

Calibration Report: Spectroradiometer
S/N: 6207
ECN: 2008990

8 April 2002

Bryan Fabbri
Analytical Services & Materials, Inc.
Hampton, Virginia

Summary

Calibration date: 6 March 2002

Next calibration date: 6 March 2004

A collection, analysis and calibration of data from Analytical Spectral Devices, Inc. (ASD), Full Range Field Spec Radiometer, has been completed. The calibration was performed by ASD. These data were collected by ASD on 6 March 2002.

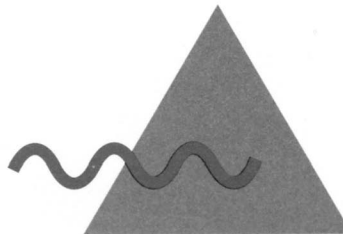
Model: FR

Serial Number: 6207

The instrument response files for each foreoptic are installed on the computer operating the instrument. These files are Ni62072.RAW and COS62072.RAW. The attached plots describe the standards used in this calibration and describe a typical instrument response to the standard stimuli.

Application:

The instrument response files are utilized by the computer operating the instrument at the time of data collection.



ANALYTICAL
SPECTRAL
DEVICES, INC.

Spectroradiometer Certificate of Calibration

Unit and Calibration No.: *FSFR 6207/2*

Calibration Date: *03/06/02* Lamp No.: *F627* Panel No: *12137-A*

Initial all applicable entries

MJ Wavelength
MJ Radiometric

Foreoptics:	Bare Fiber	<u> X </u>	8 degree	<u> </u>
	1 degree	<u> </u>	10 degree	<u> </u>
	2 degree	<u> </u>	18 degree	<u> </u>
	3 degree	<u> </u>	RCR	<u> X </u>
	5 degree	<u> </u>	UW/RCR	<u> </u>

All calibrations have been performed according to Analytical Spectral Devices' accepted procedures, using verifiable NIST-traceable irradiance, reflectance and wavelength standards.

Calibration data resides on the ASD instrument's controlling computer's hard drive and/or the controlling software system disk. Instrument response files: *Ni62072.RAW*, *COS62072.RAW*.

Irradiance Standard Vendor, Lamp number and File Name, used for Irradiance and Radiance calculations: *Optronic Laboratories, Lamp F627, LMP62072.ILL*

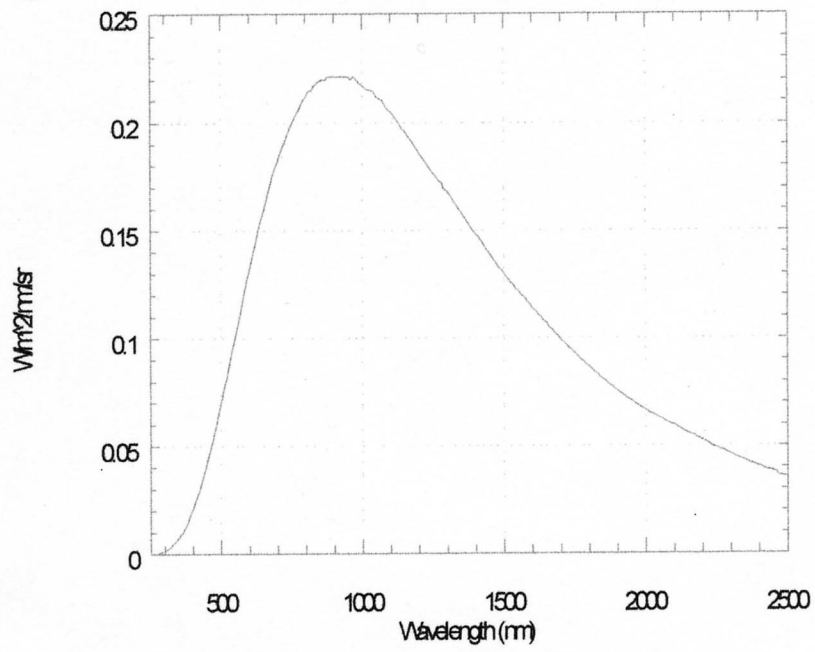
Reflectance Standard Vendor, Standard ID, and File Name, used for Radiance calculations: *Labsphere, Target #12137-A, BSE62072.REF*

ASD Certified Calibration Engineer/Technician:

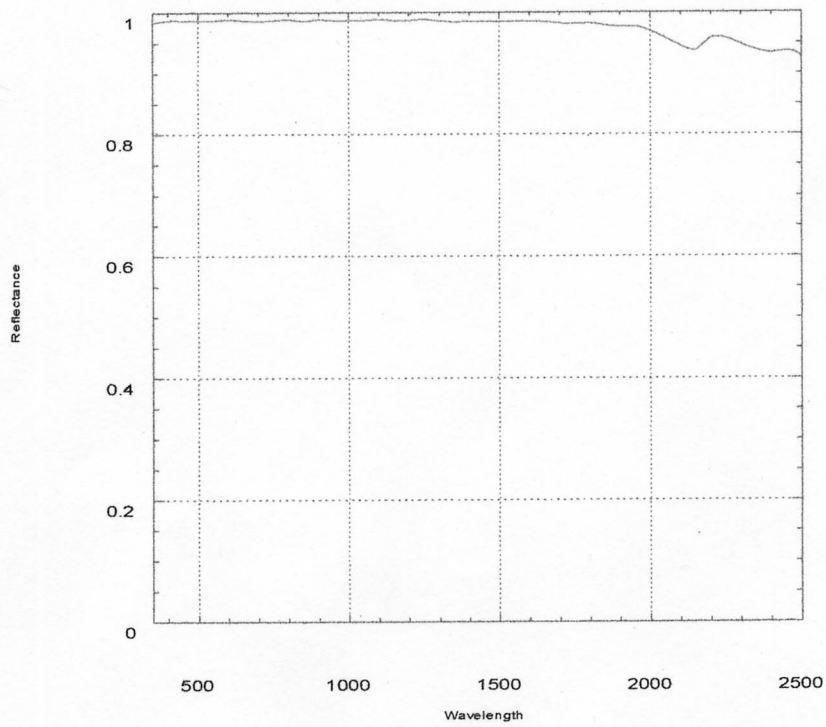
Signature *Margaret C. Mahan* Date *03/06/02*

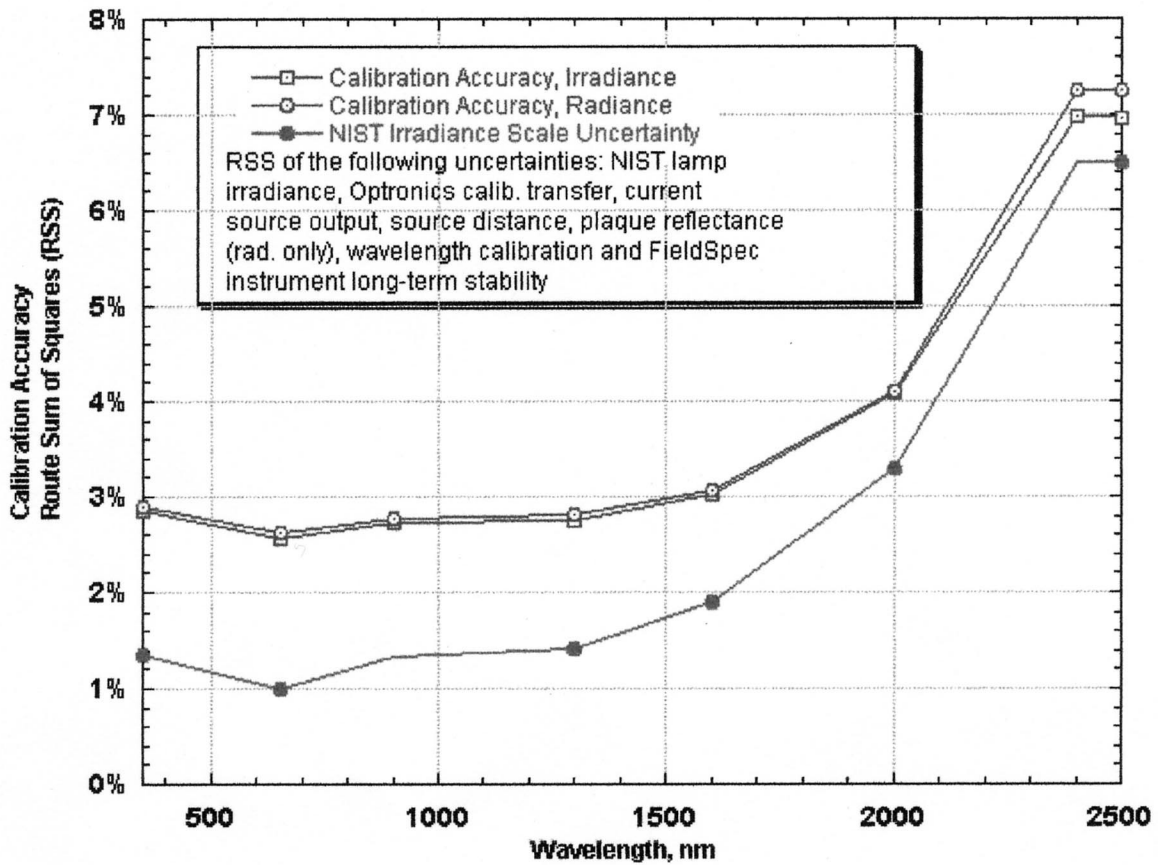
5335 Sterling Drive
Suite A
Boulder, CO 80301 U.S.A.
Phone: 303.444.6522
Fax: 303.444.6825
Web: www.asdi.com

Optronics Laboratory 1000 Watt Irradiance Standard, FEL-627
Cross Calibrated by Primary Standard, FEL-626



Spectralon(tm) Reflectance Standard, Target #12137-A

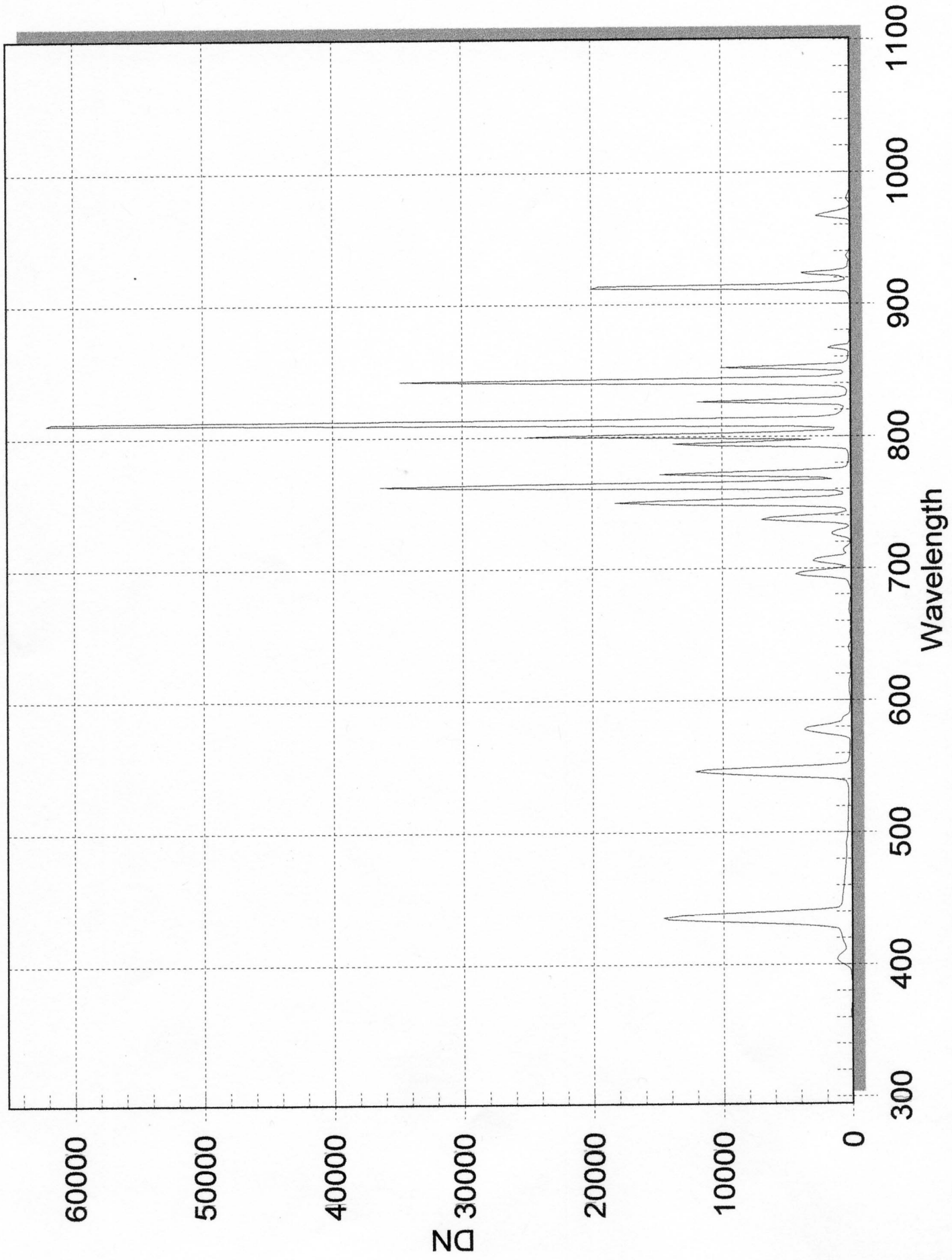




Calibration Accuracy Calculations

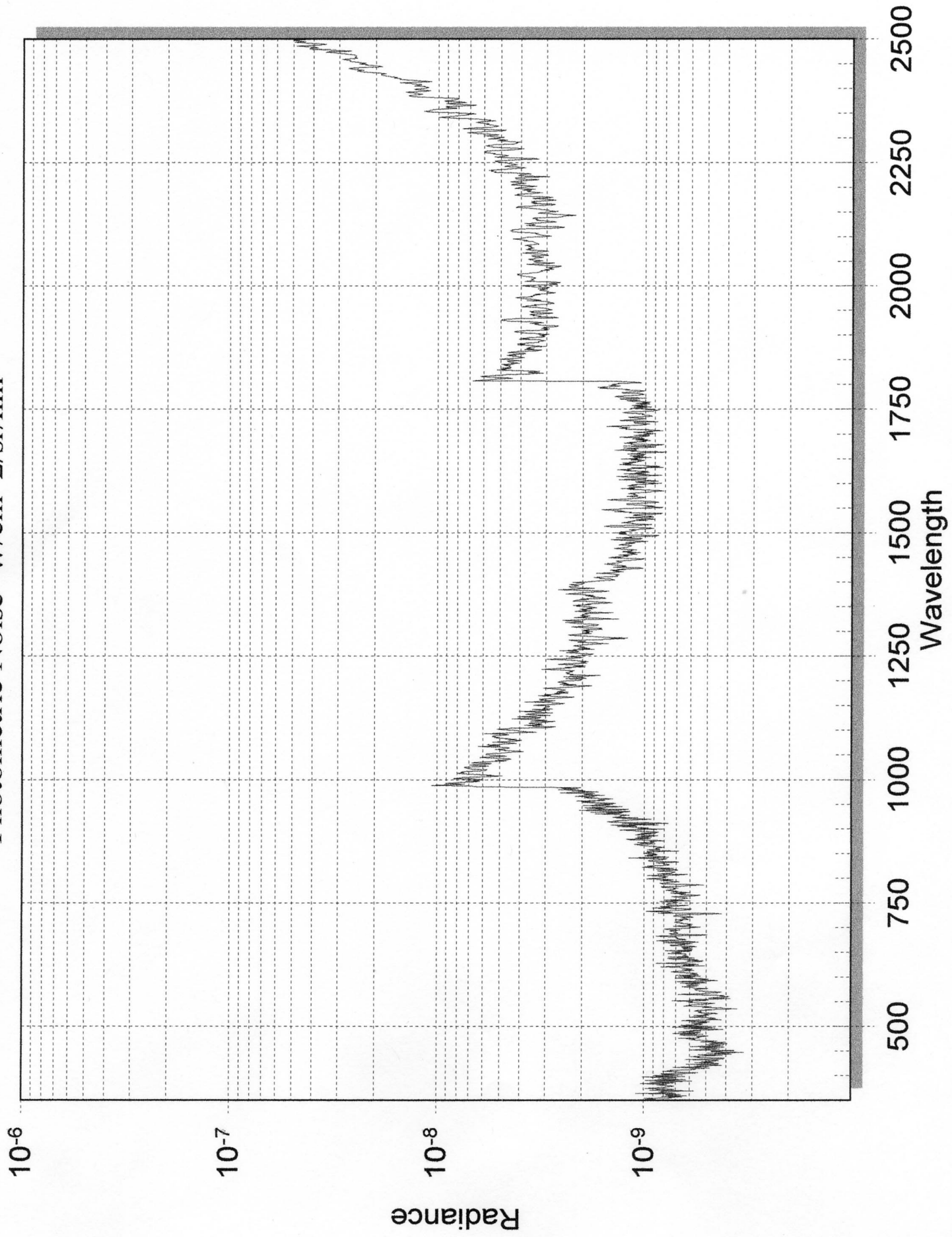
λ nm	NIST	Optronics Transfer	.1% Current Error	2mm Position Error	λ cal.	RSS Non Inst.	FR Irr. RSS	Labsph. Refl.	Rad. RSS	
350	1.35%	0.70%	0.75%	0.80%	2.50%	2.04%	2%	2.85%	0.50%	2.90%
654.6	1.01%	0.40%	0.40%	0.80%	0.88%	1.62%	2%	2.57%	0.50%	2.62%
900	1.34%	0.50%	0.35%	0.80%	0.20%	1.86%	2%	2.73%	0.50%	2.77%
1300	1.42%	0.50%	0.30%	0.80%	0.04%	1.91%	2%	2.76%	0.50%	2.81%
1600	1.89%	0.50%	0.20%	0.80%	0.04%	2.27%	2%	3.02%	0.50%	3.06%
2000	3.29%	0.75%	0.14%	0.80%	0.04%	3.56%	2%	4.08%	0.50%	4.11%
2400	6.51%	1.00%	0.14%	0.80%	0.04%	6.68%	2%	6.98%	2.00%	7.26%
2500	6.50%	1.00%	0.14%	0.80%	0.04%	6.67%	2%	6.97%	2.00%	7.25%

Mercury Argon FSFR Unit 6207/2; 02/07/02
Raw DN



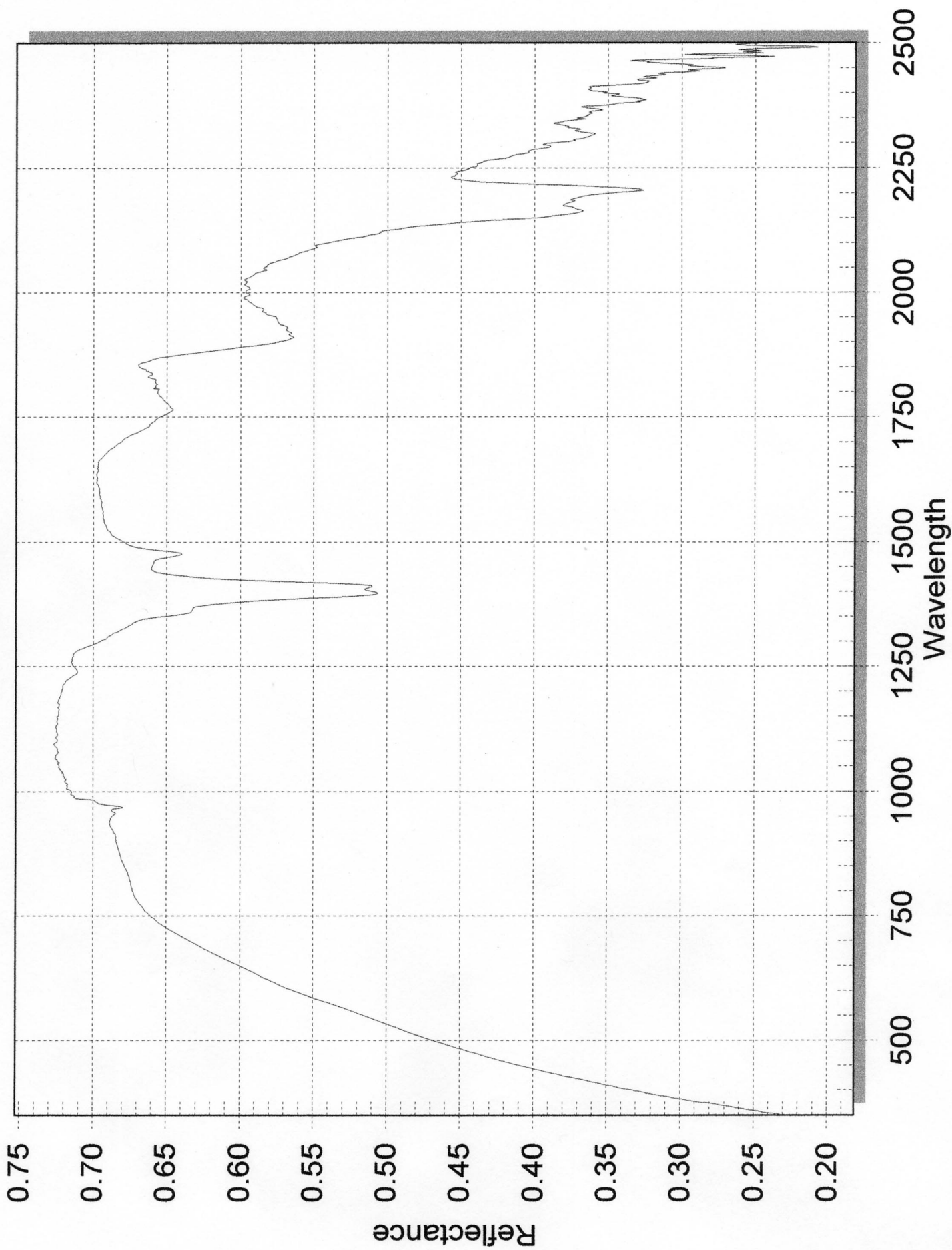
NEdL FSFR Unit 6207/2; 02/07/02

Photometric Noise $W/cm^2/sr/nm$



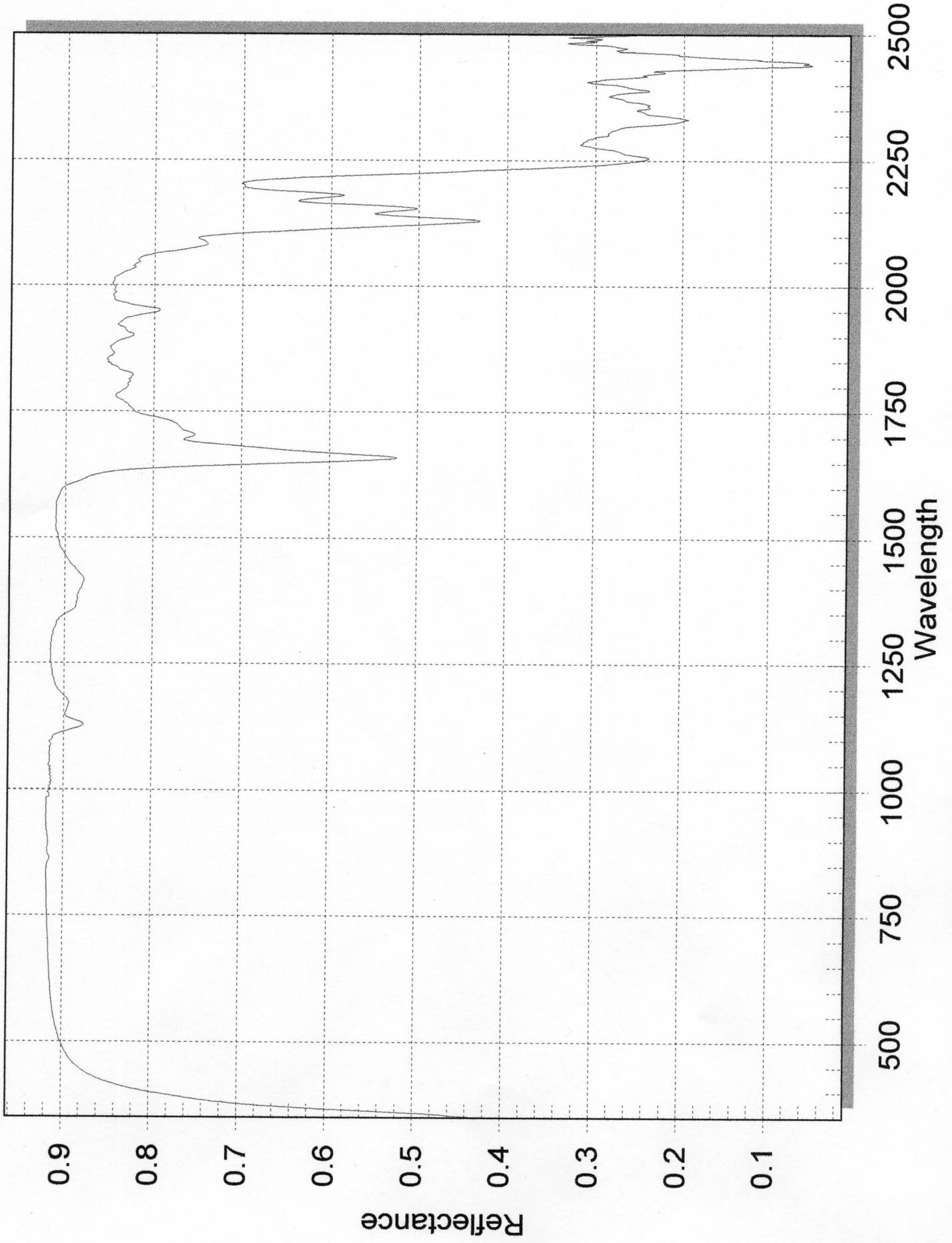
Kaolinite FSFR Unit 6207/2; 02/07/02

Reflectance



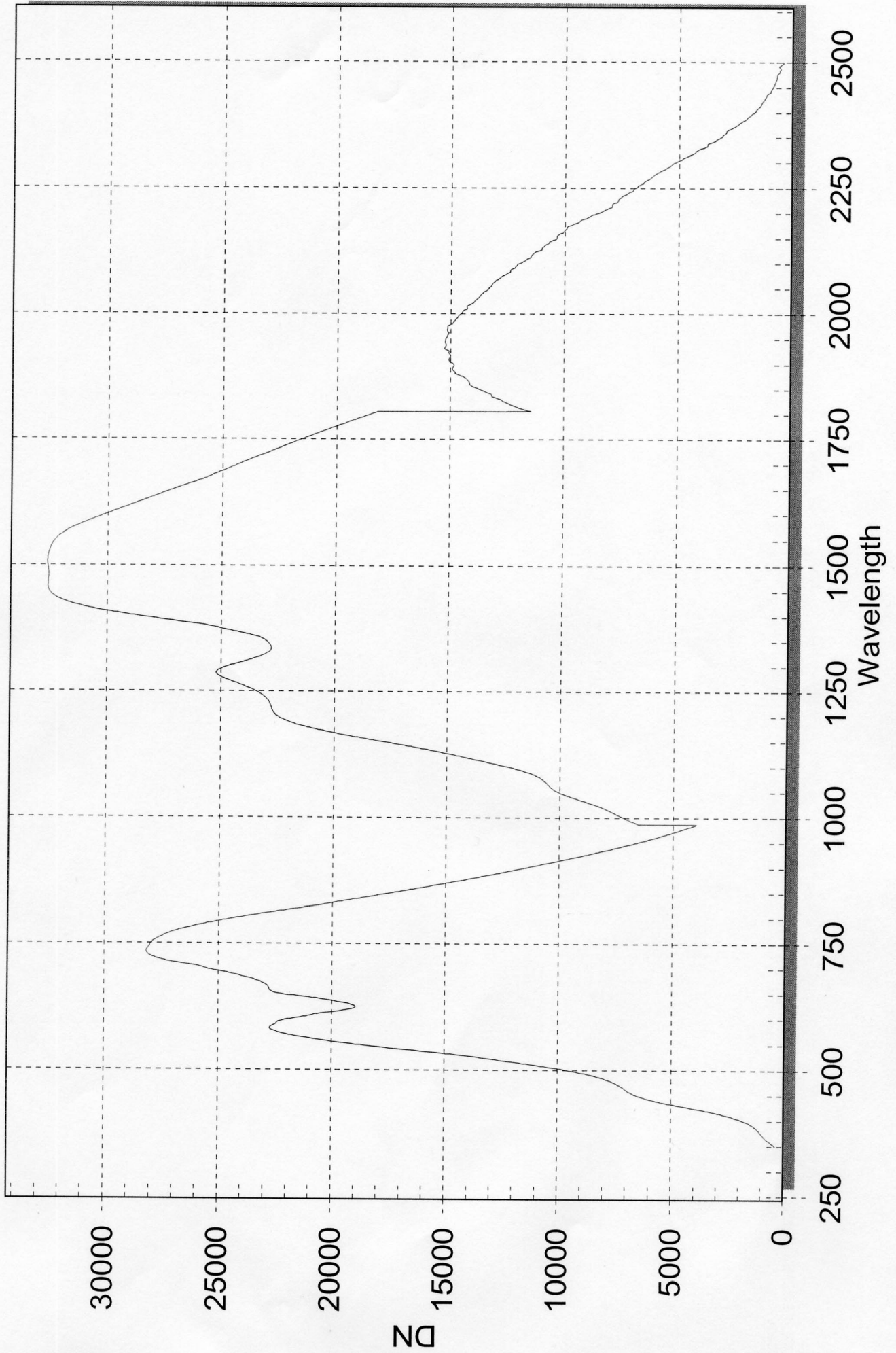
Mylar FSFR Unit 6207/2; 02/07/02

Reflectance



Spectral Data Unit 6207/2

Raw DN



NEdL Unit 6207/2

Photometric Noise - not passing in SWIR2; disregard shape of VNIR - artifact of Lowell Pro Lamp

