



## FINAL INSPECTION REPORT

### Description: Double-Clad Fiber Coupler, 1300 nm

Item #: DC1300LEB  
SN: T002957

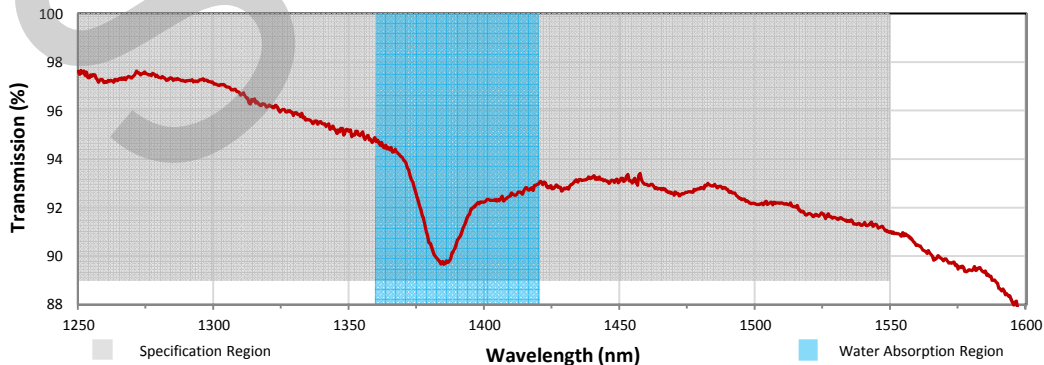
Operating Wavelength Range: 1250 - 1550 nm  
Maximum Single Mode Core Insertion Loss: 0.5 dB  
Minimum Multimode Inner Cladding Transfer: 60%  
Fiber Type:  
Double-Clad Fiber (Ports A and S): 9/105/125  $\mu\text{m}$   
Multimode Fiber (Ports B and R): 200/220  $\mu\text{m}$

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>	70%		
Input-Output Path	Port A to Port S (Single Mode Core)		
Wavelength	1250 nm <sup>d</sup>	1350 nm	1550 nm <sup>d</sup>
Insertion Loss <sup>e</sup>	0.10 dB	0.22 dB	0.41 dB
Transmission <sup>f</sup>	97.6%	95.1%	91.0%

- All values are measured at room temperature without connectors. See Verification Test Setup for details.
- Multimode Transfer is flat over a wide wavelength range. Test Data at 635 nm is indicative of the performance over the 1250 - 1550 nm wavelength range.
- 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.
- The guaranteed operating range of the device is from 1250 to 1550 nm. It is shown by the gray shaded area on the accompanying graph.
- 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.
- Calculated from Insertion Loss data above.

## Coupler Test Data

### Single Mode Transmission

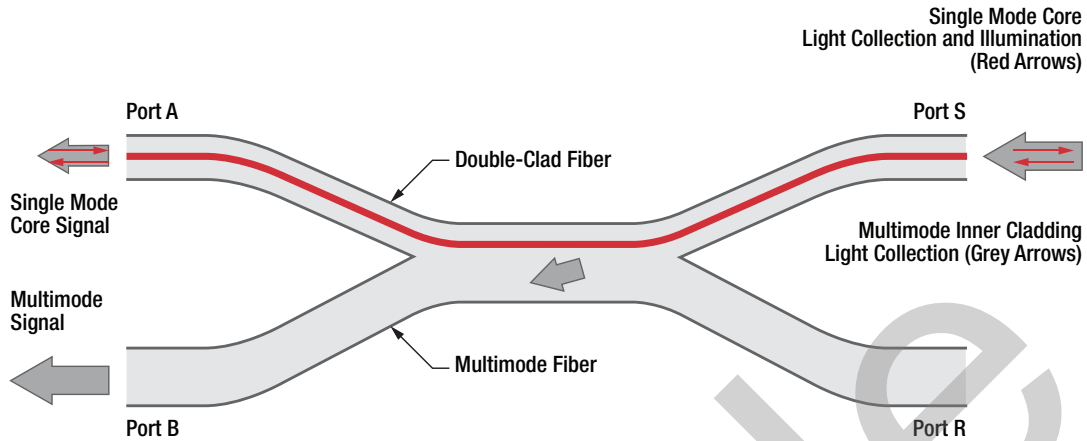


While this coupler is specified between 1250 and 1550 nm, Thorlabs provides data up to 1600 nm to provide insight into how this particular device would perform if used outside its guaranteed operating range. The out-of-band performance can vary from device to device.

Verified by:

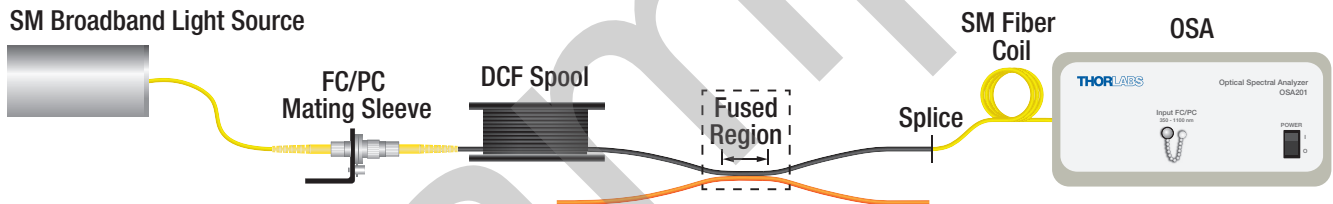
Date:

## Principle of Operation



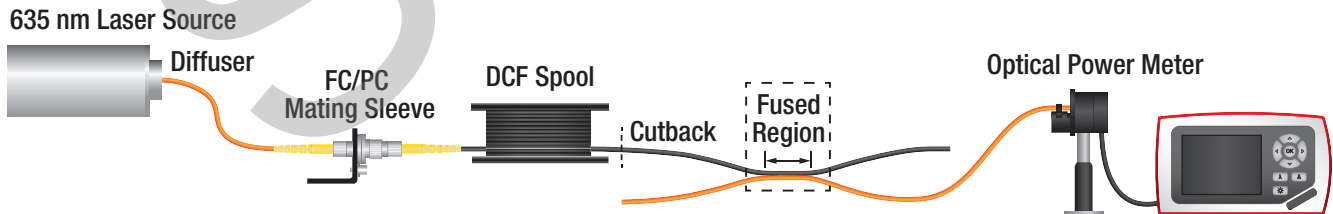
## Verification Test Setup

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



The single mode input of the coupler is connected to a Broadband Light Source (BBS) through an SMF-28 fiber and a spool of double-clad fiber (DCF). The single mode coupler output is spliced to a coiled SMF-28 patchcord (to ensure cladding modes are stripped) that leads to an Optical Spectrum Analyzer (OSA). A spectrum is recorded before and after the fibers are fused to create the coupler. 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  $\varnothing 105 \mu\text{m}$  core /  $\varnothing 125 \mu\text{m}$  cladding multimode fiber and a spool of DCF. Doing so ensures that the inner cladding modes are filled. The  $\varnothing 200 \mu\text{m}$  core /  $\varnothing 220 \mu\text{m}$  cladding 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 (%).