

Core Competencies

Micro Harmonics specializes in ferrite components for mm-wave frequencies from 25-400 GHz. Every product that we make offers unique capabilities that distinguish it from any competing technology. Our components find use in a wide range of MMW systems including test & measurement equipment, portal security, telecommunications, scanners, and radar.

Differentiators

Full Band Waveguide Isolators

Our millimeter-wave ferrite components are the most advanced in the global market. Our isolators have the industry's **lowest insertion loss** by a wide margin. They employ **diamond heatsinks**, giving them the **highest power handling capability** on the market. Micro Harmonics has developed a full line of isolators optimized for **cryogenic applications**.

Circulators

Our Y-junction circulators have the **lowest insertion loss** and **broadest bandwidth** in the industry. Our patented millimeter-wave hybrid circulators have a much wider bandwidth than traditional Y-junction circulators and are thus an enabling technology for broadband telecommunications and radar applications.

Voltage Variable Attenuators

Micro Harmonics has developed a line of **voltage variable attenuators** for mm-Wave systems based on the physics of Faraday rotation. They offer **improved power handling and higher bandwidth** than other available technologies.

Proven Performance

Customers use our products when they need the absolute highest performance in their mm-wave systems. Micro Harmonics has a **unique and sophisticated test and measurement facility** with all the equipment necessary to make comprehensive vector measurements from a few hundred MHz to over 400 GHz. **We provide RF test data for each and every component that we ship.**

Company Data

Micro Harmonics was founded in 2008. The company currently employs ten people. In 2015 the company began developing a line of ferrite components for NASA. The initial components were high-frequency MMW isolators and circulators used to suppress standing waves and direct signal flow in MMW systems. In 2018 the product line was expanded to include cryogenic MMW isolators and voltage variable attenuators. These components were targeted for NASA instrumentation but also find wide application in the commercial, scientific, and military sectors.

In 2020, Micro Harmonics invented and patented an all new MMW hybrid circulator with significantly higher bandwidth than the previous state-of-the-art circulator. This component will enable ultra-broadband telecommunications links for emerging 5G/6G applications.

Socio-Economic Category: SB

DUNS:	034119968
CAGE CODE:	6T4C6
NAICS:	334220
	334419
	541330
	541715
PSC:	H259 AJ12
	5985 5999
	C219 AR12
	C222 C215

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SBIR/STTR

Micro Harmonics has been working with NASA to develop MMW technology since 2015. MHC has been awarded six SBIR's to develop state-of-the-art ferrite components for MMW and THz systems. Every SBIR has resulted in a commercialized product line: compact wideband Faraday rotation isolators optimized for either room temperature or cryogenic applications, wide band Y-junction circulators, voltage variable attenuators, and our patented hybrid circulators.

According to the SBIR/STTR Commercialization Report to Congress (9/15/14), "A significant advantage to Phase I/II award winners is that Federal agencies may pursue *sole source* contracts to utilize technology developed through prior SBIR/STTR awards..."

Government NASA SBIR Contracts

Year	Contract	Technical Monitor
2015	NNX15CP37P	Goutam.Chattopadhyay@nasa.jpl.gov
2016	NNX16CP07C	Goutam.Chattopadhyay@nasa.jpl.gov
2017	80NSSC18P2018	Goutam.Chattopadhyay@nasa.jpl.gov
2018	80NSSC19C0148	Goutam.Chattopadhyay@nasa.jpl.gov
2019	80NSSC20C0410	Karthick.Srinivasan@nasa.jpl.gov
2021	80NSSC21C0489	Karthick.Srinivasan@nasa.jpl.gov



Past Performance

International Cryogenic Customers

Micro Harmonics Corporation (MHC) was asked by an international institution to develop a cryogenic isolator in a non-traditional band (W-9, 82-123 GHz) for both room temperature and cryogenic applications. These isolators are also useful for multiplier chains in THz systems.

MHC designed a very low-profile cryogenic isolator in W-band for the Rutherford Appleton Laboratory to be used in the Sardinia Radio Telescope receiver in Europe. Our miniature design allows for over thirty adjacent isolators to fit into the system. Unlike standard isolators, MHC isolators are not affected by external magnetic fields, so they are a perfect solution for a tight system requiring adjacent units.

Leaders in MMW and THz Devices

Virginia Diodes (VDI) uses Micro Harmonics isolators in their line of MMW frequency extension modules. VDI is a world leader in test and measurement equipment and is a supplier of frequency extenders for Keysight PNA's. Dr. Jeffrey Hesler, CTO, Hesler@vadiodes.com.

Research Institutions

We have also sold products to NASA JPL, National Radio Astronomy Observatory (NRAO), European Space Agency (ESA), Korea Astronomy and Space Science Institute (KASI), National Astronomical Observatory of Japan (NAOJ), University of Chicago, Harvard Smithsonian, MIT, Cal State University, SLAC, Stanford University, Cornell ACERT Lab, Northeastern University, Institute of Electronics Microelectronics and Nanotechnology (IEMN), Institut National d'Optique (INO).

Other Notable Customers

Keysight, Anritsu, Ceyear, Northrop Grumman, National Instruments, Farran, Low Noise Factory, Teledyne, Spacek Labs.