

## Certification to IEC 61300-3-35 Requires Automated End Face Inspection using Analysis Software Programmed to Specified Connector Quality Pass/Fail

### Overview

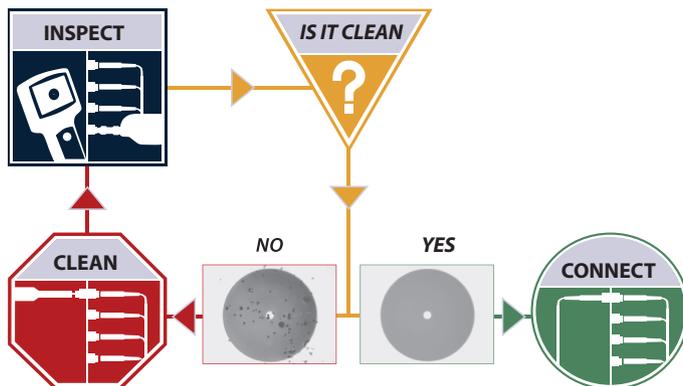
Aiding the industry effort to guarantee a common level of performance from the many fiber optic connectors found in today's fiber-rich, high-connectivity networks, the International Electrotechnical Commission (IEC) has created IEC 61300-3-35. This standard specifies pass/fail requirements for connector end face quality before connection and supports optimized product and network performance throughout the fiber optic life cycle when compliant with the standard at each stage. Because of the variables associated with manual inspection, compliance requires automated end face inspection using analysis software programmed to specified pass/fail criteria for connector quality. Automation of the systematic proactive inspection process using programmed analysis software eliminates the variables associated with manual inspection and provides a documented record of the quality of the connector end face at the point of installation, all in a 100-percent repeatable and reliable process. Combined, these benefits make automated end face inspection the most effective method available to assure and certify compliance to the IEC Standard throughout the fiber optic product life cycle and achieve the promise of next-generation networks.

### Introduction

It is widely known in the fiber optic industry that scratches, defects, and dirt on fiber optic connector end faces negatively impact network performance. If dirty and damaged end faces are not dealt with systematically, these defects can degrade network performance and eventually take down an entire link. In the effort to guarantee a common level of performance from the connector, the IEC developed Standard 61300-3-35 which specifies pass/fail requirements for end face quality inspection before connection.

### IEC Standard 61300-3-35

IEC Standard 61300-3-35 is a global common set of requirements for fiber optic connector end face quality designed to guarantee insertion loss and return loss performance. The standard contains pass/fail requirements for inspection and analysis of the end face of an optical connector, specifying separate criteria for different types of connections (for example, SM-PC, SM-UPC, SM-APC, MM, and multi-fiber connectors). The quality values used in the IEC Standard are the result of years of extensive testing of scratched, damaged, or dirty optical connectors conducted by a coalition of industry experts including component suppliers, contract manufacturers, network equipment vendors, test equipment vendors, and services providers. As a result, the IEC Standard represents a reliable and repeatable standard of quality that guarantees a common level of product and network performance throughout the entire fiber optic life cycle. Receive full details on the IEC Standard by purchasing copies of the copyrighted document at [www.ansi.org](http://www.ansi.org) and searching for "61300-3-35".



### Proactive Inspection Model: Inspect Before You Connect™

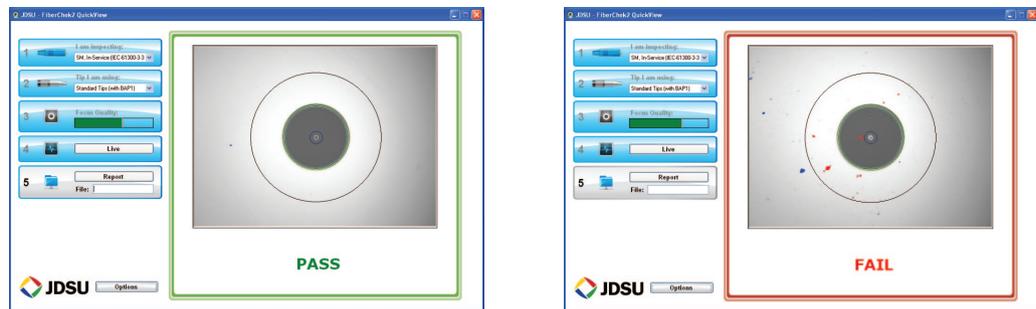
The IEC Standard is designed to guarantee a common level of fiber optic connector performance, but it only works when compliance exists every time connectors are mated. In the industry-wide effort to comply with the standard, current fiber optic handling best practices recommend systematic proactive end face inspection before connection.

JDSU reinforces this practice with its widely used proactive inspection model—Inspect Before You Connect (IBYC). While current research shows that the IBYC process is reducing the installation of contaminated fibers and improving network performance, the variables associated with manual inspection (for example, technician eyesight and expertise, ambient lighting, and display conditions), keep manual inspection from being a 100-percent reliable and repeatable method of assuring a common level of end face quality and IEC compliance. In addition, because no record of the end face condition is created, certification of quality at the point of installation using manual inspection is impractical.

Recognizing the variables and limitations of manual inspection, the IEC used the programmable inspection and analysis software FiberChek2® to develop the standard. Automating the inspection process using programmable software eliminates the variables associated with manual inspection and provides a documentable and certifiable record of the quality of the connector end face at the point of installation. Because the IEC standard requires the tester to know the exact location and size of surface defects (for example, scratches, pits, and debris), automated inspection and analysis using software programmed to specified pass/fail criteria is the only 100-percent reliable and repeatable way to achieve and certify IEC or customer-specified compliance for fiber optic end face quality—which is also the only way to realize the speed and bandwidth performance promised by next-generation networks.

**Current Industry Standard for Automated Inspection and Analysis: FiberChek2**

JDSU-developed FiberChek2 automates the pass/fail process using research-based parameters extracted from more than 8 years of testing on a constantly expanding database of fibers and fiber devices (for example, SM, MM, Ribbon, E2000, SFP/XFP, bend-insensitive fibers, lenses, and other interfaces). Conducted by a coalition of industry experts, including component suppliers and contract manufacturers, this extensive testing combined with widespread use by component manufacturers, integrators/CMs, OEMs, third-party installers, and service providers make FiberChek2 from JDSU the current proven industry standard for automated objective fiber optic connector end face inspection. The combination of common requirements (IEC 61300-3-35) and automated inspection and analysis (FiberChek2) have measurably impacted product quality throughout the supply chain.



Inspection Screenshots of the JDSU FiberChek2 Inspection and Analysis Software Program Used in Development of IEC Standard 61300-3-35

**Conclusion: IEC Compliance Requires Automated Inspection and Analysis Software**

Because only a 100-percent repeatable and reliable inspection and analysis process can ensure consistent product performance throughout the entire fiber optic product life cycle, IEC compliance requires automated inspection and analysis software programmed to specified connector quality pass/fail criteria.

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