



FCC TEST REPORT

REPORT NO.: RF90021506

MODEL NO.: WN3501A

RECEIVED: February 15, 2001

TESTED: February 21, 2001

APPLICANT: Eumitcom Technology Inc.

ADDRESS: 2F, No.2, Li Hsin Rd., Science-Based Industrial Park,
Hsinchu, Taiwan, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 13-1, Lane 19, Wen Shan 3rd St., Kweishan,
Taoyuan Hsien, Taiwan, R.O.C.

This test report consists of 48 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by NVLAP or any U.S. government agencies. The test results in the report only apply to the tested sample.



Accredited Laboratory

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	6
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS	7
3.4	DESCRIPTION OF SUPPORT UNITS	7
4	TEST PROCEDURES AND RESULTS	8
4.1	CONDUCTED EMISSION MEASUREMENT	8
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT	8
4.1.2	TEST INSTRUMENTS	8
4.1.3	TEST PROCEDURES	9
4.1.4	TEST SETUP	10
4.1.5	TEST RESULTS	11
4.2	RADIATED EMISSION MEASUREMENT	17
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT	17
4.2.2	TEST INSTRUMENTS	18
4.2.3	TEST PROCEDURES	19
4.2.4	TEST SETUP	20
4.2.5	TEST RESULTS	21
4.3	6DB BANDWIDTH MEASUREMENT	25
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT	25
4.3.2	TEST INSTRUMENTS	25
4.3.3	TEST PROCEDURE.....	26
4.3.4	TEST SETUP	26
4.3.5	EUT OPERATING CONDITION	26
4.3.6	TEST RESULTS	27
4.4	MAXIMUM PEAK OUTPUT POWER.....	31
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT	31
4.4.2	INSTRUMENTS.....	31
4.4.3	TEST PROCEDURES	32
4.4.4	TEST SETUP	32
4.4.5	EUT OPERATING CONDITION.....	32
4.4.6	TEST RESULTS	33
4.5	POWER SPECTRAL DENSITY MEASUREMENT	34
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	34
4.5.2	TEST INSTRUMENTS	34

4.5.3	TEST PROCEDURE.....	35
4.5.4	TEST SETUP	35
4.5.5	EUT OPERATING CONDITION.....	35
4.5.6	TEST RESULTS	36
4.6	BAND EDGES MEASUREMENT	40
4.6.1	LIMITS OF BAND EDGES MEASUREMENT	40
4.6.2	TEST INSTRUMENTS	40
4.6.3	TEST PROCEDURE.....	40
4.6.4	EUT OPERATING CONDITION.....	41
4.6.5	TEST RESULTS	41
4.6.6	NOTE ON BAND EDGE EMISSION.....	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
ANNEX 1	PROCESSING GAIN OF DIRECT SEQUENCE SPREAD SPECTRUM MEASUREMENT	
ANNEX 2	DSSS INFORMATION	
ANNEX 3	PHOTOGRAPHS OF EUT	



1 CERTIFICATION

PRODUCT : Wireless USB Adapter
BRAND NAME : Eumitcom
MODEL NO. : WN3501A
APPLICANT : Eumitcom Technology Inc.
OEM BRAND HOLDER : SMC Networks Inc.
OEM BRAND NAME: SMC
OEM PRODUCT NAME : EZ Connect Wireless USB Adapter
OEM MODEL NO. : SMC2662W
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247),
ANSI C63.4-1992
SITE REGISTRATION 90422 (FCC)
NO : IC 3789-5 (Canada IC)

We, **Advance Data Technology Corporation**, hereby certify that one sample WN3501A of the designation has been tested in our facility on February 21, 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 : Steven Lu , Date: Feb. 23, 2001
Steven Lu

Prepared by : Demi Chen , Date: Feb. 23, 2001
Demi Chen

Approved by : Alan Lane , Date: Feb. 23, 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 PARAGRAPH	TEST REQUIREMENTS	RESULT	REMARK
15.107	AC Power Conducted Emissions Spec.: 48 dBuV	Yes	Minimum passing margin is -13.18 dBuV At 23.92839 MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Spec.: min. 500 KHz	Yes	11.04 MHz > 500 kHz
15.247(b)	Maximum Peak Output Power Spec.: max. 30 dBm	Yes	17.41 dBm < 30 dBm
15.247(c)	Transmitter Radiated Emissions Spec.: Table 15.209	Yes	Minimum passing margin is -7.6 dBuV At 660.0 MHz
15.247(d)	Power Spectral Density Spec.: max. 8dBm	Yes	-12.54 dBm < 8 dBm
15.247(c)	Band Edge Measurement	Yes	N/A
15.247(e)	Processing Gain of Direct Sequence Spread Spectrum System Spec.: min. 10 dB	Yes	11.4dB $\geq$ 10dB

NOTE:

The receiver portion of the EUT has been tested in ADT. The test result has been verified to comply with FCC Part 15, Subpart B, Class B – Computing Devices (FCC DoC). The engineering test report can be provided upon FCC requests.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless USB Adapter
MODEL NO.	WN3501A
POWER SUPPLY	5VDC power from USB port
DATA CABLE	1.2m (Nonshielding)
I/O PORTS	NA
MODULATION TYPE	DSSS BPSK/QPSK/CCK
TRANSFER RATE	11/5.5/2/1Mbps
FREQUENCY RANGE	2400 ~ 2483.5MHz
NUMBER OF CHANNEL	11
ANTENNA TYPE	Dual Monopole
ASSOCIATED DEVICES	NA
DESCRIPTION OF MODELS	NA

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		

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Wireless USB Adapter, according to the specifications of the manufacturers, it must comply with the requirements of the following standards:

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

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.	I/O Cable
1	NOTEBOOK	DELL	PPX	99125	Nonshielded Power (1.8m)
2	PRINTER	HP	2225C+	3123S97230	Nonshielded Power (1.8m) Shielded Signal (1.2m)
3	MODEM	ACEEX	1414	980020503	Nonshielded Power (1.9m) Shielded Signal (1.2m)

4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

Notes:

- 1.The lower limit shall apply at the transition frequencies.
- 2.All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 6, 2001
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 9, 2001
ROHDE & SCHWARZ 4-wire ISN	ENY41	835154/007	Apr. 26, 2001
EMCO-L.I.S.N.	3825/2	9204-1964	July 9, 2001
Shielded Room	Site 2	ADT-C02	NA

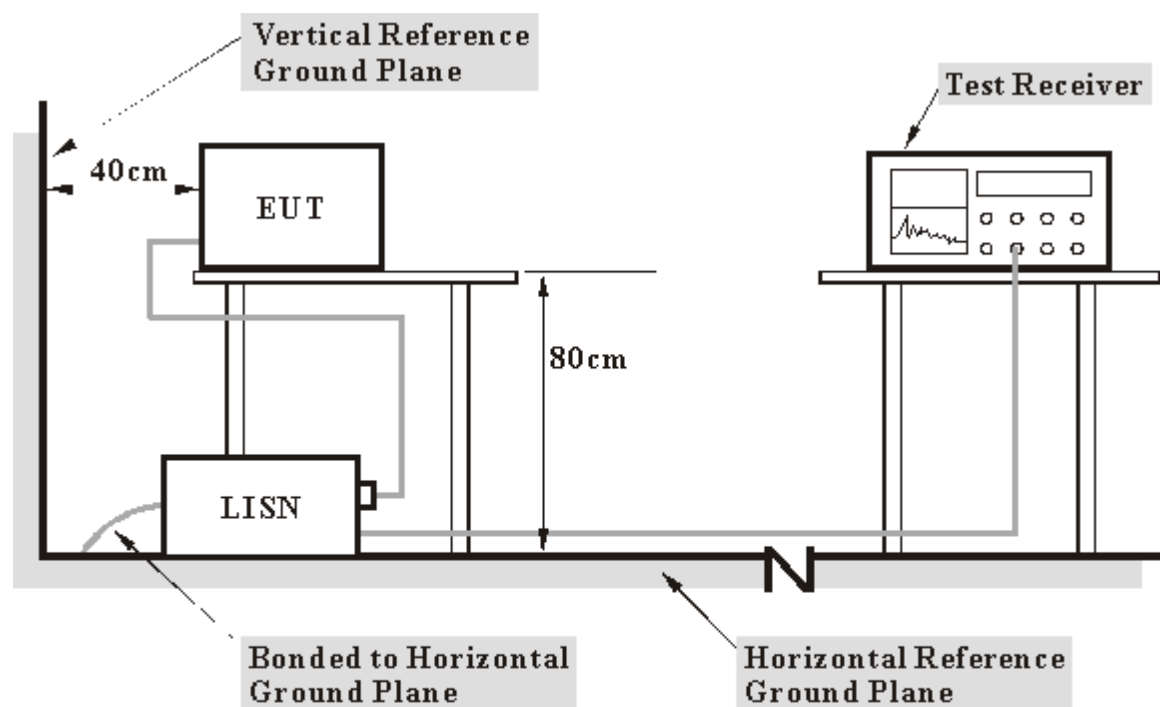
- Notes: 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.



4.1.3 TEST PROCEDURES

1. Place the EUT at 0.4 meter away from the conduction wall of the shielded room.
2. Connect the EUT to the power mains through a Line Impedance Stabilization Network (LISN).
3. Connect the other support units to the other LISN too.
4. Make sure the 50Ω / $50\mu\text{H}$ coupling impedance is provided to the measurement instrument by the LISNs.
5. Measure the maximum conducted interference on both lines of the power mains connects to the EUT, within frequency range 450KHz ~ 30MHz.
6. The emission level under limit by 10dB is not needed to 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 in this test report (**Photographs of the Test Configuration**).

4.1.5 TEST RESULTS

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 1
 Tested by : STEVEN

Location: Conduction 2

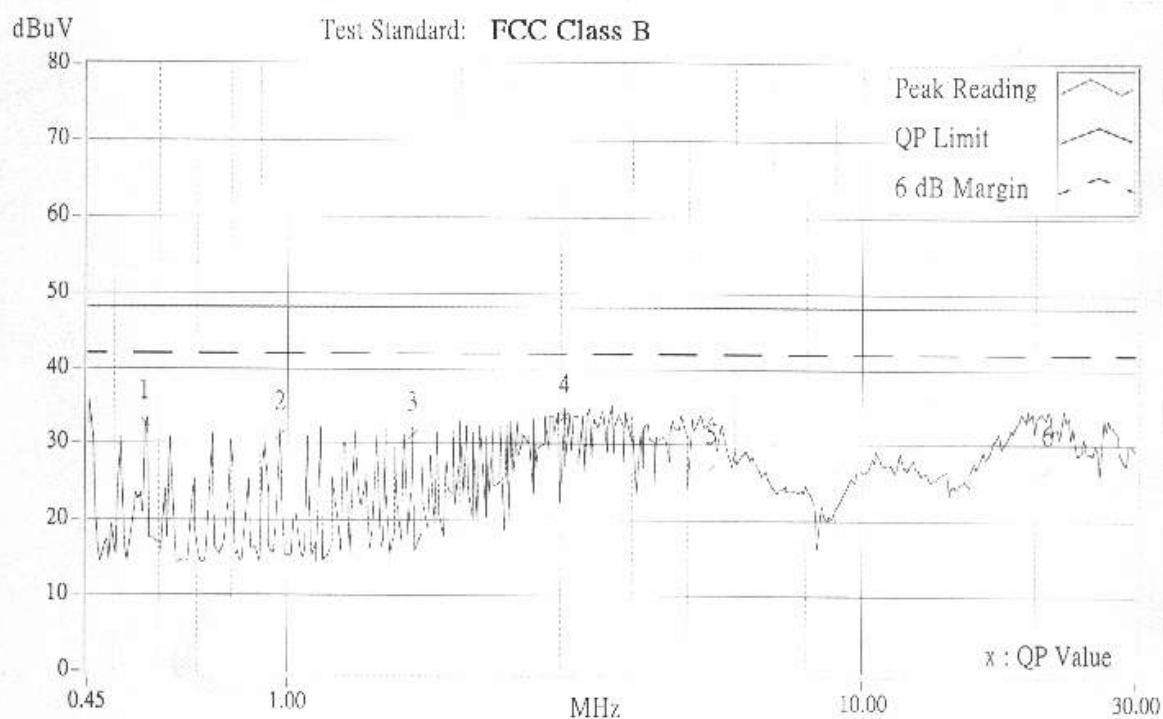
Date: 2001/2/19

Time: AM 10:31:17 Phase: L1

Temperatuer (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
1	0.57000	0.20	32.75	32.95	48.00	-15.05
2	0.97200	0.20	31.40	31.60	48.00	-16.40
3	1.65900	0.20	31.39	31.59	48.00	-16.41
+4	3.03000	-0.30	33.71	34.01	48.00	-13.99
5	5.49159	0.47	27.22	27.69	48.00	-20.31
6	21.07100	1.16	27.11	28.27	48.00	-19.73

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 1
 Tested by : STEVEN

Location: Conduction 2

Date: 2001/2/19

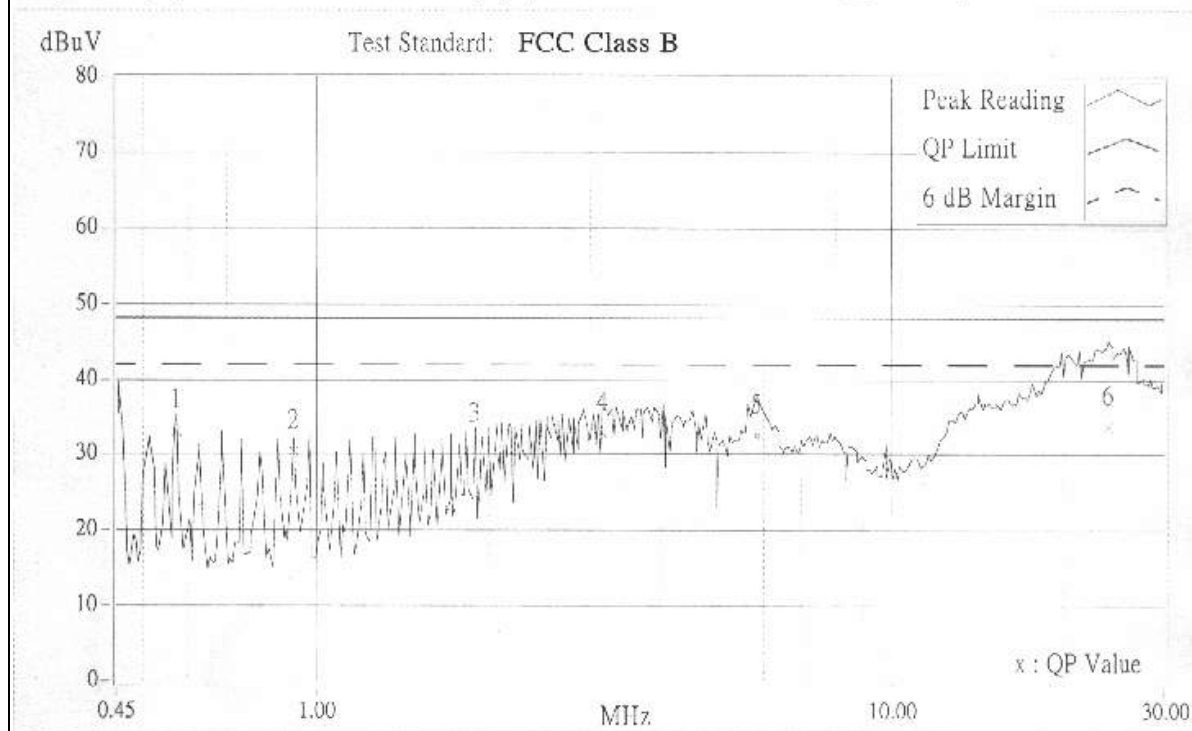
Time: AM 09:50:21

Phase: N

Temperatuér (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
1	0.57484	0.20	33.18	33.38	48.00	-14.62
2	0.91699	0.20	30.36	30.56	48.00	-17.44
3	1.88737	0.20	31.18	31.38	48.00	-16.62
4	3.15000	0.32	32.73	33.05	48.00	-14.95
5	5.83910	0.46	32.48	32.94	48.00	-15.06
+6	23.92839	1.24	33.58	34.82	48.00	-13.18

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 6
 Tested by : STEVEN

Location: Conduction 2

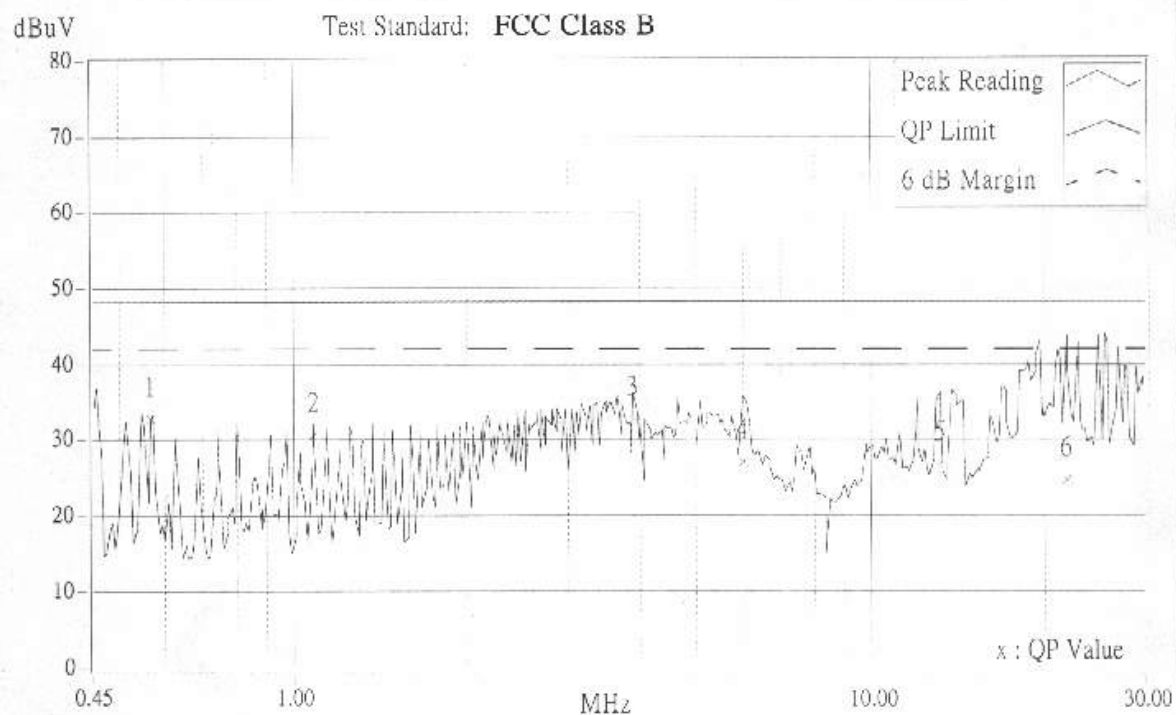
Date: 2001/2/19

Time: AM 10:04:33 Phase: L1

Temperatuer (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
1	0.57000	0.20	32.64	32.84	48.00	-15.16
2	1.08600	0.20	30.76	30.96	48.00	-17.04
+3	3.88500	0.39	32.69	33.08	48.00	-14.92
4	6.00500	0.50	27.14	27.64	48.00	-20.36
5	13.22778	0.89	26.86	27.75	48.00	-20.25
6	21.86000	1.21	24.82	26.03	48.00	-21.97

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 6
 Tested by : STEVEN

Location: Conduction 2

Date: 2001/2/19

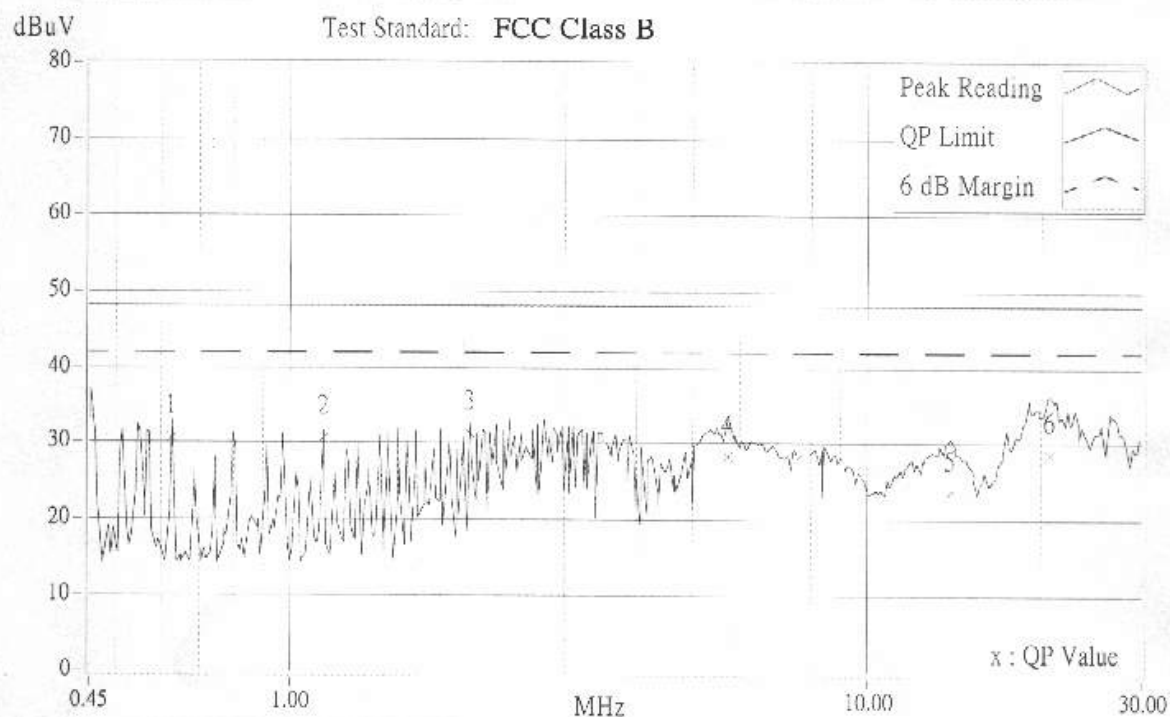
Time: AM 10:07:46

Phase: N

Temperatuer (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
1	0.62700	0.20	30.67	30.87	48.00	-17.13
2	1.14300	0.20	30.72	30.92	48.00	-17.08
+3	2.05800	0.21	31.37	31.58	48.00	-16.42
4	5.77700	0.46	28.37	28.83	48.00	-19.17
5	13.94300	0.84	23.73	24.57	48.00	-23.43
6	20.82500	1.05	28.56	29.61	48.00	-18.39

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 11
 Tested by : STEVEN

Location: Conduction 2

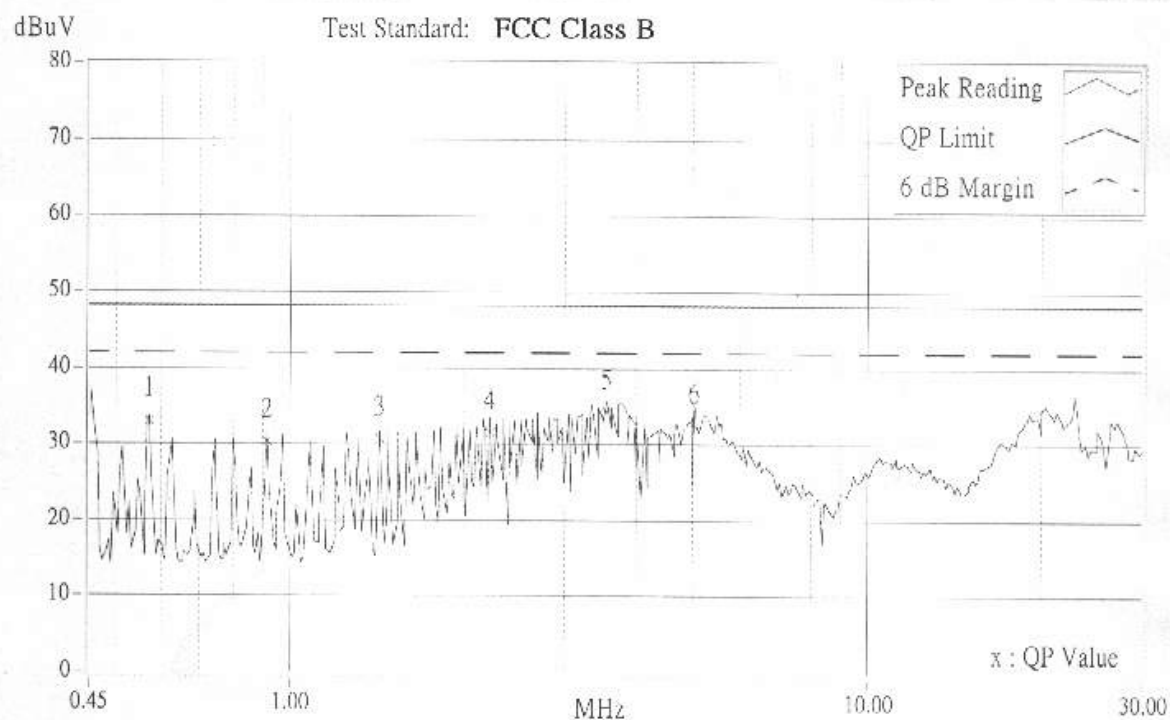
Date: 2001/2/19

Time: AM 10:27:56 Phase: L1

Temperatuer (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
1	0.57300	0.20	33.05	33.25	48.00	-14.75
2	0.91500	0.20	30.43	30.63	48.00	-17.37
3	1.42800	0.20	30.76	30.96	48.00	-17.04
4	2.22900	0.22	31.49	31.71	48.00	-16.29
+5	3.54300	0.35	34.25	34.60	48.00	-13.40
6	5.03000	0.45	32.57	33.02	48.00	-14.98

Brand / Model : WN3501A
 Test Mode :
 Power Source :
 Remark : CH 11
 Tested by : STEVEN

Location: Conduction 2

Date: 2001/2/19

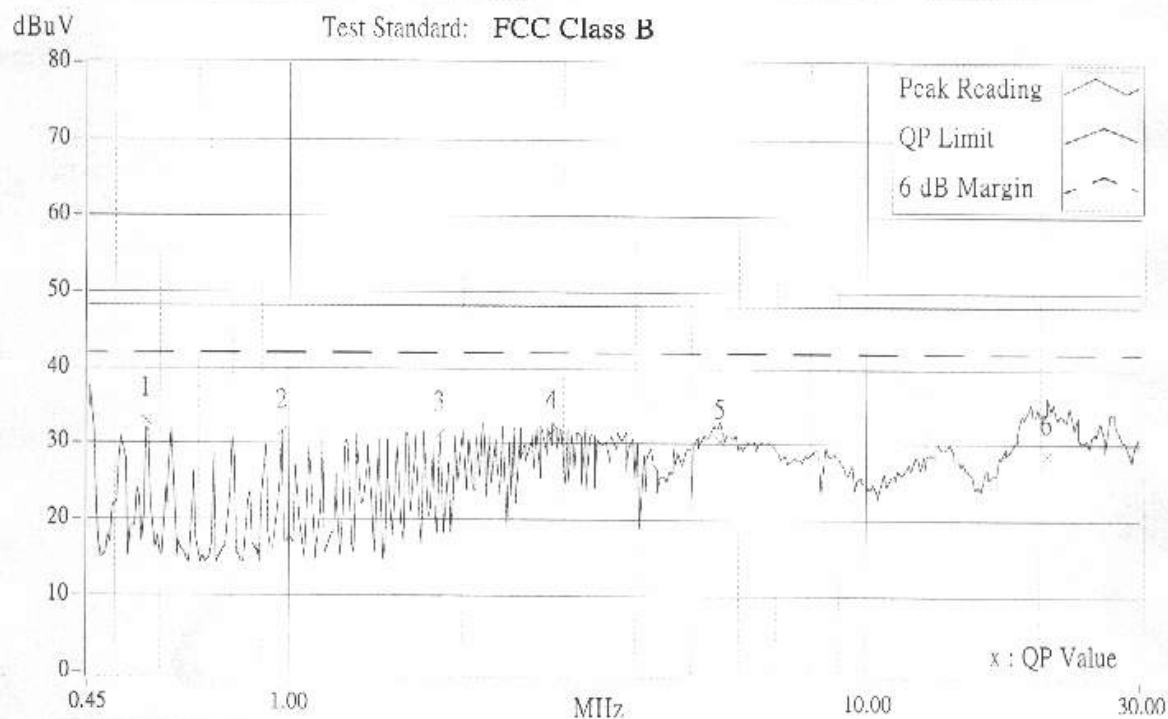
Time: AM 10:25:11

Phase: N

Temperatuer (C): 20

Humidity (%): 70

Approved by:



	Frequency	Corr. Factor	Reading dBuV	Emission dBuV	Limit dBuV	Margins dB
No.	MHz	dB	QP	QP	QP	QP
+1	0.57000	0.20	33.02	33.22	48.00	-14.78
2	0.97200	0.20	31.53	31.73	48.00	-16.27
3	1.83000	0.20	31.40	31.60	48.00	-16.40
4	2.85900	0.29	31.53	31.82	48.00	-16.18
5	5.60300	0.45	30.42	30.87	48.00	-17.13
6	20.64534	1.04	28.69	29.73	48.00	-18.27

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	
	$\mu\text{V}/\text{meter}$	$\text{dB}\mu\text{V}/\text{meter}$
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

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.

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	$\mu\text{V}/\text{m}$	$\text{dB}\mu\text{V}/\text{m}$	$\mu\text{V}/\text{m}$	$\text{dB}\mu\text{V}/\text{m}$
Above 1000	300	49.5	500	54.0

Note: 1 The lower limit shall apply at the transition frequencies.

2 Emission level ($\text{dB}\mu\text{V}/\text{m}$) = $20 \log$ Emission level ($\mu\text{V}/\text{m}$).

3 All emanation 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.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8590L	3544A01176	Apr. 18, 2001
HP Preamplifier	8447D	2944A08485	Apr. 27, 2001
HP Preamplifier	8347A	3307A01088	Sep. 04, 2001
ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Aug. 3, 2001
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	N/A
CHASE BILOG Antenna	CBL6112A	2221	Aug. 4, 2001
SCHWARZBECK Horn Antenna	BBHA9120-D	D130	Jul. 9, 2001
SCHWARZBECK Horn Antenna	BBHA9170	123	Jan. 30, 2001
EMCO Turn Table	1060	1115	N/A
SHOSHIN Tower	AP-4701	A6Y005	N/A
Open Field Test Site	Site 5	ADT-R05	Aug. 08, 2001

Notes:

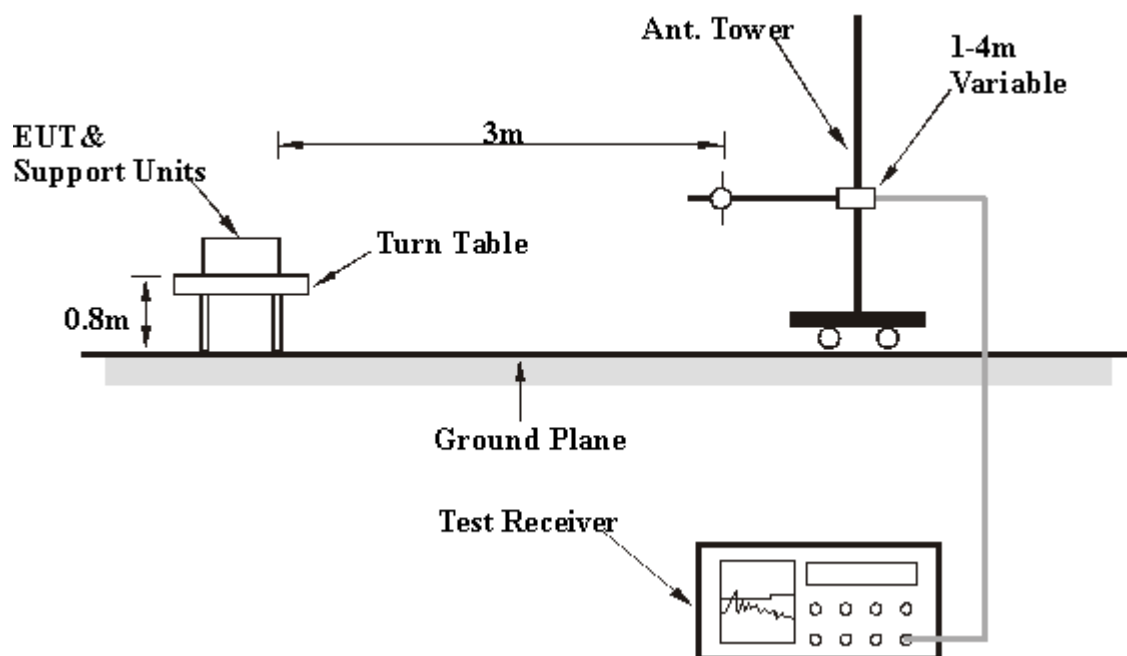
- 1.The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

4.2.3 TEST PROCEDURES

1. The EUT was placed on the turn table 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 120KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downwards between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turn table and stop at the angle where the measurement device has maximum reading
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak function, set the resolution bandwidth to 100kHz and repeat the procedures C ~ F. If the reading is lower than limit, this reading should be recorded, otherwise, the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures C ~ F for frequency band from 1 GHz to 10 times carrier frequency.
9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 300Hz. Repeat procedures C ~ F. If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

Note: 1. The frequency range of verification is either from 30 MHz to 1GHz or from 30 MHz up to 10 times carrier frequency of EUT (whichever is the highest frequency range).
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for frequency above 1GHz.

4.2.4 TEST SETUP



For the actual test configuration, please refer to the related Item in this test report (**Photographs of the Test Configuration**).

4.2.5 TEST RESULTS

Digital Portion

EUT	Wireless USB Adapter	Model	WN3501A
Mode	Channel 1	Detector Function	Quasi-Peak
Frequency Range	30-1000 MHz	Test Distance	3M
Environmental Conditions	20°C, 70%RH	Tested By	Steven Lu

ANTENNA POLARITY: VERTICAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
344.40	9.97	22.33	32.3	46.0	-13.7	177	329
368.90	9.19	28.41	37.6	46.0	-8.4	177	329
381.10	8.79	27.81	36.6	46.0	-9.4	177	329
393.60	8.39	31.01	39.4	46.0	-6.6	177	329
405.58	8.13	31.27	36.0	46.0	-10.0	122	244
417.80	8.01	25.69	33.7	46.0	-12.3	158	213
430.09	7.89	28.01	35.9	46.0	-10.1	142	193
601.78	5.74	36.16	41.9	46.0	-4.1	113	195
704.02	4.47	31.13	35.6	46.0	-10.4	100	363
748.01	3.98	31.12	35.1	46.0	-10.9	180	9

ANTENNA POLARITY: HORIZONTAL							
Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
344.08	9.97	26.83	36.8	46.0	-9.2	128	341
368.68	9.19	31.31	40.5	46.0	-5.5	100	11
380.94	8.79	29.31	38.1	46.0	-7.9	102	354
393.24	8.39	33.61	42.0	46.0	-4.0	109	16
405.52	8.13	30.87	39.0	46.0	-7.0	100	350
417.81	8.01	27.89	35.9	46.0	-10.1	100	18
430.09	7.89	28.51	36.4	46.0	-9.6	108	363
601.77	5.74	33.76	39.5	46.0	-6.5	146	363
660.00	4.47	33.01	38.4	46.0	-7.6	169	162
704.00	3.98	36.52	40.5	46.0	-5.5	125	111

- Notes: 1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

RF Portion

EUT	Wireless USB Adapter	Model	WN3501A
Mode	Channel 1	Detector Function	PK Average
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	20°C, 70%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz.	
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.		
2038.0	34.57	13.5	-	48.1	-	74.0	54.0	-25.9	-	108	197
*2412.3	36.09	69.0	60.8	105.0	96.9	-	-	-	-	108	109
4076.0	43.10	8.90	-	52.0	-	74.0	54.0	-22.0	-	100	315
4824.5	43.73	7.57	-	51.3	-	74.0	54.0	-22.7	-	108	203

ANTENNA POLARITY: Horizontal		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz	
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.		
2038.0	34.57	15.63	-	50.2	-	74.0	54.0	-23.8	-	100	32
*2412.4	36.09	68.91	61.11	105.0	97.2	-	-	-	-	100	214
4076.0	43.10	9.70	-	52.8	-	74.0	54.0	-21.2	-	104	52
4824.0	43.73	8.67	-	52.4	-	74.0	54.0	-21.6	-	104	349

- Notes:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (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	Wireless USB Adapter	Model	WN3501A
Mode	Channel 6	Detector Function	PK Average
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	20°C, 70%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz	
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.		
2063.0	34.78	15.2	-	50.0	-	74.0	54.0	-24.0	-	108	170
*2437.6	36.37	67.7	60.9	104.1	97.3	-	-	-	-	100	191
4126.3	42.71	8.49	-	51.2	-	74.0	54.0	-22.8	-	108	170
4874.3	43.75	8.15	-	51.9	-	74.0	54.0	-22.1	-	100	354

ANTENNA POLARITY: Horizontal		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz	
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.		
2063.0	34.78	17.02	-	51.8	-	74.0	54.0	-22.2	-	100	336
*2438.4	36.37	68.23	59.3	104.6	95.7	-	-	-	-	103	122
4126.0	42.71	8.49	-	51.2	-	74.0	54.0	-22.8	-	101	5
4874.2	43.75	8.55	-	52.3	-	74.0	54.0	-21.7	-	103	101

- Notes:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB)+Cable loss (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	Wireless USB Adapter	Model	WN3501A
Mode	Channel 11	Detector Function	PK Average
Frequency Range	Above 1000 MHz	Test Distance	3M
Environmental Conditions	20°C, 60%RH	Tested By	Steven Lu

ANTENNA POLARITY: Vertical		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz	
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.		
2088.0	35.07	13.8	-	48.9	-	74.0	54.0	-25.1	-	100	343
*2462.2	36.44	67.7	60.7	104.1	97.1	-	-	-	-	100	106
4176.0	42.76	9.54	-	52.3	-	74.0	54.0	-21.7	-	100	210
4924.1	43.27	8.83	-	52.1	-	74.0	54.0	-21.9	-	100	133

ANTENNA POLARITY: Horizontal		Detector Function :				6dB Bandwidth: 1MHz				Frequency Range: Above 1000 MHz	
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.		
2088.0	35.07	17.03	-	52.1	-	74.0	54.0	-21.9	-	100	329
*2462.3	36.44	64.76	57.8	101.2	94.2	-	-	-	-	100	142
4176.0	42.76	8.84	-	51.6	-	74.0	54.0	-22.4	-	100	212
4924.3	43.27	9.03	-	52.3	-	74.0	54.0	-21.7	-	100	264

- Notes:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
 2. Correction Factor (dB) = Ant. Factor (dB) + Cable loss (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 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The Limit 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	846839/018 848926/005	Mar. 03, 2001
HP ATTENUATOR	8496B	3247A18505	Cal. on use
HP PLOTTER	7475A	2641V27755	N/A

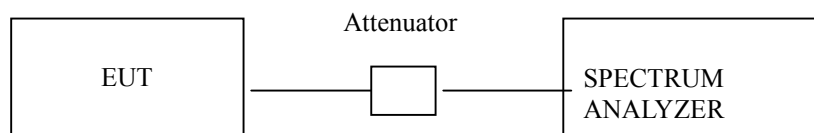
Notes:

- 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 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

4.3.4 TEST SETUP



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

4.3.5 EUT OPERATING CONDITION

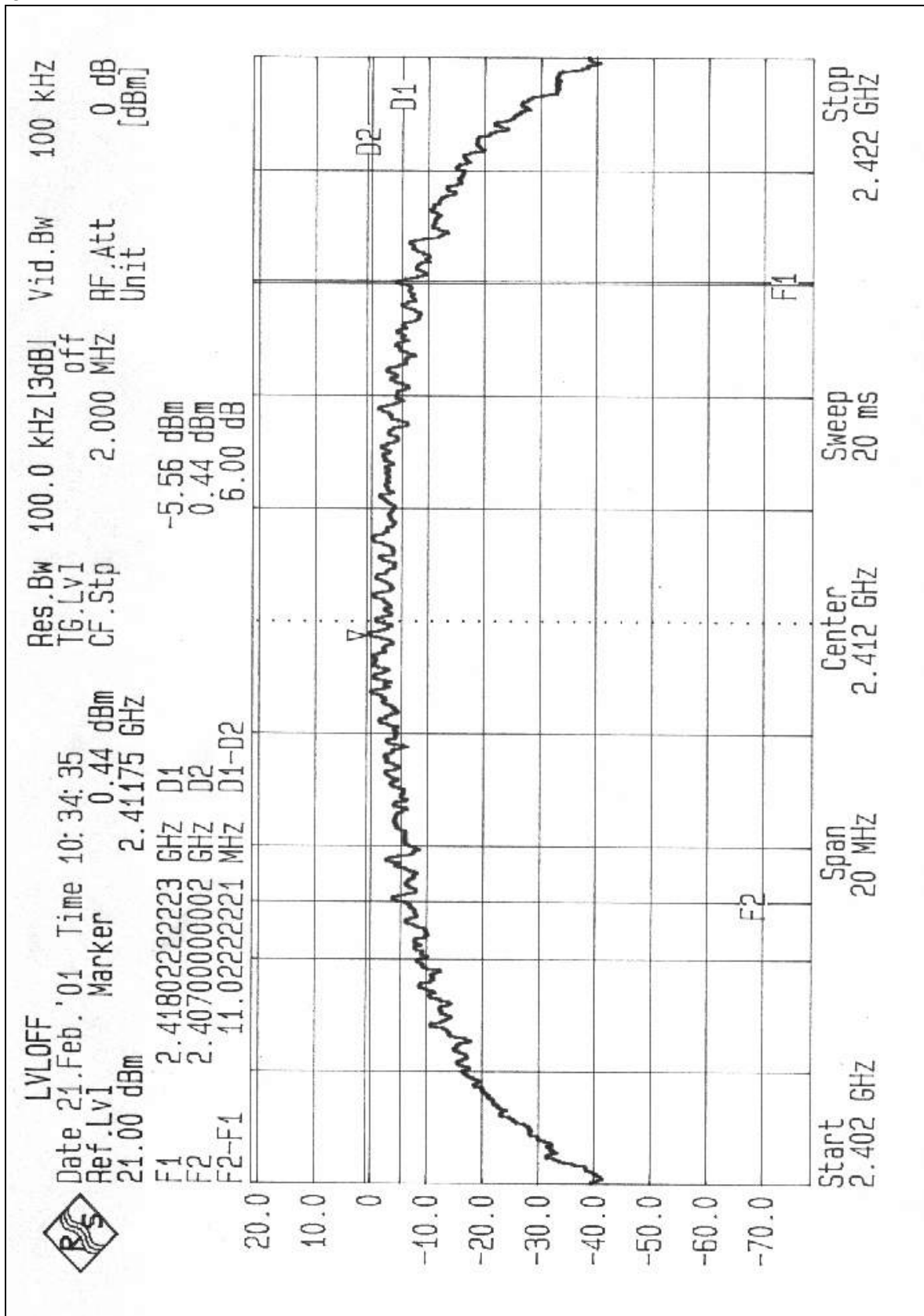
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.3.6 TEST RESULTS

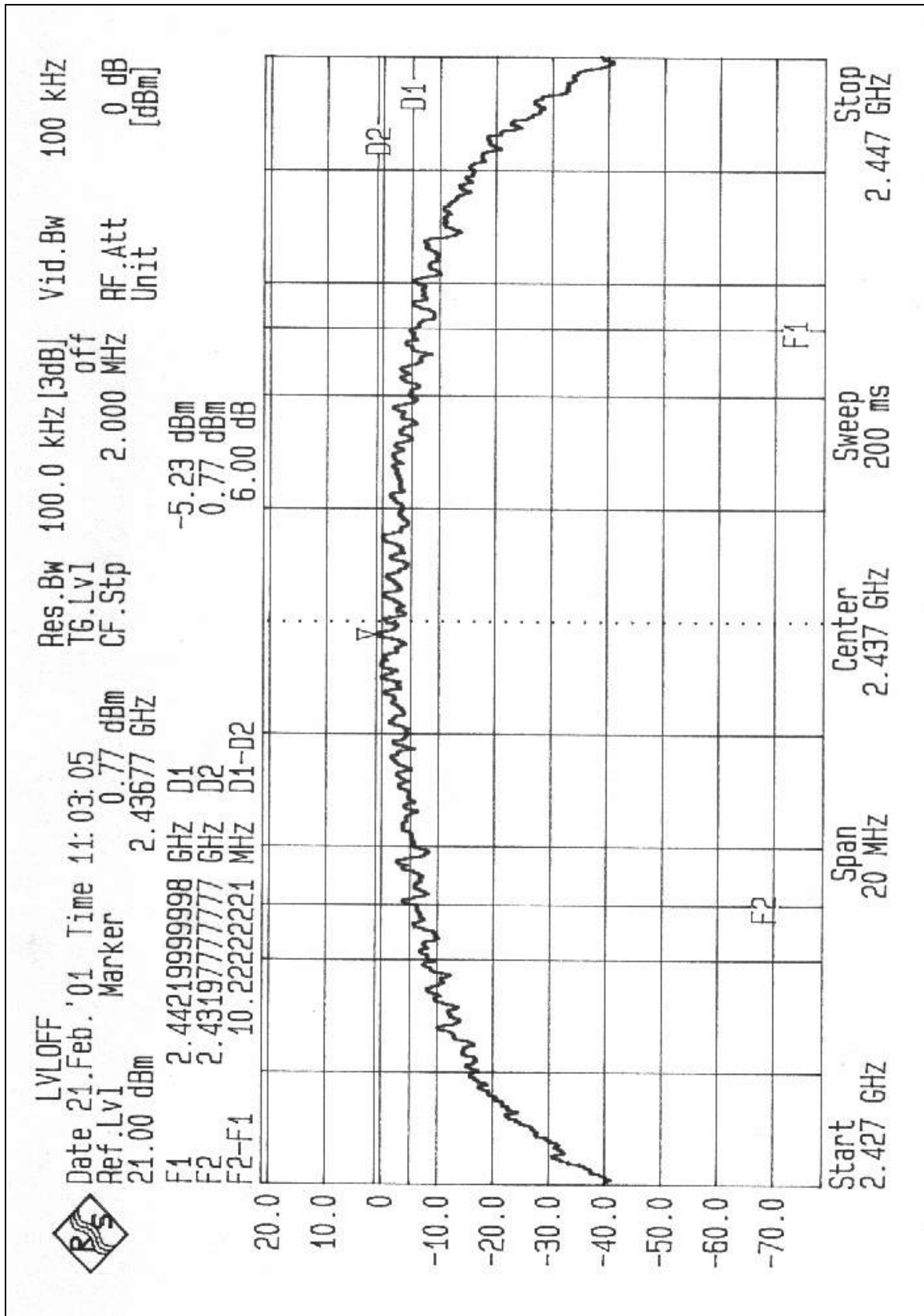
EUT	Wireless USB Adapter	Model	WN3501A
Environmental Conditions	20°C, 70%RH	Tested By	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.02	0.5	PASS
6	2437	10.22	0.5	PASS
11	2462	11.04	0.5	PASS

CH1



CH6



CH11

