



## Introduction

The UV-Vis Filter Set can be used with any UV-Vis instrument to facilitate testing of performance specifications, and for demonstration purposes. The filters are used to measure the photometric linearity and to confirm the operation of baseline correction.

The mesh filters are also used to attenuate the reference beam when measuring photometric noise. They can be used across the UV-Vis-NIR wavelength range for this purpose. You should use 1.6 Abs attenuation in the reference beam when measuring photometric noise at 3 Abs and above. You should use 3 Abs rear beam attenuation when measuring photometric noise at 6 Abs.

**Table 1.** UV-Vis Filter Set kit

Item	Description	Quantity
1	Neutral density screens (set of 3)	1
2	Filter assembly BG25 blue	3
3	Filter holder	2
4	Instructions for use	1

## Test procedures

The following test procedures should be used for older instruments that are not controlled by the Cary WinUV software. For the Cary 50, 1, 3, 4, 5, 100, 300, 400 and 500 instruments, automated tests are built into the Cary WinUV software.

- Photometric Linearity test
- Baseline Correction test

### Photometric Linearity

This test provides an indication of the photometric linearity. The test is made by taking measurements using two of the blue filters at selected wavelengths to confirm that the instrument obeys Beer's Law.

#### NOTE

The filters are not made from high-stability glass and are therefore unsuitable for making absolute measurements of photometric accuracy.

**To perform the Photometric Linearity test:**

- 1 Fit an appropriate filter holder in the sample compartment.
- 2 Set the SBW to 2.0 nm, and (if applicable) the Smoothing Time Constant to 1.0 s. Select a wavelength (refer to Table 2) to give an appropriate absorbance for the test, and zero the instrument so that the display reads 0.000 Abs.
- 3 Place one of the blue filters in the sample path and observe the displayed absorbance reading. Note this reading as F1.
- 4 Without touching the first filter, place a second filter in the light path and note the new absorbance reading (F1 + F2).
- 5 Remove the first filter and note the new absorbance reading (F2).
- 6 Add the absorbance values noted in Steps 3 (F1) and 5 (F2) and subtract the value noted in Step 4. This result is the absorbance error.

**NOTE**

If desired, repeat checks may be made using different combinations of the filters.

**Table 2.** Photometric Linearity test specifications

Total absorbance with two filters	Wavelength (approximate)	Maximum permissible error	
		DMS Series	Cary 22/2300
1.0 Abs	730 nm	0.005 Abs	0.0016 Abs
2.0 Abs	506 nm	-	0.003 Abs
3.0 Abs	520 nm	-	0.03 Abs
4.0 Abs	534 nm	-	0.2 Abs
1.0 Abs	880 nm (NIR)	-	0.015 Abs

**Baseline Correction**

This test provides an indication of the ability to correct for baseline deviation. The test is made by using the baseline programmer to correct for the presence of a blue filter.

**To perform the Baseline Correction test:**

- 1 Select a scan rate around 20 nm/s, or 0.5 nm/min. Set the upper wavelength to 440 nm, the lower wavelength to 340 nm, and the SBW to 2.0 nm.
- 2 Place one of the blue filters in the light path, initiate the Baseline Programmer, and wait for the scan to complete.

With the Baseline Corrector on, and the filter still in the light path, scan the same wavelength range.

The recorded trace should remain flat to within the specifications given in Table 3.

**Table 3.** This specification excludes effects of the stray light glass filters, which change at 310, 350, 390, 550, 670, and 750 nm

Instrument type	Corrected baseline	Range of correction
Cary 22/2300 Series	± 0.001 Abs	-0.20 to +0.20 Abs
DMS Series	± 0.0005 Abs *	-0.30 to +2.0 Abs

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This information is subject to change without notice.



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