SCIENTEC
La solution à vos mesures

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UNIVERSITAT POLITECNICA DE CATALUNYA

CERTIFICATE OF CALIBRATION

N° 01011901/057

Concerned equipment : * Spectrophotometer PR-650 N° 60961402.
Objective lens MS-75, MS-2.5X, FP-650, SRS.

Used equipments :

* Spectral emission source Helium/10.

* OL-455-8-1 calibration source serial number 96102012, calibrated on 20-05-01 under report N° 20473 010 by « Laboratoire Central des Industries Electriques » (B.N.M. authorization N° 2-25).

* OL-75210j calibration source serial number 92100039, calibrated on 14-11-00 under report N° 26551 010 by « Laboratoire Central des Industries Electriques » (B.N.M. authorization N° 2-25).

DATE OF CALIBRATION : **January 19th, 2001**

For luminance measurements, the instrument is aligned normal to the sphere aperture, the measuring spot being centered on the luminous area generated by the source.

The OL-455 power supply current is set to 5.520 A ± 0.002 A to obtain a color temperature of 2856 K ± 50 K.

For illuminance measurements, the instrument is at 50 cm from the source and aligned normal to the sphere aperture, the measuring spot being centered on the luminous area generated by the source.

The OL-752 power supply current is set to 6.500 A ± 0.002 A to obtain an illuminance of 1999 lux at 50 cm.

The spectral values corrections were made by a specific software.

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Operations performed :

- Optical cleaning
- Calibration of wavelength with spectral emission source Mercury-Argon
- Spectral relative calibration and spectral absolu calibration (luminance and illuminance)
- Linearity check at different luminance level

Results :

CONTROL AFTER CALIBRATION :

Wavelengh checks on Hélium source :

PIC N°	REFERENCE (nm)	MESURE (nm)	DEVIATION
1	388.86	389.00	0.14NM
2	447.15	447.26	0.11NM
3	587.56	587.56	0.00NM
4	667.82	668.10	0.28NM
5	728.13	728.08	- 0.05NM

Objective lens MS-75

- Spectrals luminance do not exceed ± 1.3% versus calibration values of the source, within 380-780 nm.
- Luminance deviation does not exceed 0.6% versus calibration values in the range 5 Cd/m² to 10000 Cd/m².
- The color temperature is calculated at 2851K, after measurement on OL-455.

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Objective lens MS-2.5X

- Spectrals luminance do not exceed ± 2.2 % versus calibration values of the source, within 380-780 nm.
- Luminance deviation is 0.3% versus calibration value at 3000 Cd/m².
- The color temperature is calculated at 2850K, after measurement on OL-455.

Objective FP-650

- Spectrals luminance do not exceed ± 4 % versus calibration values of the source, within 380-780 nm.
- Luminance deviation is 1.01% versus calibration value at 3000 Cd/m².
- The color temperature is calculated at 2854K, after measurement on OL-455.

Accessory SRS

- Spectrals illuminance do not exceed ± 0.6 % versus calibration values of the source, within 380-780 nm.
- Illuminance deviation is 0.1% versus calibration value at 1999 Cd/m².
- The color temperature is calculated at 3211K, after measurement on OL-752.

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- LUMINANCE LINEARITY CHECK (SOURCE OL-455) :

OBJECTIVE LENS MS-75

Calibration source luminance:	Certified luminance:	Measured luminance:	Deviation :
10000 Cd/m²	10030 Cd/m²	10040 Cd/m²	0.10%
5000 Cd/m²	5003 Cd/m²	5005 Cd/m²	0.04%
3000 Cd/m²	3006 Cd/m²	3003 Cd/m²	-0.10%
1000.0 Cd/m²	1000 Cd/m²	1004 Cd/m²	0.40%
500.0 Cd/m²	500 Cd/m²	503.0 Cd/m²	0.60%
100.05 Cd/m²	100.0 Cd/m²	100.3 Cd/m²	0.30%
50.00 Cd/m²	49.9 Cd/m²	50.05 Cd/m²	0.30%
10.000 Cd/m²	10.0 Cd/m²	10.04 Cd/m²	0.40%
5.000 Cd/m²	5.00 Cd/m²	5.000 Cd/m²	0.00%

- LUMINANCE CHECK (SOURCE OL-455) :

OBJECTIVE LENS MS-2.5X

Calibration source luminance:	Certified luminance:	Measured luminance:	Deviation :
3000 Cd/m²	3006 Cd/m²	3008 Cd/m²	0.07%

- LUMINANCE CHECK (SOURCE OL-455) :

OBJECTIVE FP-650

Calibration source luminance:	Certified luminance:	Measured luminance:	Deviation :
3000 Cd/m²	3006 Cd/m²	3033 Cd/m²	0.90%

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-ILLUMINANCE CHECK (SOURCE OL-752) :

ACCESSORY SRS

Certified Illuminance:	Measured Illuminance:	Deviation :
1999 Lux	1998 Lux	-0.05%

The system listed above was carefully and extensively tested by Scientec.
We certify, that the testing results for the preceding configuration meet the manufacturer specifications.

Certified by : J-L RONDEAU

Palaiseau, January 19th, 2001