

Electric (E-)Field Probe For EMR-200 and EMR-300

Type 33C



- Extremely wide frequency range from 300MHz to 50 GHz
- Isotropic (non-directional) measurement
- Thermocouple detectors (inherent True RMS detection)
- Compatible with EMR-200/-300 instruments (series P and later)



DESCRIPTION

The Electric Field probe, Type 33C, is a thermocouple based probe for high frequency radiation measurements with the EMR-200 and EMR-300 meters.

APPLICATIONS

The detection characteristics of the Type 33C probe ensures True RMS results for pulsed signals such as those from radar systems. Multiple frequency environments like flight lines, and multiple transmitter sites will be good applications where this detection produces the best results.

FEATURES

The Type 33C probe offers an extremely wide dynamic range (37 dB) for a thermocouple detector. A wide frequency range (300 MHz to 50 GHz) coupled with the EMR's auto-zeroing and probe recognition features provides exceptional ease-of-use. The multiple frequency calibration guarantees reliable results throughout the entire range.

OPERATING

To measure signals from all directions, three sensors are mounted in a mutually orthogonal arrangement. Each sensor consists of multiple thermocouple junctions that operate as a dipole antenna. Any energy deposited across the resistive junctions creates a voltage output, relative to the power detected. There is no minimum pulse width criteria that would limit the power detection accuracy.

RUGGEDNESS

The Type 33C probe has been designed to feature high average and peak power overloads. Average power handling can be important in many measurement situations but when measuring radar systems peak power handling is also particularly important. New environmental coatings protect the thermocouple elements for long life and stable results.

SPECIFICATIONS ^a

Type 33C Probe	Electrical (E)-field	
Frequency range ^b	300 MHz to 50 GHz	
Type of frequency response	Flat	
Measurement range	8 to 614 V/m	17 μW/cm² to 100 mW/cm²
Dynamic range	37 dB	
CW damage level	1500 V/m	0.6 W/cm²
Peak damage level ^c	27 kV/m	200 W/cm²
Sensor type	Thermocouple (inherent True RMS detection)	
Directivity	Isotropic (Tri-axial)	
Readout mode/ spatial assessment	Combined 3-axis (RSS)	
UNCERTAINTY		
Flatness of frequency response ^d Calibration uncertainty not included (see figure 1)	≤ 1.25 dB (1.8 to 40 GHz)	
Calibration uncertainty ^e @ 1 mW/cm² (61.4 V/m)	≤ 1 dB (1.8 GHz to 40 GHz) ≤ 1.5 dB (< 1.8 GHz)	
Linearity Referred to 1 mW/cm² (61.4 V/m)	≤ 0.5 dB (39 to 614 V/m)	≤ 0.5 dB (0.4 to 100 mW/cm²)
Isotropic response ^f	±1 dB	
Temperature response ^g	±0 dB/K	
GENERAL SPECIFICATIONS		
Calibration frequencies	0.3/ 0.75/ 1.8/ 2.45/ 4/ 5/ 6/ 7/ 8.2/ 9.3/ 10/ 11/ 18/ 26.5/ 40/ 45.5 GHz	
Recommended calibration interval	12 months	
Temperature range Operating Non-operating (Transport)	0 °C to +50 °C -40 °C to +70 °C	
Humidity	5 to 95 % RH @ ≤ 25 °C	≤ 23 g/m³ absolute humidity
Size	310 mm x 64 mm Ø	12.2 " x 2.5 " Ø
Weight	70 g	0.15 lbs
Compatibility	EMR-200/-300 (Series P and later)	

^a Unless otherwise noted specifications apply at reference condition: device in far-field of source, ambient temperature 23 $\pm$ 3 °C, relative air humidity 40% to 60%, sinusoidal signal

^b Cutoff frequency at approx. -3 dB

^c Pulse length 1 μ sec, duty cycle 1:1000

^d Frequency response can be compensated for by the use of correction factors mentioned in the calibration certificate of each probe

^e Accuracy of the fields generated to calibrate the probes

^f Uncertainty due to varying polarization (verified by type approval test for meter with probe). Ellipse ratio included and calibrated for each probe

^g The conversion factor of thermocouple sensors is inherently not dependent on environmental temperature

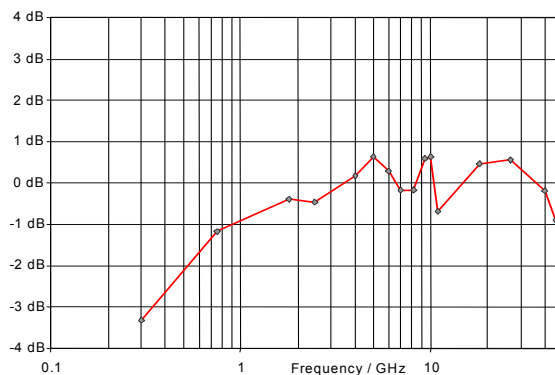


Figure 1: Frequency response characteristic

ORDERING INFORMATION

	Ordering Number
Type 33C Probe (multiple frequency calibration data included)	2244/90.81



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