



## FEATURES

- Boresight Shift Error (BSE) & Transmission Efficiency (TE) can be measured simultaneously in one complete radome scan
- AMETEK NSI-MI supports either electronically calibrated antenna or null search BSE test method
- Data post-processing and reporting in test positioner roll/az coordinates or aircraft el/az coordinates
- Antenna oriented within radome as it would be on aircraft
- Integrated Position Controller's coordinated motion used to ensure that the radome/antenna polarization relationship is the same as that seen in use on the aircraft, and so that the feed polarization is coordinated with the AUT as needed to maintain polarization alignment
- Typical test time for simultaneous BSE and TE is about one hour for the calibrated antenna approach
- Full suites of pattern distortion data collection and analysis

## DESCRIPTION

Typically, military radome test systems are custom engineered solutions developed to radome specific test requirements. AMETEK NSI-MI makes maximum utilization of standard product building blocks:

- Compact Range Reflectors
- Arena and Radome Analysis Software
- Vector Field Analyzer™
- High Speed Microwave Source
- Integrated Positioner Controller
- Mechanical Products

Radome effects, including BSE, TE, pattern distortion, reflectivity, and cross-polarization, are measured by first establishing reference performance without a radome and then measuring the same factors with the radome mounted over the radar antenna and comparing the difference between the two sets of data. This difference is then compared to pass/fail criteria to determine acceptance.

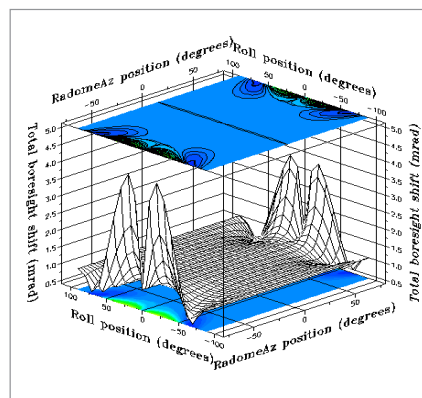
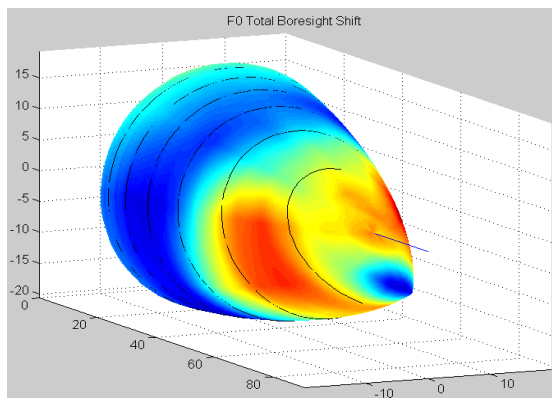
## CHALLENGES OF MILITARY RADOME MEASUREMENT SYSTEMS

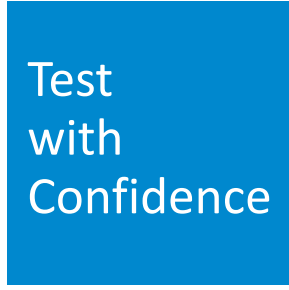
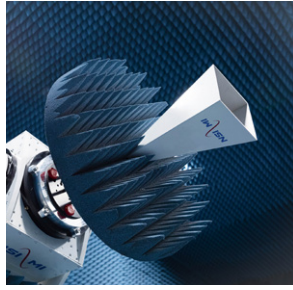
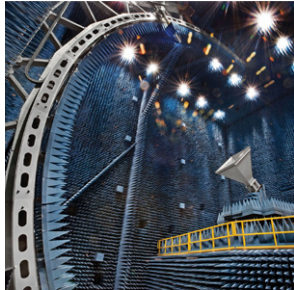
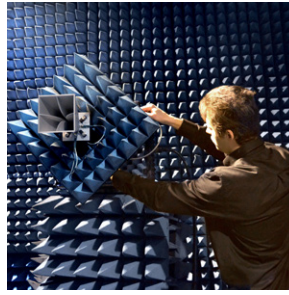
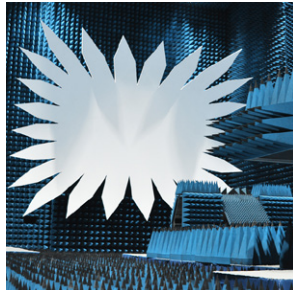
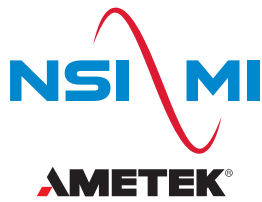
- **Transmission Efficiency (TE):** Accuracy +/- 0.02 dB
- **Boresight Shift Error (BSE):** Accuracy +/- 0.1 mrad
- **Pattern Distortion:** +/- 0.5 dB
- **Reflectivity:**  $|\Gamma|$  Accuracy +/-0.1

## ACCURACY & STABILITY

Extreme accuracy & stability are achieved through the following:

- Optional time domain analysis software to mitigate stray signals
- Active thermal stabilization of mixers and other active devices
- Innovative cable management design essentially eliminates moving cables
- LO power to signal and reference mixers automatically varied with frequency to continually optimize linearity of the receiver
- Mixer and Multiplexer mounted near the antenna
- Positioner structure specifically designed for torsional and bending stiffness
- Positioner counterweight system eliminates structural deflections for radome on/off loading
- High accuracy encoders used throughout the positioner
- Pre-loaded bearings with very low radial and axial run out
- Positioner error correction if needed
- Zero backlash through use of direct drive and torque bias
- Optional automated quarter wave movement of feed to average-out standing wave errors





## LOCATIONS

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**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

