Description: Double-Clad Fiber Coupler, Visible (430-680nm)

Item #: DC530SEFA
SN: T018576

Operating Wavelength Range: 430 - 680 nm
Maximum Single Mode Core Insertion Loss: 0.5 dB
Minimum Multimode Inner Cladding Transfer: 70%
Fiber Type:
  Double-Clad Fiber (Ports A and S): 2.3/15/125 µm
  Multimode Fiber (Ports B and R): 200/220 µm

Coupler Test Data

<table>
<thead>
<tr>
<th>Input-Output Path</th>
<th>Port S to Port B (Multimode Inner Cladding)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>635 nm</td>
</tr>
<tr>
<td>Transfer</td>
<td>82 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input-Output Path</th>
<th>Port A to Port S (Single Mode Core)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wavelength</td>
<td>430 nm, 530 nm, 632 nm</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>0.28 dB, 0.13 dB, 0.10 dB</td>
</tr>
<tr>
<td>Transmission</td>
<td>93.7 %, 97.0 %, 97.7 %</td>
</tr>
</tbody>
</table>

a. All values are measured at room temperature without connectors. See Verification Test Setup for details.
b. Multimode Transfer is flat over a wide wavelength range. Test Data at 635 nm is indicative of the performance over the 400 - 1750 nm wavelength range.
c. Multimode Transfer is defined as the ratio of the output power from Port B over the input power at Port S, as indicated in the coupler drawing above.
d. The guaranteed operating range of the device is from 430 to 680 nm. It is shown by the gray shaded area on the accompanying graph.
e. Insertion Loss (dB) is the ratio of the input power at Port A to the output power from the core of Port S as a function of wavelength.
f. Calculated from Insertion Loss data above.

While this coupler is specified between 430 and 680 nm, Thorlabs provides OSA data between 400 and 720 nm. The Noise Region come from the low power measured caused by the fibers absorption. The Artefact Region came from the OSA swithing optical sensor. An artificial pic might appear.

Verified by: Lucas Majeau Date: 04-18-17
Principle of Operation

Verification Test Setup

(1) Single Mode Insertion Loss/Transmission Measurement

The single mode input of the coupler is connected to a Broadband Light Source (BBS) through a 405HP fiber and a spool of double-clad fiber (DCF). The single mode coupler output is spliced to a coiled 460HP patchcord (to insure cladding modes are stripped) that leads to an Optical Spectrum Analyzer (OSA). A spectrum is recorded before and after the coupler manufacturing process. The difference between the two spectra can be defined as either Insertion Loss (dB) or Transmission (%).

(2) Multimode Transfer

The multimode input of the coupler is connected to a diffused 635 nm laser source through a DCF patch cord and a spool of DCF. Doing so ensures that the inner cladding modes are filled. The 200/220 μm fiber output of the coupler is connected to a silicon photodiode optical power meter. A first optical power is recorded. The coupler is then removed from the measurement setup and the DCF spool is connected directly to the same power meter. A second optical power is recorded. The Multimode Inner Cladding Transfer is defined as the ratio of the first to second power measurements (%).