

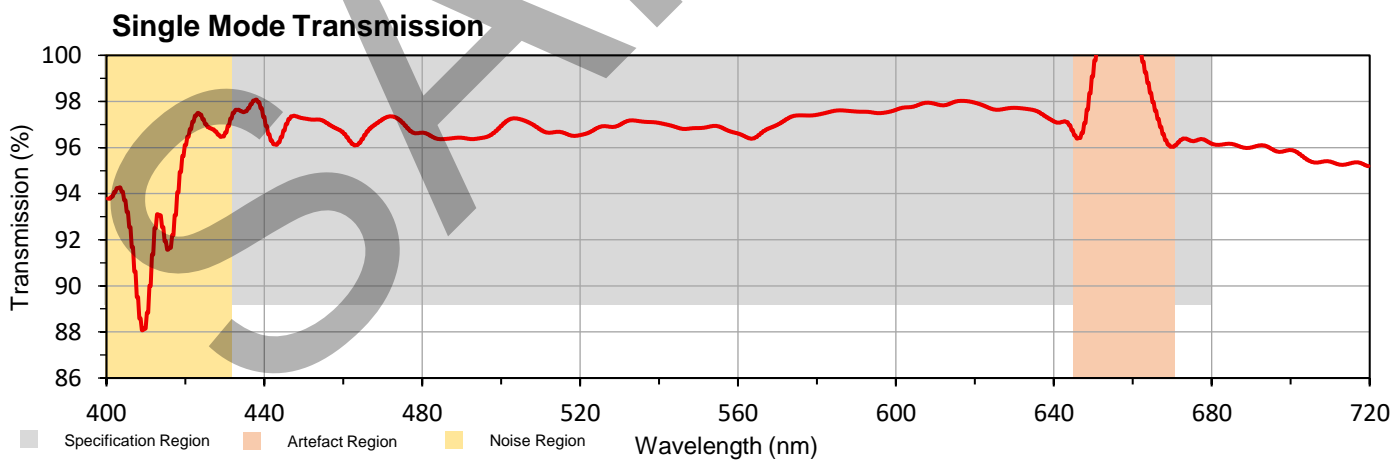
**FINAL INSPECTION REPORT**

<b>Description: Double-Clad Fiber Coupler, Visible (430-680nm)</b>	
Item #: DC530SEFA	Operating Wavelength Range: 430 - 680 nm
SN: T018576	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 $\mu\text{m}$
	Multimode Fiber (Ports B and R): 200/220 $\mu\text{m}$

Coupler Test Data <sup>a</sup>			
Input-Output Path	Port S to Port B (Multimode Inner Cladding)		
Wavelength <sup>b</sup>	635 nm		
Transfer <sup>c</sup>	82 %		
Input-Output Path	Port A to Port S (Single Mode Core)		
Wavelength	430 nm <sup>d</sup>	530 nm <sup>d</sup>	632 nm <sup>d</sup>
Insertion Loss <sup>e</sup>	0.28 dB	0.13 dB	0.10 dB
Transmission <sup>f</sup>	93.7 %	97.0 %	97.7 %

- 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.

**Coupler Test Data**

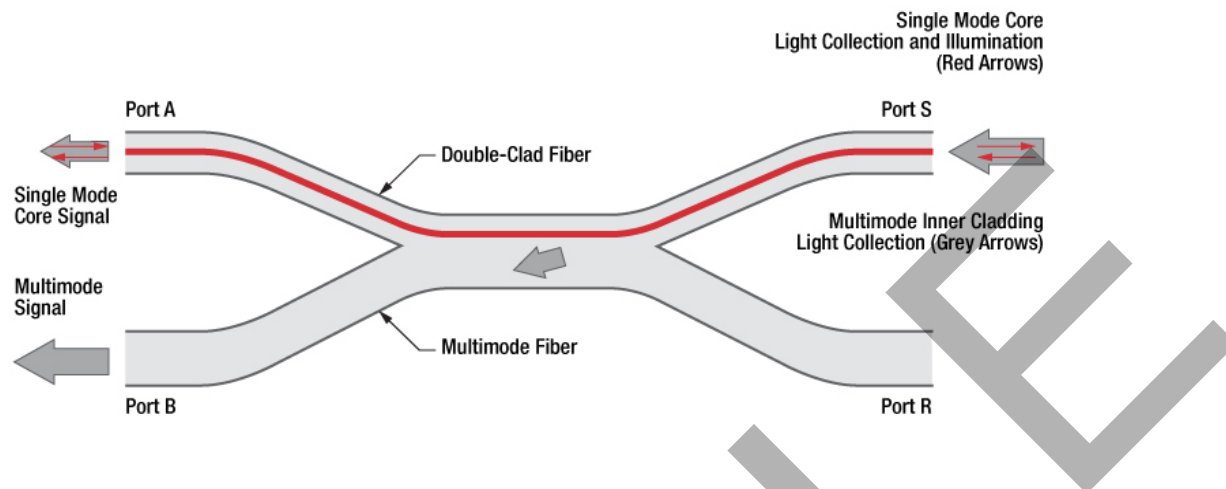


While this coupler is specified between 430 and 680 nm, Thorlabs provides OSA data between 400 and 720 nm. The Noise Region come from the low power measured caused by the fibers absorption. The Artefact Region came from the OSA swithing optical sensor. An artificial pic might appear.

Verified by: Lucas Majeau

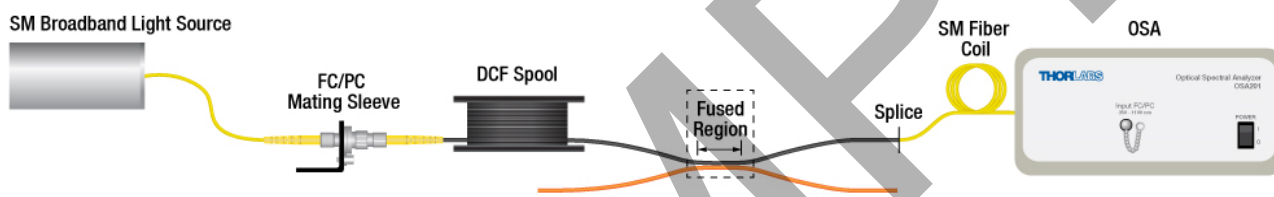
Date: 04-18-17

## Principle of Operation



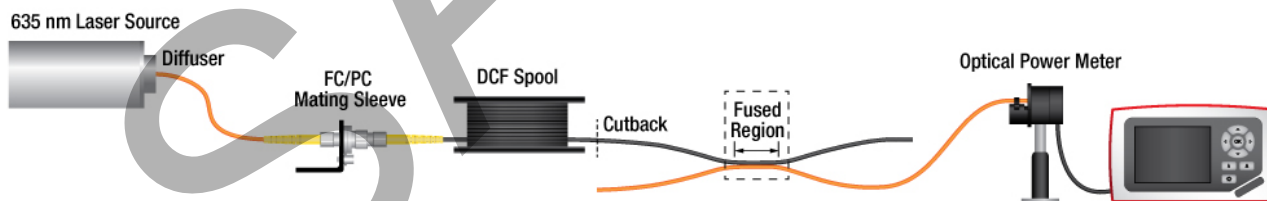
## Verification Test Setup

### (1) Single Mode Insertion Loss/Transmission Measurement



The single mode input of the coupler is connected to a Broadband Light Source (BBS) through an 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  $\mu\text{m}$  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 (%).