

REDEFINING LOW-LOSS FIBER OPTIC INTERCONNECTS

FOR PHOTONICS AND QUANTUM APPLICATIONS



Headquarters
DIAMOND SA
via dei Patrizi 5 | 6616 Losone
Switzerland
Tel. +41 58 307 45 45
info@diamond-fo.com

www.diamond-fo.com

WHAT IS ULTRA-LOW LOSS?

For decades, insertion loss values of the order of 0.1 dB were considered state of the art for fiber optic interconnects. DIAMOND has been delivering low-loss connectivity at this level since the early 2000s.

Today, photonics and quantum applications demand an even higher level of optical performance.

Ultra-Low Loss means:

- More optical power transmission
- Higher system efficiency
- Lower variability
- Improved signal integrity

Standard Low Loss

- IL ~ 0.1 dB
- T ~ 97%

Ultra-Low Loss

- IL ~ 0.02 dB
- T ~ 99.5%



1992
Grade B



2000
Introduction
of 0.1 dB Class



2023
Introduction
of ULL Class

THE FIBER / CORE IS AT THE CENTER OF OUR FERRULES



Active Core Alignment positions the fiber core exactly on the ferrule's axis with a residual eccentricity < 0.125mm. This grants an optimal alignment between mated connectors and unmatched loss performances.

ACTIVE CORE ALIGNMENT FOR PRECISION

Unlike conventional connector manufacturing processes based upon passive fiber assembly, DIAMOND's proprietary Active Core Alignment (ACA) process specifically aligns the core of the fibers at the very centre of the ferrule.

This reduces lateral offset significantly and allows for exceptionally low and repeatable insertion loss performance. This technology is applicable to a any type of fibers, such as PM and PCF.

Performance characterization

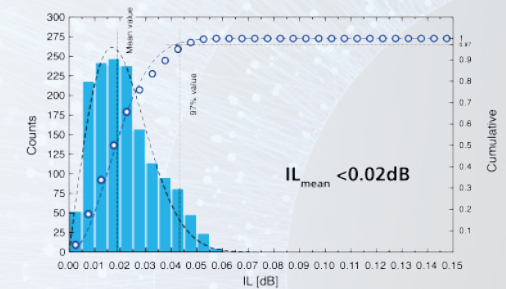
According to IEC 61300-3-34 random mating testing and confirmed independently by NIST.

SMF connections at 1550 nm

- Mean IL: 0.017 dB
- 97% IL: 0.042 dB

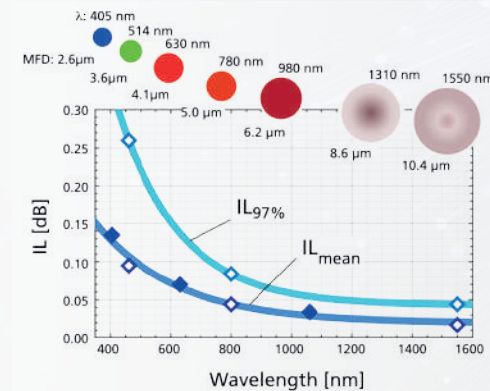
SMF connections at 780 nm

- Mean IL: 0.044 dB
- 97% IL: 0.082 dB



Connection loss distribution for a SMF at 1550 nm with E-2000® PC ULL connectors.

WHAT IF FIBER CONNECTORS WERE AS GOOD AS SPLICES?



Ultra-low loss values are also achieved with small-core fibers with very small mode field diameters from the near UV to the NIR spectral range.

