

OFS AND FURUKAWA LAUNCH HIGH-OUTPUT NARROW-LINEWIDTH TUNABLE LASER FOR ULTRA-HIGH BIT RATE 100 Gbps TRANSMISSION

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Furukawa Electric Co., Ltd., and the U.S. based OFS, Specialty Photonics Division today announced a high-output narrow-linewidth full-band tunable laser for ultra-high bit rate 100-Gbps digital coherent transmission. The full-band tunable laser provides superior performance as a signal light source and/or a local light source for digital coherent communication systems.

Furukawa Electric has begun shipping commercial samples. The product will be exhibited at OFC/NFOEC 2011, the world's largest international conference/exhibition on telecommunications.



Background

In recent years, there has been an exponential increase in the volume network infrastructure traffic, due to several enterprise and consumer market trends including cloud computing, data centers, video on demand (VoD), voice over IP (VoIP), video distribution, ubiquity of smartphones, popularity of social networks and peer to peer applications. As a result, the access, metro and long-haul network infrastructure will be required to plan and expand for ever increasing network capacity demand, eventually increasing the use for tunability in various systems and networks containing add/drop points.

Signal multiplexing techniques such as wavelength multiplexing help deal with the technological complexities of expanding transmission capacity in the core network infrastructure. However, even this technique is quickly approaching technological limitations with the current number of multiplexed wavelengths of 88. Therefore, it is becoming a requirement to raise the transmission speed per wavelength from 40 Gbps to 100 Gbps.

If the ultra-high bit rate optical transmission of 100 Gbps is implemented based on the conventional scheme of binary intensity modulation where optical intensity is ON/OFF keyed, it is impossible to transmit optical signals reliably because the signals are heavily impacted by degradation and noise over the transmission line. In May 2010, the Optical Interconnecting Forum adopted the digital coherent scheme, which uses light phase or state of the lightwave in place of light intensity or ON/OFF keying. This makes transmission much more robust against signal

degradation and unaffected by noise, along with the multilevel modulation scheme which enables suppression of net transmission speed.

This scheme has already been employed in parts of Europe and is expected to be deployed full-scale in North America in 2012. In the digital coherent scheme, interference between phase-modulated signal light and local light is utilized for demodulation at the receiving side to obtain intensity-modulated signal light. Since high coherency is required to suppress errors at the time of signal demodulation, both the signal light and local light are required to be low in oscillation spectrum width or narrow in linewidth.

With its proven track record in signal light source for optical network systems, Furukawa developed a full-band tunable laser, utilizing its developed technology for full-band tunable lasers of distributed feedback (DFB) laser array type. The tunable laser has an output of higher than 40 mW with a linewidth of lower than 500 kHz. These specifications are expected to deliver superior performance as a signal light source and/or a local light source for digital coherent communication systems.

Product Specifications

Item	Specification
Tunable wavelength range	1528 ~ 1564 nm (C band)
Optical output	40 mW (at C band)
Linewidth	< 500 kHz
Side-mode suppression ratio	> 40 dB
Average relative intensity noise	< -145 dB/Hz
Wavelength stability	< ± 2.5 GHz

About Furukawa Electric Company, Ltd.

Furukawa Electric Co. Ltd. (www.furukawa.co.jp/english) is an \$11 billion global leader in the design, manufacture and supply of fiber optic products, network products, electronics components, power cables, nonferrous metals, and other advanced technology products. Headquartered in Tokyo, Japan, Furukawa operates production facilities on five continents around the globe, including OFS and the OFS, Specialty Photonics Division, in the USA.

About OFS

OFS is a world-leading designer, manufacturer and provider of optical fiber, optical fiber cable, FTTX, optical connectivity and specialty photonics products. Our manufacturing and research divisions work together to provide innovative products and solutions that traverse many different applications as they link people and machines worldwide. Between continents, between cities, around neighborhoods, and into homes and businesses of digital consumers we provide the right optical fiber, optical cable and components for efficient, cost-effective transmission.

OFS' corporate lineage dates back to 1876 and includes technology powerhouses such as AT&T (NYSE: T) and Lucent Technologies (now Alcatel-Lucent, NYSE: ALU). Today, OFS is owned by Furukawa Electric, a multi-billion dollar global leader in optical communications. Headquartered in Norcross (near Atlanta) Georgia, U.S., OFS is a global provider with facilities in Avon, Connecticut; Carrollton, Georgia; Somerset, New Jersey; and Sturbridge, Massachusetts, as well as in Denmark, Germany and Russia.

For more information, please visit www.ofsoptics.com.

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