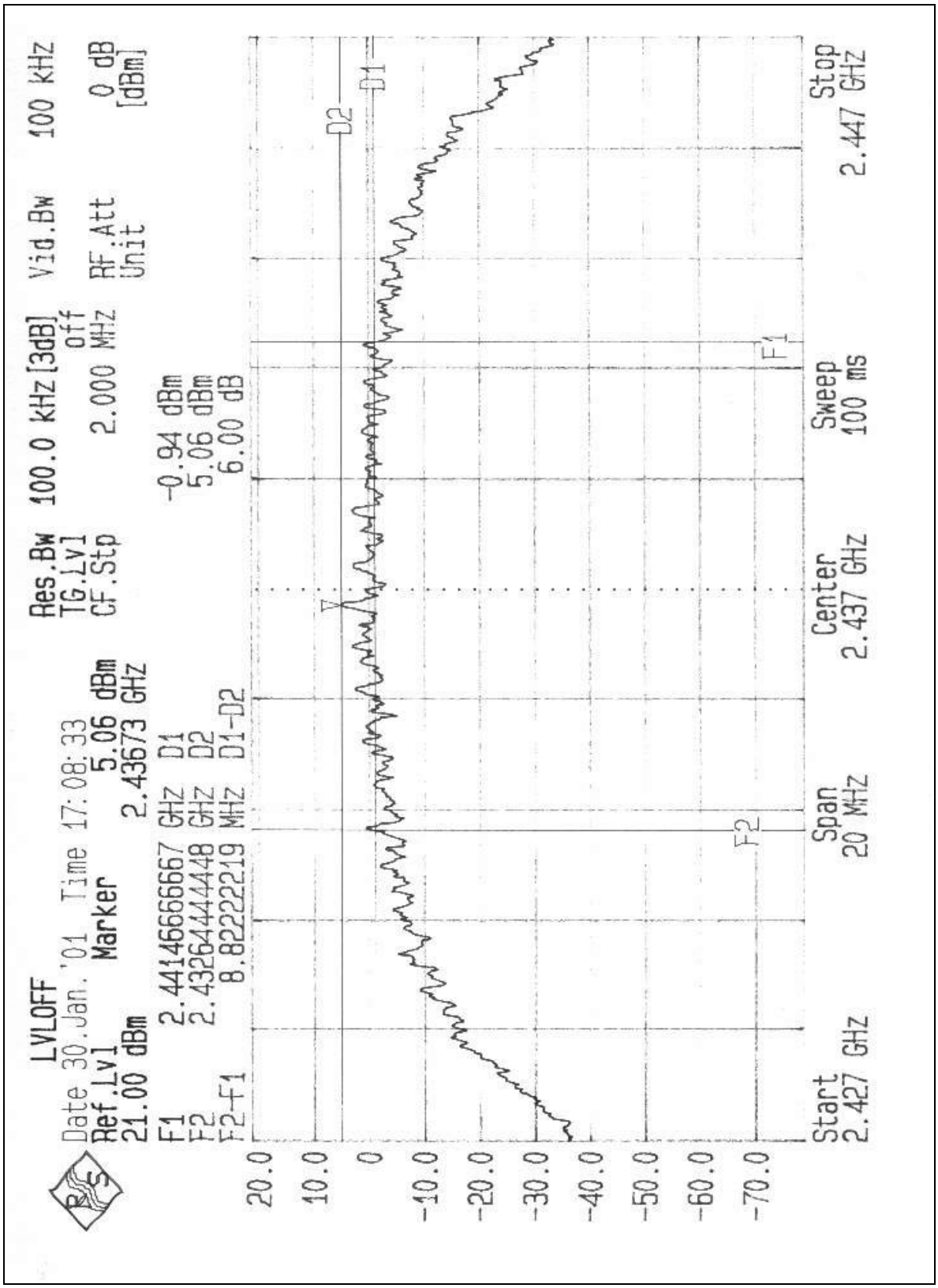
EUT	hp wireless USB network adapter	**MODEL**	J7801A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 60%RH, 1005 hPa
TESTED BY: Gary Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	8.78	0.5	PASS
6	2437	8.84	0.5	PASS
11	2462	8.82	0.5	PASS

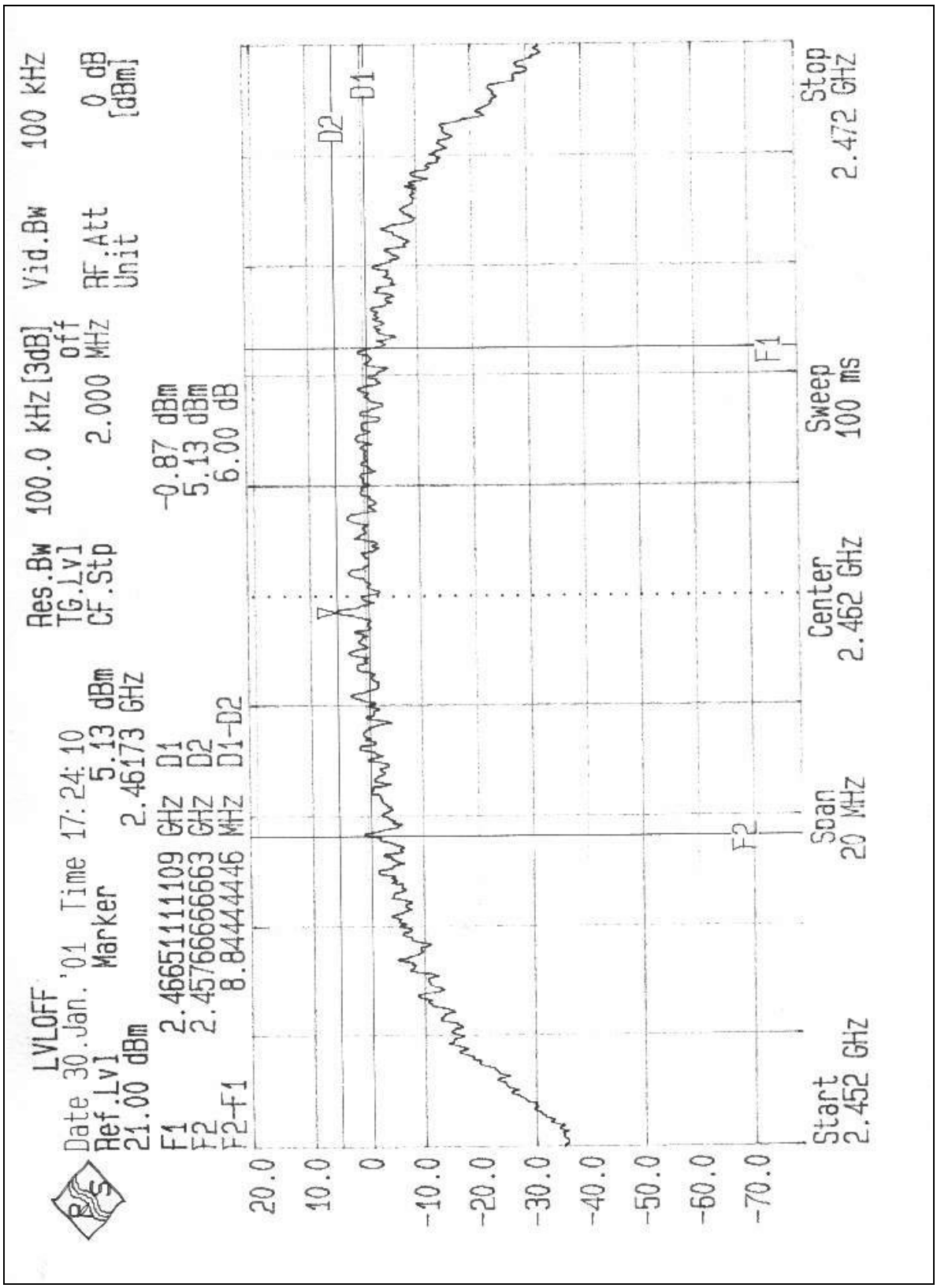
CH1


LVLOFF
Date 30.Jan.'01 Time 16:50:31
Ref.Lvl
21.00 dBm
Marker
4.75 dBm
2.41175 GHz
F1 2.416666666 GHz D1
F2 2.407888888 GHz D2
F2-F1 8.777778 MHz D1-D2
Res.BW 100.0 kHz [3dB]
TG.Lvl off
CF.Stp 2.000 MHz
-1.25 dBm
4.75 dBm
6.00 dB
Vid.BW 100 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
D1
D2
F1
F2
Start 2.402 GHz
Span 20 MHz
Center 2.412 GHz
Sweep 20 ms
Stop 2.422 GHz

CH6


LVLOFF
Date 30.Jan.'01 Time 17:08:33
Ref.Lvl
21.00 dBm
Marker
5.06 dBm
2.43673 GHz
F1 2.4414666667 GHz D1
F2 2.4326444448 GHz D2
F2-F1 8.8222219 MHz D1-D2
Res.Bw 100.0 kHz [3dB]
TG.Lvl off
CF.Stp 2.000 MHz
-0.94 dBm
5.06 dBm
6.00 dB
Vid.Bw 100 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
D2
D1
F1
F2
Start 2.427 GHz
Span 20 MHz
Center 2.437 GHz
Sweep 100 ms
Stop 2.447 GHz

CH11


LVLOFF
Date 30.Jan.'01 Time 17:24:10
Ref.Lvl
21.00 dBm
Marker
5.13 dBm
2.46173 GHz
F1 2.46651111109 GHz D1
F2 2.45766666663 GHz D2
F2-F1 8.8444446 MHz D1-D2
Res.Bw 100.0 kHz [3dB]
TG.Lvl off
CF.Stp 2.000 MHz
-0.87 dBm
5.13 dBm
6.00 dB
Vid.Bw 100 kHz
RF.Att 0 dB
Unit [dBm]
D2
D1
F1
F2
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.452 GHz
Span 20 MHz
Center 2.462 GHz
Sweep 100 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 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:

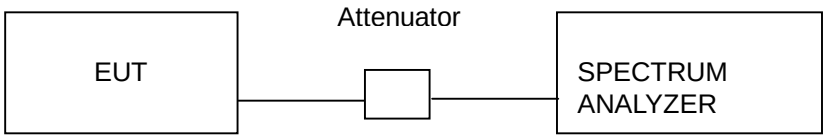
1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.3 TEST PROCEDURES

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

NOTE: This measurement is the total power of 15MHz bandwidth which is far more wider than 6dB bandwidth.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

4.4.6 TEST RESULTS

EUT	hp wireless USB network adapter	**MODEL**	J7801A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 60%RH, 1005 hPa
TESTED BY: Gary Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	17.39	30	PASS
6	2437	17.49	30	PASS
11	2462	17.49	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

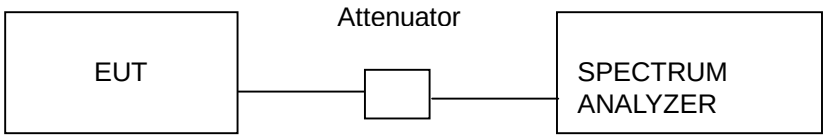
NOTE:

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/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 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

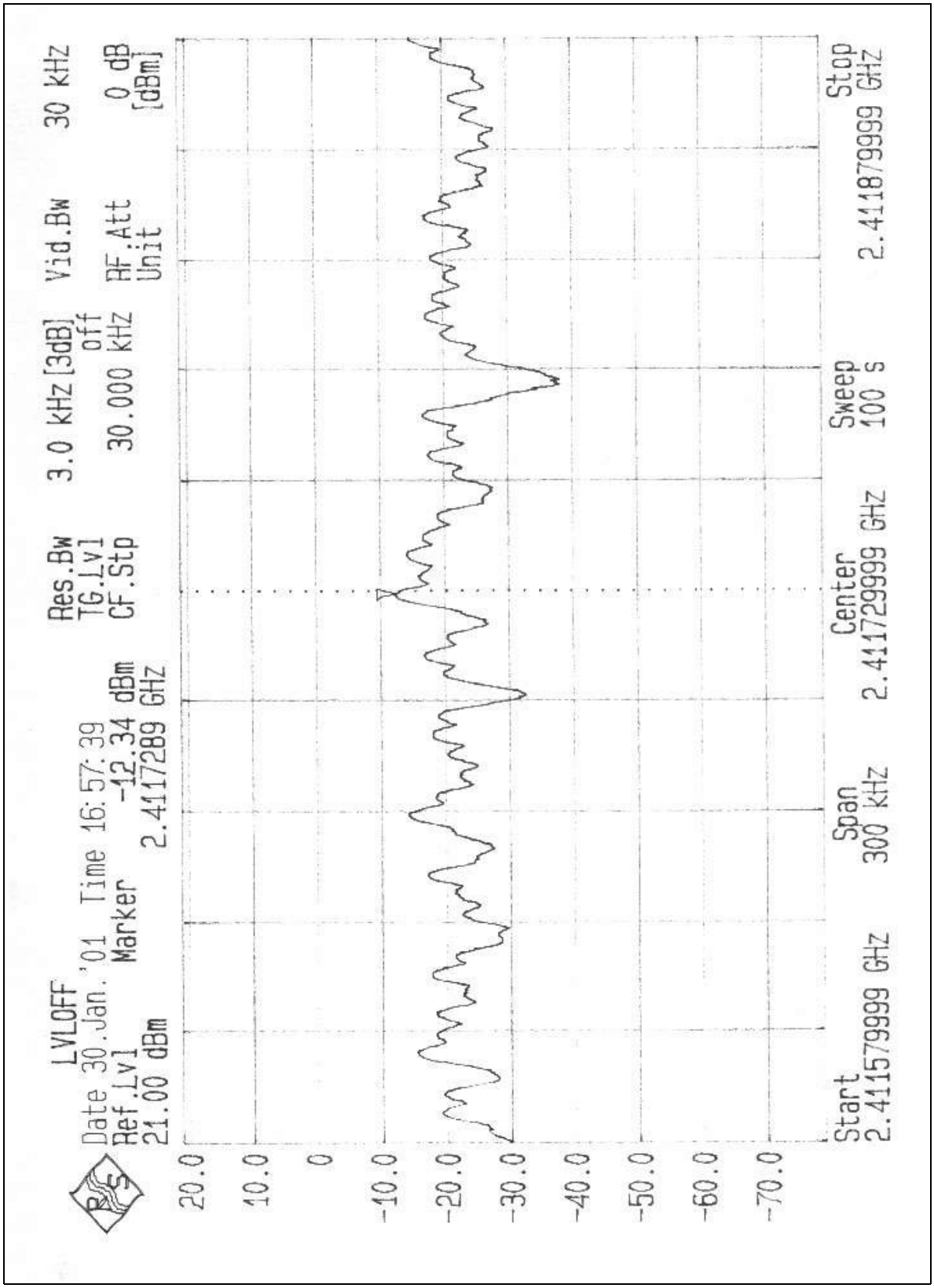
Same as 4.3.5

4.5.6 TEST RESULTS

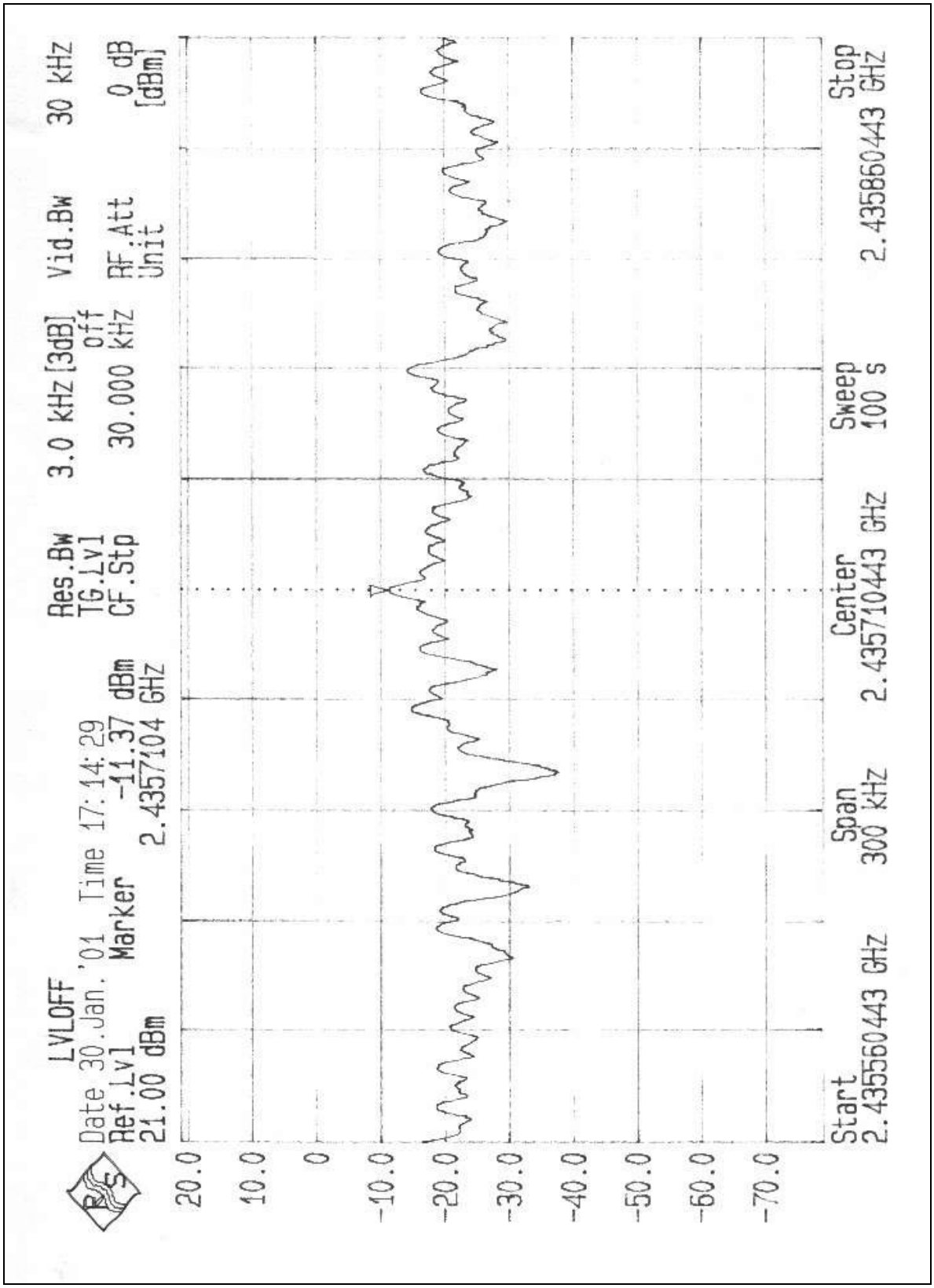
EUT	hp wireless USB network adapter	**MODEL**	J7801A
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	20 deg. C, 60%RH, 1005 hPa
TESTED BY: Gary Chang			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-12.34	8	PASS
6	2437	-11.42	8	PASS
11	2462	-11.37	8	PASS

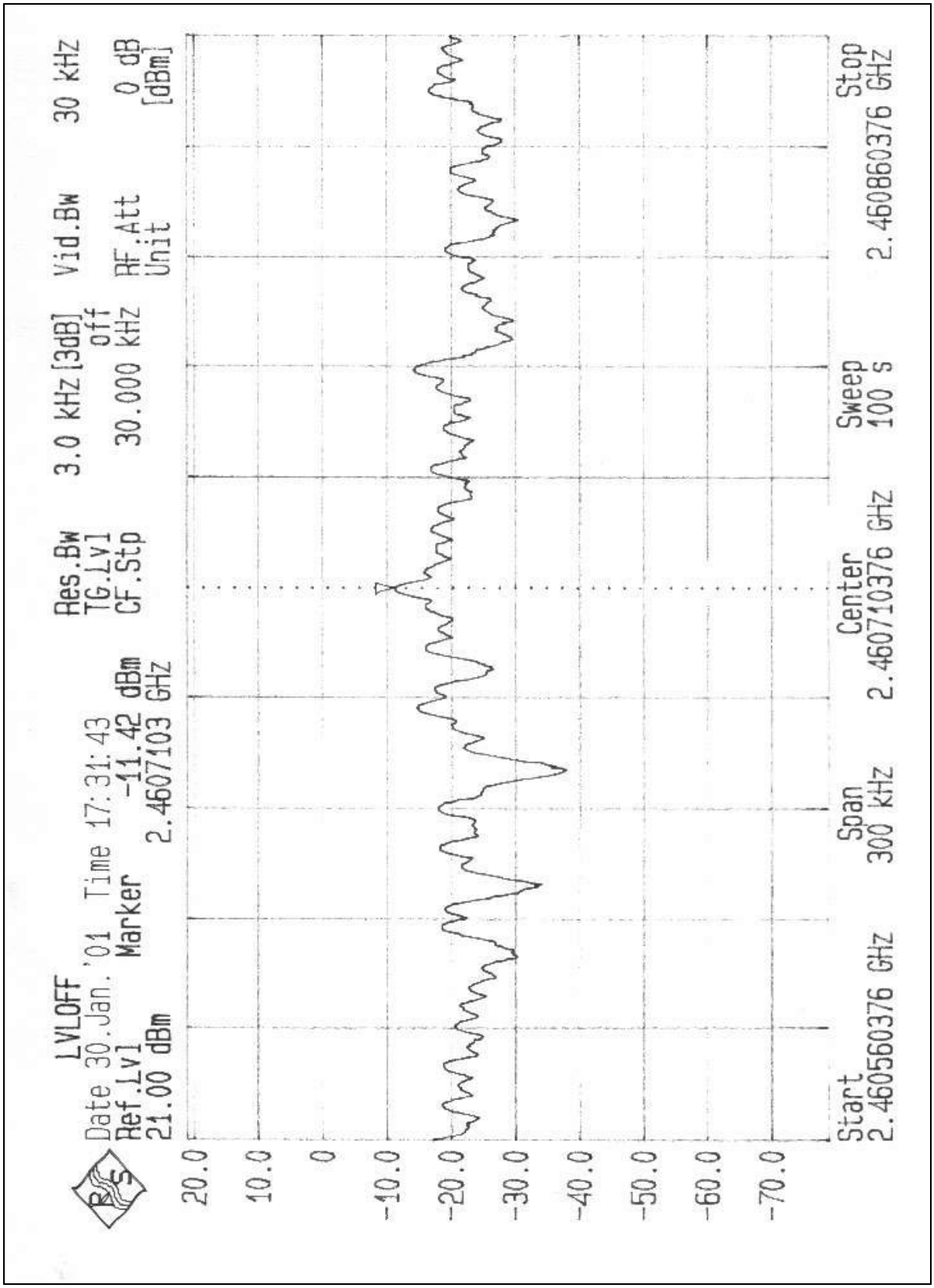
CH1


LVLOFF
Date 30.Jan.'01 Time 16:57:39
Ref.Lvl
21.00 dBm
Marker
-12.34 dBm
2.4117289 GHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl off
CF.Stp 30.000 kHz
Vid.Bw 30 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.411579999 GHz
Span 300 kHz
Center 2.411729999 GHz
Sweep 100 s
Stop 2.411879999 GHz

CH6


LVLOFF
Date 30.Jan.'01 Time 17:14:29
Ref.Lvl
21.00 dBm
Marker
-11.37 dBm
2.4357104 GHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl off
CF.Stp 30.000 kHz
Vid.Bw 30 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.435560443 GHz
Span 300 kHz
Center 2.435710443 GHz
Sweep 100 s
Stop 2.435860443 GHz

CH11


LVLOFF
Date 30.Jan.'01 Time 17:31:43
Ref.Lvl
21.00 dBm
Marker
-11.42 dBm
2.4607103 GHz
Res.Bw 3.0 kHz [3dB]
TG.Lvl off
CF.Stp 30.000 kHz
Vid.Bw 30 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Start 2.460560376 GHz
Span 300 kHz
Center 2.460710376 GHz
Sweep 100 s
Stop 2.460860376 GHz

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.

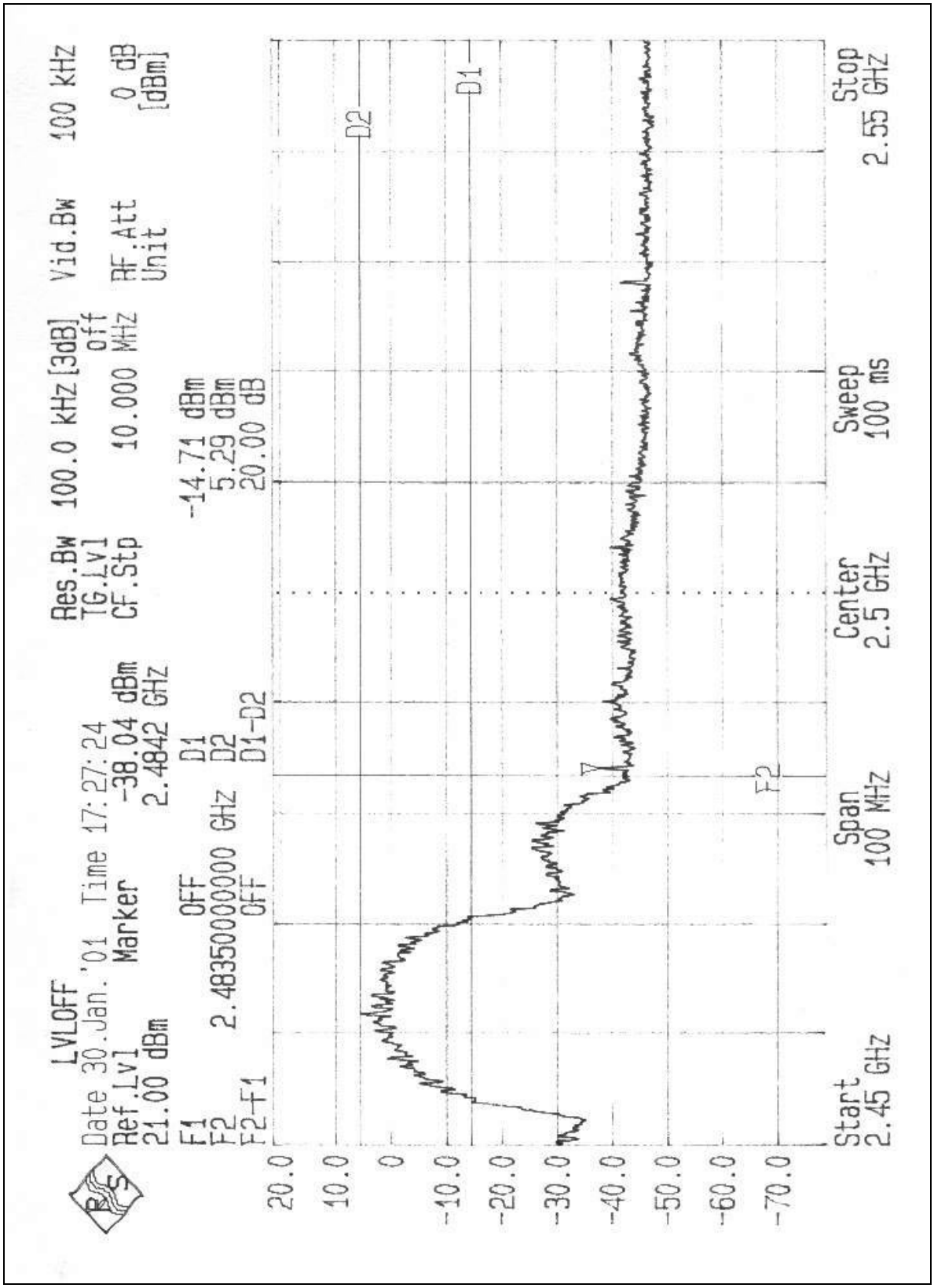
4.6.4 EUT OPERATING CONDITION

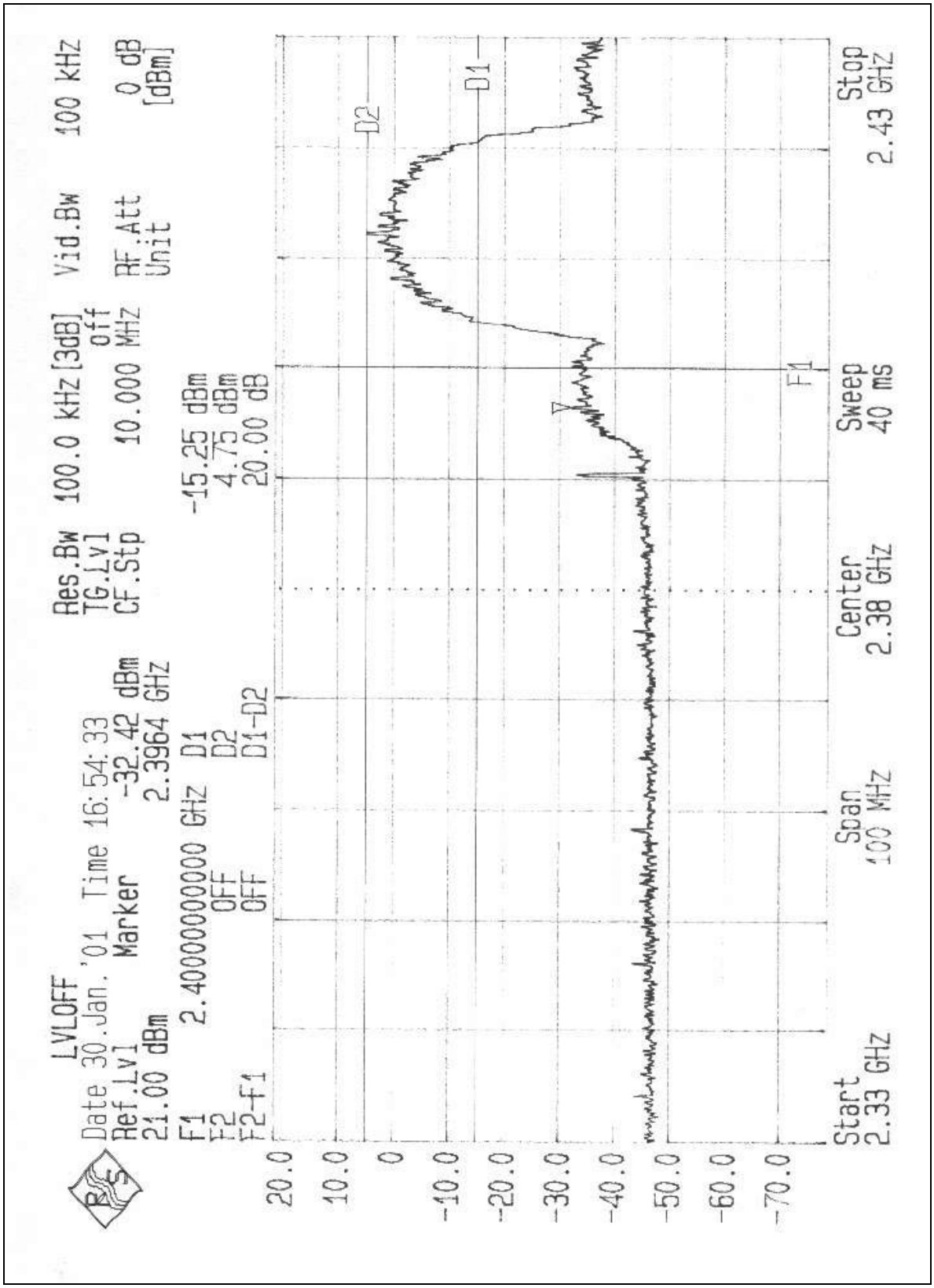
Same as Item 4.3.5

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 20.0dB delta between carrier maximum power and local maximum emission in restrict band (2.4941GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.6 (Page 25) is 94.4dBuV/m, so the maximum field strength in restrict band is 94.5-43.3= 51.2dBuV/m which is under 54 dBuV/m limit.


LVLOFF
Date 30.Jan.'01 Time 17:27:24
Ref.Lvl
21.00 dBm
Marker
-38.04 dBm
2.4842 GHz
F1 OFF
F2 2.48350000000 GHz
F2-F1 OFF
D1
D2
D1-D2
Res.Bw 100.0 kHz [3dB]
TG.Lvl off
CF.Stp 10.000 MHz
-14.71 dBm
5.29 dBm
20.00 dB
Vid.Bw 100 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
D1
D2
F2
Start 2.45 GHz
Span 100 MHz
Center 2.5 GHz
Sweep 100 ms
Stop 2.55 GHz


LVLOFF
Date 30.Jan.'01 Time 16:54:33
Ref.Lvl
21.00 dBm
Marker
-32.42 dBm
2.3964 GHz
F1 2.40000000000 GHz D1
F2 OFF D2
F2-F1 OFF D1-D2
Res.Bw 100.0 kHz [3dB]
TG.Lvl off
CF.Stp 10.000 MHz
-15.25 dBm
4.75 dBm
20.00 dB
Vid.Bw 100 kHz
RF.Att 0 dB
Unit [dBm]
20.0
10.0
0
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
D2
D1
F1
Start 2.33 GHz
Span 100 MHz
Center 2.38 GHz
Sweep 40 ms
Stop 2.43 GHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

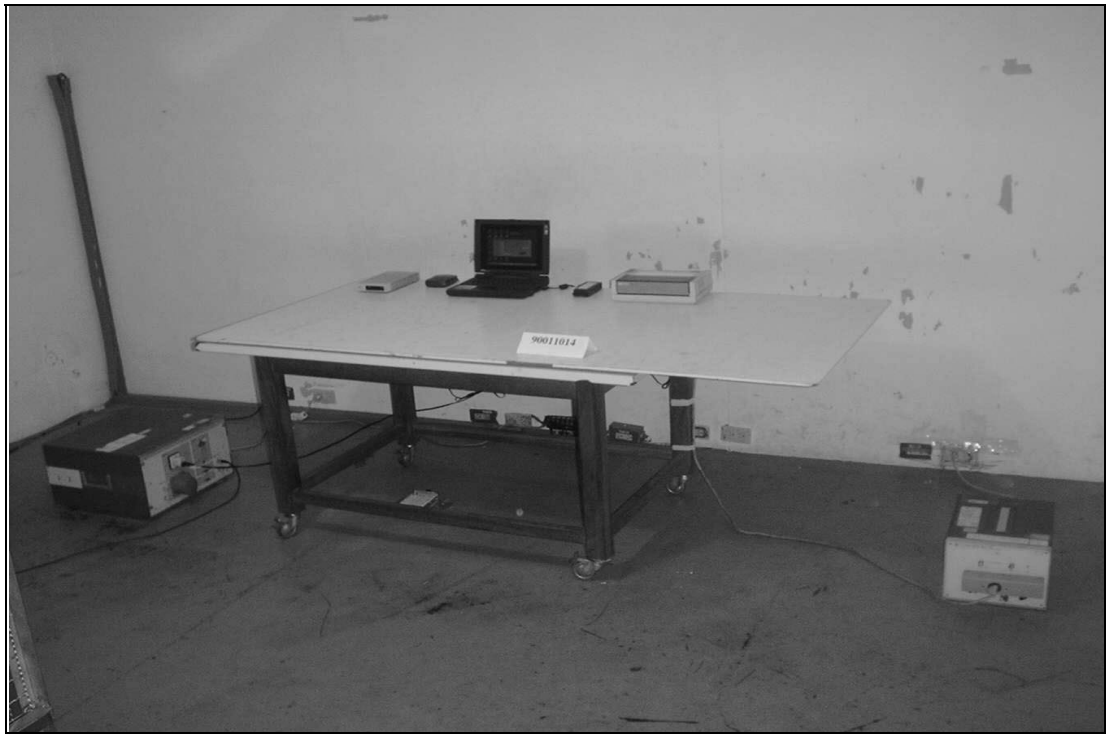
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional 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

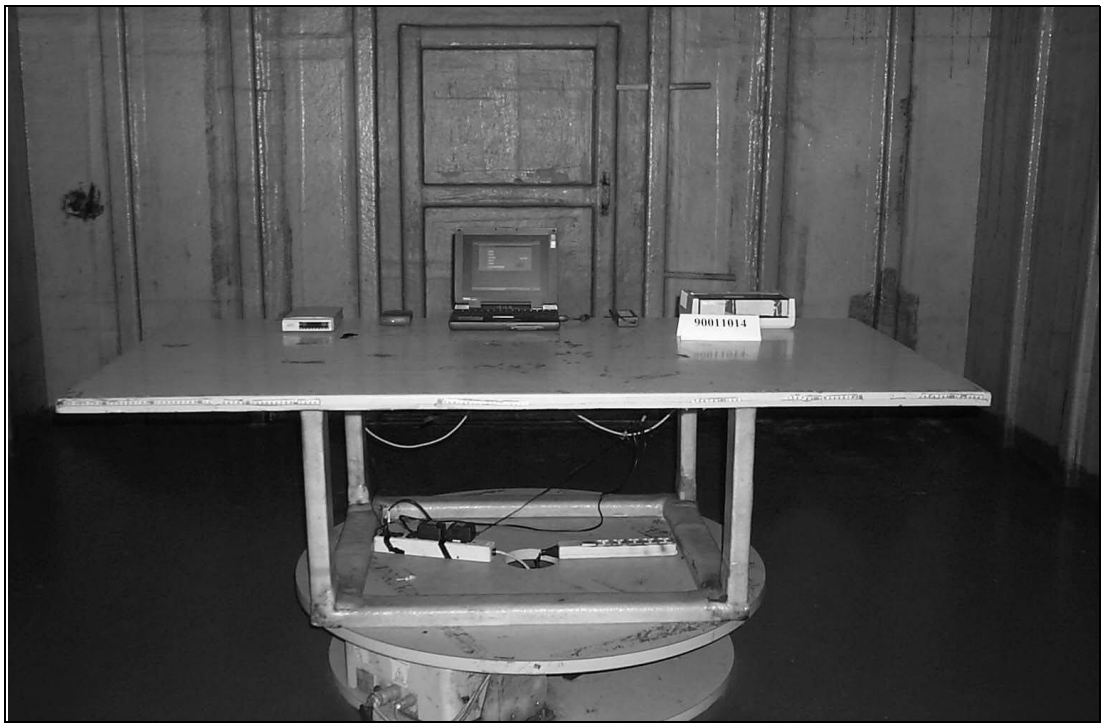
The antenna used in this product is Ceramic Patch Antenna. There is no antenna connector. And the maximum Gain of this antenna is only -2dBi.

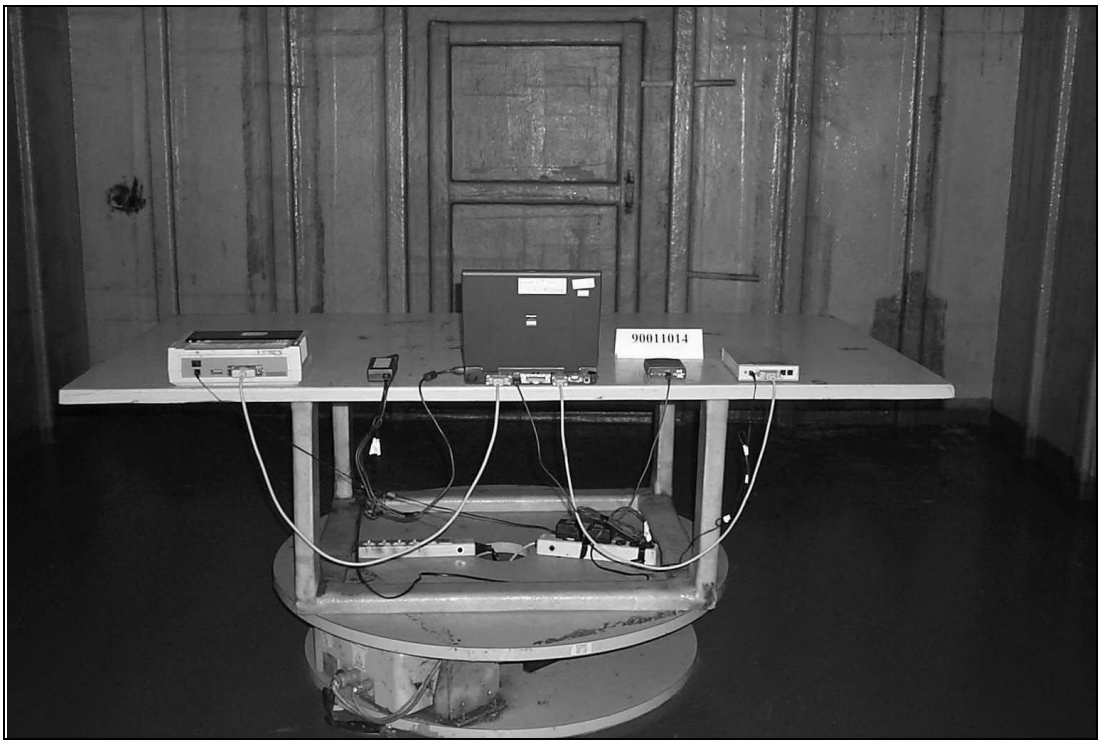
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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
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.