



721 W 1800 N
Logan, UT 84321

Certificate of Calibration

Reference Pyranometer [V_R]:

Manufacturer: Kipp & Zonen
Model: CMP 10
Serial Number: 140713
Responsivity [R_R]: 9.217 $\mu\text{V}/\text{Wm}^{-2}$

Test Pyranometer [V_T]:

Manufacturer: Kipp & Zonen
Model: EXAMPLE
Serial Number: EXAMPLE
Responsivity [R_T]: 10.934 $\mu\text{V}/\text{Wm}^{-2}$

Initial Position:

V_{R1U} = 1.302 **mV**
V_{R1S} = 0.000 **mV**
V_{R1} = 1.302 **mV**

V_{T1U} = 1.482 **mV**
V_{T1S} = 0.000 **mV**
V_{T1} = 1.482 **mV**

Transposed Position:

V_{R2U} = 1.241 **mV**
V_{R2S} = -0.007 **mV**
V_{R2} = 1.248 **mV**

V_{T2U} = 1.536 **mV**
V_{T2S} = -0.007 **mV**
V_{T2} = 1.543 **mV**

Calibration Stability:

$$(0.995) < \frac{V_{R1} V_{T1}}{V_{R2} V_{T2}} < (1.005) \quad 1.002 \quad \text{Pass}$$

Test Pyranometer Responsivity:

$$R_T = \frac{V_{R1} + V_{T1}}{V_{R2} + V_{T2}} R_R \quad 10.934 \quad \mu\text{V}/\text{Wm}^{-2}$$

Calibration Factor:

91.459 Wm^{-2}/mV

Calibration Procedure			
Calibration is based on a side-by-side comparison under high intensity metal halide lamps using an ISO-classified reference pyranometer of the same type, and is in accordance with ISO 9847 type IIc. The ISO-classified reference pyranometer is recalibrated on an alternating year schedule at the National Renewable Energy Laboratory (NREL) in Golden, Colorado. NREL reference standards are calibrated to the World Radiometric Reference (WRR) in Davos, Switzerland.			
Traceability			
Instrument (Serial #)	ISO Classification	Calibration Date	Calibration Due Date
Kipp & Zonen CMP10 (140713)	Secondary Standard	10-Sep-2016	10-Sep-2018

Technical Manager: *Jacob Bingham*

Date : 21-Jul-2017

Please keep this document for your records