



FCC TEST REPORT

REPORT NO.: RF910410R01C

MODEL NO.: WLL030M
WLL030

RECEIVED: Sep. 2, 2002

TESTED: Sep. 3 ~ Sep. 11, 2002

APPLICANT: ASKEY COMPUTER CORP.

ADDRESS: 2/FL, No. 2, Lane 497 Chung Cheng Road,
Hsin Tien, Taipei, Taiwan R.O.C.

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 : Mini PCI Combo Card
BRAND NAME : Askey
MODEL NO. : WLL030M
WLL030
APPLICANT : ASKEY COMPUTER CORP.
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 Sep. 3 to Sep. 11, 2002. 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.

CHECKED BY : Emily Lu , DATE : Sep. 18, 2002
Emily Lu

APPROVED BY : Alan Lane , DATE : Sep. 18, 2002
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 Section	Test Type and Limit	Result	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -12.00dBuV at 0.158MHz
15.247(c)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit. Minimum passing margin is -2.00dBuV at 2088.00MHz
15.247(c)	Band Edge Measurement Limit: 20 dB 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.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Mini PCI Combo Card
MODEL NO.	WLL030M, WLL030
POWER SUPPLY	3.3VDC from host equipment
MODULATION TYPE	CCK, DBPSK, DQPSK
RADIO TECHNOLOGY	DSSS
TRANSFER RATE	1/2/5.5/11Mbps
FREQUENCY RANGE	2412MHz ~ 2462MHz
NUMBER OF CHANNEL	11
OUTPUT POWER	14.94dBm
ANTENNA TYPE	Dipole Antenna
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. Model WLL030M and WLL030 are identical except for model number and the model WLL030 is designed without modem part.
2. This report, issued as a supplementary report to the original report with number RF910410R01 and RF910703R01, is prepared for FCC class II permissive change. Another Dipole antenna was added to this EUT for the test.
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 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. The test result A is for model WLL030M and the test result B is for model WLL030.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Mini PCI Combo Card. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC CFR 47 Part 15, Subpart C. (15.247)
ANSI C63.4 : 1992

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

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



3.4 DESCRIPTION OF SUPPORT UNITS

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

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	IBM	THMKPAD A20M	NA	NA
2	PRINTER	EPSON	LQ-300+	DCGY017096	FCC DoC APPROVED
3	MODEM	ACEEX	1414	980020503	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	1.8 m unshielded, DC connector, with core.
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).

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

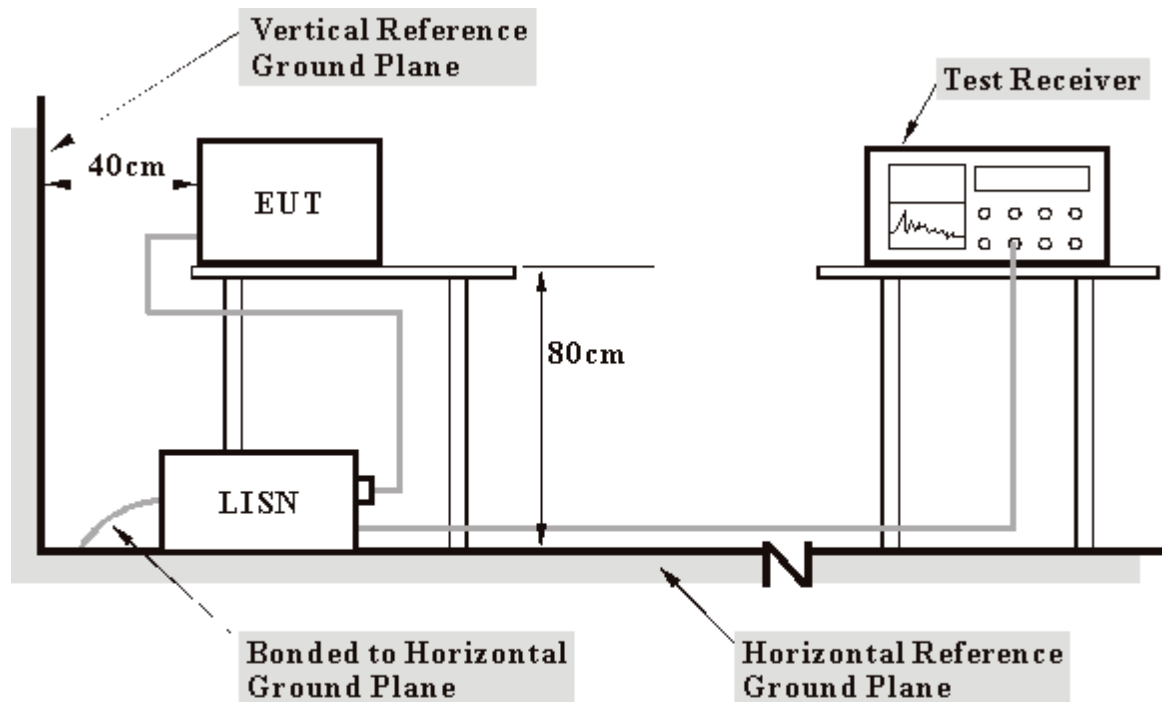
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS30	834115/016	Mar. 3, 2003
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ESH3-Z5	847265/023	Jan. 10, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Dec. 10, 2002
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/018	Dec. 10, 2002
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	July 10, 2003
Software	Cond-V2L	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C03.01	July 11, 2003
Terminator (For EMCO LISN)	NA	E1-01-300	Feb. 20, 2003
Terminator (For EMCO LISN)	NA	E1-01-301	Feb. 20, 2003
Shielded Room	Site 3	ADT-C03	NA
VCCI Site Registration No.	Site 3	C-274	NA

- NOTE:**
1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. “*”: These equipment are used for conducted telecom port test only (if tested).
 4. The test was performed in ADT Open Site No. 3.

4.1.3 TEST PROCEDURES

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



- Note:**
- Support units were connected to second LISN.
 - 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 DEVIATION FROM TEST STANDARD

No deviation

4.1.6 EUT OPERATING CONDITIONS

- a. Plug the EUT into the PCI extender which connected to a computer system placed on a testing table.
- b. The computer system ran a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- c. The computer system sent "H" messages to its screen.
- d. The computer system sent "H" messages to modem.
- e. The computer system sent "H" messages to printer, and the printer prints them on paper.

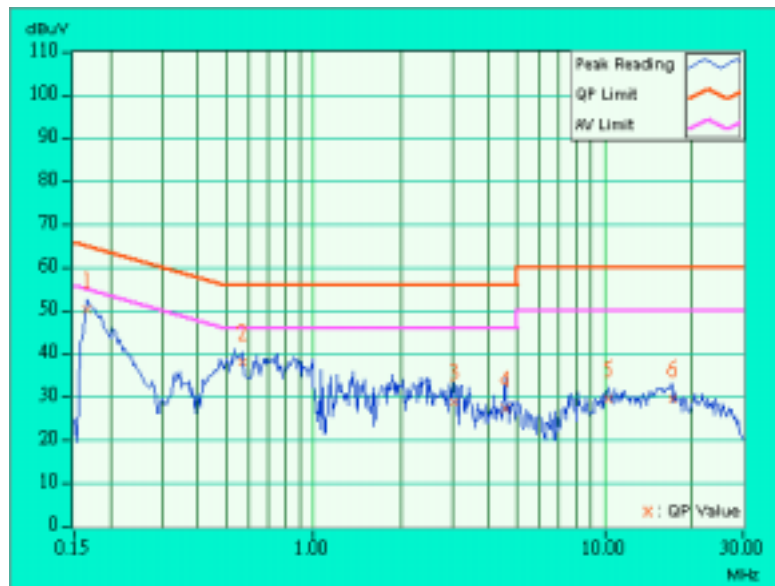
4.1.7 TEST RESULTS (A)

EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.166	0.10	49.50	-	49.60	-	65.18	55.18	-15.58	-
2	0.568	0.13	37.56	-	37.69	-	56.00	46.00	-18.31	-
3	3.047	0.30	28.10	-	28.40	-	56.00	46.00	-27.60	-
4	4.570	0.41	26.76	-	27.17	-	56.00	46.00	-28.83	-
5	10.313	0.51	28.84	-	29.35	-	60.00	50.00	-30.65	-
6	17.051	0.74	28.86	-	29.60	-	60.00	50.00	-30.40	-

NOTE:

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

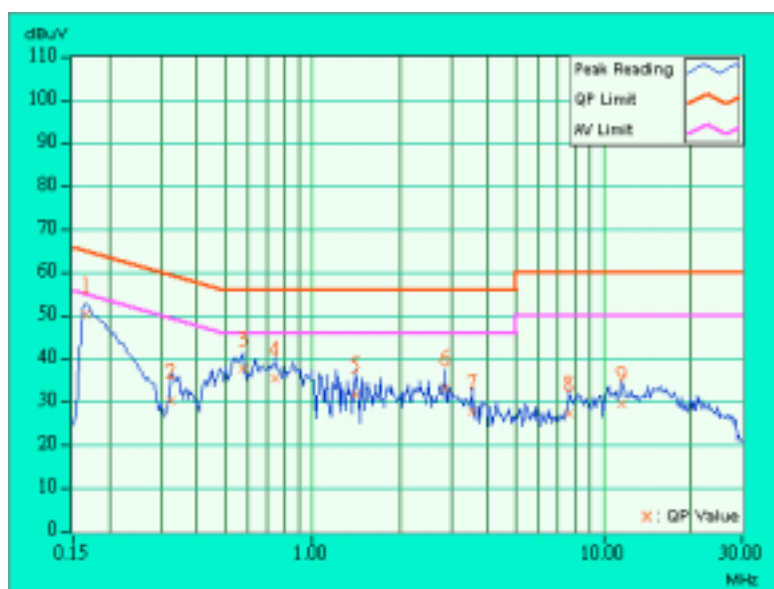


EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.166	0.10	49.86	-	49.96	-	65.18	55.18	-15.22	-
2	0.326	0.10	29.83	-	29.93	-	59.56	49.56	-29.63	-
3	0.576	0.13	37.42	-	37.55	-	56.00	46.00	-18.45	-
4	0.744	0.16	35.28	-	35.44	-	56.00	46.00	-20.56	-
5	1.402	0.20	31.35	-	31.55	-	56.00	46.00	-24.45	-
6	2.871	0.24	32.77	-	33.01	-	56.00	46.00	-22.99	-
7	3.531	0.28	27.31	-	27.59	-	56.00	46.00	-28.41	-
8	7.637	0.36	27.09	-	27.45	-	60.00	50.00	-32.55	-
9	11.570	0.43	29.16	-	29.59	-	60.00	50.00	-30.41	-

NOTE:

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

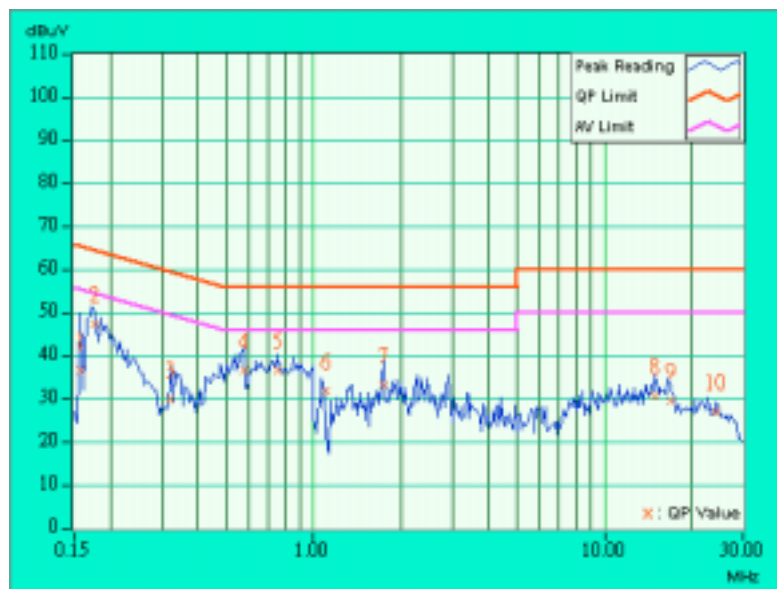


EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.158	0.10	35.70	-	35.80	-	65.58	55.58	-29.78	-
2	0.177	0.10	46.62	-	46.72	-	64.61	54.61	-17.89	-
3	0.322	0.10	29.02	-	29.12	-	59.66	49.66	-30.54	-
4	0.576	0.13	35.97	-	36.10	-	56.00	46.00	-19.90	-
5	0.752	0.16	35.92	-	36.08	-	56.00	46.00	-19.92	-
6	1.109	0.20	30.94	-	31.14	-	56.00	46.00	-24.86	-
7	1.734	0.20	32.36	-	32.56	-	56.00	46.00	-23.44	-
8	14.891	0.70	29.86	-	30.56	-	60.00	50.00	-29.44	-
9	16.973	0.74	28.74	-	29.48	-	60.00	50.00	-30.52	-
10	24.086	0.88	26.32	-	27.20	-	60.00	50.00	-32.80	-

NOTE:

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

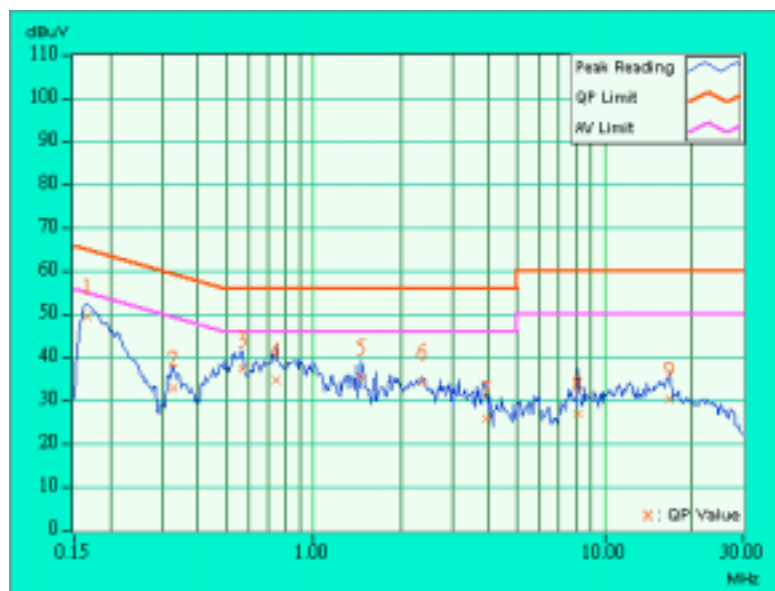


EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.166	0.10	49.26	-	49.36	-	65.18	55.18	-15.82	-
2	0.330	0.10	32.59	-	32.69	-	59.46	49.46	-26.77	-
3	0.568	0.13	36.94	-	37.07	-	56.00	46.00	-18.93	-
4	0.744	0.16	34.18	-	34.34	-	56.00	46.00	-21.66	-
5	1.465	0.20	34.92	-	35.12	-	56.00	46.00	-20.88	-
6	2.363	0.22	34.01	-	34.23	-	56.00	46.00	-21.77	-
7	3.906	0.30	25.57	-	25.87	-	56.00	46.00	-30.13	-
8	8.148	0.37	26.49	-	26.86	-	60.00	50.00	-33.14	-
9	16.801	0.54	29.96	-	30.50	-	60.00	50.00	-29.50	-

NOTE:

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

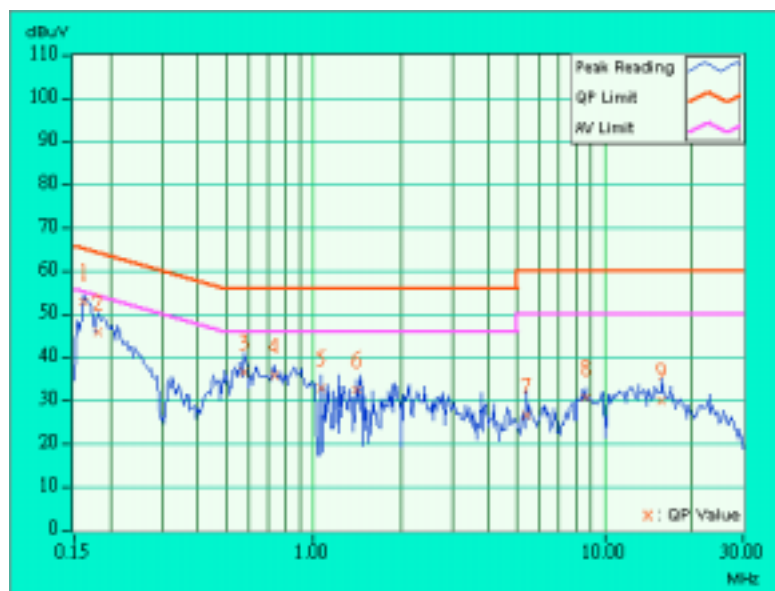


EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.162	0.10	52.39	-	52.49	-	65.38	55.38	-12.89	-
2	0.181	0.10	45.20	-	45.30	-	64.43	54.43	-19.13	-
3	0.580	0.13	36.13	-	36.26	-	56.00	46.00	-19.74	-
4	0.732	0.16	35.15	-	35.31	-	56.00	46.00	-20.69	-
5	1.055	0.20	32.28	-	32.48	-	56.00	46.00	-23.52	-
6	1.410	0.20	31.74	-	31.94	-	56.00	46.00	-24.06	-
7	5.379	0.42	25.95	-	26.37	-	60.00	50.00	-33.63	-
8	8.684	0.48	30.05	-	30.53	-	60.00	50.00	-29.47	-
9	15.598	0.71	29.41	-	30.12	-	60.00	50.00	-29.88	-

NOTE:

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

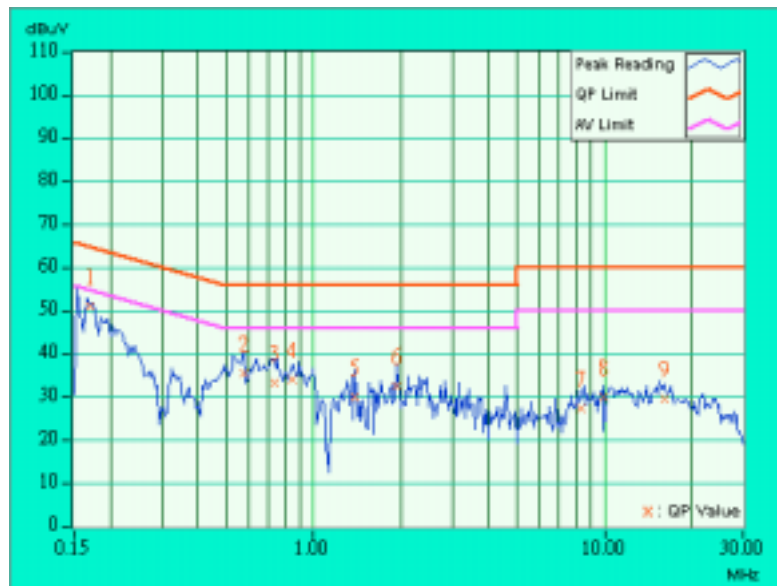


EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.170	0.10	50.42	-	50.52	-	64.98	54.98	-14.46	-
2	0.576	0.13	35.19	-	35.32	-	56.00	46.00	-20.68	-
3	0.732	0.16	32.81	-	32.97	-	56.00	46.00	-23.03	-
4	0.841	0.17	33.64	-	33.81	-	56.00	46.00	-22.19	-
5	1.391	0.20	29.41	-	29.61	-	56.00	46.00	-26.39	-
6	1.922	0.20	32.14	-	32.34	-	56.00	46.00	-23.66	-
7	8.305	0.37	26.74	-	27.11	-	60.00	50.00	-32.89	-
8	9.914	0.40	29.42	-	29.82	-	60.00	50.00	-30.18	-
9	16.066	0.52	29.04	-	29.56	-	60.00	50.00	-30.44	-

NOTE:

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



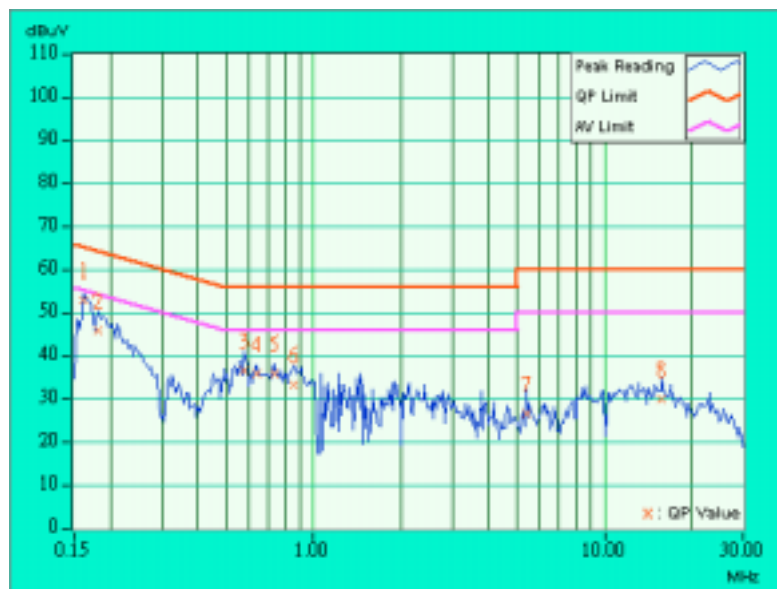
4.1.8 TEST RESULTS (B)

EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.162	0.10	52.39	-	52.49	-	65.38	55.38	-12.89	-
2	0.181	0.10	45.20	-	45.30	-	64.43	54.43	-19.13	-
3	0.580	0.13	36.13	-	36.26	-	56.00	46.00	-19.74	-
4	0.638	0.14	35.08	-	35.22	-	56.00	46.00	-20.78	-
5	0.732	0.16	35.15	-	35.31	-	56.00	46.00	-20.69	-
6	0.857	0.18	32.70	-	32.88	-	56.00	46.00	-23.12	-
7	5.379	0.42	25.95	-	26.37	-	60.00	50.00	-33.63	-
8	15.598	0.71	29.41	-	30.12	-	60.00	50.00	-29.88	-

NOTE:

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

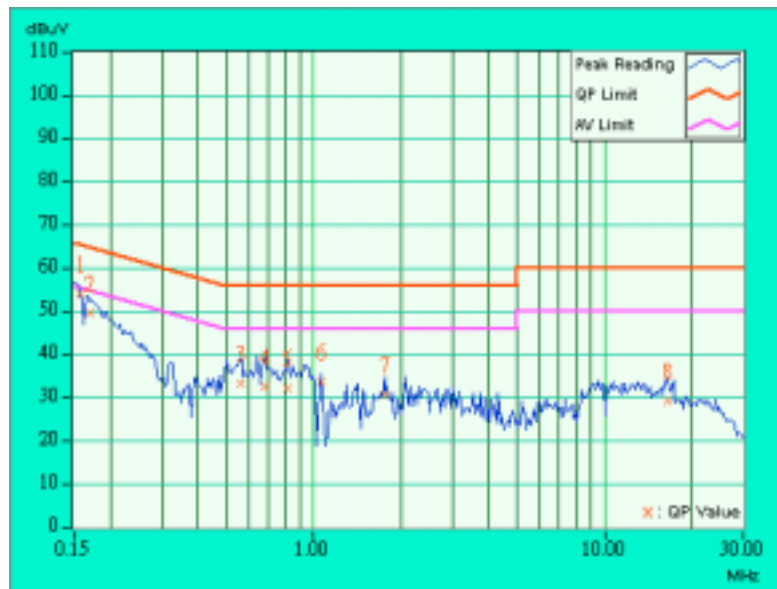


EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 1	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.158	0.10	53.48	-	53.58	-	65.58	55.58	-12.00	-
2	0.170	0.10	48.92	-	49.02	-	64.98	54.98	-15.96	-
3	0.564	0.13	32.95	-	33.08	-	56.00	46.00	-22.92	-
4	0.677	0.15	32.04	-	32.19	-	56.00	46.00	-23.81	-
5	0.814	0.17	31.81	-	31.98	-	56.00	46.00	-24.02	-
6	1.059	0.20	33.24	-	33.44	-	56.00	46.00	-22.56	-
7	1.754	0.20	30.37	-	30.57	-	56.00	46.00	-25.43	-
8	16.504	0.53	28.75	-	29.28	-	60.00	50.00	-30.72	-

NOTE:

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

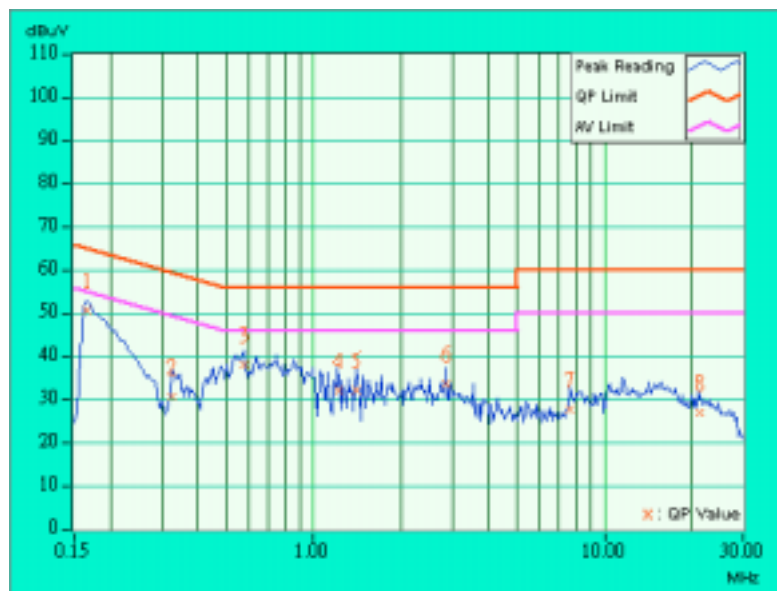


EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.166	0.10	49.86	-	49.96	-	65.18	55.18	-15.22	-
2	0.326	0.10	29.83	-	29.93	-	59.56	49.56	-29.63	-
3	0.576	0.13	37.42	-	37.55	-	56.00	46.00	-18.45	-
4	1.219	0.20	31.52	-	31.72	-	56.00	46.00	-24.28	-
5	1.402	0.20	31.35	-	31.55	-	56.00	46.00	-24.45	-
6	2.871	0.29	32.77	-	33.06	-	56.00	46.00	-22.94	-
7	7.637	0.46	27.09	-	27.55	-	60.00	50.00	-32.45	-
8	21.363	0.83	26.31	-	27.14	-	60.00	50.00	-32.86	-

NOTE:

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

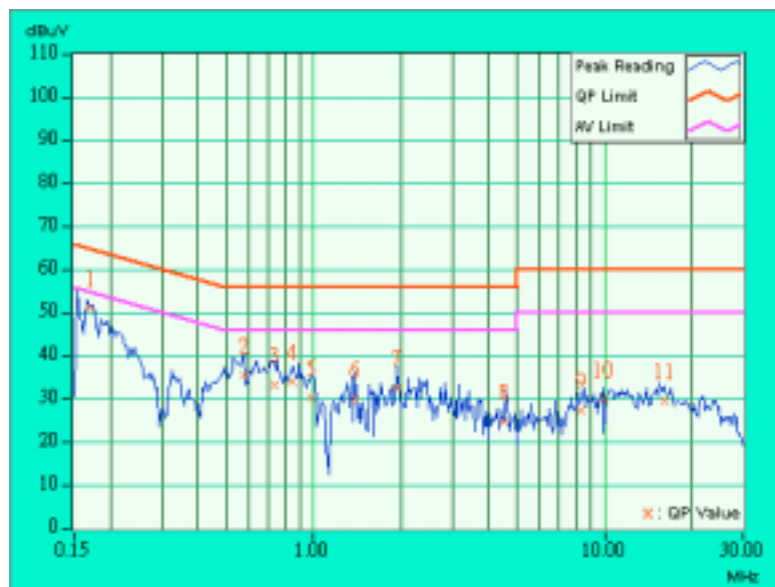


EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 6	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.170	0.10	50.42	-	50.52	-	64.98	54.98	-14.46	-
2	0.576	0.13	35.19	-	35.32	-	56.00	46.00	-20.68	-
3	0.732	0.16	32.81	-	32.97	-	56.00	46.00	-23.03	-
4	0.841	0.17	33.64	-	33.81	-	56.00	46.00	-22.19	-
5	0.978	0.20	29.75	-	29.95	-	56.00	46.00	-26.05	-
6	1.391	0.20	29.41	-	29.61	-	56.00	46.00	-26.39	-
7	1.922	0.20	32.14	-	32.34	-	56.00	46.00	-23.66	-
8	4.516	0.31	24.30	-	24.61	-	56.00	46.00	-31.39	-
9	8.305	0.37	26.74	-	27.11	-	60.00	50.00	-32.89	-
10	9.914	0.40	29.42	-	29.82	-	60.00	50.00	-30.18	-
11	16.066	0.52	29.04	-	29.56	-	60.00	50.00	-30.44	-

NOTE:

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

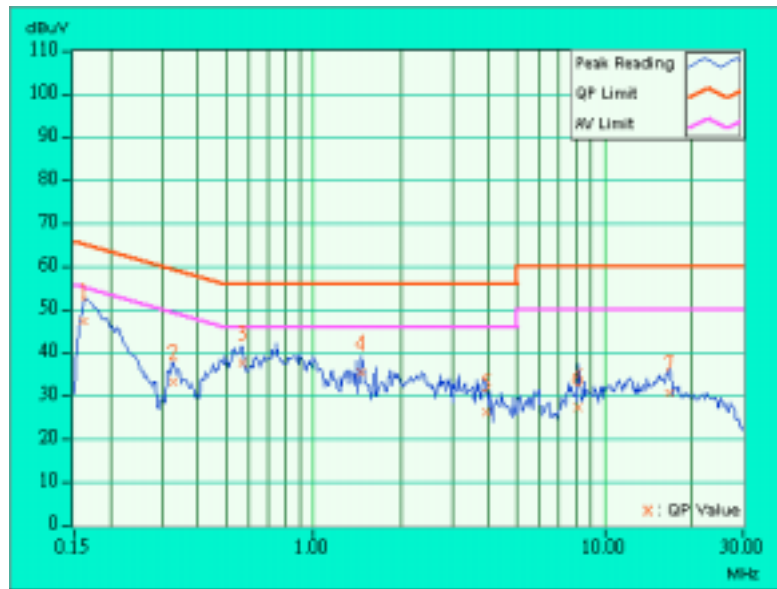


EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Line (L)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.162	0.10	46.79	-	46.89	-	65.38	55.38	-18.49	-
2	0.330	0.10	32.59	-	32.69	-	59.46	49.46	-26.77	-
3	0.568	0.13	36.94	-	37.07	-	56.00	46.00	-18.93	-
4	1.465	0.20	34.92	-	35.12	-	56.00	46.00	-20.88	-
5	3.906	0.39	25.57	-	25.96	-	56.00	46.00	-30.04	-
6	8.148	0.47	26.49	-	26.96	-	60.00	50.00	-33.04	-
7	16.801	0.74	29.96	-	30.70	-	60.00	50.00	-29.30	-

NOTE:

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

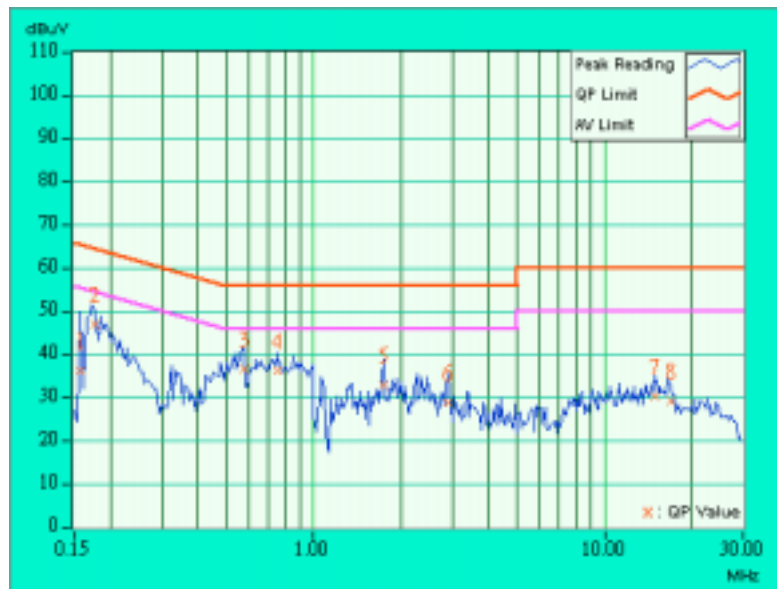


EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 11	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	35 deg. C, 50%RH, 1005 hPa	TESTED BY: Eric Lee	

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	0.158	0.10	35.70	-	35.80	-	65.58	55.58	-29.78	-
2	0.177	0.10	46.62	-	46.72	-	64.61	54.61	-17.89	-
3	0.576	0.13	35.97	-	36.10	-	56.00	46.00	-19.90	-
4	0.752	0.16	35.92	-	36.08	-	56.00	46.00	-19.92	-
5	1.734	0.20	32.36	-	32.56	-	56.00	46.00	-23.44	-
6	2.883	0.24	28.42	-	28.66	-	56.00	46.00	-27.34	-
7	14.891	0.50	29.86	-	30.36	-	60.00	50.00	-29.64	-
8	16.973	0.54	28.74	-	29.28	-	60.00	50.00	-30.72	-

NOTE:

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





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Field strength limits are at the distance of 3 meters, emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field Strength of Fundamental	
	uV/m	dBuV/m
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

NOTE:

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

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8590L	3544A01176	May 13, 2003
* HP Preamplifier	8447D	2944A08485	Oct. 30, 2002
* HP Preamplifier	8449B	3008A01201	Dec. 06, 2002
* HP Preamplifier	8449B	3008A01292	Aug. 7, 2003
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Jan. 27, 2003
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 23, 2002
* CHASE BILOG Antenna	CBL6112A	2221	Aug. 2, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	Jul. 3, 2003
* EMCO Horn Antenna	3115	9312-4192	Apr. 9, 2003
* EMCO Turn Table	1060	1115	NA
* SHOSHIN Tower	AP-4701	A6Y005	NA
* Software	AS61D4	NA	NA
* ANRITSU RF Switches	MP59B	M35046	Jan. 25, 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 12, 2003
Open Field Test Site	Site 5	ADT-R05	Jul. 19, 2003
VCCI Site Registration No.	Site 5	R-1039	NA

- NOTE:** 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per the NAMAS document NIS81.
2. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
3. "*" = These equipment are used for the final measurement.
4. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
5. The test was performed in ADT Open Site No. 5.



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.

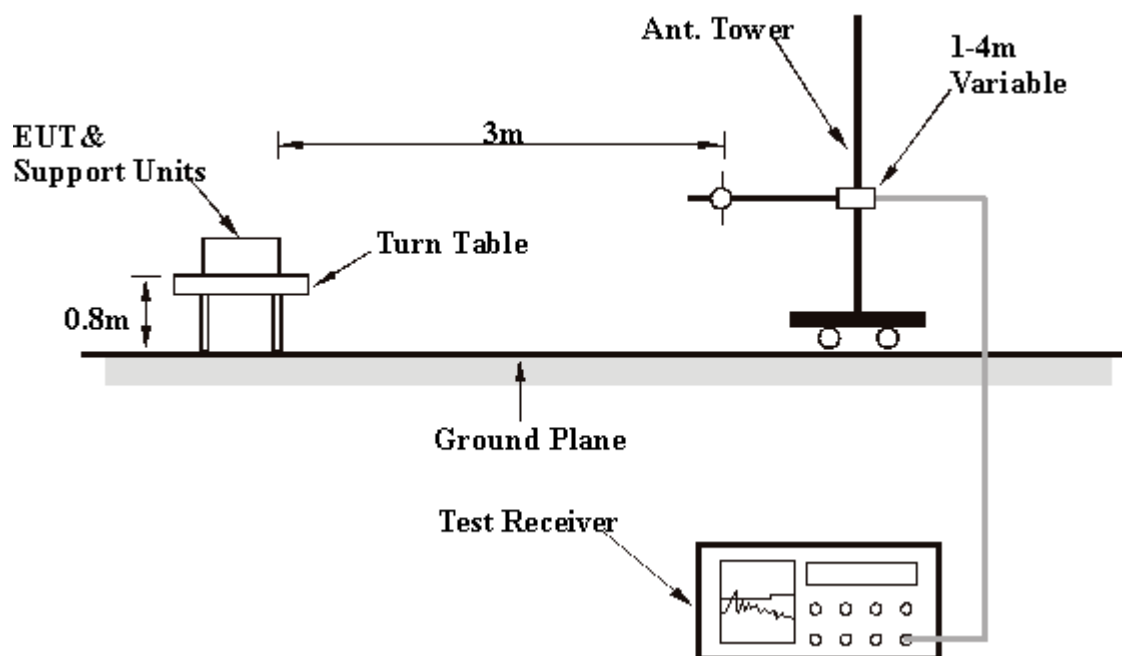
NOTE:

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 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 (A)

EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	220.00	23.9 QP	46.00	-22.10	1.40H	149	12.42	10.12	1.36	0.00	-11.48
2	264.00	35.2 QP	46.00	-10.80	1.26H	71	21.00	12.89	1.31	0.00	-14.21
3	352.00	32.1 QP	46.00	-13.90	1.32H	233	16.34	14.31	1.46	0.00	-15.76
4	396.00	31.8 QP	46.00	-14.20	1.00H	279	14.30	15.96	1.54	0.00	-17.50
5	440.00	27.8 QP	46.00	-18.20	1.00H	253	9.90	16.32	1.59	0.00	-17.90
6	520.00	35.4 QP	46.00	-10.60	1.75H	152	16.09	17.52	1.78	0.00	-19.31
7	748.00	25.6 QP	46.00	-20.40	1.00H	176	3.28	20.14	2.17	0.00	-22.32

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	264.00	28.1 QP	46.00	-17.90	1.71V	355	13.90	12.89	1.31	0.00	-14.20
2	352.00	28.0 QP	46.00	-18.00	1.31V	329	12.24	14.31	1.46	0.00	-15.76
3	396.00	26.0 QP	46.00	-20.00	1.70V	334	8.50	15.96	1.54	0.00	-17.51
4	440.00	27.6 QP	46.00	-18.40	1.43V	264	9.70	16.32	1.59	0.00	-17.91
5	748.00	25.1 QP	46.00	-20.90	1.66V	330	2.78	20.14	2.17	0.00	-22.33

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2038.00	45.2 AV	54.00	-8.80	2.29H	1	54.20	26.37	1.38	36.80	9.05
2	2038.00	57.5 PK	74.00	-16.50	2.29H	1	66.50	26.37	1.38	36.80	9.05.
3	2370.00	31.2 AV	54.00	-22.80	1.43H	125	38.00	27.52	2.40	36.73	6.80
4	2370.00	39.6 PK	74.00	-34.40	1.43H	125	46.40	27.52	2.40	36.73	6.80
5	2385.00	41.5 PK	74.00	-32.50	1.39H	15	48.00	27.67	2.53	36.72	6.52
6	*2412.00	100.5 PK			1.12H	180	107.00	27.67	2.53	36.72	6.52
7	*2412.00	93.5 AV			1.12H	180	100.00	27.67	2.53	36.72	6.52
8	4824.00	48.8 PK	74.00	-25.20	1.33H	230	50.00	31.52	4.01	36.70	1.18
9	4076.00	45.5 AV	54.00	-8.50	2.13H	8	48.00	30.38	3.63	36.52	2.51
10	4076.00	57.2 PK	74.00	-16.80	2.13H	8	59.70	30.38	3.63	36.52	2.51.
11	6113.00	41.0 AV	54.00	-13.00	2.34H	232	40.00	32.98	4.78	36.74	-1.02
12	6113.00	53.7 PK	74.00	-20.30	2.34H	232	52.70	32.98	4.78	36.74	-1.02
13	7263.00	50.0 PK	74.00	-24.00	1.46H	202	45.20	36.20	5.58	37.00	-4.78

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2038.00	40.5 AV	54.00	-13.50	1.52V	308	49.50	26.37	1.38	36.80	9.05
2	2038.00	52.0 PK	74.00	-22.00	1.52V	308	61.00	26.37	1.38	36.80	9.05
3	2375.00	48.2 PK	74.00	-25.80	1.25V	272	55.00	27.52	2.40	36.73	6.80
4	*2412.00	105.5 PK			1.11V	284	112.00	27.67	2.53	36.72	6.52
5	*2412.00	98.5 AV			1.11V	284	105.00	27.67	2.53	36.72	6.52
6	4076.00	39.1 AV	54.00	-14.90	1.62V	278	41.60	30.38	3.63	36.52	2.51
7	4076.00	50.6 PK	74.00	-23.40	1.62V	278	53.10	30.38	3.63	36.52	2.51
8	4824.00	52.0 PK	74.00	-22.00	1.25V	342	53.20	31.52	4.01	36.70	1.18
9	7235.00	47.8 PK	74.00	-26.20	1.37V	56	43.00	36.20	5.58	37.00	-4.78
10	8152.00	47.8 AV	54.00	-6.20	1.86V	254	42.40	36.93	5.82	37.33	-5.42
11	8152.00	56.2 PK	74.00	-17.80	1.86V	254	50.80	36.93	5.82	37.33	-5.42.

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2063.00	50.7 AV	54.00	-3.30	1.00H	235	59.50	26.51	1.51	36.79	8.77
2	2063.00	53.5 PK	74.00	-20.50	1.69H	229	62.30	26.51	1.51	36.79	8.77
3	*2437.00	99.6 PK			1.13H	191	105.80	27.81	2.66	36.71	6.24
4	*2437.00	90.8 AV			1.13H	191	97.00	27.81	2.66	36.71	6.24
5	4874.00	45.9 PK	74.00	-28.10	1.53H	8	47.00	31.59	4.03	36.70	1.08
6	4126.00	46.7 AV	54.00	-7.30	1.72H	229	49.10	30.50	3.66	36.56	2.39
7	4126.00	49.1 PK	74.00	-24.90	1.72H	229	51.50	30.50	3.66	36.56	2.39
8	7286.00	46.3 PK	74.00	-27.70	1.18H	298	41.40	36.26	5.65	37.02	-4.90

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2063.00	46.0 AV	54.00	-8.00	2.09V	358	54.80	26.51	1.51	36.79	8.77
2	2063.00	55.3 PK	74.00	-18.70	2.09V	358	64.10	26.51	1.51	36.79	8.77
3	*2437.00	105.3 PK			1.09V	172	111.50	27.81	2.66	36.71	6.24
4	*2437.00	97.1 AV			1.09V	172	103.30	27.81	2.66	36.71	6.24
5	4126.00	49.5 AV	54.00	-4.50	1.14V	264	51.90	30.50	3.66	36.56	2.39
6	4126.00	54.0 PK	74.00	-20.00	1.14V	264	56.40	30.50	3.66	36.56	2.39
7	4874.00	47.5 PK	74.00	-26.50	1.55V	335	48.60	31.59	4.03	36.70	1.08
8	6188.00	43.5 AV	54.00	-10.50	1.63V	283	42.30	33.30	4.67	36.77	-1.20
9	6188.00	51.2 PK	74.00	-22.80	1.63V	283	50.00	33.30	4.67	36.77	-1.20
10	7286.00	46.9 PK	74.00	-27.10	1.16V	13	42.00	36.26	5.65	37.02	-4.90

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2088.00	52.0 AV	54.00	-2.00	1.36H	312	60.50	26.66	1.64	36.78	8.49
2	2088.00	60.9 PK	74.00	-13.10	1.36H	312	69.40	26.66	1.64	36.78	8.49
3	*2463.00	97.8 PK			1.47H	332	104.00	27.81	2.66	36.71	6.24
4	*2463.00	90.8 AV			1.47H	332	97.00	27.81	2.66	36.71	6.24
5	2493.00	44.2 PK	74.00	-29.80	1.49H	4	50.20	27.96	2.78	36.70	5.96
6	4176.00	46.1 AV	54.00	-7.90	1.85H	311	48.40	30.56	3.68	36.58	2.33
7	4176.00	48.1 PK	74.00	-25.90	1.85H	311	50.40	30.56	3.68	36.58	2.33
8	4924.00	46.2 PK	74.00	-27.80	1.19H	357	47.20	31.66	4.06	36.70	0.99
9	6264.00	44.1 AV	54.00	-9.90	1.07H	340	42.70	33.63	4.56	36.81	-1.38
10	6264.00	51.5 PK	74.00	-22.50	1.07H	340	50.10	33.63	4.56	36.81	-1.38
11	7387.00	46.1 PK	74.00	-27.90	1.19H	112	41.00	36.40	5.79	37.05	-5.14

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2088.00	47.2 AV	54.00	-6.80	1.63V	283	55.70	26.66	1.64	36.78	8.49
2	2088.00	53.9 PK	74.00	-20.10	1.63V	283	62.40	26.66	1.64	36.78	8.49
3	*2462.00	104.2 PK			1.37V	309	110.40	27.81	2.66	36.71	6.24
4	*2462.00	95.8 AV			1.37V	309	102.00	27.81	2.66	36.71	6.24
5	2492.00	45.0 PK	74.00	-29.00	1.44V	326	51.00	27.96	2.78	36.70	5.96
6	4176.00	44.7 AV	54.00	-9.30	1.16V	236	47.00	30.56	3.68	36.58	2.33
7	4176.00	51.4 PK	74.00	-22.60	1.16V	236	53.70	30.56	3.68	36.58	2.33
8	4924.00	47.0 PK	74.00	-27.00	1.49V	334	48.00	31.66	4.06	36.70	0.99
9	6263.00	44.4 AV	54.00	-9.60	1.16V	119	43.00	33.63	4.56	36.81	-1.38
10	6263.00	48.4 PK	74.00	-25.60	1.16V	119	47.00	33.63	4.56	36.81	-1.38
11	7387.00	47.1 PK	74.00	-26.90	1.54V	351	42.00	36.40	5.79	37.05	-5.14

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.

4.2.8 TEST RESULTS (B)

EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 11	FREQUENCY RANGE	30-1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	176.00	30.0 QP	43.50	-13.50	1.18H	3	19.84	9.08	1.09	0.00	-10.16
2	264.00	26.8 QP	46.00	-19.20	1.33H	295	12.60	12.89	1.31	0.00	-14.20
3	352.00	27.9 QP	46.00	-18.10	1.25H	68	12.14	14.31	1.46	0.00	-15.76
4	396.00	25.9 QP	46.00	-20.10	1.49H	63	8.40	15.96	1.54	0.00	-17.51
5	440.00	28.0 QP	46.00	-18.00	1.49H	207	10.10	16.32	1.59	0.00	-17.90
6	528.00	33.2 QP	46.00	-12.80	1.80H	178	13.78	17.62	1.79	0.00	-19.42
7	616.00	27.8 QP	46.00	-18.20	1.55H	31	7.02	18.82	1.96	0.00	-20.78
8	836.00	28.4 QP	46.00	-17.60	1.22H	115	5.52	20.54	2.34	0.00	-22.88

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	176.00	22.0 QP	43.50	-21.50	1.46V	64	11.84	9.08	1.09	0.00	-10.16
2	220.00	20.0 QP	46.00	-26.00	1.48V	154	8.52	10.12	1.36	0.00	-11.48
3	264.00	24.9 QP	46.00	-21.10	1.08V	96	10.70	12.89	1.31	0.00	-14.20
4	352.00	26.6 QP	46.00	-19.40	1.54V	272	10.84	14.31	1.46	0.00	-15.76
5	440.00	24.0 QP	46.00	-22.00	1.00V	274	6.10	16.32	1.59	0.00	-17.91
6	528.00	34.2 QP	46.00	-11.80	1.23V	148	14.78	17.62	1.79	0.00	-19.42
7	572.00	30.3 QP	46.00	-15.70	1.39V	65	10.17	18.25	1.88	0.00	-20.13
8	616.00	24.3 QP	46.00	-21.70	1.45V	12	3.52	18.82	1.96	0.00	-20.78
9	660.00	25.0 QP	46.00	-21.00	1.36V	103	3.74	19.25	2.01	0.00	-21.26
10	704.00	25.5 QP	46.00	-20.50	1.18V	112	4.08	19.38	2.04	0.00	-21.42
11	792.00	24.5 QP	46.00	-21.50	1.37V	82	1.63	20.60	2.27	0.00	-22.87
12	836.00	22.0 QP	46.00	-24.00	1.30V	26	-0.88	20.54	2.34	0.00	-22.88

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030
MODE	Channel 1	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2038.00	48.0 AV	54.00	-6.00	1.14H	333	57.00	26.37	1.38	36.80	9.05
2	2038.00	50.2 PK	74.00	-23.80	1.14H	333	59.20	26.37	1.38	36.80	9.05
3	*2412.00	97.3 AV			1.14H	176	67.10	27.67	2.53	0.00	-30.20
4	*2412.00	104.1 PK			1.14H	176	73.90	27.67	2.53	0.00	-30.20
5	4076.00	49.5 AV	54.00	-4.50	1.69H	72	52.00	30.38	3.63	36.52	2.52
6	4076.00	50.5 PK	74.00	-23.50	1.69H	72	53.00	30.38	3.63	36.52	2.52

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2038.00	49.8 AV	54.00	-4.20	1.00V	329	58.88	26.37	1.38	36.80	9.05
2	2038.00	50.9 PK	74.00	-23.10	1.00V	92	59.90	26.37	1.38	36.80	9.05
3	*2412.00	95.2 AV			1.34V	56	65.00	27.67	2.53	0.00	-30.20
4	*2412.00	102.6 PK			1.34V	56	72.40	27.67	2.53	0.00	-30.20
5	4076.00	47.5 AV	54.00	-6.50	1.06V	122	50.00	30.38	3.63	36.52	2.51
6	4076.00	49.4 PK	74.00	-24.60	1.06V	122	51.90	30.38	3.63	36.52	2.51

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 6	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2063.00	48.4 AV	54.00	-5.60	1.25H	17	57.20	26.51	1.51	36.79	8.77
2	2063.00	49.8 PK	74.00	-24.20	1.25H	17	58.60	26.51	1.51	36.79	8.77
3	*2437.00	104.3 PK			1.45H	157	73.80	27.81	2.66	0.00	-30.47
4	*2437.00	97.0 AV			1.45H	157	66.50	27.81	2.66	0.00	-30.47
5	4126.00	44.6 AV	54.00	-9.40	1.27H	92	47.00	30.50	3.66	36.56	2.39
6	4126.00	46.1 PK	74.00	-27.90	1.27H	92	48.50	30.50	3.66	36.56	2.39

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2063.00	50.4 AV	54.00	-3.60	1.28V	179	59.20	26.51	1.51	36.79	8.77
2	2063.00	51.5 PK	74.00	-22.50	1.28V	179	60.30	26.51	1.51	36.79	8.77
3	*2437.00	103.7 PK			1.23V	78	73.20	27.81	2.66	0.00	-30.48
4	*2437.00	95.8 AV			1.23V	78	65.30	27.81	2.66	0.00	-30.48
5	4126.00	48.9 AV	54.00	-5.10	1.20V	83	51.33	30.50	3.66	36.56	2.40
6	4126.00	50.5 PK	74.00	-23.50	1.20V	83	52.90	30.50	3.66	36.56	2.40

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. " * " : Fundamental frequency
5. The other emission levels were very low against the limit.



EUT	Mini PCI Combo Card	MODEL	WLL030M
MODE	Channel 11	FREQUENCY RANGE	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 1050 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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2088.00	49.6 AV	54.00	-4.40	1.68H	77	58.10	26.66	1.64	36.78	8.49
2	2088.00	51.1 PK	74.00	-22.90	1.68H	77	59.60	26.66	1.64	36.78	8.49
3	*2462.00	101.5 PK			1.56H	50	71.00	27.81	2.66	0.00	-30.48
4	*2462.00	95.5 AV			1.56H	50	65.00	27.81	2.66	0.00	-30.48
5	4176.00	46.6 AV	54.00	-7.40	1.29H	144	48.90	30.56	3.68	36.58	2.33
6	4176.00	47.7 PK	74.00	-26.30	1.29H	144	50.00	30.56	3.68	36.58	2.33

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)	Antenna Factor (dB)	Cable Factor (dB)	Pre-Amp. Factor (dB)	Correction Factor (dB)
1	2088.00	51.0 AV	54.00	-3.00	1.21V	266	59.48	26.66	1.64	36.78	8.49
2	2088.00	51.8 PK	74.00	-22.20	1.21V	266	60.30	26.66	1.64	36.78	8.49
3	*2462.00	96.1 AV			1.12V	54	65.60	27.81	2.66	0.00	-30.47
4	*2462.00	102.8 PK			1.12V	54	72.30	27.81	2.66	0.00	-30.47
5	4176.00	45.8 AV	54.00	-8.20	1.14V	74	48.12	30.56	3.68	36.58	2.34
6	4176.00	46.9 PK	74.00	-27.10	1.14V	74	49.20	30.56	3.68	36.58	2.34

NOTE:

1. Emission level = Raw value - Correction Factor
2. Correction Factor = Pre-Amp. Factor - Ant. Factor - Cable loss
(Pre-Amp. Factor = 0, when a Pre-Amplifier is not used for the test.)
3. Margin value = Emission level - Limit value
4. “ * ” : Fundamental frequency
5. The other emission levels were very low against the limit.



4.3 BAND EDGES MEASUREMENT

4.3.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	July 24, 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 via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.



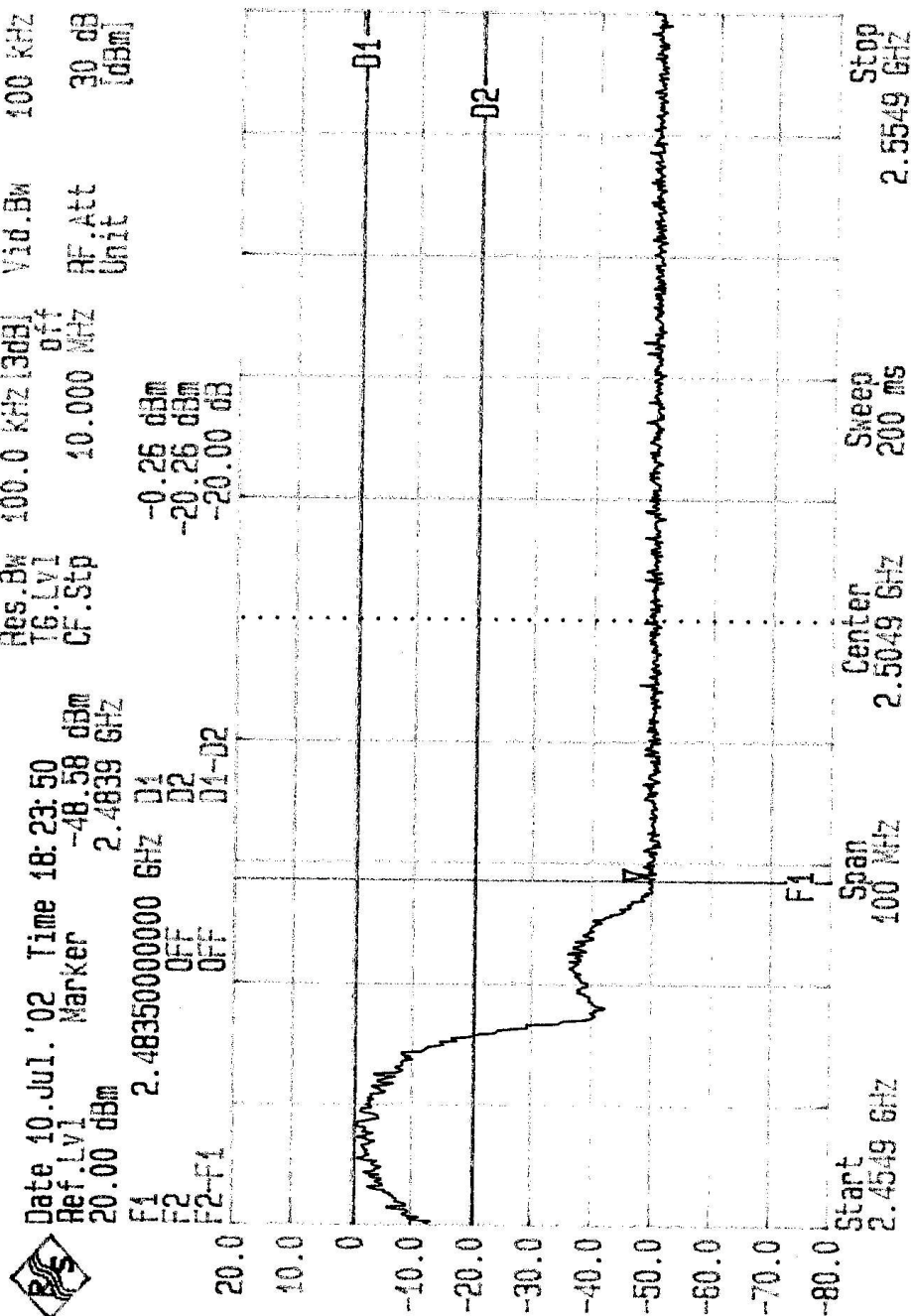
4.3.4 EUT OPERATING CONDITION

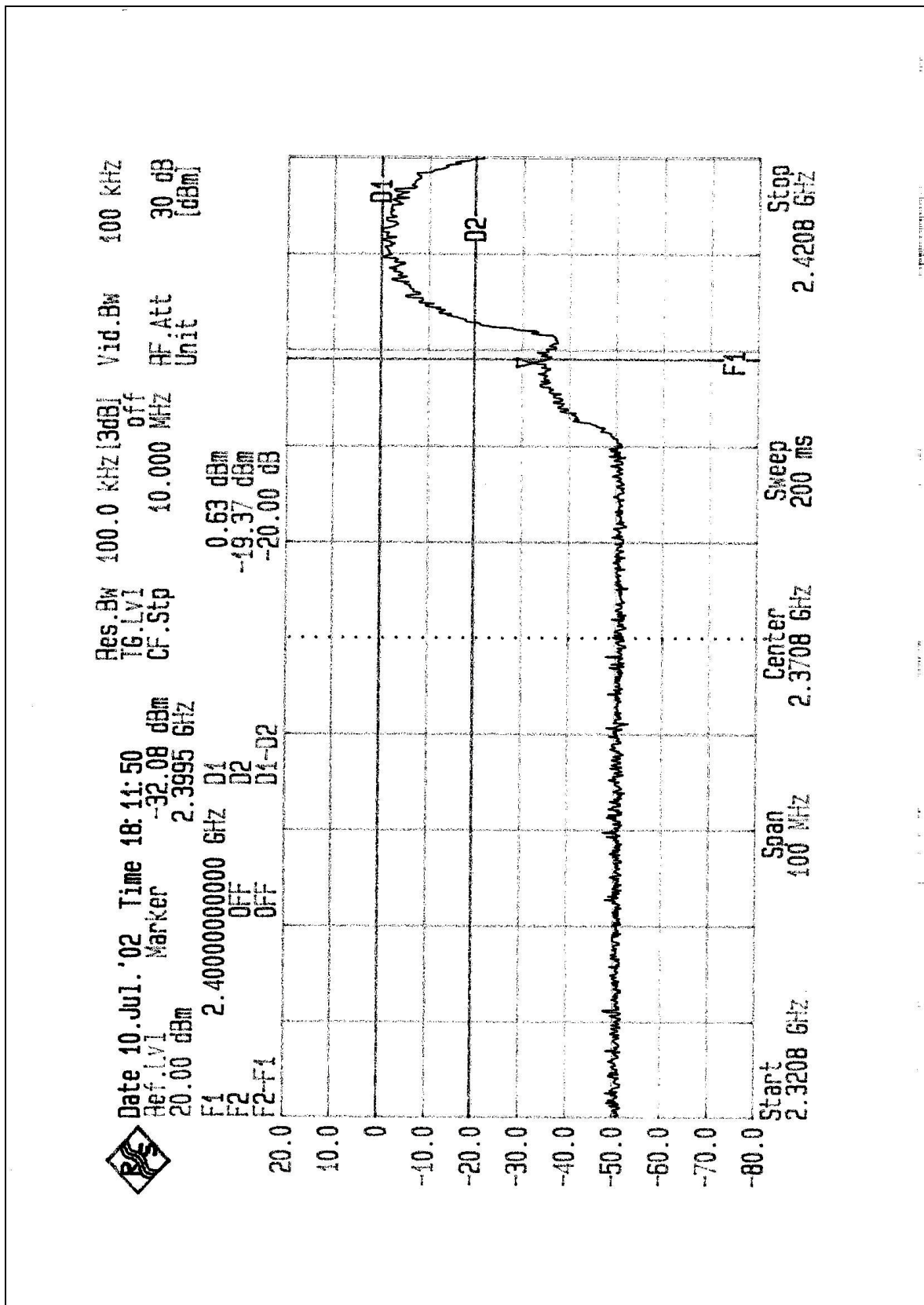
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.5 TEST RESULTS

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

NOTE: The band edge emission plot on the following 2 pages shows 48.32dB / 48.63dB delta between carrier maximum power and local maximum emission in restrict band (2.4839GHz / 2.3995GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 (Page 32) is 97.3dBuV/m, so the maximum field strength in restrict band is $98.5 - 48.32 = 50.18$ dBuV/m which is under 54 dBuV/m limit.







4.4 ANTENNA REQUIREMENT

4.4.1 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.

4.4.2 ANTENNA CONNECTED CONSTRUCTION

The Antenna used in this EUT is Inverted F Antenna. The antenna connector type is UFL. And the maximum Gain of these antennas is only 1.5dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST





RADIATED EMISSION TEST







6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml.

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