



# Analysis of Diffuser Panel and Reflector of LED Light Bulb

Low electricity consuming LED light bulbs are drawing attention because of its high energy-saving effect. A diffuser panel to reduce the intense light from the light source and a reflector for the efficient use of light are used for a LED light bulb.

This time, the UH4150 installed with a transmission holder (close contact), which allows the measurement the light including the diffused light, and a  $\Phi$  60 full integrating sphere was used to measure the transmission spectrum of the diffuser panel in a LED light bulb. The reflectance spectrum of the reflector of the LED light bulb was also measured by using the micro total reflectance measurement system (special order), which allows the measurement even for the micro size of about  $\Phi$  5mm.



UH4150 Spectrophotometer

## Transmission Spectrum Measurement for LED Light Bulb Diffuser Panel LED

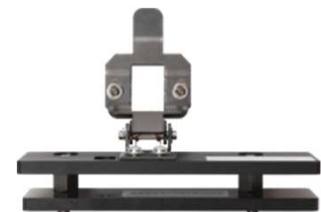
- ✓ With UH4150 model, by using a transmission holder (close contact) and  $\Phi$  60 full integration sphere, the total transmission spectrum including the diffused light can be measured.
- ✓ The high transmittance of about 90% was observed in the visible region. The result indicates that the consistently high transmittance enables the light transmittance without affecting the light bulb color and day white color tones (Figure 1).

### Analytical Conditions

Instrument	Model UH4150 Spectrophotometer
Measurement wavelength range	300~800 nm
Scan speed	300 nm/min
Slit	8 nm
Sampling interval	1 nm

### Accessory

- $\Phi$ 60 full-sphere integrating sphere accessory (P/N: 1J1-0122)
- Transmittance holder (close contact) (P/N: 1J0-0202)



Transmittance Holder (close contact)

### Transmission Spectrum

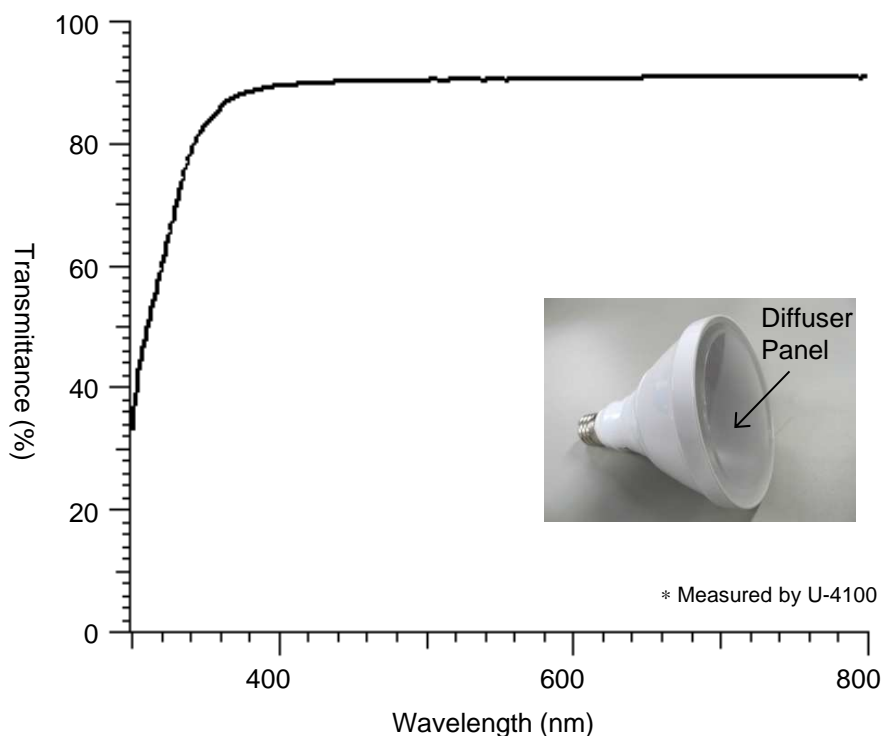
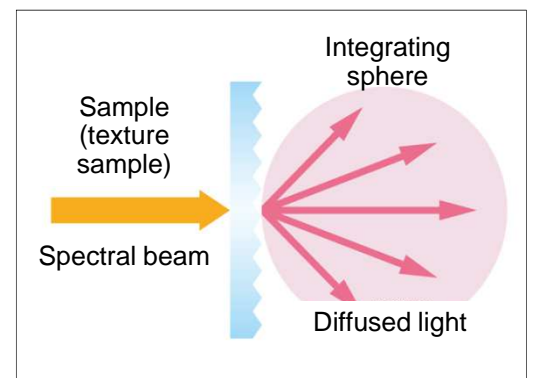


Figure 1 Transmission Spectrum of Diffuser Panel

### Analysis Image





### Total Reflectance Spectrum Measurement of LED Light Bulb Reflector

- ✓ By installing the micro total reflectance measurement system (special order) with the UH4150 model, the total reflectance spectrum including the diffused light from a sample of about  $\Phi$  5 mm can be measured.
- ✓ The size of the flat part of a reflector is very small. Therefore, a lens was used to focus the irradiation light.
- ✓ The aluminum plane mirror (DS No. UV110001-01) was used as the standard reflective material for the measurement of the total reflectance spectrum. The result is shown as the absolute value after the conversion based on the reflectance of the aluminum plane mirror.
- ✓ A high reflectance of about 90% was obtained (Figure 2). It is structured in such a way to efficiently utilize the light emitted by LED.

#### Analytical Conditions

<b>Instrument</b>	Model UH4150 Spectrophotometer
<b>Measurement wavelength range</b>	300~800 nm
<b>Scan speed</b>	300 nm/min
<b>Slit</b>	8 nm
<b>Sampling interval</b>	1 nm
<b>Standard reflective material</b>	Aluminum plane mirror

#### Accessory

- $\Phi$ 60 Standard Integrating Sphere (for total reflectance) (P/N: 1J1-0121)
- Micro Total Reflectance Measurement System (special order)



Lens of Micro Total Reflectance Measurement System (special order)



Total Reflectance Holder of Micro Total Reflectance Measurement System (special order)

#### Reflectance Spectrum

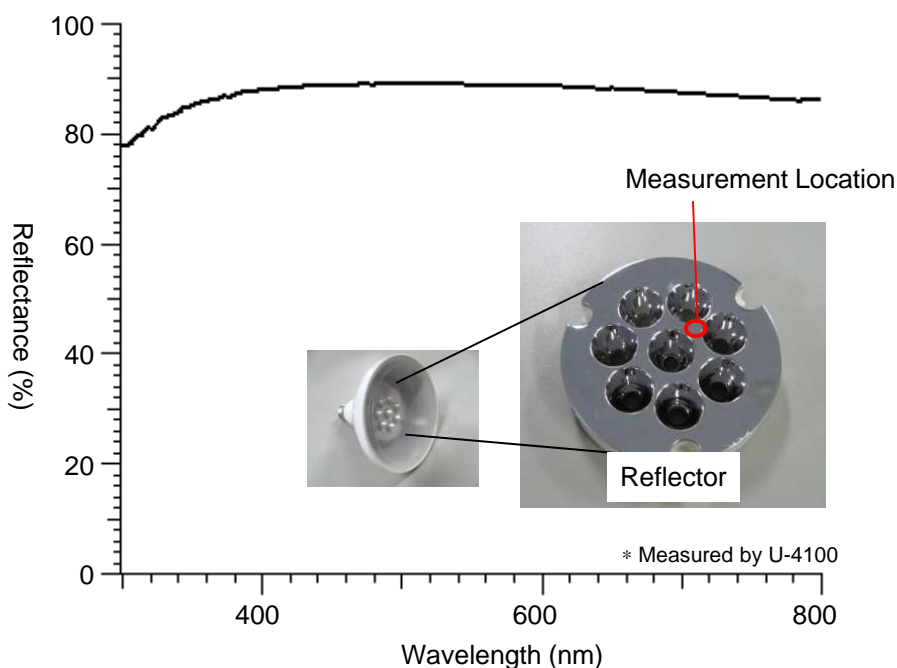


Figure 2 Reflectance Spectrum of Reflector

#### [KEY WORDS]

NOTE: These data are an example of measurement; the individual values cannot be guaranteed.

Spectrophotometer, UH4150, U-4100, LED, Diffuser Panel, Reflector, Transmission Spectrum, Reflectance Spectrum, Transmittance, Reflectance