



Test Report

For

Applicant : AboCom Systems, Inc.
Equipment Type : CompactFlash Size Ethernet LAN Card
Model : CE10T
FCC ID : MQ4CE10T

Report No. : 99CH005F



QTK99-F042

Test Report Certification

Quietek Corporation

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Hsin-Chu County, Taiwan, R.O.C.

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Accredited by NIST(NVLAP), VCCI, BSMI, DNV, TUV

Applicant : AboCom Systems, Inc.
 Address : 1F, No.21, R&D Road II, Science-Based Industrial Park,
 Hsin-Chu , Taiwan, R.O.C.
 Equipment Type : CompactFlash Size Ethernet LAN Card
 Model : CE10T
 FCC ID. : MQ4CE10T
 Measurement Standard : CISPR 22/1994
 Measurement Procedure : ANSI C63.4 /1992
 Operation Voltage : DC 5V
 Classification : Class B
 Test Result : Complied
 Test Date : Dec.06, 1999
 Report No. : 99CH005F



The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

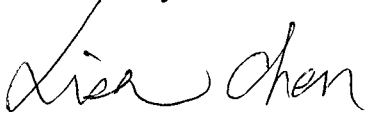
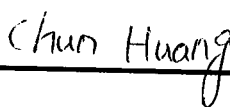
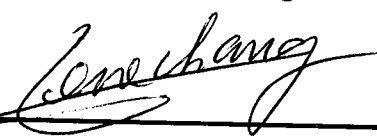
Documented by: Lisa Chen 	Test Engineer: Chun Huang 	Approved: Gene Chang 
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1. General Information

1.1 EUT Description

Applicant : AboCom Systems, Inc.

Address : 1F, No.21, R&D Road II, Science-Based Industrial Park,
Hsin-Chu , Taiwan, R.O.C.

Equipment Type : CompactFlash Size Ethernet LAN Card

Model : CE10T

FCC ID : MQ4CE10T

Operation Voltage : DC 5V

Remark : 1.EUT is a CompactFlash Size Ethernet LAN Card, in 10Mbps transmission speed.
2.QuieTek had verified the construction and formation of these model in typical operation , then shown in the this report.

1.2 Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

1.2.1 Notebook PC

Model Number : HRMADA M300
Serial Number : 1J99CYB5A98K
FCC ID : DoC
Manufacturer : COMPAQ
Floppy : COMPAQ COMPUTER, M/N:PP2056, S/N:NA
Power Adapter : COMPAQ COMPUTER, M/N:ADP-50UB
S/N:W5T993056255
Cable In: Shielded, 1.8m
Cable Out: Non-Shielded, 1.8m + Core
CompactFlash Size Ethernet LAN Card(EUT)
:MFT: AboCom, M/N:CE10T, S/N:NA

1.2.2 Monitor

Model Number : CM752ET-311
Serial Number : T8E004443
FCC ID : DoC
Manufacturer : HITACHI
Data Cable : Shielded, 1.5m
Power Cord : Shielded, 1.8m

1.2.3 Modem

Model Number : 1414
Serial Number : 980033037
FCC ID : IFAXDM1414
Manufacturer : ACEEX
Data Cable : Shielded, 1.5m
Power Adapter : ACCEX, M/N: SCP41-91000A
Cable Output : Shielded, 1.5m

1.2.4 Video Camera

Model Number : Wcam 3X
Serial Number : N/A
FCC ID : DoC
Manufacturer : Mustek
Data Cable (USB) : Shielded, 1.5m

1.2.5 Lan Cable: Non-Shielded, 7.0m×1

1.2.6 Tel Cable: Non-Shielded, 7.0m×1

1.2.7 DFE 530 Net Card×1

Partner PC

1.2.8 Host Personal Computer

Model Number : VE 5/200 SERIES 4
Serial Number : SG80700316
FCC ID : DoC
Manufacturer : HP
Power Cord : Non-Shielded, 1.8m

1.2.9 Monitor

Model Number : CM752ET-311
Serial Number : T8E004439
FCC ID : DoC
Manufacturer : HITACHI
Data Cable : Shielded, 1.5m
Power Cord : Shielded, 1.7m

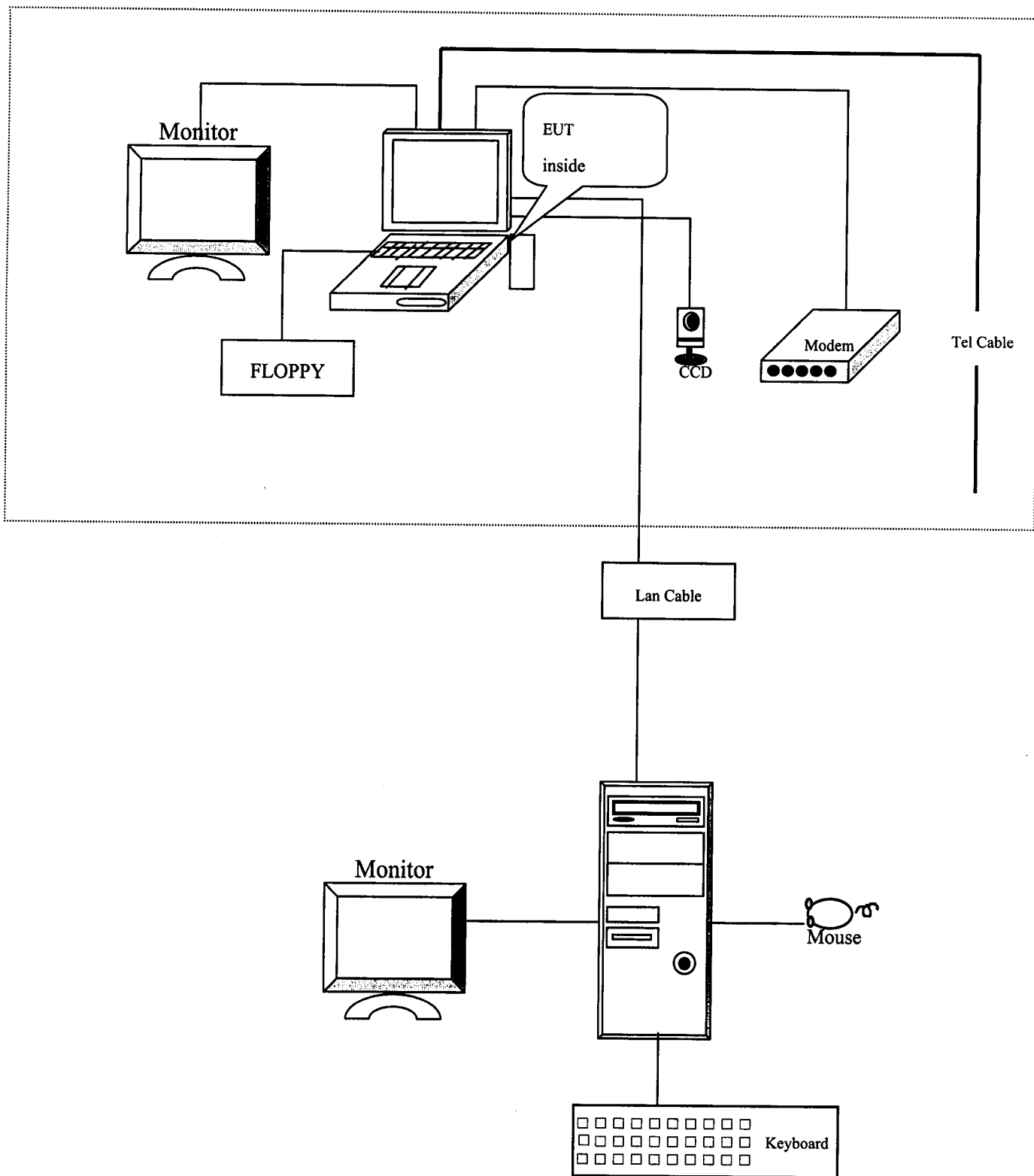
1.2.10 Keyboard

Model Number : 6311-TW2C
Serial Number : N/A
FCC ID : DoC
Manufacturer : ACER
Data Cable : Shielded, 1.8m

1.2.11 Mouse

Model Number : M-M35
Serial Number : 811313-2000
FCC ID : DZL210365
Manufacturer : Logitech
Data Cable : Shielded, 1.8m

1.3 EUT Configuration



1.4 EUT Exercise Software

The EUT exercise program used during conducted testing was designed to exercise the EUT in a manner similar to a typical use. The exercise sequence is listed as below:

- 1.4.1 Setup the EUT and simulators as shown on 1.3.
- 1.4.2 Turn on the power of all equipment.
- 1.4.3 Personal Computer reads data from disk.
- 1.4.4 Data will be transmitted between host PC and partner PC through EUT.
- 1.4.5 The transmission status will be shown on the monitor.
- 1.4.6 Personal Computer will read data from floppy disk and then writes the data into floppy disk , same operation for hard disk.
- 1.4.7 Repeat the above procedure 1.4.4 to 1.4.6

1.5 Test performed

Conducted emissions were investigated over the frequency range from **0.15MHz to 30MHz** using a receiver bandwidth of 9kHz.

Radiated emissions were investigated over the frequency range from **30MHz to 1000MHz** using a receiver bandwidth of 120kHz. Radiated testing was performed at an antenna to EUT distance of 10 meters .



1.6 Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: November 3, 1998 File on
 Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Reference 31040/SIT1300F2



September 30, 1998 Accreditation on NVLAP
 NVLAP Lab Code: 200347-0

February 23, 1999 Accreditation on DNV
 Statement No. : 413-99-LAB11



December 8, 1998 Registration on VCCI
 Registration No. for No.2 Shielded Room C-858
 Registration No. for No.1 Open Area Test Site R-823
 Registration No. for No.2 Open Area Test Site R-835



January 04, 1999 Accreditation on TÜV Rheinland
 Certificate No.: I9865712-9901



Name of firm : QuieTek Corporation

Site location : No.75-1, Wang-Yeh Valley, Yung-Hsing Tsuen,
 Chiung-Lin, Hsin-Chu County, Taiwan, R.O.C.

2. Conducted Emission

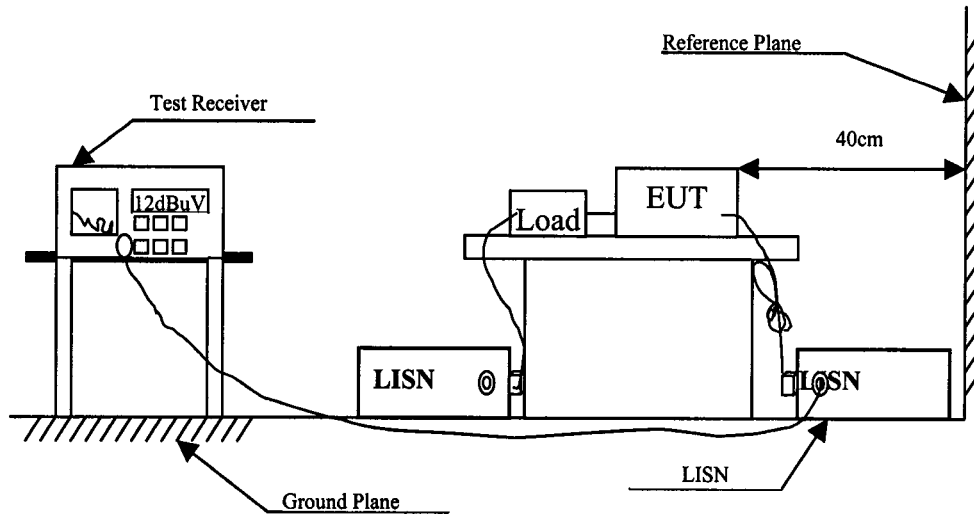
2.1 Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal..	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 1999	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 1999	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 1999	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	N/A	
5	N0.2 Shielded Room			N/A	

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

2.2 Test Setup



2.3 Limits

CISPR 22 Limits (dBuV)					FCC Part 15 Subpart B (dBuV)				
Frequency MHz	Class A		Class B		Frequency MHz	Class A		Class B	
	QP	AV	MHz	AV		uV	dBuV	uV	dBuV
0.15 - 0.50	79	66	66-56	56-46	0.45-1.705	1000	60.0	250	48.0
0.50-5.0	73	60	56	46	1.705-30	3000	69.5	250	48.0
5.0 - 30	73	60	60	50					

Remarks : In the above table, the tighter limit applies at the band edges.

2.4 Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4 /1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

2.5 Test Results

The conducted emission from the EUT is measured and shown in attachment 1 of test report. The acceptance criterion was met and the EUT passed the test.

3. Radiated Emission

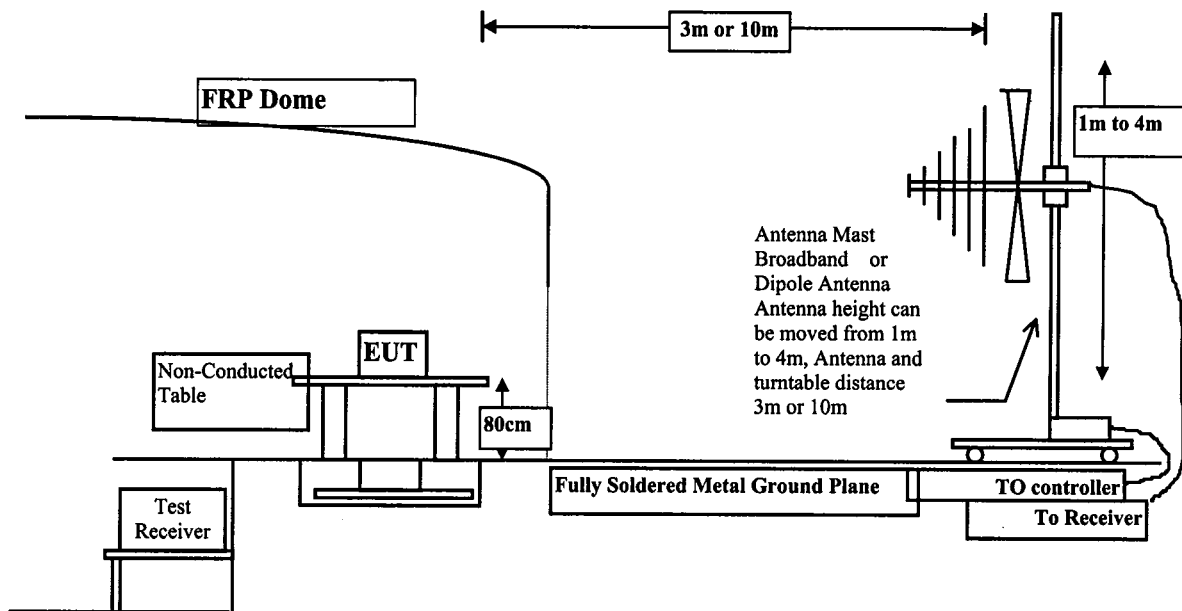
3.1 Test Equipment

The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Site # 1	X Test Receiver	R & S	ESCS 30 / 825442/14	May, 1999
	Spectrum Analyzer	Advantest	R3261C / 71720140	May, 1999
	Pre-Amplifier	HP	8447D/3307A01812	May, 1999
	X Bilog Antenna	Chase	CBL6112B / 12452	Sep., 1999
Site # 2	X Horn Antenna	EM	EM6917 / 103325	May, 1999
	X Test Receiver	R & S	ESCS 30 / 825442/17	May, 1999
	Spectrum Analyzer	Advantest	R3261C / 71720609	May, 1999
	Pre-Amplifier	HP	8447D/3307A01814	May, 1999
	X Bilog Antenna	Chase	CBL6112B / 2455	Sep., 1999
	X Horn Antenna	EM	EM6917 / 103325	May, 1999

- Note:
1. All equipment upon which need to calibrated are with calibration period of 1 year.
 - 2.. Mark "X" test instruments are used to measure the final test results.

3.2 Test Setup



3.3 Limits

CISPR 22 Limits (dBuV)					FCC Part 15 Subpart B (dBuV)				
Frequency MHz	Class A		Class B		Frequency	Class A		Class B	
	Distance (m)	dBuV/m	Distance (m)	dBuV/m		uV	dBuV	uV	dBuV
30 – 230	10	40	10	30	30 – 88	90	39	100	40.0
230 – 1000	10	47	10	37	88 – 216	150	43.5	150	43.5
					216 – 960	210	46.5	200	46.0
					960 - 2000	300	49.5	500	54.0

Remark: 1. The tighter limit shall apply at the edge between two frequency bands.

2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3. RF Line Voltage (dBuV) = 20 log RF Line Voltage (uV)

3.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 10 meters . The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4 /1992 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCS 30) is 120 kHz.

3.5 Test Results

The radiated emission from the EUT is measured and shown in attachment 1 of test report. The acceptance criterion was met and the EUT passed the test.

4. EMI Reduction Method During Compliance Testing

No modification was made during testing.

5. Attachment

Attachment 1: Summary of Test Results	Number of Pages: 5
Attachment 2: EUT Test Photographs	Number of Pages: 2
Attachment 3: EUT detailed photographs	Number of Pages: 9

Attachment 1 : Summary of Test Results

The test results in the emission were performed according to the requirements of measurement standard and process. Quietek Corporation is assumed full responsibility for the accuracy and completeness of these measurements. The test data of the emission are listed as the attached data.

All the tests were carried out with the EUT in normal operation, which was defined as:

Mode 1 : Normal Operation(CE10T)

The EUT passed all the tests.

The uncertainty is calculated in accordance with NAMAS NIS 81, The total uncertainty for this test is as follows:

➤ **Emission Test**

- Uncertainty in the Conducted Emission Test: $< \pm 2.0$ dB
- Uncertainty in the field strength measured: $< \pm 4.0$ dB

CONDUCTED EMISSION DATA

Date of Test : Dec.06, 1999 EUT : Compact-Flash Size Ethernet PC Card
 Test Mode : Mode 1 Detect Mode : Quasi-Peak & Average

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level Line1 dBuV	Measurement Level Line1 dBuV	Limits dBuV
*0.203	0.02	0.10	56.65	56.77	63.50
0.271	0.03	0.10	50.43	50.56	61.09
0.339	0.04	0.10	48.39	48.53	59.22
0.472	0.06	0.10	45.26	45.42	56.47
2.091	0.15	0.13	38.71	38.99	56.00
4.124	0.19	0.16	39.04	39.39	56.00

Average:

0.203	0.02	0.10	45.50	45.62	53.49
0.271	0.03	0.10	43.20	43.33	51.09
0.339	0.04	0.10	37.30	37.44	49.23
0.472	0.06	0.10	38.20	38.36	46.48
2.091	0.15	0.13	25.40	25.68	46.00
4.123	0.19	0.16	32.90	33.25	46.00

Remarks :

1. " * " means that this data is the worst emission level.

CONDUCTED EMISSION DATA

Date of Test : Dec.06, 1999 EUT : Compact-Flash Size Ethernet PC Card
 Test Mode : Mode 1 Detect Mode : Quasi-Peak & Average

Frequency MHz	Cable Loss dB	LISN Factor dB	Reading Level Line2 dBuV	Measurement Level Line2 dBuV	Limits dBuV
*0.202	0.02	0.10	55.37	55.49	63.52
0.269	0.03	0.10	48.61	48.74	61.14
0.388	0.05	0.10	39.51	39.66	58.12
0.470	0.06	0.10	44.53	44.69	56.51
2.025	0.14	0.13	38.66	38.93	56.00
4.456	0.19	0.16	39.14	39.50	56.00

Average:

0.202	0.02	0.10	44.30	44.42	53.53
0.269	0.03	0.10	42.60	42.73	51.15
0.388	0.05	0.10	38.90	39.05	48.11
0.470	0.06	0.10	38.80	38.96	46.51
2.025	0.14	0.13	32.70	32.97	46.00
4.456	0.19	0.16	32.90	33.26	46.00

Remarks :

1. " * " means that this data is the worst emission level.

RADIATED EMISSION DATA

Date of Test : Dec.06, 1999 EUT : Compact-Flash Size Ethernet PC Card
 Test Mode : Mode 1 Test Site : No.1 Open Test Site

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Horizontal	Margin	Limit	Ant	Turn
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
*80.000	1.64	8.20	0.00	16.57	26.40	3.60	30.00	396	143
140.000	2.21	11.28	0.00	4.85	18.34	11.66	30.00	396	82
160.000	2.40	10.32	0.00	3.92	16.64	13.36	30.00	396	121
180.000	2.60	9.47	0.00	8.60	20.66	9.34	30.00	396	9
200.000	2.78	9.30	0.00	10.82	22.90	7.10	30.00	396	108
240.000	3.17	11.32	0.00	7.57	22.06	14.94	37.00	396	20
320.000	3.86	13.59	0.00	6.96	24.41	12.59	37.00	380	113
400.000	4.28	15.85	0.00	4.42	24.55	12.45	37.00	380	109

Remarks:

- 1.All Readings below 1GHz are Quasi-Peak, above are average value.
- 2.“ * ”, means this data is the worst emission level.
- 3.Emission Level = Reading Level + Antenna Factor + Cable loss

RADIATED EMISSION DATA

Date of Test : Dec.06, 1999 EUT : Compact-Flash Size Ethernet PC Card
 Test Mode : Mode 1 Test Site : No.1 Open Test Site

Freq.	Cable Loss	Probe Factor	PreAMP	Reading Level	Measurement Vertical	Margin	Limit	Ant	Turn
MHz	dB	dB/m	dB	dBuV	dBuV/m	dB	dBuV/m	cm	deg
60.000	1.44	6.00	0.00	17.25	24.69	5.31	30.00	102	155
80.000	1.64	7.12	0.00	16.38	25.14	4.86	30.00	102	98
120.000	2.02	11.56	0.00	8.73	22.31	7.69	30.00	102	173
140.000	2.21	11.15	0.00	7.32	20.67	9.33	30.00	102	169
160.000	2.40	10.28	0.00	7.08	19.76	10.24	30.00	102	65
*180.000	2.60	9.21	0.00	14.34	26.15	3.85	30.00	102	10
200.000	2.78	9.07	0.00	10.37	22.23	7.77	30.00	102	161
240.000	3.17	11.22	0.00	9.16	23.55	13.45	37.00	102	188

Remarks:

- 1.All Readings below 1GHz are Quasi-Peak, above are average value.
- 2.“ * ”, means this data is the worst emission level.
- 3.Emission Level = Reading Level + Antenna Factor + Cable loss