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News Release

OFS AND FURUKAWA LAUNCH COHERENT MIXER WITH BUILT-IN POLARIZATION MULTIPLEXER/DEMULTIPLEXER

OFC/ NFOEC 2011, Booth 2019, Los Angeles, California, March 8, 2011 – Furukawa Electric Co., Ltd., and the U.S. based OFS, Specialty Photonics Division, today announced a coherent mixer with built-in polarization multiplexer/demultiplexer for ultra-high bit rate 100-Gbps digital coherent transmission. The coherent mixer, a key component required at the signal receiver in the optical digital coherent scheme, is integrated with a polarization multiplexer/demultiplexer resulting in a compact device. This helps reduce costs and provides simplification, high reliability, small form factor, and elimination of characteristics degradation at the connected part. Furukawa Electric plans to begin volume production in the 3rd Quarter 2011. The product will be exhibited at OFC/NFOEC 2011, the world's largest international conference/exhibition on telecommunications.

Photo: Appearance of Coherent Mixer with built-in polarization multiplexer/demultiplexer

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.

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 (OIF) Note 1 decided to adopt 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, enhanced ultra-high speed optical transmission can be realized by using two orthogonally polarized lightwaves to propagate the phase-modulated signals. A polarization multiplexer/demultiplexer and a coherent mixer (or optical interference device) are required at the signal receiver in such a scheme.

Furukawa Electric has developed a single compact device that integrates a polarization multiplexer/demultiplexer, which has a high-polarization extinction ratio, with a coherent mixer, which has excellent loss of uniformity. This builds upon Furukawa technology and vast experience in planar lightwave circuit (PLC), optical splitters and athermal waveguide gratings (AWGs) with high reliability and superior characteristics. The product thus combines the advantages of PLC stabilized characteristics reproducibility with the skew minimization characteristics of a coherent mixer.

Product Specifications

- High reliability having a proven track record in splitters and athermal AWGs
- Low cost
- Small size
- Excellent loss uniformity (1 dB or better)
- Low skew (typically 1 ps or lower)
- High polarization extinction ratio (18 dB or higher)

Note 1: OIF; The Optical Internetworking Forum (OIF) promotes the development and deployment of interoperable networking solutions and services through the creation of Implementation Agreements (IAs) for optical networking products, network processing elements, and component technologies.

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, connectivity, FTTx and specialty photonics solutions. Our marketing, sales, manufacturing and research teams provide forward-looking, innovative products and solutions in areas including Telecommunications, Medicine, Industrial Automation, Sensing, Government, Aerospace and Defense applications. We provide reliable, cost effective optical solutions to enable our customers to meet the needs of today's and tomorrow's digital and energy consumers and businesses.

OFS' corporate lineage dates back to 1876 and includes technology powerhouses such as AT&T and Lucent Technologies. Today, OFS is owned by Furukawa Electric, a multi-billion dollar global leader in optical communications.

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

CONTACT:

Sherry Salyer

OFS Public Relations

shsalyer@ofsoptics.com

Direct: 770-798-4210

Mobile: 678-296-7034

Technical Contact:

Oshima Isamu

Furukawa Electric

oshima.isamu@furukawa.co.jp