



**MYRICOM, INC. TEST REPORT**

**FOR THE**

**M3-E16 3-SLOT ENCLOSURE WITH  
M3-SW16-8F, M3-SPINE-8F & M3-M MONITOR LINECARDS**

**EN55022 CLASS A, FCC PART 15 SUBPART B CLASS A & CISPR 22 CLASS A  
COMPLIANCE**

**DATE OF ISSUE: JANUARY 26, 2001**

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Date of test: January 11, 2001

**Report No: EN01-006**

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ACA/NATA (Australia); SABS (South Africa); SWEDAC (Sweden); TUV Rheinland-Germany; TUV Rheinland-Korea; TUV Rheinland-Russia; Radio Communications Agency (RA); NEMKO (Norway).

## ADMINISTRATIVE INFORMATION

**DATE OF TEST:** January 11, 2001

**DATE OF RECEIPT:** January 11, 2001

**PURPOSE OF TEST:** To demonstrate the compliance of the M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards with the requirements for EN55022 Class A, FCC Part 15 Subpart B Class A & CISPR 22 Class A devices.

**MANUFACTURER:** Myricom, Inc.  
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**REPRESENTATIVE:** Alan Kulawik

**TEST LOCATION:** CKC Laboratories, Inc.  
110 Olinda Place  
Brea, CA 92621

**TEST PERSONNEL:** Stuart Yamamoto

**TEST METHOD:** EN55022 1998, ANSI C63.4 1992 & CISPR 22 1985

**FREQUENCY RANGE:** 150 kHz – 6.25 GHz

**EQUIPMENT UNDER TEST:**

**M3-E16 3-Slot Enclosure**

Manuf: Myricom, Inc.  
Model: M3-E16  
Serial: 64652

**8 Port Fiber Myrinet Card**

Manuf: Myricom, Inc.  
Model: M3-SPINE-8F  
Serial: 64289

**10BaseT Ethernet Monitoring Card**

Manuf: Myricom, Inc.  
Model: M3-M Monitor  
Serial: 68340

**8 Port Fiber Myrinet Card**

Manuf: Myricom, Inc.  
Model: M3-SW16-8F  
Serial: 60793

## **SUMMARY OF RESULTS**

For the European Union, the Myricom, Inc. M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards was tested in accordance with EN55022 1998 for compliance with the requirements of EN55022 1998 rules. As received, the above equipment was found to be fully compliant with the limits of EN55022 Class A. The results in this report apply only to the items tested, as identified herein.

For Australia/New Zealand, the equipment under test was found to be fully compliant with AS/NZS 3548 Class A, using the EN55022 specifications and methods.

For Japan, the equipment under test was found to be fully compliant with the VCCI Class A requirements, using the CISPR 22 specifications and methods.

For the US and Canada, the equipment under test was found to be fully compliant with the FCC Part 15 Subpart B & ICES-003 Class A limits, using the FCC Part 15 Subpart B and CISPR 22 1985 specifications, and ANSI C63.4 1992 methods.

## **MEASUREMENT UNCERTAINTY**

Associated with data in this report is a  $\pm 4$ dB measurement uncertainty.

## **EQUIPMENT UNDER TEST (EUT) DESCRIPTION**

Myricom Switch (16 Myrinet 2000 Fiber ports + M3-M monitor linecard with 2 ethernet ports).

## **PERIPHERAL DEVICES**

The EUT was tested with the following peripheral(s):

### **Hub**

Manuf: Netgear  
Model: FS108  
Serial: F518E06050651

### **Monitor**

Manuf: Miracle  
Model: MO935  
Serial: 90052394

### **Keyboard**

Manuf: HP  
Model: 5129  
Serial: F02605917

### **Mouse**

Manuf: HP  
Model: MS-34  
Serial: LZN01904868

### **Computer**

Manuf: HP  
Model: Pavilion 6735  
Serial: KR03109769

### **Myrinet 2000 Fiber Optic PCI Card**

Manuf: Myricom, Inc.  
Model: M3F-PCI64B-8  
Serial: 63007

## REPORT OF MEASUREMENTS

The following tables report the six highest worst case levels recorded during the tests performed on the M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards. All readings taken are peak readings unless otherwise noted by a “Q” or “A”. The data sheets from which these tables were compiled are contained in Appendix B.

<b>Table 1: Six Highest Radiated Emission Levels - EN55022</b>									
FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
143.977	39.9	17.0	-28.6	2.1		30.4	40.0	-9.6	H
375.018	50.0	15.0	-28.1	3.5		40.4	47.0	-6.6	H
500.015	47.6	16.9	-28.0	4.1		40.6	47.0	-6.4	HQ
874.992	41.3	23.0	-27.4	5.6		42.5	47.0	-4.5	HQ
996.539	43.0	24.3	-28.2	6.2		45.3	47.0	-1.7	HQ
999.986	43.5	24.3	-28.2	6.2		45.8	47.0	-1.2	HQ

Test Method: BS EN55022 1998  
 Spec Limit : EN55022 Class A  
 Test Distance: 10 Meters

NOTES: H = Horizontal Polarization  
 V = Vertical Polarization  
 Q = Quasi Peak Reading  
 A = Average Reading

COMMENTS: The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick’s Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.5°C, Humidity: 56%.

**Table 2: Six Highest Conducted Emission Levels - EN55022**

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
		Lisn dB							
0.191441	57.0	0.0				57.0	66.0	-9.0	B
9.976737	43.2	0.0				43.2	60.0	-16.8	B
13.747640	43.2	0.0				43.2	60.0	-16.8	W
14.365100	43.1	0.0				43.1	60.0	-16.9	W
15.004600	43.3	0.0				43.3	60.0	-16.7	W
20.054530	42.7	0.0				42.7	60.0	-17.3	B

Test Method: BS EN55022 1998  
 Spec Limit : EN55022 Class A

NOTES:  
 Q = Quasi Peak Reading  
 A = Average Reading  
 B = Black Lead  
 W = White Lead

COMMENTS: The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.0°C, Humidity: 47%.

**Table 3: Six Highest Conducted Emission Levels - EN55022 (Telecom Ports)**

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
		Lisn dB							
9.976737	43.8	0.0				43.8	74.0	-30.2	N
13.747640	45.3	0.0				45.3	74.0	-28.7	N
14.056370	44.2	0.0				44.2	74.0	-29.8	N
14.387150	46.2	0.0				46.2	74.0	-27.8	N
14.982550	44.0	0.0				44.0	74.0	-30.0	N
20.054530	46.9	0.0				46.9	74.0	-27.1	N

Test Method: BS EN55022 1998  
 Spec Limit : EN55022 Class A

NOTES: N = None

COMMENTS: The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick’s Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.0°C, Humidity: 47%.

**Table 4: Six Highest Conducted Emission Levels - CISPR 22**

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV	SPEC LIMIT dBµV	MARGIN dB	NOTES
		Lisn dB							
0.191441	58.1	0.0				58.1	66.0	-7.9	W
0.641928	42.8	0.0				42.8	60.0	-17.2	B
9.976737	43.8	0.0				43.8	60.0	-16.2	B
13.747640	43.1	0.0				43.1	60.0	-16.9	B
14.365100	43.1	0.0				43.1	60.0	-16.9	B
15.004600	43.6	0.0				43.6	60.0	-16.4	W

Test Method: ANSI C63.4 1992  
 Spec Limit : CISPR 22 Class A

NOTES: Q = Quasi Peak Reading  
 A = Average Reading  
 B = Black Lead  
 W = White Lead

COMMENTS: The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 110 VAC, 60 Hz. Temperature: 18.0°C, Humidity: 47%.

**Table 5: Six Highest Radiated Emission Levels - FCC > 1GHz**

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS				CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
1124.991	60.5	22.0	-41.7	3.6		44.4	49.5	-5.1	H
1249.996	58.2	22.6	-41.3	3.8		43.3	49.5	-6.2	H
1749.989	55.4	24.9	-40.5	4.7		44.5	49.5	-5.0	V
1999.985	52.3	26.2	-40.5	4.9		42.9	49.5	-6.6	V
2750.041	45.8	30.1	-38.1	5.9		43.7	49.5	-5.8	V
5000.004	44.4	32.9	-41.1	6.8		43.0	49.5	-6.5	V

Test Method: ANSI C63.4 1992  
 Spec Limit : FCC Class A  
 Test Distance: 10 Meters

NOTES:  
 H = Horizontal Polarization  
 V = Vertical Polarization  
 N = No Polarization  
 D = Dipole Reading  
 Q = Quasi Peak Reading  
 A = Average Reading

COMMENTS: The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick’s Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Frequency range scanned and maximized, 1-6.25 GHz. Power-One power supply, MPU150-S259. Voltage to EUT is 110 VAC, 60 Hz. Temperature: 18.5°C, Humidity: 56%.

**TABLE A**

**LIST OF TEST EQUIPMENT**

**Brea  
VCCI Acceptance No. R-301 & C-314  
Industry Canada File No. IC 3172**

Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Bicon Antenna	A.H. System	SAS-200/540	220	092000	092001
Log Periodic Antenna	A.H. System	SAS-200/516	331	092000	092001
Pre-amp	HP	8447D	1937A02548	030700	030701
Antenna cable	NA	RG214	Cable#15	122000	122001
Pre-amp to SA cable	NA	RG58	Cable#10	091800	091801
Horn Antenna	Emco	3115	9603-4683	020700	020701
Microwave Pre-amp	HP	83017A	3123A00282	030100	030101
¼" Helix Coaxial Cable	Andrew	FSJ-50A-4	Cable#7 (6 ft)	071800	071801
¼" Helix Coaxial Cable	Andrew	FSJ-50A-4	Cable#14 (60ft)	071800	071801
Spectrum Analyzer	HP.	8566B	2532A02509	092600	092601
QP Adapter	HP	85650A	3303A01884	092600	092601
LISN	Emco	3816/2NM	9809-1090	030800	030801
Spectrum Analyzer	HP	8566B	2532A02509	092600	092601
TLISN	FCC	FCC-TLISN-T4	15550	080800	080801

## **EUT SETUP**

The equipment under test (EUT) and the peripheral(s) listed were set up in a manner that represented their normal use, as shown in the setup photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany Tables 1 and 5 for radiated emissions, and Tables 2, 3 and 4 for conducted emissions. Additionally, a complete description of all ports and the I/O cables is included on the information sheets contained in Appendix A.

During radiated emissions testing, the EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. This configuration is typical for radiated emissions testing of table top devices.

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT is located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test. Conducted emissions tests required the use of the LISNs listed in Table A.

The AC power line and I/O cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. This configuration was precisely noted in the test report. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

One module of each type was operative in each ITE evaluated in a test unit. For system units, one of each type of ITE that could have been included in the possible system configuration was included in the test unit.

The actual interfacing ITE or simulators were used to provide representative operating conditions provided the effects of the simulator were isolated or identified.

The interval between different pieces of equipment was about 10 centimeters. All excessive interconnecting cable was bundled in 30-40 centimeter lengths. For detail on the disposition of the cables during the test, refer to the "Cable Information Sheet" and the photographs contained in Appendix A.

## TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Table A were used to collect both the radiated and conducted emissions data for the M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards. For radiated measurements below 300 MHz, the biconical type antenna listed was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. The horn antenna was used for frequencies exceeding 1000 MHz. The measurements listed in Tables 1 and 5 incorporate any correction factors associated with the use of the antennas, preamplifiers, and cabling used during the radiated test. These correction factors are also listed for each measurement on the data sheets contained in Appendix B.

The HP spectrum analyzer was used for all measurements. The measurement uncertainty is approximately  $\pm 4$  dB, which includes all test equipment and peripherals. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB $\mu$ V, and a vertical scale of 10 dB per division.

TABLE B : ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	6.25 GHz	1 MHz

## **SPECTRUM ANALYZER DETECTOR FUNCTIONS**

The notes that accompany the measurements contained in Tables 1 through 5 indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data for the M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards.

### **Peak**

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

### **Quasi-Peak**

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual was followed.

### **Average**

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

## **TEST METHODS**

The radiated and conducted emissions data of the M3-E16 3-Slot Enclosure with M3-SW16-8F, M3-SPINE-8F & M3-M Monitor Linecards was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna and cable loss, and amplifier gain, the data was reduced as shown in the "Sample Calculations". The corrected data was then compared to the EN55022 Class A, FCC Part 15 Subpart B Class A and CISPR 22 Class A emission limits to determine compliance.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

### **Radiated Emissions Testing (Electric Field)**

During the preliminary radiated scan, the EUT was powered up and operating in its defined test mode with the I/O and power cords facing the antenna. The frequency range of 30 MHz - 88 MHz was then scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks that were at or near the limit were recorded. The frequency range of 100 - 300 MHz was scanned in the same manner, with the biconical antenna, and the peaks recorded. Lastly, a scan of the FM band from 88 - 110 MHz was made, using a reduced resolution bandwidth and a reduced frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 - 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 - 1000 MHz was again scanned. The horn antenna was used for frequencies above 1000 MHz. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of the peripheral(s) and cables. Maximizing of the cables and peripheral locations was achieved by monitoring the spectrum analyzer on a closed circuit television monitor while the EUT components and cables were being moved and rearranged on the EUT table for maximum emissions. Photographs showing the final worst case configuration of the EUT are contained in Appendix A.

## Conducted Emissions Testing

For the conducted emissions, the LISNs used were 50  $\mu$ H-/+50 ohms. Above 150 kHz, a 0.15  $\mu$ F series capacitor is added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz - 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

## SAMPLE CALCULATIONS

The basic spectrum analyzer reading was converted using correction factors as shown in the six highest emissions readings in Tables 1 through 5. For radiated emissions in dB $\mu$ V/m, the spectrum analyzer reading in dB $\mu$ V was corrected by using the following formula:

$$\begin{aligned} & \text{Meter reading (dB}\mu\text{V)} \\ & + \text{Antenna Factor (dB)} \\ & + \text{Cable Loss (dB)} \\ & - \text{Distance Correction (dB)} \\ & - \text{Pre-amplifier Gain (dB)} \\ & = \text{Corrected Reading (dB}\mu\text{V/m)} \end{aligned}$$

This reading was then compared to the applicable specification limit to determine compliance.

**APPENDIX A**  
**INFORMATION ABOUT THE EQUIPMENT UNDER TEST**

**INFORMATION ABOUT THE EQUIPMENT UNDER TEST**

Test Software/Firmware: Fast\_test9r.dat  
 CRT was displaying: Status  
 Power Supply Manufacturer: Power-One  
 Power Supply Part Number: MPU150-S259  
 AC Line Filter Manufacturer: Corcom  
 AC Line Filter Part Number: 3ED8

The AC power cord is removable and is NOT shielded  
 Line voltage used during testing: 110VAC 60Hz/235VAC 50Hz

**I/O PORTS**

Type	#
Myrinet 2000 FIBER	16
Ethernet 10Base-T	2

**CRYSTAL OSCILLATORS**

Type	Freq In MHz
16, 20, 125	

**PRINTED CIRCUIT BOARDS**

Function	Model & Rev	Clocks, MHz	Layers	Location
Monitor with ethernet	M3-M linecard	4, 8, 16, 20, 48	8	ALL
8 Myrinet Fiber ports	M3-SPINE-8F	4, 8, 16, 40, 62.5, 125, 1250	8	ALL
Switch & 8 Fiber ports	M3-SW16-8F	4, 8, 16, 40, 62.5, 125, 1250	8	ALL

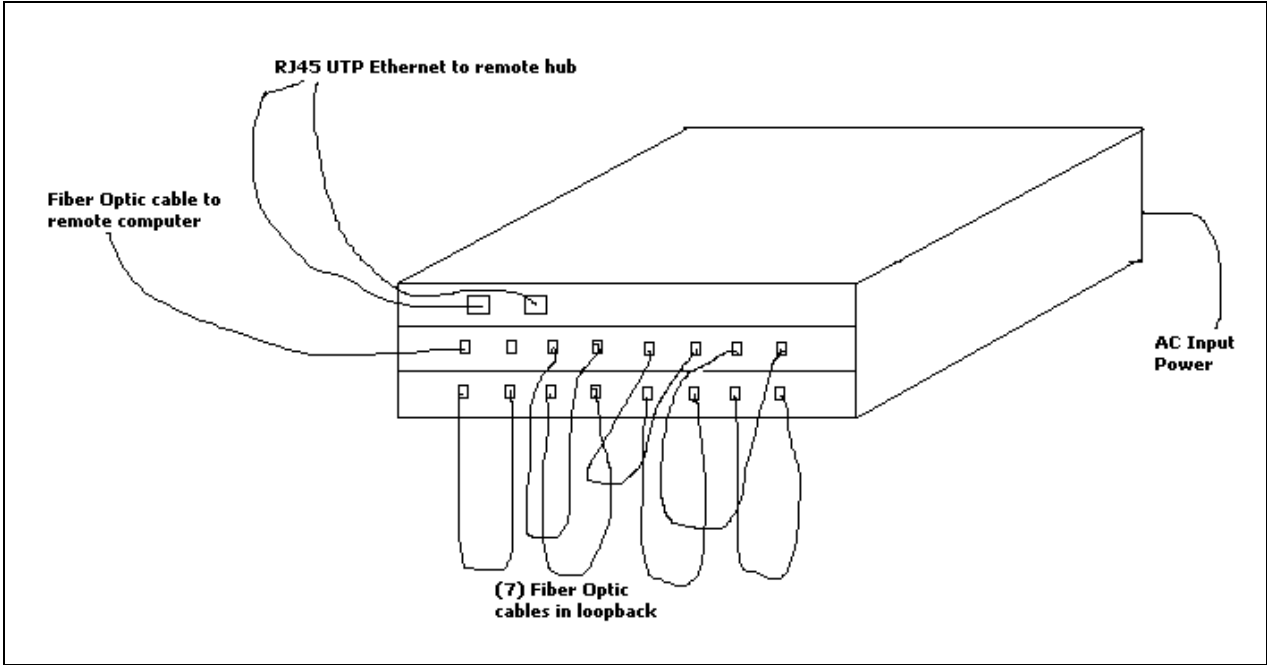
### CABLE INFORMATION

Cable #: 1	Cable(s) of this type:
Cable Type: Fiber Optic Construction: Full Duplex Connected To End (1): EUT Connector At End (1): LC Shield Grounded At (1): Part Number: M3F-CB-1M	Shield Type: N/A Length In Meters: 1 Connected To End (2): EUT Connector At End (2): LC Shield Grounded At (2): Number of Conductors:
Notes: Used for loopback on EUT	

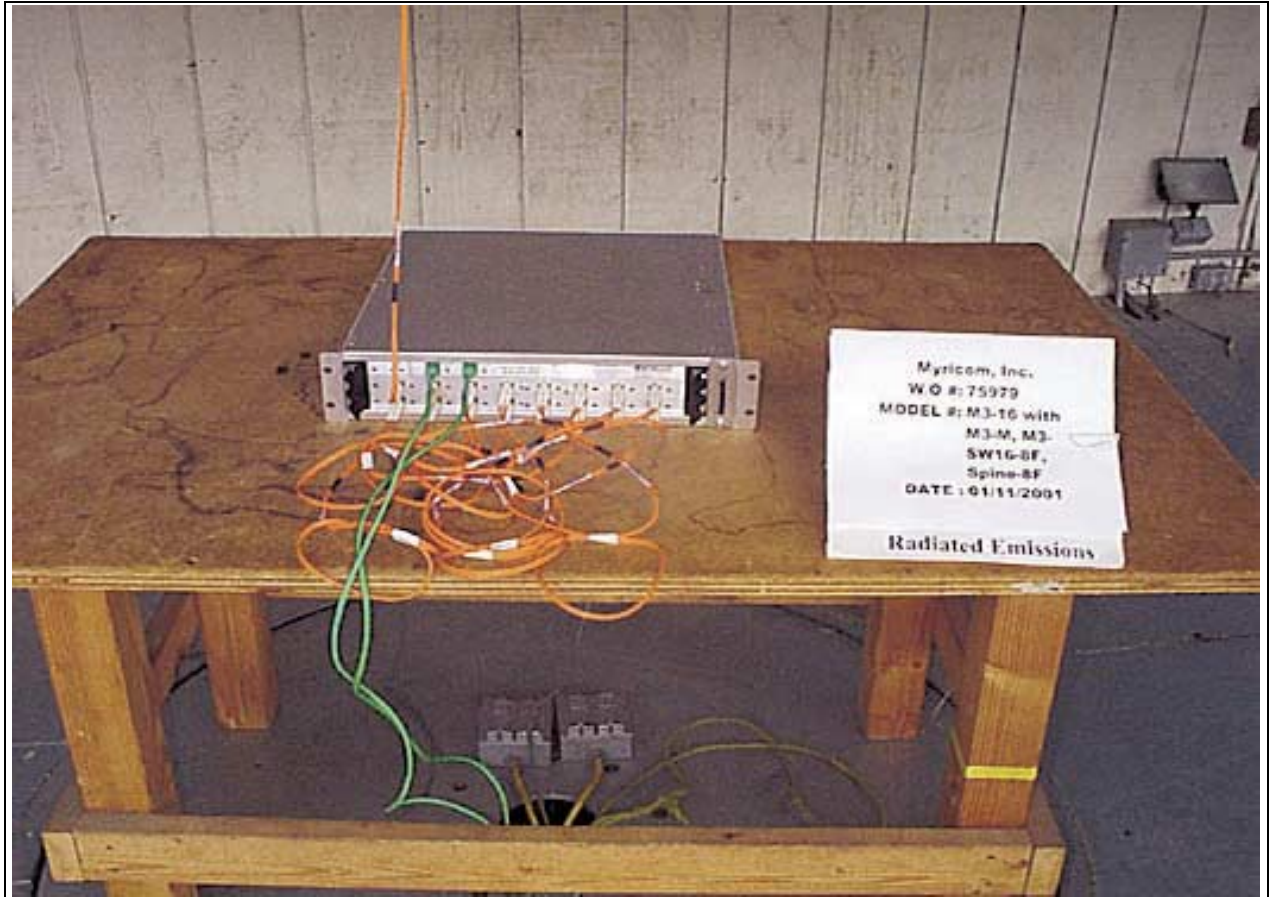
Cable #: 2	Cable(s) of this type:
Cable Type: Fiber Optic Construction: Full Duplex Connected To End (1): EUT  Connector At End (1): LC Shield Grounded At (1): M3F-CB-8M Part Number:	Shield Type: N/A Length In Meters: 8 Connected To End (2): M3F-PCI64B-8 PCI card in a PC  Connector At End (2): LC Shield Grounded At (2): Number of Conductors:
Notes: Used to connect EUT (a 16-port all fiber switch) to a remote PC.	

Cable #: 3	Cable(s) of this type:
Cable Type: UTP CAT5 Construction: Unshield Twisted Pair Connected To End (1): EUT (M3-M ethernet port) Connector At End (1): RJ45 Shield Grounded At (1): Part Number:	Shield Type: N/A Length In Meters: 10  Connected To End (2): Remote 10 Mbit ethernet hub  Connector At End (2): RJ45 Shield Grounded At (2): Number of Conductors: 8
Notes:	

# EQUIPMENT TEST SETUP DIAGRAM



**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



Radiated Emissions - Front View

**PHOTOGRAPH SHOWING RADIATED EMISSIONS**



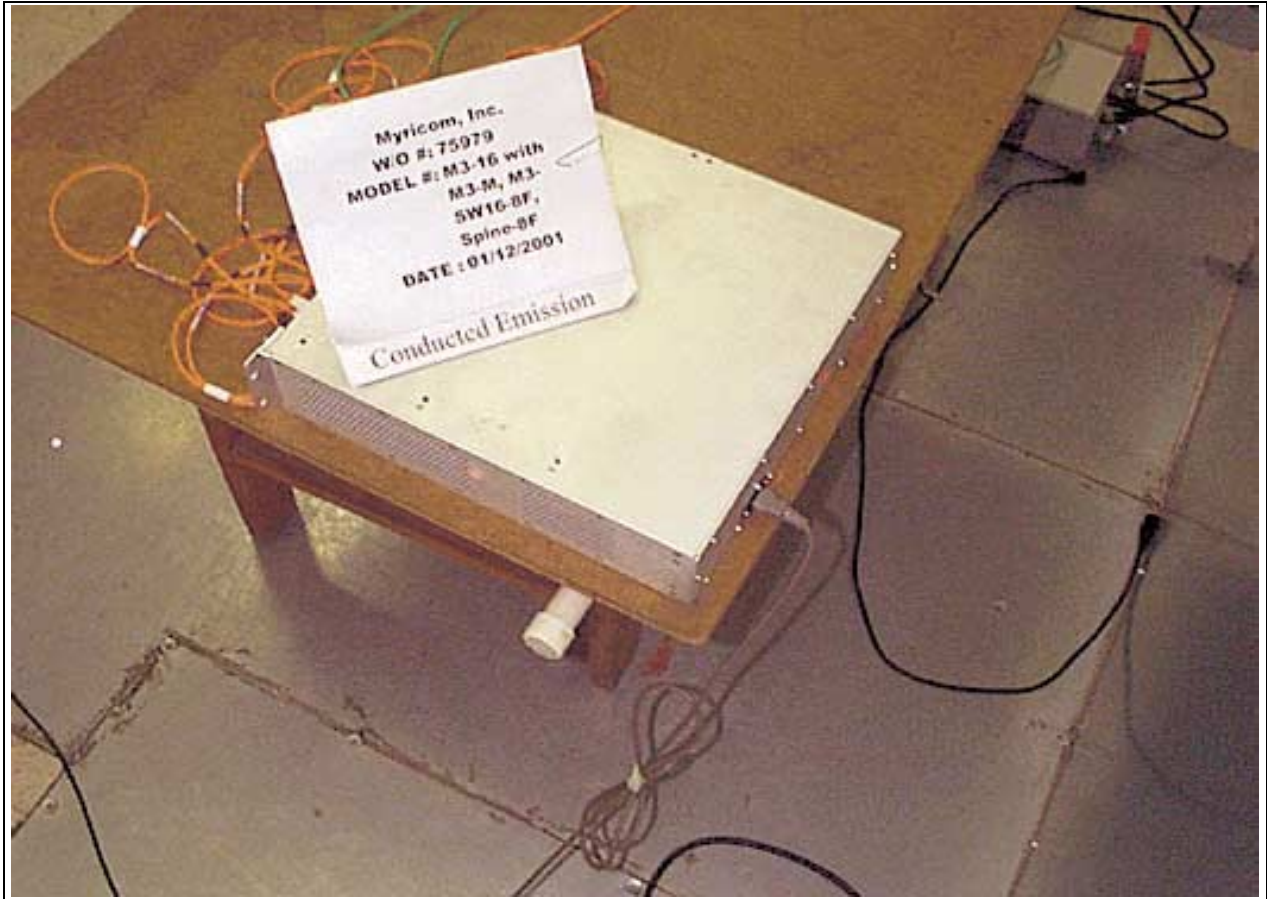
Radiated Emissions - Back View

**PHOTOGRAPH SHOWING CONDUCTED EMISSIONS**



Conducted Emissions - Front View

**PHOTOGRAPH SHOWING CONDUCTED EMISSIONS**



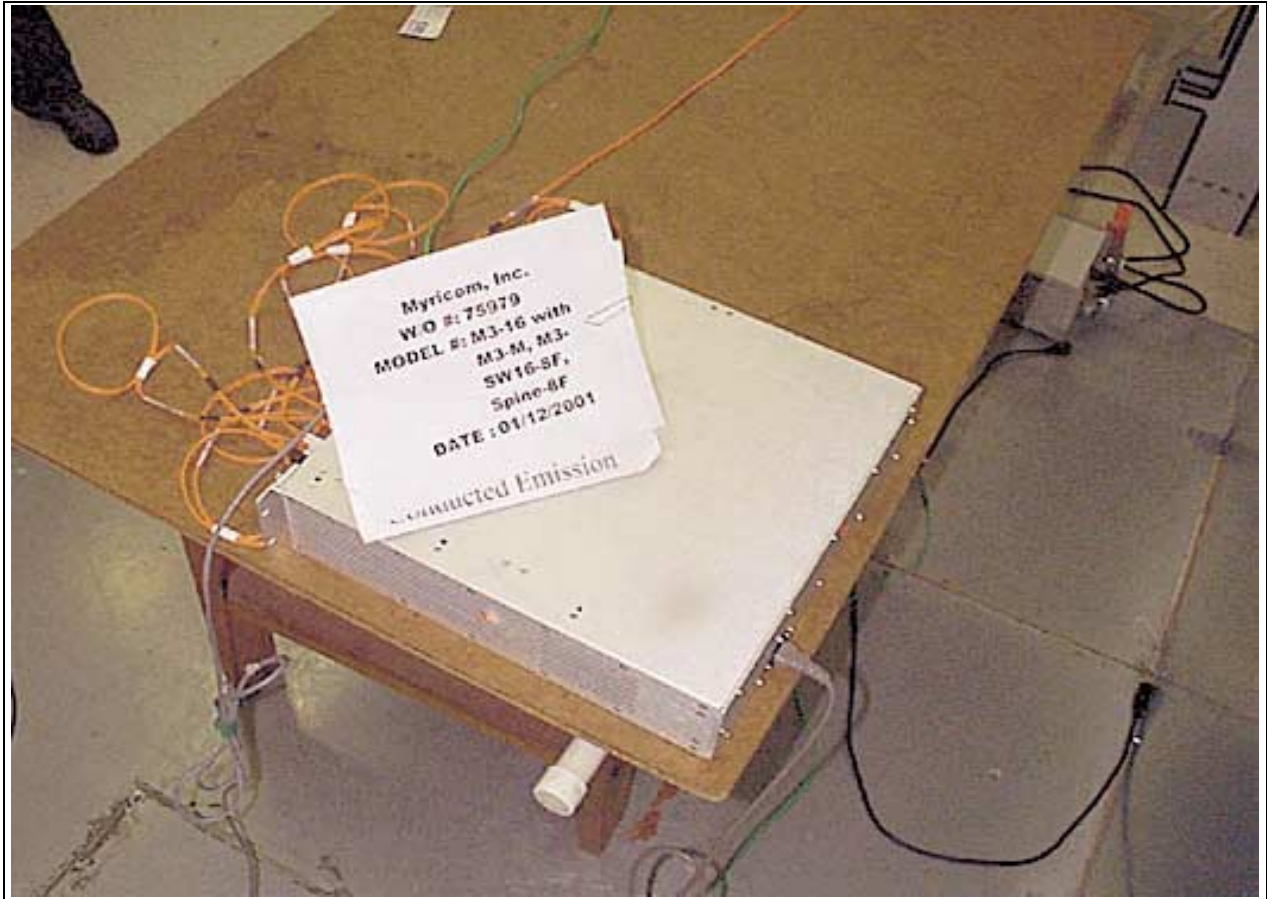
Conducted Emissions - Back View

**PHOTOGRAPH SHOWING CONDUCTED EMISSIONS**



Conducted Emissions - Front View (Telecom)

**PHOTOGRAPH SHOWING CONDUCTED EMISSIONS**



Conducted Emissions - Back View (Telecom)

**APPENDIX B**  
**MEASUREMENT DATA SHEETS**

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **EN55022 A RADIATED**  
 Work Order #: **75979**  
 Test Type: **Maximized Emissions**  
 Equipment: **Chassis**  
 Manufacturer: Myricom  
 Model: See List Below  
 S/N: See List Below

Date: 01/11/2001  
 Time: 17:04:42  
 Sequence#: 1  
 Tested By: Stuart Yamamoto

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.5°C, Humidity: 56%.

**Measurement Data:** Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Pream Bicon Cable Log_3				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			dB	dB	dB	dB					
1	999.986M	43.5	-28.2	+0.0	+6.2	+24.3	+0.0	45.8	47.0	-1.2	Horiz
	QP						72				244
^	999.984M	45.8	-28.2	+0.0	+6.2	+24.3	+0.0	48.1	47.0	+1.1	Horiz
							72				244
3	996.539M	43.0	-28.2	+0.0	+6.2	+24.3	+0.0	45.3	47.0	-1.7	Horiz
	QP						332				235
^	996.545M	45.3	-28.2	+0.0	+6.2	+24.3	+0.0	47.6	47.0	+0.6	Horiz
							332				235
5	874.992M	41.3	-27.4	+0.0	+5.6	+23.0	+0.0	42.5	47.0	-4.5	Horiz
	QP						71				99
^	875.016M	45.9	-27.4	+0.0	+5.6	+23.0	+0.0	47.1	47.0	+0.1	Horiz
							71				99

7	874.981M	40.3	-27.4	+0.0	+5.6	+23.0	+0.0 131	41.5	47.0	-5.5	Vert 100
8	999.989M QP	38.3	-28.2	+0.0	+6.2	+24.3	+0.0 329	40.6	47.0	-6.4	Vert 274
^	999.988M	43.1	-28.2	+0.0	+6.2	+24.3	+0.0 329	45.4	47.0	-1.6	Vert 274
10	500.015M QP	47.6	-28.0	+0.0	+4.1	+16.9	+0.0 302	40.6	47.0	-6.4	Horiz 208
^	500.009M	52.0	-28.0	+0.0	+4.1	+16.9	+0.0 302	45.0	47.0	-2.0	Horiz 208
12	375.018M	50.0	-28.1	+0.0	+3.5	+15.0	+0.0 360	40.4	47.0	-6.6	Horiz 99
13	996.542M QP	37.8	-28.2	+0.0	+6.2	+24.3	+0.0 57	40.1	47.0	-6.9	Vert 100
^	996.542M	41.6	-28.2	+0.0	+6.2	+24.3	+0.0 57	43.9	47.0	-3.1	Vert 100
15	500.021M	45.1	-28.0	+0.0	+4.1	+16.9	+0.0 157	38.1	47.0	-8.9	Vert 140
16	143.977M	39.9	-28.6	+17.0	+2.1	+0.0	+0.0 140	30.4	40.0	-9.6	Horiz 241
17	624.996M	40.2	-27.9	+0.0	+4.6	+19.5	+0.0 345	36.4	47.0	-10.6	Horiz 129
18	144.007M	38.4	-28.6	+17.0	+2.1	+0.0	+0.0 175	28.9	40.0	-11.1	Vert 237
19	200.001M	38.7	-28.6	+16.2	+2.4	+0.0	+0.0 65	28.7	40.0	-11.3	Horiz 328
20	336.032M	42.5	-28.2	+0.0	+3.3	+16.7	+0.0 98	34.3	47.0	-12.7	Horiz 131
21	191.980M	36.4	-28.6	+16.5	+2.4	+0.0	+0.0 205	26.7	40.0	-13.3	Vert 100
22	199.988M	36.1	-28.6	+16.2	+2.4	+0.0	+0.0 118	26.1	40.0	-13.9	Vert 100
23	624.020M	36.4	-27.9	+0.0	+4.6	+19.4	+0.0 343	32.5	47.0	-14.5	Horiz 110

Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **EN55022 A COND AVG**  
 Work Order #: **75979**  
 Test Type: **Conducted Emissions**  
 Equipment: **Chassis**  
 Manufacturer: Myricom  
 Model: See List Below  
 S/N: See List Below

Date: 01/12/2001  
 Time: 12:20:52  
 Sequence#: 9  
 Tested By: Stuart Yamamoto

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

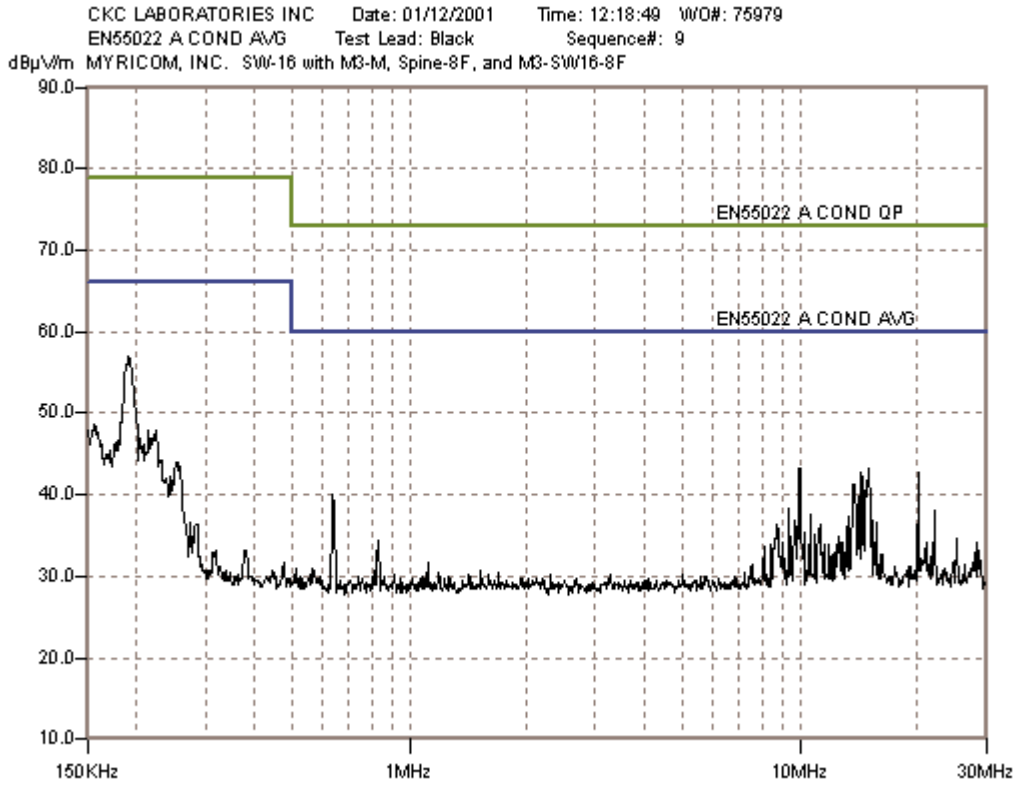
**Test Conditions / Notes:**

The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.0°C, Humidity: 47%.

**Measurement Data:** Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	dB				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	191.441k	57.0					+0.0	57.0	66.0	-9.0	Black
2	15.005M	43.2					+0.0	43.2	60.0	-16.8	Black
3	9.977M	43.2					+0.0	43.2	60.0	-16.8	Black
4	14.365M	42.8					+0.0	42.8	60.0	-17.2	Black
5	20.055M	42.7					+0.0	42.7	60.0	-17.3	Black
6	154.973k	48.6					+0.0	48.6	66.0	-17.4	Black

7	158.288k	48.4	+0.0	48.4	66.0	-17.6	Black
8	150.000k	47.9	+0.0	47.9	66.0	-18.1	Black
9	225.423k	47.8	+0.0	47.8	66.0	-18.2	Black
10	214.649k	47.8	+0.0	47.8	66.0	-18.2	Black
11	220.451k	47.5	+0.0	47.5	66.0	-18.5	Black
12	13.726M	41.3	+0.0	41.3	60.0	-18.7	Black
13	204.288k	46.9	+0.0	46.9	66.0	-19.1	Black
14	161.604k	46.8	+0.0	46.8	66.0	-19.2	Black
15	14.696M	40.6	+0.0	40.6	60.0	-19.4	Black
16	179.009k	46.6	+0.0	46.6	66.0	-19.4	Black
17	208.847k	46.3	+0.0	46.3	66.0	-19.7	Black
18	175.694k	46.3	+0.0	46.3	66.0	-19.7	Black
19	163.261k	46.3	+0.0	46.3	66.0	-19.7	Black
20	638.811k	40.0	+0.0	40.0	60.0	-20.0	Black



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **EN55022 A COND AVG**  
 Work Order #: **75979**  
 Test Type: **Conducted Emissions**  
 Equipment: **Chassis**  
 Manufacturer: Myricom  
 Model: See List Below  
 S/N: See List Below

Date: 01/12/2001  
 Time: 12:23:30  
 Sequence#: 10  
 Tested By: Stuart Yamamoto

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

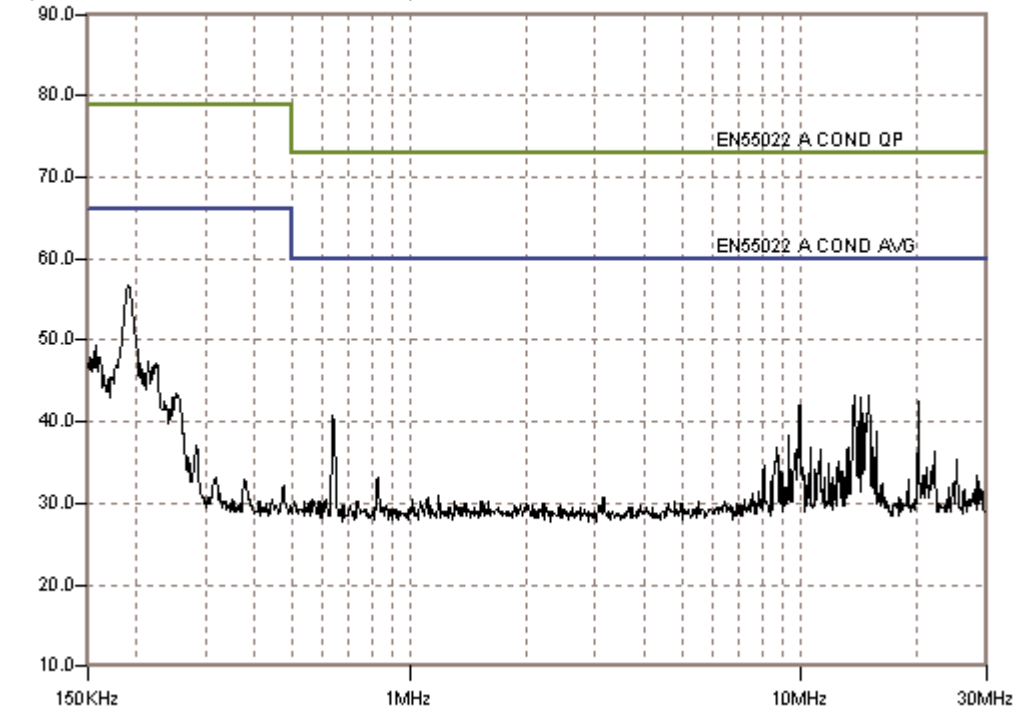
The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick’s Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.0°C, Humidity: 47%.

**Measurement Data:** Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	dB			Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	189.784k	56.7				+0.0	56.7	66.0	-9.3	White
2	15.005M	43.3				+0.0	43.3	60.0	-16.7	White
3	158.288k	49.3				+0.0	49.3	66.0	-16.7	White
4	13.748M	43.2				+0.0	43.2	60.0	-16.8	White
5	14.365M	43.1				+0.0	43.1	60.0	-16.9	White
6	180.667k	48.9				+0.0	48.9	66.0	-17.1	White

7	154.973k	48.7	+0.0	48.7	66.0	-17.3	White
8	20.055M	42.4	+0.0	42.4	60.0	-17.6	White
9	9.977M	42.1	+0.0	42.1	60.0	-17.9	White
10	151.658k	48.0	+0.0	48.0	66.0	-18.0	White
11	160.775k	47.8	+0.0	47.8	66.0	-18.2	White
12	213.820k	47.4	+0.0	47.4	66.0	-18.6	White
13	205.532k	47.2	+0.0	47.2	66.0	-18.8	White
14	224.595k	47.1	+0.0	47.1	66.0	-18.9	White
15	638.811k	40.9	+0.0	40.9	60.0	-19.1	White
16	221.279k	46.9	+0.0	46.9	66.0	-19.1	White
17	14.056M	40.0	+0.0	40.0	60.0	-20.0	White
18	209.676k	45.9	+0.0	45.9	66.0	-20.1	White
19	14.850M	39.8	+0.0	39.8	60.0	-20.2	White
20	164.919k	45.8	+0.0	45.8	66.0	-20.2	White

CKC LABORATORIES INC Date: 01/12/2001 Time: 12:21:40 WO#: 75979  
EN55022 A COND AVG Test Lead: White Sequence#: 10  
dBµV/m MYRICOM, INC. SW-16 with M3-M, Spine-8F, and M3-SW16-8F



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **EN55022A [AVG] (Telecom)**  
 Work Order #: **75979** Date: 01/12/2001  
 Test Type: **Conducted Emissions** Time: 12:31:15  
 Equipment: **Chassis** Sequence#: 11  
 Manufacturer: Myricom Tested By: Stuart Yamamoto  
 Model: See List Below  
 S/N: See List Below

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick’s Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 235 VAC, 50 Hz. Temperature: 18.0°C, Humidity: 47%.

**Measurement Data:** Reading listed by margin. Test Lead: None

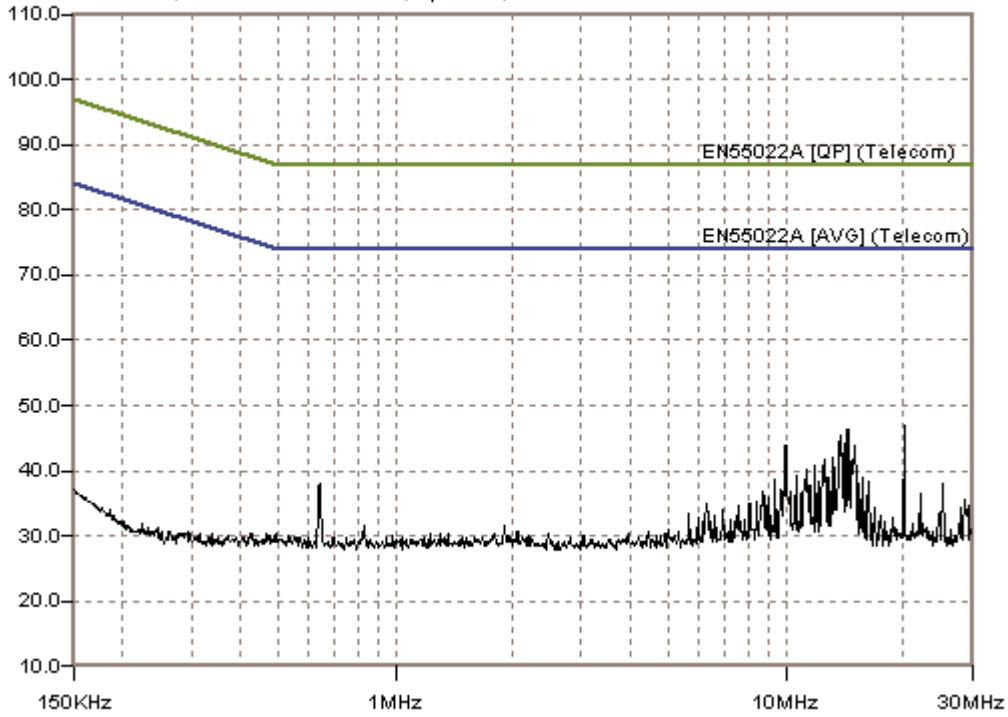
#	Freq MHz	Rdng dBµV	dB			Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	20.055M	46.9				+0.0	46.9	74.0	-27.1	None
2	14.387M	46.2				+0.0	46.2	74.0	-27.8	None
3	13.748M	45.3				+0.0	45.3	74.0	-28.7	None
4	14.056M	44.2				+0.0	44.2	74.0	-29.8	None
5	14.983M	44.0				+0.0	44.0	74.0	-30.0	None
6	9.977M	43.8				+0.0	43.8	74.0	-30.2	None

7	13.130M	41.9	+0.0	41.9	74.0	-32.1	None
8	12.513M	41.7	+0.0	41.7	74.0	-32.3	None
9	14.696M	41.4	+0.0	41.4	74.0	-32.6	None
10	11.895M	40.7	+0.0	40.7	74.0	-33.3	None
11	13.439M	40.6	+0.0	40.6	74.0	-33.4	None
12	11.234M	40.1	+0.0	40.1	74.0	-33.9	None
13	10.616M	39.3	+0.0	39.3	74.0	-34.7	None
14	15.644M	39.1	+0.0	39.1	74.0	-34.9	None
15	12.799M	39.0	+0.0	39.0	74.0	-35.0	None
16	9.359M	38.6	+0.0	38.6	74.0	-35.4	None
17	12.204M	38.4	+0.0	38.4	74.0	-35.6	None
18	16.262M	38.2	+0.0	38.2	74.0	-35.8	None
19	15.335M	38.0	+0.0	38.0	74.0	-36.0	None
20	641.928k	37.9	+0.0	37.9	74.0	-36.1	None

CKC LABORATORIES INC Date: 01/12/2001 Time: 12:29:08 WO#: 75979

EN55022A [AVG] (Telecom) Test Lead: None Sequence#: 11

dB $\mu$ V MYRICOM, INC. SW-16 with M3-M, Spine-8F, and M3-SW16-8F



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **CISPR22 A COND AVE**  
 Work Order #: **75979**  
 Test Type: **Conducted Emissions**  
 Equipment: **Chassis**  
 Manufacturer: **Myricom**  
 Model: **See List Below**  
 S/N: **See List Below**

Date: 01/12/2001  
 Time: 12:12:01  
 Sequence#: 7  
 Tested By: Stuart Yamamoto

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

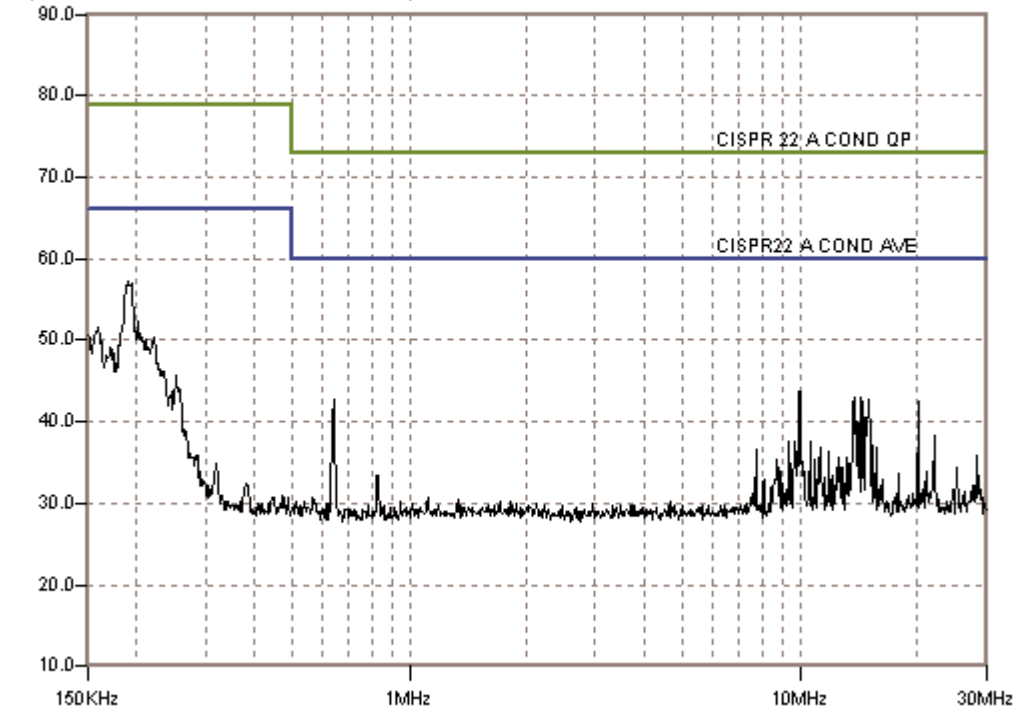
The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 110 VAC, 60 Hz. Temperature: 18.0°C, Humidity: 47%.

**Measurement Data:** Reading listed by margin. Test Lead: Black

#	Freq MHz	Rdng dBµV	dB				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	189.784k	57.3					+0.0	57.3	66.0	-8.7	Black
2	202.216k	52.4					+0.0	52.4	66.0	-13.6	Black
3	159.946k	51.5					+0.0	51.5	66.0	-14.5	Black
4	199.730k	51.0					+0.0	51.0	66.0	-15.0	Black
5	205.532k	50.9					+0.0	50.9	66.0	-15.1	Black
6	150.829k	50.5					+0.0	50.5	66.0	-15.5	Black

7	223.766k	50.4	+0.0	50.4	66.0	-15.6	Black
8	212.162k	50.1	+0.0	50.1	66.0	-15.9	Black
9	163.261k	49.9	+0.0	49.9	66.0	-16.1	Black
10	9.977M	43.8	+0.0	43.8	60.0	-16.2	Black
11	14.365M	43.1	+0.0	43.1	60.0	-16.9	Black
12	13.748M	43.1	+0.0	43.1	60.0	-16.9	Black
13	172.378k	49.1	+0.0	49.1	66.0	-16.9	Black
14	15.005M	42.8	+0.0	42.8	60.0	-17.2	Black
15	641.928k	42.8	+0.0	42.8	60.0	-17.2	Black
16	20.055M	42.6	+0.0	42.6	60.0	-17.4	Black
17	174.865k	48.3	+0.0	48.3	66.0	-17.7	Black
18	227.910k	47.2	+0.0	47.2	66.0	-18.8	Black
19	178.180k	47.1	+0.0	47.1	66.0	-18.9	Black
20	14.696M	40.6	+0.0	40.6	60.0	-19.4	Black

CKC LABORATORIES INC Date: 01/12/2001 Time: 12:08:50 WO#: 75979  
CISPR22 A COND AVE Test Lead: Black Sequence#: 7  
dBµV/m MYRICOM, INC. SW-16 with M3-M, Spine-8F, and M3-SW16-8F



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**  
 Specification: **CISPR22 A COND AVE**  
 Work Order #: **75979**  
 Test Type: **Conducted Emissions**  
 Equipment: **Chassis**  
 Manufacturer: Myricom  
 Model: See List Below  
 S/N: See List Below

Date: 01/12/2001  
 Time: 12:15:58  
 Sequence#: 8  
 Tested By: Stuart Yamamoto

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

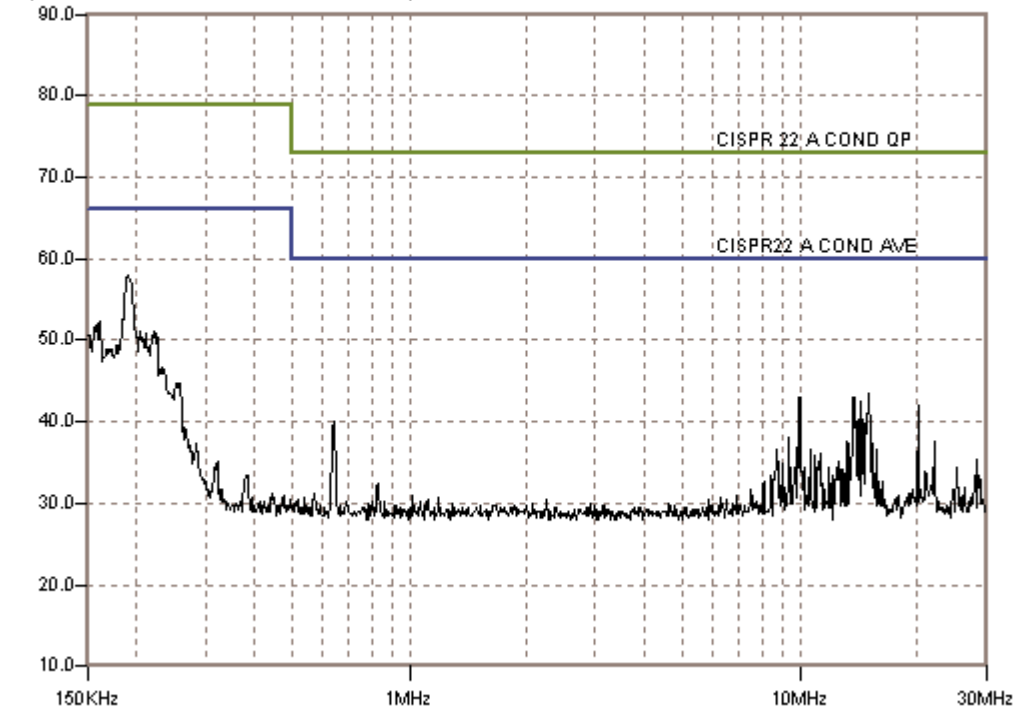
The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Power-One power supply, MPU150-S259. Voltage to EUT is 110 VAC, 60 Hz. Temperature: 18.0°C, Humidity: 47%.

**Measurement Data:** Reading listed by margin. Test Lead: White

#	Freq MHz	Rdng dBµV	dB				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	191.441k	58.1					+0.0	58.1	66.0	-7.9	White
2	160.775k	52.3					+0.0	52.3	66.0	-13.7	White
3	159.117k	52.0					+0.0	52.0	66.0	-14.0	White
4	157.460k	51.9					+0.0	51.9	66.0	-14.1	White
5	221.279k	51.2					+0.0	51.2	66.0	-14.8	White
6	204.288k	51.0					+0.0	51.0	66.0	-15.0	White

7	225.423k	50.9	+0.0	50.9	66.0	-15.1	White
8	222.937k	50.9	+0.0	50.9	66.0	-15.1	White
9	211.333k	50.8	+0.0	50.8	66.0	-15.2	White
10	150.829k	50.6	+0.0	50.6	66.0	-15.4	White
11	15.005M	43.6	+0.0	43.6	60.0	-16.4	White
12	180.667k	49.5	+0.0	49.5	66.0	-16.5	White
13	178.180k	49.3	+0.0	49.3	66.0	-16.7	White
14	214.649k	49.2	+0.0	49.2	66.0	-16.8	White
15	13.726M	43.0	+0.0	43.0	60.0	-17.0	White
16	9.977M	43.0	+0.0	43.0	60.0	-17.0	White
17	173.207k	49.0	+0.0	49.0	66.0	-17.0	White
18	14.365M	42.6	+0.0	42.6	60.0	-17.4	White
19	20.055M	42.0	+0.0	42.0	60.0	-18.0	White
20	232.054k	46.6	+0.0	46.6	66.0	-19.4	White

CKC LABORATORIES INC Date: 01/12/2001 Time: 12:13:56 WO#: 75979  
CISPR22 A COND AVE Test Lead: White Sequence#: 8  
MYRICOM, INC. SW-16 with M3-M, Spine-8F, and M3-SW16-8F



Test Location: CKC LABORATORIES INC • 110 N. OLINDA PL. • BREA, CA 92823 • 714-993-6112

Customer: **Myricom, Inc.**

Specification: **FCC A RADIATED**

Work Order #: **75979**

Date: 01/11/2001

Test Type: **Maximized Emissions**

Time: 14:57:02

Equipment: **Chassis**

Sequence#: 1

Manufacturer: Myricom

Tested By: Stuart Yamamoto

Model: See List Below

S/N: See List Below

**Equipment Under Test (\* = EUT):**

Function	Manufacturer	Model #	S/N
Chassis*	Myricom	M3-16	64652
10BaseT Ethernet monitoring card	Myricom, Inc.	M3-M	
8 port fiber Myrinet card	Myricom, Inc.	Spine-8F	
8 port Fiber Myrinet card	Myricom, Inc.	M3-SW16-8F	

**Support Devices:**

Function	Manufacturer	Model #	S/N
Hub	Netgear	FS108	F518E06050651
Monitor	Miracle	MO935	90052394
Keyboard	HP	5129	F02605917
Mouse	HP	MS-34	LZN01904868
Computer	HP	Pavilion 6735	KR03109769
Myrinet 2000 Fiber Optic PCI card	Myricom, Inc.	M3F-PCI64B-8	63007

**Test Conditions / Notes:**

The EUT is placed stand alone on the wooden table. All Myrinet 2000 ports filled. Both ethernet ports (RJ45 UTP green for St. Patrick's Day) connected to remotely located hub that is connected to the computer. Sixteen fiber communication ports all connected in loop back. The source data is created from the remotely located computer and sent to the EUT and the data is received from the switch to the M3F-PCI64-8 PCI card. Frequency range scanned and maximized, 1-6.25 GHz. Power-One power supply, MPU150-S259. Voltage to EUT is 110 VAC, 60 Hz. Temperature: 18.5°C, Humidity: 56%.

**Measurement Data:** Reading listed by margin. Test Distance: 10 Meters

#	Freq MHz	Rdng dBµV	Cable listed by margin.				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			Cable dB	Cable dB	83017 dB	Horn dB					
1	1749.989M	55.4	+4.1	+0.6	-40.5	+24.9	+0.0	44.5	49.5	-5.0	Vert 100
2	1124.991M	60.5	+3.2	+0.4	-41.7	+22.0	+0.0 22	44.4	49.5	-5.1	Horiz 173
3	2750.041M	45.8	+5.2	+0.7	-38.1	+30.1	+0.0 347	43.7	49.5	-5.8	Vert 167
4	1249.996M	58.2	+3.4	+0.4	-41.3	+22.6	+0.0 360	43.3	49.5	-6.2	Horiz 161
5	5000.004M	44.4	+7.4	-0.6	-41.1	+32.9	+0.0 359	43.0	49.5	-6.5	Vert 170

6	1999.985M	52.3	+4.3	+0.6	-40.5	+26.2	+0.0	42.9	49.5	-6.6	Vert
							361				119
7	1124.995M	58.3	+3.2	+0.4	-41.7	+22.0	+0.0	42.2	49.5	-7.3	Vert
							136				100
8	1750.012M	53.0	+4.1	+0.6	-40.5	+24.9	+0.0	42.1	49.5	-7.4	Horiz
							50				137
9	1375.055M	55.2	+3.6	+0.4	-40.9	+23.0	+0.0	41.3	49.5	-8.2	Vert
							345				100
10	1499.978M	53.8	+3.7	+0.4	-40.5	+23.5	+0.0	40.9	49.5	-8.6	Vert
											100
11	1624.973M	52.6	+3.9	+0.5	-40.5	+24.3	+0.0	40.8	49.5	-8.7	Vert
							14				100
12	1059.018M	57.2	+3.2	+0.4	-42.0	+21.7	+0.0	40.5	49.5	-9.0	Vert
							144				100
13	1038.213M	57.1	+3.2	+0.4	-42.0	+21.6	+0.0	40.3	49.5	-9.2	Vert
							146				129
14	2996.531M Ave	40.9	+5.5	+0.7	-38.4	+31.4	+0.0	40.1	49.5	-9.4	Horiz
							29				162
^	2996.543M	51.4	+5.5	+0.7	-38.4	+31.4	+0.0	50.6	49.5	+1.1	Horiz
							29				162
16	1003.438M Ave	54.9	+3.2	+0.4	-42.2	+21.4	+0.0	37.7	49.5	-11.8	Horiz
							84				202
^	1003.484M	64.6	+3.2	+0.4	-42.2	+21.4	+0.0	47.4	49.5	-2.1	Horiz
							84				202
18	3003.497M Ave	38.2	+5.5	+0.7	-38.4	+31.4	+0.0	37.4	49.5	-12.1	Horiz
							360				99
^	3003.486M	47.1	+5.5	+0.7	-38.4	+31.4	+0.0	46.3	49.5	-3.2	Horiz
							360				99
20	1003.432M Ave	54.3	+3.2	+0.4	-42.2	+21.4	+0.0	37.1	49.5	-12.4	Vert
							86				119
^	1003.464M	64.1	+3.2	+0.4	-42.2	+21.4	+0.0	46.9	49.5	-2.6	Vert
							86				119
22	3000.044M Ave	37.4	+5.5	+0.7	-38.4	+31.4	+0.0	36.6	49.5	-12.9	Horiz
							360				99
^	3000.048M	48.1	+5.5	+0.7	-38.4	+31.4	+0.0	47.3	49.5	-2.2	Horiz
							360				99
24	1000.017M Ave	53.8	+3.2	+0.4	-42.2	+21.4	+0.0	36.6	49.5	-12.9	Vert
							88				130
^	1000.017M	63.1	+3.2	+0.4	-42.2	+21.4	+0.0	45.9	49.5	-3.6	Vert
							88				130
26	1250.111M Ave	50.3	+3.4	+0.4	-41.3	+22.6	+0.0	35.4	49.5	-14.1	Vert
							87				100
^	1250.089M	63.5	+3.4	+0.4	-41.3	+22.6	+0.0	48.6	49.5	-0.9	Vert
							87				100

28	1000.047M Ave	52.2	+3.2	+0.4	-42.2	+21.4	+0.0 70	35.0	49.5	-14.5	Horiz 100
^	1000.017M	62.4	+3.2	+0.4	-42.2	+21.4	+0.0 70	45.2	49.5	-4.3	Horiz 100
30	2500.018M Ave	38.2	+5.0	+0.7	-37.8	+28.7	+0.0 342	34.8	49.5	-14.7	Vert 100
^	2499.956M	49.1	+5.0	+0.7	-37.8	+28.7	+0.0 342	45.7	49.5	-3.8	Vert 100