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Data Sheet

Pro Series

RadiSense® 10

Electric Field Probe

Models - RS2010M

Accurate | High Speed | Wide Band

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RadiSense® 10

Models - RS2010M

The most accurate E-field probe

Accurate | **Best Isotropy** | **Wide Band**

The M-version of the RadiSense 10 uses dedicated hardware filtering making it capable of accurately measuring E-field test levels that are using a 1 kHz pulse modulated signal, like specified in the international Defence standard MilStd. 461G (RS103) and Aerospace DO-160G standard (Section 20).

Why is accuracy important? To perform correct radiated immunity (susceptibility) tests, the absolute electrical field strength must be measured accurately. This is important during actual testing, as well as during verification (substitution test) and during 1-, 4- or 16-point calibrations. Based on these measurements, the power to be provided by the signal generators and power amplifiers is determined.

What influences accuracy? Firstly, the size of the probe is important. The smaller the probe the better. The change from cubical to spherical probes improved the accuracy. Furthermore, aspects like amplitude linearity, frequency response, temperature drift and non-isotropic behaviour of the probe, are important parameters.

Superb Isotropy Isotropic behaviour of E-field probes is rather underexposed. The isotropic response is the dependency of the measured field strength in relation to the position of the probe in the electric field. The lower this dependency, the better. During testing in an anechoic chamber, the surrounding walls, floor and ceiling will cause reflections. these reflections arrive at the probe elements from different angles. This results in large and unpredictable measurement errors when your probe is not isotropic. Furthermore, isotropic behaviour was often specified at MHz frequencies, while the non-isotropic behaviour will cause substantial measurement errors specifically at higher frequencies. Due to its superior design, the isotropic response of the RadiSense® 10 is improved by typically a factor of 5 compared to the competition. This will lead to a factor of 2 or more improvement of the overall measurement accuracy!

How is accuracy achieved? The RadiSense® 10 uses a spherical design with six antenna elements and a laser power supply, providing an extreme small measuring volume. Patented technology is used to optimize the isotropic response. All these factors together make the RadiSense® 10 probe the most accurate, commercially available, E-Field probe in the world. Due to its unique antenna design of the RadiSense® 10 an extremely wide frequency range from 9 kHz to 12 GHz is covered with a single E-field probe. This makes the RadiSense® 10 ideal for nearly all (EMC) test applications. The RadiSense® 10 offers a maximum speed of 100 isotropic measurements per second, enabling fast measurements for all EMC test applications like: Automotive, Military/Aerospace, and Industrial/Telecom testing in anechoic chambers or reverberation chambers.

Internal calibration data The linearity adjustment data is by default stored inside the probe. In addition, the frequency response calibration data of the X-Y-Z axis can be stored as user correction data inside the probe. As a result there is no need to apply frequency dependent corrections for individual axis' in software anymore. This feature results in a high accuracy and ease-of-use.

Performance	RSS2010M
Measuring range (1)	0,1 to 500 V/m
Max input level before damage	1000 V/m
Frequency range	9 kHz to 10 GHz (usable up to 12 GHz)
Resolution	0.01 V/m
Measurement speed (X,Y, Z & E_{tot})	100 measurements/s
Accuracy (2,3)	
Frequency response	±1 dB (9 kHz – 10 GHz)
Anisotropy (4)	< ±0.25 dB (9 kHz - 1 GHz) < ±0.5 dB (1 GHz - 3 GHz) < ±1.0 dB (3 GHz - 6 GHz) < ±2.0 dB (6 GHz - 10 GHz)
Linearity (5)	±0.5 dB ±0.5 V/m
Dimensions	
Shape of housing	Spherical
Total electrical dimensions	4.9 * 4.9 * 4.9 cm (117 cm^3)
Diameter of Spherical housing	2.5 cm (0.98 in)
Environmental conditions	
Temperature range (operating)	0 °C to 40 °C (32 °F to 104 °F)
Relative humidity (operating)	10 % to 90 % RH (non-condensing)
Power consumption	
Factory adjustment data	Internally stored, ISO17025 calibration
Accredited calibration (6)	Traceble, accredited calibration with calibration certificate (optional)
Optical LASER power	Max. 0.5 Watt at aperture @ 808 nm
Laser safety class	Class 1M
Interfaces & cables	
F.O. connector LASER	FC/PC fibre
F.O. connector data	ST/PC fibre
Fiber length (7)	100 m maximum (Optional)
Safety	
Interlock	External Interlock & closed loop safety system
Warranty (8)	3 Years

1) 0,4 to 500 V/m < 100 MHz only for RSS2010M

2) The overall measurement accuracy of a field probe is primarily determined by the measurement uncertainty of the calibration laboratory. This calibration uncertainty varies significantly between different calibration labs. Therefore, the specified accuracy for the probe does not include the measurement uncertainty of the calibration laboratory but refers solely to the accuracy and stability of the probe itself. To determine the overall measurement uncertainty, the RSS (Root Sum Square) of the specified accuracy of the probe and the stated measurement uncertainty of the calibration report must be calculated.

3) The specified accuracy is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

2) Isotropy is the maximum deviation from the geometric mean as defined by IEEE 1309-2013.

3) Specified linearity is defined over a range of ± 6 dB from the reference point as defined in the IEC61000-4-3 standard.

4) This calibration can be stored inside the probe as user correction data.

5) Probe is delivered with Circa 2.5 m fixed + 10 m extension fiber and FC/ST in-line coupling set as a standard. Other fiber length available on request

6) Standard one year of warranty is given on Raditeq equipment. After you register your new Raditeq product two (2) years of warranty will be added for free resulting in three (3) years of warranty. Registration can be done at: www.raditeq.com

- Specifications measured after 30 minutes warm-up time.

Specifications are subject to change without notice

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