FCC TEST REPORT

REPORT NO.: RF920527R02A
MODEL NO.: WM601-I
RECEIVED: May 29, 2003
TESTED: Jun. 12 to 16, 2003

APPLICANT: CYBERTAN TECHNOLOGY INC

ADDRESS: No.99, Park Avenue III, Science-based Industrial Park, Hsinchu, Taiwan 308,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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Lab Code: 200376-0

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1 CERTIFICATION

PRODUCT :	54G Wireless LAN module
BRAND NAME :	CyberTAN
MODEL NO. :	WM601-I
APPLICANT :	CYBERTAN TECHNOLOGY INC
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Jun. 12 to 16, 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: Amanda Chu , **DATE:** *Jul. 08, 2003*

(Amanda Chu)

APPROVED BY: , **DATE:** *Jul. 08, 2003*

(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 Limit: 48dBuV	PASS	Meet the requirement of limit Minimum passing margin is –18.70 dBuV at 0.5276 MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is –1.4 dBuV at 2483.50MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	54G Wireless LAN module
MODEL NO.	WM601-I
POWER SUPPLY	3.3VDC from host equipment
MODULATION TYPE	CCK, OFDM, DBPSK, DQPSK
RADIO TECHNOLOGY	DSSS, OFDM
TRANSFER RATE	1/2/5.5/6/9/11/12/18/24/36/48/54Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	16.66dBm
ANTENNA TYPE	Dipole Antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. There are three types of antennas provided to this EUT, please refer to the following table:

No.	*Model No.*	*Gain (dBi)*	*Antenna Type / Connector*
1	MCF-003A-163-05	2	dipole antenna / with UFL connector (Internal)
2	C034-510242-A	2	dipole antenna / with UFL connector (Internal) Reversed TNC connector (External)
3	C120-510053-A	2	dipole antenna / with UFL connector (Internal) Reversed TNC connector (External)
Model : MCF-003A-163-05 & C034-510242-A & C120-510053-A, three models are identical except for their model number and antenna connector. Model: MCF-003A-163-05 was chosen for final test.			

2. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 54Mbps.
3. The EUT complies with IEEE 802.11g draft standards, and backwards compatible with IEEE 802.11b products.
4. For a more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided in this EUT.

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

NOTE:

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

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a 54G Wireless LAN module. 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 : 1992

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

NOTE: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of 47 CFR Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

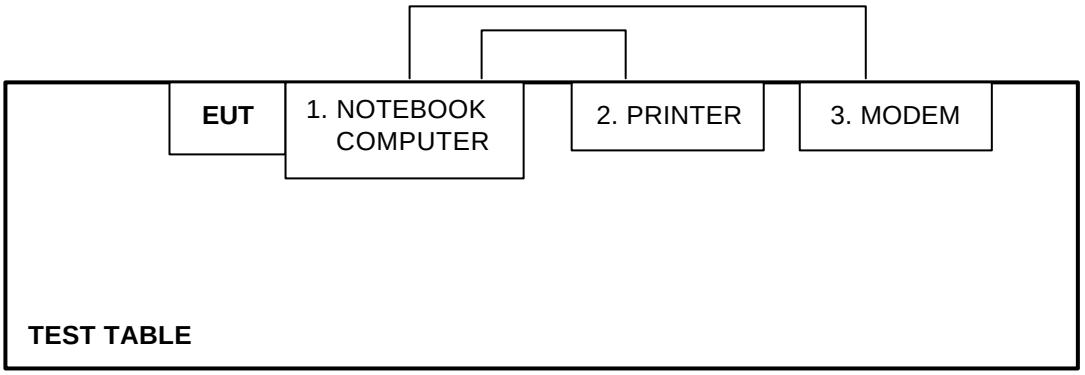
3.4 DESCRIPTION OF SUPPORT UNITS

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

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP01L	TW-09C748-12800-17Q-C504	DoC
2	PRINTER	EPSON	LQ-300+	DCGY017079	DOC
3	MODEM	ACEEX	1414	0206026775	IFAXDM1414

No.	Signal cable description
1	NA
2	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.3m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.

Note: 1. All power cords of the above support units are unshielded (1.8m).



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

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	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. All emanations from a class B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DATE
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Nov. 17, 2003
ROHDE & SCHWARZ LISN (for EUT)	ESHS-Z5	848773/004	Nov. 13, 2003
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 23, 2003
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 03, 2004
Terminator(for KYORITSU)	50	#1	Apr. 11, 2004
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.

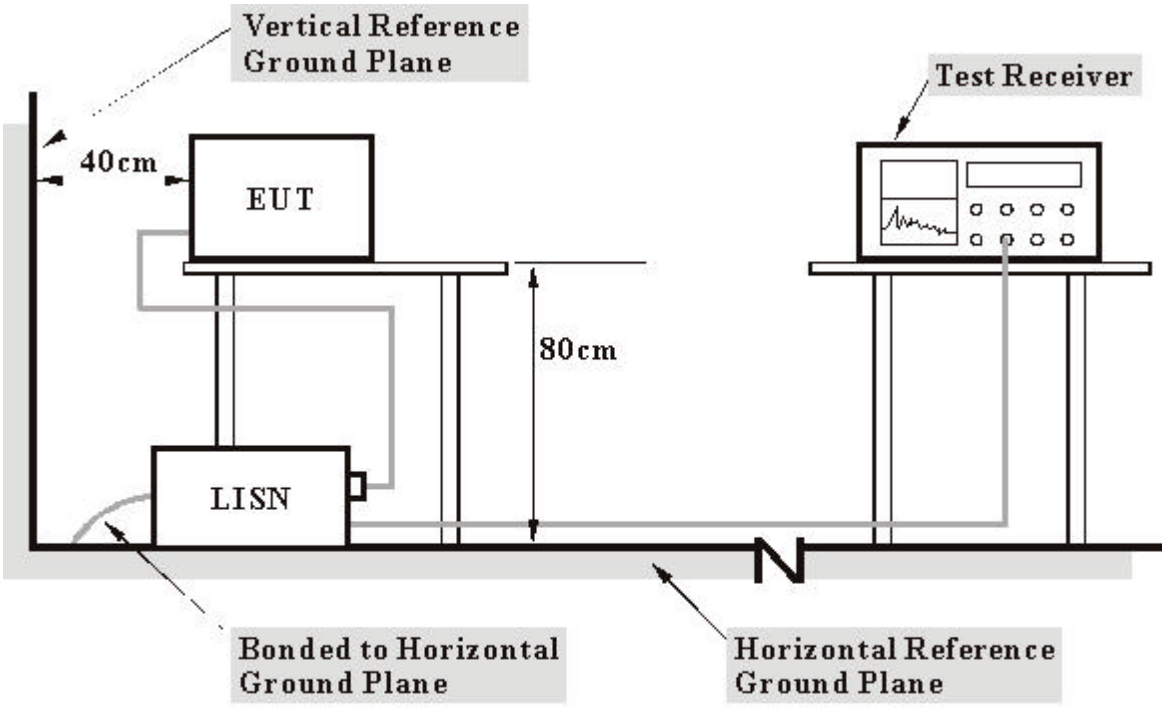
3. TEST PROCEDURES

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

4.1.3 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.

4.1.4 EUT OPERATING CONDITIONS

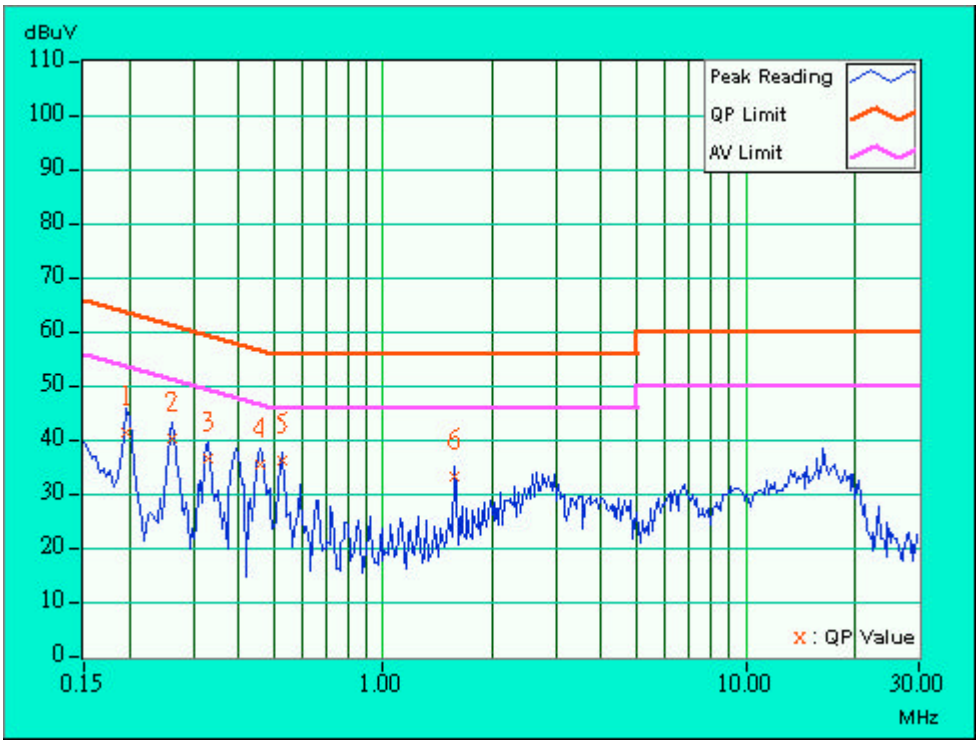
a. Plug the EUT into the support unit 1 (Notebook computer) which placed on a testing table.
b. The support unit 1 (Notebook computer) ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.5 TEST RESULTS

EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	41.34	-	41.44	-	63.74	53.74	-22.30	-
2	0.263	0.10	40.21	-	40.31	-	61.33	51.33	-21.02	-
3	0.330	0.10	36.74	-	36.84	-	59.46	49.46	-22.62	-
4	0.459	0.10	35.36	-	35.46	-	56.72	46.72	-21.26	-
5	0.525	0.10	36.12	-	36.22	-	56.00	46.00	-19.78	-
6	1.584	0.10	33.30	-	33.40	-	56.00	46.00	-22.60	-

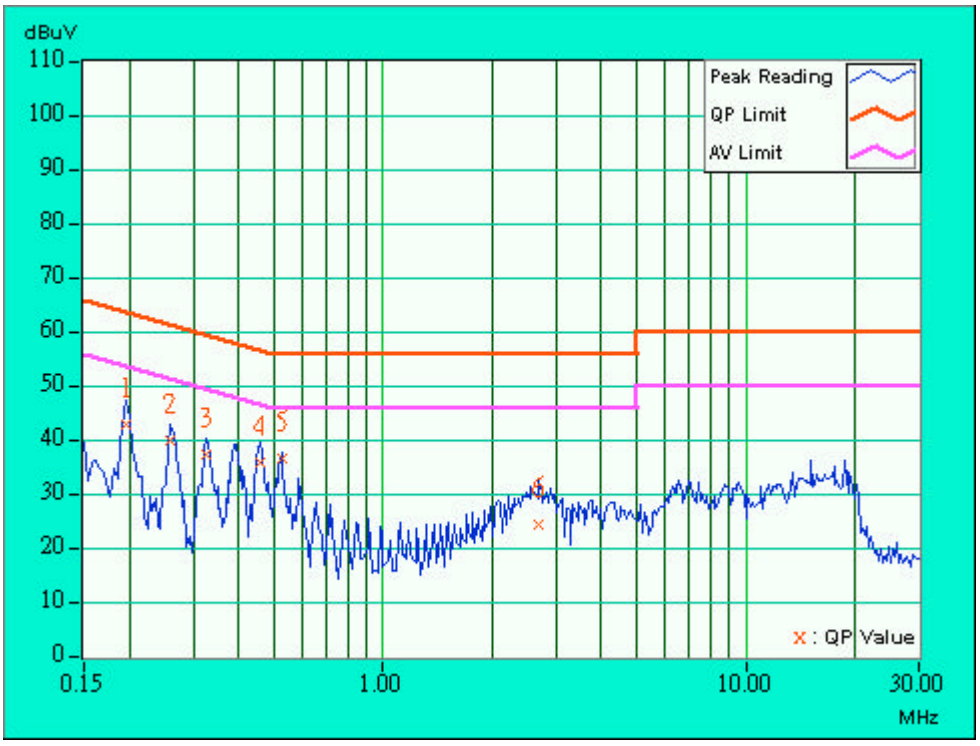
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 1	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	42.85	-	42.95	-	63.74	53.74	-20.79	-
2	0.259	0.10	39.77	-	39.87	-	61.45	51.45	-21.58	-
3	0.326	0.10	37.21	-	37.31	-	59.56	49.56	-22.25	-
4	0.459	0.10	35.72	-	35.82	-	56.72	46.72	-20.90	-
5	0.525	0.10	36.44	-	36.54	-	56.00	46.00	-19.46	-
6	2.693	0.13	24.19	-	24.32	-	56.00	46.00	-31.68	-

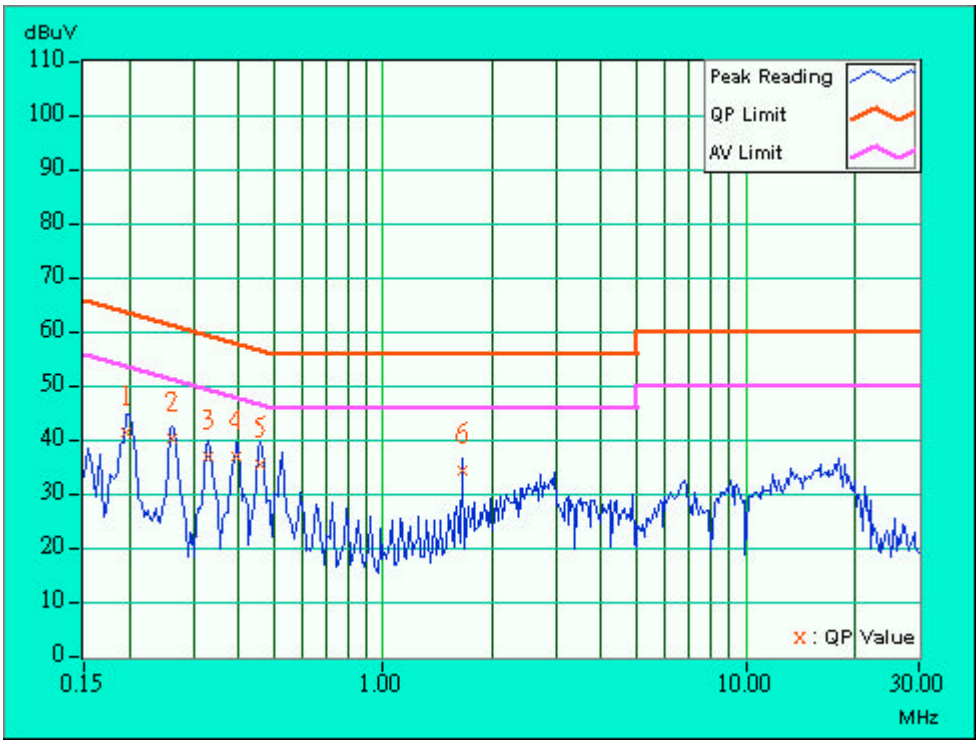
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	41.32	-	41.42	-	63.74	53.74	-22.32	-
2	0.263	0.10	40.31	-	40.41	-	61.33	51.33	-20.92	-
3	0.330	0.10	36.90	-	37.00	-	59.46	49.46	-22.46	-
4	0.396	0.10	36.96	-	37.06	-	57.93	47.93	-20.87	-
5	0.461	0.10	35.46	-	35.56	-	56.67	46.67	-21.11	-
6	1.646	0.10	34.17	-	34.27	-	56.00	46.00	-21.73	-

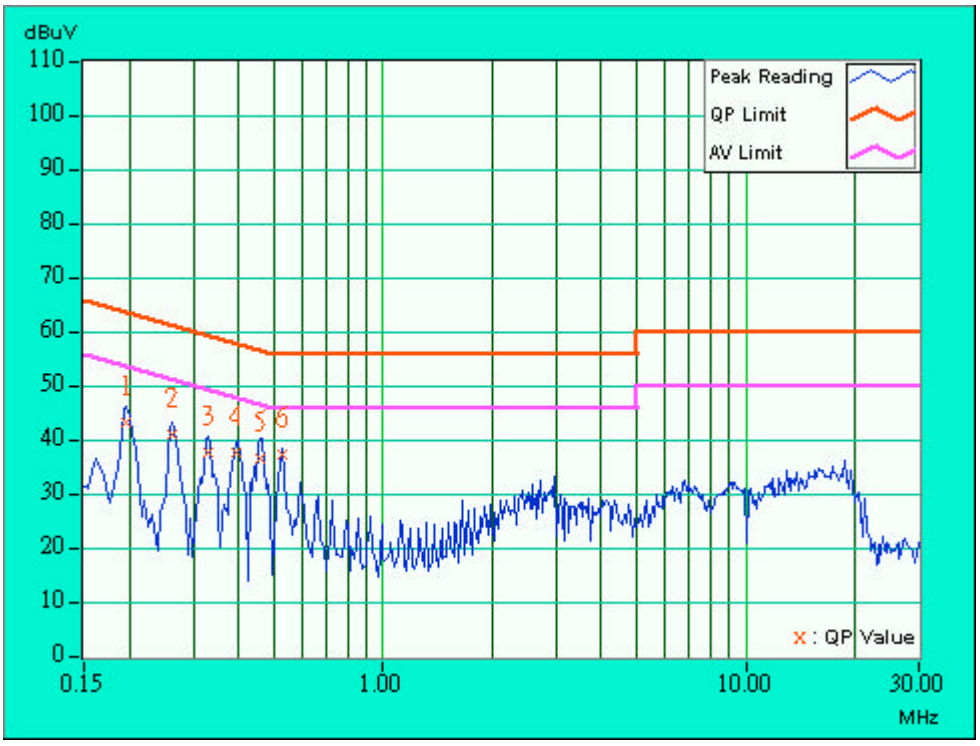
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 6	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	43.27	-	43.37	-	63.74	53.74	-20.37	-
2	0.263	0.10	41.14	-	41.24	-	61.33	51.33	-20.09	-
3	0.330	0.10	37.67	-	37.77	-	59.46	49.46	-21.69	-
4	0.394	0.10	37.84	-	37.94	-	57.98	47.98	-20.04	-
5	0.460	0.10	36.60	-	36.70	-	56.69	46.69	-19.99	-
6	**0.528**	**0.10**	**37.20**	**-**	**37.30**	**-**	**56.00**	**46.00**	**-18.70**	**-**

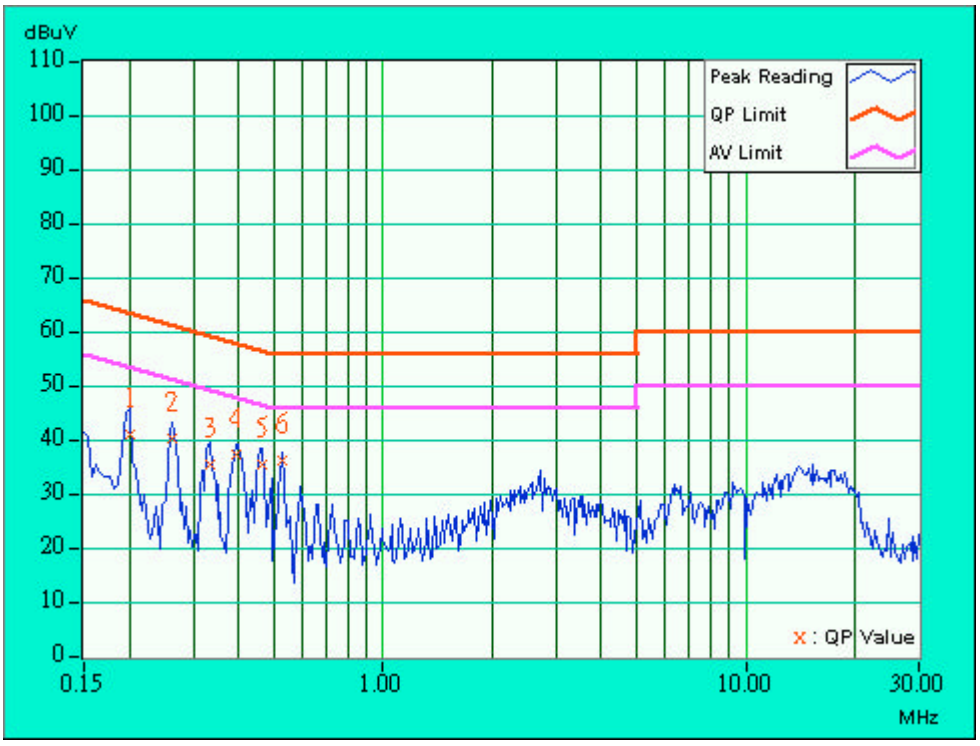
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.10	40.92	-	41.02	-	63.58	53.58	-22.56	-
2	0.263	0.10	40.41	-	40.51	-	61.33	51.33	-20.82	-
3	0.334	0.10	35.40	-	35.50	-	59.36	49.36	-23.86	-
4	0.396	0.10	37.19	-	37.29	-	57.93	47.93	-20.64	-
5	0.463	0.10	35.30	-	35.40	-	56.65	46.65	-21.25	-
6	0.529	0.10	36.36	-	36.46	-	56.00	46.00	-19.54	-

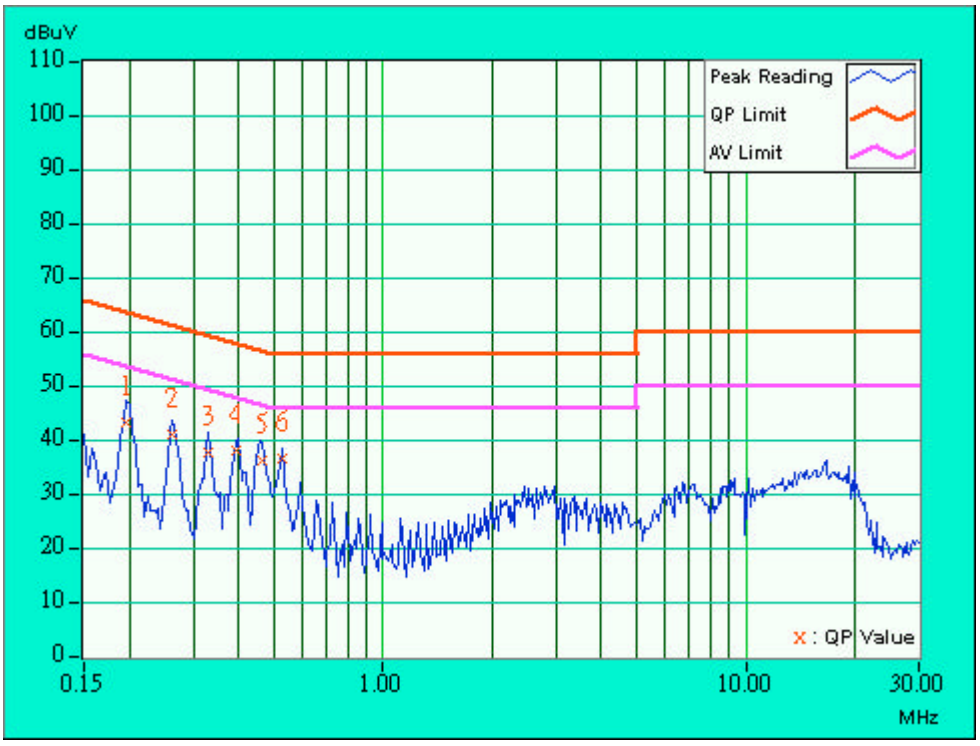
NOTES: (1) "*": Undetectable
(2) Q.P. and AV. are abbreviations of quasi-peak and average.
(3) "-": The Quasi-peak reading value also meets an average limit, thus measurement with the average detector is unnecessary.
(4) The emission levels of other frequencies were very low against the limit.
(5) Correction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



EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 11	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	27 deg. C, 62%RH, 968 hPa	**TESTED BY**	Tony Chen

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.197	0.10	43.15	-	43.25	-	63.74	53.74	-20.49	-
2	0.263	0.10	41.04	-	41.14	-	61.33	51.33	-20.19	-
3	0.330	0.10	37.76	-	37.86	-	59.46	49.46	-21.60	-
4	0.396	0.10	38.10	-	38.20	-	57.93	47.93	-19.73	-
5	0.462	0.10	36.17	-	36.27	-	56.65	46.65	-20.38	-
6	0.530	0.10	36.55	-	36.65	-	56.00	46.00	-19.35	-

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 of Fundamental	
	uV/m	dBuV/m
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8594ER	3829U04676	Jul. 14, 2003
ADVANTEST Spectrum Analyzer	R3271A	85060311	May 21, 2004
CHASE RF Pre_Amplifier	CPA9232	1057	Apr. 24, 2004
HP Pre_Amplifier	8449B	3008A01281	June 27, 2004
ROHDE & SCHWARZ Test Receiver	ESVS 10	849231 /019	Nov. 03, 2003
CHASE Broadband Antenna	CBL6111c	2730	Jul 17, 2003
Schwarzbeck Horn_Antenna	BBHA9120-D1	D123	Jul. 31, 2003
SCHWARZBECK Tunable Dipole Antenna	UHAP	897	Mar. 07, 2005
SCHWARZBECK Tunable Dipole Antenna	VHAP	880	Mar. 07, 2005
RF Switches (ARNITSU)	CS-201	1565157	Jul. 29, 2003
RF CABLE (Chaintek) 1GHz-20GHz	Ak 9515-D	001	Aug, 20.2003
RF Cable(RICHTEC)	9913-30M	STCCAB-30M-1GHz-021	Nov. 5, 2003
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 3789-C.

4.2.3 TEST PROCEDURES

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

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

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

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

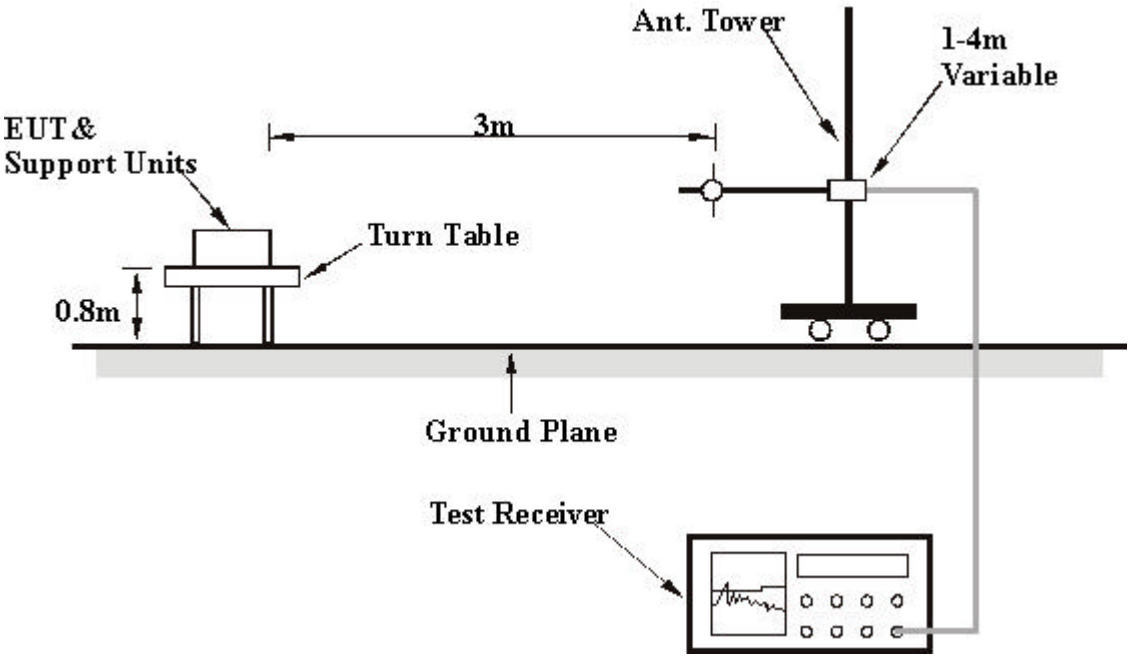
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

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

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

4.2.4 TEST SETUP



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

4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.5.

4.2.6 TEST RESULTS

EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 11	**FREQUENCY RANGE**	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	23 deg. C, 57 % RH, 968 hPa	**TESTED BY**	Eric Lee

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	32.4 QP	43.50	-11.10	1.02 H	217	20.90	11.50
2	160.02	31.6 QP	43.50	-11.90	1.35 H	290	21.30	10.30
3	179.76	29.8 QP	43.50	-13.70	1.77 H	233	21.00	8.80
4	200.00	40.0 QP	43.50	-3.50	1.52 H	57	31.00	9.00
5	240.06	43.7 QP	46.00	-2.30	1.25 H	256	31.90	11.80
6	300.29	34.9 QP	46.00	-11.10	1.12 H	144	20.70	14.20
7	320.00	38.4 QP	46.00	-7.60	1.11 H	0	23.90	14.60
8	360.02	35.4 QP	46.00	-10.60	1.56 H	289	19.70	15.70
9	400.01	42.0 QP	46.00	-4.00	1.00 H	209	24.90	17.10
10	439.99	36.5 QP	46.00	-9.50	1.00 H	152	18.50	18.00
11	480.01	39.4 QP	46.00	-6.60	1.02 H	148	20.60	18.90
12	640.00	32.9 QP	46.00	-13.10	1.40 H	148	11.10	21.90
13	680.03	34.5 QP	46.00	-11.50	1.39 H	53	12.30	22.20
14	720.01	36.2 QP	46.00	-9.80	1.15 H	49	12.90	23.30
15	799.98	35.9 QP	46.00	-10.10	1.53 H	191	12.20	23.70
16	720.01	36.2 QP	46.00	-9.80	1.15 H	49	12.90	23.30
17	799.98	35.9 QP	46.00	-10.10	1.53 H	191	12.20	23.70

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	120.02	26.3 QP	43.50	-17.20	1.44 V	44	14.80	11.50
2	133.49	37.2 QP	43.50	-6.30	1.23 V	133	25.40	11.70
3	160.00	30.4 QP	43.50	-13.10	1.52 V	77	20.10	10.30
4	179.76	30.7 QP	43.50	-12.80	1.49 V	24	21.90	8.80
5	200.02	33.1 QP	43.50	-10.40	1.58 V	68	24.10	9.00
6	240.02	28.0 QP	46.00	-18.00	1.61 V	26	16.20	11.80
7	320.01	35.4 QP	46.00	-10.60	1.71 V	33	20.80	14.60
8	352.00	35.0 QP	46.00	-11.00	1.39 V	301	19.50	15.50
9	400.01	34.4 QP	46.00	-11.60	1.74 V	81	17.30	17.10
10	480.01	35.0 QP	46.00	-11.00	1.69 V	84	16.10	18.90
11	499.98	31.7 QP	46.00	-14.30	1.37 V	157	12.40	19.30
12	560.02	37.3 QP	46.00	-8.70	1.58 V	84	15.80	21.50
13	600.02	37.3 QP	46.00	-8.70	1.31 V	52	16.40	20.90

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

4.2.7 TEST RESULTS - DSSS

EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average(AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	2390.00	55.0 PK	74.00	-19.00	1.32 H	43	25.20	29.80
1	2390.00	45.0 AV	54.00	-9.00	1.32 H	43	15.20	29.80
2	*2412.00	97.1 PK			1.37 H	249	67.20	29.90
2	*2412.00	90.8 AV			1.37 H	249	60.90	29.90
3	4824.00	48.7 PK	74.00	-25.30	1.35 H	249	12.40	36.20
4	7236.00	47.0 PK	74.00	-27.00	1.04 H	198	5.30	41.70
5	9648.00	50.9 PK	74.00	-23.10	1.59 H	357	6.00	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	2390.00	62.4 PK	74.00	-11.60	1.58 V	46	32.60	29.80
1	2390.00	51.7 AV	54.00	-2.30	1.58 V	46	21.90	29.80
2	*2412.00	108.1 PK			1.65 V	249	78.20	29.90
2	*2412.00	100.9 AV			1.65 V	249	71.00	29.90
3	4824.00	56.3 PK	74.00	-17.70	1.23 V	55	20.10	36.20
3	4824.00	46.6 AV	54.00	-7.40	1.23 V	55	10.40	36.20
4	7236.00	48.3 PK	74.00	-25.70	1.52 V	109	6.60	41.70
5	9648.00	52.8 PK	74.00	-21.20	1.49 V	59	7.90	44.90
5	9648.00	42.5 AV	54.00	-11.50	1.49 V	59	-2.40	41.70

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	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	2390.00	53.1 PK	74.00	-20.90	1.52 H	341	23.30	29.80
1	2390.00	43.0 AV	54.00	-11.00	1.52 H	341	13.20	29.80
2	*2437.00	97.2 PK			1.58 H	134	67.20	30.00
2	*2437.00	90.2 AV			1.58 H	134	60.20	30.00
3	2484.00	52.8 PK	74.00	-21.20	1.38 H	52	22.60	30.10
3	2484.00	42.4 AV	54.00	-11.60	1.38 H	52	12.20	30.10
4	4874.00	49.5 PK	74.00	-24.50	1.32 H	297	13.10	36.50
5	7311.00	46.2 PK	74.00	-27.80	1.39 H	87	4.50	41.80
6	9748.00	49.5 PK	74.00	-24.50	1.57 H	349	4.90	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	2390.00	54.1 PK	74.00	-19.90	1.52 V	209	24.30	29.80
1	2390.00	44.1 AV	54.00	-9.90	1.52 V	209	14.30	29.80
2	*2437.00	108.1 PK			1.02 V	84	78.10	30.00
2	*2437.00	102.0 AV			1.02 V	84	72.00	30.00
3	2483.50	55.8 PK	74.00	-18.20	1.32 V	47	25.60	30.10
3	2483.50	44.3 AV	54.00	-9.70	1.32 V	47	14.20	30.10
4	4874.00	57.3 PK	74.00	-16.70	1.40 V	107	20.90	36.50
4	4874.00	46.6 AV	54.00	-7.40	1.40 V	107	10.10	36.50
5	7311.00	45.9 PK	74.00	-28.10	1.12 V	261	4.10	41.80
6	9748.00	52.4 PK	74.00	-21.60	1.07 V	243	7.80	44.60
6	9748.00	43.5 AV	54.00	-10.50	1.07 V	243	-1.20	41.80

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	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	96.3 PK			1.00 H	44	66.30	30.10
1	*2462.00	89.3 AV			1.00 H	44	59.30	30.10
2	2483.50	55.4 PK	74.00	-18.60	1.32 H	216	25.30	30.10
2	2483.50	46.3 AV	54.00	-7.70	1.32 H	216	16.20	30.10
3	4924.00	49.9 PK	74.00	-24.10	1.11 H	48	13.20	36.70
4	7386.00	47.1 PK	74.00	-26.90	1.11 H	245	5.20	41.80
5	9848.00	50.3 PK	74.00	-23.70	1.62 H	247	6.00	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	107.3 PK			1.01 V	326	77.30	30.10
1	*2462.00	101.4 AV			1.01 V	326	71.30	30.10
2	2483.50	64.7 PK	74.00	-9.30	1.63 V	261	34.60	30.10
2	2483.50	52.4 AV	54.00	-1.60	1.63 V	261	22.30	30.10
3	4924.00	57.5 PK	74.00	-16.50	1.62 V	343	20.80	36.70
3	4924.00	46.9 AV	54.00	-7.10	1.62 V	343	10.20	36.70
4	7386.00	47.4 PK	74.00	-26.60	1.32 V	146	5.50	41.80
5	9848.00	52.4 PK	74.00	-21.60	1.43 V	298	8.00	44.40
5	9848.00	42.3 AV	54.00	-11.70	1.43 V	298	-2.00	41.80

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

4.2.8 TEST RESULTS -OFDM

EUT	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 1	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average(AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	2390.00	55.3 PK	74.00	-18.70	1.34 H	328	25.50	29.80
1	2390.00	43.3 AV	54.00	-10.70	1.34 H	328	13.50	29.80
2	*2412.00	94.8 PK			1.03 H	298	64.90	29.90
2	*2412.00	86.8 AV			1.03 H	298	56.90	29.90
3	2484.00	53.2 PK	74.00	-20.80	1.67 H	243	23.10	30.10
3	2484.00	43.4 AV	54.00	-10.60	1.67 H	243	13.30	30.10
4	4824.00	45.3 PK	74.00	-28.70	1.22 H	220	9.10	36.20
5	7236.00	46.7 PK	74.00	-27.30	1.36 H	290	5.10	41.70
6	9648.00	50.8 PK	74.00	-23.20	1.28 H	163	5.90	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	2390.00	61.8 PK	74.00	-12.20	1.31 V	43	32.00	29.80
1	2390.00	48.1 AV	54.00	-5.90	1.31 V	43	18.30	29.80
2	*2412.00	104.6 PK			1.05 V	43	74.70	29.90
2	*2412.00	95.4 AV			1.05 V	43	65.50	29.90
3	2484.00	55.7 PK	74.00	-18.30	1.48 V	26	25.50	30.10
3	2484.00	45.2 AV	54.00	-8.80	1.48 V	26	15.10	30.10
4	4824.00	48.3 PK	74.00	-25.70	1.25 V	247	12.10	36.20
5	7236.00	48.7 PK	74.00	-25.30	1.30 V	290	7.10	41.70
6	9648.00	53.5 PK	74.00	-20.50	1.42 V	76	8.60	44.90
6	9648.00	42.8 AV	54.00	-11.20	1.42 V	76	-2.10	36.20

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	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 6	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	2390.00	54.0 PK	74.00	-20.00	1.28 H	357	24.20	29.80
1	2390.00	43.1 AV	54.00	-10.90	1.28 H	357	13.30	29.80
2	*2437.00	94.2 PK			1.33 H	137	64.30	30.00
2	*2437.00	85.7 AV			1.33 H	137	55.70	30.00
3	2483.50	53.2 PK	74.00	-20.80	1.36 H	261	23.00	30.10
3	2483.50	42.3 AV	54.00	-11.70	1.36 H	261	12.20	30.10
4	4874.00	46.5 PK	74.00	-27.50	1.02 H	258	10.10	36.50
5	7311.00	47.2 PK	74.00	-26.80	1.23 H	158	5.40	41.80
6	9748.00	50.3 PK	74.00	-23.70	1.34 H	265	5.70	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	2390.00	54.1 PK	74.00	-19.90	1.25 V	247	24.30	29.80
1	2390.00	44.0 AV	54.00	-10.00	1.25 V	247	14.20	29.80
2	*2437.00	106.2 PK			1.34 V	42	76.30	30.00
2	*2437.00	96.5 AV			1.34 V	42	66.60	30.00
3	2484.00	53.4 PK	74.00	-20.60	1.36 V	269	23.30	30.10
3	2484.00	44.4 AV	54.00	-9.60	1.36 V	269	14.30	30.10
4	4874.00	57.6 PK	74.00	-16.40	1.09 V	38	21.10	36.50
4	4874.00	44.3 AV	54.00	-9.70	1.09 V	38	7.90	36.50
5	7311.00	46.2 PK	74.00	-27.80	1.19 V	280	4.40	41.80
6	9748.00	53.2 PK	74.00	-20.80	1.29 V	282	8.60	44.60
6	9748.00	42.5 AV	54.00	-11.50	1.29 V	282	-2.10	41.80

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	54G Wireless LAN module	**MODEL**	WM601-I
MODE	Channel 11	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 58%RH, 968 hPa	**TESTED BY**	Eric Lee

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	94.3 PK			1.32 H	327	64.30	30.10
1	*2462.00	85.3 AV			1.32 H	327	55.20	30.10
2	2483.50	57.3 PK	74.00	-16.70	1.35 H	326	27.20	30.10
2	2483.50	44.8 AV	54.00	-9.20	1.35 H	326	14.60	30.10
3	4924.00	47.9 PK	74.00	-26.10	1.25 H	297	11.20	36.70
4	7386.00	47.3 PK	74.00	-26.70	1.55 H	107	5.50	41.80
5	9848.00	50.2 PK	74.00	-23.80	1.33 H	59	5.80	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	106.3 PK			1.34 V	31	76.20	30.10
1	*2462.00	97.1 AV			1.34 V	31	67.00	30.10
2	2483.50	65.8 PK	74.00	-8.20	1.33 V	7	35.70	30.10
2	**2483.50**	**52.6 AV**	**54.00**	**-1.40**	**1.33 V**	**7**	**22.50**	**30.10**
3	4924.00	47.9 PK	74.00	-26.10	1.65 V	23	11.20	36.70
4	7386.00	48.2 PK	74.00	-25.80	1.22 V	132	6.40	41.80
5	9848.00	52.4 PK	74.00	-21.60	1.42 V	209	8.10	44.40
5	9848.00	43.4 AV	54.00	-10.60	1.42 V	209	-0.90	36.70

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 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP	1093.4495.30	Dec. 19, 2003

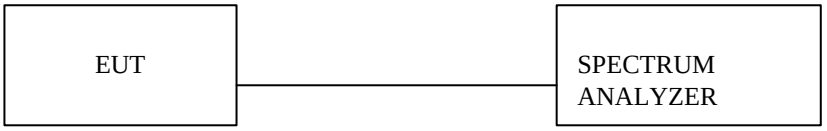
NOTE:

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

4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

4.3.4 TEST SETUP



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

4.3.5 EUT OPERATING CONDITIONS

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