

Bit Rate Multiplier



Applications

- Up to 640 Gb/s OTDM system
- Transmission network characterization

Features

- Passive fiber delay line based technology
- Bit rate multiplication x2, x4, x8 and x16 of the input bit rate
- Operation wavelength range from 1530 to 1565 nm
- Linearly polarized output
- Tunable delay greater than 200 ps
- Amplitude equalization
- Low insertion loss
- Long term stability
- PRBS output

The Bit Rate Multiplier (BRM) is a passive device to increase the repetition rate of an input optical clock by 2, 4, 8, and 16 times. It splits the input pulse into two identical images, and sends them to a Mach-Zehnder interferometer. One leg of the interferometer has variable pulse delay and amplitude equalization, while the other leg has fixed bit pattern delay. Bit pattern delay ensures that the output is a pseudo-random bit sequence (PRBS) when the input signal is PRBS. After recombination, the repetition rate is twice the input rate. By cascading up to four stages, the bit rate can be multiplied 16 fold.

In conjunction with Calmar's picosecond fiber lasers (PSL), pulse streams of 10, 20, 25, 40, 50, 80, 100, 160, 200, 320 GHz and beyond can be generated. With its all PM configuration, neither a pre- nor post- multiplication polarization controller is needed. As a result, all channels get the same linear polarization status automatically. The proprietary design of precise attenuation compensation enables amplitude equalization for all channels. A tunable optical delay of greater than 200 ps provides end users a very wide range of input bit rates. BRM is very easy to operate with laser sources from different vendors and the output after multiplication is very stable. The optional temperature controller further enhances the output stability for different environmental conditions.

Technical Specifications

Model Number	BRM-T-2	BRM-T-4	BRM-T-8	BRM-T-16
Multiplication Factor	2	4	8	16
Wavelength (nm)	1530 ~ 1565			
Polarization Extinction Ratio (dB)	>20			
Input Data Format	$2^7-1 \sim 2^{31}-1$ PRBS			
Output Data Format	2^7-1 PRBS			
Tunable Delay (ps)	>200			
Temp Stability (ppm/°C)	10			
Insertion Loss (dB)	5	10	15	20
Dimensions (cm)	48(w) x 42(d) x 9(h)			

Due to our continuous improvement program, specifications are subject to change without notice.

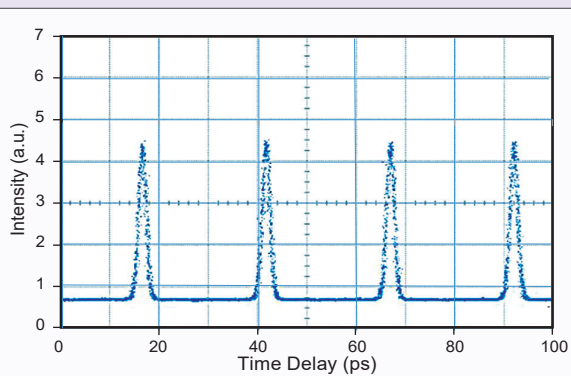
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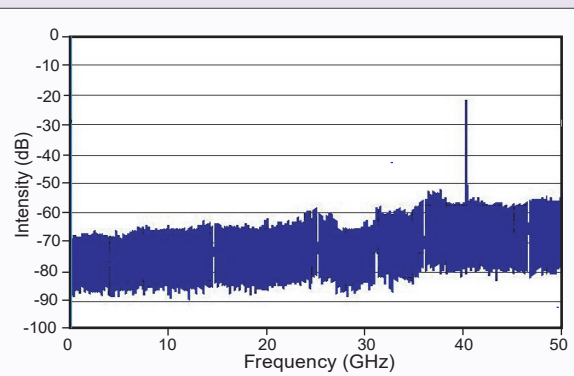
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Oscilloscope Trace Corresponding to a 40 GHz Output Signal with a Pulse Width of 2.2 ps (10 ps/ div)



40 GHz Spectrum, Suppression of Input Frequency >35dB
Input 10 GHz, Output 40 GHz

