

FAB S and LAB S

Do It Terahertz—Virginia Diodes



If you need very high frequency, reliable test & measurement sources or detectors over 150 GHz, Virginia Diodes (VDI) is about the only place to go. VDI produces state-of-the-art test & measurement equipment for applications from 26 GHz to 2 THz. These products include vector network analyzer, spectrum analyzer and signal generator extension modules that extend the capability of high performance microwave measurement tools to higher frequencies. VDI's component products include detectors, mixers, frequency multipliers and custom systems including space applications.

All VDI components include in-house fabricated GaAs Schottky diodes and microelectronic filter structures so they have full control over the starting materials and production processes. Showing market leadership at high frequencies, VDI worked with Keysight to create the first system for network analysis up to 1.5 THz for Chalmers University of Technology in 2016, and is the only company supplying waveguide-based power meters over 100 GHz (using the Erickson design that they acquired years ago).

VDI was founded in 1996 by Dr. Thomas W. Crowe—still VDI's CEO and president—as a spin-off from the Terahertz Research Program at the University of Virginia (UVA). From 1996 to 2001, VDI sold only Schottky diodes for scientific applications including radio astronomy and high frequency radar. During that period, VDI operated as a UVA spin-off and utilized the facilities on-site. Around 2001, VDI expanded to include offices in downtown Charlottesville, Va. and started selling complete mixer, detector and multiplier products operating from 50 to 1000

GHz. By 2004, VDI started selling sub-systems such as THz transmitter and receiver modules. That same year, all VDI operations moved to the current location on Second Street in Charlottesville and stopped utilizing UVA facilities.

VDI has continued to grow the number of product offerings and employees needed to satisfy a broad range of THz and mmWave customers. The company employs more than 50 engineers, technicians and administrative staff working in a high tech 20,000 sq. ft. facility. Its mission is to make the THz frequency band as useful for scientific, defense and commercial applications as the microwave and infrared bands are today.

While visiting in April, *Microwave Journal* learned about a very interesting project VDI participated in under a NASA Small Business Innovative Research contract. The company developed and manufactured an 883 GHz radiometer to perform global ice cloud mapping on a NASA cubesat, appropriately called IceCube. IceCube was launched from the International Space Station in May 2017, and successfully made measurements to prove the concept of using submillimeter waves to make these measurements from space, as they had previously only been done from aircraft. NASA now plans to do future missions using COTS products from companies such as VDI due to this project's success. So if your project demands very high frequency signals or analysis, VDI is your starting point.

www.vadiodes.com