

## EMF MEASUREMENT EQUIPMENT

### Measure: Why?

- Measurement determines whether the limit values for electromagnetic radiation specified in laws, national regulations, and recommendations are being adhered to. This is essential for occupational safety and to protect the general public.
- Measurement gives reassurance. It is the most important step in effective protection. Take maintenance work on an antenna array, for example: Are the transmitters switched off? Or is the field strength safe? Do the actual values agree with the theoretical ones?
- Measurement gives facts. For example, public protection: On site measurements show the actual exposure levels. This can help to allay unfounded anxiety, and can be used to initiate further preventive action – even if the values are well below the permitted limits.
- Measurement makes sure. For instance, when planning high tension transmission lines or antenna arrays, spot check measurements show whether the field strength simulation used in planning corresponds to reality.



### Measure: How?

- Only standard-compliant measurements provide comparable, reproducible and legally defensible results.
- The measurement results must be understandable, even for someone who is not constantly concerned with electromagnetic fields.
- The electric and magnetic fields must be measured separately in the near field.
- Non-directional (isotropic) measurement is demanded by the standards.

- The permitted field strengths depend on the frequency. The measuring instrument must therefore be sensitive enough, have a wide dynamic range, and be capable of frequency selective field strength evaluation complying with regulations.
- If the field strength is high or unknown, fit the instrument on a tripod and measure by remote control.



### Measure right!

- Measurement means comparison with a known quantity. Since field strength units are also defined by national standards, our instruments are calibrated against quantities that are traceable to these standards.
- Measuring equipment for outdoor use must be robust, dustproof, and weatherproof, to keep working accurately in the rough conditions of everyday use.
- Simple operation avoids mistakes and leads to reliable and dependable results.
- Minimum down time: We calibrate instruments in our own Narda laboratory in rapid time. Recalibration is recommended every one to three years, depending on the device.



## BROADCASTING, TELECOMS, MOBILE RADIO

- Occupational safety: Safety zones must be defined and observed when working in the immediate vicinity of antennas.
- Warning people and informing the general public: People want uninterrupted coverage, but at the same time, the radiation levels have to be kept low.

**NBM-550**, the Narda Broadband Field Meter, uses isotropic E-field and H-field probes to measure the electric and magnetic field components – simply, precisely, and non-directionally.

**RadMan and Nardalert**, the clip-on monitors, keep an eye on your personal safety.

**SRM-3006**, the Selective Radiation Meter, shows the source and magnitude of individual contributions to the overall field strength and evaluates them on site.

**Area Monitor**, the long-term Measurement System, keep an eye on electromagnetic fields, day and night.

**EFC-400**, the Simulation Software, estimates the field situation by calculation before new antennas are installed.



## INDUSTRY, MEDICINE, PUBLIC SAFETY



- Industrial safety: Low frequency and high frequency welding equipment, RF heating for plastic welding, drying, bonding, coating – whatever the application, the limits must not be exceeded.
- Human safety in medicine: Magnetic Resonance Imaging, magnet therapy, diathermy, hyperthermy – the diagnosis must be correct, the therapy must benefit the patient, and medical staff must not be put in any danger.
- Public safety: Close to high tension cables and transformer stations, proof that the field exposure is within the permitted limits is required.
- Domestic appliances must meet the magnetic field properties specified in the international standard e.g. IEC/EN 62233.

**NIM**, the complete Measurement System with Dual Electric and Magnetic Field Probe for Frequencies up to 100 MHz.

**EHP-50F and EHP-200A** detect electric and magnetic fields from the lowest of frequencies right up to the high frequencies used in industry and medicine.

**ELT-400**, the Exposure Level Tester, also measures pulsed magnetic fields in industry and the home.

**HP-01**, frequency-selective and wideband measurement of magnetic fields from 0 Hz to 1000 Hz.





## RADAR, AIR TRAFFIC CONTROL, RADIO LINK

- Directional radio antennas strongly concentrate the radiation power, and radar equipment uses extremely high impulse power levels as well. Primarily, those who work close to such equipment need protection, but the exposure levels for the general public also need to be checked.



**NBM-550**, the Narda Broadband Field Meter, can also measure the true power of pulsed electric fields if fitted with a suitable measuring probe.

**SRM-3006**, the Selective Radiation Meter, can continuously register even short radar impulses with frequency-selective accuracy in Level Meter and Scope mode.

**RadMan XT and Nardalert S3**, the clip-on monitors, keep an eye on your personal safety. RadMan XT, used as **leak detector**, can find radiation leaks caused by damaged feeders.

## POWER UTILITIES AND ELECTRIC RAILROADS



- Power utilities use 50 or 60 Hz AC in transformer stations and high tension lines; inverters and switched mode power supplies generate harmonics at several kilohertz.
- Subways and railroads operate using high value direct currents or alternating currents at 16 2/3, 50, or 60 Hz that cause magnetic fields.

**EHP-50F**, the Electromagnetic Field Analyzer, detects electric and magnetic fields from the lowest of frequencies right up to the harmonic frequency range.

**ELT-400**, The Exposure Level Tester. Wide frequency range (1 Hz – 400 kHz), standard-compliant measurement.

**EFC-400**, the powerful PC software application, simulates the field situation by calculation, including all components – from DC up to telecommunication frequencies, and can even determine the noise pollution level due to high tension lines.



## RF TEST & MEASUREMENT

For RF test and measurement, Narda offers real-time spectrum analyzers, monitoring receivers, and direction-finding systems.

More and more devices now have to share the available frequency spectrum as a result of new technologies such as the Internet of things (IoT), machine to machine (M2M) or car to car (C2C) communications, and the rapidly growing 4G/5G mobile networks. The risk of RF interference has grown as a result.



### SignalShark®:

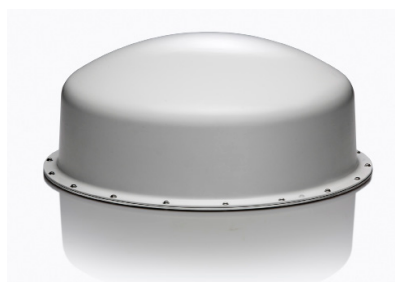
Signal analyzer for detection, analysis, classification, and localization of RF signals between 8 kHz and 8 GHz. Suitable for mobile and fixed use.



### IDA2:

Signal analyzer for detection, analysis, and localization of RF signals between 9 kHz and 6 GHz.

Whether you are making a wideband measurement of entire frequency ranges, or searching for hidden signals, or needing to reliably detect very short impulses, or localizing interference signals – Narda provides comprehensive measurement solutions for the ever more complex radio frequency spectrum. The design and excellent performance of Narda measuring devices make them ideal for on-site measurements as well as for fully-fledged laboratory use.



### ADFA:

Two Automatic DF Antennas (ADFA) in combination with the Narda Real-Time Handheld Analyzer SignalShark support full automatic direction finding.

### NRA:

Remote-controlled spectrum analyzer, with exceptionally powerful features and outstanding price / performance ratio. It is particularly suitable for radio monitoring.



## NARDA SAFETY TEST SOLUTIONS – LEADERS IN EMF MEASUREMENT

Narda is a leading provider of measuring equipment for the EMF Safety, RF Test & Measurement and EMC sectors. With its standards-compliant EMF measurement solutions for electrical and magnetic fields from 0 Hz to 90 GHz, Narda covers virtually all mobile radio services – including 5G.

The EMF Safety product range includes wideband and frequency selective measuring instruments, full coverage wide area monitors, and personal safety monitors that are worn on the person.

The RF Test & Measurement range includes analyzers and devices for measuring and identifying RF sources.

The PMM brand of EMC instruments consists of devices for measuring the electromagnetic compatibility of equipment. Servicing and calibration, as well as training programs complete the range of services provided.

The company management system is ISO 9001:2015 certified, and Narda operates a DIN EN ISO/IEC 17025:2005 accredited calibration laboratory. Narda has development and production facilities at three locations: Hauppauge, Long Island/USA, Pfullingen/Germany and Cisano/Italy. It also has its own representative in Beijing/China. A global network of Sales Partners ensures close customer contact. Narda is part of L3 Technologies, New York.



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