

TEST REPORT #270900

STANDARD: FCC PART 15

**SUBPART B--UNINTENTIONAL RADIATORS
SECTION 15.109 RADIATION EMISSION LIMITS**

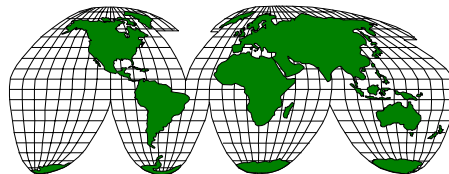
EQUIPMENT TESTED:

IMATION CORP.

MODEL: TRAVAN FW-20GB

TEST DATE: 27 SEPTEMBER 2000

1100 Falcon Avenue
Glencoe, MN 55336



INTERNATIONAL
CERTIFICATION SERVICES, INC.

Tele: 320-864-4444
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Prepared for: Imation Corp
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Oakdale, MN 55128-3414

Test agent: International Certification Services, Inc.
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Test location: International Certification Services, Inc.
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Prepared by: International Certification Services, Inc.
1100 Falcon Avenue
Glencoe, MN 55336

International Certification Services represents to the client that testing is done in accordance with standard procedures applicable and that reported test results are accurate within generally accepted commercial ranges of accuracy.

This report only applies to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. International Certification Services shall have no liability for any deductions, inferences or generalizations drawn by the client or others from this report.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.

1.0 TEST SUMMARY

TEST REPORT: #270900

COMPANY: Imation Corp.

AGENT: International Certification Services, Inc.

PHONE: 320-864-4444

TEST DATE: 27 September, 2000

EQUIPMENT UNDER TEST: High Density Firewire magnetic tape drive

GENERAL TEST SUMMARY: The testing was performed at International Certification Services, Inc. at 1100 Falcon Ave, Glencoe, MN 55336

VERIFICATION / CERTIFICATION STATUS: The Imation Corp. Model: The Travan FW-20GB Drive system was found to be in compliance with the FCC Part 15 Subpart B, Section 15.109 requirements.

MODIFICATIONS NECESSARY: None

TESTED BY

Steve Wendlandt

WRITTEN BY

Duane R. Bagdons

Applicable Standards

47 CFR Ch.1 (10-1-98 Edition)
FCC Part 15 Radio Frequency Devices
Subpart B Unintentional Radiators
Section 15.109 Radiated Emission Limits

2.1 Referenced Standards

ANSI C63.4-1992 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 Ghz.

2.2 Equipment Units Tested

The Imation Firewire Travan Drive is an external tape drive that works on a Firewire or IEEE 1394 interface. The internal drive is a standard Seagate Model: STT220000A. Imation adds a Firewire interface board to this standard drive for the total product. During testing a downline computer was connected to the Firewire interface that was connected to the Travan Drive (EUT). Data was constantly passed back and forth between the two devices to simulate normal operating conditions.

2.3 Equipment and Cable Configuration

See photos of the EUT pc board and schematic and test configuration setup in Attachment A

2.4 List of Test Equipment

<u>Test Equipment</u>	<u>Model</u>	<u>S/N</u>	<u>Calibration Date</u>
Spectrum Analyzer	Hewlett-Packard 8566B	2421A00458	09/24/00
Preamp	MiniCircuits ZKL-2R7	N/A	09/24/00
Biconical Antenna	AH Systems Model SAS-200/540	328	09/24/00
Log Periodic Antenna (200-1000 MHz)	EMCO 3146	9111-3280	09/24/00

2.5 Units of Measurement.

All measurements were taken in dBuV/m with the antenna located at 3 meters distance from the EUT. Frequency measurements are recorded in Mhz

2.6 Location of Test Site

The open area test site (OATS) measurement facility used to collect the data was International Certification Services, Inc. at 1100 Falcon Ave in Glencoe, MN 55336. This site has been certified to be in spec of the normalized site attenuation per ANSI C63.4-1992. See letter of compliance from FCC dated July 23, 1998. (FCC 31040/SIT 1300F2)

2.7 Measurement Procedures

The Imation Corp. Firewire Travan Drive was placed on a non conducting table with cables plugged into all external connectors. A peripheral computer device was connected to the Firewire interface to keep data flowing during the testing to the computer.

The receiving antenna was placed at a distance of 3 meters from the EUT. The EUT was set on an insulating table in the OATS site and rotated through 360 degrees to determine the worst case EUT orientation. The antenna was positioned vertical and horizontal to determine which antenna polarity orientation was worst case. Then certification data was recorded at all the frequencies from the fundamental to the 10th harmonic at an antenna height variation of from 1-4 meters.

2.8 Reporting Measurement Data

See data sheets and plots in Attachment B.

2.9 Radiated Emissions Data

The frequency and amplitude of the tuned frequency of the EUT along with the frequencies and amplitudes of the harmonics are reported in the data sheets in Attachment B. This information is plotted against the limit of section 15.109 of FCC Part 15 subpart B. The polarization of the antenna for each measurement is also recorded.

The Final Level, expressed in dBuV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBuV) and adding the antenna correction factor and cable loss factor (Factor dB) and subtracting the preamp gain. This result then has the FCC limit subtracted from it to provide the margin which gives the tabular data as shown in the data sheets in Attachment B.

Example:

<u>Frequency</u>	<u>Level</u>	+	<u>Factor</u>	=	<u>Corr Data</u>	-	<u>FCC Limit</u>	=	<u>Margin</u>
<u>(MHz)</u>	<u>(dBuV)</u>	+	<u>(dB)</u>	=	<u>(dBuV/m)</u>	-	<u>(dBuV/m)</u>	=	<u>(dB)</u>
100.0	20.6	+	11.0	=	31.6	-	43.5	=	-11.9

2.10 Operating Frequency Data for Unintentional Radiators

All operating frequencies and harmonic frequencies and ambient temperature at which all data was taken at is recorded in the data sheets in Attachment B.

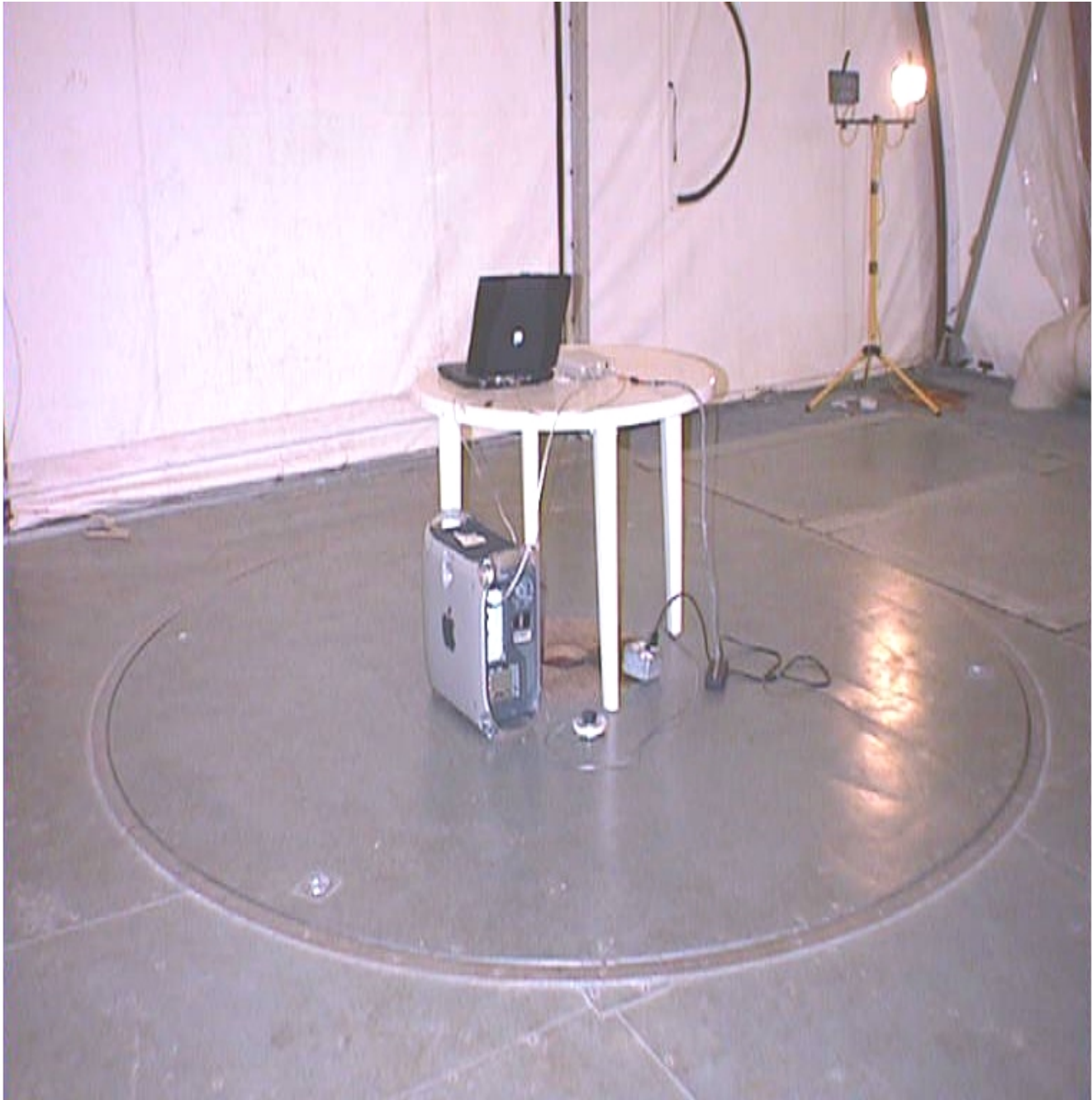
2.11 Summary of Results

The EUT passed the requirements of FCC Part 15 Subpart B, Section 15.109 with a minimum passing margin of -10.1601 dBuV/m at 393.24 Mhz. for radiated emissions and -9.18 dBuV at .7668 Mhz for conducted emissions. No modifications were necessary to accomplish this compliance.

ATTACHMENT A

RADIATED AND CONDUCTED MEASUREMENT PHOTOS AND TEST CONFIGURATION

Imation Corp.
Model: Travan FW-20GB Drive
Radiated Emissions Test Configuration



**Imation Corp.
Model: Travan FW-20 GB Drive
Conducted Emissions Test Configuration**



ATTACHMENT B

DETAILED TEST DATA SHEETS

Each radiated emissions plot indicates the receiving antenna measurement distance in meters and the emission amplitudes with respect to their applicable limits. The associated tabulation for each radiated plot lists the emission frequency, the final emission level, and the margin from the limit.

Imation Corp.
Model: Travan FW-20 GB Drive
Temperature: 57 Deg F.
Humidity: 49 % R.H.

Test Technician: Steve Wendlandt

Certification testing was performed at the OATS site with an antenna distance of 3 meters and the EUT at 0-360 Degrees to the antenna. Data was optimized at antenna heights of from 1-4 meters.

The limit for section 15.109 is 100 uV/m from 30-88 Mhz, 150 uV/m from 88-216, 200 uV/m from 216-960 Mhz and 500 uV/m above 960 Mhz. All data is taken with the required Quasi-Peak Detector. This converted to dBuV is the limit shown in the next table.

Freq (Mhz)	dBuV	Ant Corr Fac	Cable Corr Fac	Preampl Gain	Corr Data (dBuV)	FCC Class B Limits	Margin
32.48	44.4	13.1616	1.290332	33	25.85193	40	-14.14807
79.989	49.6	9.60022	2.113764	33	28.31398	40	-11.68602
160.014	45.7	12.60084	2.642852	33	27.94369	43.52	-15.57631
179.998	47.8	13.49992	2.700371	33	31.00029	43.52	-12.51971
315.014	49.8	14.9994	3.7841	33	35.5835	46.02	-10.4365
393.24	49.5	15.2648	4.0951	33	35.8599	46.02	-10.1601
399.48	48.5	15.3896	4.1199	33	35.0095	46.02	-11.0105
450.06	43.8	16.7012	4.6277	33	32.1289	46.02	-13.8911
480.06	42	17.5012	4.9386	33	31.4398	46.02	-14.5802
870	35	23	7.0457	33	32.0457	46.02	-13.9743

Worst Case Margin

Conducted tests were performed at 120 VAC, 60 Hz. The limit for section 15.109 is 250 uV or 48 dBuV from .45-30 Mhz. All data is taken with the required Quasi-Peak Detector. This converted to dBuV is the limit shown in the next table.

Freq (Mhz)	dBuV	COND	LISN Corr Fac	Cable Corr Fac	EM7600 Corr Fac	Corr Data (dBuV)	FCC Class B Limits	Margin
0.7668	29.2	Line N	-0.48	0.1	10	38.82	48	-9.18
0.7682	29.4	Line L	-0.48	0.1	10	39.02	48	-8.98
0.8207	29	Line N	-0.48	0.1	10	38.62	48	-9.38
0.8252	29.2	Line L	-0.48	0.1	10	38.82	48	-9.18
3.736	26.7	Line L	-0.48	0.3	10	36.52	48	-11.48
3.7377	26.2	Line N	-0.48	0.3	10	36.02	48	-11.98
4.0505	28.6	Line L	-0.48	0.3	10	38.42	48	-9.58
4.1823	27.7	Line N	-0.48	0.3	10	37.52	48	-10.48
21.4807	27.3	Line N	-0.48	0.7	10	37.52	48	-10.48
27.0274	28	Line N	-0.48	0.9	10	38.42	48	-9.58

Worst Case Margin

ATTACHMENT C

**PRODUCT DATA SHEET OR PRODUCT INFORMATION FORM AS
SUPPLIED BY THE CUSTOMER**

COMPANY NAME: Imation Corp.

CUSTOMER REPRESENTATIVE: International Certification Services, Inc.

EQUIPMENT DESCRIPTION: Firewire Magnetic Tape drive

MODEL NUMBER: Travan FW-20GB

SERIAL NUMBER: ENG 0001

TYPE OF TEST:

	Development
X	Initial Design Verification
	Design Change (Please describe exact changes below)
	Production Sample (Audit Test)

OSCILLATOR FREQUENCIES: 24.576 Mhz

POWER INTERFACE:

Frequency: 60 Hz

Voltage: 120 VAC

Number of Phases: 1

Current N/A

POWER SUPPLY:

Description: switching type

Manufacturer: Lin Engineering

Model Number: AD35W2P-225B Rev 2

Switching Frequencies:

POWER CABLE:

☐ Hardwired

☒ Flexible

☐ Shielded

☒ Unshielded

☐ Current

☒ Removable

POWER LINE FILTER: none

Manufacturer: N/A

Model Number: N/A

CABINET SHIELDING PROVISION:

Shielded Plastic enclosure.

SOFTWARE AND / OR OPERATING MODES:

BER tape

INTERFACING EQUIPMENT OR SIMULATORS

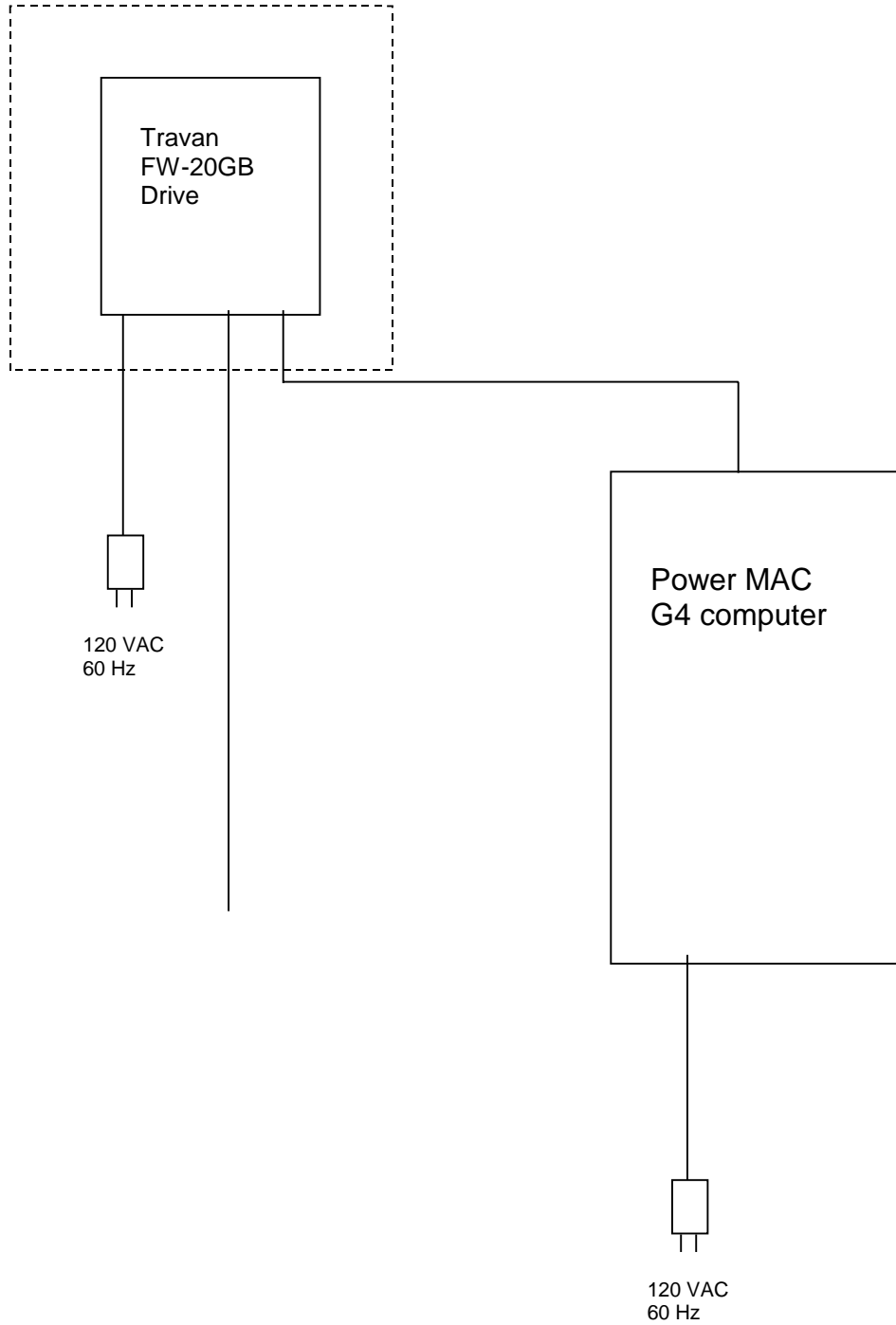
Description	Model Number	Serial Number	FCC ID (If Applicable)
Travan Drive	Model: FW-20GB	Engineering unit	N/A
POWER MAC G4 computer	Model: M5183	XBO3513UJ3B	N/A

I/O CABLES:

Function	Length	Connector Type	Shield Termination Location
Firewire Cable (x2)	10 feet	Firewire	Unshielded

Imation Corp.
Model: Travan FW-20GB Drive
Test Configuration

EUT



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