FCC TEST REPORT

REPORT NO.: RF930519L06C
MODEL NO.: DWL-G122
RECEIVED: Sep. 08, 2004
TESTED: Sep 15 to 30, 2004

APPLICANT: Alpha Networks Inc.

ADDRESS: NO.8,Li Hsing Rd VII ,SCIENCE-BASED INDUSTRIAL PARK,HSINCHU,TAIWAN,R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien, Taiwan, R.O.C.

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No. 2177-01

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1 CERTIFICATION

PRODUCT :	802.11g USB Adapter
MODEL NO. :	DWL-G122
BRAND :	D-Link
TESTED:	Sep 15 to 30, 2004
APPLICANT :	Alpha Networks Inc.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-2001

The above equipment (Model: DWL-G122) has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : Amanda Chu , **DATE:** Oct. 04, 2004
(Amanda Chu)

TECHNICAL ACCEPTANCE : Hank Chung , **DATE:** Oct. 04, 2004
Responsible for RF
(Hank Chung)

APPROVED BY : , **DATE:** Oct. 04, 2004
(Eric Lin, 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 –14.20dBuV at 0.181MHz
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 –8.8dBuV at 9748.00MHz
15.247(c)	Band Edge Measurement Limit: 20dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

NOTE: This report is prepared for FCC class II permissive change. Only conducted emission, radiated emission, Maximum Peak Output Power and Band Edge Measurement conducted emission were presented in this test report.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	802.11g USB Adapter
MODEL NO.	DWL-G122
POWER SUPPLY	5Vdc from host equipment
MODULATION TYPE	BPSK, QPSK, CCK, 16QAM, 64QAM
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	802.11b: 11/5.5/2/1Mbps 802.11g: 54/48/36/24/18/12/9/6Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	17.88dBm
ANTENNA TYPE	Printed antenna, peak gain: 2.0 dBi
DATA CABLE	USB cable (shielded, 1.5m)
I/O PORTS	USB port x 1
ASSOCIATED DEVICES	NA

NOTE:

1. This report is prepared for FCC class II permissive change. The difference compared with the original design is as the following:
   ◆Add one new antenna:

No.	*Antenna Type*	*Gain (dBi)*
1	Printed Antenna	2.0

2. The above EUT information was declared by the manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided to this EUT.

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

NOTE:

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

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an 802.11g USB Adapter . According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C. (15.247)

ANSI C63.4 : 2001

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

3.4 DESCRIPTION OF SUPPORT UNITS

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

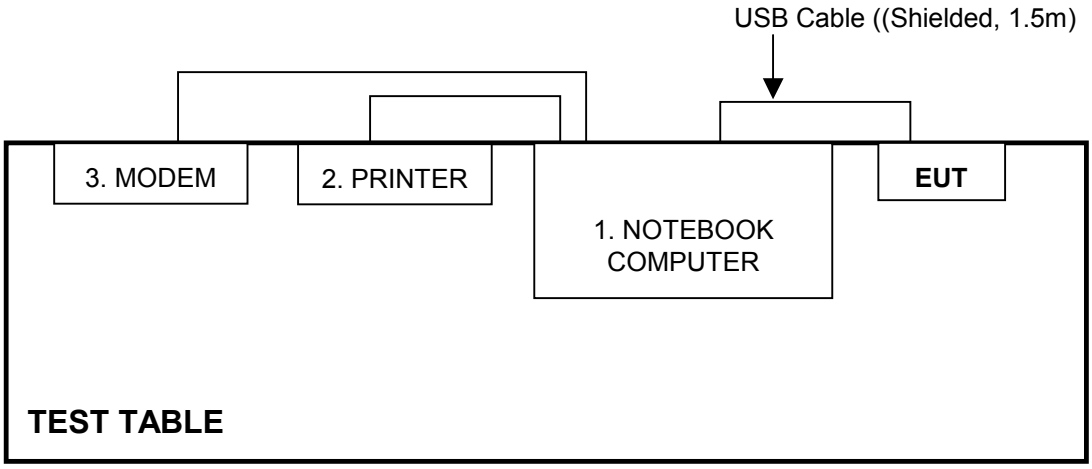
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Notebook Computer	Dell	PP01L	TW-09c748-12800-165-3171	FCC DoC
2	PRINTER	HP	C2642A	MY79F1C3MZ	B94C2642X
3	MODEM	ACEEX	1414	0206026776	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.8 m foil shielded wire, terminal by frame, PS2 Connector, w/o Core.
3	1.0 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core

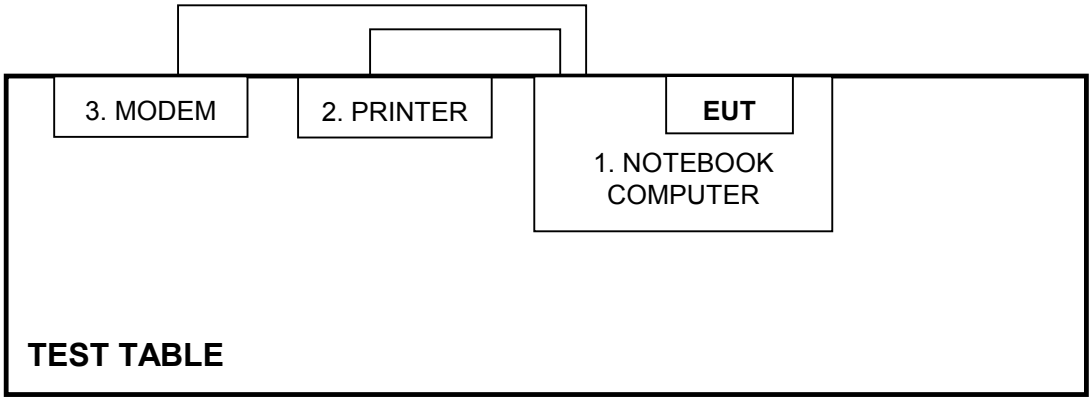
NOTE: All power cords of the above support units are non-shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

WITH USB CABLE:



WITHOUT USB CABLE:



NOTE: 1. Please refer to the photos of test configuration in Item 5 also.

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTES: (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.

4.1.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
*ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 04, 2004
*ROHDE & SCHWARZ LISN (for EUT)	ESHS-Z5	848773/004	Nov. 04, 2004
*KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 23, 2005
*RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 02, 2005
*Terminator(for KYORITSU)	50	3	May 10, 2005
*Software	Cond-V2e	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in ADT Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.
4 * = These equipment are used for the final measurement.
5 The measurement uncertainty is 2.53 dB, which is calculated as per the document CISPR 16-4

4.1.2 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.

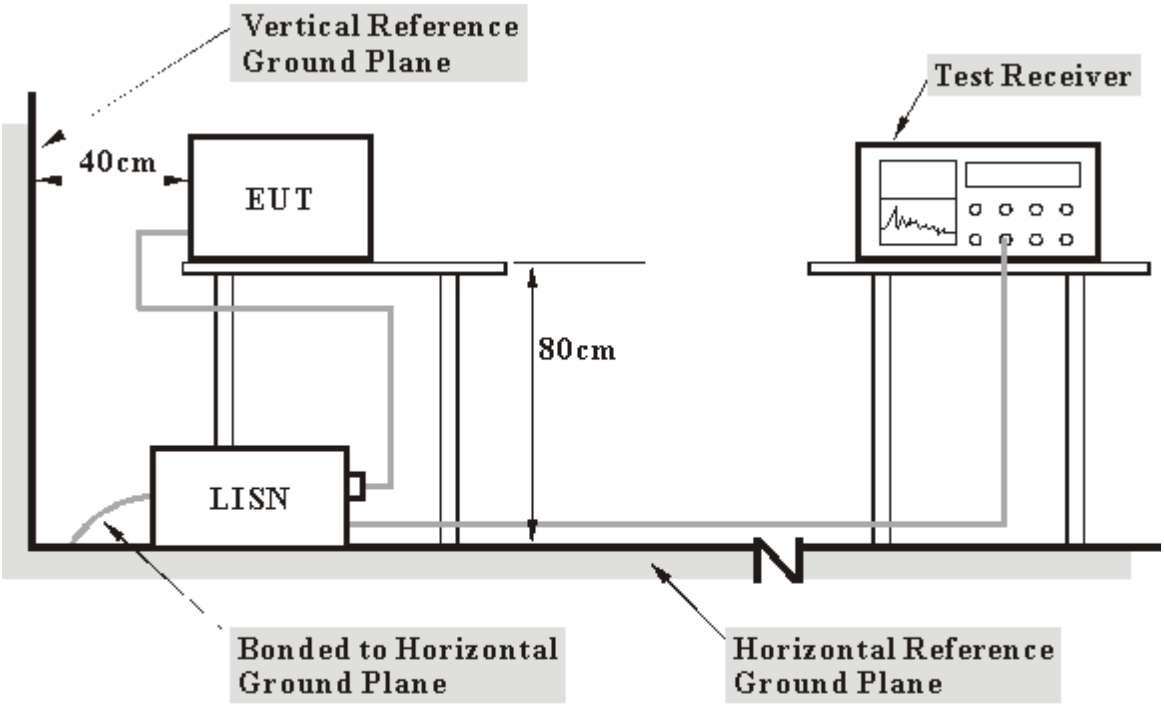
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

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. Plug the EUT into the support unit 1 (Notebook computer) which placed on a testing table.

b. The support unit 1 (Notebook computer) ran a test program “CTxRx 2.1.0.0" to enable EUT under transmission condition continuously at specific channel frequency.

c. Notebook computer sends "H" messages to modem.

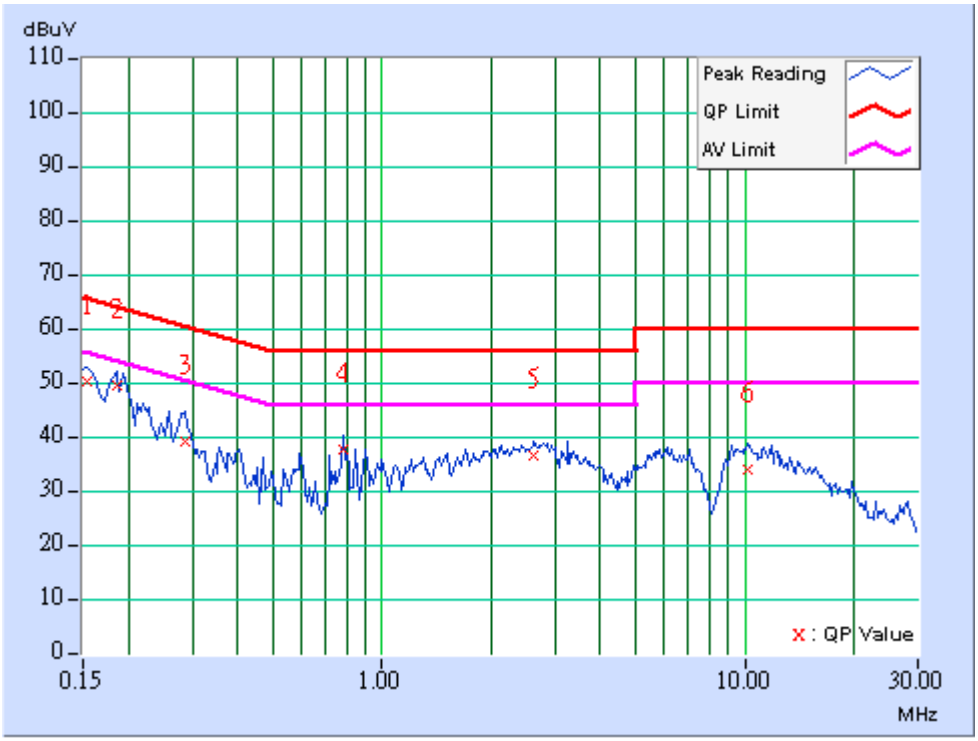
d. Notebook computer sends "H" messages to printer, and the printer prints them on paper.

4.1.6 TEST RESULTS

EUT	802.11g USB Adapter		
MODEL	DWL-G122	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	26 deg. C, 65%RH, 954 hPa	**TESTED BY**	Wen Yu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.21	49.72	-	49.93	-	65.79	55.79	-15.86	-
2	0.185	0.27	48.88	-	49.15	-	64.25	54.25	-15.10	-
3	0.287	0.26	38.27	-	38.53	-	60.62	50.62	-22.09	-
4	0.779	0.26	36.80	-	37.06	-	56.00	46.00	-18.94	-
5	2.627	0.33	35.67	-	36.00	-	56.00	46.00	-20.00	-
6	10.203	0.82	33.35	-	34.17	-	60.00	50.00	-25.83	-

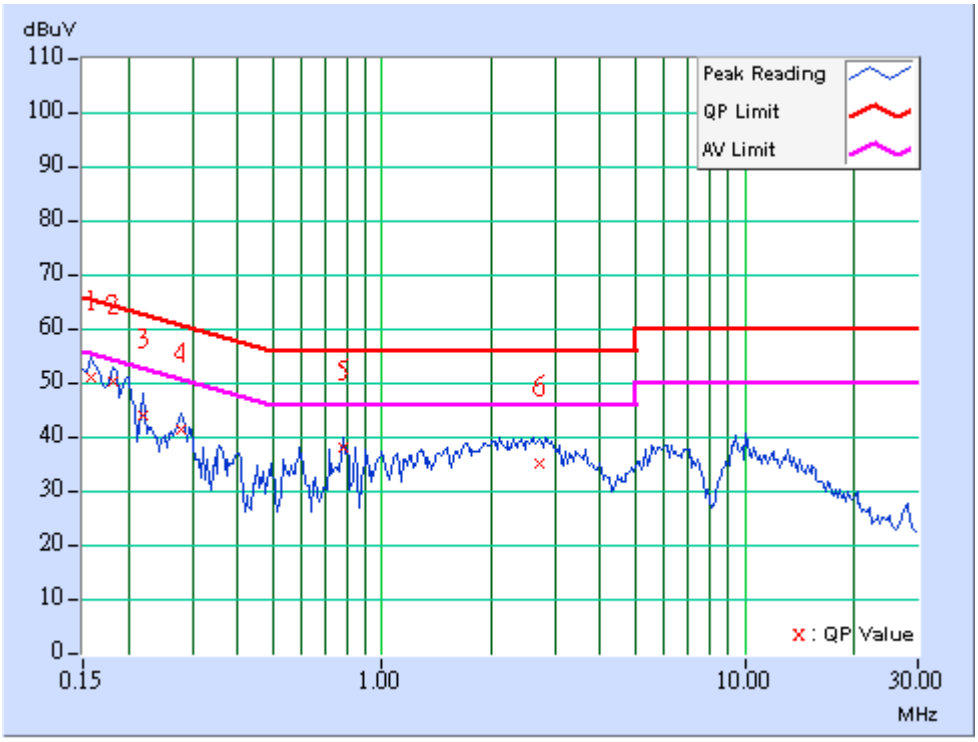
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	802.11g USB Adapter		
MODEL	DWL-G122	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	26 deg. C, 65%RH, 954 hPa	**TESTED BY**	Wen Yu

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.158	0.22	50.67	-	50.89	-	65.58	55.58	-14.69	-
2	**0.181**	**0.26**	**49.97**	**-**	**50.23**	**-**	**64.43**	**54.43**	**-14.20**	**-**
3	0.220	0.29	43.78	-	44.07	-	62.81	52.81	-18.74	-
4	0.279	0.26	41.02	-	41.28	-	60.85	50.85	-19.57	-
5	0.779	0.26	37.69	-	37.95	-	56.00	46.00	-18.05	-
6	2.720	0.34	34.73	-	35.07	-	56.00	46.00	-20.93	-

NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction Factor = Insertion loss + Cable loss
(6) Margin value = Emission level - Limit 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 (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	8594ER	3829U04676	Sep. 01, 2005
*ADVANTEST Spectrum Analyzer	R3271A	85060311	Jun. 16, 2005
*CHASE RF Pre_Amplifier	CPA9232	1057	May 10, 2005
*HP Pre_Amplifier	8449B	3008A01922	Oct. 13, 2004
*ROHDE & SCHWARZ Test Receiver	ESVS 10	849231 /019	Oct. 31, 2004
*CHASE Broadband Antenna	VULB9168	138	May 22, 2005
*Schwarzbeck Horn_Antenna	3115	5619	Jun. 16, 2005
*SCHWARZBECK Tunable Dipole Antenna	UHAP	897	Mar. 07, 2005
*SCHWARZBECK Tunable Dipole Antenna	VHAP	880	Mar. 07, 2005
*RF Switches (ARNITSU)	CS-201	1565157	Dec. 01, 2004
*RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Feb. 09. 2005
*RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1 GHz-021	Dec. 01, 2004
*Software	AS60P8	NA	NA
*CHANCE MOST Antenna Tower	AT-100	0203	NA
*CHANCE MOST Turn Table	TT-100	0203	NA

Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Tunable Dipole Antenna)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. C.
5. The FCC Site Registration No. is 656396.
6. The VCCI Site Registration No. is R-1626.
7. The CANADA Site Registration No. is IC 4824-3.
8. The measurement uncertainty is 3.56 dB, which is calculated as per the document CISPR 16-4

4.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

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

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

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

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

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

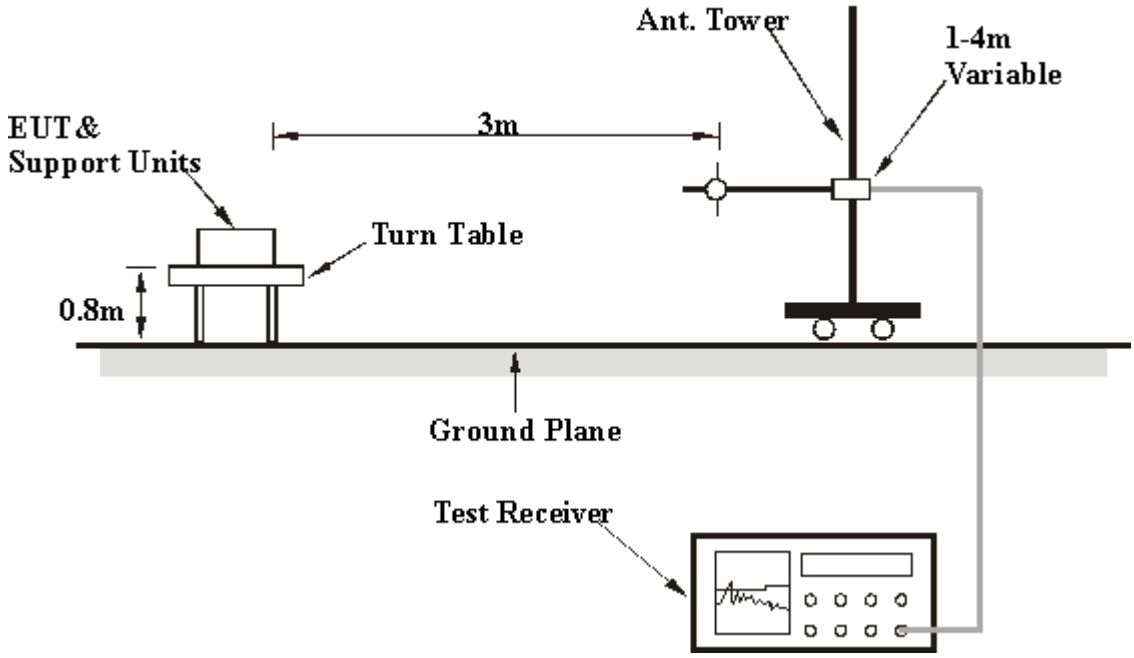
NOTE:

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	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 11, With USB Cable	**FREQUENCY RANGE**	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

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	120.00	20.00 QP	43.50	-23.50	2.62 H	311	8.00	12.10
2	240.00	27.70 QP	46.00	-18.30	1.34 H	121	15.00	12.80
3	299.99	29.90 QP	46.00	-16.10	1.10 H	242	14.70	15.20
4	320.00	29.30 QP	46.00	-16.70	1.00 H	247	13.50	15.80
5	324.20	24.50 QP	46.00	-21.50	1.11 H	250	8.50	16.00
6	374.99	23.00 QP	46.00	-23.00	1.01 H	15	5.40	17.60
7	528.03	23.80 QP	46.00	-22.20	1.00 H	22	1.90	21.90
8	959.98	30.00 QP	46.00	-16.00	1.00 H	92	0.50	29.50

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	120.00	28.90 QP	43.50	-14.60	1.06 V	23	16.80	12.10
2	240.00	28.90 QP	46.00	-17.10	1.00 V	304	16.10	12.80
3	299.99	22.50 QP	46.00	-23.50	1.00 V	83	7.30	15.20
4	320.00	25.30 QP	46.00	-20.70	1.00 V	39	9.50	15.80
5	324.19	27.70 QP	46.00	-18.30	1.03 V	354	11.70	16.00
6	374.99	24.90 QP	46.00	-21.10	1.11 V	347	7.30	17.60
7	528.04	26.20 QP	46.00	-19.80	1.11 V	3	4.40	21.90
8	959.98	30.60 QP	46.00	-15.40	1.05 V	10	1.10	29.50

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

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 11, Without USB Cable	**FREQUENCY RANGE**	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

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	120.00	18.10 QP	43.50	-25.40	1.41 H	3	6.00	12.10
2	240.02	29.50 QP	46.00	-16.50	1.41 H	258	16.80	12.80
3	299.96	34.90 QP	46.00	-11.10	1.05 H	15	19.70	15.20
4	320.00	24.60 QP	46.00	-21.40	1.00 H	14	8.80	15.80
5	324.19	26.30 QP	46.00	-19.70	1.08 H	323	10.40	16.00
6	374.99	29.00 QP	46.00	-17.00	2.54 H	6	11.50	17.60
7	528.03	24.90 QP	46.00	-21.10	1.50 H	194	3.10	21.90
8	959.98	32.60 QP	46.00	-13.40	1.41 H	310	3.10	29.50

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	120.00	24.70 QP	43.50	-18.80	1.09 V	11	12.60	12.10
2	240.00	25.40 QP	46.00	-20.60	1.00 V	296	12.60	12.80
3	299.99	29.10 QP	46.00	-16.90	2.08 V	134	13.90	15.20
4	320.00	23.80 QP	46.00	-22.20	1.24 V	349	8.00	15.80
5	324.19	29.10 QP	46.00	-16.90	1.04 V	83	13.10	16.00
6	375.00	27.20 QP	46.00	-18.80	1.00 V	158	9.70	17.60
7	528.03	29.90 QP	46.00	-16.10	1.00 V	1	8.00	21.90
8	959.99	30.40 QP	46.00	-15.60	1.00 V	322	1.00	29.50

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

4.2.8 TEST RESULTS -DSSS

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

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	2375.00	43.80 PK	74.00	-30.20	1.57 H	44	13.10	30.70
2	2390.00	50.40 PK	74.00	-23.60	1.46 H	133	16.60	33.80
3	*2412.00	108.20 PK			1.46 H	133	78.30	29.90
3	*2412.00	101.30 AV			1.46 H	133	71.40	29.90
4	4824.00	46.20 PK	74.00	-27.80	1.17 H	0	9.90	36.20
5	7236.00	48.90 PK	74.00	-25.10	1.61 H	172	7.20	41.70
6	9648.00	52.00 PK	74.00	-22.00	1.66 H	319	7.10	44.90
6	9648.00	43.10 AV	54.00	-10.90	1.66 H	319	-1.80	44.90

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	2375.00	45.50 PK	74.00	-28.50	1.50 V	266	14.80	30.70
2	2390.00	42.60 PK	74.00	-31.40	1.60 V	180	8.80	33.80
3	*2412.00	99.80 PK			1.60 V	180	69.90	29.90
3	*2412.00	93.50 AV			1.60 V	180	63.60	29.90
4	4824.00	46.00 PK	74.00	-28.00	1.50 V	13	9.80	36.20
5	7236.00	48.50 PK	74.00	-25.50	1.38 V	161	6.80	41.70
6	9648.00	51.60 PK	74.00	-22.40	1.60 V	23	6.60	44.90
6	9648.00	42.00 AV	54.00	-12.00	1.60 V	23	-2.90	44.90

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

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 6	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	106.40 PK			1.16 H	328	76.40	30.00
1	*2437.00	99.70 AV			1.16 H	328	69.70	30.00
2	4874.00	45.80 PK	74.00	-28.20	1.18 H	359	9.40	36.50
3	7311.00	49.20 PK	74.00	-24.80	1.66 H	180	7.40	41.80
4	9748.00	51.70 PK	74.00	-22.30	1.67 H	320	7.10	44.60
4	9748.00	43.50 AV	54.00	-10.50	1.67 H	320	-1.20	44.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	102.40 PK			1.87 V	238	72.40	30.00
1	*2437.00	95.80 AV			1.87 V	238	65.90	30.00
2	4874.00	45.90 PK	74.00	-28.10	1.16 V	50	9.40	36.50
3	7311.00	49.40 PK	74.00	-24.60	1.36 V	160	7.60	41.80
4	9748.00	51.30 PK	74.00	-22.70	1.61 V	22	6.70	44.60
4	9748.00	41.40 AV	54.00	-12.60	1.61 V	22	-3.20	44.60

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

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 11	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	106.00 PK			1.36 H	129	75.90	30.10
1	*2462.00	99.00 AV			1.36 H	129	68.90	30.10
2	2483.50	48.60 PK	74.00	-25.40	1.36 H	129	18.50	30.10
3	2498.00	41.20 PK	74.00	-32.80	1.22 H	335	9.60	31.60
4	4924.00	46.40 PK	74.00	-27.60	1.17 H	2	9.70	36.70
5	7386.00	49.50 PK	74.00	-24.50	1.63 H	181	7.60	41.80
6	9848.00	51.60 PK	74.00	-22.40	1.68 H	135	7.20	44.40
6	9848.00	43.20 AV	54.00	-10.80	1.68 H	135	-1.20	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	100.40 PK			1.18 V	184	70.30	30.10
1	*2462.00	93.20 AV			1.18 V	184	63.10	30.10
2	2483.50	43.00 PK	74.00	-31.00	1.18 V	184	12.90	30.10
3	2498.00	45.30 PK	74.00	-28.70	1.32 V	5	13.70	31.60
4	4924.00	46.70 PK	74.00	-27.30	1.33 V	20	10.00	36.70
5	7386.00	49.20 PK	74.00	-24.80	1.35 V	162	7.30	41.80
6	9848.00	51.30 PK	74.00	-22.70	1.62 V	21	6.90	44.40
6	9848.00	41.70 AV	54.00	-12.30	1.62 V	21	-2.70	44.40

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

4.2.9 TEST RESULTS-OFDM

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 1	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

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	2375.00	44.60 PK	74.00	-29.40	1.67 H	135	13.90	30.70
2	2390.00	49.40 PK	74.00	-24.60	1.76 H	122	15.60	33.80
3	*2412.00	102.20 PK			1.76 H	122	72.30	29.90
3	*2412.00	93.80 AV			1.76 H	122	63.90	29.90
4	4824.00	46.20 PK	74.00	-27.80	1.39 H	38	10.00	36.20
5	7236.00	49.10 PK	74.00	-24.90	1.66 H	72	7.40	41.70
6	9648.00	51.70 PK	74.00	-22.30	1.58 H	336	6.80	44.90
6	9648.00	43.30 AV	54.00	-10.70	1.58 H	336	-1.60	44.90

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	2375.00	48.30 PK	74.00	-25.70	1.67 V	334	17.60	30.70
2	2390.00	43.10 PK	74.00	-30.90	1.48 V	18	9.30	33.80
3	*2412.00	94.20 PK			1.48 V	18	64.30	29.90
3	*2412.00	86.80 AV			1.48 V	18	56.90	29.90
4	4824.00	45.50 PK	74.00	-28.50	1.50 V	14	9.30	36.20
5	7236.00	48.70 PK	74.00	-25.30	1.39 V	238	7.00	41.70
6	9648.00	51.40 PK	74.00	-22.60	1.64 V	13	6.50	44.90
6	9648.00	43.00 AV	54.00	-11.00	1.64 V	13	-1.90	44.90

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

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 6	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	103.10 PK			1.18 H	328	73.10	30.00
1	*2437.00	94.90 AV			1.18 H	328	65.00	30.00
2	4874.00	46.70 PK	74.00	-27.30	1.38 H	29	10.20	36.50
3	7311.00	49.60 PK	74.00	-24.40	1.55 H	332	7.80	41.80
4	9748.00	52.40 PK	74.00	-21.60	1.58 H	327	7.80	44.60
4	**9748.00**	**45.20 AV**	**54.00**	**-8.80**	**1.58 H**	**327**	**0.60**	**44.60**

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2437.00	97.70 PK			1.11 V	242	67.70	30.00
1	*2437.00	90.10 AV			1.11 V	242	60.10	30.00
2	4874.00	45.70 PK	74.00	-28.30	1.17 V	45	9.20	36.50
3	7311.00	49.40 PK	74.00	-24.60	1.33 V	235	7.60	41.80
4	9748.00	51.20 PK	74.00	-22.80	1.57 V	10	6.60	44.60
4	9748.00	42.50 AV	54.00	-11.50	1.57 V	10	-2.20	44.60

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

EUT	802.11g USB Adapter	**MODEL**	DWL-G122
MODE	Channel 11	**FREQUENCY RANGE**	1000~25000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION & BANDWIDTH**	Peak (PK) Average (AV) 1 MHz
ENVIRONMENTAL CONDITIONS	27 deg. C, 59%RH, 954 hPa	**TESTED BY**	Wen Yu

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	97.80 PK			1.03 H	65	67.70	30.10
1	*2462.00	90.30 AV			1.03 H	65	60.20	30.10
2	2483.50	45.60 PK	74.00	-28.40	1.03 H	65	15.50	30.10
3	2498.00	43.60 PK	74.00	-30.40	1.26 H	304	12.00	31.60
4	4924.00	45.70 PK	74.00	-28.30	1.36 H	28	9.00	36.70
5	7386.00	48.10 PK	74.00	-25.90	1.57 H	339	6.30	41.80
6	9848.00	52.50 PK	74.00	-21.50	1.47 H	349	8.10	44.40
6	9848.00	43.80 AV	54.00	-10.20	1.47 H	349	-0.60	44.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	93.90 PK			1.76 V	6	63.80	30.10
1	*2462.00	85.90 AV			1.76 V	6	55.80	30.10
2	2483.50	42.20 PK	74.00	-31.80	1.76 V	6	12.10	30.10
3	2498.00	48.60 PK	74.00	-25.40	1.31 V	4	16.90	31.60
4	4924.00	45.80 PK	74.00	-28.20	1.34 V	15	9.10	36.70
5	7386.00	48.90 PK	74.00	-25.10	1.30 V	238	7.10	41.80
6	9848.00	52.90 PK	74.00	-21.10	1.65 V	0	8.50	44.40
6	9848.00	44.30 AV	54.00	-9.70	1.65 V	0	0.00	44.40

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

4.3 MAXIMUM PEAK OUTPUT POWER

4.3.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May 06, 2005
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2005
TEKTRONIX OSCILLOSCOPE	TDS 220	B027241	Jun. 29, 2005
NARDA DETECTOR	4503A	FSCM99899	NA

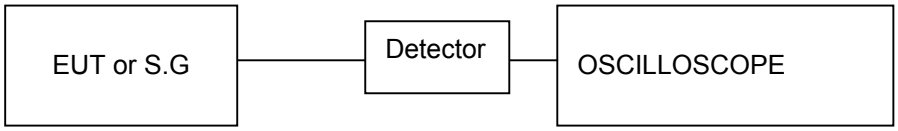
Note:

1. The measurement uncertainty is 1.25dB, which is calculated as per the document ETSI TR 100 028.
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 PROCEDURES

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

4.3.4 TEST SETUP



4.3.5 EUT OPERATING CONDITIONS

Same as Item 4.1.5.

4.3.6 TEST RESULTS-DSSS

EUT	802.11g USB Adapter		
MODEL	DWL-G122	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 65%RH, 954 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Wen Yu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	16.09	30	PASS
6	2437	17.88	30	PASS
11	2462	15.98	30	PASS

4.3.7 TEST RESULTS-OFDM

EUT	802.11g USB Adapter		
MODEL	DWL-G122	**ENVIRONMENTAL CONDITIONS**	28 deg. C, 65%RH, 954 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Wen Yu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	14.2	30	PASS
6	2437	17.75	30	PASS
11	2462	14.12	30	PASS

4.4 BAND EDGES MEASUREMENT

4.4.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 1 MHz Resolution Bandwidth).

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100037	May 06, 2005

Note:

1. The measurement uncertainty is 2.79dB, which is calculated as per the document ETSI TR 100 028
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 PROCEDURE

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

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 EUT OPERATING CONDITION

Same as Item 4.3.6

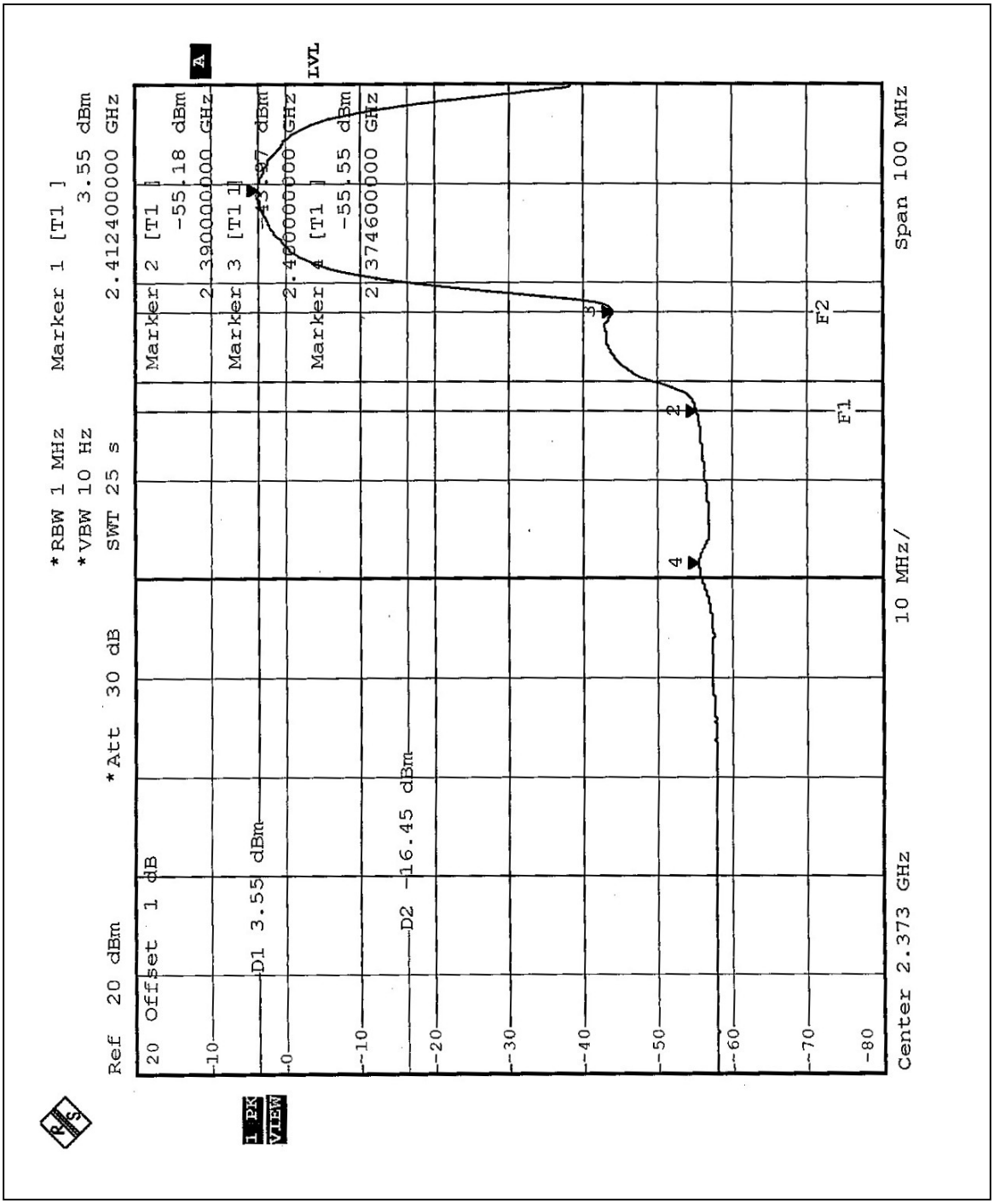
4.4.6 TEST RESULTS-DSSS

The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

NOTE (1): The band edge emission plot on the following first page shows 58.73dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 101.3dBuV/m, so the maximum field strength in restrict band is 101.3-58.73=42.57dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 58.51dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2. is 99.0dBuV/m, so the maximum field strength in restrict band is 99.0-58.51=40.49dBuV/m which is under 54 dBuV/m limit.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*Att 30 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
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Marker 2 [T1]
-55.18 dBm
2.390000000 GHz
Marker 3 [T1]
-13.87 dBm
2.400000000 GHz
Marker 4 [T1]
-55.55 dBm
2.374600000 GHz
20 Offset 1 dB
D1 3.55 dBm
D2 -16.45 dBm
Center 2.373 GHz
10 MHz/
Span 100 MHz
F1
F2
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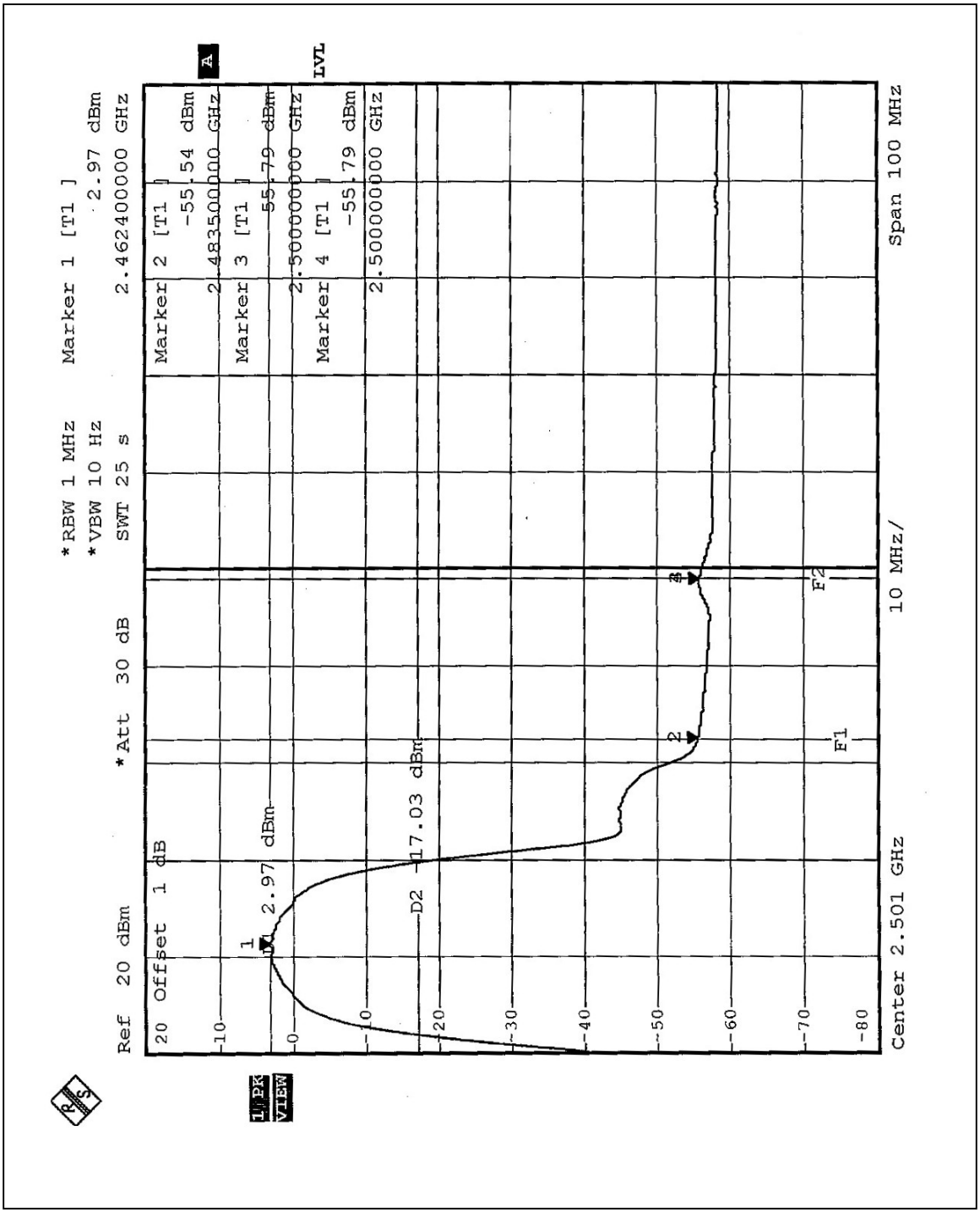
VIEW
A
LVL


Ref 20 dBm
Att 30 dB
RBW 1 MHz
VBW 10 Hz
SWT 25 s
Marker 1 [T1]
2.97 dBm
2.462400000 GHz
Marker 2 [T1]
-55.54 dBm
2.483500000 GHz
Marker 3 [T1]
-55.79 dBm
2.500000000 GHz
Marker 4 [T1]
-55.79 dBm
2.500000000 GHz
Offset 1 dB
2.97 dBm
D2 -17.03 dBm
F1
F2
Center 2.501 GHz
10 MHz/
Span 100 MHz

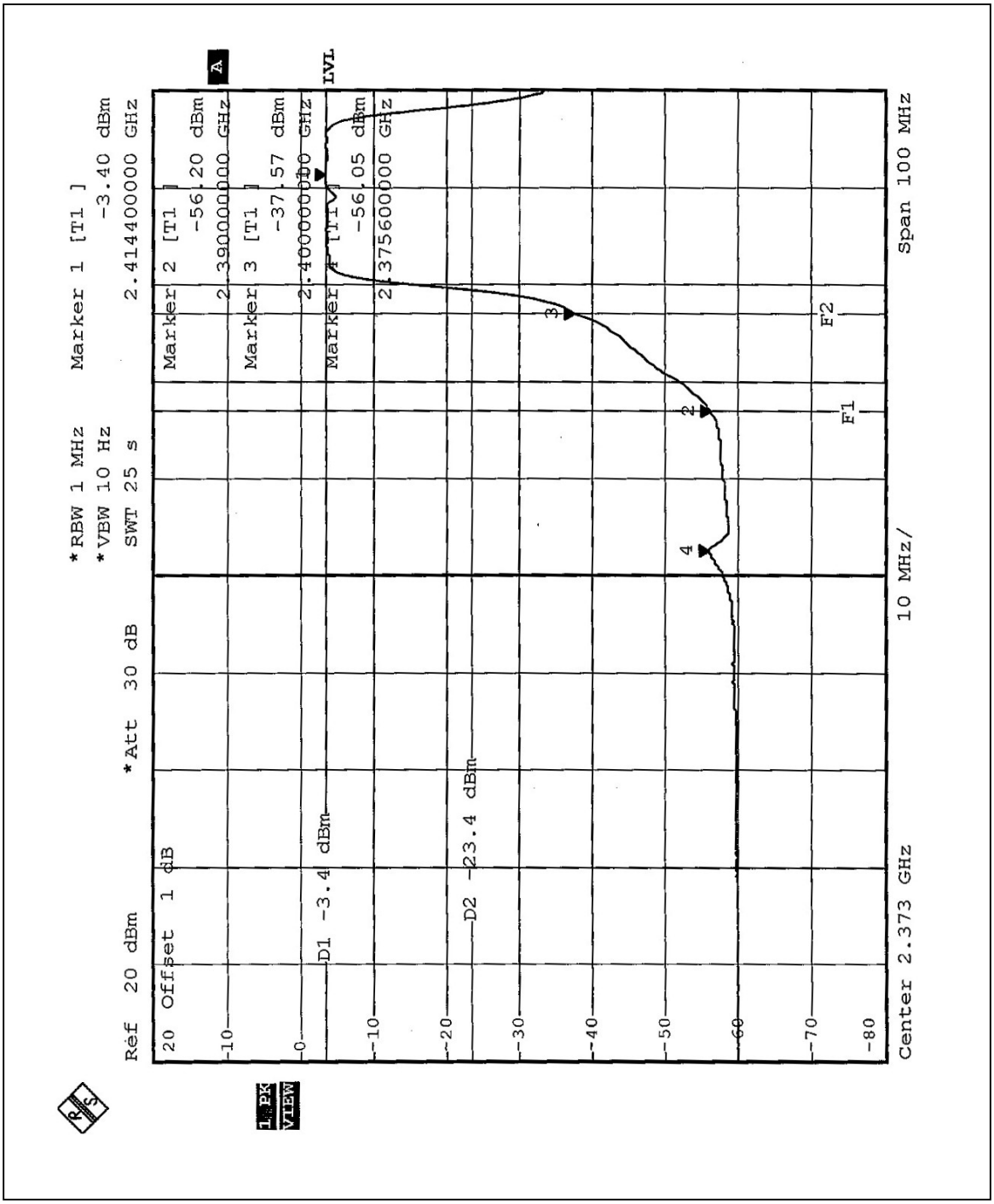
4.4.7 TEST RESULTS -OFDM

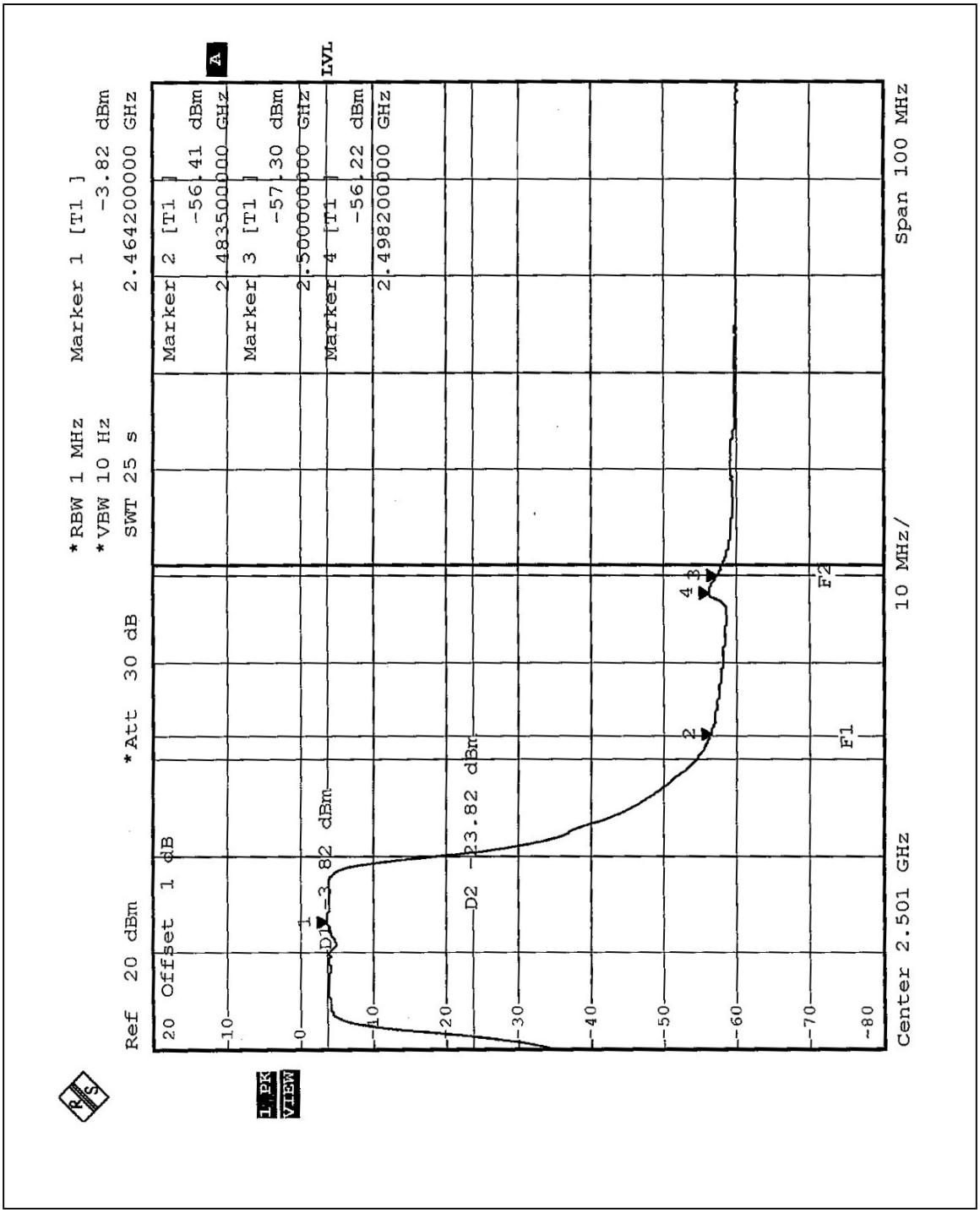
The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

Note - The delta method is only used up to 2 MHz away from the restricted bandage, The radiated emissions which located in other restricted frequency band, the result, please refer to 4.2.

NOTE (1): The band edge emission plot on the following first page shows 52.8dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2 is 93.8dBuV/m, so the maximum field strength in restrict band is 93.8-52.8=41.0dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 52.59dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2. is 90.3dBuV/m, so the maximum field strength in restrict band is 90.3-52.59=37.71dBuV/m which is under 54 dBuV/m limit.


Ref 20 dBm
Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-3.40 dBm
2.414400000 GHz
Marker 2 [T1]
-56.20 dBm
2.390000000 GHz
Marker 3 [T1]
-37.57 dBm
2.400000000 GHz
Marker 4 [T1]
-56.05 dBm
2.375600000 GHz
D1 -3.4 dBm
D2 -23.4 dBm
F1
F2
Center 2.373 GHz
10 MHz/
Span 100 MHz


Ref 20 dBm
Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 10 Hz
SWT 25 s
Marker 1 [T1]
-3.82 dBm
2.464200000 GHz
Marker 2 [T1]
-56.41 dBm
2.483500000 GHz
Marker 3 [T1]
-57.30 dBm
2.500000000 GHz
Marker 4 [T1]
-56.22 dBm
2.498200000 GHz
A
LVL
D1 -3.82 dBm
D2 -23.82 dBm
F1
F2
Center 2.501 GHz
10 MHz/
Span 100 MHz
I PK
VIEW

4.5 ANTENNA REQUIREMENT

4.5.1 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.

4.5.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Printed Antenna without connector. The maximum Gain of the antenna is 2dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (With USB Cable)

CONDUCTED EMISSION TEST (Without USB Cable)

RADIATED EMISSION TEST (With USB Cable)

RADIATED EMISSION TEST (Without USB Cable)

6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP, UL, A2LA
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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

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

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