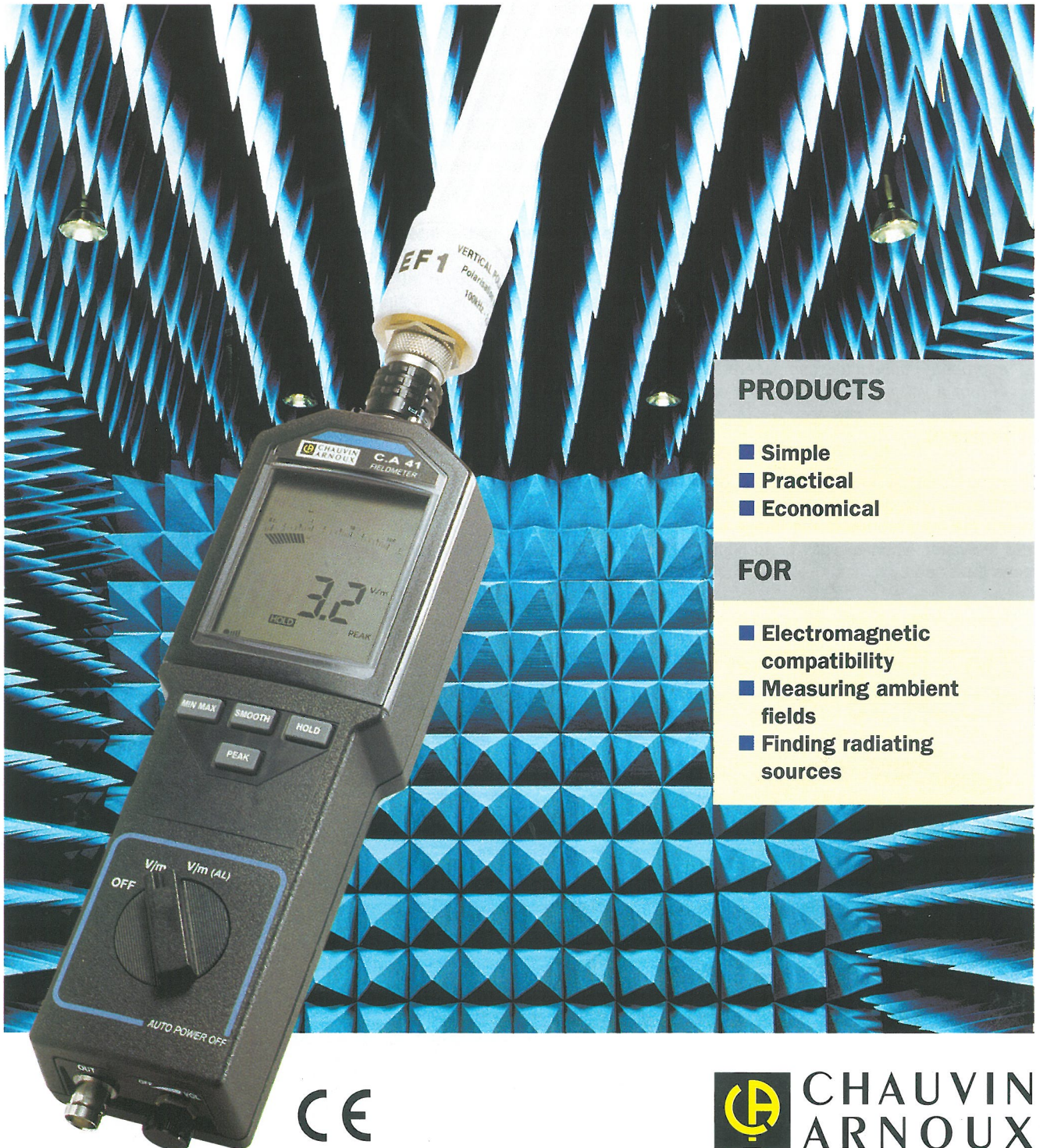


# WIDE BAND FIELD METERS

*New Technology*

# C.A 41 & C.A 43

## FIELDMETER



### PRODUCTS

- Simple
- Practical
- Economical

### FOR

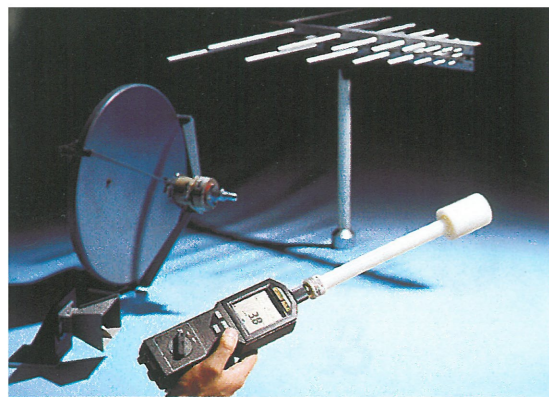
- Electromagnetic compatibility
- Measuring ambient fields
- Finding radiating sources

Background: anechoic chamber (I.M.O. 69 01 42 49)

CE

 CHAUVIN  
ARNOUX



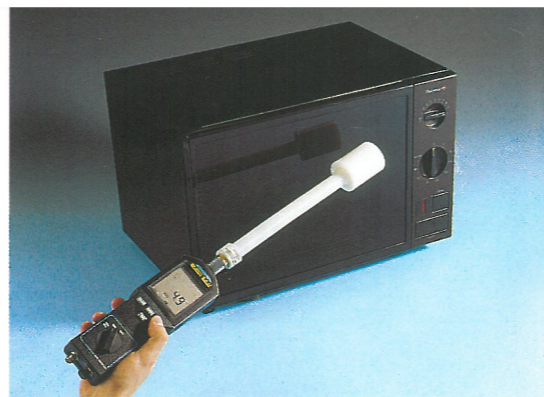


**Immunity**

The capacity of an instrument to operate correctly in a given electromagnetic environment (here, the atmosphere is disturbed by the dosed emissions of the different aerials).

**Emissivity**

The quantification of the interfering power of an instrument in relation to applicable standards (here, the level of radiation of a microwave oven is tested so that it is not harmful to the health of the user).



The industrial atmosphere is charged with numerous rays. Depending on the situation, these waves are deliberately generated (radio telephones, TV emissions, etc.) or emitted quite unintentionally (switch-mode power supplies, car ignitions, etc.).

In all cases these waves are likely to cause problems in the operation of modern equipment: random breakdown of controllers, untimely triggering of alarms, failure of electronic systems or computer systems, etc.

Physically these phenomena can be explained in a few words:

An AC voltage present between two conductors, or the flow of a current produces a radio-electric wave (emission). This wave, if it meets an appropriate conductor, can generate in turn a voltage (e.m.f.) capable of disturbing this same receiver (susceptibility).

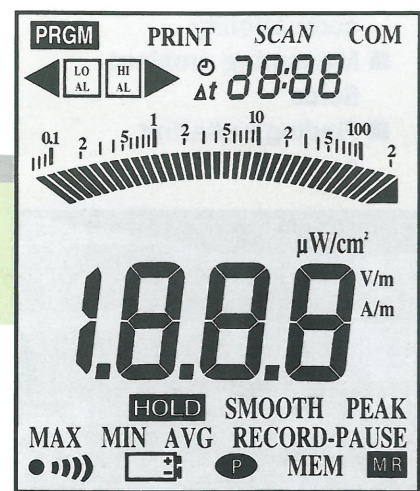
The most widely known example of electromagnetic disturbance is without doubt the interference to the image of the television when a faulty motorbike goes past nearby.

The CHAUVIN ARNOUX field meters present all the functions necessary for the measurement and the analysis of radiated disturbances. They make it possible to identify the presence of a field of interference, to evaluate its nature (transitory) to determine its polarisation and to accurately measure it.

This small sized instrument has its own sensor, with vertical polarisation for the C.A 41 or isotropic polarisation for the C.A 43. It is used to measure the effective value of strong fields, generally greater than 0.1 V/m.

The wide pass band of the interchangeable probes (100 kHz to 2.5 GHz) makes it possible to cover all the standardised frequencies with a single sensor.

The handiness, cost and ease of use of the CHAUVIN ARNOUX field meters allow them to be used for measurements on all sites where there is electromagnetic activity. Measurements can be made by qualified or unqualified personnel, both for the installation and maintenance of electronic or computer systems.



The 2000 count display (50 X 60 mm) provides the user with maximum ease of reading. A real dashboard, it continuously displays all the functions in use.

**The standards of Electromagnetic Compatibility**

In the field of electromagnetic interference, emission and immunity are subject to a European (ref. 89/336/CEE of 3/5/89) which obliges industrial and domestic instruments to conform to a set of standards (EN 50081-1, EN 50082-1, etc.). On 1st January 1996 the instruments must necessarily be in conformity and have the CE marking.

The IEC 801-3 standard (NFC 46-022 or VDE 0843-3) concerns the immunity of instruments to fields of electromagnetic radiation. It defines the test procedures to be carried-out on instruments. The standardised degrees of severity are 1.3 and 10 V/m, or to be defined.

The C.A 43 is particularly suitable for making these tests: resolution of 0.1 V/m, output optical fiber EMIGRAPH software, etc.

**PORTABLE**

The C.A 41 and C.A 43 are light weight and battery powered. The remaining service life is shown when the instrument is switched on. Real on-site instruments, they allow measurements to be made outside, or in confined spaces (GTEM cells).

**DYNAMIC**

The dynamic range: 0.1 V/m to 200 V/m, makes it possible to cover all the applications linked to the measurement of electromagnetic fields. Whether in anechoic chamber (medium to strong fields) or in industrial locations (low to medium fields), the instruments satisfy the needs of the different uses.

**ALARMS**

Depending on the measurement, a sound alarm can be activated to rapidly check whether ambient radiation exceeds the immunity threshold of an instrument. In strong fields, the programming of a high threshold makes it possible to warn the user of a limit that must not be crossed at the risk of danger to health. On the immunity test, the programming of low and high thresholds makes it possible to monitor the range of the field.

**TECHNOLOGY**

The cases of the field meters are completely screened. The electronics withstand up to 200V/m without any effect (level IV, IEC 801-3). Modern assembly techniques have enabled a significant increase in reliability. The manufacturing costs of these instruments have been reduced by the same amount. Which allows us to offer an unprecedented price.

**ACCURACY**

The metrological qualities of the C.A 41 and C.A 43 make them instruments of reference. The sources of error have been eliminated and corrective techniques have been built in. Every second, the instrument checks the battery voltage (a voltage that is too low does not stop its operation but causes erroneous measurements). The temperature of the probe is also measured in order to make compensations to the offset of the sensitivity as a function of the temperature. The non-linearity of probes is automatically taken into account by the field meter which

then applies a specific linearisation. This ensures the interchangeability of measurement probes.

**POWER DENSITY**

The C.A 43 measures the density of energy received in  $\mu\text{W}/\text{cm}^2$  for distant fields of flat waves. This function enables the instrument to be used as an intensiometer (dosemeter). On RECORD mode, it is possible to find out the average dose of electromagnetic radiation received during a given time.

**MEMORISATION**

The C.A 43 has an EEPROM memory capable of storing up to 1920 measurement counts and their date. There are two ways of using the memory. The first consists of memorising the measurements on the spot, for example during a check of a site. The second method allows the C.A 43 to be left to memorize, with a defined interval, the results of min, max and average measurements. This makes it possible to extrapolate the tendency and to detect random phenomena over time (site monitoring).

**PEAK MEASUREMENTS**

The PEAK function allows the measurement of peak values from 1ms. The detection of transitory fields is essential for finding the sources of breakdowns. This function also makes possible the measurement of fields on GSM radio-telephones (modulation at 250 Hz). It also permits the measurement of the modulation rate of AM emitters by taking the ratio of the PEAK value over the average value (standard reading).

**RECORDING OUTPUT**

The C.A 41 model is fitted with an analogue output for the recording of data on plotters or graphic recorders with a minimum impedance of 100 k $\Omega$ . The C.A 43 has as standard an optical and bi-direction RS 232 interface. The optic fibre link (supplied) is not sensitive to electromagnetic disturbances. It is thus possible to leave the C.A 43 in anechoic chamber during Electromagnetic Compatibility tests. The EMIGRAPH software can thus read the measurements at a distance or make the acquisition on the computer.

SPECIFICATIONS						
Band width	From 100 kHz to 2.5 GHz (1)					
Measurement unit	V/m			$\mu\text{W}/\text{cm}^2$		
Automatic ranges	0.1 to 1	1 to 10	10 to 100	100 to 199.9	0.1 to 199.9	200 to 1999
Accuracy (2)	0.7 V/m	0.5 V/m	1 dB	2 dB	1 dB	2 dB
Resolution	0.1 V/m	0.1 V/m	0.1 V/m	0.1 V/m	0.1 $\mu\text{W}/\text{cm}^2$	1 $\mu\text{W}/\text{cm}^2$

(1) Value only indicative from 100 kHz to 1 MHz.

(2) In the reference conditions (150 MHz, 20 °C, 65 % RH).

- Stability: 0.2 dB
- Operating temperature: 0 to 50 °C
- Sampling time: 250  $\mu\text{s}$
- Alimentation pile 9 V, autonomie > 30 h
- Digital measurement time: 400 ms
- Dimensions: 216 x 72 x 37 mm, masse : 350 g

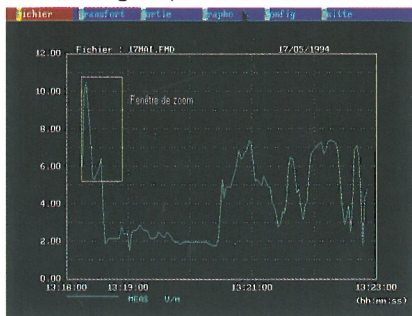


## COMPUTER PROCESSING

The **EMIGRAPH** software supplied as standard with the C.A 43, has been designed to optimise the capacities of the field meter. Because of this, it is easy to use and has, in addition, functions not normally found at this price level.

### ■ Acquisition

For dynamic tests, the **EMIGRAPH** software performs the acquisition of measurements from the C.A. 43 field meter, at a rate of one count every 2 seconds. This enables the recording of spot measurements.



### ■ Presentation

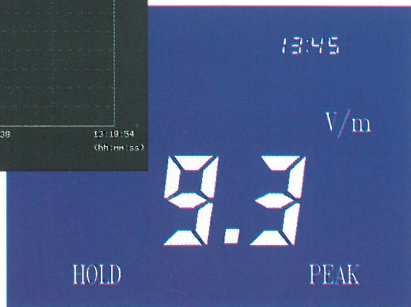
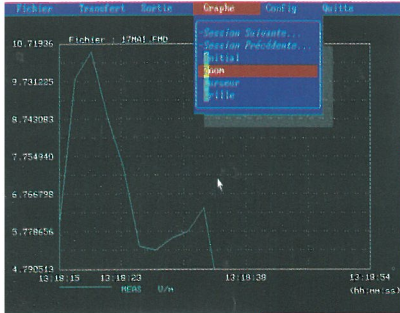
**EMIGRAPH** manages the transfer and the display of data (min, max and average) memorized by the C.A 43. It is thus possible to rapidly search on the screen for the presence of random interference phenomena.

### ■ Zoom

The analysis of details is made easier by access to zoom. The use of the mouse makes operations especially easy.

### ■ Display

For Electromagnetic compatibility tests in anechoic or cell chambers, when the display of the C.A. 43 is no longer visible, **EMIGRAPH** provides the solution. It is possible to represent the display of the C.A. 43 on full screen. This allows the user the possibility of precisely adjusting the value of the field generated.



## MEASUREMENT PROBES

The measurement principle of the C.A 41 and C.A 43 is based on the reception, by an aerial, of a radio-electric signal. The sensitive element is a detection cell with a very low threshold. It transmits a continuous signal to the measurement instrument. A resistive line ensures that this assembly has maximum transparency which does not disturb the field in which the field meter is immersed. The instrument automatically recognises the probe mounted at its tip and applies a specific linearity correction. The probes are thus completely interchangeable with almost no change to the accuracy of the measurement.

### ■ Wide band

From 100 kHz to 2.5 GHz.

### ■ Accuracy

The error due to interchangeability is less than:  
 $\pm 0.5$  dB from 0 to 200 V/m,  
 $\pm 1$  dB from 1 MHz to 2.5 GHz.

### ■ Polarisation

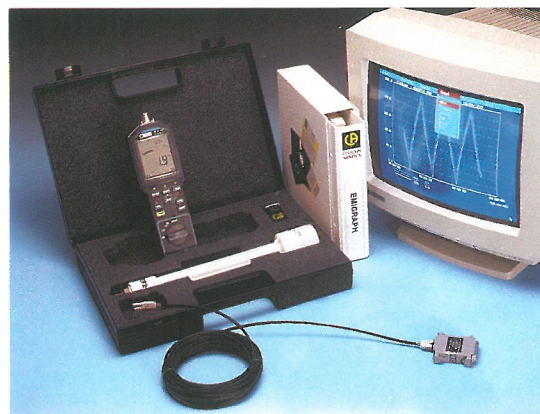
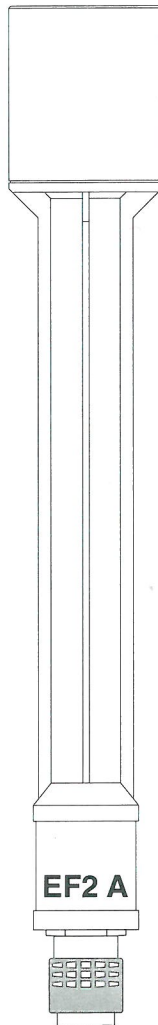
Two models are available:  
 – probe EF1 with vertical polarisation,  
 – probe EF2A isotropic.

### ■ Interchangeable

Linearity corrections are automatic and the mounting is done by simply clipping on (push-pull type socket).

### ■ Stylish design

The dimensions ( $\varnothing 50 \times 320$  mm) and the weight (250 g) are limited. The material and the shape minimise the distortion of the lines of the field measured.



## TO ORDER

Ref.

### ■ C.A. 41 FIELDMETER ..... P01.1670.01

Supplied in a carrying case comprising the C.A. 41, the EF1 probe (with vertical polarisation), a 9V battery and a User's manual.

### ■ C.A. 43 FIELDMETER ..... P01.1670.02

Supplied in a carrying case comprising the C.A. 43, the EF2A probe (isotropic), an optical link (10 m of plastic fibre), an opto-electric adaptor DB25M/DB9F adaptor, the **EMIGRAPH** software and its User manual in a file, a 9V battery and the User manual for the instrument.

### ■ ACCESSOIRES

- Shockproof case n° 10 ..... P01.2980.09 (for other C.A. 41/43)
- EF1 probe ..... P01.1672.01 (with vertical polarisation)
- EF2A probe (isotropic) ..... P01.1672.02
- Optical link ..... P01.1670.03
- Opto-electric adaptor ..... P01.1672.04 (DB 25 M with convertor of type DB 25 F/DB 25 F and adaptor DB 25 F/DB 9 F)

## YOUR DISTRIBUTOR

