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OPERATING LIFETIMES OF OZ OPTICS FIBER PIGTAILED LASER MODULES

OZ Optics has spent significant research efforts in developing laser modules with high reliability and long operating lifetimes. With the use of in-fiber directional fiber optic power monitors, these sources can achieve very high stability (< 2% variation), even compensating for over-time degradation of optical components and laser diode fluctuations. With this method, OZ Optics is able to achieve longer operation life times and greater stability than is usually achievable with laser diodes. This technique can be easily applied to other source wavelengths, including high power applications that may greatly benefit from the stability and enhanced lifetime.

The following charts give typical test data for optical sources that have been manufactured. While actual lifetimes depend on the operating wavelength, laser power, and reliability data for the laser diodes by the manufacturers, the data shown here indicates the reliability of the optics and control electronics developed by OZ Optics.

Example 1: 670 nm sources

Chart 1 shows the output power over time for six laser diode sources, pigtailed with polarization maintaining fibers. All six sources emit 1 mW of laser power at 670 nm with a forward monitoring optical tap used to control and stabilize the output power. The devices were operated at room temperature continuously for over one year. As shown in the chart, all six devices have operated for the entire duration of the test with less than 1% reduction in output power, and are expected to operate at least 3 years with less than 5% variation.

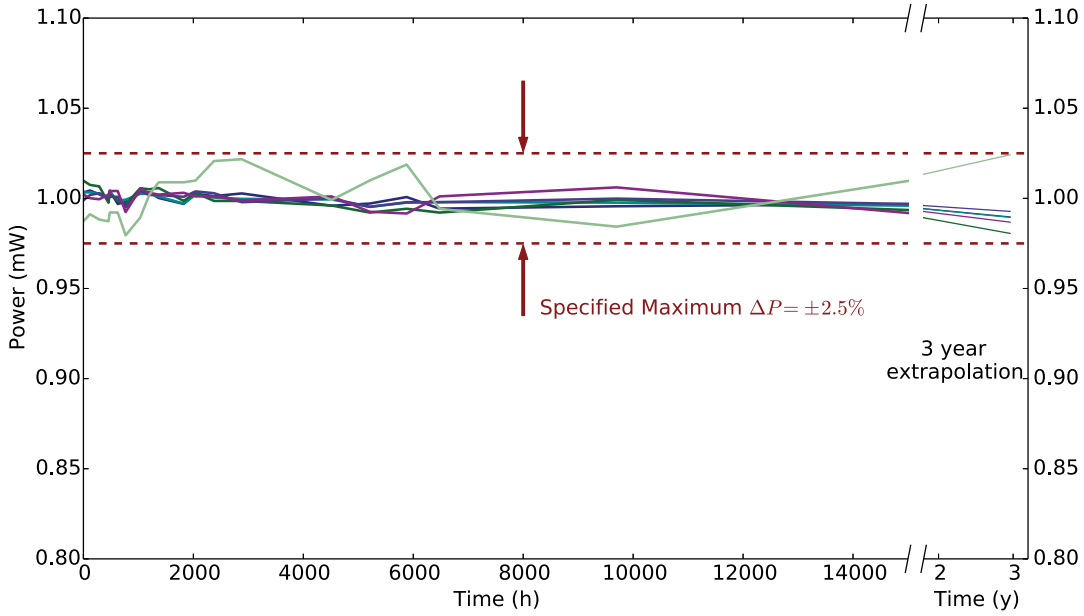

Chart 1: 670 nm source lifetime test results measured for 6 devices operating for 15000 hours.

Example 2: 450 nm sources

Chart 2 shows the output power over time for a laser diode source, pigtailed with a polarization maintaining fiber, operating at 450 nm with 23 mW of output power. A forward monitoring optical tap was used to stabilize the source and the device was operated at room temperature continuously for over 1500 hours with less than 1.5% variation in output power.

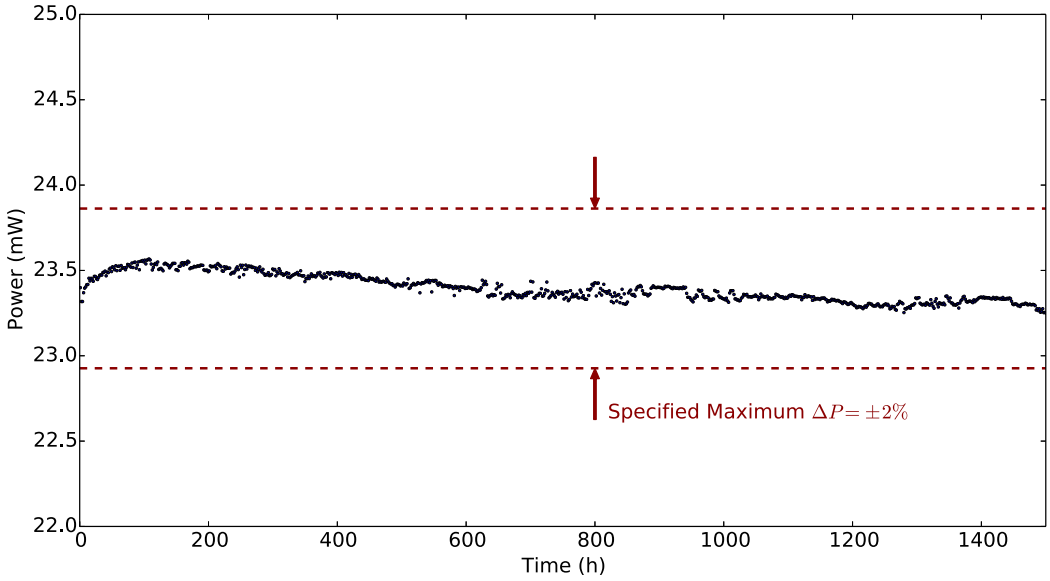

Chart 2: 450 nm source lifetime test results measured for a device operating for 1500 hours.

Example 3: 405 nm sources

Chart 3 shows the output power over time for three laser diode sources, pigtailed with polarization maintaining fibers. All three sources emit over 30 mW of laser power at 405 nm. Power was controlled using the internal monitoring photodiode inside the laser diode housing. The devices were operated at room temperature continuously and all the units performed for 1400 hours with less than 3% variation in output power.

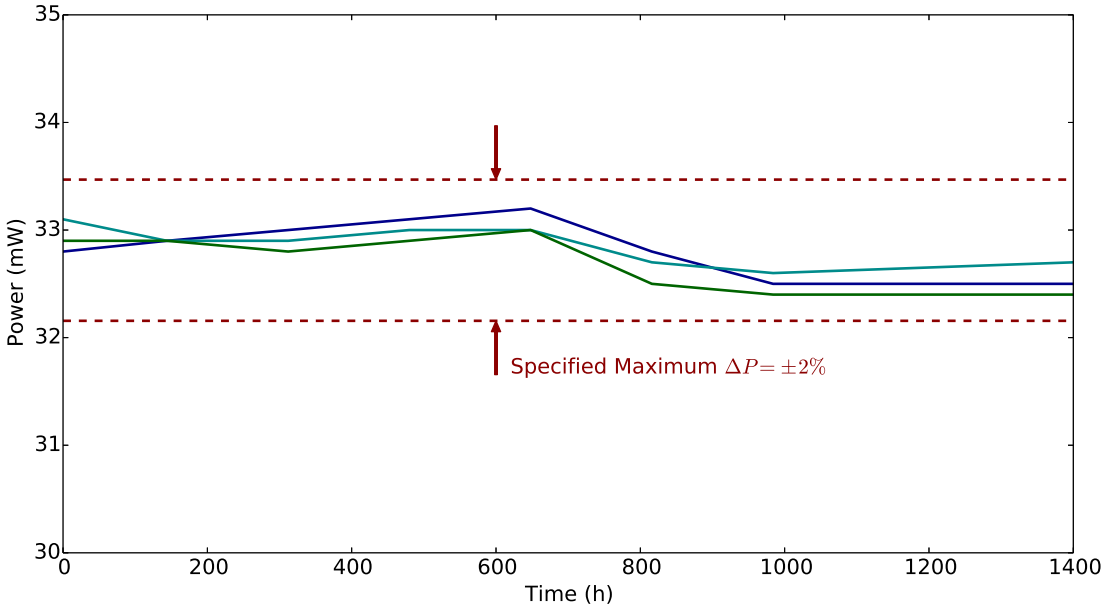

Chart 3: 405 nm source lifetime test results.