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 Date: 13 September 2006

Subject: Calibration of SRRL Baseline Measurement System (BMS) Global UVA Radiometers
 Instruments: Kipp & Zonen UV-S-A-T s/n 010536 and CUVA1 s/n 950006

NREL PV Radiometric Measurements Task monitored the millivolt output of two (2) BMS Global UVA Radiometers while measuring the spectral distribution of natural sunlight in global horizontal incidence mode on 12 September 2006 from 280 nm and 400 nm at 2nm steps 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 F407 on 12 April 2006. Spectral data was corrected based on measurements of the EKO portable light source made on April 12 and September 12, 2006, which was on average of about 5% increase across all wavelengths.

The spectra were integrated between 315 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. September 12, 2006 NREL Global UVA Calibration Summary

Time (MST)	Spectrum W/m ²	UV-S-A-T V (avg.)	W/m ² /V	CUAV1 V (avg.)	W/m ² /V
11:53	47.45908	1.67578	28.3206	-0.89700	-52.9089
11:55	47.20176	1.67103	28.2470	-0.89455	-52.7660
11:57	46.90909	1.66750	28.1314	-0.89247	-52.5607
11:59	46.81423	1.66807	28.0649	-0.89241	-52.4581
12:01	46.71364	1.66739	28.0161	-0.89227	-52.3539
12:03	46.51778	1.67008	27.8536	-0.89380	-52.0448
12:05	46.29710	1.66257	27.8468	-0.88984	-52.0285
12:07	46.06231	1.66219	27.7119	-0.88949	-51.7852
		Avg.	28.024		-52.363
		Sigma	0.2100		0.3883

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 12 Sept 2006

