

Gaussian Beam Polyrod Antenna Systems

Keysight Technologies and
MWI Laboratories

Precise & Cost-Effective Non-Destructive Testing of Dielectric Materials

To characterize dielectric materials, non-destructively, over a wide range of frequencies and applications, it is essential to direct the energy transmitted to the test sample accurately. MWI Laboratories offers a range of Gaussian Beam Polyrod antenna systems that produce a collimating beam (without a focal point) to inspect composite materials.

Similar to a laser, MWI's collimating RF beam is very directional, narrow and prevents over-illumination of the sample. This makes it very easy for the user to determine where the energy is located in performing non-destructive testing (NDT) for dielectric material characterization, uniformity and defect detection measurements over a wide range of frequencies.



PRA_0716

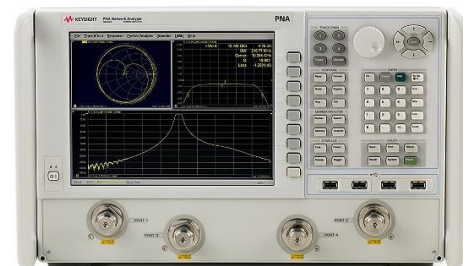
The Polyrod antennas produce a planar wave within 1 inch of the tip making the systems more stable for calibration, and making it easier to produce dB & phase data for permittivity/permeability. The systems are light-weight and easy to operate without the need for an RF engineer. Mechanical and software noise reduction improvements increase dynamic range greater than 70dB while reducing signal scattering and sample wrap-around.

MWI offers a range of Gaussian Beam Polyrod antenna systems – Polyrod antennas and compatible holders, in different designs and with different bandwidths. There are six Polyrod antenna configurations with a frequency range of 7-50 GHz, each of which can be placed within close proximity of another to create a dual-polarity setup, and a broadband antenna, the PRA0716, with a frequency range of 0.7 – 16 GHz

When connected to a Keysight vector/performance network analyzer such as the Field Fox, PXI, PNA-X the MWI antennas can measure small resistive loaded and small composite materials parts sheets greater than 3.0 sq.ins.



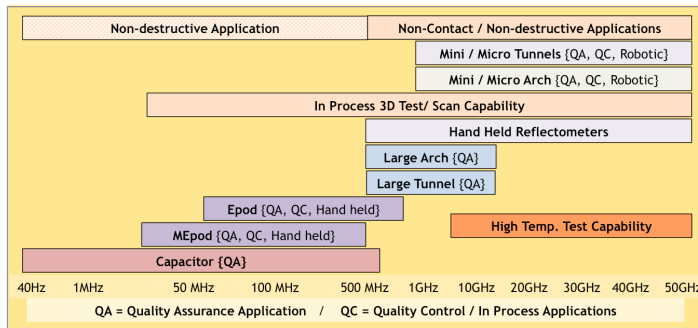
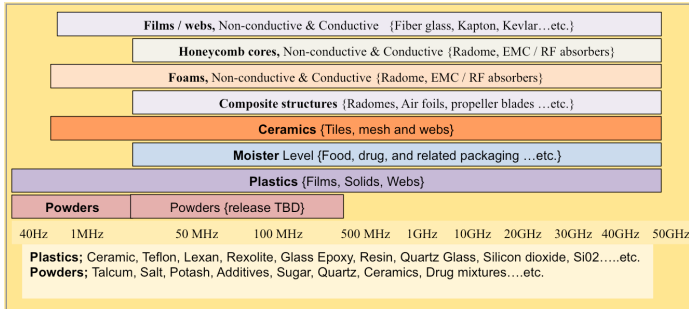
- Non-destructive testing of materials during laboratory QA, in-process QC, post repair verification and maintenance inspection.
- Available in six configurations from 7–50 GHz. Custom design polyrod antennas can be developed.
- Can be used in close proximity and set-up for dual polarity.
- Broadband 0.7 – 16GHz antenna available (PRA_0716)
- Used with Keysight's Vector Network Analyzers
- Cost effective solution: costs less to operate, requires less training



Gaussian Beam Polyrod Antenna Systems

The systems have been used in multiple test system configurations including: admittance tunnels, NRL reflection loss arches, robotic XYZ-Scanners, reflectometer, surface defect detectors, for either laboratory QA test devices, in-process (online) QC devices and hand held devices.

MWI's Gaussian Beam Polyrod antennas, when used with a Keysight vector network analyzer allows you to accurately characterize dielectric materials, non-destructively.



System Components

Keysight Technologies

PNA Series N52xxx	Vector Network Analyzer
or, PXI M937xx	Vector Network Analyzerr
or, FieldFox Series N99xxx	Hand-held Vector Network Analyzer

MWI Laboratories

PRA_22	Gaussian Polyrod Antenna 33-50 GHz
PRA_28	Gaussian Polyrod Antenna 26.5-40 GHz
PRA_34	Gaussian Polyrod Antenna 22-33 GHz
PRA_62	Gaussian Polyrod Antenna 10-22 GHz
PRA_90	Gaussian Polyrod Antenna 7-16 GHz
PRA_0716	Gaussian Polyrod Antenna 0.7-16 GHz
PRA_XX	Custom Design Gaussian Polyrod Antenna

To learn how this solution can address your specific needs please contact Keysight's solutions partner, MWI Laboratories www.keysight.com/find/mwi



Keysight & Solutions Partners
Extending our solutions to meet your needs

Keysight and its Solutions Partners work together to help customers meet their unique challenges, in design, manufacturing, installation or support. To learn more about the program, our partners and solutions go to www.keysight.com/find/solutionspartner

Material-Wave Interactions Laboratories (MWI Lab) is a spin-off from Arizona State University with exclusive rights for three research patents: the revolutionary Gaussian Beam and Linearly Polarize Resonate Loop Technologies. MWI is the premier provider of "Non-Destructive" in-process Quality Control and laboratory Quality Assurance, and Radio Frequency testing services used to measure the anisotropic, dielectric, and/or magnetic material properties.

www.mwilab.com

For information on Keysight Technologies' products, applications and services, go to www.keysight.com

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