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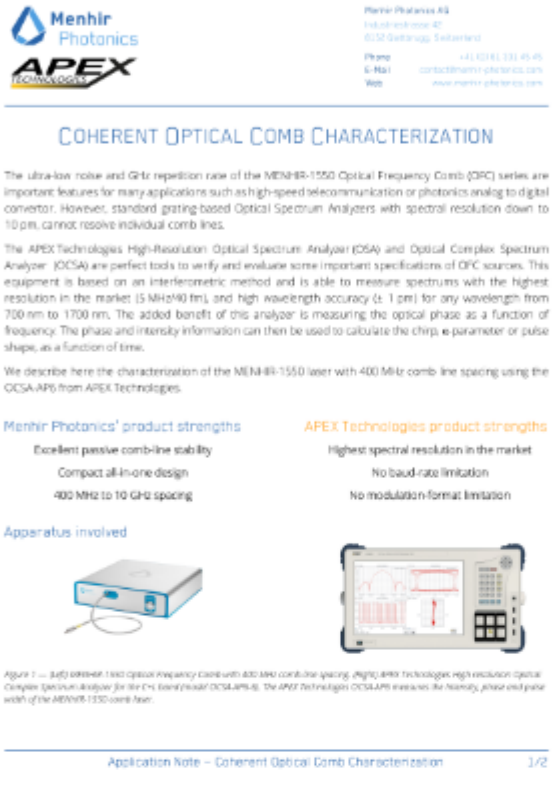
Wednesday, March 6, 2024

PHOTONICS spectra®

WHITE PAPERS & APPLICATION NOTES



Menhir Photonics
APEX TECHNOLOGIES

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COHERENT OPTICAL COMB CHARACTERIZATION

The ultra-low noise and GHz repetition rate of the MENHIR-1550 Optical Frequency Comb (OFC) series are important features for many applications such as high-speed telecommunication or photonics analog to digital convertor. However, standard grating-based Optical Spectrum Analyzers with spectral resolution down to 10 pm, cannot resolve individual comb lines.

The APEX Technologies High-Resolution Optical Spectrum Analyzer (OSA) and Optical Complex Spectrum Analyzer (OCSA) are perfect tools to verify and evaluate some important specifications of OFC sources. This equipment is based on an interferometric method and is able to measure spectrums with the highest resolution in the market (5 MHz/40 fm), and high wavelength accuracy (± 1 pm) for any wavelength from 700 nm to 1700 nm. The added benefit of this analyzer is measuring the optical phase as a function of frequency. The phase and intensity information can then be used to calculate the chirp, α-parameter or pulse shape, as a function of time.

We describe here the characterization of the MENHIR-1550 laser with 400 MHz comb line spacing using the OCSA-AP6 from APEX Technologies.

Menhir Photonics' product strengths
- Excellent passive comb-line stability
- Compact all-in-one design
- 400 MHz to 10 GHz spacing

APEX Technologies product strengths
- Highest spectral resolution in the market
- No baud-rate limitation
- No modulation-format limitation

Apparatus involved

Figure 1 — (left) MENHIR-1550 Optical Frequency Comb with 400 MHz comb line spacing. (Right) APEX Technologies High-resolution Optical Complex Spectrum Analyzer for the C+L band model OCSA-AP6-40. The APEX Technologies OCSA-AP6 measures the intensity, phase and pulse width of the MENHIR-1550 comb laser.

Application Note – Coherent Optical Comb Characterization 1/2

Coherent Optical Comb Characterization

The ultra-low noise and GHz repetition rate of the MENHIR-1550 optical frequency comb (OFC) series are important features for many applications such as high-speed telecommunication or photonics analog to digital convertor. We describe here the characterization of the coherent comb using the OCSA-AP6 from APEX Technologies. The device can resolve each comb line in amplitude and in phase, and it allows to calculate the pulse profile in the time domain.

DOWNLOAD APPLICATION NOTE

Menhir Photonics

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