



721 W 1800 N
Logan, UT 84321

Example Certificate of Calibration

Reference Pyranometer [V_R]:

Manufacturer: Kipp&Zonen
Model: CMP 11
Serial Number: 127077
Responsivity [R_R]: 9.720 μV/Wm⁻²

Test Pyranometer [V_T]:

Manufacturer: Kipp&Zonen
Model: EXAMPLE
Serial Number: EXAMPLE
Responsivity [R_T]: 9.257 μV/Wm⁻²

Initial Position:

V_{R1U} = 4.982 mV
V_{R1S} = -0.001 mV
V_{R1} = 4.983 mV

V_{T1U} = 4.602 mV
V_{T1S} = -0.009 mV
V_{T1} = 4.611 mV

Transposed Position:

V_{R2U} = 4.851 mV
V_{R2S} = 0.006 mV
V_{R2} = 4.845 mV

V_{T2U} = 4.749 mV
V_{T2S} = 0.000 mV
V_{T2} = 4.749 mV

Calibration Stability:

$$(0.995) < \frac{V_{R1} V_{T1}}{V_{R2} V_{T2}} < (1.005)$$

0.999 Pass

Test Pyranometer Responsivity:

$$R_T = \frac{V_{R1} + V_{T1}}{V_{R2} + V_{T2}} R_R$$

9.257 μV/Wm⁻²

Calibration Factor:

108.025 Wm⁻²/mV

Calibration Procedure
Calibration is based on a side-by-side comparison under high intensity metal halide lamps using a reference pyranometer of the same type. This method fully complies with the procedure detailed in ISO 9847 type IIc.
Traceability
The reference pyranometer was originally calibrated by Kipp & Zonen on 30-Apr-2014 and is due for recalibration by the National Renewable Energy Laboratory (NREL) on 30-Apr-2016. Kipp & Zonen and NREL reference standards are calibrated to the World Radiometric Reference (WRR) in Davos, Switzerland.

Technical Manager: *Jacob Bingham*

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Please keep this document for your records