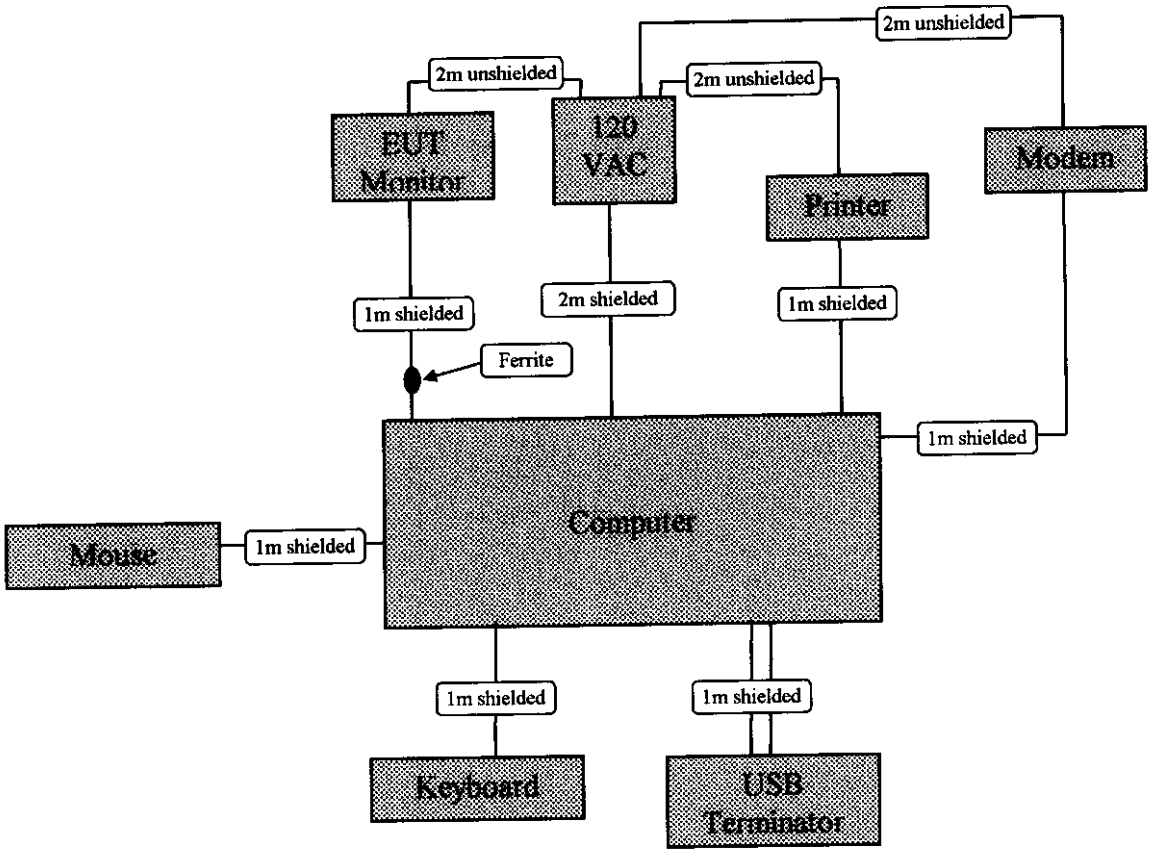
1.4 CONFIGURATION OF TESTED SYSTEM



1.5 TEST METHODOLOGY

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 1992. Radiated testing was performed at an antenna to EUT distance of ten meters.

1.6 TEST FACILITY

The open area test site and conducted measurement facility used to collect the radiated data is located on the parking lot of Rhein Tech Laboratories, Inc. 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. This site has been fully described in a report dated June 24, 1996, submitted to and approved by the Federal Communication Commission to perform AC line conducted and radiated emissions testing (ANSI C63.4 1992).

Testing performed at 10 meters follows the test methodology of EN55022 (CISPR22). The Federal Communication Commission accepts 10 meter data in order to meet Class B Compliance.

5.0 CONDUCTED EMISSION DATA

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. If the conducted emissions exceed the average limit with the instrument set to the quasi-peak mode, then measurements are made in the average mode.

The conducted test was performed with the EUT exercise program loaded, and the emissions were scanned between 150 kHz to 30 MHz on the NEUTRAL SIDE and HOT SIDE, herein referred to as L1 and L2, respectively.

TABLE 2: CONDUCTED EMISSIONS: 1024 X 768 @ 75HZ

NEUTRAL SIDE (Line 1)

EMISSION FREQUENCY (MHz)	TEST DETECTOR	ANALYZER READING (dBuV)	SITE CORRECTION FACTOR (dB)	EMISSION LEVEL (dBuV)	EN55022 / CISPR22 QP(1) LIMIT (dBuV)	EN55022 / CISPR22 QP(1) MARGIN (dBuV)	EN55022 / CISPR22 AV(1) LIMIT (dBuV)	EN55022 / CISPR22 AV(1) MARGIN (dBuV)
0.206	Pk	42.9	0.8	43.7	63.4	-19.7	53.4	-9.7
0.309	Pk	34.1	0.7	34.8	60.0	-25.2	50.0	-15.2
0.412	Pk	27.5	0.6	28.1	57.6	-29.5	47.6	-19.5
0.824	Pk	33.2	0.7	33.9	56.0	-22.1	46.0	-12.1
2.244	Pk	37.5	1.2	38.7	56.0	-17.3	46.0	-7.3
6.540	Pk	31.3	2.1	33.4	60.0	-26.6	50.0	-16.6
19.700	Pk	29.1	3.8	32.9	60.0	-27.1	50.0	-17.1
26.220	Pk	31.1	4.1	35.2	60.0	-24.8	50.0	-14.8

HOT SIDE (Line 2)

EMISSION FREQUENCY (MHz)	TEST DETECTOR	ANALYZER READING (dBuV)	SITE CORRECTION FACTOR (dB)	EMISSION LEVEL (dBuV)	EN55022 / CISPR22 QP(1) LIMIT (dBuV)	EN55022 / CISPR22 QP(1) MARGIN (dBuV)	EN55022 / CISPR22 AV(1) LIMIT (dBuV)	EN55022 / CISPR22 AV(1) MARGIN (dBuV)
0.204	Pk	42.7	0.4	43.1	63.4	-20.3	53.4	-10.3
0.307	Pk	34.8	0.6	35.4	60.1	-24.7	50.1	-14.7
0.411	Pk	27.1	0.6	27.7	57.6	-29.9	47.6	-19.9
0.822	Pk	34.0	0.7	34.7	56.0	-21.3	46.0	-11.3
2.760	Pk	35.4	1.5	36.9	56.0	-19.1	46.0	-9.1
8.495	Pk	29.9	2.5	32.4	60.0	-27.6	50.0	-17.6
19.700	Pk	30.2	4.3	34.5	60.0	-25.5	50.0	-15.5
26.230	Pk	30.9	4.7	35.6	60.0	-24.4	50.0	-14.4

[1]Pk = Peak; QP = Quasi-Peak; Av = Average

TEST PERSONNEL:

Signature: Elizabeth Szrajer **Date:** 8/17/98

Typed/Printed Name: Elizabeth Szrajer

6.0 RADIATED EMISSION DATA

The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit. Explanation of the Correction Factor is given in paragraph 6.1.

TABLE 3: RADIATED EMISSIONS: 1024 X 768 @ 75HZ

(Temperature: 80°F, Humidity: 51%)

EMISSION FREQUENCY (MHz)	ANTENNA POLARITY (H/V)	ANALYZER READING (dBuV)	SITE CORRECTION FACTOR (dB/m)	EMISSION LEVEL (dBuV/m)	EN55022 / CISPR22 LIMIT (dBuV/m)	EN55022 / CISPR22 MARGIN (dBuV/m)
84.254	V	51.6	-30.3	21.3	30.0	-8.7
121.712	V	53.4	-26.9	26.5	30.0	-3.5
134.328	V	51.9	-26.9	25.0	30.0	-5.0
140.618	H	51.9	-25.8	26.1	30.0	-3.9
178.070	V	48.0	-27.0	21.0	30.0	-9.0
196.622	H	46.5	-26.5	20.0	30.0	-10.0
215.510	H	46.0	-25.3	20.7	30.0	-9.3
315.076	H	50.1	-21.5	28.6	37.0	-8.4
365.366	H	48.3	-20.1	28.2	37.0	-8.8

All readings are quasi-peak, unless stated otherwise. See Appendix B for Radiated Test Methodology.

TEST PERSONNEL:

Signature: Elizabeth Szrajer Date: 8/18/98

Typed/Printed Name: Elizabeth Szrajer

6.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FI(dBuV/m) = SAR(dBuV) + SCF(dB/m)$$

FI = Field Intensity
SAR = Spectrum Analyzer Reading
SCF = Site Correction Factor

The Site Correction Factor (SCF) used in the above equation is determined empirically, and is expressed in the following equation:

$$SCF(dB/m) = -PG(dB) + AF(dB/m) + CL(dB)$$

SCF = Site Correction Factor
PG = Pre-amplifier Gain
AF = Antenna Factor
CL = Cable Loss

The field intensity in microvolts per meter can then be determined according to the following equation:

$$FI(uV/m) = 10^{FI(dBuV/m)/20}$$

For example, assume a signal at a frequency of 125 MHz has a received level measured as 49.3 dBuV. The total Site Correction Factor (antenna factor plus cable loss minus preamplifier gain) for 125 MHz is -11.5 dB/m. The actual radiated field strength is calculated as follows:

$$49.3 \text{ dBuV} - 11.5 \text{ dB} = 37.8 \text{ dBuV/m}$$

$$10^{37.8/20} = 10^{1.89} = 77.6 \text{ uV/m}$$

3.0 SYSTEM TEST CONFIGURATION

3.1 JUSTIFICATION

The system was configured for testing in a typical fashion (as a customer would normally use it). Worst case conducted emissions and radiated emissions are presented in 1024 X 768 @ 75 Hz mode.

The EUT was tested with all ports attached to external peripherals. The monitor was investigated as powered from the wall outlet since there is no auxiliary power outlet. CPU Speed: 166MHz.

3.2 EUT EXERCISE SOFTWARE

The EUT exercise program used during radiated and conducted testing has been designed to exercise the various system components in a manner similar to a typical use. The software, contained on the hard disk drive, sequentially exercises each system component. 1) an H prints on the monitor, (2) an H prints on the printer 3) an H is sent to serial ports, 4) a file is read from the floppy diskette, 5) a file is read from the hard drive and any other hard drive present, 6) a file is read from the CD-ROM drive. In cases that implement the use of Universal Serial Bus (USB) ports, a looped batch program is initiated to render a continuous flow of data through the USB ports. The complete cycle takes less than one second and is repeated continually. Systems that utilize network cards are connected to a server and are configured to transmit and receive packets of data continuously. As the keyboard and mouse are strictly input devices, no data was transmitted to them during test. They are, however, continuously scanned for data input activity.

3.3 SPECIAL ACCESSORIES

The end user is advised that he/she should use the same type of cables as those mentioned in Table 1 of this test report.

3.4 CONFORMANCE STATEMENT

I, the undersigned, hereby declare that the equipment tested and referenced in this report conforms to the identified standard(s) as described in this attached test record. No modifications were made during testing to the equipment in order to achieve compliance with these standards.

Furthermore, there was no deviation from, additions to or exclusions from the ANSI C63.4 test methodology.

Signature: 

Date: August 28, 1998

Typed/Printed Name: Bruno Clavier

Position: Quality Manager
(NVLAP Signatory)

NVLAP *Accredited by the National Voluntary Accreditation Program for the specific scope of accreditation under Lab Code 20061-0.*

Note: This report may not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.