4.0 TEST DATA

4.1 Radiated Emissions

Initial Scan

A radiated profile scan was taken at a 3-metre distance on eight azimuths of the system under test in both vertical and horizontal polarities of the antenna in a semi-anechoic chamber.

Instrumentation used in the chamber as below:

Computer	Grace 486 PC
Spectrum Analyser	HP 8568B in Peak Hold Mode 30-1000MHz HP 70001/4A (1-2GHz) Peak Hold
Pre-Amplifier	Chase pre-amp
Antenna	Chase CBL6140

The data obtained from the profile scan was used as a guide for the final Open Area Test Site (OATS) measurements.

Final Measurements

The system under test was transferred to the OATS from the semi-anechoic chamber. The data obtained from the chamber profile-scan was used to guide the test engineer. Each emission from the system was maximised by revolving the system on the turntable and moving the antennae in height and azimuth. Cable and system component positions had been investigated for maximum emissions, and the system under test represents the worst case configuration. The worst case data is presented in this report.

Test instrumentation used in the OAT's measurements was as follows:

Computer	IBM Aptiva 2144
Receiver	Rohde & Schwarz Model ESVP 30-1000MHz set to CISPR Quasi-Peak Hewlett-Packard 700001/4A (1-2GHz) Peak Measurement
Antennae	Chase CBL 6112 (30-1000MHz) Comtest Horn 91888-2 (1-2GHz)

4.2 Conducted Emissions

A filtered 110V/60Hz mains supply was fed to the equipment under test via a Line Impedance Stabilisation Network (LISN). The remaining system was also powered from the 110V/60Hz supply via a distribution box connected to a second LISN. The LISN's were directly bonded to the conductive ground-plane.

Initial Scan

The worst case emissions were identified on both the Line and Neutral Phases using a Rohde & Schwarz ESS receiver swept from 0.15MHz to 30.0MHz with a 10kHz resolution whilst set on peak hold.

Final Measurement

The worst case emissions identified from the initial scan results were then re-measured using the EMI Receiver set to Quasi-Peak detection. The worst case results are presented in this report.

Test Instrumentation used in the conducted test was as follows:

LISN	Chase Electrics type 2050 (2 off)
Receiver	Rohde & Schwarz type ESS

The worst case results are presented in this report.

5.0 RESULTS

5.1 Alternate FCC Class B Power Line Conducted Emissions

hp C5687A Tape Drive

Test Data

Frequency (MHz)	Amplitude Quasi-Peak (dBµV)	Specification Limit Quasi-Peak (dBµV)	Specification Limit Average (dBµV)
0.155	48.4	65.7	55.7
0.210	35.4	63.2	53.2
7.880	17.6	60.0	50.0
8.510	18.4	60.0	50.0
17.100	25.7	60.0	50.0
29.980	26.7	60.0	50.0

Note: A search was made of the frequency spectrum from 0.15MHz to 30MHz and the measurements reported are the highest emissions relative to the Alternate FCC Class B Computing Device Limits (CISPR 22 Class B). Line Voltage set at 110V/60Hz.

Procedure: In accordance with ANSI C63.4 1992.

Approved by: .....
Rob St John James

5.2 Alternate FCC Class B Radiated Emissions (30-1000MHz)

hp C5687A Tape Drive

Test Data

Frequency MHz	Receiver Amplitude dBuV	Antenna Factor dB	Cable Loss dB	[redacted]	Specified QP Limit @ 10m dBuV/m	uV/m
30.633	6.2	17.0	0.8		30.0	31.6
34.190	9.7	15.8	0.9		30.0	31.6
38.460	5.1	13.6	1.0		30.0	31.6
120.007	6.7	11.4	2.5		30.0	31.6
233.335	14.8	9.8	3.4		37.0	70.8
600.003	7.3	18.7	6.0		37.0	70.8
648.038	4.5	19.1	6.4		37.0	70.8
864.068	3.1	20.4	7.3		37.0	70.8

Note: A search was made of the frequency spectrum from 30MHz to 1000MHz, at a distance of 10 metres and the measurements reported are the highest emissions relative to the CISPR Class B Computing Device Limits.

Procedure: In accordance with ANSI C63.4 1992

Approved by: .....
Rob St John James

5.3 FCC Class B Radiated Emissions (1-2GHz)

hp C5687A Tape Drive

Test Data

Frequency GHz	Receiver Amplitude dBuV	Antenna Factor dB	Cable Loss dB	[redacted]	Specified Peak Limit @ 3m dBuV/m
1.296	22.73	21.2	5.3		54.0
1.404	21.15	21.3	5.6		54.0
1.512	21.47	21.0	5.7		54.0
1.728	16.25	21.0	6.7		54.0

Note: A search was made of the frequency spectrum from 1 to 2GHz, at a distance of 3 metres and the measurements reported are the highest emissions relative to the FCC Class B Computing Device Limits.

Procedure: In accordance with ANSI C63.4 1992

Approved by: .....
Rob St John James

6.0 DETAILS OF SUPPORTING SYSTEM

Unit under Test : hp SureStore DAT40e C5687A Tape Drive

Serial number: C391502595

FCC ID: B94C5687

SUPPORTING EQUIPMENT	PART/MODEL NUMBER	FCC ID OR FCC DOC	SERIAL NUMBER
hp Netserver LC II	D5969A	DOC	FR83724162
hp Deskjet 890C PRINTER	C5876A	B94C4602X	SG7AR1605T
hp ERGO 1024 Display	D2831A	A3LCGC560	GB80213961
hp MOUSE	C3751A	DZL211029	LZA72914550
hp KEYBOARD	C4950#ABA	CIGE03633	E03633MLUS2-C
hp SCSI Cable	C5741A	N/A	CABLE
hp SCSI Cable with Terminator	757-2	N/A	CABLE
Datamate Terminator	DM2050-02-68R	N/A	Terminator

7.0 EUT OPERATING CONDITIONS

Conducted and Radiated testing were performed according to the procedures in ANSI C63.4-1992 and to the harmonised limits in the FCC Report and Order, ET Docket No 92-152, adopted 17th September 1993 i.e. CISPR22 Class B limits.

Exerciser Software

The software used to exercise the System was SCO UNIX with several script files running on several sessions. One script file wrote scrolling 'H's to the display, another wrote 'H's to the printer and the last session ran a file that copied data from the hard file to the Tape Drive in streaming mode. In this way the System and the Hewlett-Packard C5687A Tape Drive were operating at maximum data rates.

The Keyboard and Mouse are continuously scanned for data input. The Display was tested in the SCO UNIX default mode; white on black with brightness set to raster extinction and contrast to maximum. The SCO UNIX default mode is VGA; 640 pels/line, 480 vertical pels and a refresh rate of 60Hz.

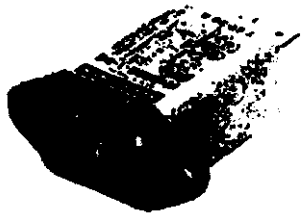
IEC Filter Details (Type FN9222)

SCHAFFNER

Compact high-performance module FN 9222

This family provides IEC 950-compliant power entry with a superb performance-to-size ratio. It is available in versions with up to 15A current ratings, and with very high filtering component values for its housing size.

- up to 15A current ratings
- 12 and 15A versions with IEC hot inlet
- IEC 950-compliant
- lightweight construction
- excellent performance to size ratio
- optional medical version (B type)
- snap-in version (S type)



See Mechanical Data (page 42) for details of housings and output connections.

Filter selection table

Choose the family FN xxx with the required body style and features, and add -?? to determine current rating, and /?? for output connections. Example: FN 9222-1/06 is a horizontal screw-mounting filter, rated for 1A, with fast-on outputs.

Approvals

(10A max. for VDE, SEV, Semko)

Family	Current ratings A at 40°C (25°)						Output connection	Housing	
	1 (1.2)	3 (3.5)	6 (7.2)	10 (11.6)	10 (12)	10 (15)			
FN 9222 -?? /??	-1	-3	-6	-10	-12	-15	/06	✓	-
FN 9222S -?? /??	-1	-3	-6	-10	-12	-15	/06	-	✓
	Inductance L mH								
	12	2.5	0.78	0.225	0.11	0.075			

Additional specifications

Filter type	Capacitance Cx nF	Cy nF	Maximum leakage µA/phase	Res. R MΩ	Weight g	Maximum operating volt. VAC	Hz	Operating frequency Hz	Hipot test voltage P-E VAC	P-N VDC
All standard types	100	2.2	190	1	40	250	50/60	DC to 400	2000	1700
B types (medical)	100	-	2	1	40	250	50/60	DC to 400	2500	1700

MTBF at 40°C, 230V, per Mil-HB-217F: 1,800,000 hours

9.0 FCC SITE COMPLIANCE STATEMENT

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

September 16, 1998

IN REPLY REFER TO
31040/SIT
1300F2

Hursley EMC Services Ltd.
Unit 16, Brickfield Lane
Chandlers Ford, Hampshire SO53 4DP
United Kingdom

Attention: R. St. John James

Re: Measurement facility located at Hursley Park
(3 & 10 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has also been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list is available on the Internet at the FCC Website www.fcc.gov under Electronic Filing.

Sincerely,

Thomas W. Phillips
Electronics Engineer
Customer Service Branch

10.0 LETTER OF AUTHORISATION

The following letter authorises Hursley EMC Services Limited to act as agent for Hewlett-Packard Limited, with respect to FCC Certification applications.

Hewlett-Packard Limited
Computer Peripherals Bristol
Filton Road
Stoke Gifford
Bristol BS12 6QZ
Tel. (0117) 979 9910
Fax. (0117) 979 0076

HEWLETT PACKARD

Mr. Rob St. John James
Hursley EMC Services Limited
Brickfield Lane
Chandler's Ford
Hampshire
SO53 4DP
UK

24th May 99

Dear Mr. St. John James,

I hereby authorise you, and your successors, in the capacity as EMC Manager of Hursley EMC Services Limited, to sign any and all applications for the certification of FCC form 731, to be submitted on behalf of Hewlett Packard Limited for those products tested for compliance and found to comply with parts 2 and 15 of the Federal Communications Commission's rules.

Yours sincerely,

John Vickers
Customer Experience Manager

Acknowledged and agreed
Hursley EMC Services Limited:

Mr. Rob St. John James
EMC Manager

Date:

Registered Office: [illegible] Road, Bracknell, Berkshire RG12 1HN
Registered number 690597 England

Printed on recycled paper

11.0 ANTI-DRUG ABUSE STATEMENT

[redacted]
Hewlett-Packard Limited
Computer Peripherals Bristol
Filton Road
Stoke Gifford
Bristol BS12 6QZ
Tel (0117) 979 9910
Fax (0117) 979 0976

HEWLETT PACKARD

Federal Communications Commission
Equipment Authorisation Commission
7435 Oakland Mills Road
Columbia MD 21046

Re. Anti-Drug Abuse Statement

24th May 99

To whom it may concern:

I hereby certify on behalf of Hewlett Packard Limited that no party to the application is subject to a denial of Federal benefits, that includes FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.S. 853 (a).

Yours sincerely,

John Vickers
Customer Experience Manager

Registered Office: [illegible] Bracknell, Berkshire RG12 1HN
Registered number 690597 England

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