

# INTRODUCING OUR FOUR BUSINESS UNITS





Test & Measurement Equipment

**Calibration & Measurement Services** 



**Custom System Applications** 



Millimeter Wave & Sub-THz COTS



# TEST & MEASUREMENT EQUIPMENT

From its rich COTS component foundation, Eravant has developed a wide variety of standalone test equipment and partnered with key industry leaders to offer cost-effective test solutions for covering mmWave and sub-THz frequency bands up to 330 GHz.

#### ANTENNA TESTING

#### Antenna Ranges

- Millimeter wave and sub-THz compact ranges
- VNA extenders for OTA (overthe-air) ranges

#### **Antenna Range Accessories**

- Standard gain horn and probe antenna assemblies
- Antenna mounts
- Dual-polarized corrugated horn assemblies
- Broadband dual-ridge and quad-ridge reference horns
- Orthomode transducers (OMT)
- Rectangular/circular waveguide rotary joints
- Polarizers
- Compact range reflectors



#### EXTENDERS

#### Signal Sources and Frequency Extenders

- Mechanically tuned gunn oscillators with modulators
- Frequency synthesizers
- Frequency generator extenders
- Upconverter/downconverters

#### Vector Network Analyzer (VNA) Extenders

- TX/RX VNA extenders
- Waveguide calibration kits
- Proxi-Flange<sup>™</sup> contactless flanges
- Wave-Glide<sup>™</sup> VNA rail system

#### **Other Extenders and Simulators**

- Signal analyzer extenders
- Noise figure analyzer extenders
- Phase Noise Analyzer Extenders
- Radar Target Simulators



#### ACCESSORIES

#### **Test and Measurement Accessories**

- Compact benchtop amplifiers
- Amplitude detectors
- Direct reading/programmable waveguide attenuators
- Benchtop/mini faraday isolators
- Electrically controlled attenuators
- Electro-mechanical waveguide switches
- Pin diode switches (SPST/SPDT/ SP4T/SP8T/SP16T)
- Waveguide to coax adapters
- Instrumentation grade waveguide sections
- Waveguide quick-connects
- Mini-jacks
- Test and VNA cables
- Coaxial components



# CALIBRATION & MEASUREMENT SERVICES

Eravant recognizes that many customers need occasional testing and calibration of certain components and sub-systems in high frequency bands covering 50 to 330 GHz for various applications. Historically, customers would had to develop, purchase, or rent expensive, dedicated test setups. Now, Eravant is pleased to offer the following test and calibration services to the industry as a cost-effective solution to this problem.

## ANTENNA MEASUREMENT

Frequency Range: 0.7 to 330 GHz

Gain, 2D, 3D radiation pattern measurement

Far-Field Range up to 15 ft (4.5 m) far-field distance

Compact Range for DUT up to  $\varphi 12$  in (300mm)

Max DUT Weight: 6 lbs. (2.7 kg)

## **CRYOGENIC COMPONENT TESTING**

Frequency Range: DC to 110 GHz

Temperature Range: 293 K (+20 °C) to 4.2 K (-269 °C)

7.5"x7.5"x7.5" Workspace for DUT

## THERMAL VACUUM (TVAC) COMPONENT TESTING

Coming Soon (Q4 2024)

Frequency Range: DC to 110 GHz

Temperature range:-160 °C to 250 °C

Vacuum Pressure: 10-6 torr.

24"x24"x24" Workspace for DUT

## NOISE SOURCE CALIBRATION

Frequency Range: 10 to 220 GHz

Cross-Reference Method for Coax (10 to 67 GHz)

Hot/Cold Reference Method for Waveguide (18 to 220 GHz)

Cold Reference Termination Cooled with LN2







# CUSTOM PRODUCT SOLUTIONS

Eravant has amassed a wealth of knowledge, experience and design libraries from its COTS component foundation. As a result, Eravant has helped developed many custom products and sub-assemblies for customers, ranging from one-time components and subsystems to high volume production parts. Eravant works with customers every step of the way in the development process, from concept to manufacturing.

#### **PROJECT 1**

Space Heritage - Ka-Band Transceiver & Antenna Assembly

Application: Small Maritime Surveillance CubeSat

Development: 5 Months Program: Perseus-M Satellite

**Features:** The module converts a 0.9 to 1.1 GHz IF input signal to deliver linear transmission of +29 dBm at 26.7 to 26.9 GHz frequency range with a built-in phase locked oscillator, integrated transmitter, polarizer, and lens corrected antenna.

**Results:** Eravant successfully delivered seven space flight qualified Ka-Band integrated transmitter assemblies (ITAs) within five months. The project culminated with a published IEEE paper entitled "Low cost Ka-band transmitter for CubeSat systems" presented at IEEE Radio & Wireless Week. Two satellites were launched into space with additional units to follow.

#### **PROJECT 2**

Space Heritage - C-Band & Patch Antennas

Application: 6U CubeSat Deep-Space Mission

Development: 3 Months Program: ArgoMoon

**Features:** The C-Band and X-Band antennas fulfill the frequency requirement of 7.145 to 7.235 GHz and 8.4 to 8.5 GHz, respectively and feature 8.0 dBi gain with 8.519 dB return loss.

**Results:** Eravant successfully delivered two of each antenna within three months. Both antennas were installed in the satellite system, which was

#### **PROJECT 3**

# Case Study: Custom Sounder for 5G mmW Channel Characterization

**Application:** 5G millimeter wave channel characterization, integral to the development of the architecture and design of new wireless networks. The sounder is unique in its ability to quickly capture and process real-time channel parameter measurements.

Development: 5 Months Program: AT&T and NI "Porcupine"

**Features:** TX and RX modules that include sector antennas, amplifiers, and switch networks to support system requirements. To realize the project in such a short amount of time, Eravant relied on their millimeter wave hardware experience and drew heavily from manufacturing knowledge gained through the development of their standard product offering.

**Results:** Eravant successfully delivered the channel sounder capable of making 6,000 measurements per minute. Its real-time signal processing can generate an enormous amount of data. The equipment was used to model the 28 GHz portion of the spectrum.



## MILLIMETER WAVE & SUB-THZ COMMERCIAL-OFF-THE-SHELF (COTS) COMPONENTS

Eravant's mission is to make millimeter wave and sub-THz technologies (30 to 300 GHz) more accessible. In the past decade, Eravant has focused on the development of standard commercial-off-the-shelf (COTS) components which are the building blocks for system applications.

Today, Eravant offers over 5000+ unique models in a wide range of categories, from passive components such as antennas and waveguides to active devices such as amplifiers and multipliers.

## **OSCILLATORS**

- Dielectric resonator
- Gunn oscillators
- Phase locked
- **Synthesizers**
- Voltage tuned oscillators

## **ANTENNAS**

- Conical/pyramidal horns
- Corrugated horns •
- Lens corrected •
- Spot-focusing lens •
- Omnidirectional
- Cassegrain reflector
- Patch array
- Polarizers •
- Orthomode transducers •
- Probes
- Dihedral/trihedral corner • reflectors
- Rotary joints •
- Mono-pulse •
- Slotted waveguide array •
- Dual ridge/quad ridge horns



## AMPLIFIERS

- Benchtop amplifiers •
- Broadband amplifiers
- GaN, low noise amplifiers
- Power amplifiers



## COAXIAL COMPONENTS

- Fixed attenuators
- Adapters
- Bulkheads
- Loads
- Power splitter/combiner
- Hybrid/directional coupler
- Filters
- Bias tees
- Dc blocks
- Cable assemblies



### **CONTROL DEVICES**

- Voltage controlled variable attenuators
- Analog/digitally controlled phase shifters
- PIN diode switches
- Manual waveguide switches
- Motorized waveguide switches



#### WAVEGUIDE COMPONENTS

- Straight/bend/twist sections
- Bulkheads
- Waveguide to coax adapters
- Taper/mode transitions
- Termination loads
- Magic tees
- Power dividers
- **Directional couplers**
- Filters



## FERRITE DEVICES

- Coaxial isolators/circulators
- Benchtop/mini faraday isolators
- Y-junction isolators/ circulators



#### FREQUENCY CONVERTERS

- Amplitude detectors
- Passive/active multipliers
- Mixers



## LOWERING BARRIERS

Eravant's mission is to make millimeter wave (mmWave) and sub-terahertz (sub-THz) radio frequency technology more accessible to scientists, academics, and engineers by lowering budget, knowledge, and experience barriers traditionally found in the mmWave space. MmWave and sub-THz frequencies specifically refer to a portion of the radio frequency spectrum covering 30 to 300 GHz. For over a decade, Eravant has been focused on developing and manufacturing commercial-of-the-shelf (COTS) components in this frequency range, creating the building blocks for all kinds of system applications. Enabled by our vast COTS components library, Eravant has been able to develop and maintain a wide range of standalone test equipment, and by partnering with industry leaders, we now offer cost-effective total solutions to equip your

# Test & Measurement Equipment & Extenders Up to 330 GHz

Custom Solutions for Unique Applications lab up to 330 GHz. With our vast design library, and a decade of experience in the mmWave space, Eravant has designed and manufactured an array of custom products, sub-assemblies, and subsystems, to volume production in the tens of thousands of units. In addition, Eravant has recognized an industry need for accurate standard testing and calibration for mmWave components and sub-systems, particularly in the high-frequency bands covering 50 to 330 GHz. We are excited to announce that Eravant now offers test and calibration services. Leverage our state-of-the-art facility to save time and money with our test and calibration services, including 2D/3D antenna pattern measurement, noise source calibration, and thermal and cryogenic vacuum testing.

Millimeter Wave & Sub-THz COTS Components for System Development

Calibration & Measurement Services Reaching Sub-THz Frequencies





501 Amapola Avenue, Torrance, CA 90501 | www.eravant.com | 424-757-0168 | support@eravant.com This information is subject to change without notice. Copyright © 2024 by Eravant