

**NREL**

National Renewable Energy Laboratory

Memo

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Subject: Calibration of SRRL Baseline Measurement System (BMS) Global UV-Total Radiometers

Instruments: Eppley TUVR s/n 33444

NREL PV Radiometric Measurements Task monitored the millivolt output of one (1) BMS Global UV-Total Radiometer while measuring the spectral distribution of natural sunlight in global horizontal incidence mode on 26 October 2007 from 280 nm and 400 nm using an Optronic Laboratories OL-756 (double monochromator UV spectroradiometer). The millivolt output from the BMS Radiometers were recorded by the BMS CR23X datalogger.

The OL-756 spectrometer calibrated against NREL's National Institute of Standards and Technology (NIST) Standard of spectral irradiance F597 on 26 October 2007.

The spectra were integrated between 280 nm and 400 nm to produce the total power under each spectral distribution. All data were used to compute the calibration factors shown in Table 1.

Table 1. October 26, 2007 NREL Global UV-Total Calibration Summary

Time (MST)	Spectrum W/m ²	TUVR mV (avg.)	W/m ² /mV
12:23	33.91613	4.659942	7.2782
12:25	33.96991	4.629192	7.3382
12:27	33.85046	4.612077	7.3395
12:29	33.91286	4.589815	7.3887
12:31	34.12000	4.604146	7.4107
12:33	33.88429	4.566857	7.4196
		Avg.	7.362
		Sigma	0.0538

UNCERTAINTY

The estimated uncertainty in the OL-756 spectral irradiance calibration is $\pm 4.0\%$ from 300 nm to 400nm. The accuracy of the CR23X data logger was about 0.8%. Estimated uncertainty in the derived calibration factor is $\pm 4.8\%$ (limit of error). Spectral data is plotted on the back of this sheet.

Figure 1. Measured Spectral Distributions indicated by OL-756 UV Spectroradiometer 26 Oct 2007

OL756 Global Horizontal Spectra and TUVR Normalized Spectral Response

