

## ELECTRIC AND MAGNETIC FIELD ANALYZER

EHP-200

# Selective and broadband high frequency field analysis

- ▲ **New solution for isotropic measurements  
in the 9 kHz – 30 MHz range**
- ▲ **Electric Fields from 0.02 to 1000 V/m**
- ▲ **Magnetic Fields from 0.6 mA/m to 300 A/m**
- ▲ **Built-in Frequency Spectrum Analysis**
- ▲ **Built-in rechargeable battery**
- ▲ **Optical Fibre connection to PC**



EHP-200

## EHP200 E&H FIELD ANALYZER

The E-H field analyser model EHP-200 was designed for accurate isotropic measurements of both electric and magnetic fields in the 9 kHz - 30 MHz frequency range, with no or minimum perturbation of the fields to be measured.

Field sensors and electronic measuring circuitry are fitted into robust housing, only 92 x 92 x 109 mm in size.

Separate 3 axis and total values (actual and average) are measured with exceptional flatness and linearity of  $\pm 0.3$  dB. Results are expressed in V/m, A/m,  $\mu$ T, mW/cm<sup>2</sup>, mG, W/m<sup>2</sup> and % (percentage of the selected Limit).

When the auxiliary input is selected measurement results are expressed in mV or dBm.

The EHP-200 features built-in spectrum analysis with maximum BW resolution of 1 kHz for detailed measurements of E and H field intensity vs. frequency, with dynamic range of 80 dB. The built-in rechargeable Li-Ion battery provides up to 8 hours of continuous operation.

The EHP-200 is controlled by the PC or by the display unit 8053-Display through the optical fibre link, and measurements are displayed in real time. Additional input is available to measure the frequency spectrum of external signals.

### APPLICATIONS

#### **Safety in occupational environments**

According to several safety regulations worker exposure cannot exceed specified limits.

Emission from several industrial machines operating in the high frequency range could be potentially dangerous to the operator.

In the Near Field region near that kind of apparatus accurate measurements of both Electric and Magnetic fields should be taken to demonstrate compliance to safety standards.

EHP-200, equipped with both electric and magnetic field sensors within a small housing, is the ideal solution to perform accurate measurements and spectrum analysis in the 9 kHz – 30 MHz frequency range.

Its small size and optical output enables minimum field perturbation.

#### **Broadcasting Surveillance**

The EHP-200 is particularly useful in measuring the actual fields generated by long, medium and short wave broadcast transmitters, to ensure safety around the sites of large antennas, to control power transmitted in the radiation direction, to test transmitting antenna functions and identify borders between near and far field regions.

#### **Wave impedance**

As a unique feature, the PC program calculates field wave impedance by dividing the total value of the E-field by that of the H-field. This method is particularly suitable for evaluating the non-linear, scattered near-field region of large broadcast antenna systems.

#### **Fields generated by Metal detectors and RFID's**

Fields generated by a number of devices using RF to detect the presence of metals, to identify objects, anti-theft systems etc. can now be measured easily and accurately.



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## EHP-TS application software

The recently developed EHP-TS software allows the user to control Narda analyzers such as EHP-50C and EHP-200 through a Personal Computer. The optical cable coming from the analyzer (Max lenght: 40m) can be easily connected to the PC by the provided optical to USB converter USB-OC. If longer distance is required the optional 8053-OC optical to RS232 converter can be used for optical fibre length up to 80m.

A user friendly graphical interface includes commands to set all parameters.

To understand them better, controls are grouped in five selectable sections while the spectrum measurement is continuously displayed and updated. Both electric and magnetic field spectrum measurements can be displayed on the same graph.

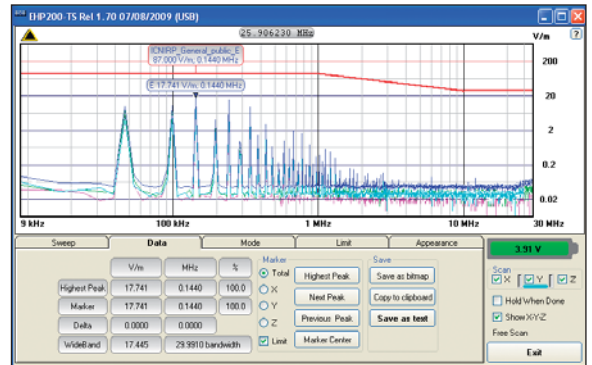
Sweep, Mode, Limit and Appearance sections are used to set all measurement and display parameters while Data section, with the Marker controls, shows numerical results like field strength and frequency at the marker and highest peak positions.

A wideband measurement is displayed too, including all contributions within the spectrum shown.

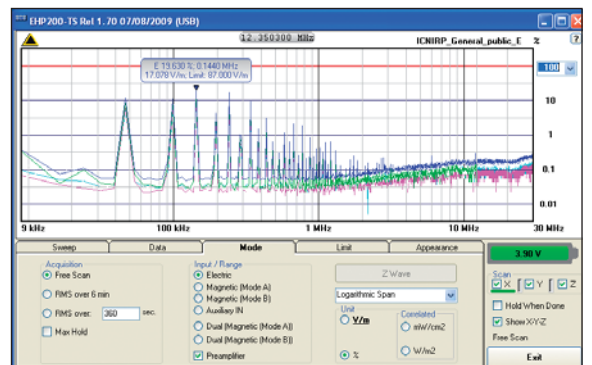
Several units, as well as percentage of limit, can be selected to display measurement results which, along with user comments, can be saved as either bitmap or text files to be easily imported in other software applications like spreadsheets or word processor.

Following the so called precautionary principle, many countries adopted their own reference limits. Besides having ICNIRP limits already available, EHP-TS allows the user to create and save custom limits which may reflect local regulations as well as user specific needs.

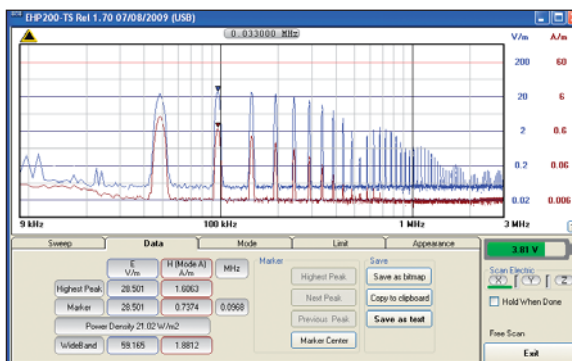
All values of the selected limit are always included, for reference, in any .bmp or .txt saved file. Availability of lightweight devices equipped with Windows™ operating system like UMPC and similar, makes EHP-TS software the ideal solution to perform accurate on field spectrum analysis with minimum effort and light equipment.



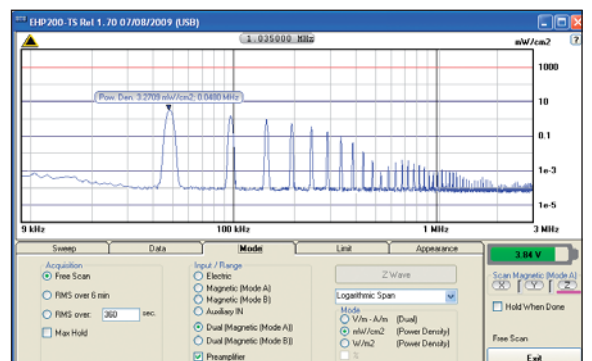
Limit value can be shown at Marker frequency. Data section shows numerical results. It includes Marker controls and Save buttons



Spectrum graph can be shown as percentage of selected limit. Mode section allows to select different acquisition modes as well as range, unit and linear or logarithmic frequency scale.



Both electric and magnetic fields can be displayed on the same graph.



Power density spectrum is calculated over real electric and magnetic field measurement and therefore applicable to both far and near field conditions.

## The 8053-Display Unit

The EHP-200 can also be easily operated through the accessory 8053-Display Unit, with the following limitations:

- no spectrum display
- no wave impedance computing
- min. frequency start of: 50 kHz

Span setting:

- min. span: 300 kHz
- start <500 kHz: max. span = 500 kHz
- start >500 kHz: max. span = 30 MHz

The following functions are available:

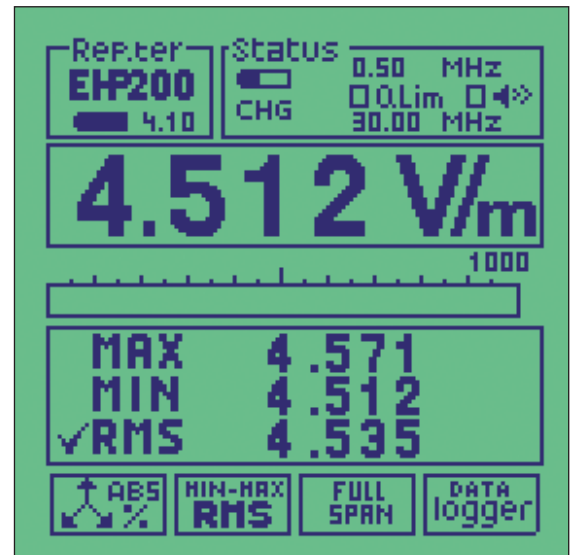
Field selection (E, H), 3-axis display, Min-Max-RMS, Logger, Alarms.

By the Data logger mode of the 8053-Display Unit, the User can record the measurements and save them in a file in the memory of the 8053-Display Unit.

All collected data files are progressively numbered and contain:

- Time duration
- Logger settings
- Date and time when the measurement began
- Average value
- Value of each single item of data stored
- User's comment.

In order not to influence the field to be measured, communication between the EHP-200 Analyser and the 8053-Display Unit is through a rugged optical fibre cable.



The 8053-Display



The 8053-Display  
in Analog mode

## TECHNICAL SPECIFICATIONS

EHP-200 E&H FIELD ANALYSER					
RF Specifications		Electric Field	Magnetic Field Mode A	Magnetic Field Mode B	AUX Input
Frequency Range		9 kHz ÷ 30 MHz	9 kHz ÷ 3 MHz	300 kHz ÷ 30 MHz	9 kHz ÷ 30 MHz
Measurement Range	@ 10 kHz RBW	0.1 ÷ 1000 V/m	0.03 ÷ 300 A/m	3 mA/m ÷ 30 A/m	-80 ÷ 0 dBm
	@ preamp. ON	0.02 ÷ 200 V/m	6 mA/m ÷ 60 A/m	0,6 mA/m ÷ 6 A/m	-94 ÷ -14 dBm
Dynamic range		> 80 dB			
Sensitivity	@ 10 kHz RBW	0,1 V/m	30 mA/m	3 mA/m	-80 dBm
	@ preamp. ON	0,02 V/m	6 mA/m	0,6 mA/m	-94 dBm
Resolution		0.01 V/m	1 mA/m	0.1 mA/m	0.01 dB
Flatness		±0.5 dB@20 V/m	±0.8dB@166mA/m	±0.8dB@53mA/m	±0.4dB@-20 dBm
		0.1 ÷ 27 MHz	0.15 ÷ 3 MHz	0.3 ÷ 27 MHz	
Anisotropy		±0.8 dB @ 1 MHz			
Linearity		0.5 dB @ 1 MHz from Full Scale to -60 dB FS			
Frequency span width		0 to 30 MHz			
Resolution bandwidth		1 kHz - 3 kHz - 10 kHz - 30 kHz - 100 kHz - 300 kHz			
Rejection to E- Field		---	> 20 dB	> 20 dB	---
Rejection to H- Field		> 20 dB	---	---	---
Calibration		Internal EEPROM			
Temperature error		0.02 dB/°C			
General Specifications					
AUX input		50Ω ; type MMCX			
Preamplifier		14 dB, selectable ON/OFF			
Reading Units		V/m, A/m, μT, mW/cm <sup>2</sup> , W/m <sup>2</sup> (additional units mG and % of selected limit are available with the provided control software)			
Optical link		Optical Fibre, max. length 80m (40m with USB - OC)			
Internal battery		3.7 V – 3.6 Ah Li-Ion, rechargeable			
Battery operation		> 8 hours (recharging time: approx. 8 hours)			
External supply		10 ÷ 15 VDC, 500 mA			
Firmware update		Via optical fibre			
Operating temperature		-10 °C to 50 °C			
Storage temperature		-20 °C to 70 °C			
Dimensions and weight		92 x 92 x 109 mm - 550 g			
Recommended calibration interval		24 months			
Country of origin		Italy			

8053-Display Unit Specifications		
Functional Specifications	Electric Field	Magnetic Field
Display	Backlight LCD, 72 x 72 mm, 128 x 128 pixels	
Interfaces	Optical Fibre; RS-232	
Internal memory	32700 measurements	
Functions	RMS/AVG, 30 s up to 30 min.; alarm 0-100 % f.sc.	
Data logger modes	Sampling (1, 10 to 900 s); data change; over limit; manual;	
Clock	Internal real time clock	
Internal battery	Rechargeable NiMH batteries (5 x 1,2 V)	
External DC supply	10 ± 15 V, about 500 mA	
Operational and Storage temperature	Operating -10 °C / 40 °C	Storage -20 °C / 70 °C
Size and Weight	108 x 240 x 50 mm	1.07 kg

## ORDERING INFORMATION

EHP-200	Part Number (P/N)
EHP-200 Electric and Magnetic field analyzer Includes: - EHP-200 Basic Unit - 8053-SC Soft carrying case, holds basic unit and accessories including 8053-Display (650.000.035) - AC/DC battery charger (650.000.036) - International AC plug adapters (UK:650.000.037, USA:650.000.038, Australia: 650.000.039, Italy: 650.000.040) - FO-8053/10 Cable, fiber optic 10m (650.000.053) - FO-10USB Cable, fiber optic 10m (650.000.177) - Optical-USB converter (650.000.176) - Plastic rod support, 50cm (231.800.012) - Mini tripod, bench top (650.000.151) - PC software, CD-ROM - Operating Manual EHP-200 - Certificate of calibration - Return for repair form	650.000.137
ACCESSORIES	
8053-OC Optical to RS232 converter	650.000.062
8053-OC-PS optional power supply for 8053-OC	650.000.179
FO-8053/20 Cable, fiber optic 20m	650.000.055
FO-8053/40 Cable, fiber optic 40m	650.000.052
FO-8053/80 Cable, fiber optic 80m	650.000.128
FO-20USB Cable, fiber optic 20m	650.000.178
FO-40USB Cable, fiber optic 40m	650.000.182
TR-02A wooden tripod 1-2m with soft carrying bag	655.000.005
TT-01 telescopic mast (120-420 cm) with carrying bag	650.000.005
8053-Display display unit	620.000.057
8053-CA car adapter	650.000.058
8053-CC rigid case	650.000.059

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