

NARDA EMF MONITORS

AMB-8059

Continuous, remote monitoring and logging of electromagnetic fields

ITU-T K.83
compliant

- ▲ **Interchangeable probes from 10 Hz to 40 GHz for low frequency & high frequency applications**
- ▲ **Multi-band probes for telecommunications monitoring**
- ▲ **Simultaneous monitoring of electric and magnetic fields**
- ▲ **Fully autonomous operation:**
 - Solar panel power supply
 - Built-in 3G modem
 - Built-in Wi-Fi
 - Automatic data transfer
 - Daily reports, warnings & alarm messages via SMS
 - On-board GPS
- ▲ **Easy integration into test environments and Web Based Applications**
- ▲ **Low weight, robust design, compact size for indoor and outdoor operations**
- ▲ **Drive test capability of AMB-8059/00 model according to ITU-K.113**



*Area Monitor AMB-8059/03
with Solar Panel*

INTRODUCTION

Narda EMF Monitors are equipped with exclusive, state-of-the-art sensors having high sensitivity, accuracy and reliability. Their robust, uncluttered construction is perfect for long-term outdoor installation. The AMB-8059 handles applications from a few Hertz through to long wave and on up to high frequency microwave radiation using a selection of interchangeable probes for electric and magnetic fields.

MINIMUM OUTLAY, MAXIMUM RESULT

An EMF monitoring system is made up from a series of EMF monitors installed wherever the EMF presence needs to be assessed continuously or by long term observation. The EMF monitors store the data and report them using conventional mobile data communication at set time intervals to a central unit, e.g. PC or data server. The system size can range from a single location up to countrywide coverage. Narda EMF monitors combine all the features that are essential for this purpose: autonomy, outdoor usability, mobility, robustness, and low operating costs.

You can be certain to find the ideal solution for every area of application with Narda. And you can depend on its reliability, thanks to our decades of experience coupled with cutting edge technology, backed up by our own certified calibration laboratory.



THE AMB SERIES

Its broadband application is the optimum solution for technical superiority from a tight budget. Four models are available:

Unit designation	AMB-8059/03	AMB-8059/02	AMB-8059/01	AMB-8059/00
Solar panel (24/7) & back-up battery	✓		✓	
Internal 3G modem	✓	✓		
Wi-Fi	✓	✓	✓	✓
Ethernet port	✓		✓	
USB	✓	✓	✓	
RS232	✓		✓	
Optical link	✓		✓	✓
GPS sensor	✓	✓	✓	✓
Battery life 6 – 12 months (Li-Ion)		✓		✓
Remote capabilities	✓	✓	✓	✓
Permanent outdoor installation	○		○	
Indoor installation		○		○
Drive test measurement				● ⁽¹⁾
(1) Car mounting kit required, see optional accessories				
○ Suggested ● Necessary				



COMPLETE PROGRAM FOR ALL REQUIREMENTS

Narda offers a wide range of different isotropic probes. These include quad-band probes for separating mobile telephone services as well as wideband measurement from 100 kHz to 40 GHz. Special probes are available for low frequency magnetic or electric fields from 10 Hz to 5 kHz. This means that emissions from high-voltage cables and transformer stations can be recorded. Further, it is possible to combine up to two probes, e.g. an electric and a magnetic field probe in the so-called "dual probe configuration".



Magnetic field probe



Electric field probe



*Dual probe configuration
(without radome)*

THE APPLICATIONS - NARDA AREA MONITOR PROBES

Frequency range	100 kHz to 3 GHz	100 kHz to 7 GHz	10 Hz to 5 kHz	300 kHz to 18 GHz	300 kHz to 40 GHz	0.1 to 3000 MHz 0.1 to 862 MHz 933-3000 MHz	0.1-3000 MHz GSM, UMTS	0.1-7000 MHz GSM, UMTS	10 Hz to 5 kHz
Field type (isotropic sensors)	E	E	E	E	E	E	E	E	H
Band type	Single	Single	Single	Single	Single	Tri	Quad	Quad	Single
Probe designation	EP-1B-01	EP-1B-03	EP-1B-04	EP-1B-05	EP-1B-06	EP-3B-01	EP-4B-01	EP-4B-02	HP-1B-01
Mobile communications	●	●		●	●	●	●	●	
Radio / TV broadcasting	●	●		●	●	●	●	●	
Directional radio		○		●	●	○	○	○	
Satellite communications				●	●				
Radar				●	●				
Industry	●	●	●			●	●	●	●
Railroads			●						●
Power lines			●						●
Transformers			●						●

● more important ○ variable importance

SIMULTANEOUS MONITORING OF ELECTRIC AND MAGNETIC FIELDS

Possible dual probe configuration:

Probe combination		HP-1B-01 + EP-1B-01	HP-1B-01 + EP-1B-03	HP-1B-01 + EP-1B-04	HP-1B-01 + EP-1B-05	HP-1B-01 + EP-1B-06
Frequency range / field type	H	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz	10 Hz to 5 kHz
	E	100 kHz to 3 GHz	100 kHz to 7 GHz	10 Hz to 5 kHz	300 kHz to 18 GHz	300 kHz to 40 GHz

SPECIFICATIONS

EP-1B-01 Electric Field Probe*	
Field Probe* Frequency range	100 kHz to 3 GHz
Measurement range	0.2 to 200 V/m (dynamic range > 60 dB)
Measurement resolution	0.01 V/m
Overload	600 V/m
Flatness @ 20 V/m	1 to 200 MHz \pm 0.8 dB; 150 kHz to 3 GHz \pm 1.5 dB
Linearity	\pm 0.5 dB (0.5 to 100 V/m)
Anisotropy @ 6 V/m	\pm 0.8 dB @ 50 MHz (typical 0.6 dB)
H-Field rejection	> 20 dB
Size and weight	450 mm length, 55 mm \varnothing , 180 g

EP-1B-03 Electric Field Probe*	
Field Probe* Frequency range	100 kHz to 7 GHz
Measurement range	0.2 V/m to 200 V/m (dynamic range > 60 dB)
Measurement resolution	0.01 V/m
Overload	600 V/m
Flatness @ 20 V/m	3 MHz to 200 MHz: \pm 0.8 dB; 0.15 MHz to 3 GHz: \pm 1.5 dB ; 0.1 MHz to 6 GHz: \pm 2 dB
Linearity	\pm 0.5 dB (0.5 to 100 V/m)
Anisotropy @ 6 V/m	\pm 0.8 dB @ 50 MHz (typical 0.6 dB)
H-Field rejection	> 20 dB
Size and weight	450 mm x 55 mm \varnothing , 180 g

EP-1B-04 Electric Field Probe*	
Frequency range	10 Hz to 5 kHz
Measurement range	5 V/m to 20 kV/m (dynamic range > 72 dB)
Measurement resolution	0.1 V/m
Overload	> 30 kV/m
Flatness @ 100 V/m (40 Hz – 1 kHz)	1 dB (typical 0.5 dB)
Anisotropy @ 100 V/m	0.5 dB @ 50 Hz
H-Field rejection	> 20 dB
Size and weight	77 mm x 53 mm \varnothing , 110 g

EP-1B-05 Electric Field Probe*	
Frequency range	300 kHz to 18 GHz
Measurement range	0.5 V/m to 800 V/m (dynamic range > 64 dB)
Measurement resolution	0.01 V/m
Overload	1200 V/m
Flatness @ 6 V/m	1 MHz to 1 GHz \pm 1.5 dB; 1 GHz to 12 GHz \pm 3.0 dB; 12 GHz to 18 GHz \pm 4.0 dB
Linearity	\pm 0.5 dB (\pm 0.3 typical) (1.2 V/m to 200 V/m) @ 200 MHz
Anisotropy @ 200 MHz	\pm 0.8 dB (typical 0.5 dB @ 930 and 1800 MHz)
H field rejection	> 20 dB
Size and weight	450 mm x 55 mm \varnothing , 180 g

EP-1B-06 Electric Field Probe*	
Frequency range	300 kHz to 40 GHz
Measurement range	0.5 V/m to 800 V/m (dynamic range > 64 dB)
Measurement resolution	0.01 V/m
Overload	1200 V/m
Flatness @ 6 V/m	1 MHz to 1 GHz ± 1.5 dB 1 GHz to 12 GHz ± 3.0 dB 12 GHz to 23 GHz ± 4.0 dB 23 GHz to 40 GHz ± 5.0 dB
Linearity	± 0.5 dB (± 0.3 typical) (1.2 V/m to 200 V/m) @ 200 MHz
Anisotropy @ 200 MHz	± 0.8 dB (typical 0.5 dB @ 930 and 1800 MHz)
H field rejection	> 20 dB
Size and weight	450 mm x 55 mm \varnothing , 180 g

EP-3B-01 Tri-Band Electric Field Probe*			
Frequency range	Wideband: 0.1 to 3000 MHz	Low pass: 0.1 to 862 MHz	High pass: 933 to 3000 MHz
Measurement resolution	0.01 V/m		
Measurement range	0.2 to 200 V/m (dynamic range > 60 dB)		
Overload	600 V/m		
Flatness @ 20 V/m	1 to 200 MHz ± 0.8 dB 150 kHz to 3 GHz ± 1.5 dB	1 to 200 MHz ± 0.8 dB 150 kHz to 862 MHz ± 1.5 dB	933 to 3000 MHz ± 1.5 dB
Linearity	± 0.5 dB (0.5 to 100 V/m)		
Anisotropy @ 6 V/m	± 0.8 dB @ 50 MHz (typical 0.6 dB)		± 0.8 dB @ 1 GHz (typical 0.6 dB)
Out of band attenuation	Not applicable	933 MHz to 3 GHz > 23 dB (ref. to 50 MHz)	0,1 to 862 MHz > 23 dB (ref. to 1 GHz)
H field rejection	> 20 dB		
Size and weight	450 mm x 55 mm \varnothing , 180 g		

EP-4B-01 Quad-Band Electric Field Probe*				
Frequency range	Wideband 0.1 to 3000 MHz	EGSM 900 925 to 960 MHz	EGSM 1800 1805 to 1880 MHz	UMTS 2110 to 2170 MHz
Meas. range	0.2 to 200 V/m	0.03 to 30 V/m	0.03 to 30 V/m	0.03 to 30 V/m
Meas. resolution	0.01 V/m			
CW damage level	300 V/m			
Flatness @ 6 V/m	1 to 200 MHz ± 0.8 dB 150 kHz to 3 GHz ± 1.5 dB	925 to 960 MHz $+0.5/-2.5$ dB	1805 to 1880 MHz $+0.5/-2.5$ dB	2110 to 2170 MHz $+0.5/-2.5$ dB
Linearity	± 0.5 dB (0.5 to 100 V/m)	± 0.5 dB (0.06 to 20 V/m)	± 0.5 dB (0.06 to 20 V/m)	± 0.5 dB (0.06 to 20 V/m)
Anisotropy	± 0.8 dB @ 50 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB @ 942.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB @ 1842.5 MHz, 3 V/m (typical 0.6 dB)	± 0.8 dB @ 2140 MHz, 3 V/m (typical 0.6 dB)
Out of band attenuation	Not applicable	Rejection to 1842 MHz(GSM): 25 dB to 2140 MHz(UMTS): 25 dB	Rejection to 942 MHz(GSM): 15 dB to 2140 MHz(UMTS): 13 dB	Rejection to 942 MHz(GSM): 17dB to 1842 MHz(GSM): 10 dB
Centre frequency drift	Not applicable	40 °C – 50 °C = ± 100 kHz -20 °C – 40 °C = ± 100 kHz/°C		
H field rejection	> 20 dB			
Size and weight	450 mm x 55 mm \varnothing , 210 g			

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

EP-4B-02 Quad-Band Electric Field Probe*

Frequency range	Wideband 0.1 to 7000 MHz	EGSM 900 925 to 960 MHz	EGSM 1800 1805 to 1880 MHz	UMTS 2110 to 2170 MHz
Meas. range	0.2 to 200 V/m	0.03 to 30 V/m	0.03 to 30 V/m	0.03 to 30 V/m
Meas. resolution	0.01 V/m			
Dynamic range	>60 dB			
Flatness @ 6 V/m	3 to 200 MHz \pm 1.5 dB 150 kHz to 3 GHz \pm 2 dB 0.1 MHz to 7 GHz \pm 3 dB	925 to 960 MHz +0.5 / -2.5 dB	1805 to 1880 MHz +0.5 / -2.5 dB	2110 to 2170 MHz +0.5 / -2.5 dB
Linearity	\pm 0.5 dB (0.5 to 100 V/m)	\pm 0.5 dB (0.1 to 20 V/m)	\pm 0.5 dB (0.1 to 20 V/m)	\pm 0.5 dB (0.1 to 20 V/m)
Anisotropy	\pm 0.8 dB@ 50 MHz, 3 V/m (typical 0.6 dB)	\pm 0.8 dB@ 942.5 MHz, 3 V/m (typical 0.6 dB)	\pm 0.8 dB@ 1842.5 MHz, 3 V/m (typical 0.6 dB)	\pm 0.8 dB@ 2140 MHz, 3 V/m (typical 0.6 dB)
Out of band attenuation	Not applicable	Rejection to 1842 MHz(GSM): 25 dB to 2140 MHz(UMTS): 25 dB	Rejection to 942 MHz(GSM): 15 dB to 2140 MHz(UMTS): 13 dB	Rejection to 942 MHz(GSM): 17dB to 1842 MHz(GSM): 10 dB
Centre frequency drift	Not applicable	40 °C – 60 °C = \pm 100 kHz -20 °C – 40 °C = - 100 kHz / °C		
H field rejection	> 20 dB			
Size and weight	450 mm x 55 mm \varnothing , 210 g			

HP-1B-01 Magnetic Field Probe*

Frequency range	10 Hz to 5 kHz
Measurement range and overload	50 nT to 200 μ T (dynamic range >72 dB); overload: > 1 mT
Measurement resolution	1 nT
Flatness	40 Hz to 1 kHz, 1 dB (typical 0.6 dB)
Linearity	\pm 0.5 dB (200 nT to 100 μ T)
Anisotropy	0.3 dB @ 50 Hz, 3 μ T
E field rejection	> 20 dB
Size and weight	83 mm x 53 mm \varnothing , 110 g

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

AMB-8059 Multi-band EMF Area Monitor**Technical Specifications**

Frequency range	Depending on probe (see probe specifications)
Dynamic range	Depending on probe (see probe specifications)
Resolution	Depending on probe (see probe specifications)
Sensitivity	Depending on probe (see probe specifications)
Linearity	Depending on probe (see probe specifications)
Accuracy	Depending on probe (see probe specifications)
Measurement Units	V/m, kV/m, nT, μ T, mT. The unit shown depends on the probe connected
Field measured	Total field, average and Peak (MAX)
Sampling	1 measurement every 1 s

Measurement / acquisition functions	
Memorization interval	Programmable from 30 seconds to 15 minutes
Memory	Over 128 MB
Max data storage capacity (before old data are replaced by new ones)	Over 364 days with 1 acquisition every minute
Data download	Manual Automatic managed by the unit at predefined timings ^{(1), (3)} Automatic by PC ^{(2), (3)} Automatic creation of a .TXT and .BMP file after download
Functions	AVG, RMS, maximum peak; daily report via SMS ⁽³⁾ Display and marking of data acquired during modem transmission ⁽³⁾
Field strength alarm	Two programmable field strength thresholds (warning and alarm) with automatic notice both of exceeding the limit and returning within the limits ⁽³⁾
Clock	Real time internal clock
Messages	SMS which can be sent to up to 10 mobile phones simultaneously ⁽³⁾
Sensor	Display of model and calibration date
Battery management	Every record includes Battery Voltage and Charge Current value
Temperature management	Every record includes Internal Temperature value
Humidity management	Every record includes Internal Humidity value
GPS coordinates	Programmable record
General Specifications	
GSM module	Penta-band (800, 850, 900, 1900, 2100 MHz) UMTS/3G ⁽³⁾
Wi-Fi	Wi-Fi 802.11 b/g
Field probes	Interchangeable, several models available, single and dual probe operation
Interfaces	RS232, USB, Ethernet, Micro SD Card, Wi-Fi, Optical ⁽⁶⁾ , 3G modem ⁽³⁾
Protection	Sensor to notify case opening
Other alarms	Protective case opening, internal overheat, internal humidity, low battery, battery overload (model AMB-8059/01 and AMB-8059/03 only), probe malfunction, field over limit.
Internal battery	AMB-8059/00 - AMB-8059/02: Non rechargeable primary battery, lithium SAFT LSH20 3.6 V, 13 A/h AMB-8059/01 - AMB-8059/03: Lead, 4 V, 2.5 A/h, rechargeable
Consumption	1 mA with 3G and Wi-Fi module off 500 mA max when 3G module is transmitting and Wi-Fi module off ⁽³⁾ 120 mA max when Wi-Fi module is transmitting and 3G off ⁽³⁾ 6 mA optical link data query every 1 second; Wi-Fi and 3G off
External power	DC, 5 V, 1 A max (AMB-8059/01 and AMB-8059/03 only)
Operating time @ 1 sec. rate	AMB-8059/02: about 8 months @ 1min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) ^{(4), (5)} AMB-8059/03: > 80 days in total darkness @ 1min GSM module transmission per day and single probe operating mode (autonomy depends on probe and setting) ^{(4), (5)} For best performance install solar panels in direct sunlight.
Recharging time	24 hours with external power unit (AMB-8059/01 and AMB-8059/03 only)
Auto test	Automatic
Compliance	European directives 89/336 and 73/23, CEI 211-6, CEI 211-7, ITU-T K.83, ITU-T K.113 ⁽⁷⁾
Ambient temperature	-20 °C / +55 °C
Dimensions	(WxDxH) 112 x 112 x 730 mm
Weight	AMB-8059/00 and AMB-8059/02: 1.2 kg (unit only); 6.5 kg (total weight including supports and base) AMB-8059/01 and AMB-8059/03: 2.4 kg (unit only); 7.7 kg (total weight including supports and base)
Environmental protection	IP55
Country of origin	Italy

Notes:

- (1): To the controller PC or to the user's FTP server depending on the preferred communication mode.
 (2): Directly from the station or from the user's FTP server depending on the preferred communication mode.
 (3): AMB-8059/02 and AMB-8059/03 only are equipped with 3G modem.
 (4): AMB-8059/00 and AMB-8059/01 power autonomy is longer as they are not equipped with 3G modem module.
 (5): Specifications depending on battery age, ambient temperature and GSM field coverage.
 (6): Optical link only for the model AMB-8059/03, AMB-8059/01, AMB-8059/00
 (7): Only AMB-8059/00 with option car mounting kit for drive test solution

ORDERING INFORMATION

AMB-8059	
Remote stations	
Area Monitor station powered by internal primary Li-Ion battery	AMB-8059/00
Area Monitor station powered by solar panel and back-up battery	AMB-8059/01
Area Monitor remote station with 3G internal modem, powered by internal primary Li-Ion battery	AMB-8059/02
Area Monitor remote station with 3G internal modem, powered by solar panel and back up battery	AMB-8059/03
Field probes	
Electric field probe 0.1 to 3000 MHz; 0.2 to 200 V/m	EP-1B-01
Electric field probe 0.1 to 7000 MHz; 0.2 to 200 V/m	EP-1B-03
Electric field probe 10 Hz to 5 kHz; 5 V/m to 20 kV/m	EP-1B-04
Electric field probe 300 kHz to 18 GHz; 0.5 V/m to 800 V/m	EP-1B-05
Electric field probe 300 kHz to 40 GHz; 0.5 V/m to 800 V/m	EP-1B-06
Tri-band electric field probe 0.1 to 3000 MHz / 0.1 to 862 MHz / 933 to 3000 MHz; 0.2 to 200 V/m	EP-3B-01
Quad-band electric field probe 0.1 to 3000 MHz; 0.2 to 200 V/m / 925 to 960 MHz / 1805 to 1880 MHz / 2110 to 2170 MHz, 0.03 to 30 V/m	EP-4B-01
Quad-band electric field probe 0.1 to 7000 MHz; 0.2 to 200 V/m / 925 to 960 MHz / 1805 to 1880 MHz / 2110 to 2170 MHz, 0.03 to 30 V/m	EP-4B-02
Magnetic field probe 10 Hz to 5 kHz; 50 nT to 200 μ T	HP-1B-01
Optional accessories	
8059/mast - Metallic T-shaped base and Fiberglass mast (includes kit of screws, ties and 3 ballast bags)	650.800.085
8059/CMK - Car Mounting Kit for drive test solution (AMB-8059/00 only)	650.800.300
8059/CE - Cover extension for AMB-8059 dual probe configuration	231.830.084
O/E optical converter USB	650.000.176
Cable, FO Duplex RP-02 with cable clamp, 10 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	650.000.289
Cable, FO Duplex RP-02 with cable clamp, 20 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	650.000.290
Cable, FO Duplex RP-02 with cable clamp, 40 m (only models AMB-8059/03 and AMB-8059/01 with optical link)	650.000.291
Cable, FO Duplex RP-02, 10 m (only models AMB-8059/00 with optical link)	650.000.196
Cable, FO Duplex RP-02, 20 m (only models AMB-8059/00 with optical link)	650.000.257
Cable, FO Duplex RP-02, 40 m (only models AMB-8059/00 with optical link)	650.000.275
Includes in delivery	
<ul style="list-style-type: none"> • Primary Li-ion battery (AMB-8059/00 and AMB-8059/02 only) • Power supply / Battery Charger (AMB-8059/01 and AMB-8059/03 only) • Assembled Solar Unit (AMB-8059/01 and AMB-8059/03 only) • Ethernet cable (AMB-8059/01 and AMB-8059/03 only) • 10 m optical cable and O/E converter USB (AMB-8059/00 only) • USB cable, 1.8 m, USB(A)/USB(B) • Swivel joint for installation on AMB-8059-MAST • Operating Manual, Test & Calibration Certificates • PC Software 8059-NSTS • PC Software EMF GPS logger (used only by model AMB-8059/00 Car Mounting Kit option) 	

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