

# 検定証書

証書番号 01277

型式 OL462-80A

製造番号 97100001

本書にて上記機器が下記の日時にNISTに準拠する標準器を使用して校正・試験し、  
適応仕様に合致したことを証明いたします。

校正・試験記録は下記の日付より3年間保存し、確認に必要な際には提供いたします。

NIST準拠の標準光源装置 Gooch & housego社製 OL-455-6-3

(製造番号 92202003)を使用して校正したOL750(S/N:93106010)により、

OL462-80A(S/N:97100001)の絶対値を測定し、下記に示す校正係数を決定しました。

OL462-80A校正係数(630 nm)  $1.261 \times 10^{-3} \text{ A} / (\text{W} / \text{sr m}^2 \text{ nm})$

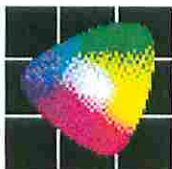
全ての校正と試験は下記の条件下で実施しました。

測定場所 国立極地研究所

清浄度 フィルター付きエアコン及び空気清浄機にて空調。

作業担当 菊地 秀治

校正有効期限 平成23年9月3日



旭光通商株式会社

〒151-0063 東京都渋谷区富ヶ谷2-21-10 木島ビル3階

Tel 03-5453-6501 Fax 03-5453-6506

<http://www.kyokko.com>

OL462-80A(S/N:97100001)校正データ

校正実施日 平成22年8月30日～9月3日



旭光通商株式会社

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作業担当者:菊地秀治

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- OL455-6-3(S/N:92202003)のサティフィケート

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## OL462-80Aの分光放射輝度測定

使用分光放射輝度計 OL750(S/N:93106010)

設定値 Lamp Current : 6.5 A

Luminance Setting :  $1.0 \times 10^{-2}$  W/m<sup>2</sup>srnm

測定日 2010年9月3日

測定場所 国立極地研究所

Data File Name: :  
 E:\D\'-S<É'nE<+0S\<É'nE#[]\220830-220903\[]\220903-01 6.5  
 00A 2777K 1.000E-2[W\_m2srnm] 300-1100nm@5nm 2.5\_2.5mm SLITS.dat  
 Data File Designation :  
 OL462-80A S/N:97100001 Lamp Current:6.500A 2821K 1.000E-2[W/m2srnm]  
 m] 300-1100nm @ 5nm; 2.5/2.5mm SLITS  
 Data File Units :  
 Radiance [W/(sr cm^2 nm)]  
 Data File Date : 100903  
 Lower Wavelength : 300.00 nm  
 Upper Wavelength : 1100.00 nm # of data points : 161  
 Increment : 5.00 nm

300.00 nm 2.258E-009  
 2.620E-009  
 3.103E-009  
 3.644E-009  
 4.231E-009

325.00 nm 4.833E-009  
 5.552E-009  
 6.520E-009  
 7.708E-009  
 9.141E-009

350.00 nm 1.090E-008  
 1.303E-008  
 1.549E-008  
 1.805E-008  
 2.103E-008

375.00 nm 2.496E-008  
 2.947E-008  
 3.405E-008  
 3.903E-008  
 4.458E-008

400.00 nm 5.087E-008  
 5.774E-008  
 6.515E-008  
 7.323E-008  
 8.210E-008

425.00 nm 9.186E-008  
 1.025E-007  
 1.142E-007  
 1.269E-007  
 1.405E-007

450.00 nm 1.545E-007  
 1.700E-007  
 1.863E-007  
 2.032E-007  
 2.205E-007

475.00 nm 2.383E-007  
 2.567E-007  
 2.752E-007  
 2.940E-007  
 3.137E-007

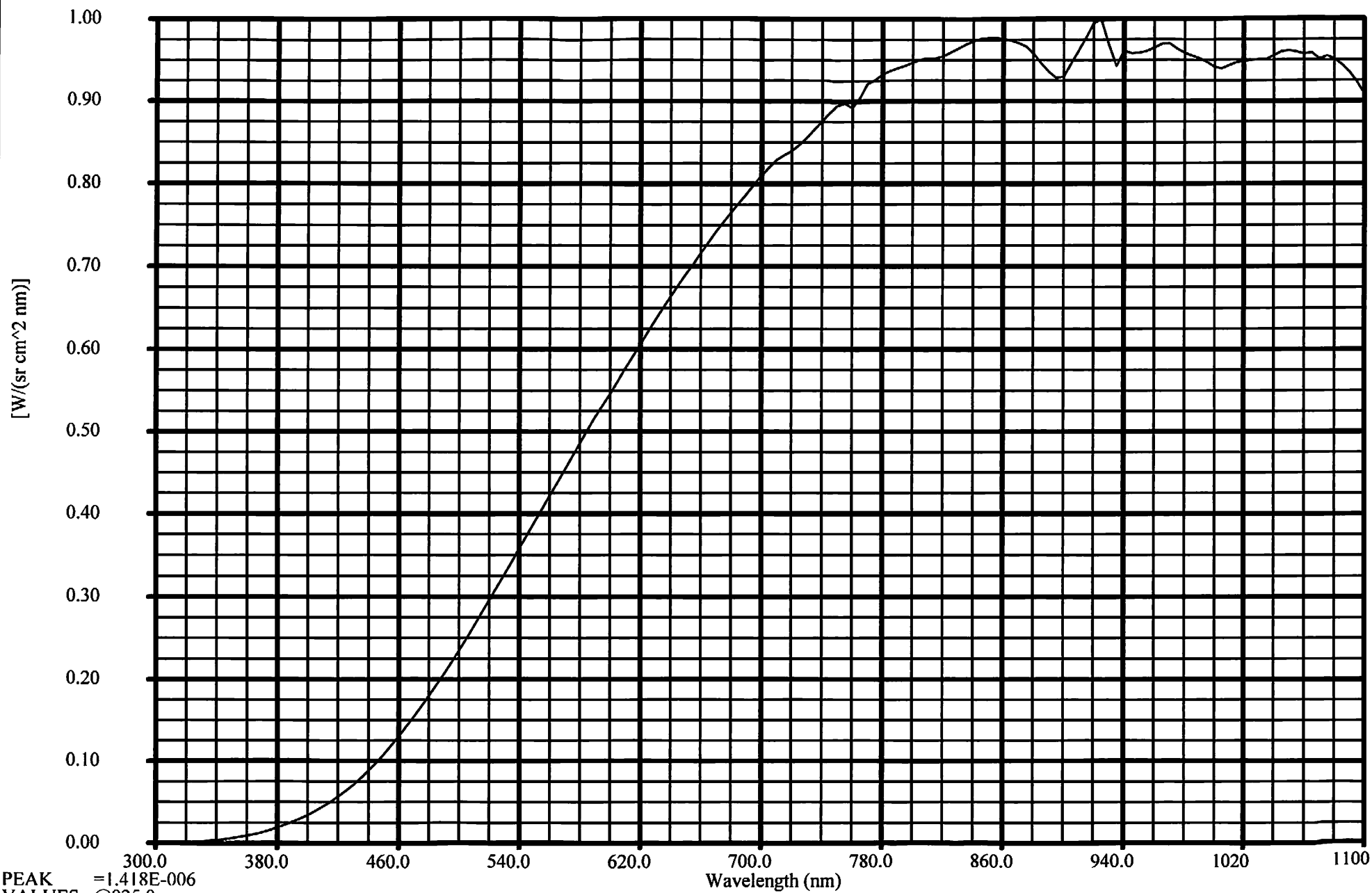
500.00 nm	3.349E-007
	3.554E-007
	3.766E-007
	3.992E-007
	4.211E-007
525.00 nm	4.424E-007
	4.643E-007
	4.864E-007
	5.092E-007
	5.315E-007
550.00 nm	5.540E-007
	5.764E-007
	5.988E-007
	6.210E-007
	6.437E-007
575.00 nm	6.664E-007
	6.893E-007
	7.120E-007
	7.343E-007
	7.545E-007
600.00 nm	7.752E-007
	7.968E-007
	8.188E-007
	8.395E-007
	8.601E-007
625.00 nm	8.810E-007
	9.018E-007
	9.220E-007
	9.417E-007
	9.607E-007
650.00 nm	9.794E-007
	9.969E-007
	1.016E-006
	1.035E-006
	1.052E-006
675.00 nm	1.069E-006
	1.086E-006
	1.102E-006
	1.117E-006
	1.134E-006
700.00 nm	1.149E-006
	1.164E-006
	1.176E-006
	1.184E-006
	1.191E-006
725.00 nm	1.202E-006
	1.214E-006
	1.228E-006
	1.242E-006
	1.256E-006

750.00 nm	1.269E-006
	1.273E-006
	1.265E-006
	1.283E-006
	1.307E-006
775.00 nm	1.313E-006
	1.323E-006
	1.329E-006
	1.333E-006
	1.338E-006
800.00 nm	1.343E-006
	1.348E-006
	1.351E-006
	1.351E-006
	1.354E-006
825.00 nm	1.361E-006
	1.368E-006
	1.375E-006
	1.381E-006
	1.384E-006
850.00 nm	1.386E-006
	1.386E-006
	1.385E-006
	1.382E-006
	1.377E-006
875.00 nm	1.371E-006
	1.359E-006
	1.342E-006
	1.328E-006
	1.317E-006
900.00 nm	1.319E-006
	1.341E-006
	1.364E-006
	1.387E-006
	1.411E-006
925.00 nm	1.418E-006
	1.374E-006
	1.338E-006
	1.364E-006
	1.359E-006
950.00 nm	1.360E-006
	1.363E-006
	1.369E-006
	1.375E-006
	1.376E-006
975.00 nm	1.367E-006
	1.360E-006
	1.355E-006
	1.350E-006
	1.343E-006

1000.00 nm	1.335E-006
	1.333E-006
	1.338E-006
	1.343E-006
	1.346E-006
1025.00 nm	1.347E-006
	1.348E-006
	1.349E-006
	1.355E-006
	1.362E-006
1050.00 nm	1.363E-006
	1.361E-006
	1.357E-006
	1.360E-006
	1.349E-006
1075.00 nm	1.354E-006
	1.349E-006
	1.339E-006
	1.327E-006
	1.310E-006
1100.00 nm	1.289E-006



— OL462-80A S/N:97100001 Lamp Current:6.500A 2821K 1.000E-2[W/m2srmm] 300-1100nm @



PEAK =1.418E-006  
VALUES @925.0 nm

= 220903-01 6.500A 2777K 1.000E-2[W\_m2srmm] 300-1100nm@5mm 2.5 2.5m

## OL462-80Aの色温度測定

使用分光放射輝度計 OL750(S/N:93106010)

設定値 Lamp Current : 5点

Luminance Setting :  $1.0 \times 10^{-2} \text{ W/m}^2 \text{ sr nm}$

測定日 2010年9月2日

測定場所 国立極地研究所

OL462-80A色温度測定データ

OL462電流値(A)	OL750での測定値(K)
3.646	1909
4.111	2081
4.600	2237
5.240	2439
6.500	2777

## OL462-80Aリニアリティー測定

使用輝度計 PR-1980A(S/N:D-2035)

設定値    Lamp Current : 6.5 A  
            Luminance Setting : 10点

測定日    2010年9月2日

測定場所 国立極地研究所

OL462-80Aリニアリティー測定データ

OL462 W/m <sup>2</sup> srnm	PR-1980A FL
5.00E-07	6.184E-03
1.00E-06	1.301E-02
5.00E-06	6.359E-02
1.00E-05	1.257E-01
5.00E-05	6.221E-01
1.00E-04	1.239E+00
5.00E-04	6.184E+00
1.00E-03	1.238E+01
5.00E-03	6.322E+01
1.00E-02	1.277E+02

ランプ交換前のOL462-80Aの分光放射輝度測定

使用分光放射輝度計 OL750(S/N:93106010)

設定値 Lamp Current : 6.5 A

Luminance Setting :  $1.0 \times 10^{-2}$  W/m<sup>2</sup>srnm

測定日 2010年9月1日

測定場所 国立極地研究所

Data File Name: :  
 E:\0\5<É'nE<†Š\<É'nE=Z\220830-220903\Z\220901 300-11  
 00\_5nm 2.5\_2.5nm 1.00E-2W 6.5A 2840K.dat  
 Data File Designation :  
 OL462-80A S/N:97100001 Lamp Current:6.5A 2840K 1.00E-2[W/m2nmsr]  
 300-1100nm @ 5nm; 2.5/2.5mm SLITS  
 Data File Units :  
 Radiance [W/(sr cm^2 nm)]  
 Data File Date : 100901  
 Lower Wavelength : 300.00 nm  
 Upper Wavelength : 1100.00 nm # of data points : 161  
 Increment : 5.00 nm

300.00 nm	2.539E-009
	2.979E-009
	3.544E-009
	4.201E-009
	4.897E-009
325.00 nm	5.669E-009
	6.584E-009
	7.782E-009
	9.294E-009
	1.113E-008
350.00 nm	1.330E-008
	1.606E-008
	1.908E-008
	2.225E-008
	2.575E-008
375.00 nm	3.062E-008
	3.548E-008
	4.151E-008
	4.741E-008
	5.415E-008
400.00 nm	6.145E-008
	6.927E-008
	7.810E-008
	8.721E-008
	9.790E-008
425.00 nm	1.085E-007
	1.207E-007
	1.331E-007
	1.462E-007
	1.621E-007
450.00 nm	1.776E-007
	1.967E-007
	2.174E-007
	2.352E-007
	2.540E-007
475.00 nm	2.755E-007
	2.953E-007
	3.097E-007
	3.343E-007
	3.605E-007

500.00 nm	3.816E-007
	4.008E-007
	4.274E-007
	4.408E-007
	4.647E-007
525.00 nm	4.884E-007
	5.088E-007
	5.440E-007
	5.685E-007
	5.933E-007
550.00 nm	6.152E-007
	6.405E-007
	6.560E-007
	6.792E-007
	7.016E-007
575.00 nm	7.276E-007
	7.540E-007
	7.734E-007
	7.902E-007
	8.150E-007
600.00 nm	8.486E-007
	8.658E-007
	8.879E-007
	9.071E-007
	9.297E-007
625.00 nm	9.562E-007
	9.821E-007
	1.001E-006
	1.023E-006
	1.038E-006
650.00 nm	1.054E-006
	1.069E-006
	1.082E-006
	1.115E-006
	1.135E-006
675.00 nm	1.156E-006
	1.172E-006
	1.187E-006
	1.203E-006
	1.207E-006
700.00 nm	1.229E-006
	1.249E-006
	1.251E-006
	1.241E-006
	1.280E-006
725.00 nm	1.284E-006
	1.302E-006
	1.315E-006
	1.330E-006
	1.334E-006



750.00 nm	1.356E-006
	1.359E-006
	1.347E-006
	1.353E-006
	1.392E-006
775.00 nm	1.402E-006
	1.403E-006
	1.390E-006
	1.400E-006
	1.410E-006
800.00 nm	1.408E-006
	1.426E-006
	1.440E-006
	1.447E-006
	1.438E-006
825.00 nm	1.439E-006
	1.452E-006
	1.453E-006
	1.460E-006
	1.461E-006
850.00 nm	1.460E-006
	1.448E-006
	1.444E-006
	1.441E-006
	1.435E-006
875.00 nm	1.428E-006
	1.415E-006
	1.398E-006
	1.383E-006
	1.363E-006
900.00 nm	1.369E-006
	1.395E-006
	1.418E-006
	1.442E-006
	1.466E-006
925.00 nm	1.476E-006
	1.410E-006
	1.384E-006
	1.417E-006
	1.411E-006
950.00 nm	1.411E-006
	1.413E-006
	1.407E-006
	1.424E-006
	1.426E-006
975.00 nm	1.416E-006
	1.408E-006
	1.404E-006
	1.391E-006
	1.378E-006

1000.00 nm 1.375E-006  
1.396E-006  
1.404E-006  
1.406E-006  
1.409E-006

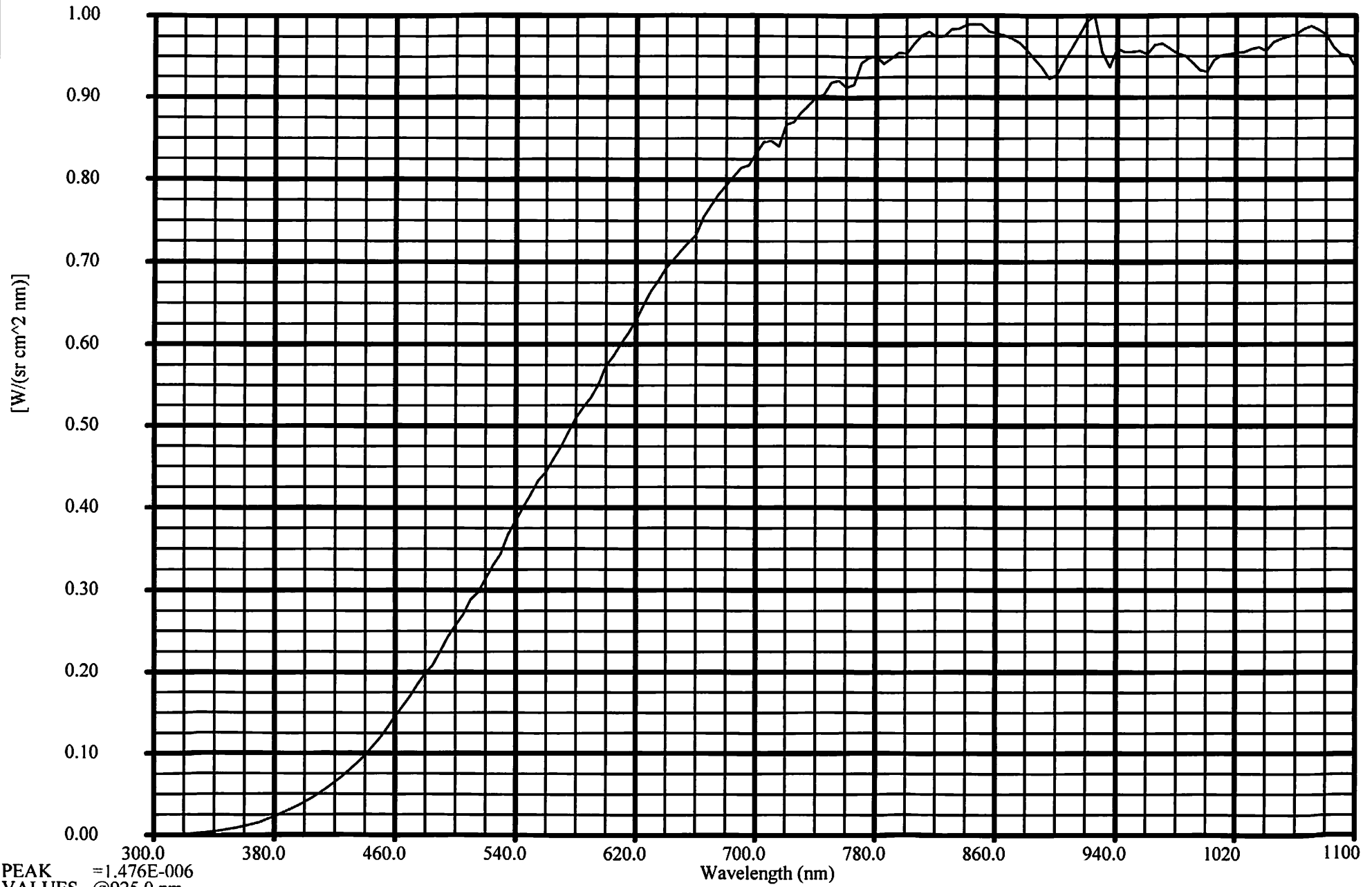
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1.416E-006  
1.419E-006  
1.412E-006  
1.428E-006

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1.438E-006  
1.442E-006  
1.451E-006  
1.457E-006

1075.00 nm 1.450E-006  
1.442E-006  
1.419E-006  
1.406E-006  
1.404E-006

1100.00 nm 1.382E-006

— OL462-80A S/N:97100001 Lamp Current:6.5A 2840K 1.00E-2[W/m2nmsr] 300-1100nm @ 5n



PEAK =1.476E-006  
VALUES @925.0 nm

- = 220901 300-1100\_5nm 2.5\_2.5nm 1.00E-2W 6.5A 2840K [W/(sr cm^2 nm)]

## OL750の絶対値検証

使用光源 OL455-6-3(S/N:92202003)

設定値 Lamp Current : 5.787A  
Luminance Setting : 1000FL

測定日 2010年8月31日

測定場所 国立極地研究所

Data File Name: :  
 E:\[unclear]-S<É'nE#<+lš\<É'nE#lZl³\220830-220903\lZl³Øl'\220831-02 204  
 50FL-1000FL 3000K 300-1100 5nm455(92202003).dat  
 Data File Designation :  
 300-1100nm 5nm 2.5/2.5slit  
 Data File Units :  
 Radiance [W/(sr cm<sup>2</sup> nm)]  
 Data File Date : 100831  
 Lower Wavelength : 300.00 nm  
 Upper Wavelength : 1100.00 nm # of data points : 161  
 Increment : 5.00 nm

300.00 nm	2.627E-008
	3.343E-008
	4.282E-008
	5.423E-008
	6.751E-008
325.00 nm	8.212E-008
	9.903E-008
	1.194E-007
	1.423E-007
	1.673E-007
350.00 nm	1.952E-007
	2.271E-007
	2.614E-007
	2.948E-007
	3.330E-007
375.00 nm	3.835E-007
	4.411E-007
	4.962E-007
	5.551E-007
	6.214E-007
400.00 nm	6.939E-007
	7.713E-007
	8.536E-007
	9.392E-007
	1.029E-006
425.00 nm	1.123E-006
	1.219E-006
	1.317E-006
	1.417E-006
	1.517E-006
450.00 nm	1.614E-006
	1.721E-006
	1.835E-006
	1.962E-006
	2.095E-006
475.00 nm	2.230E-006
	2.366E-006
	2.498E-006
	2.633E-006
	2.775E-006

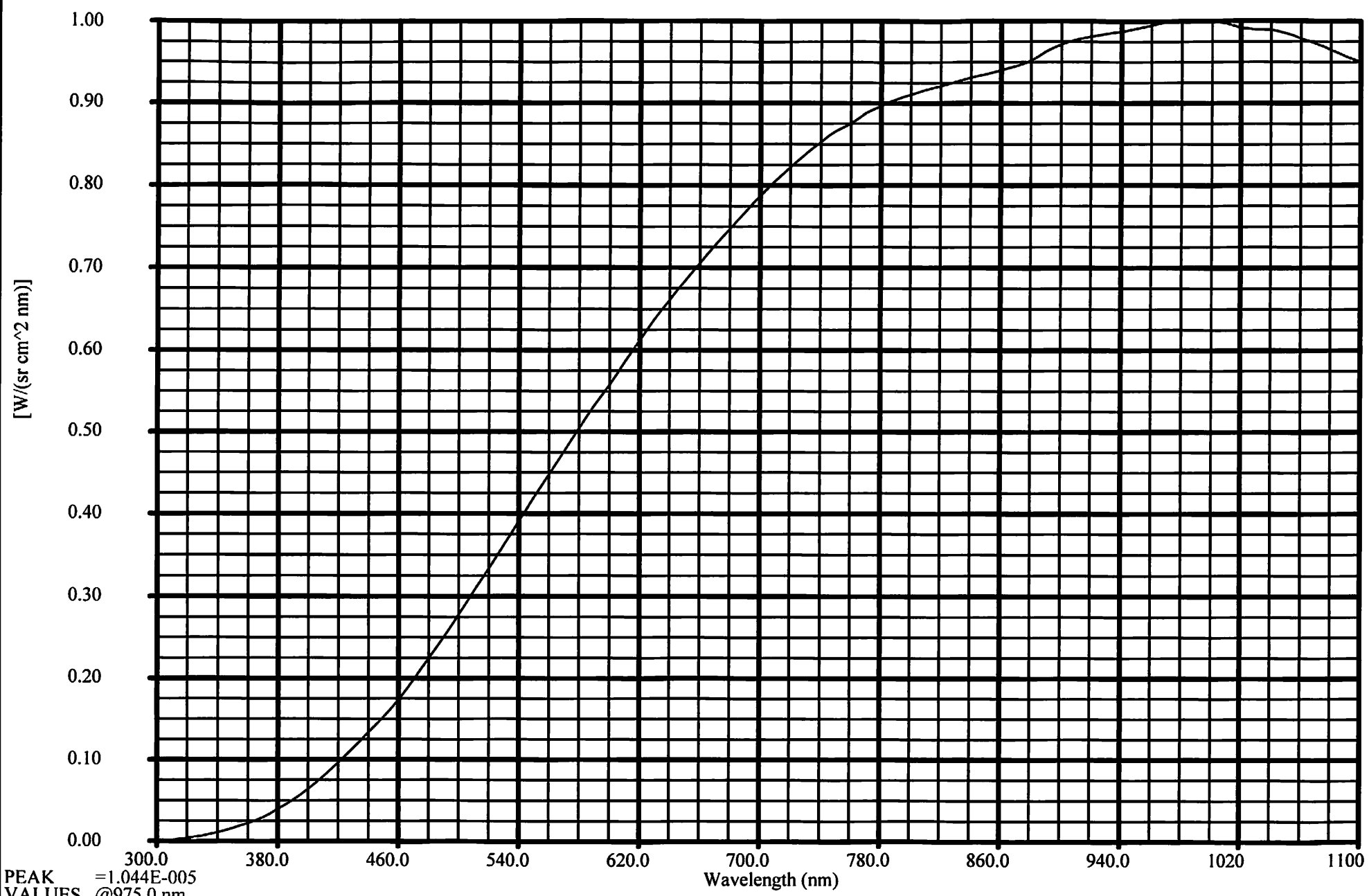
500.00 nm	2.920E-006
	3.066E-006
	3.213E-006
	3.357E-006
	3.502E-006
525.00 nm	3.648E-006
	3.797E-006
	3.947E-006
	4.099E-006
	4.247E-006
550.00 nm	4.397E-006
	4.544E-006
	4.690E-006
	4.838E-006
	4.985E-006
575.00 nm	5.133E-006
	5.281E-006
	5.426E-006
	5.569E-006
	5.702E-006
600.00 nm	5.837E-006
	5.979E-006
	6.126E-006
	6.265E-006
	6.404E-006
625.00 nm	6.539E-006
	6.672E-006
	6.796E-006
	6.915E-006
	7.035E-006
650.00 nm	7.148E-006
	7.264E-006
	7.377E-006
	7.493E-006
	7.600E-006
675.00 nm	7.709E-006
	7.815E-006
	7.920E-006
	8.025E-006
	8.130E-006
700.00 nm	8.231E-006
	8.327E-006
	8.419E-006
	8.506E-006
	8.592E-006
725.00 nm	8.677E-006
	8.758E-006
	8.838E-006
	8.911E-006
	8.985E-006

750.00 nm	9.049E-006
	9.098E-006
	9.145E-006
	9.209E-006
	9.275E-006
775.00 nm	9.324E-006
	9.370E-006
	9.413E-006
	9.449E-006
	9.484E-006
800.00 nm	9.513E-006
	9.544E-006
	9.573E-006
	9.598E-006
	9.622E-006
825.00 nm	9.647E-006
	9.674E-006
	9.703E-006
	9.729E-006
	9.749E-006
850.00 nm	9.769E-006
	9.797E-006
	9.822E-006
	9.849E-006
	9.875E-006
875.00 nm	9.905E-006
	9.943E-006
	9.999E-006
	1.006E-005
	1.011E-005
900.00 nm	1.015E-005
	1.018E-005
	1.021E-005
	1.023E-005
	1.025E-005
925.00 nm	1.027E-005
	1.029E-005
	1.030E-005
	1.031E-005
	1.033E-005
950.00 nm	1.035E-005
	1.037E-005
	1.039E-005
	1.042E-005
	1.044E-005
975.00 nm	1.044E-005
	1.044E-005
	1.044E-005
	1.044E-005
	1.044E-005

1000.00 nm	1.044E-005
	1.043E-005
	1.041E-005
	1.039E-005
	1.036E-005
1025.00 nm	1.035E-005
	1.034E-005
	1.034E-005
	1.033E-005
	1.031E-005
1050.00 nm	1.029E-005
	1.026E-005
	1.022E-005
	1.019E-005
	1.016E-005
1075.00 nm	1.012E-005
	1.008E-005
	1.004E-005
	9.994E-006
	9.958E-006
1100.00 nm	9.924E-006



— = 300-1100nm 5nm 2.5/2.5slit



PEAK = 1.044E-005  
VALUES @975.0 nm

= 220831-02 20450FL-1000FL 3000K 300-1100 5nm45(92202003) [W/(sr cm<sup>2</sup> nm)]

## Luminance and Color Temperature Calibration Certificate

OL 455-6-3

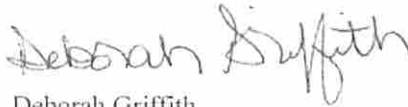
### Integrating Sphere Calibration Standard

The OL 455-6-3, S/N: 92202003, equipped with an OL 450 Controller, S/N: 92201132, was calibrated for luminance and color temperature relative to standards supplied by the National Institute of Standards and Technology (NIST). Current settings versus color temperature are given in Table 1. The estimated uncertainty in color temperature is  $\pm 25$  K. The uncertainty of the luminance values displayed on the OL 450 Controller is estimated to be less than  $\pm 2\%$  ( $\pm 0.005$  fL or  $\pm 0.02$  cd/m<sup>2</sup>) relative to the NIST photometric scale.

Current Setting for 2856K = 5.373 A

Calibration Certified By:

GOOCH & HOUSEGO



Deborah Griffith  
Radiometrist

#### CAUTION

Care should be taken that the lamp current does not exceed 6.500 amperes.

Project No: 913-504

Calibration Date: May 12, 2010

Certification Date: May 27, 2010

R:\LAMPTEMPLATES\455 RANGE 300\_1100 A.DOT

O:\reports\SOURCES\455\SN 92202003.Kyokko.913-504.doc

Gooch & Housego  
4632 26th Street  
Orlando, FL 32811, USA  
T: 407-422-3171  
F: 407-648-5412  
[www.goochandhousego.com/products/systems](http://www.goochandhousego.com/products/systems)

Table 2

OL 455-6-3, S/N: 92202003

Spectral Radiance Values \*

Wavelength [nm]	Radiance [W/(sr cm <sup>2</sup> nm)]
300	5.465E-07
310	8.929E-07
320	1.409E-06
330	2.066E-06
340	2.965E-06
350	4.061E-06
360	5.432E-06
370	6.917E-06
380	9.120E-06
390	1.147E-05
400	1.434E-05
410	1.761E-05
420	2.121E-05
430	2.510E-05
440	2.917E-05
450	3.332E-05
460	3.786E-05
470	4.316E-05
480	4.865E-05
490	5.418E-05
500	6.012E-05
510	6.611E-05
520	7.207E-05
530	7.811E-05
540	8.431E-05
550	9.043E-05
560	9.649E-05
570	1.025E-04
580	1.087E-04
590	1.146E-04
600	1.201E-04
610	1.260E-04
620	1.317E-04
630	1.372E-04
640	1.423E-04
650	1.471E-04
660	1.518E-04
670	1.564E-04
680	1.608E-04
690	1.650E-04
700	1.692E-04
710	1.730E-04
720	1.765E-04
730	1.799E-04
740	1.830E-04
750	1.858E-04

Wavelength [nm]	Radiance [W/(sr cm <sup>2</sup> nm)]
760	1.878E-04
770	1.904E-04
780	1.924E-04
790	1.940E-04
800	1.954E-04
810	1.966E-04
820	1.976E-04
830	1.987E-04
840	1.998E-04
850	2.007E-04
860	2.016E-04
870	2.029E-04
880	2.042E-04
890	2.066E-04
900	2.083E-04
910	2.094E-04
920	2.102E-04
930	2.108E-04
940	2.114E-04
950	2.122E-04
960	2.131E-04
970	2.140E-04
980	2.141E-04
990	2.140E-04
1000	2.139E-04
1010	2.134E-04
1020	2.121E-04
1030	2.116E-04
1040	2.114E-04
1050	2.104E-04
1060	2.090E-04
1070	2.077E-04
1080	2.062E-04
1090	2.044E-04
1100	2.030E-04

\* Lamp Current: 5.787 A  
 Luminance Setting<sup>1/</sup>: 20450 fL

<sup>1/</sup> The luminance setting should be adjusted using the micrometer-controlled variable aperture.

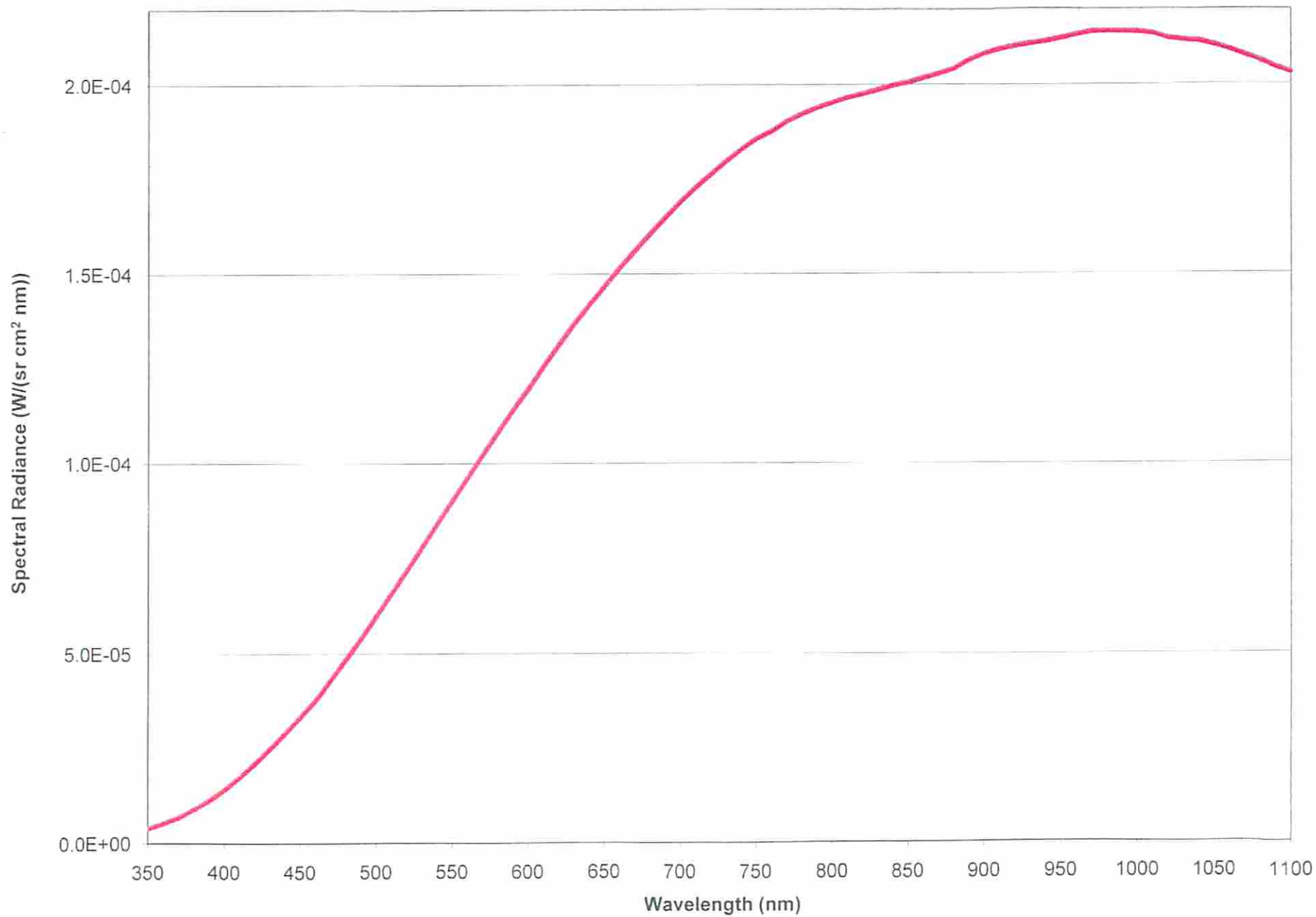
Project No: 913-504

Calibration Date: May 12, 2010

Certification Date: May 27, 2010

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Spectral Radiance Values for OL 455-6-3 S/N: 92202003



**Table 1**

**OL 455-6-3, S/N: 92202003**

**Color Temperature Calibration Values**

Color Temperature [K]	Current [Amps]
2000	3.197E+00
2010	3.219E+00
2020	3.240E+00
2030	3.262E+00
2040	3.284E+00
2050	3.306E+00
2060	3.328E+00
2070	3.351E+00
2080	3.373E+00
2090	3.395E+00
2100	3.418E+00
2110	3.441E+00
2120	3.464E+00
2130	3.487E+00
2140	3.510E+00
2150	3.533E+00
2160	3.556E+00
2170	3.579E+00
2180	3.603E+00
2190	3.626E+00
2200	3.650E+00
2210	3.674E+00
2220	3.698E+00
2230	3.722E+00
2240	3.746E+00
2250	3.770E+00
2260	3.794E+00
2270	3.818E+00
2280	3.843E+00
2290	3.867E+00
2300	3.892E+00
2310	3.916E+00
2320	3.941E+00
2330	3.966E+00
2340	3.991E+00
2350	4.016E+00
2360	4.041E+00
2370	4.066E+00
2380	4.091E+00
2390	4.117E+00
2400	4.142E+00
2410	4.167E+00
2420	4.193E+00
2430	4.218E+00
2440	4.244E+00
2450	4.269E+00
2460	4.295E+00
2470	4.321E+00
2480	4.347E+00

Color Temperature [K]	Current [Amps]
2490	4.373E+00
2500	4.399E+00
2510	4.425E+00
2520	4.451E+00
2530	4.477E+00
2540	4.503E+00
2550	4.530E+00
2560	4.556E+00
2570	4.583E+00
2580	4.609E+00
2590	4.636E+00
2600	4.663E+00
2610	4.690E+00
2620	4.717E+00
2630	4.744E+00
2640	4.771E+00
2650	4.798E+00
2660	4.826E+00
2670	4.853E+00
2680	4.880E+00
2690	4.908E+00
2700	4.935E+00
2710	4.963E+00
2720	4.991E+00
2730	5.018E+00
2740	5.046E+00
2750	5.074E+00
2760	5.102E+00
2770	5.130E+00
2780	5.158E+00
2790	5.186E+00
2800	5.214E+00
2810	5.243E+00
2820	5.271E+00
2830	5.299E+00
2840	5.328E+00
2850	5.356E+00
2860	5.384E+00
2870	5.413E+00
2880	5.441E+00
2890	5.470E+00
2900	5.499E+00
2910	5.527E+00
2920	5.556E+00
2930	5.585E+00
2940	5.614E+00
2950	5.642E+00
2960	5.671E+00
2970	5.700E+00

Color Temperature [K]	Current [Amps]
2980	5.729E+00
2990	5.758E+00
3000	5.787E+00

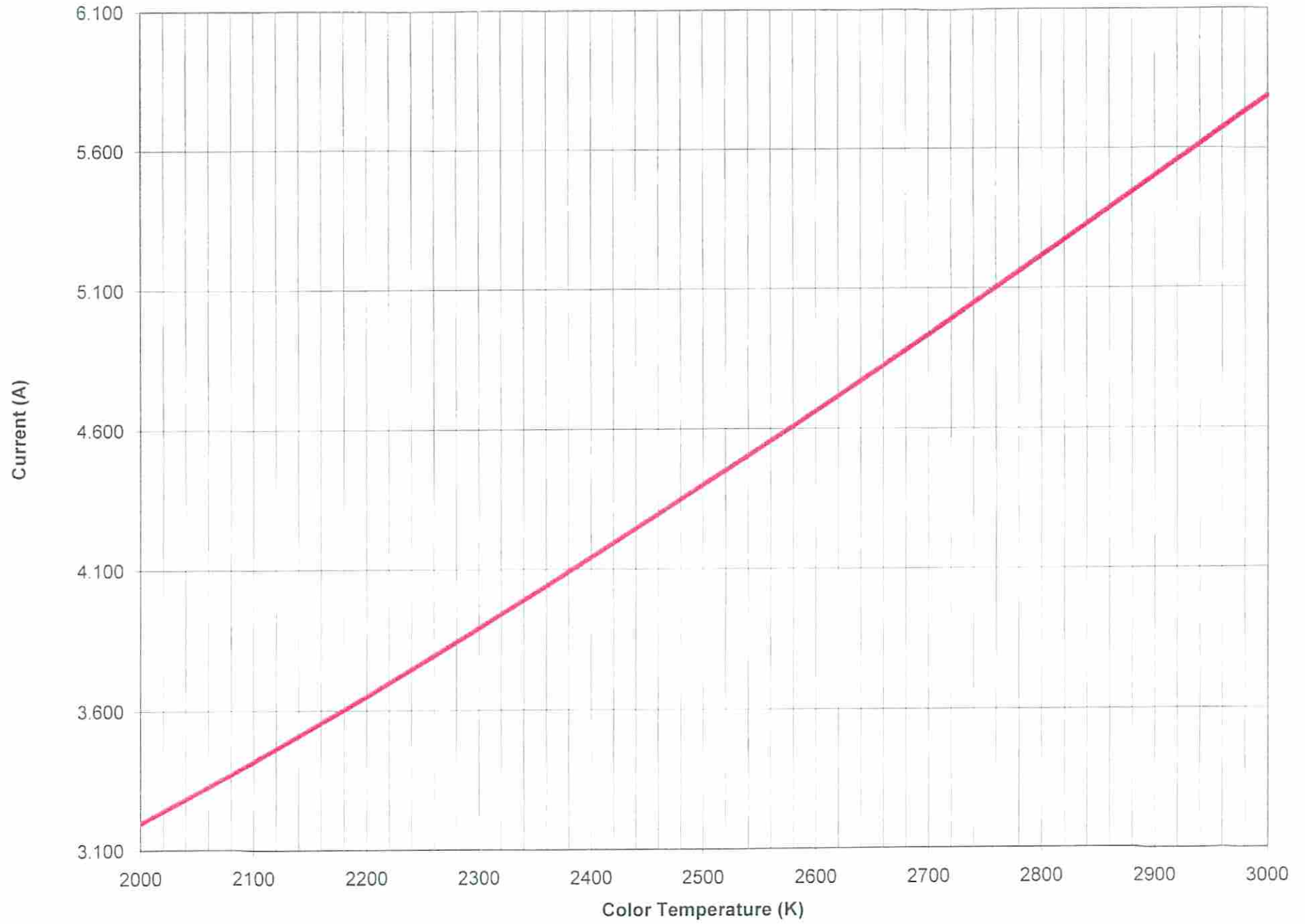
Project No: 913-504

Calibration Date: May 12, 2010

Certification Date: May 27, 2010

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Correlated Color Temperature Calibration Chart for OL 455-6-3 S/N: 92202003



Item calibrated: OL 455-6-3, S/N: 92202003 - Certification Date: 5-27-10

## Certificate of Traceability

<b>Item calibrated</b>	OL 455-6-3 Optics Head / 450 Controller		
<b>Serial Number</b>	92202003 / 92201132		
<b>Date Calibrated</b>	5-6-10 to 5-12-10	<b>Date Certified</b>	5-27-10
<b>Calibrated by</b>	Bart Lovell	<b>Certified by</b> Gooch & Housego	<i>Deborah Druffin</i>

All following items listed are within recommended limits of use and storage appropriate to maintaining traceability to NIST calibrations. Items marked are those used during the calibration above. The certification date above refers to the start of the warranty period for the calibrated item.

### Standards of Spectral Irradiance

Supplier	Serial Number	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration
NIST	F-578	#844/275860-10	
NIST	F-591	#844/273689-06	
NIST	EH2929	#844/271707-05	
OL	895	*F-578, * EH2929	
OL	F-1057	*F-578	
OL	S-707	}000570	
OL	L-973	*F-578	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
 # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number

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## Standards of Spectral Radiance

Supplier	Serial Number	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration
OL	OL 410M C/N: L000019	*F-578 Traceability to Standards of Irradiance	X
OL	OL 455-6-1-NVG C/N: 000480	*F-578 Traceability to Standards of Irradiance	
ISD	OL 480 C/N: 000570	@(Infrared Systems Development)	
<b>Key:</b> [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED] # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number			

## Standards of Total Spectral Radiant Flux and Total Luminous Flux

Supplier	Serial Number	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration
NIST	NIST-RF0812	#844/275744-08	
NIST	NIST-RF0813	#844/275744-08	
OL	T-101	*NIST-RF0812 / NIST RF0813	
OL	T-102	*NIST-RF0812 / NIST RF0813	
OL	T-103	*NIST-RF0812 / NIST RF0813	

## Standards of Total Irradiance

Supplier	Serial Number	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration
NIST	F-301	#844/250381-92	
OL	S-685	*F-301	
OL	S-686	*F-301	



### Other standards not listed above

Supplier	Serial Number	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration

### Standards of Detector Spectral Response

Supplier	Serial Number	NIST traceability (# = report number, *=NIST detector)	Used in above calibration
NIST	G704	#844/272658-05	
NIST	07200011	#844/275296-07	
NPL	90101055	#E04070008	
OL	93101092	*07200011	
OL	714	*G704	

### Standards of Photometric Response

Supplier	Serial Number	NIST traceability (# = report number, *=NIST calibrated photometers)	Used in above calibration
NIST	Photometer # 983 (983/P-556)	#844/277602-09	X
NIST	Photometer # 993 (993/P-554)	#844/277602-09	X
NIST	721	*Photometer # 983 (983/P-556) *Photometer # 993 (993/P-554)	
NIST	1062	*Photometer # 983 (983/P-556) *Photometer # 993 (993/P-554)	

## Standards of Wavelength

Supplier	Model number	Elements	NIST traceability (# = report number, *=NIST lamp)	Used in above calibration
OSRAM	Hg 100	Mercury	Physical standard	
OSRAM	65130	Mercury	Physical standard	X
OL	752-150	Florescent/ Mercury	Physical standard	

## Current calibration sources

Supplier	Model number	Serial number	Traceability (see key)	Used in above calibration
KEITHLEY	236	470535	@(TMI)	
KEITHLEY	263	0554087	@(Keithley)	
KEITHLEY	263	0682726	@(Keithley)	
KEITHLEY	2400	0899365	@(Keithley)	
OL	N/A	UNIT 2	}L000018	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
 # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number

## Voltage calibration sources

Supplier	Model number	Serial number	Traceability (see key)	Used in above calibration
KEITHLEY	236	470535	@(TMI)	
KEITHLEY	263	0554087	@(Keithley)	
KEITHLEY	263	0682726	@(Keithley)	
KEITHLEY	2400	0899365	@(Keithley)	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
 # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number

## Resistance calibration sources

Supplier	Model number	Serial number	Traceability (see key)	Used in above calibration
KEITHLEY	263	554087	@(Keithley)	
OL	35/16 SERIES	105	@(Guidline)	
L&N	4360	1854220	@(Guidline)	
L&N	4360	1753354	@(Guidline)	
OL	LOAD BOX	105	}000442	
OL	83J	101	}000439	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
 # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number

## Power Supplies

Supplier	Model number	Serial number	Traceability (see key)	Used in above calibration
OL	16DS	88100074	}000344	
OL	45D	90301161	}000387	
OL	45D	99301322	}000602	
OL	45D-DS	89300145	}000352	
OL	65A	03211288	}000566	
OL	65A	04211310	}000592	X
OL	65DS	89100770	}000358	
OL	65DS	89100777	}000341	
OL	65DS	88100671	}000389	
OL	65DS	89100775	}000359	
OL	65DS	86100566	}000408	
OL	65DS	86100567	}000384	
OL	83A	98114096	}000553	
OL	83A	99116118	}000555	
OL	83A	99116134	}000559	
OL	83/65 DM	N/A	}000388	
OL	83AX2	04220208	}000607	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
 # = NIST report, @ = Suppliers report(traceable to NIST), } = In-house control number

## Measurement devices

Supplier	Description	Model number	Serial number	Traceability (see key)	Used in above calibration
KEITHLEY	DMM	197	431159	@ (TMI)	
KEITHLEY	DMM	197	431157	@(TMI)	
KEITHLEY	DMM	197	353140	@(TMI)	
KEITHLEY	DMM	197A	538144	@(Kiethley)	
HEWLETT-PACKARD	DMM	3458A	2823A07557	@(TMI)	
KEITHLEY	DMM	2002	1034113	@(Kiethley)	
EXTECH	TEMP/RH	4458CF	PEN 1	@(Excalibur Eng)	
EXTECH	TEMP/RH	4458CF	PEN 3	A699952@(TMI)	X
EXTECH	TEMP/RH	4458CF	PEN 6	@(Excalibur Eng)	
EXTECH	TEMP/RH	4458CF	PEN 8	A435949@(TMI)	
EXTECH	TEMP/RH	4458CF	PEN 11	@ (TMI)	
GLOBAL SPECIALTIES	DIGITAL STORAGE ADAPTOR	DSA-250	194909	@(METRUM)	
TEKTRONIX	OSCILLOSCOPE	2215	B030703	@(Tektronix)	
OL	CURRENT MEASUREMENT	730C	N/A	}000468	X
OL	CURRENT MEASUREMENT	730C	96207075	}000520	X
OL	CURRENT MEASUREMENT	730C	95308007	N/A	
OL	CURRENT MEASUREMENT	730D	04307050	}000591	
OL	CURRENT MEASUREMENT	730A	840162	}000346	

**Key:** [IF THE SUPPLIER DID NOT ASSIGN A REPORT NUMBER THE IN-HOUSE CONTROL NUMBER IS SPECIFIED]  
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