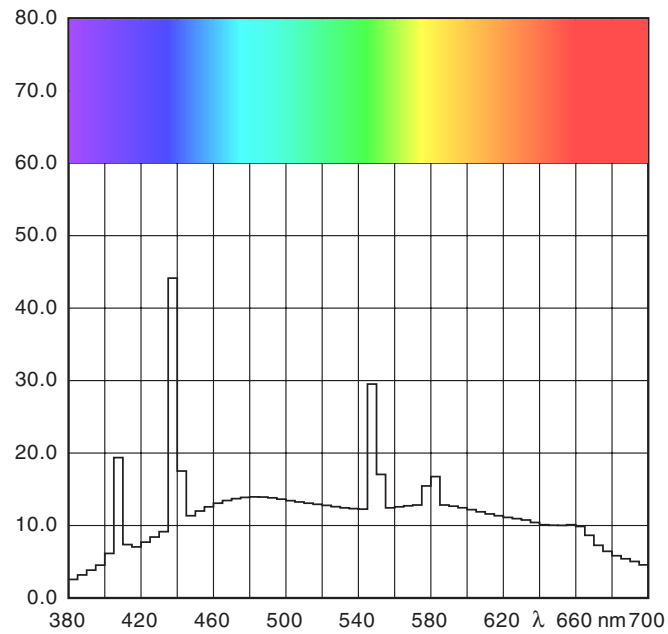


Gernot Hoffmann

Fluorescent Illuminants and Tubes



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1. Introduction

This doc shows data sets for fluorescent illuminants according to [1].

The calculations were done by SpectroCalc [4] and [9].

The reference list is the same as in [4].

It is intended to add informations about available fluorescent tubes.
It seems that no manufacturer uses the scientific notation F1-F12.

All color coordinates are calculated for $Y=1$ and $L^*=100$.
The dE calculation is meaningless.

Chapter 2:

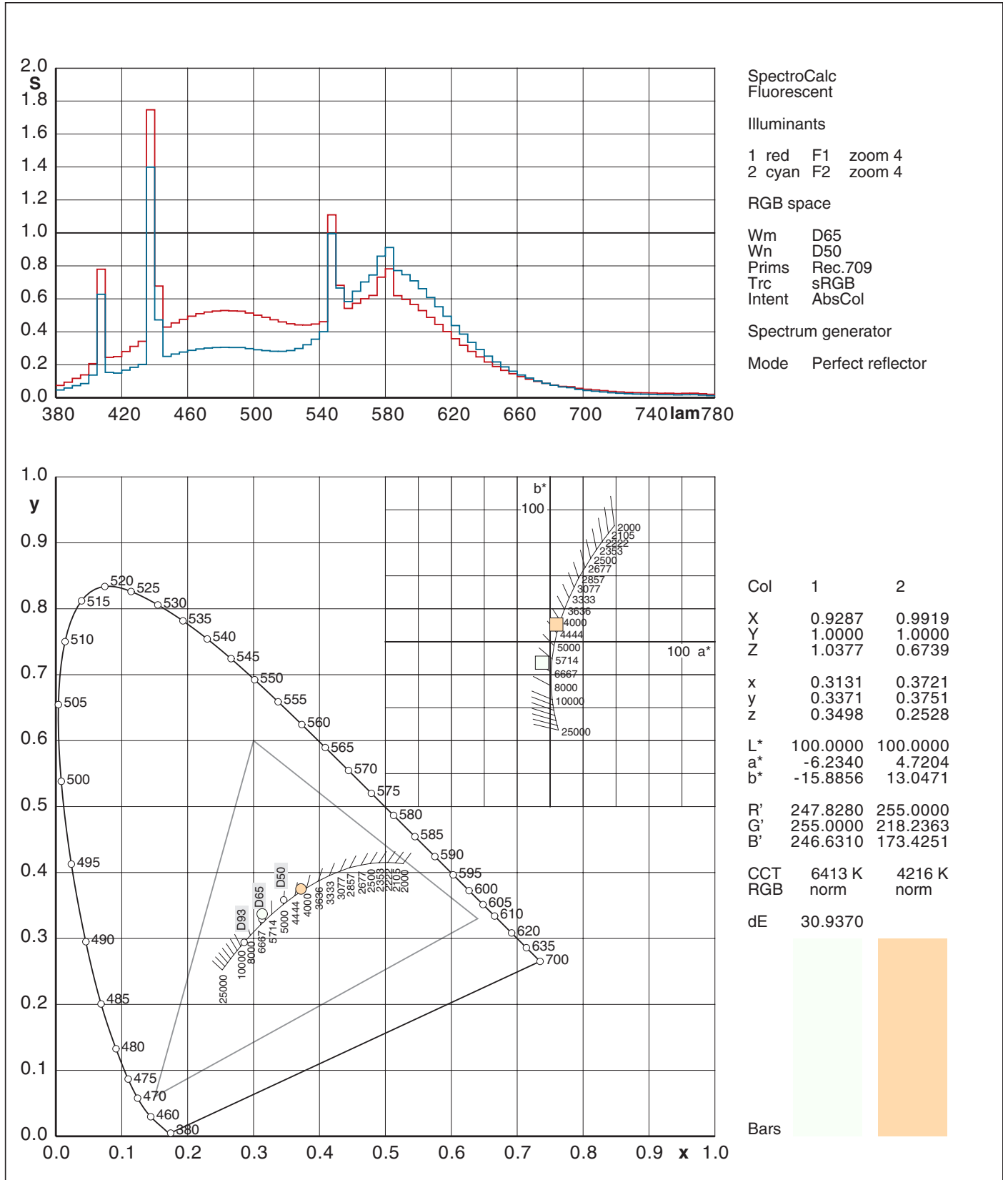
RGB values are calculated for sRGB. RGB values would be out of gamut if the actual white point is not near to the white point for sRGB (6500K). The rendering intent is Absolute Colorimetric (AbsCol). Therefore the RGB values are normalized by defining the largest value as 255. After the normalization the sRGB tone reproduction curve is applied (gamma encoding), which delivers RGB'. The normalization is indicated by 'norm' instead of a gamut warning. The simulated color patches would show a 6500K illuminant on a monitor which is near to sRGB neutrally gray. Warmer illuminants are looking quite yellow-ish and too dark. If the patch would be blown up to screen size with removed menu areas, then the appearance would be better because of adaptation.

Chapter 3:

Standard tubes have often a correlated color temperature of about 4100K. Here we use 4000K as 'Viewing Reference' color temperature, because 4100K is not available in the data base. Now we can compare warmer and cooler tubes, so far represented by illuminants. In a real environment, a 5000K tube, e.g. for inspecting prints, looks already rather cool, especially if 4000K tubes are available as standard office light. The RGB calculations are still done for Rec.709 primaries and the sRGB tone reproduction curve, but the working space white point is at 4000K. The rendering intent is AbsCol, as in chapter 2.

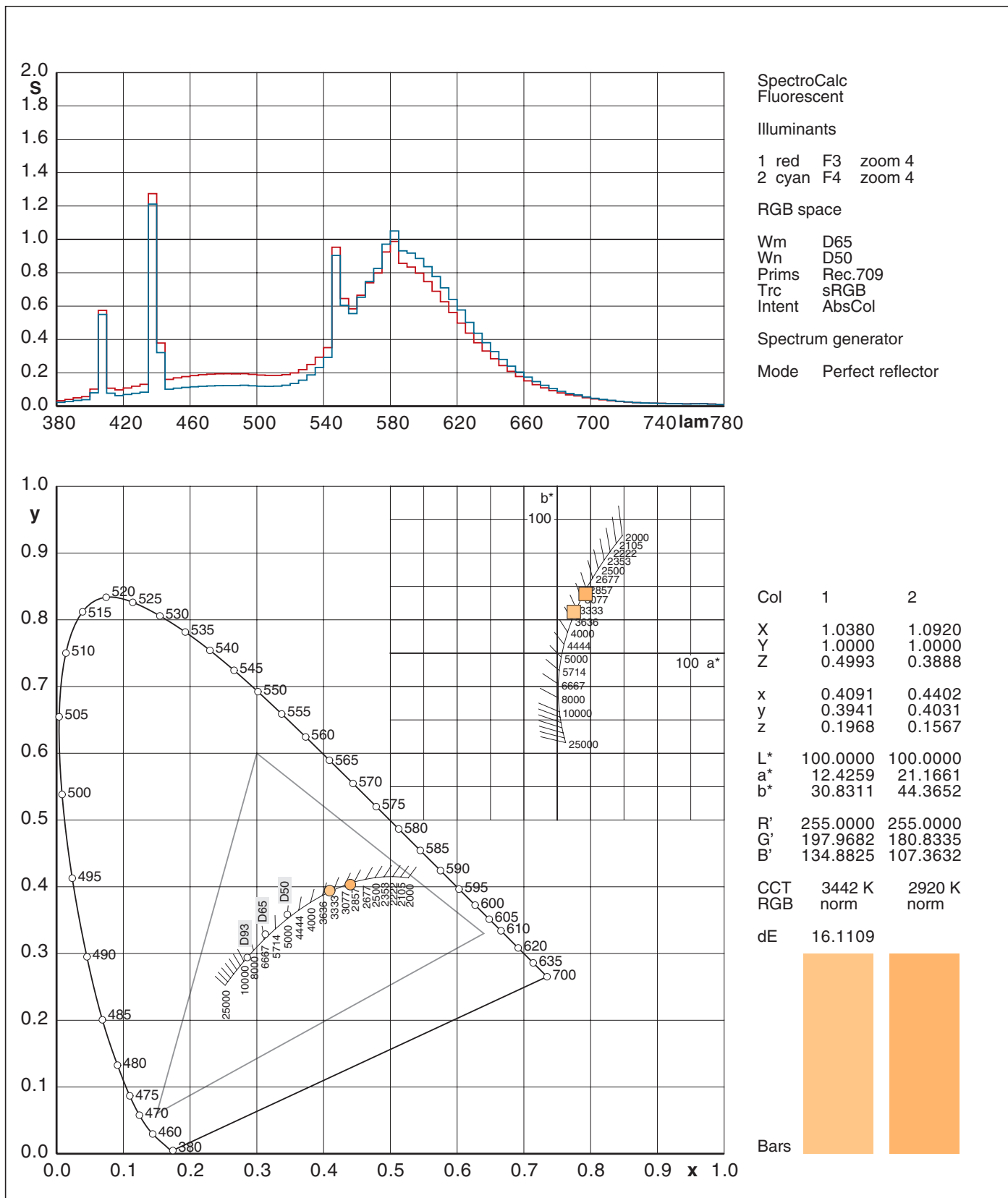
2.1 Fluorescent Illuminants F1+F2 / View 6500K

Manufacturers:



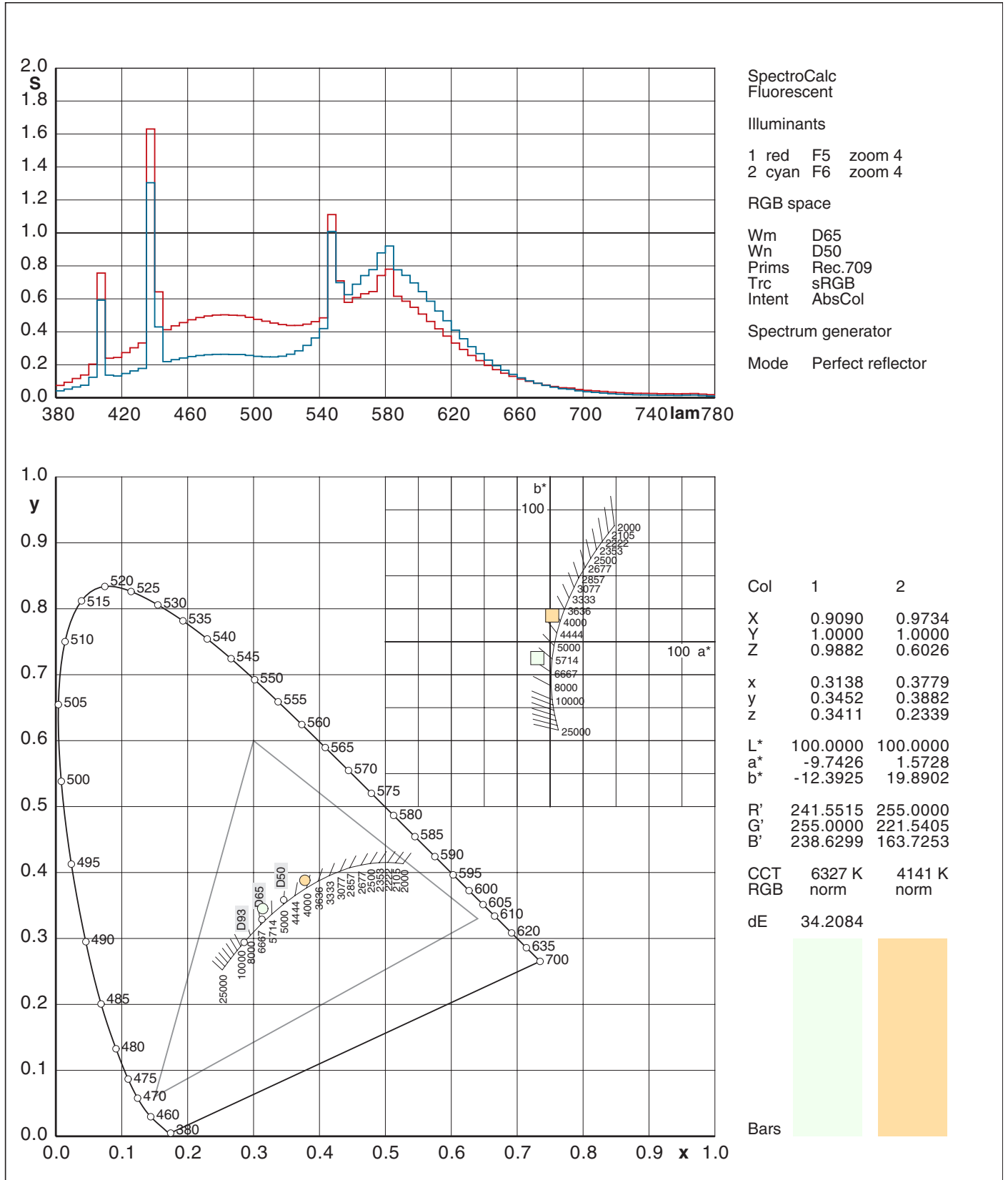
2.2 Fluorescent Illuminants F3+F4 / View 6500K

Manufacturers:



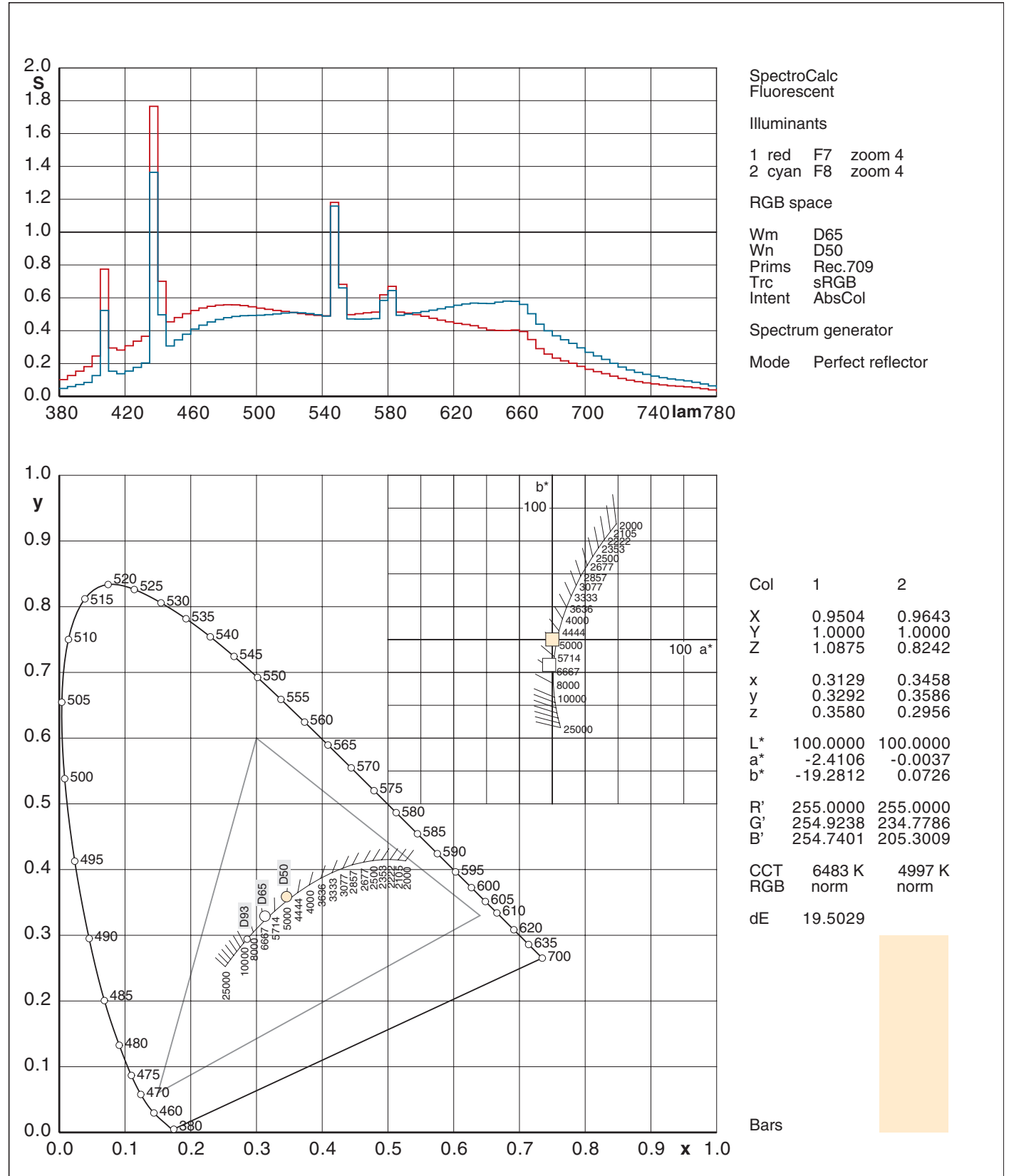
2.3 Fluorescent Illuminants F5+F6 /View 6500K

Manufacturers:



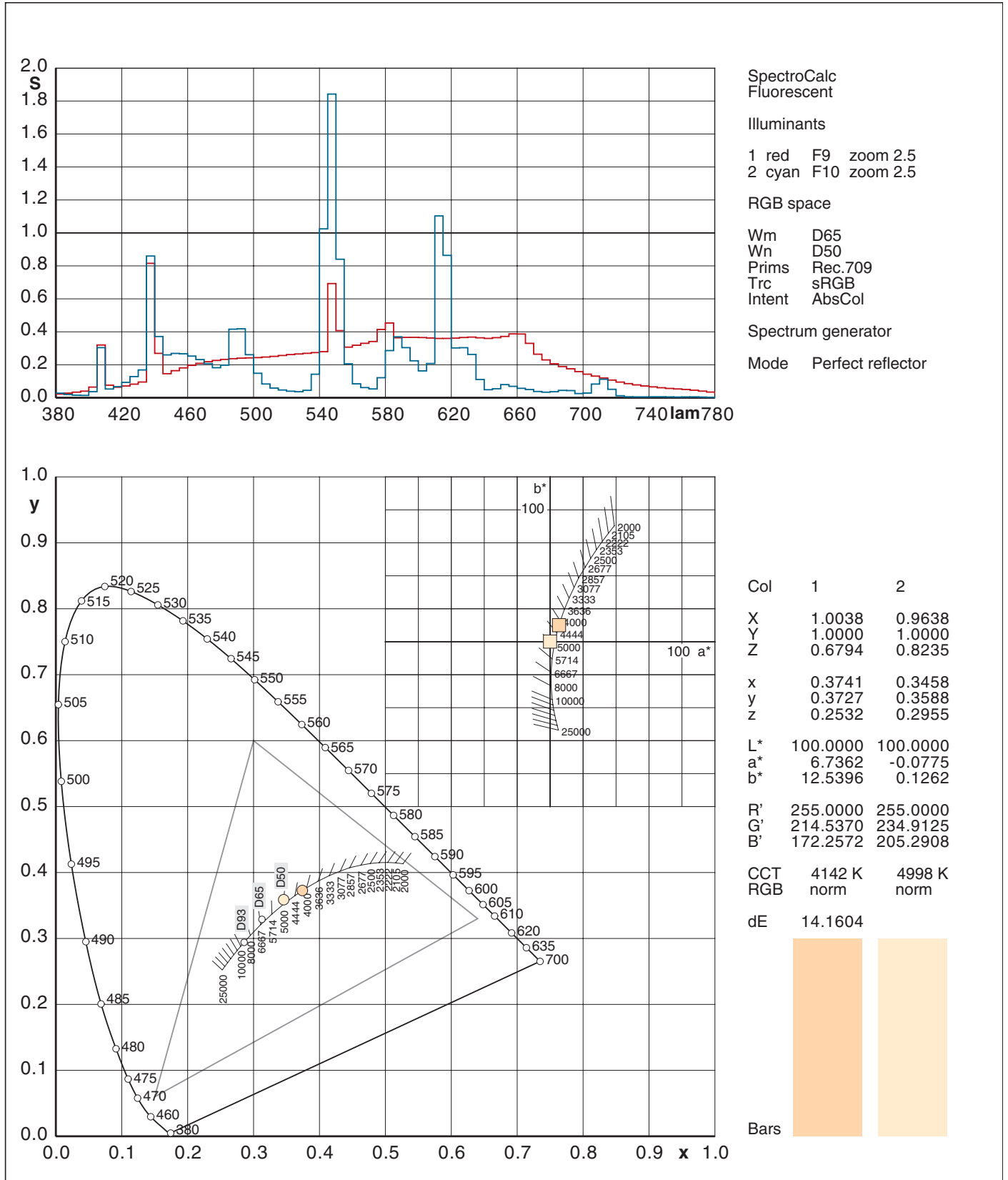
2.4 Fluorescent Illuminants F7+F8 / View 6500K

Manufacturers:



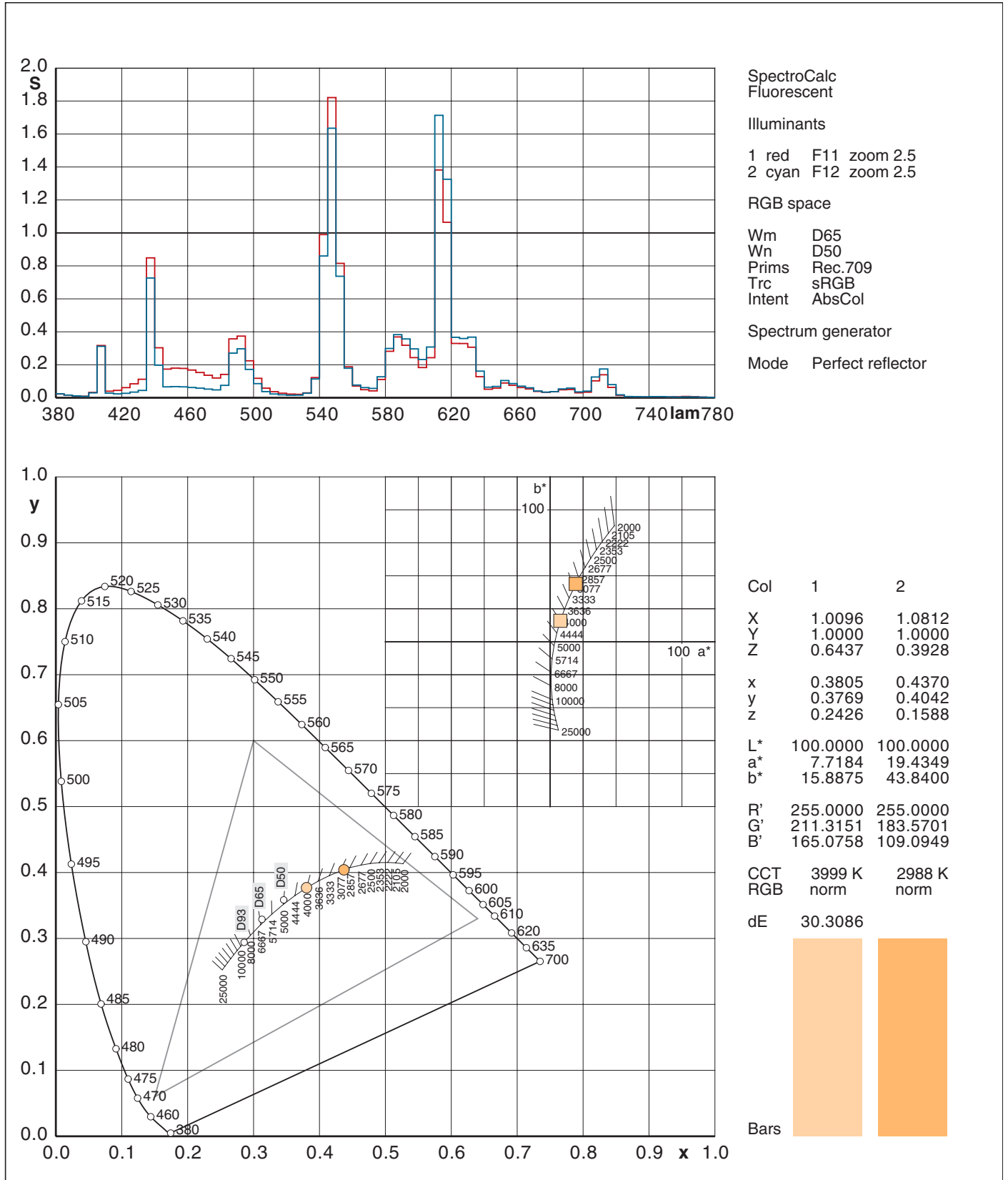
2.5 Fluorescent Illuminants F9+F10 / View 6500K

Manufacturers:



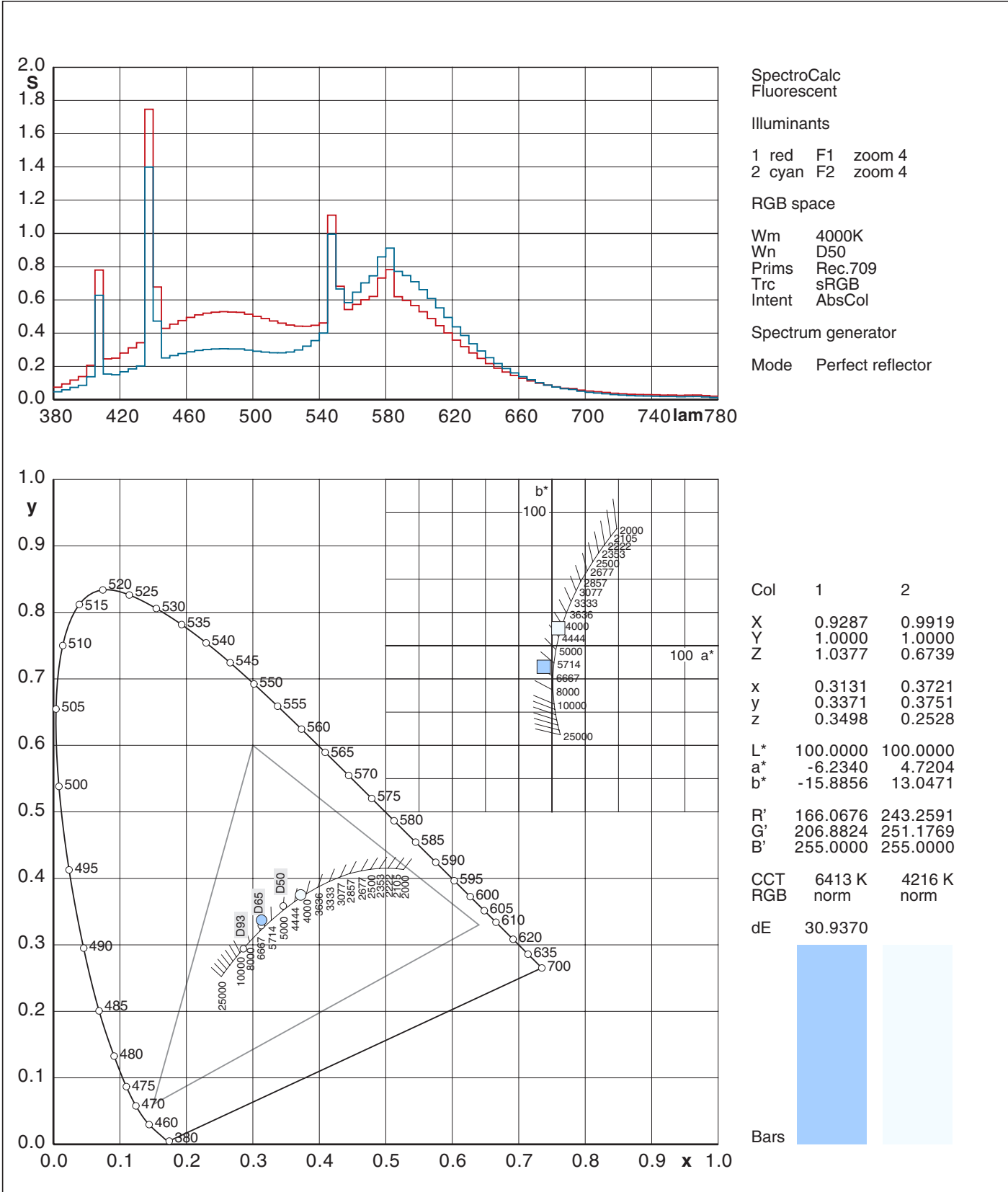
2.6 Fluorescent Illuminants F11+F12 /View 6500K

Manufacturers:



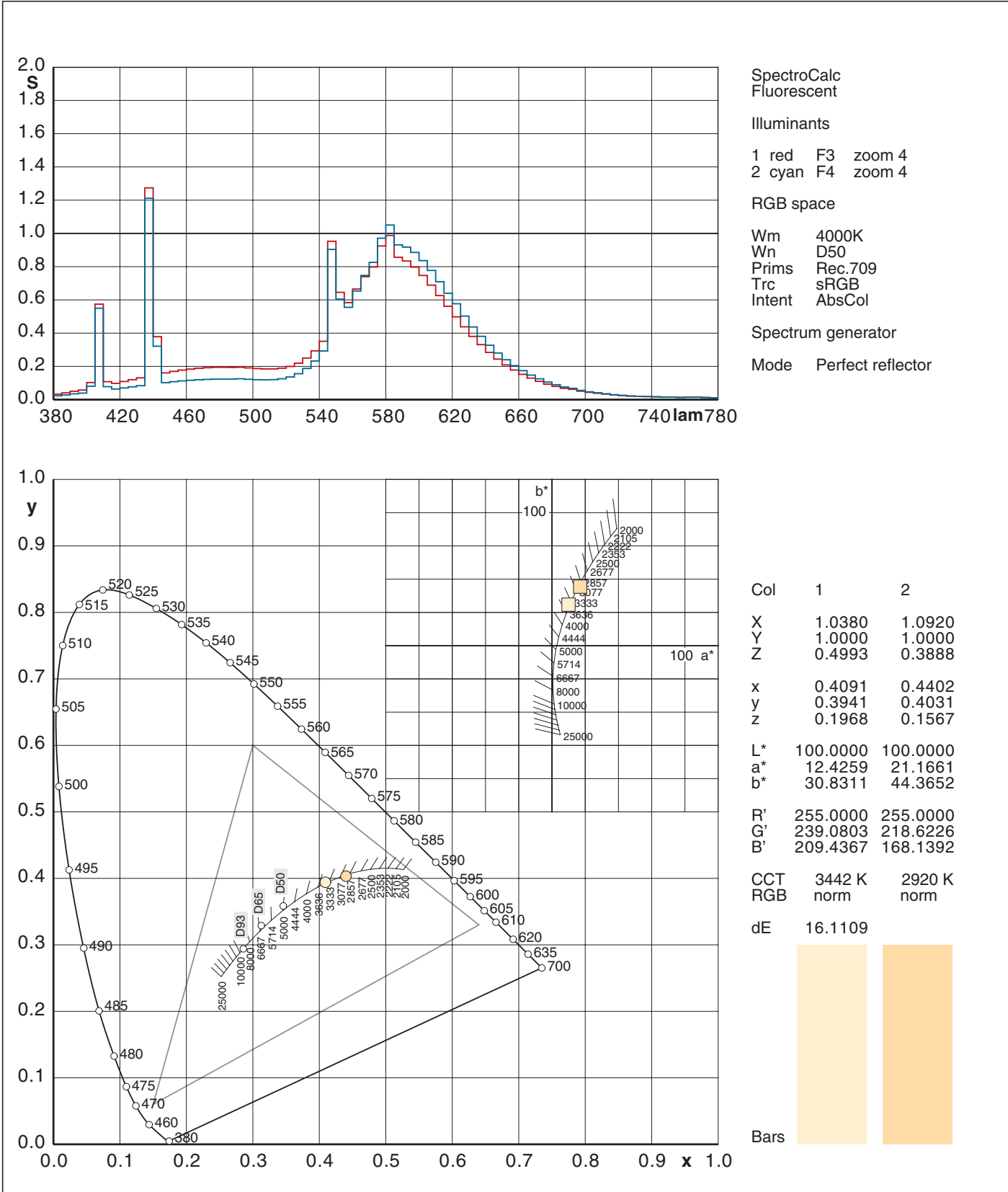
3.1 Fluorescent Illuminants F1+F2 /View 4000K

Manufacturers:



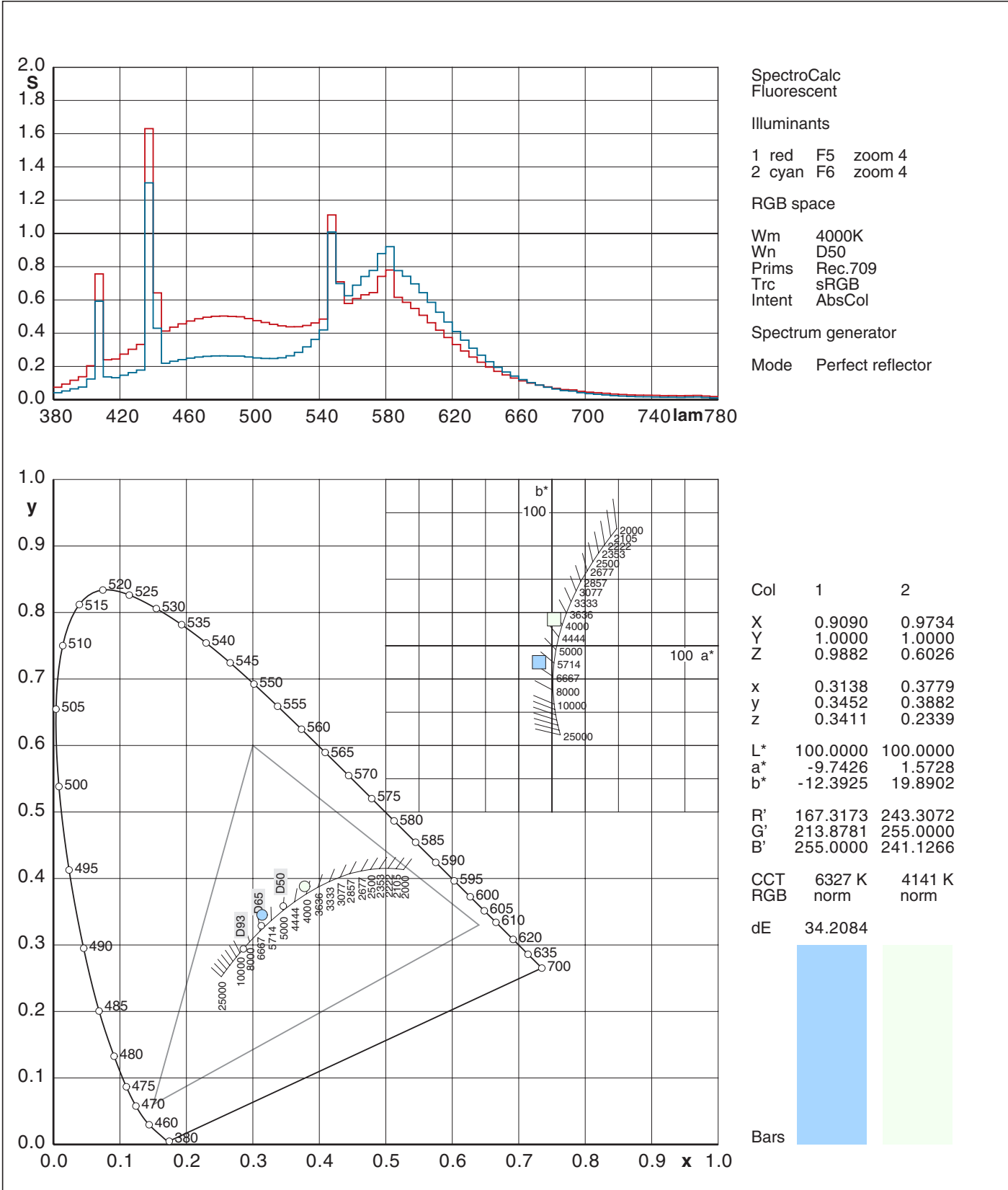
3.2 Fluorescent Illuminants F3+F4 / View 4000K

Manufacturers:



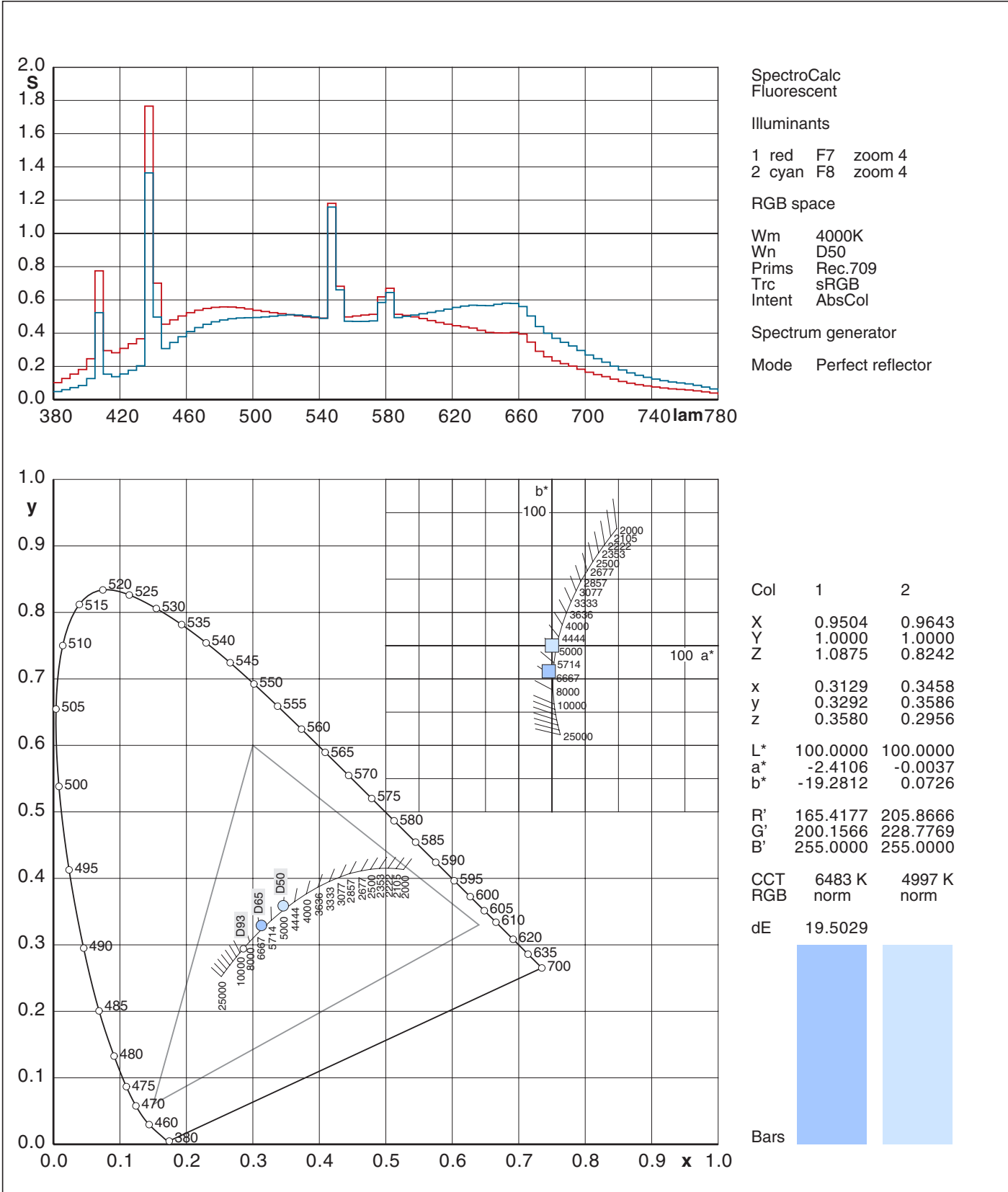
3.3 Fluorescent Illuminants F5+F6 /View 4000K

Manufacturers:



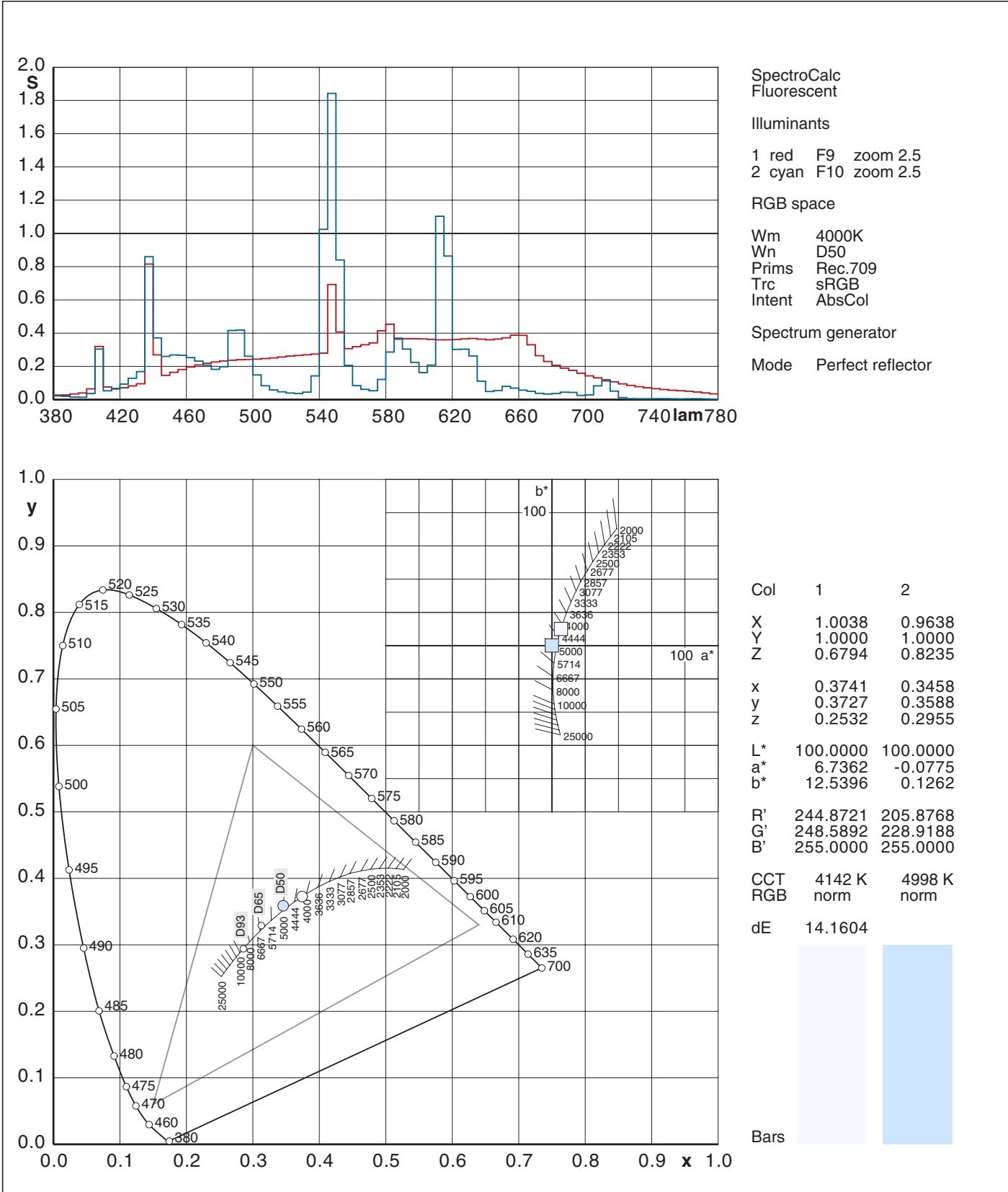
3.4 Fluorescent Illuminants F7+F8 / View 4000K

Manufacturers:



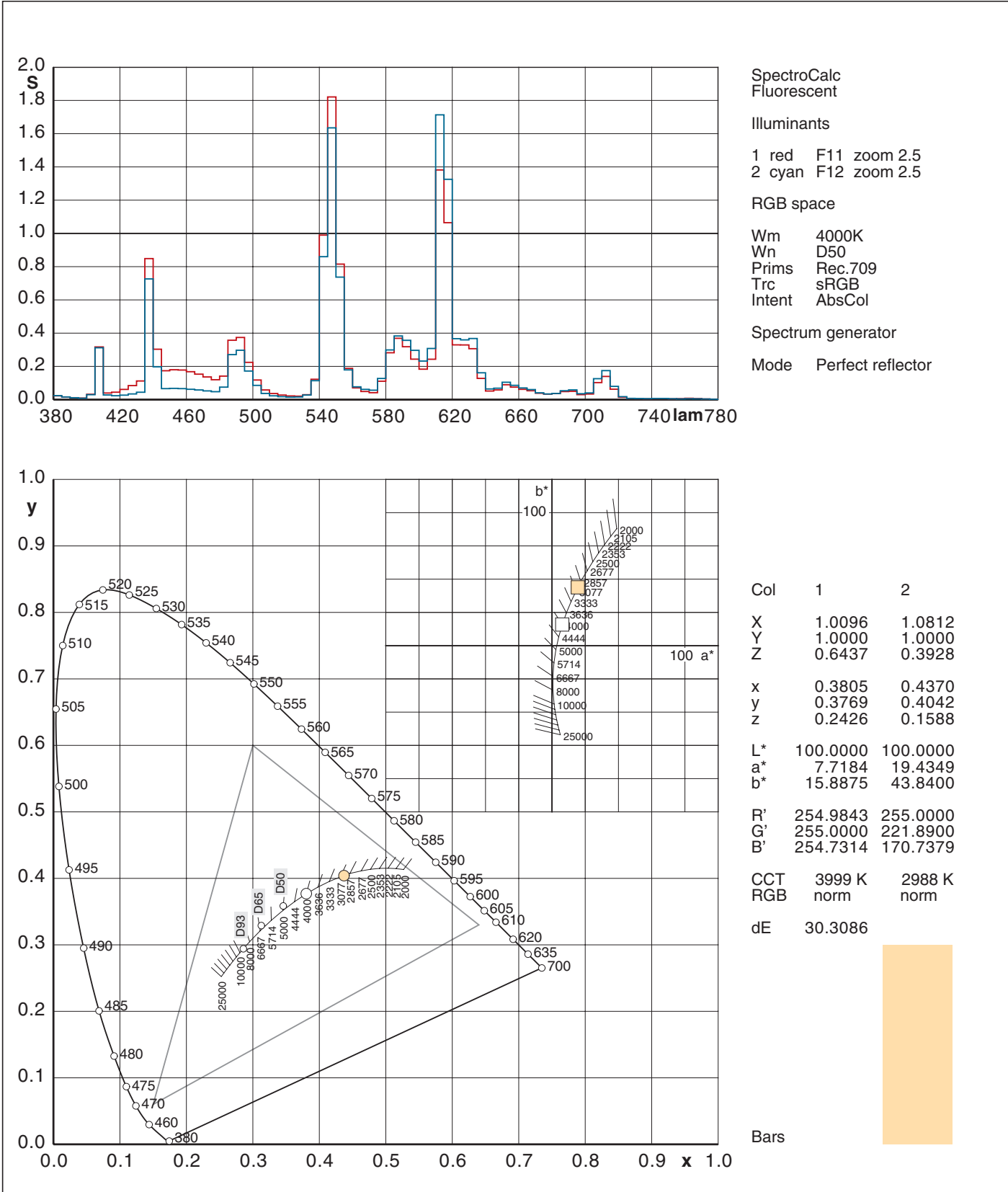
3.5 Fluorescent Illuminants F9+F10 / View 4000K

Manufacturers:



3.6 Fluorescent Illuminants F11+F12 /View 4000K

Manufacturers:



4. Commercial Designations

By courtesy of the author:

D. C. Rich

Light Sources and Illuminants: How to Standardize Retail Lighting

Textile Chemist and Colorist, vol 30, No. 1, pp 8-14, 1998.

| Type | Commercial designation | Illuminant | Chromaticity | | CCT K | CRI Ra |
|----------------|------------------------|------------|--------------|--------|----------|-----------|
| | | | x | y | | |
| Standard | DAY | F1 | 0.3131 | 0.3371 | 6430 | 76 |
| Standard | CWF | F2 | 0.3721 | 0.3751 | 4230 | 64 |
| Standard | WHITE | F3 | 0.4091 | 0.3941 | 3450 | 57 |
| Standard | WWF | F4 | 0.4402 | 0.4031 | 2940 | 51 |
| Standard | DAY | F5 | 0.3138 | 0.3452 | 6350 | 72 |
| Standard | LWF | F6 | 0.3779 | 0.3882 | 4152 | 59 |
| Broad band | D65 | F7 | 0.3129 | 0.3292 | 6500 | 90 |
| Broad band | D50 | F8 | 0.3458 | 0.3586 | 5000 | 95 |
| Broad band | CWX | F9 | 0.3741 | 0.3727 | 4150 | 90 |
| 3 narrow bands | TL85 | F10 | 0.3458 | 0.3588 | 5000 | 81 |
| 3 narrow bands | TL84 | F11 | 0.3805 | 0.3769 | 4000 | 83 |
| 3 narrow bands | TL83 | F12 | 0.4370 | 0.4042 | 3000 | 83 |

Abbreviations:

| | |
|-------|------------------------|
| DAY | Daylight |
| CWF | Cool White Fluorescent |
| WHITE | |
| WWF | Warm White Fluorescent |
| LWF | |
| CWX | Cool White Delux |
| TL85 | Philips 5000K |
| TL84 | Philips 4000K |
| TL83 | Philips 3000K |

The nomenclature by Radium and Osram is at present not clear. G.H.

5. References

- [1] R.W.G.Hunt
Measuring Colour
Fountain Press, England, 1998
- [2] International Color Consortium
<http://www.color.org>
- [3] Specification ICC.1:21001-12
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- [4] G.Hoffmann
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- [5] G.Wyszecki + W.S.Stiles
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- [6] G.Hoffmann
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- [7] G.Hoffmann
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- [8] G.Hoffmann
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<http://docs-hoffmann.de/colcalc03022006.txt>
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- [9] G.Hoffmann
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<http://docs-hoffmann.de/specalc03022006.txt>
Rename as *.eps
- [10] G.Hoffmann
Color Management by ICC profiles
<http://docs-hoffmann.de/cmsicc08102003.pdf>
- [11] <http://www.brucelindbloom.com>

This doc
<http://docs-hoffmann.de/fluorescent02062006.pdf>