

Datasheet

SMARTS AMC

SMARTS Area Monitor Compact

Efficient, versatile and safe

Narda has expanded its portfolio of EMF monitoring solutions with the introduction of a compact and flexible device that can be integrated into existing systems and local area networks.

Featuring an innovative design, SMARTS AMC offers continuous detection of RF radiation, enabling the ongoing monitoring of potentially hazardous areas and ensuring compliance with industry and government standards.

**ITU-T K.83
compliant**

Advantages of SMARTS AMC

- Quick and easy installation on wall/ceiling or standalone with tripod
- Shaped probes, up to 60 GHz, compliant with various safety standards for both occupational and public limits
- Standalone or network capabilities with logging and warning functions
- Multiple data transmission interfaces: USB-C, optical fiber, Wi-Fi, Bluetooth, and Ethernet (no SIM card required)
- Integrated sensors for GPS, barometer, temperature, air humidity, accelerometer, and compass
- Excellent shielding properties, ensuring accurate measurements even with high field strength
- Environmental protection options: IP42 for indoor use (lab, school, hospital) or IP65 for harsh environments (subway, street lamps, etc.).



Interchangeable probes

Interchangeable probes offer versatile adaptability to various application needs, enabling seamless operation even during recalibration periods. This uninterrupted continuity ensures the system's responsiveness and reliability over time. The digital probe interface eliminates the need to calibrate the main device.

To optimize performance, the probes can be calibrated in one of two modes.

Standard calibration is suitable for many environments. For example, it ensures the correct functioning of alarm devices and/or sensors when an extremely high level of precision is not required, offering an efficient trade off between accuracy and cost.

Individual calibration is personalized to meet the specific requirements of a particular application, for example inside an accredited laboratory, ensuring an optimal level of accuracy.

The choice of modes allows flexible adaptation to various needs, ensuring that calibration not only optimizes performance but also complies with the specific quality and regulatory requirements of the application in question.



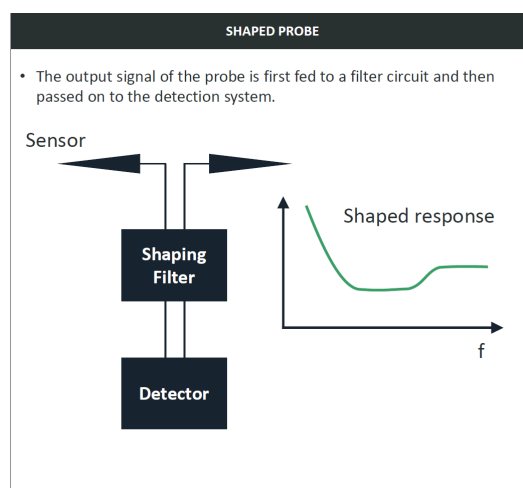
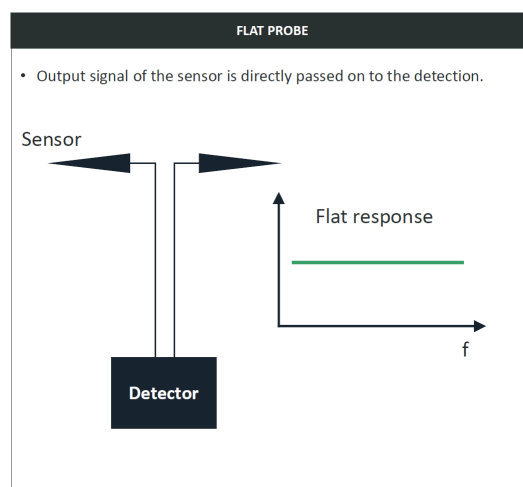
Why a shaped probe?

Shaping filters in the probes ensure that all services are evaluated according to the standard, e.g. directly compliant with ICNIRP, FCC or SC6, regardless of their frequencies, which is a patented function unique to these devices.

Weighting filters in the sensors simulate the frequency response of the standard and they ensure that the alarm thresholds (settable by user's) are correct over the entire frequency range.

Benefits of a “shaped” probe:

- › Selectivity is not necessary, shaping ensures automatic standard compliant evaluation over the entire frequency range of the probe
- › Standard compliance by means of shaped frequency response
- › Direct reading in % of standard for both E & H field
- › Shaped probes for several standards available (ICNIRP, SC6 and FCC)
- › Direct reading for both occupational and general public limit values
- › Works perfectly even in a multi frequency environment
- › Economical alternative to selective measuring devices



| Application \ Probes | EHP-2B-05 | EHP-2B-06 | EHP-2B-07 | EHP-2B-08 |
|-----------------------------------|---|---|---|---|
| Mobile communications | • | • | • | • |
| Radio / TV broadcasting | • | • | • | • |
| Directional radio | • | • | • | • |
| Satellite communications | • | • | • | • |
| Industry | • | • | • | • |
| Radar | • | • | • | • |
| Frequency range | E: 500 kHz to 9,25 GHz H: 20 MHz – 1 GHz | E: 500 kHz to 60 GHz H: 20 MHz – 1 GHz | E: 1,34 MHz to 9,25 GHz H: 1 MHz – 1 GHz | E: 1,34 MHz to 60 GHz H: 1 MHz – 1 GHz |
| Field type (isotropic sensors) | E & H | E & H | E & H | E & H |
| Band type | Shaped ICNIRP 98 SC6 | Shaped ICNIRP 98 SC6 | Shaped ICNIRP 20 FCC | Shaped ICNIRP 20 FCC |

Versatility

In addition to its various communication ports, AMC's DB15 user port makes it even more versatile by allowing threshold conditioning and the connection of external devices.

The threshold conditioning feature empowers users to fine-tune and customize the sensitivity levels, ensuring precise performance tailored to their specific needs.

Additionally, the user port facilitates the connection of external devices, such as the Device Under Test (DUT), doors interlock, and external alarms. Input and output signals are optocoupled or relays protected and there is a +5 V, 150 mA max protected input/output supply. This capability expands the functionality of AMC units, enabling seamless integration with a variety of external components.

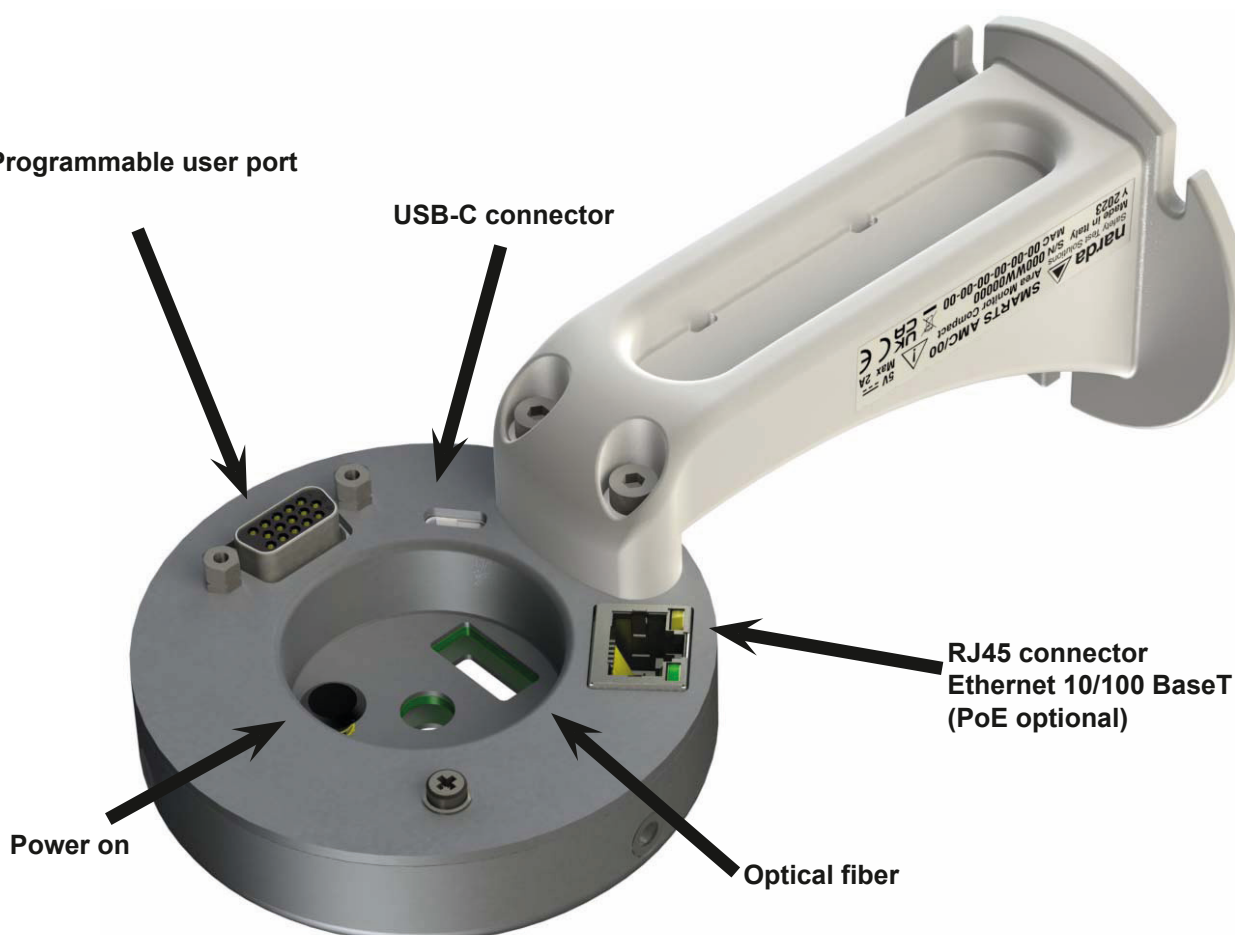
The alarms are integrated into the equipment, so no external accessories are required. The different types of alarms (acoustic, vibrating, and visual) are transmitted according to the different applications.

With threshold conditioning and the ability to connect external devices, the user port is a comprehensive solution that meets each user's unique requirements while providing a high degree of customization and integration for diverse applications.



USB-C can be used as an alternative to PoE

Programmable user port



Installation options for quick or comprehensive surveys

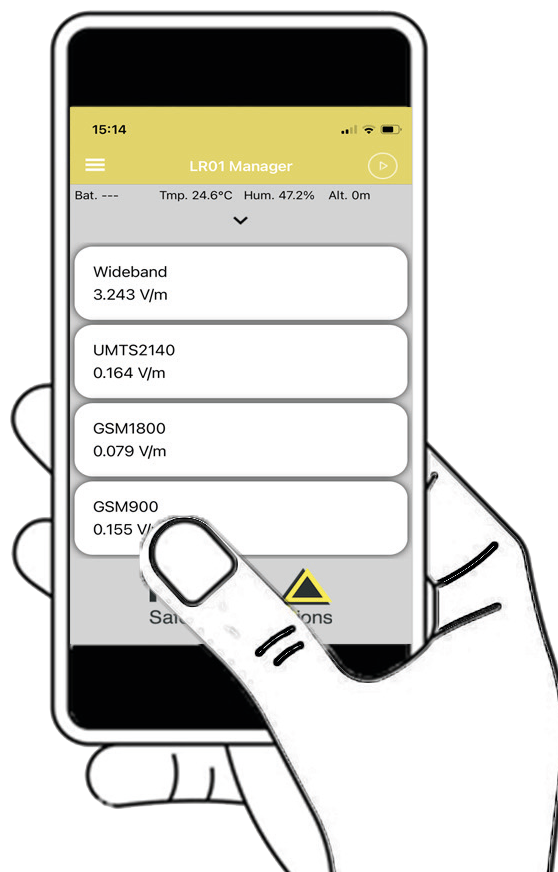
SMARTS AMC is suitable for long, medium and short term surveys.

When installed on a tripod using the optional adapters, SMARTS AMC can perform a quick survey of the area to be monitored.

In logger acquisition mode, SMARTS AMC can be configured to collect and store data directly in its internal memory. Thanks to the internal backup battery, rechargeable via USB or PoE power supply, SMARTS AMC can continue to operate even in the event of a blackout, with a standalone operating time of up to 100 hours.

Alternatively, SMARTS AMC can be controlled by the PC suite developed for Windows.

Narda also introduces an innovative way to display SMARTS AMC EMF measurements in combination with a dedicated app, Narda LR01 Manager, for mobile devices (Android and iOS) and smartwatches (WearOS).



The app works with SMARTS AMC by Bluetooth connection so users can enjoy hands-free operation and stay at a safe distance from the potentially dangerous field. The user can easily display EMF measurements, browse the technical data (battery level, altitude, etc) and change settings by simply tapping the screen.

SMARTS AMC Management Software

Narda is committed to developing solutions for remote device control, with the aim of providing customers with a simple and intuitive experience. In addition, for any need, the customer will always have the command protocol available, which we provide free of charge.

All EMF monitoring data can be stored securely and privately on your own computer, or shared publicly and free of charge online (via a web-based solution).

The management software covers several applications:

Local area network:

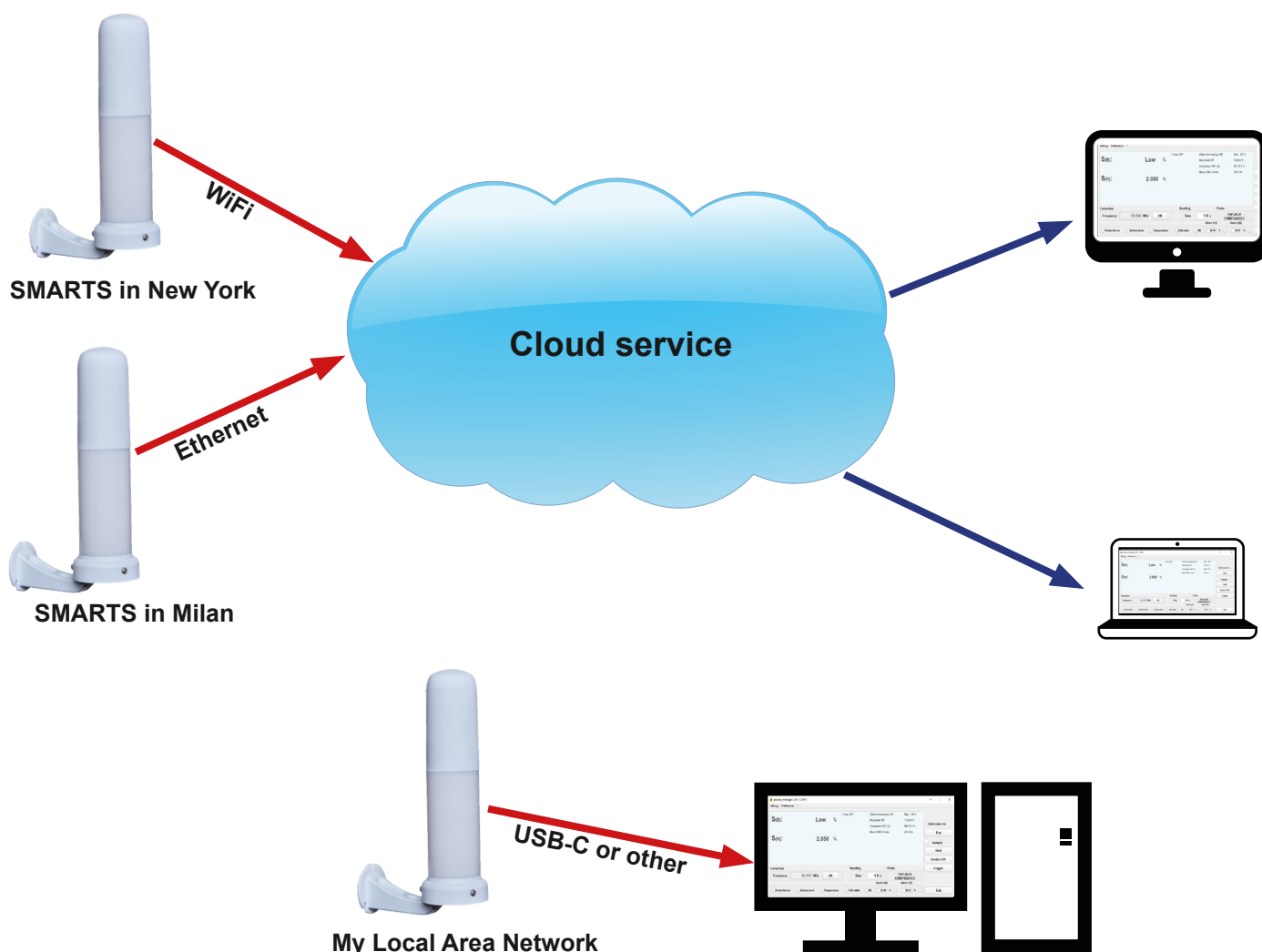
- One or more stations connects to the platform using fiber optic, USB-C, Ethernet, or Wi-Fi service ports

External network:

- A network of area monitors. The platform controls units connected locally or remotely through a cloud service installed in Windows Server (internet connection required)

The management software can warn of a higher than expected electromagnetic field level in different ways: by sending an alarm to the control center via the specified e-mail addresses, or by hardware alarm.

All measurement data and information are stored in real time. Each record contains: average and peak measurements and comparison with fixed thresholds, address, geographical position and an image of the station for easy identification.



Specifications

| SMARTS AMC | | |
|--|---|---|
| Interface | Optical (RP-02), USB (C), WiFi (802.11 b/g/n), Bluetooth (5.0), Ethernet 10/100 BaseT (PoE), User's Port | |
| Optical fiber connection | Optical serial interface 115200 Baud Connector RP02 up to a 40 m (USB-OC) | |
| Sampling time | Automatic 300 ms | |
| Internal log interval | Settable from 1 sec to 1 hour on adjustable threshold | |
| Max data storage capability | Up to 250.000 points | |
| Probe specifications | Frequency range, Frequency flatness, Dynamic range, Resolution, Sensitivity, Accuracy, Overload, Measurement units, Detector, Sampling rate, Acquisition method | |
| GNSS | Embedded receiver and antenna (GPS, GLONASS, GALILEO, QZSS and SBAS) | |
| Supplementary data Battery voltage and capacity Date & Time Temperature Humidity (relative) Pressure GPS coordinates Altitude Compass Speed Acceleration | Internal sensor for reporting and logging | |
| Warnings and Alarms notifications | Field, Probe, Temperature, Humidity, Battery, Communications | |
| Alarms types | Acoustic, visual, vibration, data log | |
| Internal memory | 256 Mb | |
| Calibration | Internal E ² PROM | |
| Backup internal battery | 3.7 V / 1320 mAh Li-Ion | |
| Operating time (without power supply connection) | Standalone mode Optical mode BT mode WiFi mode | up to 100 hours up to 60 hours up to 20 hours up to 10 hours |
| Recharging time | < 2.5 hours | |
| External supply | 5 VDC, I _{max} 600 mA | |
| Firmware updating | Through the optical link | |
| Self test | Automatic at power on | |
| Operating temperature | -20 to +55 °C | |
| Storage temperature | -30 to +75 °C | |
| Operating relative humidity ⁽⁵⁾ | 5 to 95 % | |
| Ingress protection | Up to IP65 | |
| Dimensions | Ø 86 mm, height 306 mm, wall distance 93 mm | |
| Weight | 800g total weight inclusive of main unit and probe | |

EHP-2B-05 ELECTRIC AND MAGNETIC SHAPED FIELD PROBE - For ICNIRP 1998 and SC 6 2015*

| | | | Electric Field | Magnetic Field |
|--|-------------------------------|----------------|--|---------------------------|
| Frequency range | ICNIRP 1998 | Occupational | 0.5 – 9250 MHz | 20 – 1000 MHz |
| | | General Public | 3 – 9250 MHz | |
| | SC6 2015 | Controlled | | |
| | | Uncontrolled | | |
| Level range ⁽¹⁾ | Occupational / Controlled | | 0.1 – 1000 % | 0.3 – 1000 % |
| | General Public / Uncontrolled | | 0.5 – 1000 % | 1.5 – 1000 % |
| Overload | | | 2000 % | |
| Linearity ⁽²⁾ | | | +/- 0.5 dB | |
| Power (Amplitude) dynamic range | Occupational / Controlled | | 40 (80) dB | 35 (70) dB |
| | General Public / Uncontrolled | | 33 (66) dB | 28 (56) dB |
| Resolution | | | 0.01 % | |
| Sensitivity | Occupational / Controlled | | 0.1 % | 0.3 % |
| | General Public / Uncontrolled | | 0.5 % | 1.5 % |
| Frequency flatness ⁽³⁾ (typ) | ICNIRP 1998 | Occupational | 0.5 – 3 MHz +4/-2 dB 3 – 9250 MHz +/-3 dB | 20 – 1000 MHz +/-3 dB |
| | | General Public | 3 – 10 MHz +2/-3 dB 10 – 9250 MHz +/-3 dB | |
| | SC6 2015 | Controlled | 3 – 9250 MHz +/-3.5 dB | |
| | | Uncontrolled | | |
| Anisotropy ⁽⁴⁾ | | | +/-0.5 dB | |
| Temperature error ⁽⁴⁾ | | | 0.03 dB/°C | 0.01 dB/°C |
| Temperature sensor | | | On board | |
| Field sensor | | | Triaxial orthogonal dipoles | Triaxial orthogonal loops |
| A/D conversion | | | On board | |
| Calibration ⁽⁵⁾ | | | internal E2PROM | |
| Operating temperature | | | -20 to +55 °C | |
| Operating relative humidity ⁽⁶⁾ | | | 5 to 95 % | |
| Storage temperature | | | -30 to +75°C | |
| Dimensions | | | 165 mm length, 54 mm diameter | |
| Weight | | | 100 g | |

Unless otherwise specified, the following specifications refer to 23°C operating ambient temperature and 50% relative humidity.

Note (1): Power density referred.

Note (2): At 50 MHz on related level range 6 dB above the noise floor

Note (3): Relative to 10% of the standard limit

Note (4): At 50 MHz / 10% of the standard limit

Note (5): Recommended re-calibration interval 24 months

Note (6): Without condensation

(*) All probes include on board A/D conversion, calibration factors on E²PROM, and temperature sensor

EHP-2B-06 ELECTRIC AND MAGNETIC SHAPED FIELD PROBE - For ICNIRP 1998 and SC 6 2015*

| | | | Electric Field | Magnetic Field |
|--|-------------------------------|----------------|--|---------------------------|
| Frequency range | ICNIRP 1998 | Occupational | 0.5 MHz – 60 GHz | 20 – 1000 MHz |
| | | General Public | 3 MHz – 60 GHz | |
| | SC6 2015 | Controlled | | |
| | | Uncontrolled | | |
| Level range ⁽¹⁾ | Occupational / Controlled | | 0.1 – 1000 % | 0.3 – 1000 % |
| | General Public / Uncontrolled | | 0.5 – 1000 % | 1.5 – 1000 % |
| Overload | | | 2000 % | |
| Linearity ⁽²⁾ | | | +/- 0.5 dB | |
| Power (Amplitude) dynamic range | Occupational / Controlled | | 40 (80) dB | 35 (70) dB |
| | General Public / Uncontrolled | | 33 (66) dB | 28 (56) dB |
| Resolution | | | 0.01 % | |
| Sensitivity | Occupational / Controlled | | 0.1 % | 0.3 % |
| | General Public / Uncontrolled | | 0.5 % | 1.5 % |
| Frequency flatness ⁽³⁾ (typ) | ICNIRP 1998 | Occupational | 0.5 – 3 MHz +4/-2 dB 3 – 18000 MHz +/-3 dB 18 – 60 GHz +8/-1 dB | 20 – 1000 MHz +/-3 dB |
| | | General Public | 3 – 10 MHz +2/-3 dB 10 – 18000 MHz +/-3 dB 18 – 60 GHz +8/-1 dB | |
| | SC6 2015 | Controlled | 3 – 9250 MHz +/-3.5 dB 9250 – 18000 MHz +6/0 dB 18 – 60 GHz +8/-1 dB | |
| | | Uncontrolled | | |
| Anisotropy ⁽⁴⁾ | | | +/-0.5 dB | |
| Temperature error ⁽⁴⁾ | | | 0.03 dB/°C | 0.01 dB/°C |
| Temperature sensor | | | On board | |
| Field sensor | | | Triaxial orthogonal dipoles | Triaxial orthogonal loops |
| A/D conversion | | | On board | |
| Calibration ⁽⁵⁾ | | | internal E ² PROM | |
| Operating temperature | | | -20 to +55 °C | |
| Operating relative humidity ⁽⁶⁾ | | | 5 to 95 % | |
| Storage temperature | | | -30 to +75°C | |
| Dimensions | | | 165 mm length, 54 mm diameter | |
| Weight | | | 100 g | |

Unless otherwise specified, the following specifications refer to 23°C operating ambient temperature and 50% relative humidity.

- (1) Power density referred.
- (2) At 50 MHz on related level range 6dB above noise floor
- (3) Relative to 10% of the standard limit
- (4) At 50 MHz / 10% of the standard limit
- (5) Recommended re-calibration interval 24 months
- (6) Without condensation

(*) All probes include on board A/D conversion, calibration factors on E²PROM, and temperature sensor

EHP-2B-07 ELECTRIC AND MAGNETIC SHAPED FIELD PROBE - For ICNIRP 2020 and FCC 96 326*

| | | | Electric Field | Magnetic Field |
|--|--------------|----------------|-------------------------------|---|
| Frequency range | ICNIRP 2020 | Occupational | 5 – 9250 MHz | 1 – 1000 MHz |
| | | General Public | | |
| | FCC 96-326 | Occupational | 2 – 9250 MHz | 2 – 1000 MHz |
| | | General Pop. | 1.34 – 9250 MHz | 1 – 1000 MHz |
| Level range ⁽¹⁾ | Occupational | | 0.1 – 1000 % | 0.3 – 1000 % |
| | General P. | | 0.5 – 1000 % | 1.5 – 1000 % |
| Overload | | | 2000 % | |
| Linearity ⁽²⁾ | | | +/- 0.5 dB | |
| Power (Amplitude) dynamic range | Occupational | | 40 (80) dB | 35 (70) dB |
| | General P. | | 33 (66) dB | 28 (56) dB |
| Resolution | | | 0.01 % | |
| Sensitivity | Occupational | | 0.1 % | 0.3 % |
| | General P. | | 0.5 % | 1.5 % |
| Frequency flatness ⁽³⁾ (typ) | ICNIRP 2020 | Occupational | 5 – 9250 MHz +/-2 dB | 1 – 200 MHz +3.5/-1 dB 200 – 1000 MHz +3.5/-4 dB |
| | | General Public | | |
| | FCC 96-326 | Occupational | 2 – 9250 MHz +/-3 dB | 2 – 1000 MHz +/-3 dB |
| | | General Pop. | 1.34 – 9250 MHz +/-3 dB | 1 – 1000 MHz +/-3 dB |
| Anisotropy ⁽⁴⁾ | | | +/-0.5 dB | |
| Temperature error ⁽⁴⁾ | | | 0.03 dB/°C | 0.01 dB/°C |
| Temperature sensor | | | On board | |
| Field sensor | | | Triaxial orthogonal dipoles | Triaxial orthogonal loops |
| A/D conversion | | | On board | |
| Calibration ⁽⁵⁾ | | | internal E ² PROM | |
| Operating temperature | | | -20 to +55 °C | |
| Operating relative humidity ⁽⁶⁾ | | | 5 to 95 % | |
| Storage temperature | | | -30 to +75°C | |
| Dimensions | | | 165 mm length, 54 mm diameter | |
| Weight | | | 100 g | |

Unless otherwise specified, the following specifications refer to 23°C operating ambient temperature and 50% relative humidity.

Note (1): Power density referred.

Note (2): At 50 MHz on related level range 6dB above noise floor

Note (3): Relative to 10% of the standard limit

Note (4): At 50 MHz / 10% of the standard limit

Note (5): Recommended re-calibration interval 24 months

Note (6): Without condensation

(*) All probes include on board A/D conversion, calibration factors on E²PROM, and temperature sensor

EHP-2B-08 ELECTRIC AND MAGNETIC SHAPED FIELD PROBE - For ICNIRP 2020 and FCC 96 326*

| | | | Electric Field | Magnetic Field |
|--|--------------|----------------|--|---|
| Frequency range | ICNIRP 2020 | Occupational | 5 MHz – 60 GHz | 1 – 1000 MHz |
| | | General Public | | |
| | FCC 96-326 | Occupational | 2 MHz – 60 GHz | 2 – 1000 MHz |
| | | General Pop. | 1.34 MHz – 60 GHz | 1 – 1000 MHz |
| Level range ⁽¹⁾ | Occupational | | 0.1 – 1000 % | 0.3 – 1000 % |
| | General P. | | 0.5 – 1000 % | 1.5 – 1000 % |
| Overload | | | 2000 % | |
| Linearity ⁽²⁾ | | | +/- 0.5 dB | |
| Power (Amplitude) dynamic range | Occupational | | 40 (80) dB | 35 (70) dB |
| | General P. | | 33 (66) dB | 28 (56) dB |
| Resolution | | | 0.01 % | |
| Sensitivity | Occupational | | 0.1 % | 0.3 % |
| | General P. | | 0.5 % | 1.5 % |
| Frequency flatness ⁽³⁾ (typ) | ICNIRP 2020 | Occupational | 5 – 9250 MHz +/-2 dB 9250 – 18000 MHz + 3/-2 dB 18 – 60 GHz +8/-1 dB | 1 – 200 MHz +3.5/-1 dB 200 – 1000 MHz +3.5/-4 dB |
| | | General Public | | |
| | FCC 96-326 | Occupational | 2 – 18000 MHz +/-3 dB 18 – 60 GHz +8/-1 dB | 2 – 1000 MHz +/-3 dB |
| | | General Pop. | 1.34 – 18000 MHz +/-3 dB 18 – 60 GHz + 8/-1 dB | 1 – 1000 MHz +/-3 dB |
| Anisotropy ⁽⁴⁾ | | | +/-0.5 dB | |
| Temperature error ⁽⁴⁾ | | | 0.03 dB/°C | 0.01 dB/°C |
| Temperature sensor | | | On board | |
| Field sensor | | | Triaxial orthogonal dipoles | Triaxial orthogonal loops |
| A/D conversion | | | On board | |
| Calibration ⁽⁵⁾ | | | internal E2PROM | |
| Operating temperature | | | -20 to +55 °C | |
| Operating relative humidity ⁽⁶⁾ | | | 5 to 95 % | |
| Storage temperature | | | -30 to +75°C | |
| Dimensions | | | 165 mm length, 54 mm diameter | |
| Weight | | | 100 g | |

Unless otherwise specified, the following specifications refer to 23°C operating ambient temperature and 50% relative humidity.

Note (1): Power density referred.

Note (2): At 50 MHz on related level range 6dB above noise floor

Note (3): Relative to 10% of the standard limit

Note (4): At 50 MHz / 10% of the standard limit

Note (5): Recommended re-calibration interval 24 months

Note (6): Without condensation

(*) All probes include on board A/D conversion, calibration factors on E²PROM, and temperature sensor

Ordering information

Instrument Sets

| Description | Part number |
|--|----------------------|
| <ul style="list-style-type: none"> › LR-01 Basic Unit › USB Cable – USB(A)/USB(C) 2m long › AC/DC Converter with plug adapters › RP-02/10 10m long › USB-OC Optical Converter › AMC Interface › Wall support bracket › Tripod support › Radome AMC › Tools › USB memory stick including software media and operating manual › Certificate of Calibration › Return for Repair Form | SMARTS-AMC-00 |

Probes

| Description | Part number |
|---|------------------|
| Electric and magnetic shaped field probe - For ICNIRP 1998 and SC 6 2015 E: 500 kHz to 9.25 GHz; 0.1 (0.5) to 1000 % H: 20 MHz to 1 GHz; 0.3 (1.5) to 1000 % | EHP-2B-05 |
| Electric and magnetic shaped field probe - For ICNIRP 1998 and SC 6 2015 E: 500 kHz to 60 GHz; 0.1 (0.5) to 1000 % H: 20 MHz to 1 GHz; 0.3 (1.5) to 1000 % | EHP-2B-06 |
| Electric and magnetic shaped field probe - For ICNIRP 2020 and FCC 96 326 E: 1.34 MHz to 9,25 GHz; 0.1 (0.5) to 1000 % H: 1 MHz to 1 GHz; 0.3 (1.5) to 1000 % | EHP-2B-07 |
| Electric and magnetic shaped field probe - For ICNIRP 2020 and FCC 96 326 E: 1.34 MHz to 60 GHz; 0.1 (0.5) to 1000 % H: 1 MHz to 1 GHz; 0.3 (1.5) to 1000 % | EHP-2B-08 |

Accessories

| Description | Part number |
|-------------------------------------|--------------------|
| FO Duplex Cable RP-02, 20 m | 650.000.257 |
| FO Duplex Cable RP-02, 40 m | 650.000.275 |
| DB15 Cable - DB15(m)/DB15(m), 1,8 m | 210.500.051 |
| Ethernet Cable, 5m | 210.500.052 |
| PoE Injector | 650.000.340 |
| TR-02, tripod with plastic column | 650.000.090 |

Narda Safety Test Solutions GmbH
Sandwiesenstrasse 7
72793 Pfullingen, Germany
Phone: +49 7121 9732-0
info@narda-sts.com

www.narda-sts.com

Narda Safety Test Solutions
North America Sales Office
435 Moreland Road
Hauppauge, NY11788,USA
Phone: +1 631 231-1700
info@narda-sts.com

Narda Safety Test Solutions Srl
Via Benessea 29/B
17035 Cisano sul Neva (SV) - Italy
Phone: +39 0182 58641
nardait.support@narda-sts.it

Narda Safety Test Solutions GmbH
Beijing Representative Office
Xiyuan Hotel, No.1 Sanlihe Road, Haidian
100044 Beijing, China
Phone: +86 10 6830 5870
support@narda-sts.cn

© Names and Logo are registered trademarks of Narda Safety Test Solutions GmbH – Trade names are trademarks of the owners.