Cary Eclipse

Pre-installation manual

Installation category II
Pollution degree 2
Safety class I (EN 61010–1)

VARIAN

85 101740 00
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Varian Australia is ISO9001 certified.

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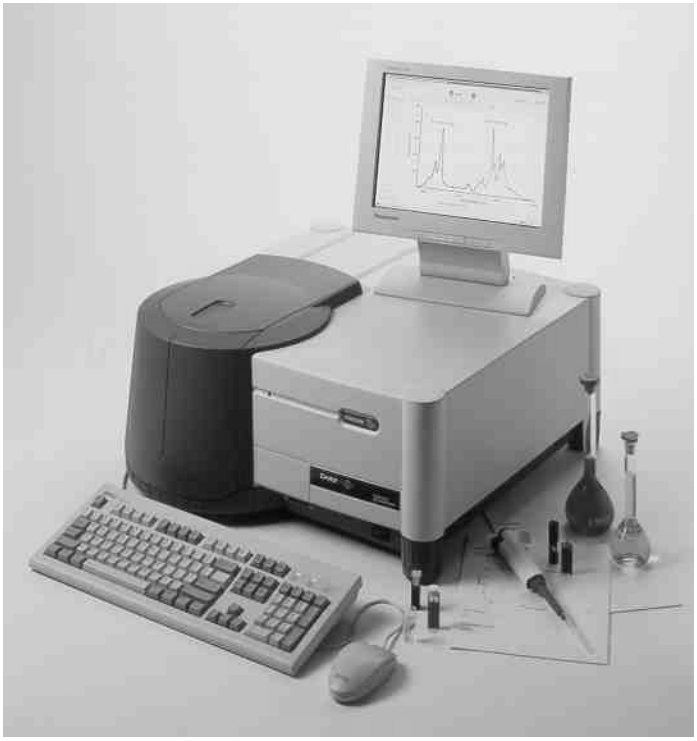
1. Pre-installation

1.1 Introduction

The Cary Eclipse fluorescence spectrophotometer has been designed to provide a complete analysis system for fluorescence, phosphorescence and chemiluminescence measurements. All Cary Eclipse instruments are been tested and proven to specification before dispatch from the manufacturing plant.



This publication (Pre-installation manual—part number 85 101740 00) contains general information that is relevant to the preparation of an installation site and details the facilities which must be provided to ensure that the system can be operated properly and safely.

Detailed operating procedures are provided in the Cary Eclipse software on-line Help system and in the operation manual that is supplied with the instrument.

Installations of the Cary Eclipse are undertaken by Varian trained and qualified Customer Service representatives (CSR's). Before the CSR attends your site to perform the installation, you should complete the Pre-installation Checklist contained in section 1.3. Strike out any entries not appropriate to your system, then send a copy of the checklist to your local Varian Sales and Service Office or local Varian agent dealing with the installation of the equipment. On receipt of this document, the Varian representative will contact you to arrange a convenient time for installation.

1.2 Information symbols

The following symbols and messages appear on the Cary Eclipse and relevant documentation.

1.2.1 Warnings and Cautions

Other specific warnings and cautions appear in this manual and detail the specific hazard, describe how to avoid it, and specify the possible consequences of not heeding the warning or caution.

Warning

A 'Warning' message appears in the manual when failure to observe instructions or precautions could result in death or injury. Symbols depicting the nature of the specific hazard are also placed alongside warnings.

Caution

A 'Caution' message is used when failure to observe instructions could result in damage to equipment (Varian supplied and/or associated equipment).

A 'Note' is used to give advice or information.

Read all warnings and cautions carefully and observe them at all times.

A triangular symbol indicates a warning. The meanings of the symbols that may appear alongside warnings in the documentation or on the instrument are as follows:

Electrical shock

Eye hazard

Noxious gases

Hot surfaces

Fire hazard

Sharp edge

Corrosive liquids

Moving part

Heavy weight (danger to feet)

Heavy weight (danger to hands)

Part can be ejected

The adjacent symbol may be used on warning labels attached to the instrument. When you see this symbol you must refer to the relevant operation or service manual for the correct procedure referred to by that warning label.

Information symbols

The following symbols appear on the Cary Eclipse or documentation to provide you with additional information:

When attached to the rear of the product, this symbol indicates that the product complies with the requirements of one or more EU directives.

Indicates high voltage Xenon flash lamp present

Federal Communications Commission advisory

The following is a USA Federal Communications Commission advisory:

Caution

This equipment generates, uses, and can radiate radio frequency energy and if not installed and operated in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference in which case the user at his or her own expense will be required to take whatever measures may be required to correct the interference.

CE Compliant Products

The Cary Eclipse has been designed to comply with the requirements of the Electro-magnetic Compatibility (EMC) Directive and the Low Voltage (electrical safety) Directive (commonly referred to as the LVD) of the European Union.

Varian has confirmed that each product complies with the relevant Directives by testing a prototype against the prescribed European Norm, EN, and standards.

Proof that a product complies with the directives is indicated by: -

- the CE Marking appearing on the rear of the product
- the documentation package that accompanies the product, containing a copy of the Declaration of Conformity. This Declaration is the legal declaration by Varian that the product complies with the directives and also shows the EN standards to which the product was tested to demonstrate compliance.

It is signed by Varian's Authorized Representative in the EU, and by a representative from the manufacturing plant.

1.3 Pre-installation checklist

Before you arrange installation by Varian Field Service, please complete the checks on this page and send a copy to your local Varian office.

Preparation	Refer to section	Done
Work area prepared and meets requirements.	3	❑
Power supplies meet requirements	4	❑
Gas supplies as required (Optional, Nitrogen for optics purging)	5	❑
The Cary Eclipse and any accessories are on site and unpacked.	6	❑
Computer meets requirements	7.1	❑
Windows operating system installed	8	❑
A quartz fluorescence cell is available		❑
Internet Explorer 4+ installed	8	❑
Operator training is required.	9	❑

All applicable preparations have been completed. Please arrange for the installation to be completed.

I fully understand that charges may be levied if the installation by Varian Service personnel is delayed due to facilities not being prepared in accordance with the information contained in this manual.

Company name and address: _____

_____

Signed: _____

Name: _____

Telephone: _____

Preferred installation date: _____

Note The remainder of this manual contains the environmental requirements and technical specifications for the Cary Eclipse, and should not be discarded. Keep this manual for future reference.

Your local Varian office is:

Varian Office card to be attached here.

2. Weights and dimensions

Before arranging for delivery of the Cary Eclipse to your facility, please make sure that all passages to the site of installation are at least 1.1 metre wide. Allow additional room for manoeuvring the shipping container around corners and/or through doors.

The following tables identify the space and weight requirements of the Cary Eclipse components. The instrument is designed to sit on a workbench that is wide enough to allow access to all components and sturdy enough to support their combined weight.

Warning:
Many of the packages are large and heavy. To avoid the chance of injury to personnel or accidental damage to the equipment, always use two or more people when handling the packages or lifting equipment into position. NEVER attempt to lift the packages alone

Instrument weights and dimensions

System Unit	Weight		Width		Depth		Height	
	kg	lb	mm	in	mm	in	mm	in
Cary Eclipse	31	68	600	24	610	24	280	11
Printer (typical)	5.5	12	380	15	300	12	120	5
Computer (typical)	20	44	520	20	520	20	400	16

Shipping weights and dimensions

System Unit	Weight		Width		Depth		Height	
	kg	lb	mm	in	mm	in	mm	in
Cary Eclipse	54	119	820	32	760	30	560	22
Printer (typical)	7.5	17	580	23	550	22	320	17
Computer (typical)	34	75	1200	48	600	24	320	23

3. Environmental conditions

Suitability

The instrument is only suitable for indoor use in the following categories:

- Installation category II
- Pollution degree 2
- Safety Class 1 (EN 61010–1)

Operating specifications for the PC, Monitor and Printer/Plotters may differ from those required for the Cary Eclipse instrument. You must check in the literature provided with these units and arrange the operating environment to suit the complete system.

3.1 Environmental control

You are responsible for providing an acceptable operating environment. Attention paid to the operating environment will ensure the continued high performance of your Cary Eclipse instrument. The instrument warranty will be made void if the equipment is operated in sub-standard conditions.

Environmental control

Condition	Altitude (m)	Temp (°C) t	Relative Humidity (%) non-condensing
Non-operating (transport)	0–2133 (0–7000')	5–45	20–80
Non-operating but meeting dielectric strength tests	sea level	40	91–95
Operating but not necessarily meeting performance specifications	0–2000 (0–6562')	5–31 31–40	≤80 ≤[80–3.33(t–31)]
Operating within performance specifications	0–853 (0–2800') 853–2133 m (2800–7000')	10–35 10–25	8–80

3.1.1 Humidity

The relative humidity of the operating environment should be between 8 and 80% with no condensation. Operating a Cary Eclipse in very low humidity may result in the accumulation and discharge of static electricity that shortens the life of electronic components. Operating at high humidity will produce condensation and result in short circuits.

Varian recommends that your laboratory be equipped with a temperature/humidity monitor. This will ensure that your laboratory is always in conformance with the temperature and humidity specifications.

3.1.2 Particulate matter and fumes

Sample preparation areas and materials storage facilities should be located in a separate room. For optimum performance the area should have a dust-free, low humidity atmosphere. A layer of dust on the electronic components could act as an insulating blanket and reduce heat transfer to the surrounding air.

Caution

The Cary Eclipse is designed for operation in clean air conditions. The laboratory must be free of all contaminants that could have a degrading effect on the instrument's components. Dust, acid and organic vapours must be expelled from the work area.

3.1.3 Temperature

Air conditioning is recommended. The room should be temperature controlled if your analyses are particularly sensitive.

For optimum analytical performance it is recommended that the ambient temperature of the laboratory be between 20–25 °C and be held constant to within ±2 °C throughout the entire working day.

Note As laboratory temperature increases, system reliability decreases. All electronic components generate heat while operating. This heat must be dissipated to the surrounding air if the components are to operate correctly.

3.1.4 Vibration

Ensure that lab benches are free from vibration. If possible, any equipment generating vibration during operation should be installed on the floor rather than alongside the system on the workbench.

3.1.5 Exhaust system

It is your responsibility to provide an adequate exhaust system. An exhaust system is not required for normal operation of the instrument but should be installed if substances giving off toxic vapours are to be analysed.

3.2 Work bench

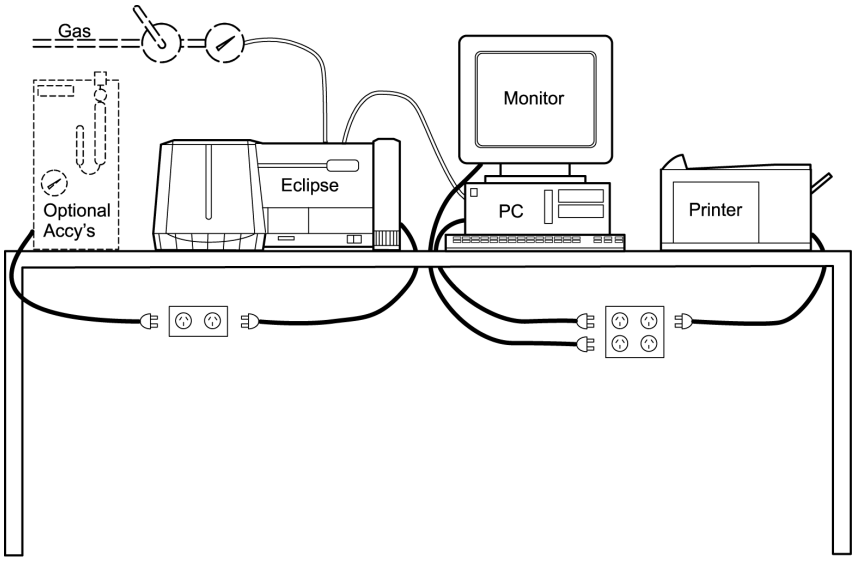
The workbench must be stable and strong enough to support the total weight of equipment to be used. The worktops should be large enough to permit a free circulation of air around each unit in the system. Remember to provide space for the computer, monitor and printer. The workbench should be about 90 cm (36 in) high. To avoid damage through spillage of the samples being analysed, the worktops should be covered with a material that is corrosion resistant and impervious to liquids

Spatial setup recommendations for Cary Eclipse

Varian recommends that adequate space be allowed around the system for ease of access. Our recommendations are as follows:

Recommendations	Purpose	Recommended distance
Allow adequate space behind the system	Provide clear space for air circulation, gas, electrical and communication connections.	110 to 200 mm (4 to 8 in.)
Allow adequate space in front of the system.	Some accessories attach to the front of the instrument. These may overhang the bench if adequate space is not allowed.	150 mm (6 in.) when using the extended sample compartment and thermostatted accessories.

Varian recommends the following system layout:



Note that the gas line is only required if purging of the optical windows and sample compartment are required. Optional accessories may or may not require a power connection.

3.3 Gas cylinder storage

Where it is planned to use portable gas storage cylinders, there must be arrangements to store the cylinders vertically where they can be firmly secured to a rigid support.
Refer to section 5 for more information.

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4. Electrical specifications

4.1 Mains Supply

The installation of electrical power supplies must comply with the rules and/or regulations imposed by local authorities responsible for the supply of electrical energy to the workplace.

Warning
Good electrical grounding is essential to avoid potentially hazardous shock hazards. 3-wire outlet with ground connection must be provided for the instrument. Make certain that power outlets are earth-grounded at the grounding pin.

All power supplies must be single phase AC voltage, three wire system (active, neutral, earth) and should be terminated at an appropriate power outlet receptacle that is within reach of the instrument power cord assembly. For safety reasons, a separate power outlet receptacle should be provided for each unit in the system. Do not use extension cords or outlet adaptors.

All Cary Eclipse instruments are supplied with a 2 metre (6' 6") long power cord and three-pin plug assembly that is compatible with common standards applicable in most areas.

Avoid using power supplies from a source that may be subject to electrical or RF interference from other services (large electric motors, elevators, and welders for example).

Mains voltage requirements

System Unit	Required Supply Voltage	Power Rating (typical)
Cary Eclipse	85 to 264 VAC, 47 to 63 Hz	180 VA
Computer	100, 120, 220, 240 VAC 50/60 Hz	300 VA
Printer	100, 120, 220, 240 ±10% VAC 50/60 ±1 Hz	100 VA

Note The table above is indicative only. Refer to the literature provided with the computer, printer etc. for details of individual power requirements.

4.2 Fuses

Two fuses are used in the Cary Eclipse. Both are of type;

T3.15 AH 250V IEC [2] Sheet 5
5 x20mm.

Note for safety reasons, any other internal fuse or circuit breaker is not operator accessible, and should only be replaced by Varian authorized personnel.

Note Fuse information on the rear of the instrument is the most up to date.

4.3 External connections

Mains inlet coupler

3/2 A 120/250 VAC 50–60 Hz IEC type

Country	Mains power cord	Plug
Australia	10 A 250 VAC	Complies with AS3112
USA	10 A 125 VAC	Complies with NEMA 5–15P
Europe	6 A 250 VAC	Complies with CEE7 sheet vii or NFC61.303 VA

Rear

IEEE 488 (GPIB Cary Eclipse system connection).

Front

25 Way D-Range (External accessory connection)

Sample Compartment

25 Way D-Range (Internal accessory connection)
15 Way D-Range (Internal accessory connection)
9 Way D-Range (Internal accessory connection)

Please consult your monitor and printer manuals for details of their individual cabling requirements as well as the Cary Eclipse Hardware operation manual for details of the electrical connections required for operating the optional accessories.

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5. Gas supplies

All gas supply installations must comply with the rules and/or regulations that are imposed by the local authorities responsible for the supply of compressed gas energy to the workplace.

Cylinders containing gas under pressure should be firmly secured to a rigid structure and the storage area must be well ventilated. Never locate gas cylinders near a source of ignition or in a position that is subject to direct heat. Gas storage cylinders often incorporate a pressure relief device which will discharge the gas at a pre-determined temperature, usually around 52 °C (125 °F).

If gases are to be plumbed from a remote storage area to the instrument site, ensure that the local outlets are fitted with shut-off valves and suitable regulators that are easily accessible to the instrument operator.

5.1 Nitrogen supply

The Cary Eclipse is fitted with a connection point for purging of the sample compartment windows and sample compartment. Purging of the windows and sample compartment may be required when using low temperature accessories that could cause condensation to form on the windows or cells as they cool. More details are provided in the Cary Eclipse on-line help system.

Nitrogen supplies are not available from Varian but may be obtained from commercial suppliers. Liquid nitrogen (in conjunction with a heat exchanger) is recommended because it is generally less costly than compressed nitrogen and is of better quality. Where compressed nitrogen must be used, the gas must be dry, oil–free and uncontaminated. Do not use compressed nitrogen from a supplier who uses oil or water in the compression process (these methods leave fine particles of oil or water suspended in the nitrogen that may be deposited on the instrument optics). Only use nitrogen from a supplier who fills containers from immersion pumps that are lubricated with liquid nitrogen.

Note The instrument warranty will be void if damage is caused by the use of contaminated nitrogen.

Operating pressure for the nitrogen purging system is recommended at up to 70kPa (10 psi). Use a suitable regulator and gauge assembly to ensure that the nitrogen supply is maintained at correct pressure.

Nitrogen supply tubing should be clean, flexible plastic tubing– 6 mm (1/4“) inside diameter (Tygon PVC or equivalent). Do not use rubber tubing as this is usually treated internally with talc which will be carried into and contaminate the instrument optics.

The nitrogen system should include a manifold assembly with inlet from the supply and two outlets for connection to the instrument. Manifold outlets should each be fitted with a stop valve and flowmeter for control of gas flow to the instrument. Flow meters should be adjustable for flow rates of 0 to 30 litres per minute (0 to 64 cubic feet per hour).

6. Equipment on-site

6.1 Insurance

As the carrier's liability ceases when the equipment is delivered, Varian recommends that the instrument owner arrange a separate insurance to cover transportation from the delivery point to the installation site. The delivery point will vary according to the carrier, the shipping method and in some cases the terms of sale. Some carriers will deliver only to their own distribution centre while others may deliver to your off-loading bay. Very few carriers will deliver to the actual installation site.

6.2 Inspection for transit damage

Transit damage can be obvious or concealed and in either case will be admitted by the carrier only if it is reported within the terms of the carrier's agreement. For any claims against damage in transit, the following general rules apply:

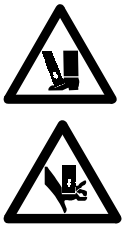
- Before accepting delivery, you must inspect the packages for signs of obvious damage. The nature of any obvious damage must be noted on the carrier's waybill, which then must be countersigned by a representative of the carrier.
- Within the time limit stated in the terms and conditions of carriage, a further inspection must be made for concealed damage. If any damage is found at this stage, the carrier must be notified in writing. You must retain all packaging material for subsequent inspection by a representative of the carrier.
- A copy of any damage report must be forwarded to the Varian Sales Office dealing with the supply of your equipment.

After accepting delivery, take the equipment to the installation site, then unpack and check the contents. Varian instruments are inherently robust and the packaging is designed to prevent internal damage. However, the contents form part of a precision measuring system and all packages should be handled with care. In transit, sharp

jolts must be avoided and the packages should not be inverted or tilted unnecessarily.

Markings on the shipping cartons generally indicate which side of the package should be kept on top. In-house transit routes must be carefully considered. Vertical, horizontal and turning clearances should be calculated from the shipping carton dimensions of the spectrofluorometer (refer to section 2), which is the largest unit in any system configuration.

Unpacking of the equipment is your responsibility and instructions are provided with the spectrofluorometer. As the packages are opened, the contents should be checked against the enclosed packing lists and any differences from the original order should be referred immediately to your Varian Sales Office. All contents of the shipping packages should be assembled together when installation is to be carried out by Varian Service personnel. Do not discard any packaging components or filler materials.



Warning:
Many of the packages are large and heavy. To avoid the chance of injury to personnel or accidental damage to the equipment, always use two or more people when handling the packages or lifting equipment into position. NEVER attempt to lift the packages alone

7. Computer interface

7.1 Computer requirements

7.1.1 Cary Eclipse software

The minimum configuration represents the absolute minimum specifications you will require to operate the Cary Eclipse. The recommended configuration is provided to allow sourcing of a new PC to be used with the instrument.

Minimum	**Recommended**
IBM compatible	IBM compatible
Intel Pentium II processor	Intel Pentium II processor
32 M RAM	64 M RAM
200 MB free space on hard disk	500 MB free space on hard disk
3.5” 1.44 MB floppy drive	3.5” 1.44 MB floppy drive
Video card supporting 800 x 600 resolution, high color (16 bit) mode	Video card supporting 800 x 600 resolution, high color (16 bit) mode
Super VGA screen	Super VGA screen
16 x CD-ROM drive	24 x CD-ROM drive
16 bit sound card	16 bit sound card
Windows 101 key keyboard	Windows 101 key keyboard
Microsoft or compatible mouse	Microsoft or compatible mouse
One spare PCI expansion slot	One spare PCI expansion slot
	Continued...

Microsoft Windows 98® or Windows NT® (including Service Pack 4 or later)	Microsoft Windows 98® or Windows NT® (including Service Pack 4 or later)
Microsoft Internet Explorer 4 or later is required for NT systems	Microsoft Internet Explorer 4 or later is required for NT systems

Varian can supply a PC for the Cary Eclipse software in the recommended configuration with Windows 98—as part number 79 100263 00. The operating system software will be pre-loaded. All software disks and manuals will be supplied to the customer.

PCs supplied with Letter of Credit orders will be an international brand and will be the 'Recommended' configuration or better.

Better PC components can be substituted for those listed above eg. processor type, amount of memory, screen size and resolution, operating system version etc.

7.1.2 IEEE 488 interface

The Cary Eclipse requires an IEEE-GPIB card to be fitted in the PC. This card is included with your instrument.

The Varian CSR they will install the GPIB card in your PC. If you are supplying your own PC you will need to install the card yourself. The Cary Eclipse Hardware manual, supplied with the instrument contains installation instructions for the IEEE-GPIB card.

7.1.3 Recommended printer

You can use any printer supported by your Microsoft Windows® operating system.

7.2 Interconnecting cables

The monitor, printer/plotter and Cary Eclipse are connected to the PC via cables that plug into the back of the PC. The Cary Eclipse is connected via a shielded IEEE 488 cable (provided with the instrument). The keyboard is also plugged into the PC. Please consult your monitor and printer manuals for details of their individual cabling requirements.

8. Setting up your PC

8.1 Cary Eclipse software

The Cary Eclipse software requires Microsoft Windows 98® or Windows NT® to be installed on your PC. For instructions on installing Windows®, please refer to the documentation supplied with Windows®.

The Cary Eclipse software is **not** supported for Windows 95®.

Ensure that you have your Display Desktop area set to at least 800 by 600 pixel's and that the Color palette is set to High color (16 bit). For instructions, please refer to the documentation supplied with Windows®.

The Varian CSR will install the Cary Eclipse software during their visit. Installation of the Windows® operating system is **not** included as part of the standard instrument installation.

8.2 Internet browser

For installations using Windows NT® operating system it is important that Microsoft's Internet Explorer version 4 (IE4) or later be installed **before** installing the Cary Eclipse software. Installation of the browser is required to provide files required for the Cary Eclipse On-line help to function. If you are using Windows 98® no installation is required as the files required are installed with the operating system.

You can continue to use your preferred browser, and shortcuts to the IE4 program can be removed from the desktop and program selection if desired.

IE4 can be downloaded from Microsoft's web site (www.microsoft.com) or obtained from your local software retailer.

Note A windows update disk (containing IE4) will be shipped with the Cary Eclipse software.

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9. Operator training

During the installation procedure, the Varian Customer Service Representative (CSR) will demonstrate the basic operating procedures. The CSR however, is not necessarily experienced in complex analytical routines and is not authorised to conduct extensive training.

To ensure that your operators benefit the most from witnessing the installation performance tests, operator training should be completed before your equipment is installed. It is strongly recommended that you take advantage of the special training courses that are conducted at various locations by the Varian Customer Support and Sales Organisation.

In some areas it may be possible to arrange for operator training to be carried out after the installation, using your own instrument. To investigate this possibility, please contact your local Varian Sales and Service Office.

Typical installation by a CSR for a standard Cary Eclipse system will be completed within four hours and the system will be ready for use. However, this time will be extended if the system includes major accessories. The installation time can be kept to a minimum by ensuring proper site preparation and easy access to all equipment.

The initial software installation and preliminary operational tests will take around thirty minutes. There is then a period of two hours that must be allowed for instrument warm-up before the detailed instrument tests for conformance to specification can be carried out. During this time the CSR will demonstrate some of the basic system operating procedures. An automated software process performs operational tests that will take around thirty minutes. The results from these tests can be directly compared against the same tests completed at the factory before shipment.

If your system computer was purchased from Varian, it will be configured, formatted, partitioned and loaded with its operating system. The Cary Eclipse software will be installed during installation.

Please note that you must have a working knowledge of the computer operating system, as this type of instruction is not provided by Varian. The literature supplied with the Cary Eclipse provides step-by-step instructions for setting up the system and detailed operating instructions for the analysis procedures—it does not include instructions for operation of the computer.