

# 8-Axis Robotic Antenna Measurement System



## FEATURES

- C-band to mmWave frequencies
- High accuracy positioners
- Automatic electronic SNF alignment capability
- Complete 3D characterization
- Far-Field, Holographic and Near-Field patterns

## DESCRIPTION

NSI-MI Technologies' 8-Axis Robotic Antenna Measurement System (RAMS) is ideal for measuring antennas up to 2.4 m x 1.2 m (8 ft x 4 ft). It is well suited to perform testing of high, medium and low gain antennas, since it offers PNF, CNF and SNF capabilities.

## SPECIFICATIONS

Parameter	
Construction	8-Axis system comprised of 6-Axis robotic arm with precision X-axis translation positioner and Phi-axis rotation positioner
Drive System	Precision Stepper Motor & Servo with Absolute Encoder
PNF Scan Area (nominal)	2.4 m x 1.2 m (8 ft x 4 ft)
CNF Scan Height (nominal)	1.2 m (4 ft) Radius: 1 m (40 in.)
SNF Scan Area	360° in Phi and 165° in Theta with 1 m (40 in.) Radius
Maximum Antenna Load	4,500 kg (10,000 lb)
Maximum Antenna Diameter (SNF)	760 mm (30 in.)
System Controller	NSI-MI controller with Ethernet interface
Measurement Workstation	Measurement workstation computer with large LCD monitor
Scanner Absorber	Absorber Kit 3 in. Pyramidal Cone & Flat
Probe	Open-ended Waveguide Probe(s) or optional broadband single or dual pol probe antennas
RF Cables	20 GHz RF Cables
Rotary Joints	Qty. 2 - DC-26.5 GHz, (Phi, Pol)
Supported RF Devices	NSI-MI Receiver Subsystem or selection of Keysight, Rohde & Schwarz and Anritsu VNA's (contact NSI-MI for a complete list)
Power	120–240 VAC switchable, 500 watts and 3-phase 240/480/575 VAC

The RAMS uses a 6-axis precision robotic arm that acts as Y-axis for PNF & CNF and Theta-axis for SNF acquisitions. It also incorporates a small (500 mm diameter) rotary positioner that is used as a Phi-axis for CNF and SNF acquisitions. This positioner can support AUT loads of up to 4,500 kg (10,000 lb). Lastly RAMS also uses a precision linear translation positioner that is used as an X-axis for PNF acquisition and robot repositioning.

RAMS allows for CNF and SNF testing with adjustable probe radii and PNF testing with different AUT to probe separations. It also allows for PNF testing where the scan plane can be vertical or horizontal and is therefore ideal for custom measurement applications. The system interfaces with a wide variety of RF equipment and is capable of measuring amplitude and phase patterns from C-band to mmWave Bands. The system software runs on an Intel® based measurement workstation and provides automatic setup of scans based on measurement parameters and desired output. Measured data can be processed for far-field or holographic patterns yielding complete characterization of the antenna's performance. A single data set provides information on antenna gain, side lobe structure, beam pointing and cross polarization.

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## SPECIFICATIONS

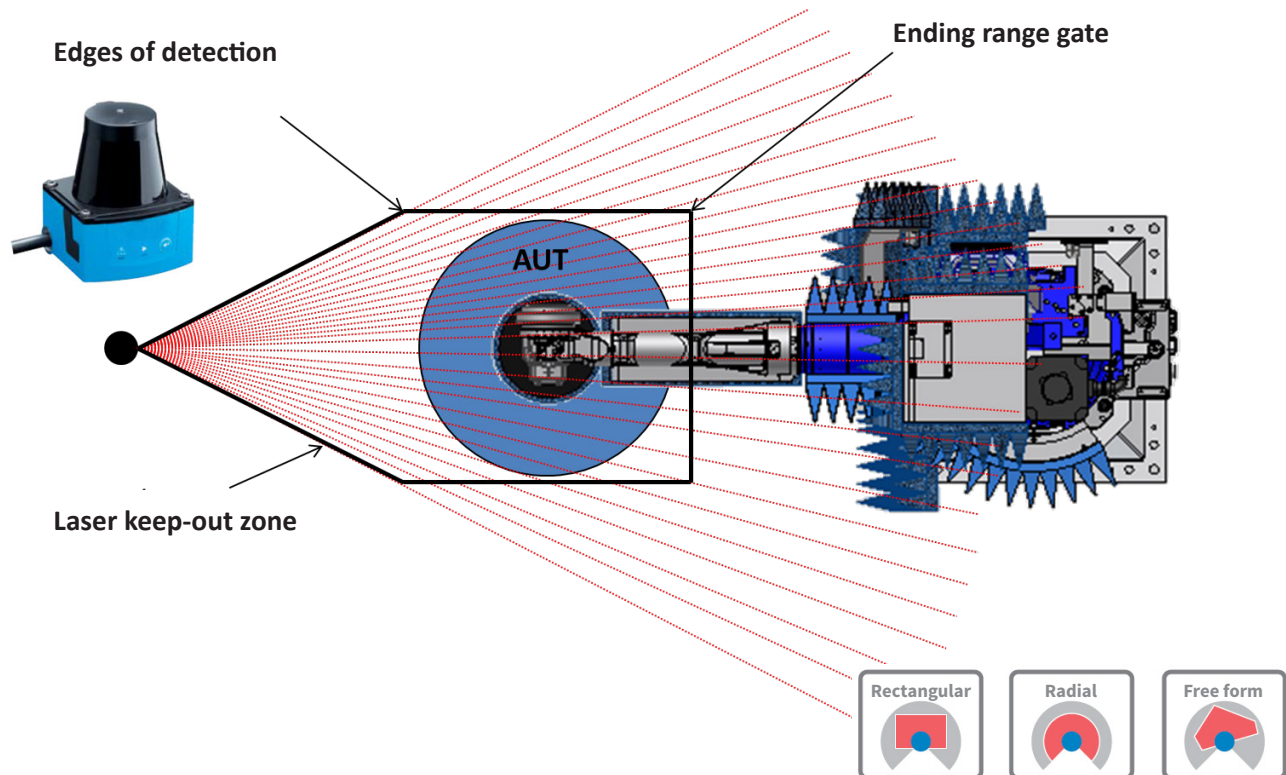
Physical	
Width	3 m (10 ft)
Depth	3 m (10 ft)
Height	3 m (10 ft)
Weight	500 kg (1,000 lb)



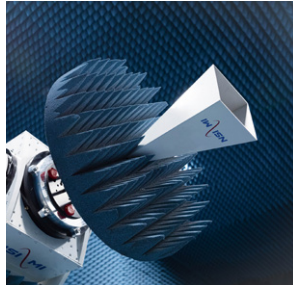
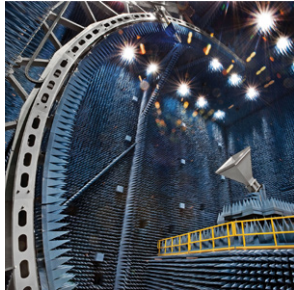
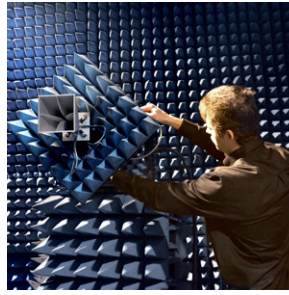
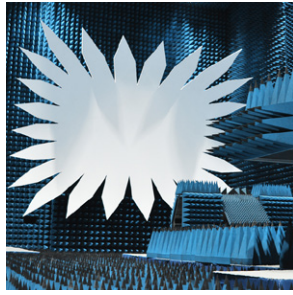
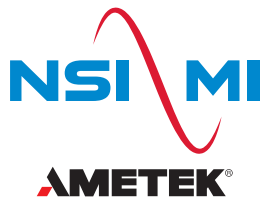
## 2D LASER SCANNER SAFETY SYSTEM

Safety is a high priority for NSI-MI for both personnel and hardware. Robotic systems require an extra level of hardware safety due to the vast range of motions available. A number of accessories are available that provide additional levels of test article and operator safety. These accessories include LIDAR light curtain system. The LIDAR system is used to establish a “light barrier” between the scanning robot system and the test article. If the barrier is crossed, the system immediately shuts down. Multiple LIDAR modules can be coupled to create complex joined surfaces to fully enclose the object. The LIDAR sensors operate independent of the measurement system and provide an additional level and assurance.

The sensors can be programmed for any continuous shape from the sensor, see figure below:



- **Infrared Beam (non-visible light)**
- **270° FOV, 4 m range, 10 mm beam spacing at 2 m**
- **By implementing multiple spinning lasers, a keep-out volume is defined**
- **Allows definition of arbitrary keep-out zones**
- **Advantage over traditional light curtains: no receiver required**



Test  
with  
Confidence

## LOCATIONS

1125 Satellite Blvd., Suite 100  
Atlanta, Georgia 30024-4629  
USA

+1 678 475 8300

19730 Magellan Drive  
Torrance, CA 90502-1104  
USA

+1 310 525 7000

Unit 51 Harley Road  
Sheffield, S11 9SE  
UK

+44 7493 235224

**AMETEK NSI-MI Technologies** introduced the world to microwave antenna measurement systems and is the preferred global supplier of antenna, radar cross section, and radome measurement solutions. Today, our innovative products, systems, and services lead the industry in setting new standards for tomorrow's performance. From world-class in-house testing facilities to delivering industry-leading turnkey systems, we provide the highest quality measurement products on the market.

Our full range of standard products and custom-designed systems are backed by our longstanding commitment to precision-engineered accuracy, reliability, and lasting performance. We provide the right solution for every RF measurement need and our worldwide network of service professionals are always available to offer support.

For more information on ordering AMETEK NSI-MI Technologies' products, applications or services please contact your nearest NSI-MI office. Our complete sales team information is available at: [www.nsi-mi.com/contact-us](http://www.nsi-mi.com/contact-us)

## ISO 9001:2015 CERTIFIED

