

Spectral Test System

The spectral test station measures spectral-response at discrete wavelengths. The system is finished to meet customer requirements for spectral range. Light sources, gratings, detectors and optical coatings determine the range. Beam delivery is integrating sphere, collimator/telescope or other optics selected for the task.

The STS system has many features. The high throughput f/4 monochromator has a 4-position grating turret. It provides spectral agility for work from 0.2 to 14 microns or more. The monochromator has half meter focal length. It provides resolving power of 1000 at all wavelengths (200um slit). The STS system uses all reflective optics and has integrated light sources and optional reference detector.



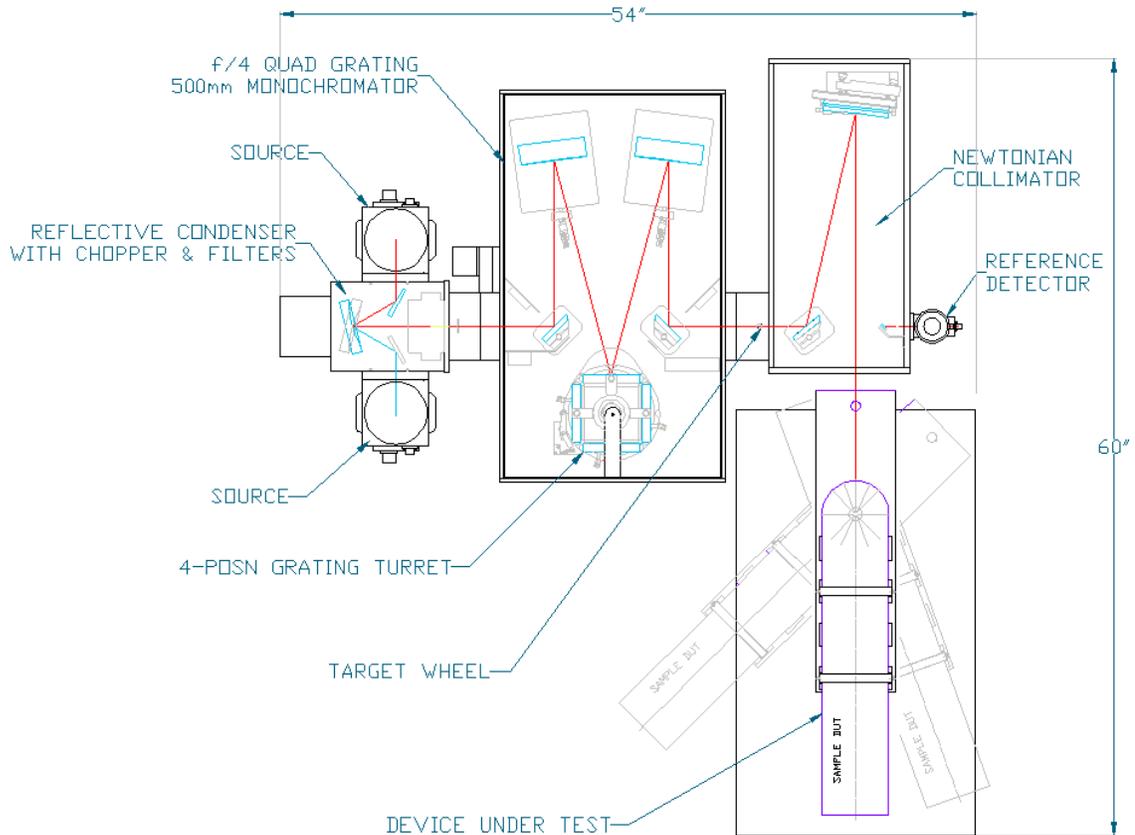
Typical systems feature a four inch collimated output beam. Specific reference detectors and sample mounts are considered and determined with respect to customer requirements for system operation and data production.

f/4 Quadruple Grating System | 100 mm DIA Collimated Output | Integrated and Tested

Chromatic aberration	None. All reflective optical system
Wavelength range	0.2 to 14 microns or more
Aperture ratio	f/4 (NA 0.12)
Wavelength Accuracy	±0.2 nm (with 1200 G/mm grating)
Wavelength Reproducibility	± 0.05 nm (with 1200 G/mm grating)
Monochromator focal length	500 mm (other available)
Resolving power	1000 (with typical gratings and 0.2mm slit width)
Grating turret	4–positions (automatic)
Grating size	110*110mm
Spectral bandwidth	Adjustable (at monochromator slits)
Spectral increment	10e-3 to 100 nanometers
Wavelength control	PC, software
Output beam	100 mm diameter collimated (others available)
Light sources	Xenon, QTH, IR-emitter
Light chopper	Variable speed
Filter wheel	5-positions (automatic)
Reference detector	Optionally available

Ordering Information

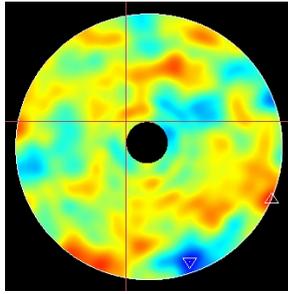
Part Number: 500-108846 = UV-IR STS 0.25 to 14 micron all reflective spectral test station with 4” diameter collimated output beam, resolving power 1000 across the range, and rotary stage for device under test

General Layout

In the STS system reflective condensing optics collect light and focus to the monochromator entrance slit. A light chopper and order sorting and/or spectral purity filters sets are in line. Monochromator entrance and exit slits are adjustable in width. Slit width and grating determine bandpass. The computer controlled monochromator sets wavelength band and scan range. Monochromatic light is focused to the target (aperture) wheel for maximum power. Systems requiring more beam uniformity use as integrating sphere before the telescope. For the highest spectral purity, we provide double monochromator systems.

The optical system ends with a high quality monochromatic beam reaching the device under test. The monochromator, light source, target and collimator for are assembled and tested prior to shipment. This guarantees alignment and simplifies set up in the end user laboratory. We can assist with installation and offer free training and familiarization at our facility in Massachusetts.

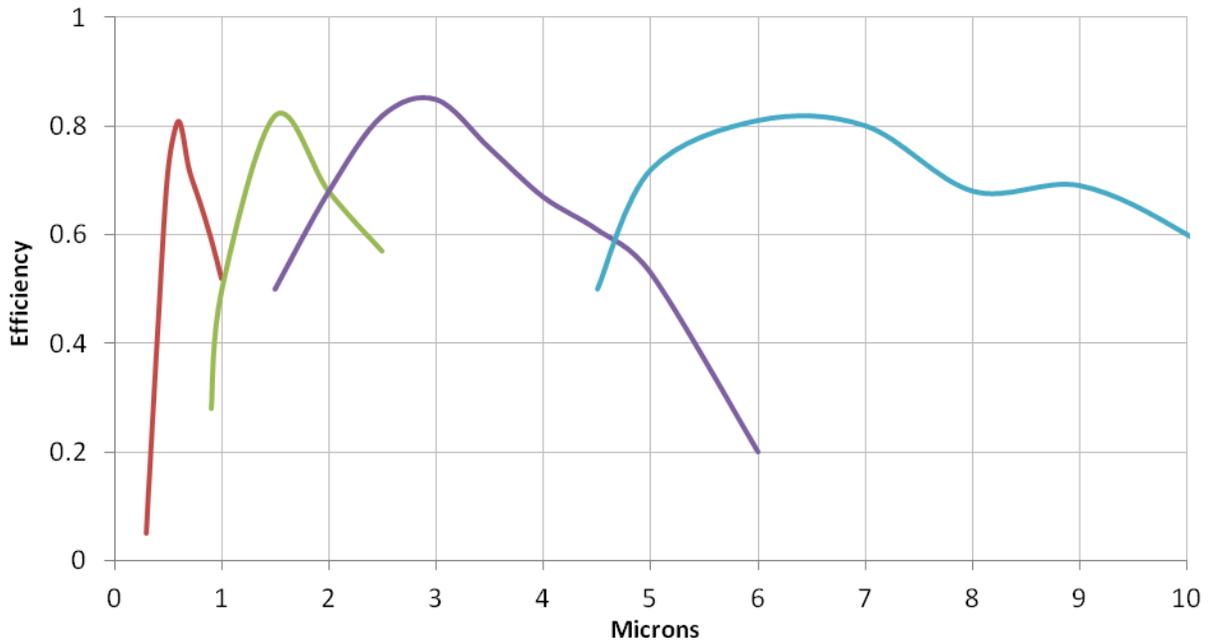




Output Options

Extremely high-quality wave front collimators are quoted on request. They are accompanied by interferometer test data certifying wave front. Test results are obtained by a long-unequal-path Twyman-Green interferometer with phase-shift capability. It provides data reduction for easy to understand wave front and roughness data.

Grating Selection (nominal)

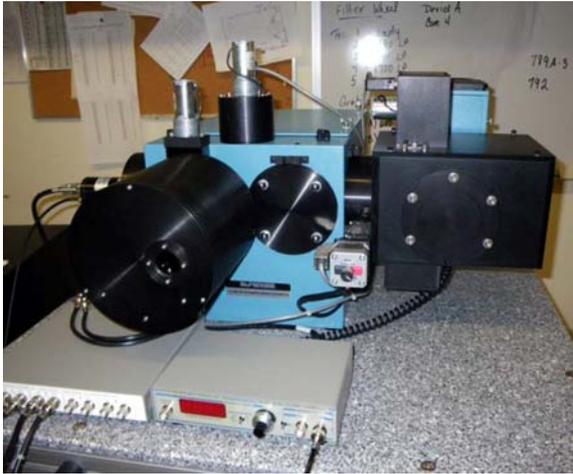


Performance with different gratings

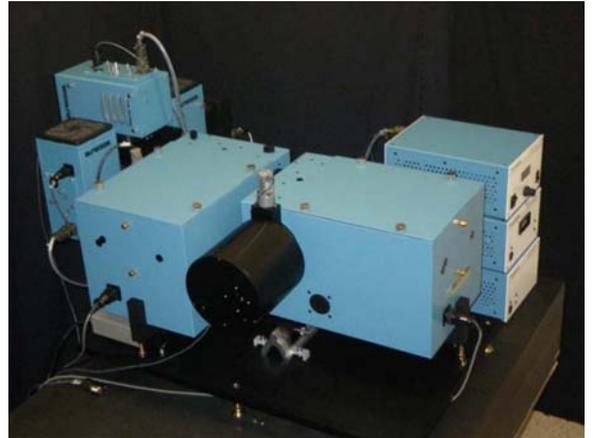
Grating Groove Density (g/mm) ¹	1200	600	300	150
Reproducibility (nm)	0.05	0.1	0.2	0.4
Bandwidth (1 mm slit width)	1.7	3.4	7	14
Wavelength Range up to (nm)	1300	2,600	5,200	10,400
Optimal grating range	400 - 900 nm	1 - 2.4 um	2.3 - 5.2 um	5.3 - 12 um
Grating peak efficiency	600 nm	1.6 um	3.5 um	8 um

1. There are many gratings to choose from, this table shows only some examples

Alternate Spectral Test System Configurations & Examples



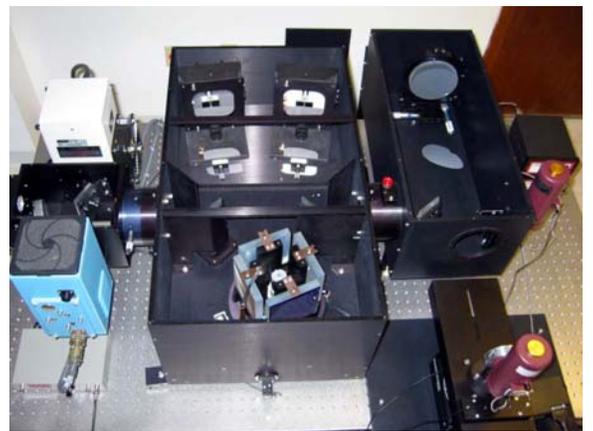
NIR and MWIR System with 1" DIA output beam



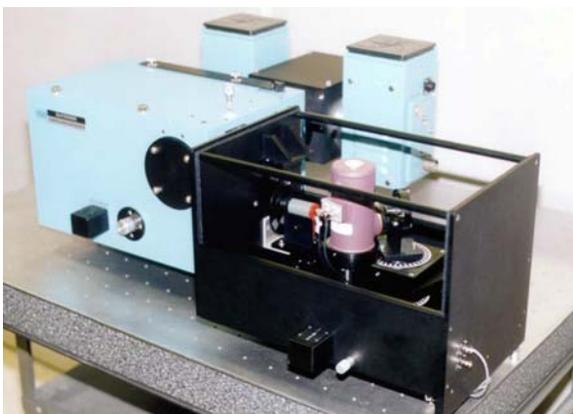
Double monochromator system for 0.2 to 2.5 microns with 1" DIA output beam



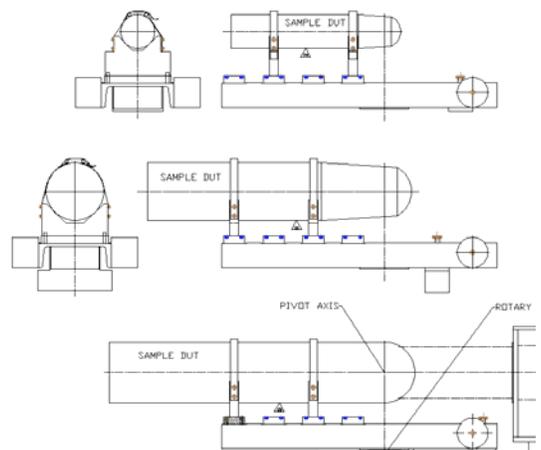
Two light sources (QTH and IR-emitter), reflective condenser, light chopper and filter wheel section



Quad grating STS on the bench with covers off



NIR and MWIR System for variable angle reflectance and transmission testing of windows and lenses



Call today to discuss your measurement and characterization requirements