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Engineering and Testing for EMC and Safety Compliance

APPLICATION FOR FCC CERTIFICATION

CLASS B DIGITAL DEVICE

MAG Technology Co., Ltd..
9F, No. 245, Sec. 1 Tunhwa S. Road
Taipei, Taiwan, R.O.C.

MODEL: E7006 17" Monitor

FCC ID: IAWE7006

June 23, 1998

This report concerns (check one): Original Grant: X Class II Change: **Equipment Type: Monitor**	
Deferred grant requested per 47 CFR 0.457 (d) (1) (ii)?	**Yes: No: X** **If yes, defer until: _____ *Date***
Company name agrees to notify the Commission by: _____(date) of the intended date of announcement of the product so that the grant can be issued on that date.	
Transition Rules Request per 15.37? Yes: No: X **If no, assumed Part 15, subpart B for unintentional radiators - the new 47 CFR [10-1-90 Edition] provision..**	

REPORT PREPARED BY:

EMI Technician: Daniel W. Baltzell
Administrative Writer: Dixie L. Shetter

Rhein Tech Laboratories, Inc.

Document Number : 980382

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TABLE OF CONTENTS

APPENDIX LISTING

FIGURE INDEX

TABLE INDEX

1.0 GENERAL INFORMATION

The following Application for FCC Certification of a Class B Digital Device is prepared on behalf of MAG Technology Co., Ltd.. in accordance with Part 2, and Part 15, Subparts A and B of the Federal Communications Commissions rules and regulations. The Equipment Under Test (EUT) was the MAG Technology Co., Ltd., E7006 17" Monitor, FCC ID: IAWE7006. The test results reported in this document relate only to the item that was tested.

All measurements contained in this Application were conducted in accordance with ANSI C63.4 Methods of Measurement of Radio Noise Emissions, 1992. The instrumentation utilized for the measurements conforms with the ANSI C63.4 standard for EMI and Field Strength Instrumentation. Some accessories are used to increase sensitivity and prevent overloading of the measuring instrument. These are explained in the appendix of this report. Calibration checks are performed regularly on the instruments, and all accessories including the high pass filter, preamplifier and cables.

All radiated and conducted emissions measurement were performed manually at Rhein Tech, Incorporated. The radiated emissions measurements required by the rules were performed on the ten meter, open field, test range maintained by Rhein Tech Laboratories, Inc., 360 Herndon Parkway, Suite 1400, Herndon, Virginia 20170. Complete description and site attenuation measurement data have been placed on file with the Federal Communications Commission. The power line conducted emission measurements were performed in a shielded enclosure also located at the Herndon, Virginia facility. Rhein Tech, Labs, Inc. is accepted by the FCC as a Facility available to do measurement work for others on a contract basis.

1.1 PRODUCT DESCRIPTION

Features of the E7006:

- Multi-scanning at horizontal frequencies of 30KHz to 70KHz and vertical frequencies of 50Hz to 120Hz.
- 1280 x 1024 maximum resolution
- 17-inch (16" viewable) Flat square tube, anti-glare, anti-static
- 0.28mm dot pitch
- Microprocessor-based design with digital controls
- JAG OSD Control
- Unlimited colors
- Compatible with standard IBM® VGA, extended VGA, Super VGA, IBM® XGA modes, as well as VESA® ergonomic standards
- Universal power supply
- Tilt and swivel base
- MPR-II compliant
- TCO-1992/TCO-1995 optional
- VESA® Display Power Management (DPMS™) compatible
- Microsoft® Windows® 95 compatible and VESA® Display Data Channel (DDC) 1/2B compatible
- EPA Energy Star™ compliant power saving

1.2 RELATED SUBMITTAL(S)/GRANT(S)

N/A. This is an original submission for Certification.

1.3 TEST SYSTEM DETAILS

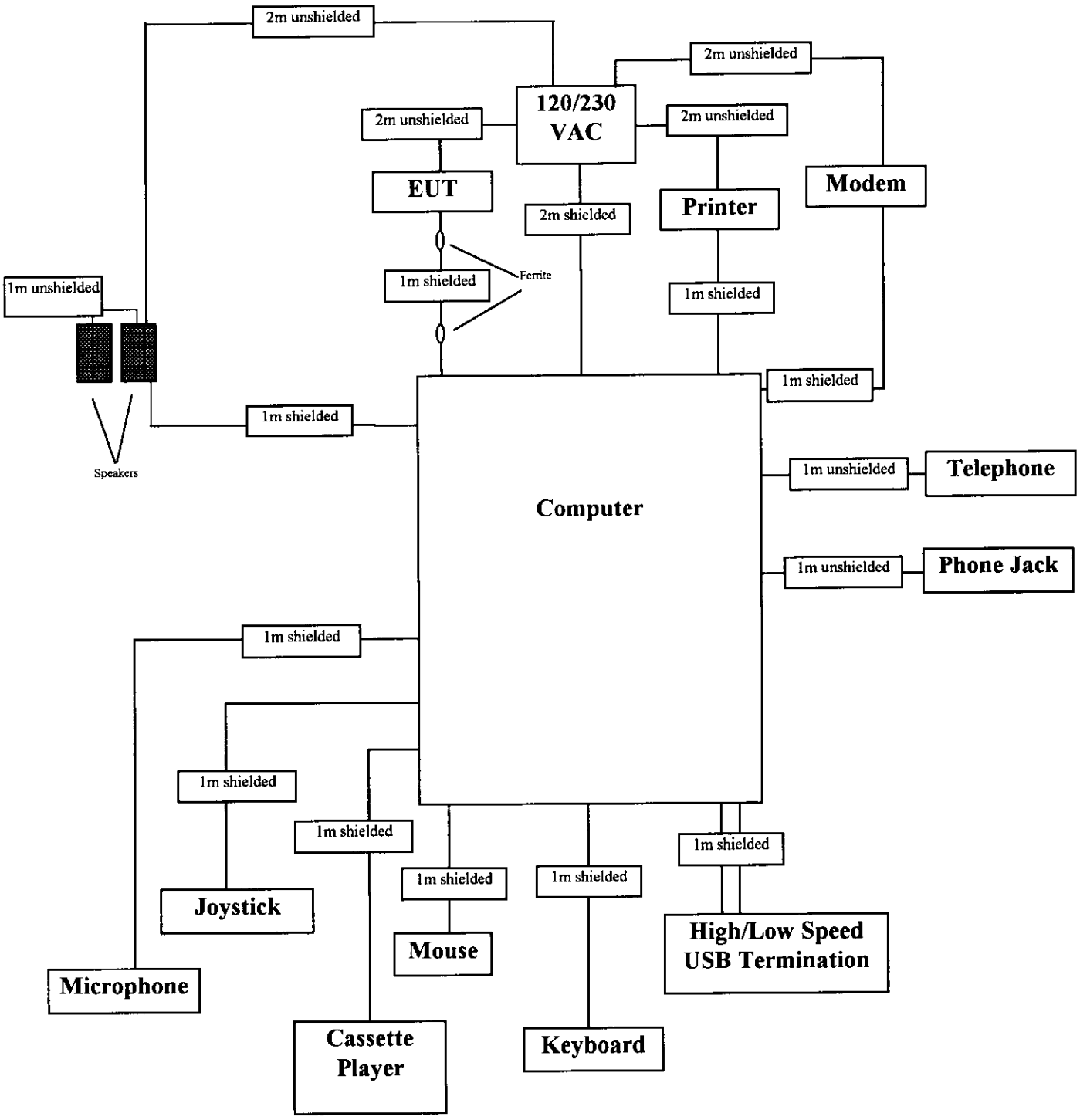
The FCC Identifiers for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO	FCC ID	CABLE DESCRIPTIONS	RTL BAR CODE
AUDIO DEVICE	RADIO SHACK	SCP-59	N/A	N/A	SHIELDED I/O	900691
JOYSTICK	MICROSOFT CORP.	SIDEWINDER 3D PRO	01946902	C3KMP1	SHIELDED I/O	8831
KEYBOARD	MAXI SWITCH	2196003-XX-XXX	07320177/G22-B	D7L2196003-XX	SHIELDED I/O	7975
MICROPHONE	TELEX	N/A	700373-000	N/A	SHIELDED I/O	7277
MODEM	US ROBOTICS	0413	839032B26MKGR	DoC	SHIELDED I/O, UNSHIELDED POWER	900405
MONITOR (EUT)	**MAG TECHNOLOGY CO., LTD.**	**E7006**	**SMAI7006009**	**IAWE7006 (PENDING)**	**SHIELDED I/O, FERRITE ON BOTH ENDS, UNSHIELDED POWER**	**9327**
MOUSE	MICROSOFT CORP.	INTELLIMOUSE 1.1A	01504624	C3KKMP5	SHIELDED I/O	8448
PRINTER	EPSON	P950A	3JU1120100	BJMFBP950A	SHIELDED I/O, UNSHIELDED POWER	7701
SPEAKERS	ALTEC LANSING	GCS100	FMW0033464	N/A	SHIELDED I/O, UNSHIELDED POWER	9165
SPEAKERS	ALTEC LANSING	GCS100	FMW0030780	N/A	SHIELDED I/O, UNSHIELDED POWER	9162
SYSTEM	GATEWAY 2000, INC.	TABOR/LOW PROFILE MINI-DESKTOP	N/A	DoC	N/A	8920
TERMINATION	GATEWAY 2000, INC.	USB HIGH/LOW SPEED	N/A	N/A	SHIELDED I/O	6834
TERMINATION	RADIO SHACK	600 OHM PHONE JACK	N/A	N/A	UNSHIELDED I/O	8961
TELEPHONE	PANASONIC	KX-T700	2GIA003103	N/A	UNSHIELDED I/O	900697

INTERNAL COMPONENTS

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO	FCC ID	CABLE DESCRIPTIONS	RTL BAR CODE
CD-ROM	PANASONIC	SR-8582-B (DVD)	SA8304070841	IUO9TB062CRB	INTERNAL RIBBON	9071
CD-ROM	PHILIPS	CDD6310/31	E118405	DoC	INTERNAL RIBBON	9126
CPU	INTEL	PENTIUM II 400 MHz	080612JDA0382	N/A	N/A	8913
FLOPPY DRIVE	MITSUBISHI	LS-120	NM011169	N/A	INTERNAL RIBBON	8924
HARD DRIVE	WESTERN DIGITAL	AC12100-00LC	WT3800383503	N/A	INTERNAL RIBBON	8923
MODEM	US ROBOTICS	0484 (PYTHON)	87174900	DoC	UNSHIELDED I/O	8755
MOTHERBOARD	INTEL	TABOR	AA700352-200	N/A	INTERNAL RIBBON	8998
POWER SUPPLY	ASTEC	ATX202-3515	2580244740	N/A	SHIELDED POWER	8747
SOUND CARD	CREATIVE LABS	N/A	M4170730450203	N/A	SHIELDED I/O	8267
VIDEO CARD	ACCEL GRAPHICS	PERMEDIA2 2V	225-0128-01	N/A	N/A	9332

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 10 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).

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). The system was tested in 640 x 480, 1024 x 768 and 1280 x 1024. CPU Speed: 400 MHz.

The host computer was tested with all ports attached to external peripherals. The E7006 17" Monitor was investigated as powered from the wall outlet since there is no auxiliary power outlet on the host computer.

3.2 EUT EXERCISE SOFTWARE

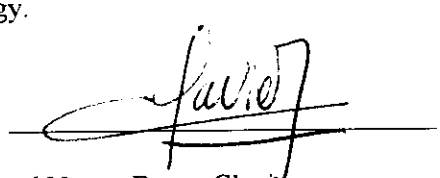
The EUT exercise program used during radiated and conducted testing has been designed to exercise the various system components in a manner similar to a typical use. The software, contained on the hard disk drive sequentially exercises each system component: 1) an H prints on the monitor, 2) an H prints 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

All interface cables used for compliance testing should be the same type as shown in Section 1.3 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 63.4 test methodology.

Signature: 

Date: July 8, 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.

6.0 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 1: CONDUCTED EMISSIONS: 640 X 480 @ 85HZ (MONITOR TO LISN)

NEUTRAL SIDE (Line 1)

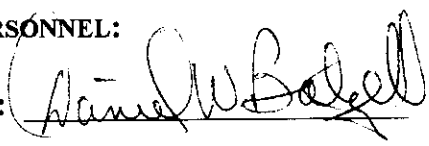
EMISSION FREQUENCY (MHz)	TEST DETECTOR	ANALYZER READING (dBuV)	SITE CORRECTION FACTOR (dB)	EMISSION LEVEL (dBuV)	EN55022 / CISPR22 QP(1) LIMIT (dBuV)	EN55022 / CISPR22 QP(1) MARGIN (dBuV)	EN55022 / CISPR22 AV(1) LIMIT (dBuV)	EN55022 / CISPR22 AV(1) MARGIN (dBuV)
0.150	Pk	53.6	0.9	54.5	66.0	-11.5	56.0	-1.5
0.150	Qp	48.4	0.9	49.3	66.0	-16.7	56.0	-6.7
0.150	Av	42.8	0.9	43.7	66.0	-22.3	56.0	-12.3
0.232	Pk	44.2	0.7	44.9	62.4	-17.5	52.4	-7.5
0.274	Pk	41.8	0.7	42.5	61	-18.5	51.0	-8.5
0.321	Pk	34.5	0.7	35.2	59.7	-24.5	49.7	-14.5
0.364	Pk	34.6	0.7	35.3	58.6	-23.3	48.6	-13.3
0.407	Pk	37.6	0.6	38.2	57.7	-19.5	47.7	-9.5
0.452	Pk	35.5	0.6	36.1	56.8	-20.7	46.8	-10.7
1.792	Pk	39.4	1.0	40.4	56.0	-15.6	46.0	-5.6

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)
0.151	Pk	53.4	0.4	53.8	65.9	-12.1	55.9	-2.1
0.151	Qp	48.6	0.4	49.0	65.9	-16.9	55.9	-6.9
0.151	Av	42.9	0.4	43.3	65.9	-22.6	55.9	-12.6
0.230	Pk	45.3	0.5	45.8	62.4	-16.6	52.4	-6.6
0.277	Pk	38.7	0.5	39.2	60.9	-21.7	50.9	-11.7
0.363	Pk	31.8	0.6	32.4	58.7	-26.3	48.7	-16.3
0.407	Pk	35.5	0.6	36.1	57.7	-21.6	47.7	-11.6
0.452	Pk	33.8	0.6	34.4	56.8	-22.4	46.8	-12.4
0.496	Pk	33.7	0.6	34.3	56.1	-21.8	46.1	-11.8
1.706	Pk	40.2	1.1	41.3	56.0	-14.7	46.0	-4.7

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

TEST PERSONNEL:

Signature: 

Date: 6/23/98

Typed/Printed Name: Daniel W. Baltzell

TABLE 2: CONDUCTED EMISSIONS: 1024 X 768 @ 85HZ (MONITOR TO LISN)

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	48.4	0.8	49.2	63.4	-14.2	53.4	-4.2
0.275	Pk	45.0	0.7	45.7	61.0	-15.3	51.0	-5.3
0.344	Pk	44.8	0.7	45.5	59.1	-13.6	49.1	-3.6
0.344	Qp	43.3	0.7	44.0	59.1	-15.1	49.1	-5.1
0.344	Av	43.2	0.7	43.9	59.1	-15.2	49.1	-5.2
0.412	Pk	39.6	0.6	40.2	57.6	-17.4	47.6	-7.4
0.483	Pk	42.3	0.6	42.9	56.3	-13.4	46.3	-3.4
0.483	Qp	40.1	0.6	40.7	56.3	-15.6	46.3	-5.6
0.483	Av	40.1	0.6	40.7	56.3	-15.6	46.3	-5.6
0.619	Pk	42.3	0.6	42.9	56.0	-13.1	46.0	-3.1
0.619	Qp	40.8	0.6	41.4	56.0	-14.6	46.0	-4.6
0.619	Av	37.2	0.6	37.8	56.0	-18.2	46.0	-8.2
1.785	Pk	44.6	1.0	45.6	56.0	-10.4	46.0	-0.4
1.785	Qp	42.7	1.0	43.7	56.0	-12.3	46.0	-2.3
1.785	Av	40.4	1.0	41.4	56.0	-14.6	46.0	-4.6
18.890	Pk	32.9	3.7	36.6	60.0	-23.4	50.0	-13.4

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	51.0	0.4	51.4	63.4	-12.0	53.4	-2.0
0.204	Qp	47.0	0.4	47.4	63.4	-16.0	53.4	-6.0
0.204	Av	41.0	0.4	41.4	63.4	-22.0	53.4	-12.0
0.274	Pk	45.8	0.5	46.3	61.0	-14.7	51.0	-4.7
0.344	Pk	41.9	0.6	42.5	59.1	-16.6	49.1	-6.6
0.414	Pk	33.4	0.6	34.0	57.6	-23.6	47.6	-13.6
0.482	Pk	42.7	0.6	43.3	56.3	-13.0	46.3	-3.0
0.482	Qp	40.8	0.6	41.4	56.3	-14.9	46.3	-4.9
0.482	Av	40.4	0.6	41.0	56.3	-15.3	46.3	-5.3
0.548	Pk	40.5	0.6	41.1	56.0	-14.9	46.0	-4.9
0.617	Pk	40.1	0.6	40.7	56.0	-15.3	46.0	-5.3
1.854	Pk	44.8	1.2	46.0	56.0	-10.0	46.0	0.0
1.854	Qp	43.4	1.2	44.6	56.0	-11.4	46.0	-1.4
1.854	Av	42.3	1.2	43.5	56.0	-12.5	46.0	-2.5
19.18	Pk	33.3	4.2	37.5	60.0	-22.5	50.0	-12.5

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

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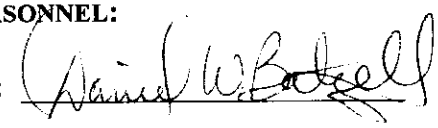
Signature: 

Date: 6/23/98

Typed/Printed Name: Daniel W. Baltzell

TABLE 3: CONDUCTED EMISSIONS: 1280 X 1024@ 60HZ (MONITOR TO LISN)

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)
0.152	Pk	53.1	0.9	54.0	65.9	-11.9	55.9	-1.9
0.152	Qp	48.7	0.9	49.6	65.9	-16.3	55.9	-6.3
0.152	Av	42.5	0.9	43.4	65.9	-22.5	55.9	-12.5
0.232	Pk	44.5	0.7	45.2	62.4	-17.2	52.4	-7.2
0.294	Pk	44.2	0.7	44.9	60.4	-15.5	50.4	-5.5
0.358	Pk	38.7	0.7	39.4	58.8	-19.4	48.8	-9.4
0.421	Pk	37.1	0.6	37.7	57.4	-19.7	47.4	-9.7
0.489	Pk	41.4	0.6	42.0	56.2	-14.2	46.2	-4.2
1.764	Pk	42.5	1.0	43.5	56.0	-12.5	46.0	-2.5
1.764	Qp	41.5	1.0	42.5	56.0	-13.5	46.0	-3.5
1.764	Av	39.0	1.0	40.0	56.0	-16.0	46.0	-6.0

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)
0.151	Pk	53.1	0.4	53.5	65.9	-12.4	55.9	-2.4
0.151	Qp	48.5	0.4	48.9	65.9	-17.0	55.9	-7.0
0.151	Av	42.5	0.4	42.9	65.9	-23.0	55.9	-13.0
0.228	Pk	45.3	0.5	45.8	62.5	-16.7	52.5	-6.7
0.295	Pk	43.8	0.6	44.4	60.4	-16.0	50.4	-6.0
0.359	Pk	33.2	0.6	33.8	58.8	-25.0	48.8	-15.0
0.422	Pk	37.2	0.6	37.8	57.4	-19.6	47.4	-9.6
0.484	Pk	41.5	0.6	42.1	56.3	-14.2	46.3	-4.2
0.484	Qp	39.9	0.6	40.5	56.3	-15.8	46.3	-5.8
0.484	Av	37.5	0.6	38.1	56.3	-18.2	46.3	-8.2
1.766	Pk	37.7	1.2	38.9	56.0	-17.1	46.0	-7.1

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

TEST PERSONNEL:

Signature: 

Date: 6/23/98

Typed/Printed Name: Daniel W. Baltzell

7.0 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 7.1.

TABLE 4: RADIATED EMISSIONS: 640 X 480 @ 85HZ

(Temperature: 82°F, Humidity: 62%)

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)
30.110	V	43.5	-19.7	23.8	30.0	-6.2
82.194	V	49.4	-30.7	18.7	30.0	-11.3
123.240	V	43.7	-25.5	18.2	30.0	-11.8
144.298	H	43.3	-28.5	14.8	30.0	-15.2
202.818	H	42.9	-26.5	16.4	30.0	-13.6
249.592	H	39.5	-23.4	16.1	37.0	-20.9

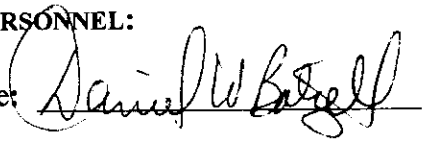
TABLE 5: RADIATED EMISSIONS: 1024 X 768 @ 85 HZ

(Temperature: 82°F, Humidity: 62%)

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)
39.386	H	40.0	-21.8	18.2	30.0	-11.8
118.452	H	40.6	-25.2	15.4	30.0	-14.6
142.194	H	43.6	-28.2	15.4	30.0	-14.6
277.596	H	40.8	-22.3	18.5	37.0	-18.5
341.100	H	38.4	-20.6	17.8	37.0	-19.2
380.802	H	37.6	-19.7	17.9	37.0	-19.1
420.384	V	45.3	-18.3	27.0	37.0	-10

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

TEST PERSONNEL:

Signature: 

Date: 6/23/98

Typed/Printed Name: Daniel W. Baltzell

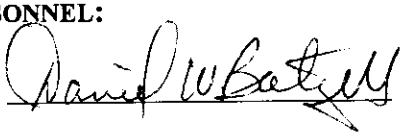
TABLE 6: RADIATED EMISSIONS: 1280 X 1024 @ 60 Hz

(Temperature: 82°F, Humidity: 62%)

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)
171.139	H	47.1	-27.3	19.8	30.0	-10.2
180.149	H	46.2	-27.1	19.1	30.0	-10.9
198.169	H	42.5	-26.5	16.0	30.0	-14.0
234.200	V	44.7	-23.9	20.8	37.0	-16.2
297.207	H	44.7	-22.3	22.4	37.0	-14.6
306.195	H	46.4	-21.7	24.7	37.0	-12.3
342.235	H	43.0	-20.6	22.4	37.0	-14.6
351.245	H	42.5	-20.4	22.1	37.0	-14.9
369.235	H	42.1	-20.1	22.0	37.0	-15.0

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

TEST PERSONNEL:

Signature: 

Date: 6/23/98

Typed/Printed Name: Daniel W. Baltzell

7.1 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:

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

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

8.0 PHOTOS OF TESTED EUT

The following photos are attached:

Figure 3: Front of Monitor
Figure 4: Back of Monitor
Figure 5: Right Side of Monitor
Figure 6: Left Side of Monitor
Figure 7: Bottom of Monitor
Figure 8: Case Interior
Figure 9: Right Interior
Figure 10: Left Interior
Figure 11: Top Interior
Figure 12: Bottom Interior
Figure 13: Bezel Interior, Button Control Panel, Solder Side
Figure 14: Button Control Panel, Component Side
Figure 15: Button Control Panel, Solder Side
Figure 16: Back Interior, with CRT Neck Board with Shielding, Solder Side
Figure 17: CRT Neck Board, with Shielding, Component Side
Figure 18: CRT Neck Board, Component Side
Figure 19: CRT Neck Board, Solder Side
Figure 20: Back of CRT
Figure 21: Main Board, Component Side
Figure 22: Main Board, Solder Side
Figure 23: Motherboard Chassis, Top

APPENDIX A: Emissions Equipment List

DESCRIPTION	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. LAB
AMPLIFIER	HEWLETT PACKARD	11975A	2304A00348	TEST EQUITY
AMPLIFIER (S/A 1)	RHEIN TECH	PR-1040	N/A	RTL
AMPLIFIER (S/A 2)	RHEIN TECH	RTL2	N/A	RTL
AMPLIFIER (S/A 3)	RHEIN TECH	8447F	2944A03783	RTL
AMPLIFIER (S/A 4)	RHEIN TECH	8447D	2727A05397	RTL
BICONICAL/LOG ANTENNA 1	ANTENNA RESEARCH	LPB-2520	1037	LIBERTY LABS
BICONICAL/LOG ANTENNA 2	ANTENNA RESEARCH	LPB-2520	1036	LIBERTY LABS
FIELD SITE SOURCE	EMCO	4610	9604-1313	RTL
FILTER (ROOM 1)	SOLAR	8130	947305	RTL
FILTER (ROOM 2)	SOLAR	8130	947306	RTL
HARMONIC MIXER 1	HEWLETT PACKARD	11970K	2332A00563	TELOGY
HARMONIC MIXER 2	HEWLETT PACKARD	11970A	2332A01199	TELOGY
HORN ANTENNA 1	EMCO	3160-10	9606-1033	EMCO
HORN ANTENNA 2	EMCO	3160-9	9605-1051	EMCO
HORN ANTENNA 3	EMCO	3160-7	9605-1054	EMCO
HORN ANTENNA 4	EMCO	3160-8	9605-1044	EMCO
HORN ANTENNA 5	EMCO	3160-03	9508-1024	EMCO
LISN (ROOM 1/L1)	SOLAR	7225-1		ACUCAL
LISN (ROOM 1/L2)	SOLAR	7225-1		ACUCAL
LISN (ROOM 2/L1)	SOLAR	7225-1	900078	ACUCAL
LISN (ROOM 2/L2)	SOLAR	7225-1	900077	ACUCAL
PRE-AMPLIFIER	HEWLETT PACKARD	8449B OPT	3008A00505	TELOGY
QUASI-PEAK ADAPTER (S/A 1)	HEWLETT PACKARD	85650A	3145A01599	ACUCAL
QUASI-PEAK ADAPTER (S/A 2)	HEWLETT PACKARD	85650A	2811A01276	ACUCAL
QUASI-PEAK ADAPTER (S/A 3)	HEWLETT PACKARD	85650A	2521A00473	ACUCAL
QUASI-PEAK ADAPTER (S/A 4)	HEWLETT PACKARD	85650A	2521A01032	ACUCAL
RF PRESELECTOR (S/A 1)	HEWLETT PACKARD	85685A	3146A01309	ACUCAL
SIGNAL GENERATOR (HP)	HEWLETT PACKARD	8660C	1947A02956	ACUCAL
SIGNAL GENERATOR (WAVETEK)	WAVETEK	3510B	4952044	ACUCAL
SPECTRUM ANALYZER 1	HEWLETT PACKARD	8566B	3138A07771	ACUCAL
SPECTRUM ANALYZER 2	HEWLETT PACKARD	8567A	2841A00614	ACUCAL
SPECTRUM ANALYZER 4	HEWLETT PACKARD	8567A	2727A00535	ACUCAL
TUNABLE DIPOLE	EMCO	3121	274	LIBERTY LABS

APPENDIX B: Conducted and Radiated Test Methodology

CONDUCTED EMISSIONS MEASUREMENTS

The power line conducted emission measurements were performed in a Series 81 type shielded enclosure manufactured by Rayproof. The EUT was assembled on a wooden table 80 centimeters high. Power was fed to the EUT through a 50 ohm / 50 microhenry Line Impedance Stabilization Network (EUT LISN). The EUT LISN was fed power through an A.C. filter box on the outside of the shielded enclosure. The filter box and EUT LISN housing are bonded to the ground plane of the shielded enclosure. A second LISN, the peripheral LISN, provides isolation for the EUT test peripherals. This peripheral LISN was also fed A.C. power. A metal power outlet box, which is bonded to the ground plane and electrically connected to the peripheral LISN, powers the EUT host peripherals.

The spectrum analyzer was connected to the A.C. line through an isolation transformer. The 50-ohm output of the EUT LISN was connected to the spectrum analyzer input through a Solar 400 kHz high-pass filter. The filter is used to prevent overload of the spectrum analyzer from noise below 400 kHz. Conducted emission levels were measured on each current-carrying line with the spectrum analyzer operating in the CISPR quasi-peak mode (or peak mode if applicable). The analyzer's 6 dB bandwidth was set to 9 kHz. No video filter less than 10 times the resolution bandwidth was used. Average measurements are performed in linear mode using a 10 kHz resolution bandwidth, a 1 Hz video bandwidth, and by increasing the sweep time in order to obtain a calibrated measurement. The emission spectrum was scanned from (150/450) kHz to 30 MHz. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in this report.

RADIATED EMISSIONS MEASUREMENTS

Before final measurements of radiated emissions were made on the open-field three/ten meter range, the EUT was scanned indoors at one meter and three meter distances if necessary in order to determine its emissions spectrum signature. The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. This process was repeated during final radiated emissions measurements on the open-field range, at each frequency, in order to insure that maximum emission amplitudes were attained.

Final radiated emissions measurements were made on the three/ten-meter, open-field test site. The EUT was placed on a nonconductive turntable approximately 0.8 meters above the ground plane. The spectrum was examined from 30 MHz to 1000 MHz using a Hewlett Packard 8566B spectrum analyzer, a Hewlett Packard 85650A quasi-peak adapter, and EMCO log periodic and an Antenna Research bilog antenna. In order to gain sensitivity, an RTL PR-1040 preamplifier was connected in series between the antenna and the input of the spectrum analyzer.

At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters in order to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. The spectrum analyzer's 6 dB bandwidth was set to 120 kHz, and the analyzer was operated in the CISPR quasi-peak detection mode. No video filter less than 10 times the resolution bandwidth was used. When the dot clock or CPU clock exceeds 108 MHz, the EUT was tested between 1 to 2 Gigahertz in peak mode with the resolution bandwidth set at 1 MHz as stated in ANSI C63.4. The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Note: Rhein Tech Laboratories, Inc. has implemented procedures to minimize errors that occur from test instruments, calibration, procedures, and test setups. Test instrument and calibration errors are documented from the manufacturer or calibration lab. Other errors have been defined and calculated within the Rhein Tech quality manual, section 6.1. Rhein Tech implements the following procedures to minimize errors that may occur: yearly as daily calibration methods, technician training, and emphasis to employees on avoiding error.