



Breaking the Quantum Barriers

**For Immediate Release**

## **ORBITS LIGHTWAVE LAUNCHES ETERNAL™**

### **A breakthrough DWDM laser source that will reset industry standards**

Pasadena, Calif., March 20, 2003 – Orbits Lightwave, Inc. has launched ETERNAL™, the world's most stable DWDM laser. ETERNAL™ represents an important technological breakthrough, offering orders of magnitude better stability and noise performance than the industry standard DFB semiconductor laser. This is the first of a series of commercial laser products Orbits is developing for the Dense Wavelength Division Multiplexing (DWDM) market. The ETERNAL is available for customer sampling and will be on display from March 25-27, 2003 at OFC 2003 (booth 2263) in Atlanta, Georgia.

The most important technical development that enables the explosive growth of the internet is the ability to add bandwidth capacity by increasing the DWDM system channel count. To increase the channel density, while avoiding cross talk between channels, the demands on the absolute frequency stability of the laser transmitter become increasingly stringent, down to 1 GHz for 25 GHz channel spacing. "This has proven to be a challenging task for the DFB laser," says Amnon Yariv, Martin and Eileen Sommerfield Professor of Applied Physics and Electrical Engineering at the California Institute of Technology (Caltech). Dr. Yariv originally invented the DFB laser and co-founded Orbits.

"The critical problem with DFB lasers," explains Prof. Amnon Yariv, "is that the laser's operating frequency is highly sensitive to changes in temperature and injection current. This fundamental property cannot be readily modified and requires high precision temperature and current controllers, to stabilize the laser frequency. Moreover, as the laser and temperature stabilizing circuitry age, the laser frequency can drift as much as tens of GHz from the DWDM channel frequency. This requires adding an external frequency reference and complex electronics and software."

The breakthrough achieved by the Orbits team, headed by Dr. Yaakov Shevy, Orbits co-founder and CEO, is the integration of these functions into a fiber laser that is only a few centimeters long. The Orbits laser passively "locks" on the ITU channel frequency and does not require an external locker, temperature control or complex electronics. The laser architecture also eliminates spatial hole burning associated with a standing wave pattern in a linear cavity. This leads to higher power, better side mode suppression and very low FM and AM noise. The laser is based on intellectual property licensed from Caltech and additional patent pending technology developed at Orbits.

The Orbits ETERNAL™ fixed frequency laser is now available for customer sampling. The laser is the first in a line of fiber laser products that utilize the Orbits architecture. Potential applications include: DWDM laser source, cable TV source, microwave generation, remote sensing and metrology. Under development are also tunable lasers that have already demonstrated unparalleled performance and compact form factor. Orbits Lightwave, Inc. is a Caltech start-up company located in Pasadena California. Orbits' mission is to develop and market breakthrough components for the telecommunications and other lightwave applications areas

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Press Release