

Press Release

08. September 2020

Stable photonic microwave generation in a compact format

The technology of ultra-stable microwave generation using optical oscillators currently enjoys growing importance. Within this photonic generation process, the optical frequency of an ultra-stable continuous wave (cw) laser is phase coherently transferred into the microwave range by means of an optical frequency comb. The underlying technique of optical frequency division (OFD) generates microwave signals with unprecedented stability. In comparison, the phase noise of conventional electronic oscillators is several orders of magnitude larger due to their inherently high losses. Cryogenic sapphire oscillators allow for signal noise in the range of the photonic technique, but they make great technical demands on their operation and are extremely cost intensive. While the potential of the photonic microwave generation for academic and commercial applications has been known since several years, the practical use of such systems was so far limited to a smaller user group because of their high complexity and the expertise needed for their operation. As the pioneer of the optical frequency comb technology and experienced manufacturer of ultra-stable cw lasers, Menlo Systems now offers the first commercial complete solution for photonic microwave generation. The PMWG-1500 Photonic Microwave Generator is a compact system which is fitted into a mobile 19" rack. It constitutes Menlo Systems' SmartComb compact and fully automated optical frequency comb generator which is reference to Menlo Systems' ORS-Cubic Ultrastable Laser. The ORS-Cubic is based on a cubic resonator cavity which stabilizes the cw laser to a linewidth of <1 Hz. The PMWG-1500 profits from Menlo System's expertise in the fields of optical reference systems, microwave generation, and frequency comb technology.

The result are microwave signals up to 12 GHz with a phase noise of <-130 dBc/Hz at offset frequencies from 1 kHz relative to the carrier. Moreover, the complete system guarantees high reliability, is easy to operate, and cost efficient with respect to purchase and operation. The area of application for ultra-stable microwave signals ranges from the characterization of cesium atomic clocks, to classical radar applications and satellite communication. Menlo Systems' PMWG-1500 is ideally suited as source of ultra-stable microwave signals for future applications in the most recent technological fields.

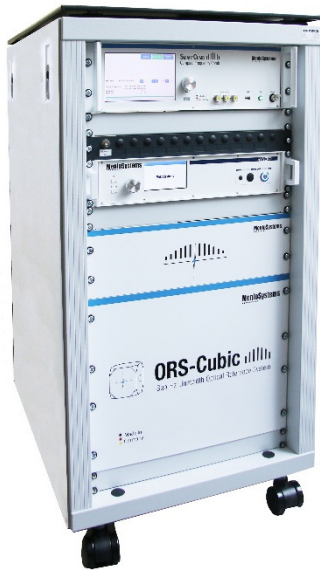


Abbildung: PMWG-1500 Photonischer Mikrowellengenerator im kompakten 19" Einschubregal

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About Menlo Systems:

Precision in Photonics. Together we shape light.

Menlo Systems GmbH is a leading developer and global supplier of instrumentation for high-precision metrology. The company with headquarters in Martinsried near Munich is known for its Nobel Prize winning

optical frequency comb technology. With subsidiaries in the US and China and a global distributor network, Menlo Systems is closely connected to its customers from science and industry. The main product lines are optical frequency combs, time and frequency distribution, terahertz systems, ultrafast and ultrastable lasers, and corresponding control electronics. Besides standard production, Menlo Systems develops and manufactures custom made solutions for laser-based precision measurements.
