

# XBEAM

Performance Optical Connectors



## The Challenge:

A long standing MAC Panel customer, involved in the testing of high volume, high performance automotive products, had been using fiber optic for many years and had tried different approaches when connecting up to 16 multi-mode cables to their ATE (Automatic Test Equipment) systems.

Despite trying many different approaches, all previous connection systems failed to provide a reliable full spectrum performance for the optical signals. As such, the only way to connect from the ATE to the DUT (device under test) was via standard commercial optical cables and connectors. Our customer was doing just this. Each DUT presented for test required the test fixture to be manually connected with 16 individual optical cables with FC style connectors.

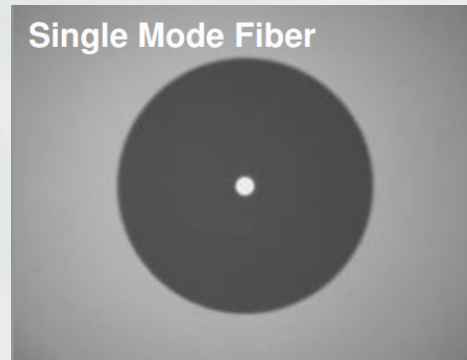
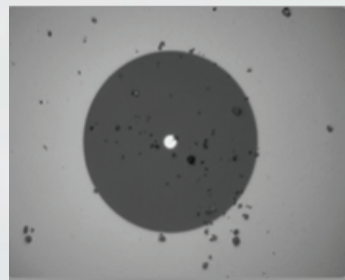
There were two primary issues with manually connecting these cables. The most obvious, perhaps, was the time involved in manually connecting. This process typically took at least 30 minutes per fixture set up, including frequent connector cleaning and maintenance. The second, potentially with the greater negative impact, is that the performance of the FC connectors degraded with multiple mating cycles.

## A Common Problem:

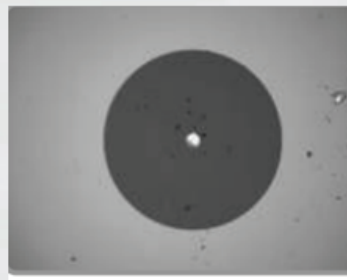
FC connectors, along with all glass to glass optical connectors, are not designed for the frequent mating associated with connections to ATE test fixtures. The performance of these connectors degrades after the initial connection and will continue to degrade as a result of lens wear from the glass to glass connection, and from contamination, and the cleaning process.

**Types of Contamination:**

Fiber end faces should be free of all contamination or defects, as shown on the right:

**Common types of contamination and defects include the following:**

**Dirt**



**Pits & Chips**



**Scratches**



**Oil**

Contamination, and lack of control over it, is a familiar problem with optical connectors. For example, a single fleck of dust can be sufficient to obstruct 15% of the transmission capacity of a multi-mode connector. Our customer frequently replaced the optical cables to ensure consistency of performance. This was a time consuming and costly process, and ultimately still lacked control over the signal performance.

**The Customer Requirement:**

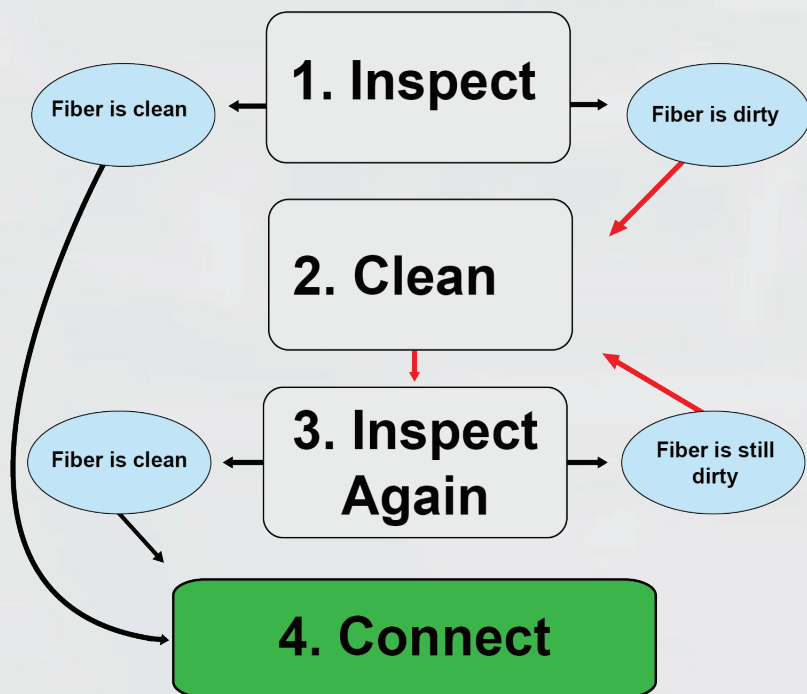
It was the lack of control over the performance of the FC connectors over a period of time that drove the need for a more reliable connection method that:

1. Could be connected in seconds rather than minutes.
2. Offered consistent and stable performance.

## The Solution:

X-BEAM optical connectors by MAC Panel are designed for integration into the popular SCOUT and TITAN Mass Interconnect product families. X-BEAM connectors operate for a minimum of 2,000 mating cycles (5,000 typical), with no cleaning or maintenance, to the full performance specification of the contact. This, coupled with a typical overall connection time of less than 30 seconds for all connectors in the system (since all contacts are connected simultaneously) made X-BEAM a perfect solution.

### Traditional Optical Connector Process



## The Result:

Our customer is now enjoying consistent and reliable optical performance which allows him to manage his ATE assets and test processes more effectively. It is estimated that the change to X-BEAM has already saved in excess of 100 hours ATE down-time.

