narda Safety Test Solutions®
an L3 Communications Company

E-FIELD PROBE

EF6091

Measuring electric fields from 100 MHz to 60 GHz

using instruments in the NBM-500 family

- **General public and occupational field exposure**
- **Broad frequency range with high dynamic range**
- **Isotropic (non-directional) measurement**

The probe contains three orthogonally arranged dipoles with detector diodes. The diode voltages each correspond to the RMS value of the spatial components. The isotropic measurement result is obtained by addition within the probe.

APPLICATIONS

The probe detects electric fields from 100 MHz up to 60 GHz. This frequency range covers almost the entire range of high frequency communications, right up to mobile radio and satellite links. The linearity and sensitivity of the probe ensure its suitability for checking human safety limit values in the occupational and general public environments.

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 detector elements are also largely protected against overload, since their destruction limit is well above all 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 EF6091	Electric (E-)Field	
Frequency range [b]	100 MHz to 60 GHz	
Type of frequency response	Flat	
Measurement range	0.7 to 400 V/m (CW) 0.7 to 61.4 V/m (True RMS)	130 nW/cm² to 42 mW/cm² (CW) 130 nW/cm² to 1 mW/cm² (True RMS)
Dynamic range	55 dB	
CW damage level	1600 V/m	700 mW/cm²
Peak damage level [c]	1900 V/m	1 W/cm²
Sensor type	Diode based system	
Directivity	Isotropic (Tri-axial)	
Readout mode / spatial assessment	Combined 3-axis (RSS)	
UNCERTAINTY		
Flatness of frequency response [d] Calibration uncertainty not included	±3 dB (300 MHz to 40 GHz) approx. +3/-6 dB (100 MHz to 60 GHz)	
Calibration uncertainty [e] @ 0.2 mW/cm² (27.5 V/m)	±1 dB (<400 MHz) ±1.5 dB (400 MHz to 1.8 GHz) ±1 dB (≥ 1.8 GHz)	
Linearity Referred to 0.2 mW/cm² (27.5 V/m)	±3 dB (1 to 2 V/m) ±1 dB (2 to 250 V/m) ±2 dB (250 to 400 V/m)	±3 dB (0.26 to 1 µW/cm²) ±1 dB (1 µW/cm² to 16.5 mW/cm²) ±2 dB (16.5 mW/cm² to 42 mW/cm²)
Isotropic response [f]	typ. ±1 dB	
Temperature response	±0.9 dB (-0.03 dB/K)	
GENERAL SPECIFICATIONS		
Calibration frequencies	100/ 200/ 300/ 500/ 750 MHz 1/ 1.8/ 2.45/ 3/ 4/ 5/ 6/ 8.2/ 10/ 11/ 18/ 26.5/ 40/ 45.5/ 60 GHz	
Recommended calibration interval	24 months	
Temperature range Operating Non-operating (transport)	 -10 °C to +50 °C -40 °C to +70 °C	
Humidity	5 to 95 % RH @ ≤28 °C	≤26 g/m³ absolute humidity
Size	318 mm x 66 mm Ø	
Weight	90 g	
Compatibility	NBM-500 series meters	
Country of origin	USA	

(a) Unless otherwise noted specifications apply at reference condition: device in far-field of source, ambient temperature 23±3 °C, relative air humidity 40 % to 60 %, sinusoidal signal
(b) Cutoff frequency at approx. -6 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) 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 EF6091, E-field for NBM, 100 MHz – 60 GHz, isotropic	**2402/04**

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