

# IEC REQUIREMENTS FOR LASER PRODUCT SAFETY



**Outside of the U.S., the IEC 60825 series of standards are generally used to evaluate the potential laser hazards from laser products.**

## **Common laser product safety standards in this series include:**

**IEC 60825-1:** “Safety of laser products – Part 1: Equipment classification and requirements”

- The base laser product safety standard for all laser products

**IEC 60825-2:** “Safety of laser products – Part 2: Safety of optical fibre communication systems (OFCS)”

- Additional requirements for fiber-optic systems

**IEC 60825-12:** “Safety of laser products – Part 12: Safety of free space optical communication systems used for transmission of information”

- Additional requirements for free space systems that are generally installed to transmit information from rooftop to rooftop

## **The process for evaluating a laser product to the IEC 60825-1 Standard involves the following main steps:**

1. Determining the laser Class of the radiation that is accessible for the Operator, Maintenance, and Service personnel (usually by laser power/energy measurements per the IEC 60825-1’s test methods);
2. Making sure the product employs the applicable labels, construction features (interlocks, key control, beam attenuator, emission indicator, etc.), user manual statements, etc. as required based on the laser Classes present;
3. Generating the appropriate IEC 60825-1 Report documenting how the product complies;
4. Laser product manufacturers may use an IEC 60825-1 Report as part of their comprehensive technical file to show the laser product safety requirements are met, or to support a request for a 3rd party safety mark.

## **IEC 60825-1 Requirements and IEC Certification:**

When products are submitted to UL for full IEC Certification (an evaluation of all potential hazards, not just laser hazards), generally, the laser safety aspect of that Certification process will use the IEC 60825-1 laser safety requirements.



### How UL Can Help with the IEC 60825-1 Process?

**A:** UL can perform any or all of the above steps in the IEC 60825-1 process for laser product manufacturers, even without a concurrent evaluation for full IEC Certification to address other non-laser safety requirements. Key services related to this IEC 60825-1 process include:

- Conducting a preliminary evaluation on a product (or even the plans for a future product, if the actual product is not yet available) to provide guidance on what the IEC 60825-1 will require for labeling, construction requirements, user manual statements, etc
- Performing only the laser testing and providing the results to the manufacturer. This could also include the determination of the laser Classification by providing detailed Classification calculations and results
- Performing laser testing, determination of the laser Class, and a construction review of the product and providing the results in a letter report
- Performing all of the above and providing the manufacturer with an IEC 60825-1 Report in the official IEC Test Report Format (TRF) – either with a CB Test Certificate, or just as an Informative Report

These services can help manufacturers meet IEC 60825-1 laser safety requirements, as well as address laser safety requirements for a full IEC Certification of the product.

