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CERTIFICATE OF CALIBRATION

NET RADIOMETER

MODEL		
SERIAL NUMBER	041556	
SENSITIVITY of upper sensor at normal incidence	14.2	µV/W/m²

CALIBR. PROCEDURE

Exact interchange of test NR LITE and reference NR LITE in a horizontal parallel beam of light from a Xenonlamp. Full collimation angle of beam is 1.0°. Irradiance is 500 ±50 W/m². Roomtemperature is 20 - 22°C.
Only the upper sensors are compared. Also is checked whether the lower sensor sensitivity is within ±15% from the upper sensor sensitivity.
Because test and reference radiometer are of the same model, the indoor conditions have at principle less influence on the transfer of calibration. The above sensitivity is theoretically best for conditions as during the calibration of the reference NR LITE outdoors (see below).

REFERENCE NR LITE FT006, active from February 5, 2003.

hierarchy of traceability

The reference NR LITE FT006 has been compared against a pyrheliometer CH 1 sn930025 with the sun as source under clear sky conditions. The reference CH 1 sn930025 on his turn was calibrated at the WRC Davos CH against the World Standard Group in summer 2001.

The instruments were placed side by side on a tracking platform in such a way that the direct radiation was always normal incident. The reference NR LITE was built in a box with collimation tube, so having nearly a pyrheliometer's field of view.
During the calibration periods the instruments received irradiances >700 W/m².
The instrument temperature was approx. 20°C +/-3°C.
The calibration periods were on September 3 from 12:30 to 16:30 (civil time, summertime) and September 4 from 11:30 to 15:00. For this periods the Airmass passed by the sunbeam ranged from 1.37 to 1.89. The sky was blue with max. 3/8 Cumuli for this periods.

The sensitivity is determined from thirteen 10 min. measurement series consisting of 60 instantaneous voltage readings for both NR LITE and CH1.
Measurement series were taken from a continuous record and log file by selecting periods with direct irradiance continuously >700 W/m². NR LITE zero-offset is measured before and after the series by shading the NR *LITE* during a period of 2 minutes.
Rather stable zero-offsets (+150 +/- 30 µV) were found and subtracted from all NR LITE voltages. Momentaneous sensitivities for every reading (sampling frequency 6/min) are calculated from corrected NR LITE voltages and CH1 irradiance signals.
The thirteen mean sensitivities, calculated for each measurement series, ranged from 13.2181 to 13.393. Averaged value is 13.307 µV/W/m² with a standard deviation (σ) of 0.061 µV/W/m².

IN CHARGE OF TEST	G.Lindner	
DATE	19-05-04	Kipp & Zonen, Delft, Holland