



# FCC DoC TEST REPORT

**REPORT NO.:** D921208R02

**MODEL NO.:** MN-710

**RECEIVED:** December 05, 2003

**TESTED:** December 05 ~ December 10, 2003

**APPLICANT:** Microsoft Corporation

**ADDRESS:** One Microsoft Way, Redmond WA 98052-6399,  
U.S.A

**ISSUED BY:** Advance Data Technology Corporation

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

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0528  
ILAC MRA



Lab Code: 200102-0



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## 1 CERTIFICATION

**PRODUCT :** Microsoft® Broadband Networking Wireless USB  
2.0 Adapter (Receiver Part)

**BRAND NAME :** Microsoft®

**MODEL NO. :** MN-710

**TEST ITEM:** ENGINEERING SAMPLE

**APPLICANT :** MICROSOFT CORPORATION

**STANDARDS :** FCC Part 15, Subpart B, class B,  
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from December 05 ~ December 10, 2003. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

**PREPARED BY:** \_\_\_\_\_, **DATE:** December 12, 2003  
Wendy Liao

**APPROVED BY:** \_\_\_\_\_, **DATE:** December 12, 2003  
Ellis Wu / Manager



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

Standard Section	Test Type	Result	Remarks
FCC Part 15, Subpart B, class B	Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -7.10dB at 0.168 MHz
	Radiated Emissions	PASS	Meet the requirement of limit Minimum passing margin is -4.42dB at 195.23 MHz

**NOTE:** The information of measurement uncertainty is available upon the customer's request.



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)
<b>MODEL NO.</b>	MN-710
<b>POWER SUPPLY</b>	5.0Vdc from host equipment
<b>MODULATION TYPE</b>	BPSK, QPSK, CCK, 16QAM, 64QAM
<b>MODULATION TECHNOLOGY</b>	DSSS, OFDM
<b>TRANSFER RATE</b>	54/48/36/24/18/12/11/9/6/5.5/2/1Mbps
<b>FREQUENCY RANGE</b>	2412MHz ~ 2462MHz
<b>NUMBER OF CHANNEL</b>	11
<b>MAXIMUM OUTPUT POWER</b>	18.30dBm
<b>ANTENNA TYPE</b>	Dipole antenna with 2.5dBi gain
<b>DATA CABLE</b>	USB cable (1.8m Shielded)
<b>I/O PORTS</b>	USB
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:**

1. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
2. The EUT complies with IEEE 802.11g draft standards, and backwards compatible with IEEE 802.11b products.
3. 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 to this EUT.

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

**NOTE:**

1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.
3. Transfer rate 6Mbps with OFDM technique, the worst case, was chosen for final test.

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part). According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart B, class B**  
**ANSI C63.4 : 1992**

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



### 3.4 DESCRIPTION OF SUPPORT UNITS

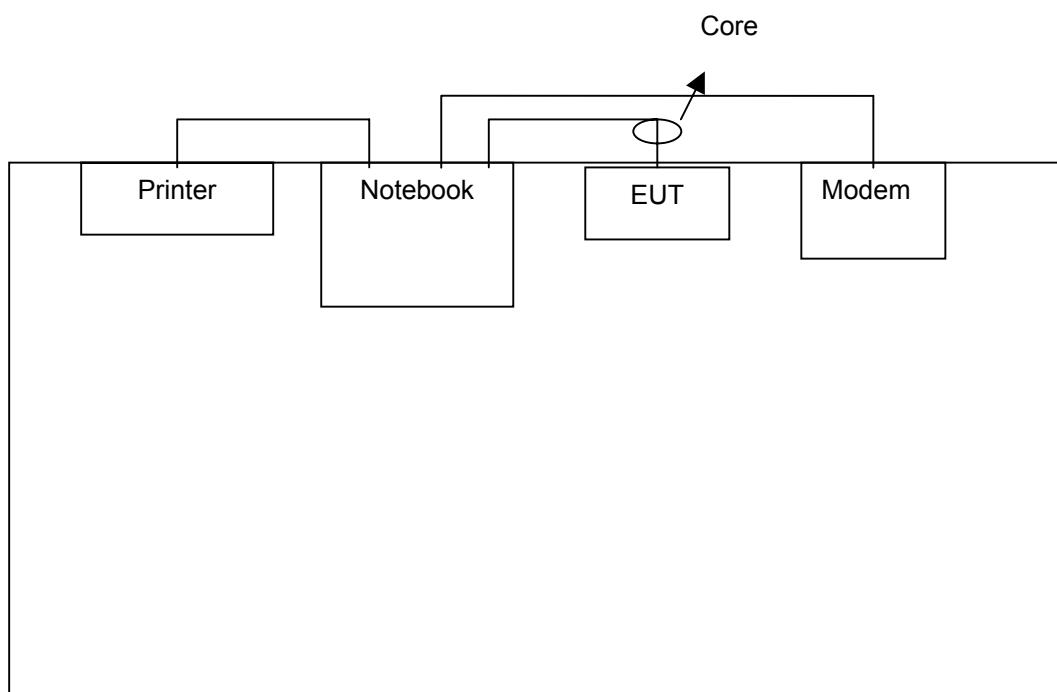
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP01L	TW-0791UH-12800-123-5423	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY017058	FCC DoC Approved
3	MODEM	ACEEX	1414	980020516	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 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





## 4 TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS 30	828765/002	July 15, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	835239/001	Apr. 28, 2004
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	835239/002	Apr. 28, 2004
*ROHDE & SCHWARZ 4-wire ISN	ENY41	935154/007	Apr. 30, 2004
*ROHDE & SCHWARZ 2-wire ISN	ENY22	833823/026	Apr. 30, 2004
Software	Cond-V2M3	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C09.01	May 23, 2004
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010789	Jun. 04, 2004

**NOTE:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. “\*”: These equipment are used for conducted telecom port test only (if tested).
3. The test was performed in ADT Shielded Room No. 9.
4. The VCCI Site Registration No. is C-1312.



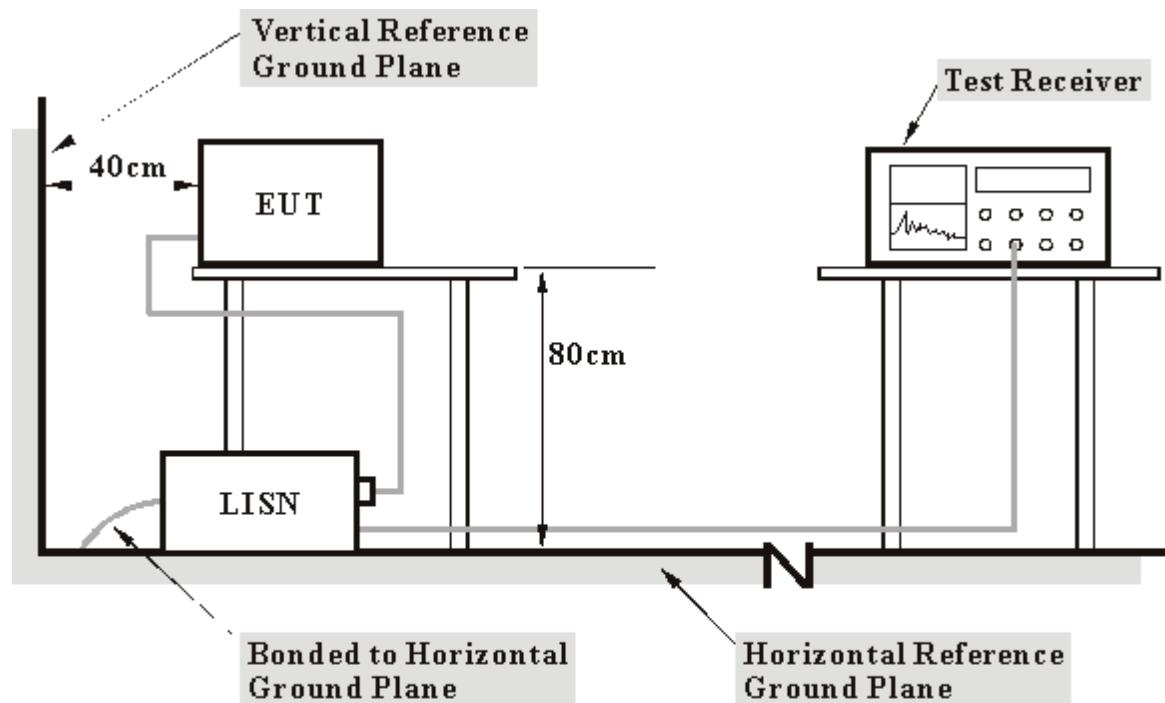
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



**Note:** 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

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

#### 4.1.6 EUT OPERATING CONDITIONS

- a. Plug the EUT a notebook 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.
- f. Steps b-e are repeated.

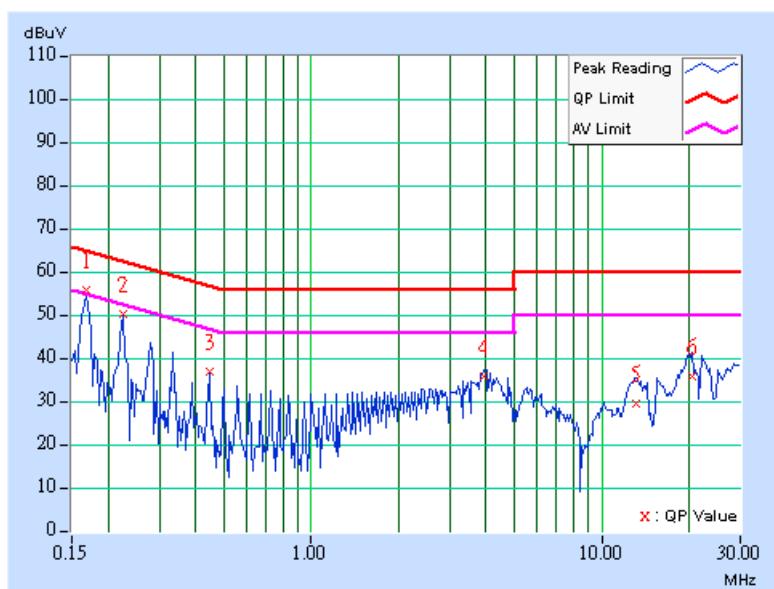
#### 4.1.7 TEST RESULTS

<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.168	0.10	54.73	-	54.83	-	65.06	55.06	-10.23	-
2	0.225	0.11	49.28	-	49.39	-	62.63	52.63	-13.24	-
3	0.447	0.20	35.83	-	36.03	-	56.93	46.93	-20.90	-
4	3.952	0.30	34.85	-	35.15	-	56.00	46.00	-20.85	-
5	13.190	0.79	28.40	-	29.19	-	60.00	50.00	-30.81	-
6	20.468	1.12	34.73	-	35.85	-	60.00	50.00	-24.15	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

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





<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.165	0.10	57.42	-	57.52	-	65.21	55.21	-7.69	-
2	0.222	0.11	50.96	-	51.07	-	62.74	52.74	-11.67	-
3	0.666	0.20	29.72	-	29.92	-	56.00	46.00	-26.08	-
4	3.718	0.20	26.78	-	26.98	-	56.00	46.00	-29.02	-
5	13.082	0.68	29.33	-	30.01	-	60.00	50.00	-29.99	-
6	21.236	0.92	34.68	-	35.60	-	60.00	50.00	-24.40	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

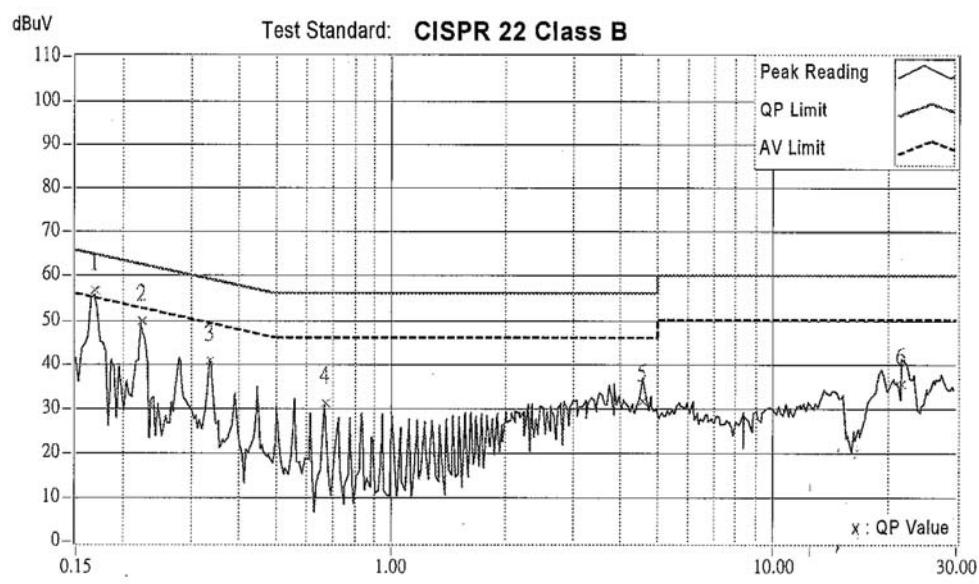
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Emission level - Limit value

5. Correction factor = Insertion loss + Cable loss

6. Emission Level = Correction Factor + Reading Value.

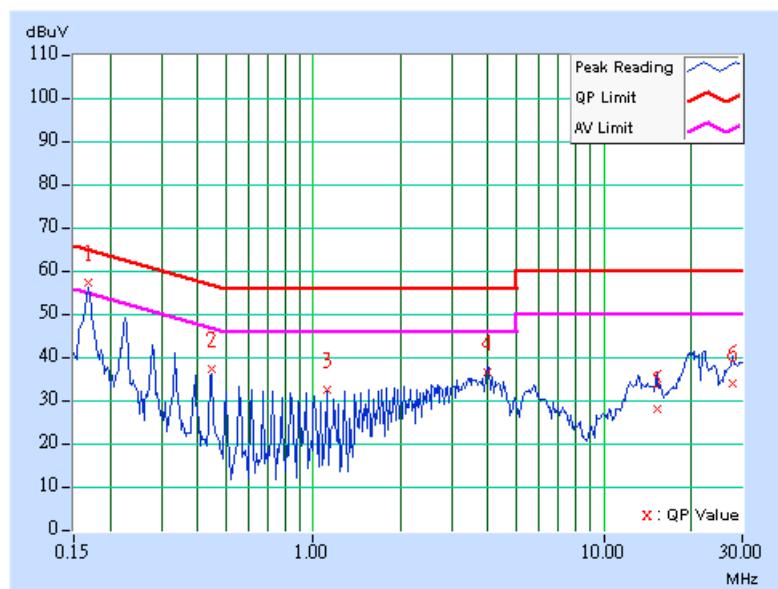


<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
			Factor	[dB (uV)]	[dB (uV)]	Q.P.	AV.	Q.P.	AV.	Q.P.
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.168	0.10	55.94	47.86	56.04	47.96	65.06	55.06	-9.02	-7.10
2	0.447	0.20	36.01	-	36.21	-	56.93	46.93	-20.72	-
3	1.114	0.20	31.06	-	31.26	-	56.00	46.00	-24.74	-
4	3.961	0.30	35.37	-	35.67	-	56.00	46.00	-20.33	-
5	15.224	0.91	26.90	-	27.81	-	60.00	50.00	-32.19	-
6	27.722	1.35	32.69	-	34.04	-	60.00	50.00	-25.96	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

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

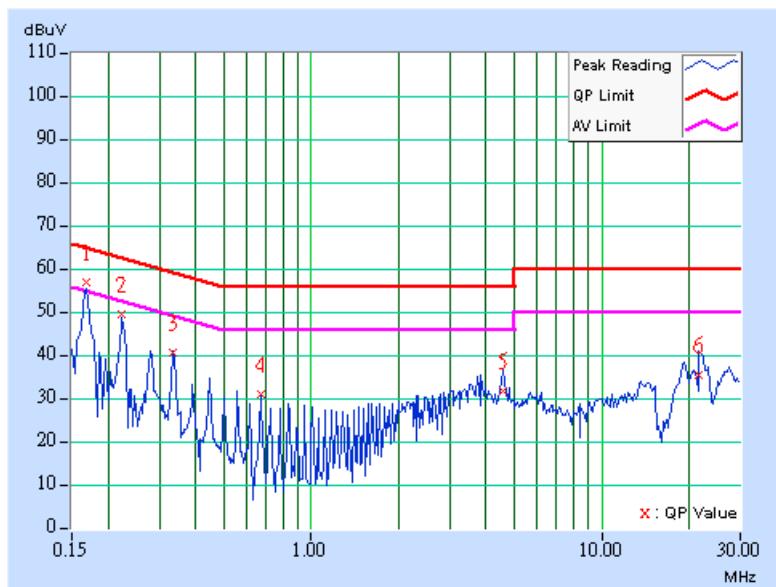


<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.168	0.10	55.96	45.91	56.06	46.01	65.06	55.06	-9.00	-9.05
2	0.222	0.11	48.74	-	48.85	-	62.74	52.74	-13.89	-
3	0.336	0.17	39.92	-	40.09	-	59.30	49.30	-19.21	-
4	0.669	0.20	30.21	-	30.41	-	56.00	46.00	-25.59	-
5	4.582	0.23	30.88	-	31.11	-	56.00	46.00	-24.89	-
6	21.677	0.93	34.59	-	35.52	-	60.00	50.00	-24.48	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

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

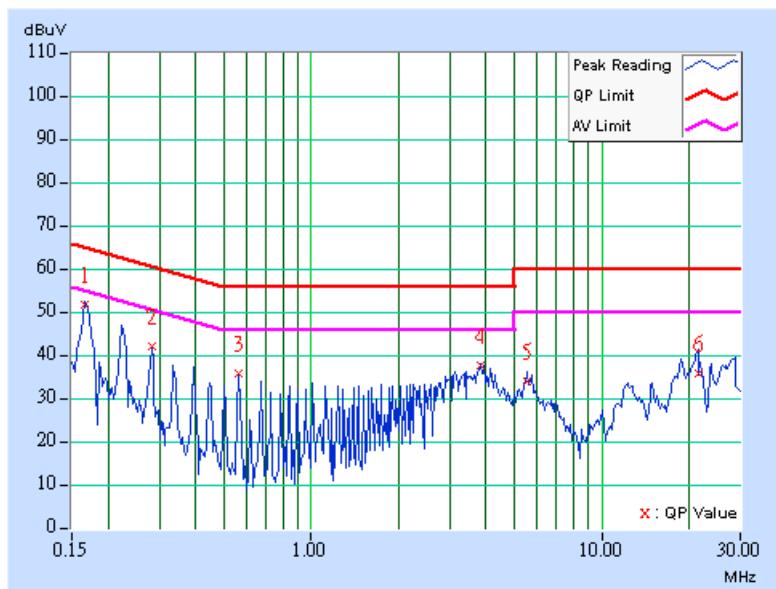


<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.165	0.10	50.72	-	50.82	-	65.21	55.21	-14.39	-
2	0.282	0.14	41.00	-	41.14	-	60.76	50.76	-19.62	-
3	0.561	0.20	34.80	-	35.00	-	56.00	46.00	-21.00	-
4	3.814	0.29	36.61	-	36.90	-	56.00	46.00	-19.10	-
5	5.552	0.38	32.82	-	33.20	-	60.00	50.00	-26.80	-
6	21.425	1.16	34.90	-	36.06	-	60.00	50.00	-23.94	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

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

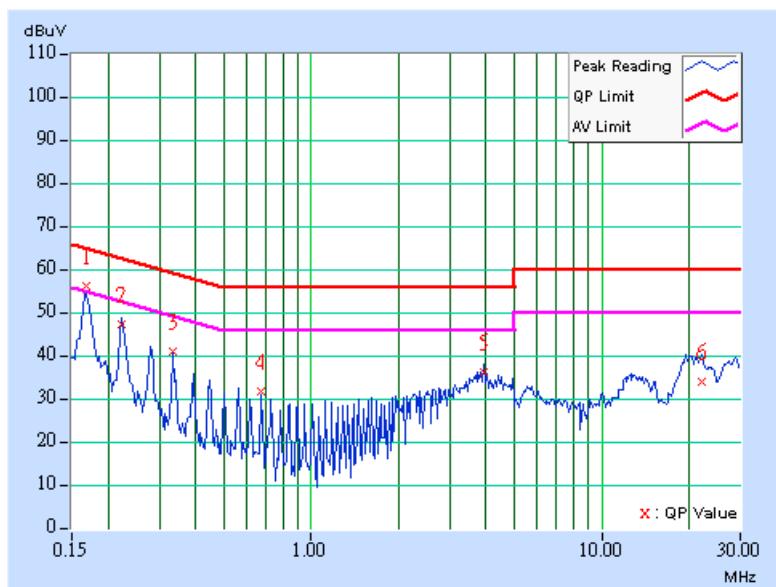


<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991hPa		<b>TESTED BY:</b> Martin Lee

No	Freq. Factor	Corr. [MHz]	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.168	0.10	55.19	45.34	55.29	45.44	65.06	55.06	-9.77	-9.62
2	0.222	0.11	46.60	-	46.71	-	62.74	52.74	-16.03	-
3	0.336	0.17	40.10	-	40.27	-	59.30	49.30	-19.03	-
4	0.672	0.20	31.09	-	31.29	-	56.00	46.00	-24.71	-
5	3.919	0.20	35.49	-	35.69	-	56.00	46.00	-20.31	-
6	22.064	0.94	33.07	-	34.01	-	60.00	50.00	-25.99	-

**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

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





## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.109 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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 (dB<sub>u</sub>V/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	8593E	3911A07465	July 07, 2004
* HP Preamplifier	8447D	2432A03504	June 10, 2004
* HP Preamplifier	8449B	3008A01292	Aug. 11, 2004
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	Jun. 26, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 13, 2004
* Schwarzbeck Antenna	VULB9168	137	Apr. 03, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	June 30, 2004
*ADT. Turn Table	TT100	0306	NA
*ADT. Tower	AT100	0306	NA
*Software	ADT_Radiated_V 5.14	NA	NA
*TIMES RF cable	LL142	CABLE-CH6-01	Apr. 30, 2004

**NOTE:**

1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. “\*” = These equipment are used for 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 Chamber No. 6.



#### 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.

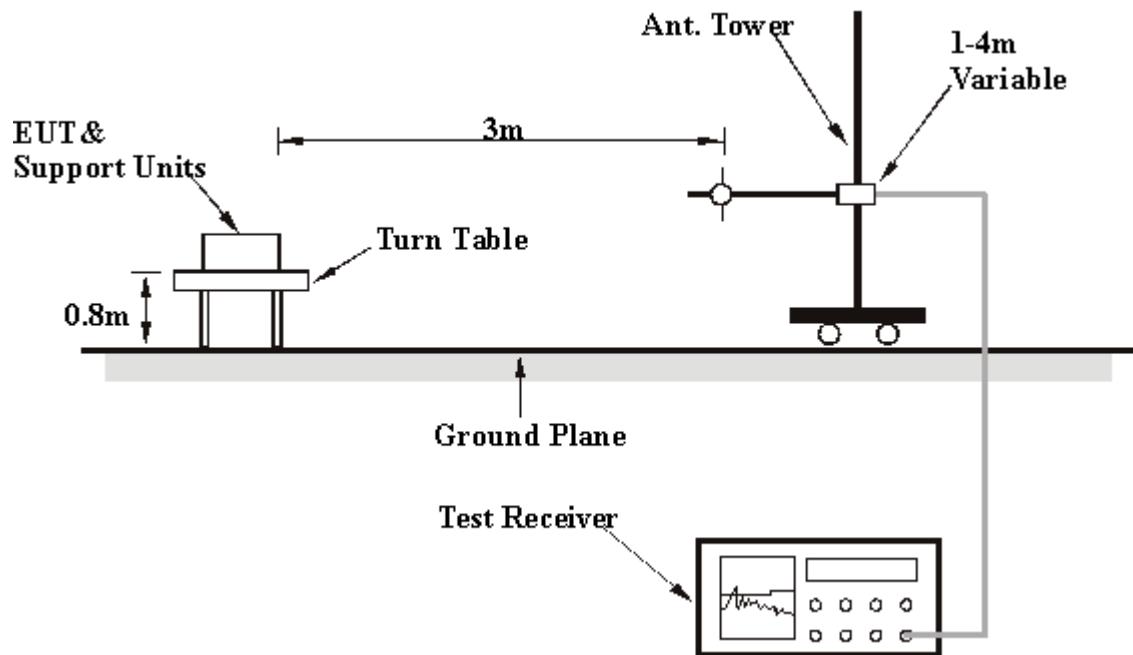
#### NOTE:

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 10 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

<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa		<b>TESTED BY:</b> Gary Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	150.52	33.13 QP	43.50	-10.37	2.50 H	289	19.09	14.04
2	<b>195.23</b>	<b>39.08 QP</b>	<b>43.50</b>	<b>-4.42</b>	<b>1.75 H</b>	<b>253</b>	<b>27.58</b>	<b>11.50</b>
3	259.38	37.37 QP	46.00	-8.63	1.00 H	67	23.76	13.61
4	325.47	32.95 QP	46.00	-13.05	1.00 H	76	17.18	15.77
5	455.71	35.56 QP	46.00	-10.44	1.75 H	94	16.18	19.38
6	599.56	35.32 QP	46.00	-10.68	1.50 H	256	12.73	22.59

**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.



<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
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	37.78	31.23 QP	40.00	-8.77	1.00 V	193	17.23	14.00
2	160.24	36.35 QP	43.50	-7.15	1.00 V	64	22.09	14.26
3	195.23	34.03 QP	43.50	-9.47	2.50 V	358	22.53	11.50
4	261.32	36.07 QP	46.00	-9.93	1.75 V	25	22.39	13.69
5	457.10	40.80 QP	46.00	-5.20	1.24 V	52	21.40	19.40
6	599.56	37.21 QP	46.00	-8.79	1.00 V	346	14.62	22.59
7	914.47	37.46 QP	46.00	-8.54	1.00 V	166	10.15	27.30

**REMARKS:** 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)  
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

<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4824.00	49.34 PK	74.00	-24.66	1.07 H	34	11.48	37.86
2	9648.00	53.33 PK	74.00	-20.67	1.27 H	34	8.86	44.47
2	9648.00	43.93 AV	54.00	-10.07	1.27 H	34	-0.54	44.47

#### 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	4824.00	50.72 PK	74.00	-23.28	1.22 V	349	12.86	37.86
2	9648.00	53.30 PK	74.00	-20.70	1.22 V	34	8.83	44.47
2	9648.00	44.53 AV	54.00	-9.47	1.22 V	34	0.06	44.47

**REMARKS:** 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)

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.



<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 6	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b>	Gary Chang

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4874.00	52.60 PK	74.00	-21.40	1.10 H	197	14.66	37.94
1	4874.00	45.18 AV	54.00	-8.82	1.10 H	197	7.24	37.94
2	9748.00	56.26 PK	74.00	-17.74	1.06 H	271	11.44	44.82
2	9748.00	46.42 AV	54.00	-7.58	1.06 H	271	1.60	44.82

**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	4874.00	51.13 PK	74.00	-22.87	1.47 V	282	13.19	37.94
1	4874.00	42.84 AV	54.00	-11.16	1.47 V	282	4.90	37.94
2	9748.00	55.92 PK	74.00	-18.08	1.42 V	34	11.10	44.82
2	9748.00	45.62 AV	54.00	-8.38	1.42 V	34	0.80	44.82

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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.



<b>EUT</b>	Microsoft® Broadband Networking Wireless USB 2.0 Adapter (Receiver Part)	<b>MODEL</b>	MN-710
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b>	Gary Chang

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4924.00	54.22 PK	74.00	-19.78	1.14 H	274	16.20	38.02
1	4924.00	46.32 AV	54.00	-7.68	1.14 H	274	8.30	38.02
2	9848.00	54.27 PK	74.00	-19.73	1.42 H	41	9.24	45.03
2	9848.00	44.87 AV	54.00	-9.13	1.42 H	41	-0.16	45.03

**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	4924.00	51.63 PK	74.00	-22.37	1.47 V	282	13.61	38.02
1	4924.00	44.36 AV	54.00	-9.64	1.47 V	282	6.34	38.02
2	9848.00	55.17 PK	74.00	-18.83	1.33 V	311	10.14	45.03
2	9848.00	44.87 AV	54.00	-9.13	1.33 V	311	-0.16	45.03

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



### RADIATED EMISSION TEST





## 6 INFORMATION ON THE TESTING LABORATORIES

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