

To order

References

Models	without AM/FM demodulation	with AM/FM demodulation	Kit* for mapping with AM/FM demodulation
C.A 47 F (France)	P01.1680.01	P01.1680.21	P01.1680.41
C.A 47 I (Italy)	P01.1680.02	P01.1680.22	P01.1680.42
C.A 47 GB (England)	P01.1680.03	P01.1680.23	P01.1680.43
C.A 47 CH (Switzerland)	P01.1680.04	P01.1680.24	P01.1680.44
C.A 47 US (United States)	P01.1680.05	P01.1680.25	P01.1680.45
C.A 47 D (Germany)	P01.1680.06	P01.1680.26	P01.1680.46
C.A 47 ES (Spain)	P01.1680.07	P01.1680.27	P01.1680.47

Delivered with a mains lead, a mains supply / battery charger, a carrying harness, and a user's manual.

Accessories

- LOG 47 application **software** with RS 232 lead P01.1019.39
- * Mapping **software** please ask for information
- Metallic storing **case** P01.2980.60
- *Shoulder **bag** P01.2980.45
- * **Amplifier** 25 MHz to 1 GHz AMP 601A P01.2703.06A
- * **Amplifier** 0.8 GHz to 2 GHz AMP 602A P01.2703.07A
- Cigar lighter **lead** P01.2951.89
- **Odometer** 4 sockets Ø 19 mm** P01.1019.47
- * **Complement for odometer** 5 sockets (1 plate + 1 socket) P01.1019.48
- **GPS 8 channels** (with antenna and connecting cable) P01.1019.49
- **Antenna** with magnet attachment 890 to 960 MHz P01.1019.50
- **Antenna** with magnet attachment 1710 to 1880 MHz P01.1019.51
- * **Antenna** with connector 890 to 960 MHz P01.1019.52
- * **Antenna** N with connector 1710 to 1880 MHz P01.1019.53
- FME male / N male elbowed **adapter** P01.1019.83
- N male / N female elbowed **adapter** P01.1019.84
- *Mains supply/**charger** 115 V P01.1019.56
- RS 232 **lead** P01.2951.81

* These accessories are not included in the mapping kit with AM/FM demodulation.

** Ø 17 or 21 upon request

Transporting equipment

Shoulder bag with numerous pockets for storing accessories



Also available as an option: Metallic storing case (dimensions: 47.5 x 47.5 x 14 cm) for the C.A 47 and all of its interconnected accessories

Your distributor:



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Electric field measurement and more: mapping made easy!

Test and optimize your network's coverage area up to 2,500 MHz!

C.A 47

Selective RF Receiver



- An on-site tool ideal for Cellular Radiotelephony, Broadcasting, Television, EMC, etc.
- Measurements for realistic electric field mapping with GPS, odometer and specialized software
- Programming and processing measurements with high performance application software
- Selectivity: 1 kHz to 1 MHz, covering virtually all current networks
- Large measurement dynamic: -10 to -130 dBm



906 211 046 - Ed. 1 - 06 / 2002 - Caractéristiques subject to modifications according to technological developments. Cartographic illustrations: GEOROUTE Raeter copyright ICGN CARTOSPHERE - AVANA 33 2 38 77 88 88.

C.A 47 Selective RF Receiver

The C.A 47 is a portable Selective RF Receiver for measuring all signal levels between 25 MHz and 2.5 GHz. Its large selectivity makes it the ideal instrument for radiation measurement in EMC. Designed for use in the field, this receiver is perfectly adapted to telecommunication network qualification measurement requirements, as for Cellular Radiotelephony, Broadcasting, or Television.

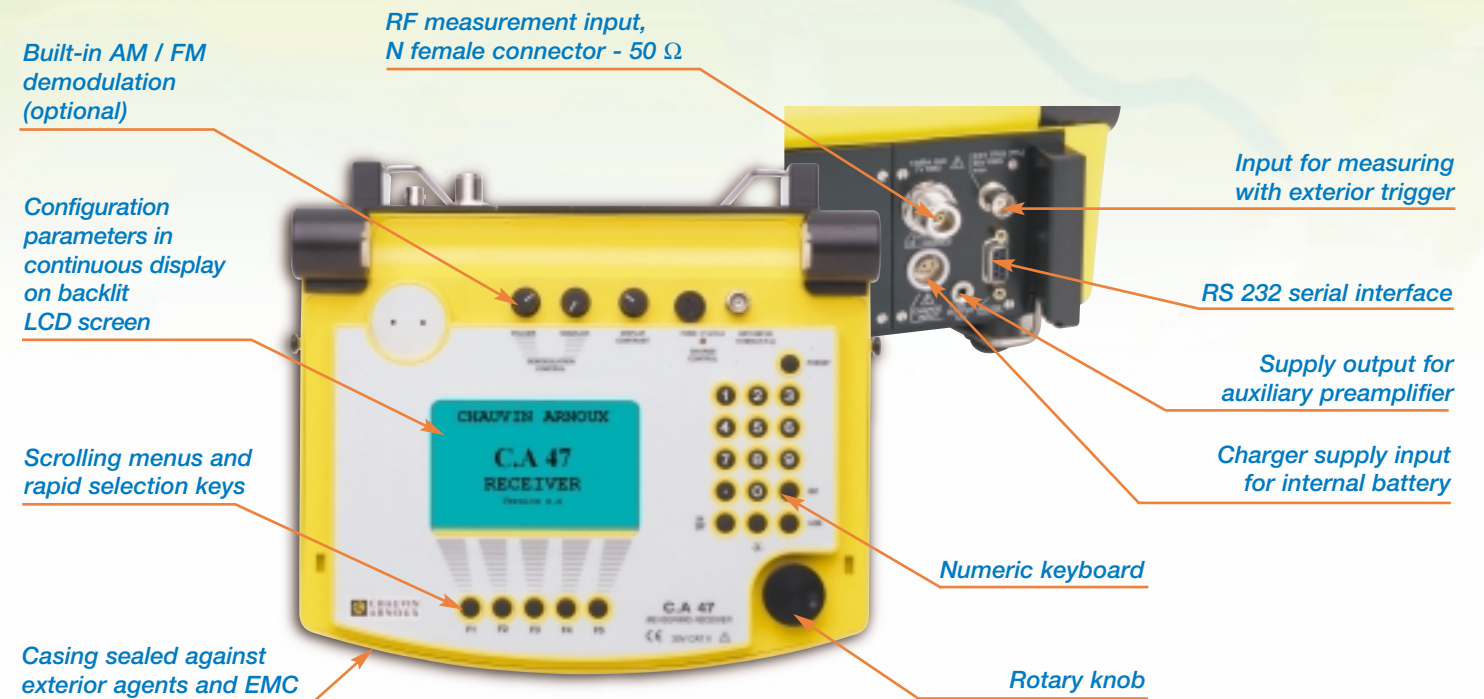
It is notably used to establish electric field maps for creating, optimizing, or maintaining sites, spectral analysis, monitoring variations in a field's amplitude over time or over a given trajectory.

Customers

- Installers
- Inspection authorities
- Operators: telephone companies, electricity boards, public transportation companies, railways, police, armies, firemen, departmental facilities, etc.

Scope

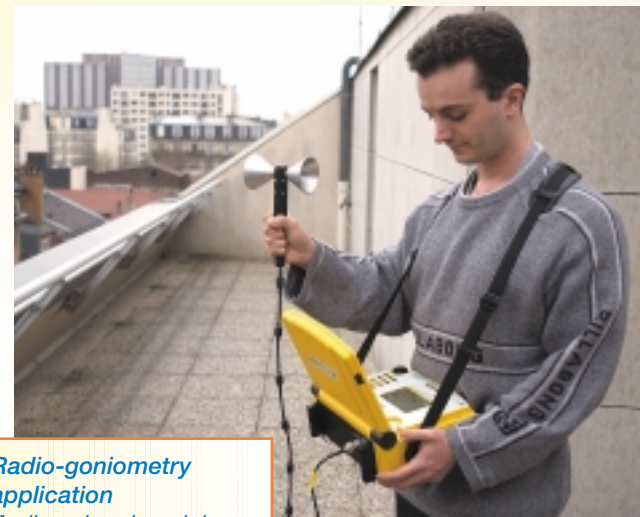
- Broadcasting
- Cellular Radiotelephony
- Television
- EMC, etc.



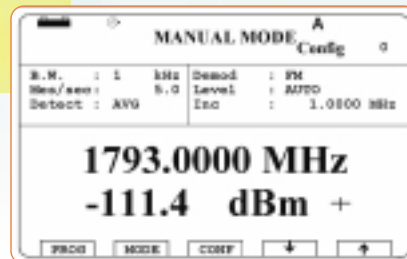
Using the C.A 47 locally

Measurements made with the C.A 47 are appreciated for their accuracy and high resolution. In the frequency range, its 100 Hz resolution allows any frequency between 25 MHz and 2.5 GHz to be selected. It has a resolution of 0.1dB on its extended measurement dynamic from -10 to -130 dBm. Covering the needs for virtually all the current networks, its 5 selectivities give it much discrimination in the frequency range. Its detection modes and large measurement speed adjustment range make it a tool perfectly adapted to measurements required by today's telecommunication facilities. Its charge life and very large storing capacity (96,000 memory positions) increase its measurement abilities in the field.

To facilitate data interpretation, the configuration parameters are constantly visible on the liquid crystal display. Its two main operating modes, Manual mode (fixed frequency) and Scan mode (frequency swing) can be used locally or with remote programming on a PC using our specialized high performance software. The basic model of the Selective RF Receiver is equipped with a built-in battery with a 3 hour charge life and only weighs 5 kg. Furnished with the basic model, its carrying harness makes using the instrument while carrying it easy.



Configuration in Manual mode at a fixed frequency

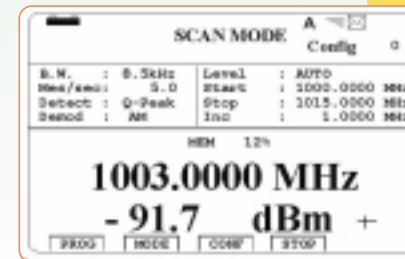


Fixed frequency (Manual mode)

When in Manual or Fixed mode, the C.A 47 measures with a large selectivity in just one frequency and stores the levels picked up by a measurement antenna or delivered by a generator. The C.A 47 is particularly suited for positioning radiating sources (pirate transmitters for example), especially when combined with a directional aerial (radio-goniometry). In this case, the level value detected by the antenna is directly displayed on the LCD screen, and the direction of the radiating source corresponds to the maximum level detected.

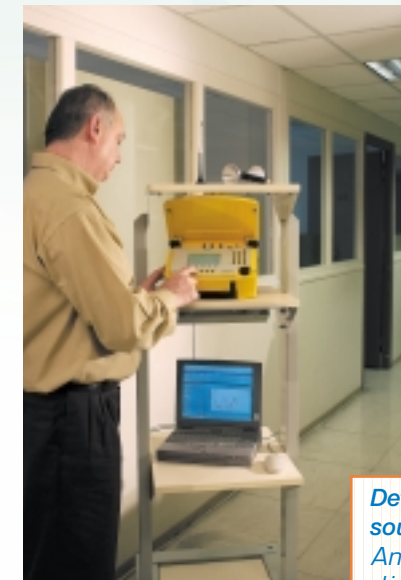
Radio-goniometry application
A directional aerial locates the source of the transmission (Ex.: pirate transmitter)

Configuration in Scan mode or frequency swing



Frequency swing (Scan mode)

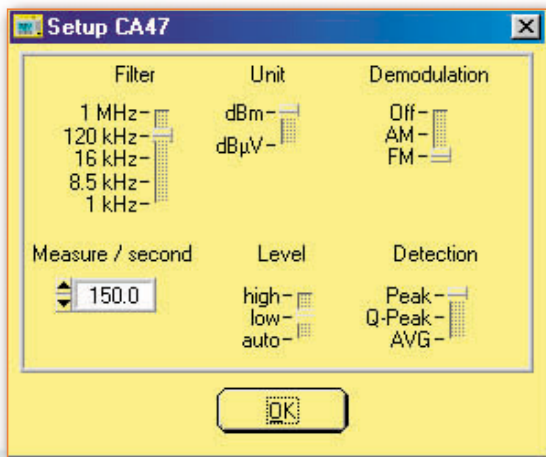
In Scan mode, all transmissions present in a frequency domain are recorded (spectral distribution). Developments in the radiating sources are detected and observed, notably interference transmissions. This operating mode requires no additional accessories, just an antenna suited for frequency domains.



Detecting a radiating source
Analysis of spectral distribution in a frequency domain

LOG 47 application software

Designed specially for the C.A 47 Selective Receiver, the LOG 47 application software is a high performance tool that broadens the instrument's measurement possibilities in PC Programming mode. Used in WINDOWS™ environments, the LOG 47 provides numerous functions:



Before making measurements, select the various configuration parameters (filter, unit, etc.) on the first interface window

- ✓ Remote operating the C.A 47 with a PC
- ✓ Changing units: dBm, mV/m, dBµV
- ✓ Automatic or manual scale setting
- ✓ Real-time representations for measurements made
- ✓ Saving and importing files
- ✓ Transferring data to Excel
- ✓ Managing measurements for mapping electric fields
- ✓ Observing changes in electric fields in relation to time or distance
- ✓ Spectral analysis and monitoring of a frequency domain

Measurements carried out with the LOG 47 application software

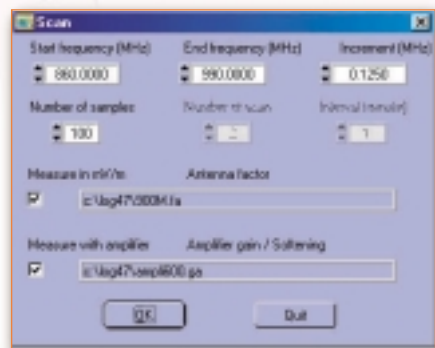
The LOG 47 application software maximizes the C.A 47's possibilities. Used in automatic mode and in real time, the instrument carries out both spectral and frequency distribution

analysis for electric fields or distance variations for electric fields.

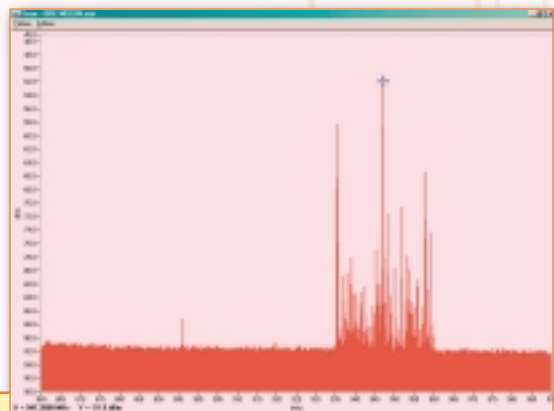
Spectral analysis in a frequency domain (Scan mode)

Combined with its LOG 47 application software, the C.A 47 becomes a powerful tool for making spectral analysis of a frequency domain. Maximum analysis resolution is given by

minimum frequency increment steps of 500 Hz. The depth of analysis corresponds to the C.A 47's measurement dynamic of 100dB.



In Scan mode, the frequency range and increment steps can be chosen with precision. The software's definition files for Antenna factor and Pre-amplifier gain improve measurement accuracy



Representation of an electric field's spectral distribution in a frequency domain

C.A 47 remote configuration: programming via broadband RS 232 interface



Measurement table carried out in real time

Automatic graphs carried out in real time

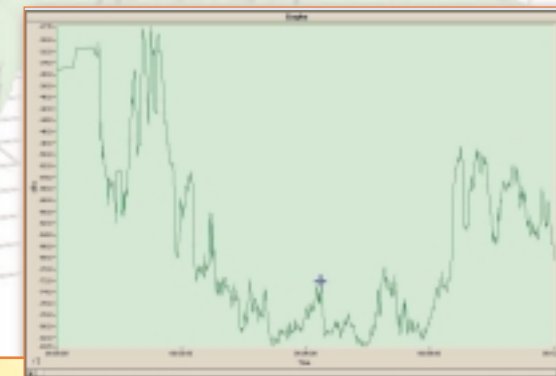
Changes in the electric field according to time (Fixed mode)

Combined with its LOG 47 application software, the C.A 47 records changes in the electric field in function to time. This measurement can be carried out simultaneously in 3 frequencies,

with a minimum resolution in frequency of 100 Hz and a measurement dynamic of 100 dB.

#	Time	Lat	Lon	Latitude	Longitude	Alt	Location point
155	89.82.34	50	-52.5	006°10'342"E	45°55'496"N	88950	
156	89.82.36	50	-52.5	006°10'342"E	45°55'496"N	88950	
157	89.82.38	50	-52.5	006°10'342"E	45°55'496"N	88950	
158	89.82.37	50	-52.5	006°10'342"E	45°55'496"N	88950	
159	89.82.38	50	-52.2	006°10'342"E	45°55'496"N	88950	
160	89.82.39	50	-52.5	006°10'342"E	45°55'496"N	88950	
161	89.82.40	50	-52.5	006°10'342"E	45°55'496"N	88950	
162	89.82.41	50	-52.4	006°10'342"E	45°55'496"N	88950	
163	89.82.42	50	-52.4	006°10'342"E	45°55'496"N	88950	
164	89.82.43	50	-52.3	006°10'342"E	45°55'496"N	88950	
165	89.82.44	50	-52.5	006°10'342"E	45°55'496"N	88950	
166	89.82.45	50	-52.5	006°10'342"E	45°55'496"N	88950	
167	89.82.46	50	-52.5	006°10'342"E	45°55'496"N	88950	
168	89.82.47	50	-52.5	006°10'342"E	45°55'496"N	88950	
169	89.82.48	50	-52.5	006°10'342"E	45°55'496"N	88950	
170	89.82.49	50	-52.4	006°10'342"E	45°55'496"N	88950	
171	89.82.50	50	-52.5	006°10'342"E	45°55'496"N	88950	
172	89.82.51	50	-52.5	006°10'342"E	45°55'496"N	88950	
173	89.82.52	50	-52.4	006°10'342"E	45°55'496"N	88950	
174	89.82.53	50	-52.5	006°10'342"E	45°55'496"N	88950	
175	89.82.54	50	-52.3	006°10'342"E	45°55'496"N	88950	
176	89.82.55	50	-52.4	006°10'342"E	45°55'496"N	88950	

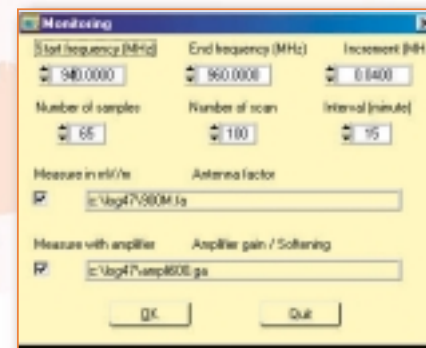
Coupling a GPS with the C.A 47 simultaneously records the geographical coordinates at each measurement point



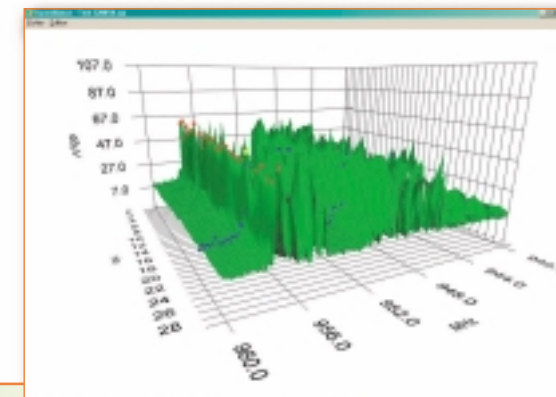
Variations in the electric fields are recorded in function to time on one to three fixed frequencies

Monitoring a spectral domain according to time (Scan mode)

The LOG 47 software makes monitoring radioelectric activity in a frequency domain simple. This measurement corresponds to changes in the spectral distribution recorded over time. It is essential for detecting the moment pirate transmitters are activated or for determining a station's activity rate.



This configuration window is used to define parameters in Monitoring mode: number of samples processed at each frequency point, number of scans, time interval between scans



A 3D representation of monitoring a spectral domain: exact analysis point coordinates (yellow) are given by the interactive display highlights in time (blue) and in frequency (red)

Electric field mapping application

The measurement: the chosen antenna (with magnet attachment) corresponds to the frequency domain being studied



Used with a PC, the LOG 47 software drives the C.A 47 and collects data supplied by the measurement accessories in order to determine geographic coordinates, travel speed and distance covered.



Geolocation: the GPS's antenna with magnet attachment picks up 8 geostationary-earth-orbiting satellites



Fastened onto a vehicle's non-drive wheel, the odometer allows a maximum speed of 160 km/h

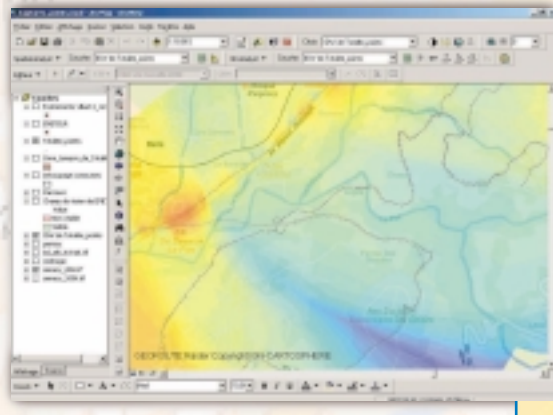
Preparing map plotting. For the measurement campaign, the vehicle is equipped with a C.A 47, PC with LOG 47 software, as well as a GPS and odometer

Thanks to its performance when combined with the LOG 47 software, the CA 47 provides data which is accurate, thus exactness in mapping electric fields.

Whether it be prior to the final installation or when making measurements to determine the site's real coverage, each of the instruments or accessories used contribute to establish a data base compatible with cartographic software: geographic coordinates, accuracy of distances covered, values measured, etc.



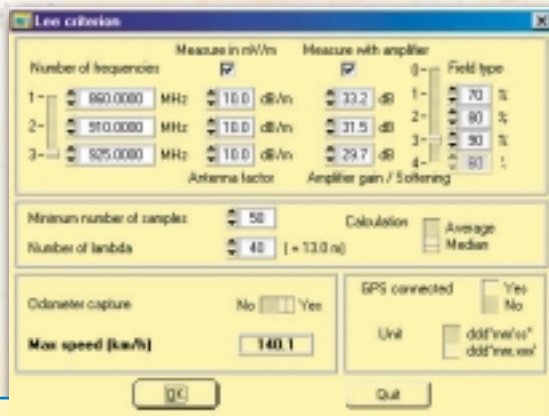
Representation of changes measured in the electric field along a covered distance is carried out in real time on 1 to 3 frequencies simultaneously



Example of electric field mapping made in the Annecy region in partnership with ESRI™ France

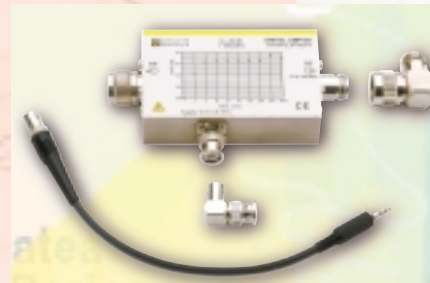
N	Time	Min	Max	CR	FL	FR	Longitude	Latitude	Alt	Speed
1	00:00:10	120	130	0.00	-85.3	-84.5	-82.5	46.04	6.84	87.13
2	00:00:15	120	130	0.00	-85.3	-84.5	-82.5	46.04	6.84	87.13
3	00:00:20	120	130	0.00	-85.3	-84.5	-82.5	46.04	6.84	87.13
4	00:00:25	120	130	0.00	-85.3	-84.5	-82.5	46.04	6.84	87.13

Measurement table with geographic coordinates provided by the GPS and the exact distances covered by the odometer

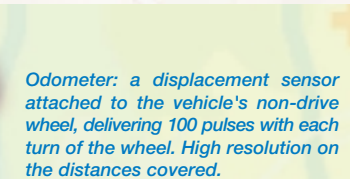


With the LOG 47, the user can respect the LEE criterion and choose the conditions for establishing average measurements. The user can also enter information about the characteristics of the measurement accessories being used: Antenna Factor, Preamplifier Gain, etc. The maximum authorized speed for the vehicle is indicated depending on the configuration

Accessories



30 dB gain amplifier is used to improve the C.A 47's sensitivity by providing -130 dBm instead of -112 dBm. For its power supply, DC voltage output of +15 V is located on the instrument's back panel. Delivered with a BNC female / male jack cable, BNC male / female elbow adapter, N male / female elbow adapter.



Odometer: a displacement sensor attached to the vehicle's non-drive wheel, delivering 100 pulses with each turn of the wheel. High resolution on the distances covered.



GPS, supplied with its antenna (magnet attachment), providing geographic coordinates need to for mapping an electric field.



Omnidirectional measurement antennae with magnet attachment or N male connector with an approximate gain of 2dB.



Specifications

Frequency:

- Frequency range: 25 MHz to 2500 MHz
- Resolution: 100 Hz
- Increment: 500 Hz to 100 MHz
- Accuracy: ±1.10⁻⁶ for 1 year
- Temperature stability: ±1.10⁻⁶
- Configuration:
 - with rotary knob
 - with keyboard
 - via RS 232 (by programming with LOG 47 - optional)

Measurement:

- Dynamic: - 10 dBm to -112 dBm ⁽¹⁾
- 40 dBm to -130 dBm ⁽¹⁾⁺⁽²⁾
- Resolution: 0.1 dB
- Accuracy: ±2 dB ⁽³⁾
- Acquisition rate: 0.1 to 165 measurements per second ⁽⁴⁾
- Type of detection: average, peak and quasi-peak
- Selectivity: 8.5 kHz, 16 kHz (see ETS 300086)
120 kHz (see CISPR 16)
1 kHz and 1 MHz at -6 dB
- Units: dBµV, dBm

Display:

- Type of display: backlit graphic LCD (95 x 60 mm)
- Messages available in 5 languages: FR, GB, AL, IT and ES

Internal memory:

- 5 configurations and 96,000 measurement counts ⁽⁵⁾

Data processing:

- Text or ASCII files used in spreadsheets or with associated LOG 47 software (optional) for programming and data processing on a PC (Windows 95, 98, NT)

RF measurement input:

- Impedance: 50 Ohms
- Maximum overload: +13 dBm
- S.W.R.: < 1.5
- Connector: N female

Measurement trigger input:

- TTL signals on BNC female connector

TTL compatible external drive input:

- Frequency: 10 MHz
- BNC female connector

RS 232 output:

- Broadband: 19200 Bauds
- Connector: female Sub D 9

Power supply output:

- + 15 Vdc for auxiliary preamplifier
- Female Jack connector

Programming:

- With RS 232 serial interface and LOG 47 software (optional)

Demodulation (optional)*:

- AM, FM or none
- Squelch and volume adjustment with potentiometer
- Audible output via internal loudspeaker

* This option cannot be used in France without authorization from the Ministry of Defense (Art. R226 of the Penal Code). This option, supplied by Chauvin Arnoux for use within French territory, cannot be used without a certified copy of the authorization mentioned above.

Climatic conditions:

- Operating temperature: 0 to +40°C
- Storing temperature: -10 to +60°C

Power supply:

- Internal power supply: rechargeable NiMH battery
- Charge life: 3 to 4 hrs depending on configuration
- Charge time: 4 hrs for instrument while not in operation, 13 hrs while in operation
- External and charger supply: 230 V ±10%, 50 Hz, approx. 45 VA 115 V (optional) ⁽⁶⁾ 12 Vdc per AC/DC block or on vehicle

CE conformity:

- EMC: NF EN 50081-1 (June 92)
NF EN 50082-2 (June 95)
- Safety: NF EN 61010-1 (1993) + A2 (1995)

Dimensions (L x W x H):

- 335 x 300 x 155 mm

Weight:

- Approx. 5.5 kg

(1) With 1 kHz analysis filter and average detection (AVG), according to frequency range
 (2) With optional AMP 601A or AMP 602A amplifier
 (3) +10°C to +30°C
 (4) At fixed frequency, depending on selectivity and Peak detection
 (5) Prefix + values measured (CR, LF separators)
 (6) To be specified when ordering