

## Electromagnetic fields



# EMF

**The full program of measuring equipment**  
for protection and safety at work

## Safety under control, focused on cost effectiveness

Laws as well as national regulations and recommendations prescribe limit values for electromagnetic radiation levels to protect employees. Measurements determine whether these limits are adhered to, so they represent the most important step towards effective protection.

Only measurements that conform to the standards will lead to comparable, reproducible and legally robust results. This includes non directional (isotropic) measurements, and naturally requires that the measuring equipment is sensitive enough and has a wide dynamic range to be able to capture and evaluate the permissible field strengths at each frequency.

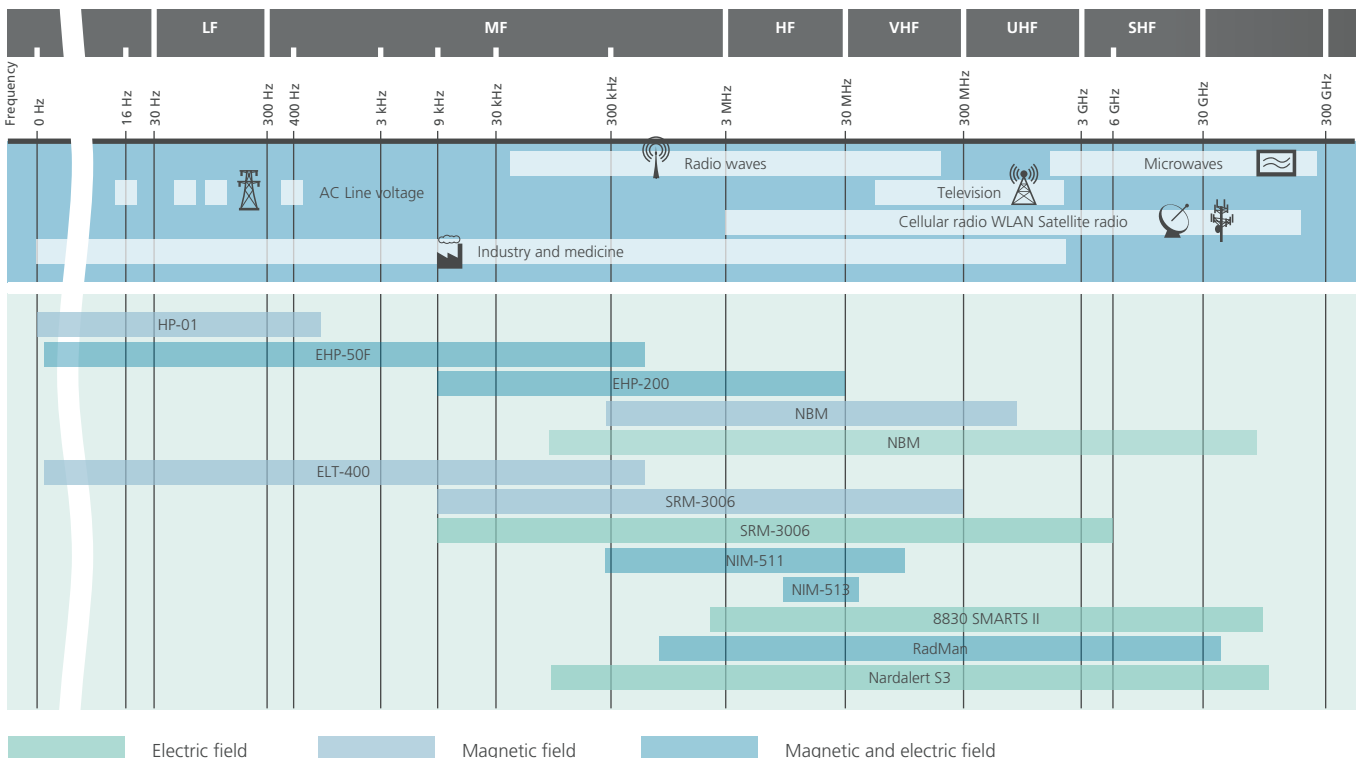
### Why measure with Narda

Narda's quality derives from our expertise. You can rely on our many years of high frequency and microwave experience and know how, as well as on the fact that we really appreciate how vital the reliability of our measuring equipment is.

We are market leaders with our products, right around the world. Our global, focused network of partners providing advice to customers and marketing our equipment plays a big part in this. At Narda, you will find exactly the right device for every task and every application. That gives you security at every stage, from planning through to system integration and on to operation of any equipment that generates an electromagnetic field.

### Accredited calibration labs

Narda Safety Test Solutions makes use of three of the most modern calibration labs, all of which offer accredited calibration in addition to the factory calibration of our instruments. The equipment is accredited by the relevant national accreditation authorities: DAkkS (Deutsche Akkreditierungsstelle) for Pfullingen in Germany and ACCREDIA (Ente italiano di accreditamento) for Cisano sul Neva in Italy. The laboratories also meet the general requirements for calibration laboratory expertise according to ISO/IEC 17025.



## Health and safety at work

Directive 2013/35/EU (EMF Directive) regulates the minimum requirements for health and safety throughout Europe with regard to employees exposed to electric, magnetic and electromagnetic fields. It specifies actual or possible dangers to health and safety. The Directive covers all known direct biophysical effects as well as the indirect effects that can be caused by electromagnetic fields.

### Employers' obligations

One of the most important requirements of the EMF Directive is the obligation placed on employers to assess the risk due to electric, magnetic and electromagnetic fields in the workplace. The EMF Directive specifies exposure limits for EMF with frequencies between 0 Hz and 300 GHz.

In line with technical progress and current scientific knowledge, employers are required to make adjustments and changes to improve the protect the health and safety of their employees. The assessments must be made by specialist services or professionals, repeated at appropriate intervals, and documented in traceable form.

This requires measuring equipment that is precise and suitable for the particular application or practical situation. Where necessary, appropriate measures need to be taken to remove or minimize the risk based on the measurement data obtained. To do this, the risk must be assessed and the exposure determined:

- ▶ Based on the emission data given by equipment manufacturers
- ▶ By simulation
- ▶ By calculation
- ▶ By measurement for definitive proof



## Measurement expertise meets industry experience

Electric, magnetic and electromagnetic fields occur in many areas in the workplace. You will find measurement solutions tailored to both the task and your area of industry at Narda.

### Broadcasting, telecommunications and cellular radio

Antennas are typical examples of EMF emitters. When working in their immediate vicinity, specifying and keeping to safe distances are paramount.

→ NBM, RadMan, SRM, Nardalert

### Industry

EMF occurs in virtually every area of industry. Examples include low and high frequency welding, drying, bonding, coating, and plastics welding, as well as semiconductor production.

→ ELT, HP-01, EHP-50F, EHP-200A

### Power supply

Transformer stations and high tension cables as well as wind farms, hydroelectric plant and solar arrays all work at 50/60 Hz and generate corresponding EMF. Inverters and switching power supplies can produce fields in the kilohertz range.

→ SRM, EHP-50F

### Radar, directional radio and satellite transmitter equipment

Because of the highly concentrated radiation power from directional radio and satellite transmitters and the very high pulse power levels from radar, persons working close to such equipment need particular protection.

→ NBM, SRM, RadMan, Nardalert



### NBM

The Broadband Field Meters in the NBM family are compact hand-held measuring sets for electric and magnetic fields. The NBM-550 is equipped with a data logger function for storing the measurement results.

NBM-550 frequency range:  
1 Hz to 90 GHz

NBM-520 frequency range:  
100 kHz to 90 GHz

### SRM

Frequency selective field strength measuring system for fast, reliable safety evaluations. With separate recording of cellular radio channels of different providers and worst-case evaluation by decoding control signals in UMTS [3G] and LTE [4G].

SRM-3006 frequency range:  
9 kHz to 6 GHz

### RadMan/Nardalert

Plug in monitors worn directly on the person. LEDs or displays indicate the electromagnetic radiation power density. RadMan XT and Nardalert are equipped with a data logger.

RadMan frequency range:  
Up to 8 GHz (LT) or 60 GHz (XT)  
Nardalert frequency range:  
100 kHz to 100 GHz



### Medicine

The effects of electromagnetic radiation in controlled doses are desirable for diagnosis and therapy of patients. Medical staff, however, need adequate protection when using nuclear magnetic resonance, magnetic field therapy, diathermy or hyperthermy.

→ ELT, HP-01, EHP-50F, EHP-200A, NBM

### Electric railroads

High DC or low frequency AC are the cause of magnetic fields in subways and urban railroads as well as mainline electric railways. On top of this, communications systems along the track or on high tension masts superimpose high frequencies up into the gigahertz range.

→ SRM, EHP-50F, HP-01

### Domestic / Retail

Domestic equipment must conform to the international standard IEC/EN 62233 for magnetic field emanations. Any retail goods security or detection systems must not affect the health and safety of users.

→ ELT, HP-01, EHP-50F, EHP-200A



### EHP

Frequency selective FFT measuring system with high dynamic range for selective and wideband measurement of magnetic and electric near and far field regions in the HF range. Sensors for all three spatial directions deliver an isotropic result.

EHP-50F frequency range:

1 Hz to 400 kHz

EHP-200A frequency range:

9 kHz to 30 MHz



### ELT

Measuring device for assessing the safety of radiation levels affecting humans in magnetic fields and for acceptance testing of electrically operated products.

ELT-400 frequency range:

1 Hz to 400 kHz



### HP-01

Frequency selective and wideband measurement of magnetic fields.

HP-01 frequency range:

0 Hz to 1 kHz



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