Telemeter Electronic

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.

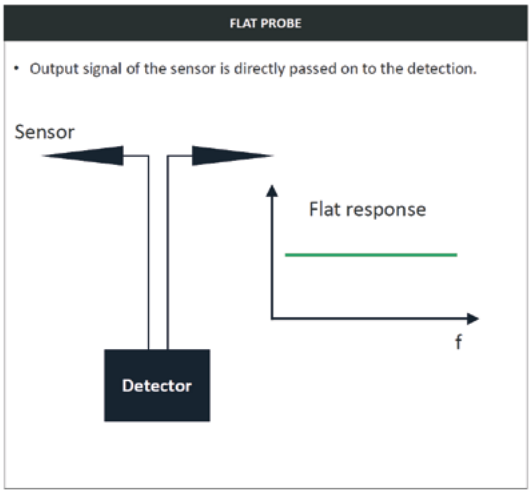
Individual calibration is personalized to meet the specific requirements of a particular application, for example inside an accredited laboratory, ensuring an optimal level of accuracy.

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?

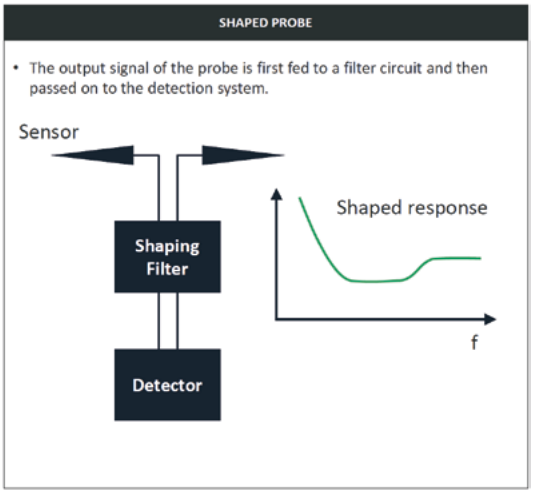
Shaping filters in the probes ensure that all services are evaluated according to the standard, e.g. directly compliant with ICNIRP, FCC or SC6, regardless of their frequencies, which is a patented function unique to these devices.

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.

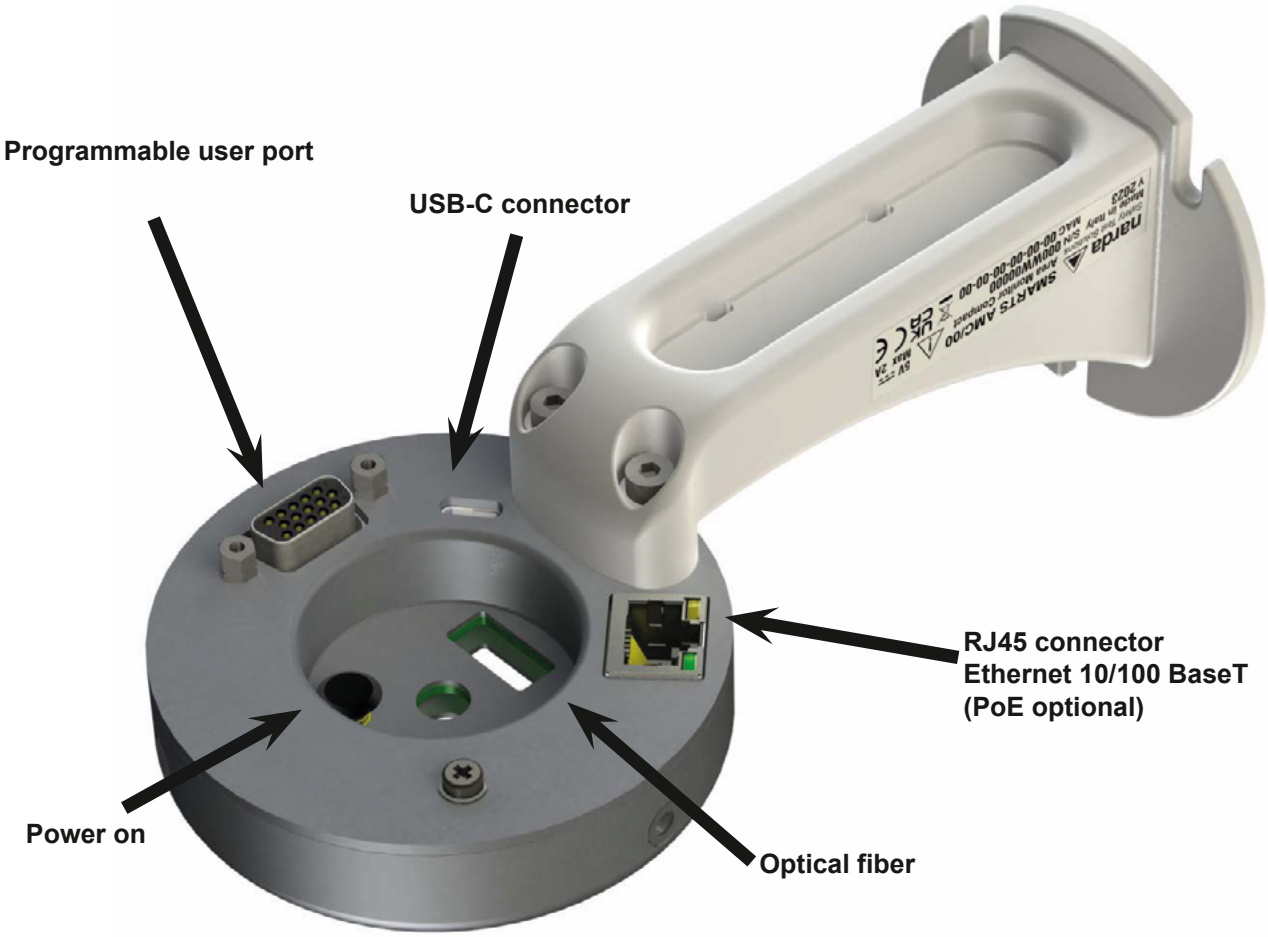
The threshold conditioning feature empowers users to fine-tune and customize the sensitivity levels, ensuring precise performance tailored to their specific needs.

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 relais 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



Installation options for quick or comprehensive surveys

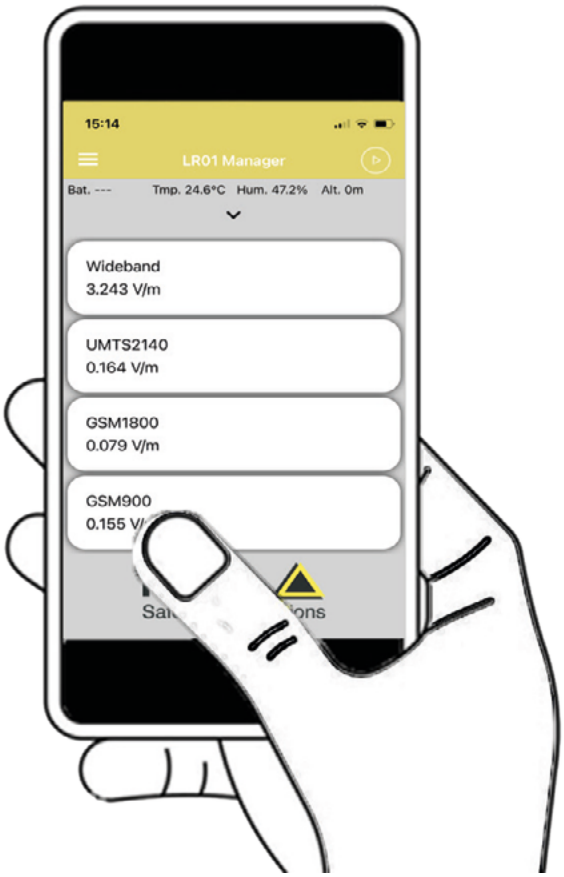
SMARTS AMC is suitable for long, medium and short term surveys.

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).



Download on the App Store

ANDROID APP ON Google play

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:

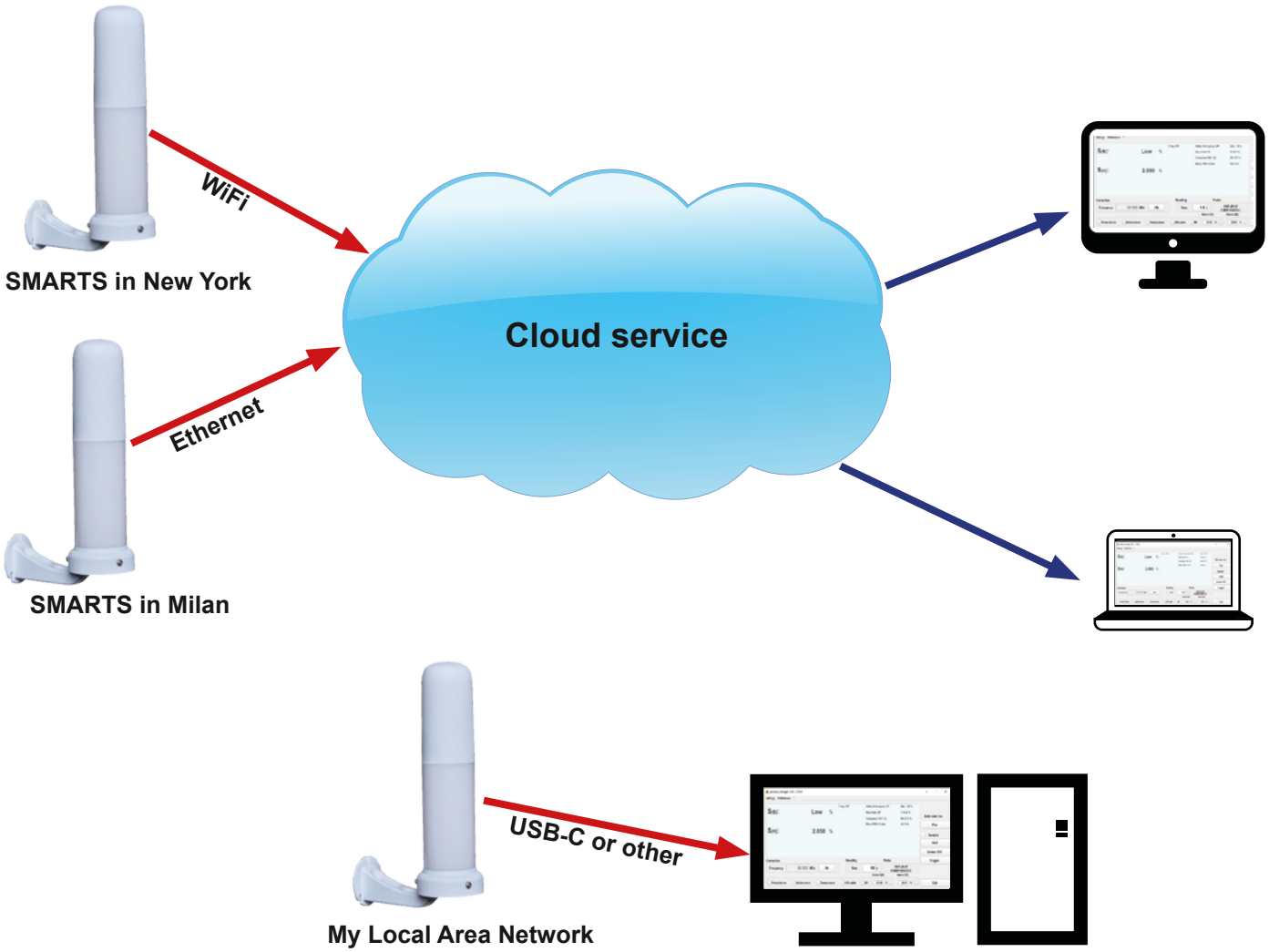
- One or more stations connects to the platform using fiber optic, USB-C, Ethernet, or Wi-Fi service ports

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^2PROM	
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, Imax 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 convertion			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 E^2PROM, 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 convertion			On board	
Calibration (5)			internal E^2PROM	
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 E^2PROM, and temperature sensor

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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 convertion			On board	
Calibration (5)			internal E^2PROM	
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 E^2PROM, 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 convertion			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 E^2PROM, and temperature sensor

Ordering information

Instrument Sets

Description	Part number
› 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**