Measurement under Illumination

The evaluation of the photometric and colorimetric characteristics of displays requires simulating different ambient lighting situations. "Real situations" may vary from no illumination to diffuse or collimated illumination. The EZContrast 160R and EZLite 120R provides such intrinsic evaluation under no illumination.

Illumination options for EZContrast and EZLite have been developed to allow these illumination features. They can be used for **measuring any reflective samples (display or material)**.

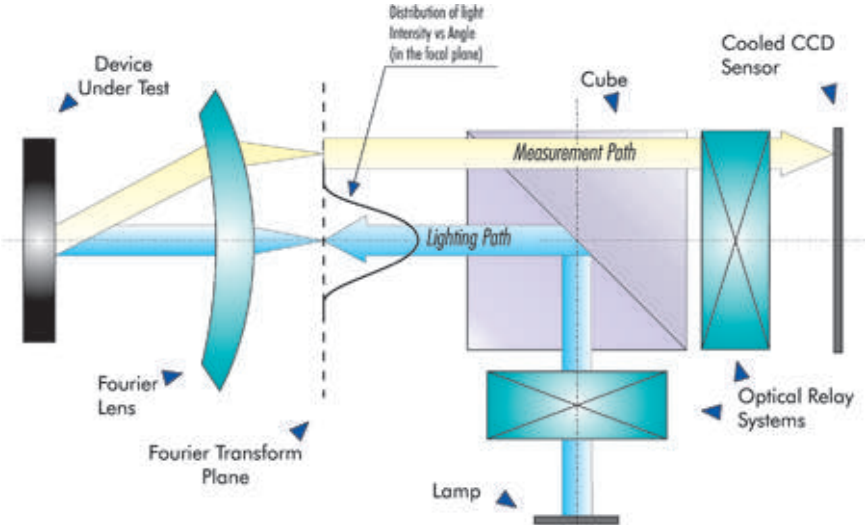
Basic Principle

The options for testing under illumination are based on the combination of Fourier Optics, beam splitter and a cooled CCD sensor head.

> A suitable light source on the side of the equipment provides the illumination (extended or point source depending on the required illumination type).

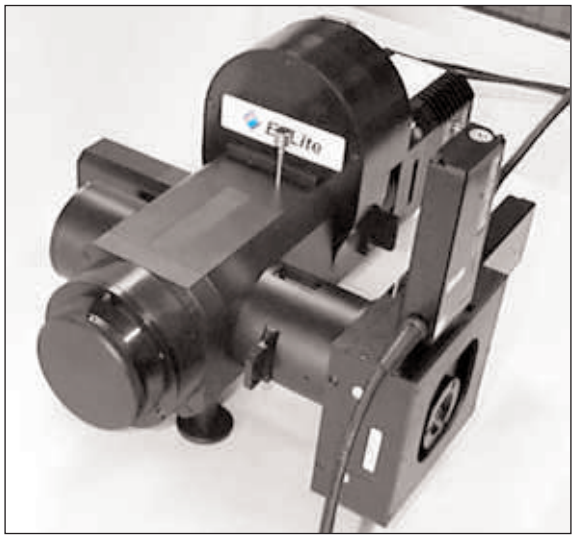
> An optical relay system combined with a beam-splitter cube enables to conjugate the light source plane with the Fourier plane. The light source distribution function allows to control the angular distribution of illumination.

> The lighting through the system can extend up to the viewing cone of the Fourier lens (+/- 80° or +/- 60°).



The illumination of the sample can easily be defined by selecting the illuminant type (C, D65, A,...), the intensity and distribution type (diffuse, collimated). Based on the above described principle, a diffuse illumination is easily obtained by producing a uniform light distribution in the Fourier plane. This leads to an independent angular distribution of incoming light on the sample. In the same way, a point source produces a collimated illumination.

The system self corrects for internal reflections.



Mounted SCANTool Option

Characteristics

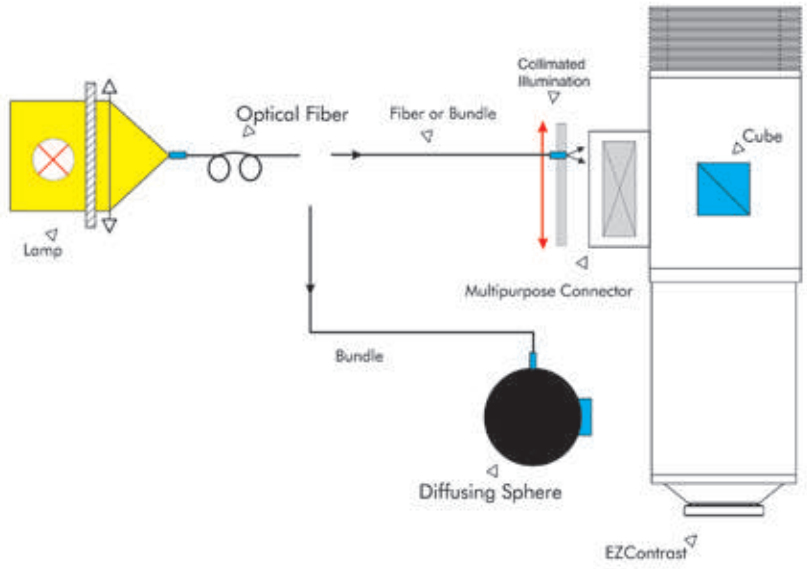
The light source is based on a 125 W arc lamp. Illumination intensity can be set on the sample from 10 to 10,000 lux (Diffuse). The spectral composition of the light can be adjusted by adding color glass filters (D65 as standard and C, or A types are available as options). Light is guided from the illumination lamp to the diffuser by optical fiber bundles. Diffuser is fixed on the side of your EZContrast equipment using a multipurpose connector.

Unpolarized **illumination is realized on a 4 mm diameter area**. This unique concept allows measurement in the full cone without worrying about the position of the lamp.

Analysis should be realized on an area within the illuminated surface (Spot size smaller than 333 mm). **Equipment should be focused on the sample surface**.

By replacing the Diffuse Add-On by the Specular Option, a collimated illumination can be applied to your sample. Incident and azimuthal angles of the illumination can easily be adjusted as required by your testing procedure.

ELDIM - 14200 Hérouville Saint Clair - France • Phone : + 33 2 31 94 76 00 - Fax : + 33 2 31 94 09 50
EMail : eldim@eldim.fr • Internet address : http://www.eldim.fr



Reflective Options Content

Specular Option

> A manual XY table for light injection, to be plugged in EZContrast or EZLite System via the multipurpose connector
> A source lamp adjusted to D65 illumination.
> A 333 mm spotsize
> A small integrating sphere to be used with a 2 mm bundle.
> A small connector to be used with a 1 mm optical fiber (N.A. : 0.22).
> The EZCom Software Reflective Add-On (*).

Diffuse Add-On

> An integrating sphere for light injection.
> Masks to simulate for example ring illumination or ulbricht sphere.

Mask Option

> Masks for ulbricht sphere or ring illumination simulation, as an option for Diffuse add-on.

Scantool Add-On

> A motorized XY table for light injection.
> A 1 mm optical fiber (N.A. : 0.37).
> The Scansoft Software.

Reflective Toolkit

> A Sample carrier to be used for films measurements and reflective calibration
> A light trap
> A mirror
> A white standard

Diffuse Option

Specifications

Illumination range (*)	Diffuse Collimated	10 to 10,000 lux 100 to 100,000 lux
Illuminated area	4 mm diameter	
Illumination cone	+/- 80° or +/-60° (EZContrast 160R or EZLite 120R)	
Color illumination	D65 , C or A type	

(*) depending on the configuration
The above features are additional ones to EZContrast or EZLite basic system specifications.

Required PC Configuration

> Dedicated computer with Pentium II processor (min 266 Mhz) or equivalent.
> 128 MBytes Ram.
> Windows 98 Second Edition or Windows 2000.
> High Color (16 bits) Video Card.
> Minimum 200 MBytes free on hard disk.
> CD-Rom Drive.
> USB port and PCI slot.

ELDIM - 14200 Hérouville Saint Clair - France • Phone : + 33 2 31 94 76 00 - Fax : + 33 2 31 94 09 50
EMail : eldim@eldim.fr • Internet address : http://www.eldim.fr