

## E-FIELD PROBE

EF0691

# Measuring electric fields from 100 kHz to 6 GHz

using instruments in the NBM-500 family

- ▲ **Field exposure from broadcasting, telecoms and industrial equipment**
- ▲ **Measurements on base stations (EN 50492 and IEC 62232)**
- ▲ **Isotropic (non-directional) measurement**
- ▲ **70 dB dynamic without changing range**
- ▲ **High sensitivity starting 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 6 GHz, covering the fields that occur in broadcasting, telecoms, and industry. The high sensitivity of 0.2 V/m and wide frequency range make it ideal for new WLAN applications. In the frequency range of mobile phone base stations the probe exceeds the requirements of the latest basic standard EN 50492 and IEC 62232.

## 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.

## 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 <sup>a</sup>

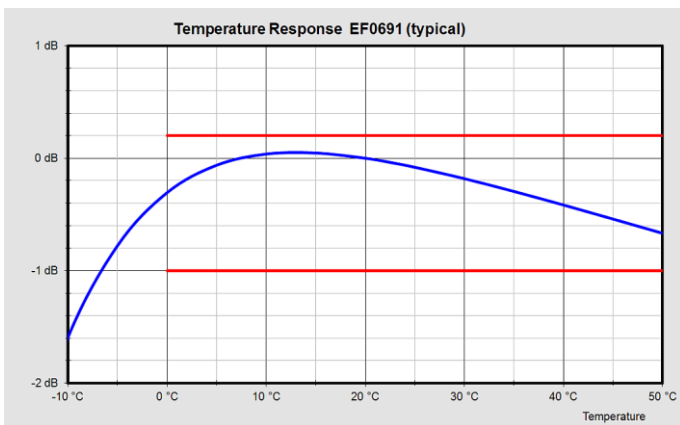
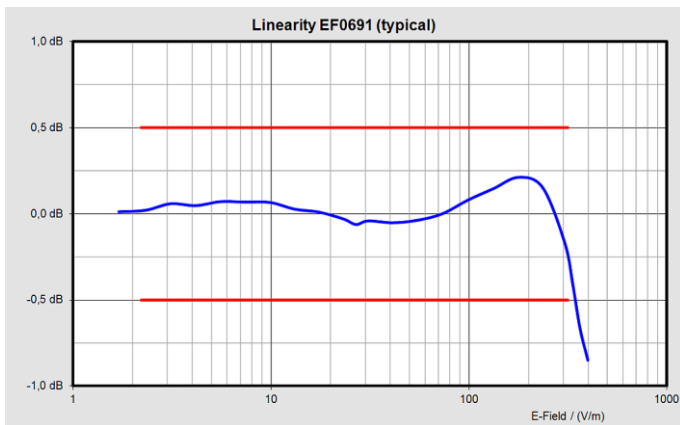
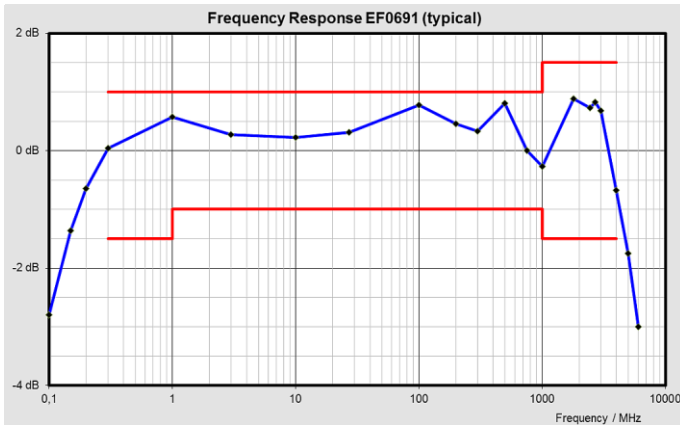
Probe EF0691		Electric (E-)Field	
Frequency range <sup>(b)</sup>	100 kHz to 6 GHz		
Type of frequency response	Flat		
Measurement range <sup>(c)</sup>	0.2 to 650 V/m (CW) 0.2 to 22 V/m (True RMS)	10 nW/cm <sup>2</sup> to 112 mW/cm <sup>2</sup> (CW)	10 nW/cm <sup>2</sup> to 0.13 mW/cm <sup>2</sup> (True RMS)
Dynamic range	70 dB		
CW damage level	1000 V/m	265 mW/cm <sup>2</sup>	
Peak damage level <sup>(d)</sup>	10 kV/m	26 W/cm <sup>2</sup>	
Sensor type	Diode based system		
Directivity	Isotropic (Tri-axial)		
Readout mode / spatial assessment	3 separate axes		
<b>UNCERTAINTY</b>			
Flatness of frequency response <sup>(e)</sup> Calibration uncertainty not included	+1.0/-1.5 dB (0.3 MHz to 1 MHz) ±1.0 dB (1 MHz to 1 GHz) ±1.5 dB (1 GHz to 4 GHz) -1.8 dB typ. @ 5 GHz		
Calibration uncertainty <sup>(f)</sup> @ 0.2 mW/cm <sup>2</sup> (27.5 V/m)	0.8 dB (≤ 300 MHz) 1.5 dB (300 MHz to 1.2 GHz) 1.3 dB (≥ 1.2 GHz)		
Linearity Referred to 0.2 mW/cm <sup>2</sup> (27.5 V/m)	±0.5 dB (2.2 to 316 V/m)	±0.5 dB (0.0013 to 26.5 mW/cm <sup>2</sup> )	
Isotropic response <sup>(g)</sup>	±1 dB (0.1 MHz to 5 GHz) ±1.2 dB (> 5 GHz)		
Temperature response	+0.2/ -1 dB (0 °C to 50 °C, related to 23 °C)		
<b>GENERAL SPECIFICATIONS</b>			
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/ 4/ 5/ 6 GHz		
Recommended calibration interval	24 months		
Temperature range	0 °C to +50 °C Non-operating (transport) -40 °C to +70 °C		
Humidity	5 to 95 % RH @ ≤25 °C	≤23 g/m <sup>3</sup> 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 -3 dB (typ.). The specifications apply to all probes with a serial number beginning with "B" or a subsequent letter  
 (c) 6 minutes averaging applied for low field strength levels  
 (d) Pulse length 1µsec, duty cycle 1:100  
 (e) Frequency response can be compensated for by the use of correction factors stored in the probe memory  
 (f) Expanded measurement uncertainty. Accuracy of the fields generated to calibrate the probes  
 (g) 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 EF0691, E-Field, for NBM, 100kHz-6GHz	2402/14B
Probe EF0691, E-Field, ACC - with accredited (DAkkS) calibration, basic unit required	2402/14B/ACC

## CHARACTERISTICS



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