narda Safety Test Solutions®
an L3 Communications Company

E-FIELD PROBE

EF0391

Measuring electric fields from 100 kHz to 3 GHz

using instruments in the NBM-500 family

- **General public and occupational field exposure from broadcasting, telecoms and industrial equipment**
- **Isotropic (non-directional) measurement**
- **64 dB dynamic range without changing measurement range**
- **Maximum sensitivity starts at 0.2 V/m**

The probe contains three orthogonally arranged dipoles with detector diodes. The three voltages, corresponding to the spatial components, are available individually at the probe output. The NBM basic unit calculates the resulting isotropic field strength.

APPLICATIONS

The probe detects electric fields from 100 kHz to 3 GHz, covering the fields that occur in broadcasting, telecoms, and industry. The high sensitivity of 0.2 V/m and excellent linearity make it ideal for measuring human safety limit values in the general public domain.

PROPERTIES

The probe is designed with mechanical and electrical properties ideal for field use. The probe head is made of foam material to provide effective protection for the sensors, while having excellent RF characteristics. The electric destruction limits for pulsed and continuous wave signals are several times higher than any of the human safety limit values.

CALIBRATION

The probe is calibrated at several frequencies. The correction values are stored in an EPROM in the probe and are automatically taken into account by the NBM instrument. Calibrated accuracy is thus obtained regardless of the combination of probe and instrument.

SPECIFICATIONS [a]

Probe EF0391	Electric (E-)Field	
Frequency range [b]	100 kHz to 3 GHz	
Type of frequency response	Flat	
Measurement range	0.2 to 320 V/m (CW) 0.2 to 10 V/m (True RMS)	10 nW/cm² to 27 mW/cm² (CW) 10 nW/cm² to 0.027 mW/cm² (True RMS)
Dynamic range	64 dB	
CW damage level	800 V/m	170 mW/cm²
Peak damage level [c]	8 kV/m	17 W/cm²
Sensor type	Diode based system	
Directivity	Isotropic (Tri-axial)	
Readout mode / spatial assessment	3 separate axes	
UNCERTAINTY		
Flatness of frequency response [d] Calibration uncertainty not included	±1 dB (1 MHz to 1 GHz) ±1.25 dB (1 GHz to 2.45 GHz)	
Calibration uncertainty [e] @ 0.01 mW/cm² (6.14 V/m)	0.8 dB (≤ 300 MHz) 1.5 dB (> 300 MHz)	
Linearity Referred to 0.01 mW/cm² (6.14 V/m)	±0.5 dB (1.2 to 200 V/m) ±0.7 dB (200 to 320 V/m)	±0.5 dB (0.00038 to 10.6 mW/cm²) ±0.7 dB (10.6 to 27 mW/cm²)
Isotropic response [f]	±1 dB	
Temperature response	+0.2/ -1 dB (±0.025 dB/K)	
GENERAL SPECIFICATIONS		
Factory calibration frequencies	0.1/ 0.2/ 0.3/ 1/ 3/ 10/ 27.12 MHz 0.1/ 0.2/ 0.3/ 0.5/ 0.75/ 1/ 1.8/ 2.45/ 2.7/ 3 GHz	
Recommended calibration interval	24 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	318 mm x 66 mm Ø	
Weight	90 g	
Compatibility	NBM-500 series meters	
Country of origin	Germany	

(a) Unless otherwise noted specifications apply at reference condition: device in far-field of source, ambient temperature 23±3 °C, relative air humidity 25% to 75%, sinusoidal signal
(b) Cutoff frequency at approx. -3 dB
(c) Pulse length 1µsec, duty cycle 1:100
(d) Frequency response can be compensated for by the use of correction factors stored in the probe memory
(e) Expanded measurement uncertainty. 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

ORDERING INFORMATION

	Part number
Probe EF0391, E-field for NBM, 100 kHz – 3 GHz, isotropic	**2402/01B**
Probe EF0391, E-Field, ACC - with accredited (DAkkS) calibration, basic unit required	**2402/01B/ACC**

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