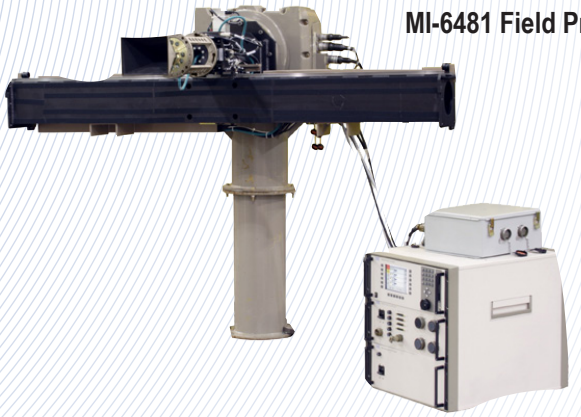
Field Probe Services



MI-6481 Field Probe

Accurate Range Evaluation Solutions

MI Technologies offers precision field probe measurements, probe data analysis and longitudinal pattern comparison testing designed for any type of range. This service uncovers and identifies the "unknowns" in the collimated electromagnetic field developed by a compact range reflector. A range probe is also effective in the analysis of both indoor and outdoor free space ranges and outdoor ground reflection ranges. Range probe analysis identifies anomalies that can cause asymmetry in measured patterns that can lead to loss of measurement accuracy or repeatability.

Consider Field Probe Service When:

- Facility configuration often changes significantly
- Recently upgrading the test facility
- Adding new test equipment
- Before beginning a new testing program
- Performing system level tests and suspect leakages
- Outside interference is suspected
- Have not evaluated range performance in some time
- Planning to relocate the test facility
- Complying with government range performance specifications
- Undergoing full commissioning of a new installation
- Reestablish or confirming performance specifications
- Detecting anomalies in measured antenna, radome, or RCS patterns and suspect range performance has degraded

The Professional Services Solution

MI's customer support engineers and technicians will detect and help correct these anomalies. Electromagnetic analysis is performed using an MI Technologies' phase and amplitude probe apparatus, a complex system consisting of a versatile, precision single-axis linear positioner and a series of high quality probe antennas. The probe system includes a measurement and control workstation with an acquisition and analysis software package. Probe positioning requires a mast, polarization positioner, probe positioner, and floor slide positioner. MI Technologies can provide necessary instrumentation and cabling.

Typical Field Probe Test and Analysis Sequence

1. Perform a detailed needs analysis, statement of work, and test plan
2. Establish a range baseline by performing "golden-unit" antenna pattern measurements
3. Set up and examine the probe equipment in the range
4. Take a data set of amplitude and phase measurements of the electromagnetic field for all required polarizations, frequencies and each position within the quiet zone
5. Collect the data set at a number of longitudinal positions throughout the quiet zone
6. Perform the test for any number of a selected range configurations
7. Tabulate, plot, and analyze the data for phase and amplitude ripple, identifying the magnitude and direction of an interference source
8. Repeat the probe after making range configuration changes
9. Ensure current performance meets or exceeds baseline performance by repeating golden-unit measurements

Longitudinal Pattern Tests and Analysis

- Characterize stray anomalous range performance over a wider angle relative to a field probe
- Measure azimuth patterns at multiple longitudinal positions along the range source axis
- Use partial wavelength pattern test position to couple and decouple the extraneous signals
- Numerically tabulate and plot variation data to provide overall stray signal levels
- Identify and correct electromagnetic interference sources through data analysis

MI Technologies Expertise

The Phase/Amplitude probe system provides a much higher level of accuracy than less sophisticated equipment. This probing system correlates amplitude and phase variation with position in the quiet zone and determines the nature of electromagnetic field error sources.

MI engineers and technicians are the biggest benefit of our field probe service. They are trained and experienced in performing probe measurements and in identifying and resolving range problems. They are committed to making the adjustments necessary to establish accurate and reliable performance. MI can help schedule periodic field probes to verify the consistency of the electromagnetic quality within the test facility.

General Probe Specifications

Planar Positions	typically planar within ± .005 to ensure accuracy; number based on test frequency wavelength
Longitudinal Positions	any requested number, with minimum based on test frequency wavelength
Polarizations	vertical, horizontal and any polarization between
Quiet Zone Size	standard probes available to 18 ft. diameter and larger with custom fixtures
Frequency Range	1 to 140 GHz
Test Report	amplitude taper magnitude, amplitude and phase ripple and variation, phase variations, and cross polarization levels (some parameters are frequency-limited)

Related Products

MI-6480 Family of Field Probes

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