MEASUREMENT/TECHNICAL REPORT

Osicom Technologies, Inc.

Model 2404-TX

FCC ID: N442404TX

APPLICATION FOR CERTIFICATION

RF Emission Measurements Performed For Determination of Compliance with the US Code of Federal Regulations Title 47, Chapter I, FCC Part 15 Subpart B As Required for Certification for Unintentional Radiators

Issue Date: September 8, 1998

This report concerns: Original grant

Equipment type: 4 Port Ethernet Card
Transition Rules per 15.37 are not requested.

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1.0 General Information

1.1 Product Description

The Model 2404-TX (referred to as the EUT in this report) is a 4 Port Ethernet Card. The EUT is supplied power supply through the host computer. The EUT is manufactured by Osicom Technologies, Inc.

1.2 Related Submittals

Osicom Technologies, Inc. is not submitting any other submittals related to the EUT.

1.4 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system which have grants, are:

Model & Serial Number	Manufacturer & FCC ID	Description	Cable Descriptions
(EUT) Model 2404-TX S/N: None	Osicom N442404TX	4 Port Ethernet Card	-(4) 1.0m, Unshielded Ethernet Cables (CAT 5) Loopback
M/N: P5-75 S/N: 3474717	Gateway 2000 HWYZAP590	Host Computer	- 1.8m, Unshielded Power Cord
M/N: D2804A S/N: KR41350659	HP CSYSC-428VSP	VGA Monitor	- 1.8m, Unshielded Power Cord - 1.8m, Integral VGA Cable
M/N: M S/N: 1391401	IBM	Key Board	- Coiled, Integral Cable
M/N: M-S34-6MD S/N: LZA54517462	Logitech DZL210472	Mouse	- 1.8m, Integral Cable
NX-1001 S/N: 510030137823	Star B6DZ150L	Parallel Printer	-1.8m, Shielded data cable

1.5 Test Methodology

The test procedures used are in accordance with the ANSI document C63.4-1992, (July 17, 1992) "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.6 Test Facility

The open area test site used to collect the radiated data is located on 8625 Helmar Road in Newark, Illinois. The open field test site has a metal ground screen. Details of the site characteristics are on file with the FCC. Conducted emission measurements and preliminary radiated emission scans were performed in shielded enclosure “A” at Radiometrics' Romeoville, Illinois EMI test lab. These sites have been fully described in a report and accepted by the FCC in a letter dated October 1, 1996 (31040/SIT 1300F2).

Conducted emission measurements were performed using an Electrometrics Model FCC/VDE 50/2 Line Impedance Stabilization Network (LISN) as the pick-up device. This device is constructed in accordance with the circuit diagram provided in Figure 3 of ANSI document C63.4-1992.

1.7 Test Equipment

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. Below 1 GHz, when a radiated emission is detected approaching the specification limit, the measurement of the emission is repeated using a tuned dipole antenna with a Roberts Balun.

The radiated emission measurements were performed with a spectrum analyzer. The bandwidths of the spectrum analyzers are adjusted to the correct bandwidths as specified by the FCC Rules. The bandwidth used from 450 kHz to 30 MHz is 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. From 1 to 2 GHz a 1 MHz bandwidth is used. In order to increase the sensitivity of the spectrum analyzer, a preamplifier was used. The preamplifiers used had sufficient dynamic range that ensured that an overload condition was not present during the tests.

2.0 System Test Configuration

2.1 Test System and Justification

Wiring was consistent with manufacturer's recommendations. The EUT was placed inside of the host computer. A mouse and a printer were connected to the host computer.

The EUT had four, unshielded, loopback cables attached to its ports.

Power was via the host computer.

2.2 EUT Exercise Software

The EUT was tested in normal communication during the tests. The EUT was continuously communicating with both the computer and its peripherals during the tests.

The EUT exercise program used during radiated and conducted testing was contained on a disk in the floppy drive of the host computer. The program sequentially exercises each system component in turn. The software continuously filled the screen with capitol H's and also sent H's to the printer. The host system also continuously communicated with the EUT to determine if it had to process any input data. This program ran until it was manually stopped at the end of each test.

2.3 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

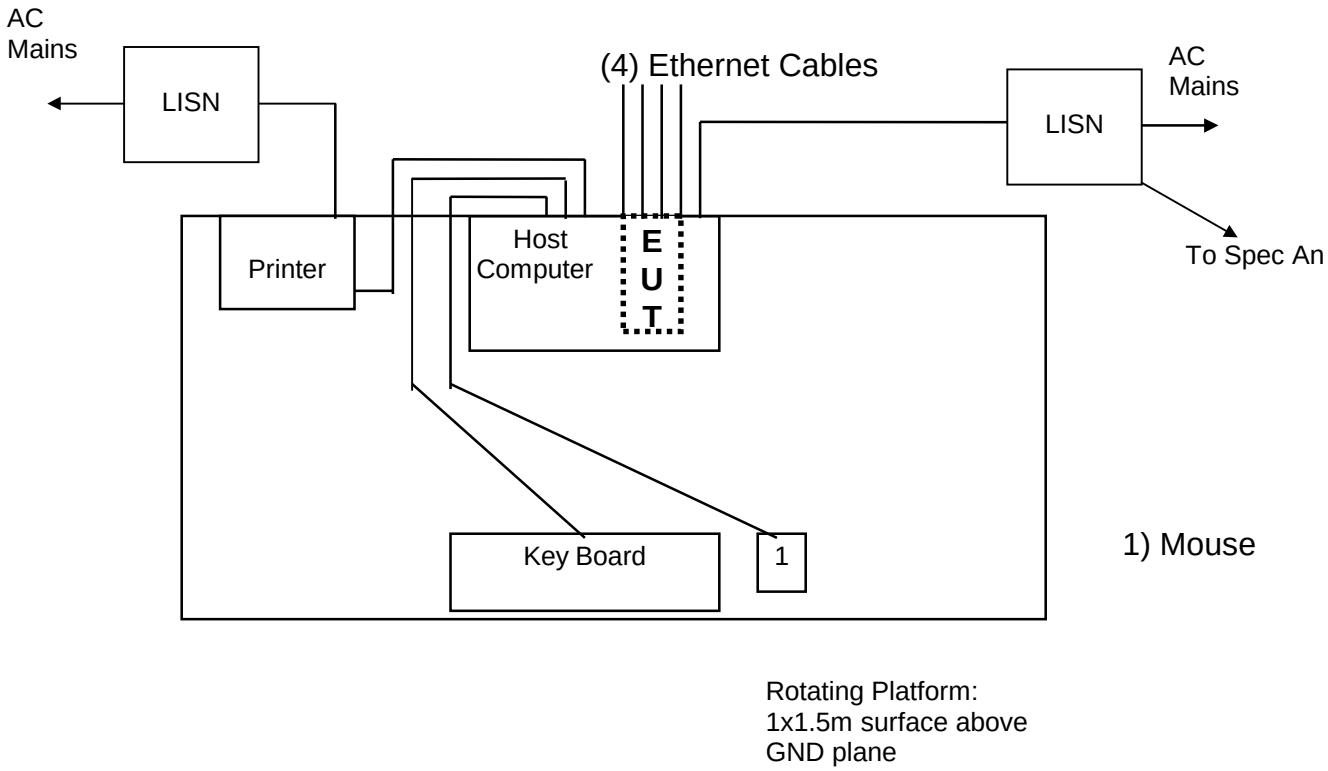
2.4 Equipment Modifications

No Modifications were made to the EUT by Radiometrics Midwest Corp. to achieve compliance.

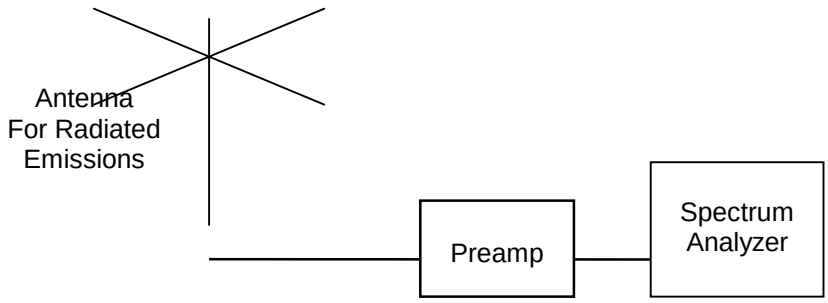
Figure 2.1 Configuration of Tested System

Conducted Emissions:
- LISN's at least 80 cm from EUT chassis
- Vertical conductive plane 40 cm from rear of table top
- EUT power cord bundled
- Test platform is not rotated

Radiated Emissions:
- LISN's not used
- AC outlet with low-pass filter at the base of the turntable
- No vertical conductive wall



Notes:
- Not to Scale
- Antenna height varied 1-4 meters
- Distance from antenna to tested system is 3 meters
- LISN=Line Impedance Stabilization Network



3.0 Conducted Emission Data

The initial step in collecting conducted data is a spectrum analyzer peak scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from the host computer (with the EUT connected) power cord, after testing all modes of operation.

Model : 2404-TX
Test Date : August 04, 1998
Serial Number : 980716287
Specification : EN 55022; Class B
Test Date : 7/23/98

Line Tested	Freq. MHz	Meter* Reading dBuV	Cable Loss dB	Strength of Signal dBuV	Limit dBuV	Margin Under Limit dB
AC Hot	0.15	32.6	0.0	32.6	66.0	33.4
AC Hot	0.28	40.3	0.1	40.4	61.0	20.6
AC Hot	0.41	33.4	0.1	33.5	57.6	24.1
AC Hot	4.95	29.3	0.2	29.5	56.0	26.5
AC Hot	12.65	29.7	0.4	30.1	60.0	29.9
Neutral	0.15	33.0	0.0	33.0	66.0	33.0
Neutral	0.28	43.1	0.1	43.2	61.0	17.8
Neutral	0.41	36.1	0.1	36.2	57.6	21.4
Neutral	1.79	27.2	0.1	27.3	56.0	28.7
Neutral	10.8	30.1	0.4	30.5	60.0	29.5

* All reading are quasi-peak with a 9 kHz bandwidth and no video filter.

Changing the frequency of the transmitter did not affect the emissions listed above.
Judgment: Passed by 17.8 dB

Test Personnel: Jeffrey E. Tomes
Senior EMC Technician

4.0 Radiated Emissions Data

The following table lists the highest measured emission frequencies, and measured levels and the Class B limit. A sample calculation is given in paragraph 4.1. . The analyzer readings are quasi-peak with a 120 kHz bandwidth and no video filter.

Manufacturer : Osicom
Model : 2404-TX
Serial Number : 980716287
Specification : EN 55022; Class B
Test Date : 07-23-1998
Test Distance : 3 Meters

Notes : Pol = Antenna Polarization; V = Vertical; H = Horizontal
BC = Biconical; LP = Log-Periodic; DP = Dipole
Corr. Factors = cable loss - preamp gain - distance factor.

Freq. MHz	Meter Reading dBuV	Antenna Factor dB	Antenna Pol/ Type	Corr. Factors dB	Field Strength of Signal dBuV/m	Limit Field Strength dBuV/m	Margin Under Limit dB
149.1	48.2	12.1	H/DP	-33.8	26.5	30.0	3.5
198.8	43.4	14.6	H/DP	-32.9	25.1	30.0	4.9
397.6	45.5	20.6	H/DP	-31.1	35.0	37.0	2.0
447.2	41.3	21.6	H/DP	-30.8	32.2	37.0	4.8
70.1	50.7	6.5	V/BC	-35.1	22.0	30.0	8.0
99.4	45.7	12.9	V/BC	-34.6	24.0	30.0	6.0
141.7	45.1	13.4	V/BC	-33.9	24.6	30.0	5.4
150.0	40.1	14.3	V/BC	-33.8	20.6	30.0	9.4
152.6	40.2	14.6	V/BC	-33.8	21.0	30.0	9.0
447.2	43.3	17.0	V/LP	-30.8	29.6	37.0	7.4
644.3	39.1	19.5	V/LP	-29.1	29.5	37.0	7.5
136.2	44.6	13.2	H/BC	-34.0	23.9	30.0	6.1
150.0	42.5	14.3	H/BC	-33.8	23.0	30.0	7.0
170.2	39.3	16.6	H/BC	-33.5	22.4	30.0	7.6
185.5	37.3	17.5	H/BC	-33.2	21.6	30.0	8.4
190.2	35.5	17.8	H/BC	-33.1	20.2	30.0	9.8
210.2	43.4	12.2	H/LP	-32.6	23.0	30.0	7.0
250.0	49.3	12.2	H/LP	-32.6	28.9	37.0	8.1
644.3	40.8	19.5	H/LP	-29.1	31.2	37.0	5.8

Judgment: Passed by 2.0 dB
No Emissions were detected from 645 to 1000 MHz within 10 dB of the limits.

Test Personnel: Jeffrey E Tomes
Senior EMC Technician

4.1 Field Strength Calculation

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

FS = RA + AF + CF - AG

Where: FS = Field Strength
RA = Receiver Amplitude
AF = Antenna Factor
CF = Cable Attenuation Factor
AG = Amplifier Gain

Assume a receiver reading of 49.5 dBuV is obtained. The Antenna Factor of 8.1 and a Cable Factor of 1.7 is added. The Amplifier Gain of 23.3 dB is subtracted, giving a field strength of 36 dBuV/m. The 36 dBuV/m can be mathematically converted to its corresponding level in uV/m.

FS = 49.5 + 8.1 + 1.7 - 23.3 = 36.0 dBuV/m

Level in uV/m = Common Antilogarithm [(36 dBuV/m)/20] = 63.1 uV/m