

TECHNICAL SPECIFICATION

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|--|---|
| Sensor Type | Electric Field (E) |
| Frequency range | 100kHz ÷ 3GHz |
| Directional pattern | Isotropic, 3-dimensional (X, Y and Z axis readings) |
| Measurement range | |
| CW signals (f>300kHz) | 0.5V/m ÷ 800V/m |
| True RMS | 0.5V/m ÷ 20V/m |
| Range selection | One single continuous range (>60dB dynamic) |
| Absolute error at 25V/m and 50 MHz | ±1dB |
| Linearity | ±0.5dB full scale |
| Isotropic deviation | typ. 0.5dB |
| Sampling rate | up 1000 sampling per second with full data connected SW |
| CW overload protection | >1000 V/m |
| Suppression H/E | typically > 25dB |
| Temperature dependency (0 to 50 °C) | +0.2/-1dB |
| Interface | |
| Data interface | optical/bidirectional |
| Physical interface | duplex optical fiber (200 µm multi mode) FSMA connectors |
| General Specification | |
| Power Supply | Internal rechargeable batteries |
| Operating time | |
| Rechargeable | typ. >15h |
| Recharging | using BC charger unit supplied 110-220 Vac (universal input) |
| Ambient temperature | |
| Operating range | 0 to +50 °C 5% to 95% relative humidity, non condensing |
| Dimensions: | |
| cubical housing (wxhxd) | 48mmx48mmx48mm |
| sensor protection caps (h) | 47mm |
| Weight (including batteries) | approx. 300g |



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APE 15 Active Electric Probe



High Accuracy measurements of electric field strength;

Broadband frequency range 100kHz ÷ 3GHz;

Simultaneous Isotropic and single axis measurements;

Small size and fiber optic link to minimize undesired interference;

Lightweight and long battery life for outdoor applications;

Fast Sampling enabling full data recording of critical pulsed modulated signals such as GSM

APE15 A TRUE ISOTROPIC PROBE

Electromagnetic field measurements for both EMC testing and RF Hazard monitoring require Isotropic Field Probes. APE15 E-field sensor includes three orthogonal dipole elements. Data is collected simultaneously from each individual element on the three axes to provide single axis or isotropic field measurements.

Other important characteristics of APE15 are an extended frequency range for maintaining a good dynamic range, and a fast sampling rate enabling the sensor to collect all data including pulsed modulated signals from GSM mobiles and base stations. Fiber optic connectivity between probe and PC provides the isolation necessary to minimize any interference due to undesired reflectors such as the human body or the data logger (PC, meter, etc.).

A serial communication adapter, powered from any computer; desk top, portable or palm top, allows the sensor's connection to any RS232 PC serial port. APE15 is supplied with simple yet powerful software which allows visualisation, storage and statistical manipulation of all the data recorded. The communication protocol remains available for integration of our probe with existing software automation packages

APPLICATIONS

APE15 has been developed to cover all applications of E-field measurements in the 100kHz-3GHz frequency range. Its small size and ease of integration into any existing system makes APE15 the ideal component for radiated immunity test systems in accordance with IEC1000-4-3 and EN61000-4-3, in an anechoic chamber, TEM Cell, TEMPACT, GTEM, etc. or to monitor the E-field. Long battery life, lightweight, APE15 will enable an operator to

perform indoor or outdoor measurement and produce an Electromagnetic field territorial map. The probe can in fact be synchronised to an external GSP as an option. The high sampling rate of APE15 will avoid any risk of not detecting pulsed modulated signals such as those generated by GSM, which are among the largest generators of "RF Pollution".

SENSOR CALIBRATION

Sensor Calibration is fundamental in defining measurement accuracy and in reducing uncertainties. It is in fact common to obtain poor comparative results among the same probes if these have been calibrated with 2 different calibration set-ups. Following national and international guidelines and the practice of several Calibration Laboratories, we calibrate all our probes using a modified TEM Cell for frequencies up to 200MHz. For frequencies greater than 200MHz a fully lined anechoic chamber with a Log Periodic or Horn antenna (>1GHz) is used. APE15 is calibrated at one frequency (50MHz) within its dynamic range at different electric field levels (*absolute calibration*). The probe is subsequently tested at different frequencies (*relative calibration*). Dynamic range and

frequency response values are then stored on board memory.

ELECTROMAGNETIC FIELD MAPPING

The increased awareness of "Electromagnetic Pollution" has generated the need for more complex measurements, rather than a simple GO/NO-GO approach.

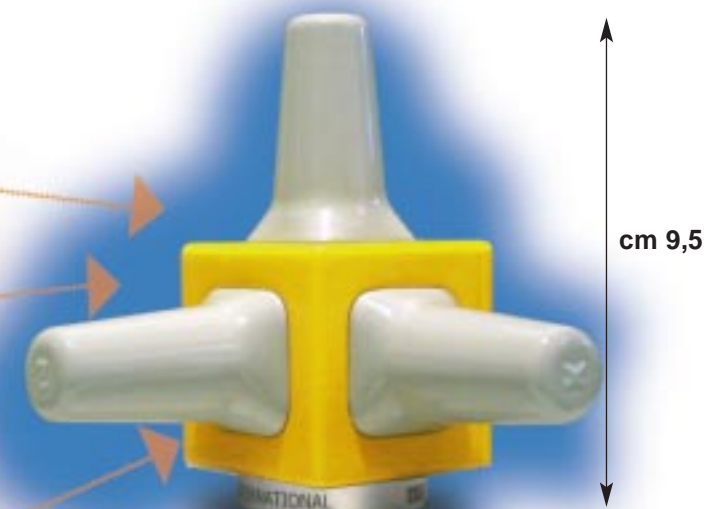
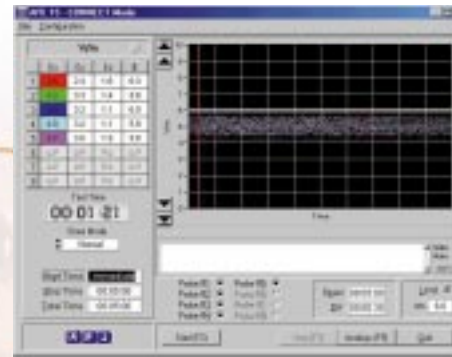
Often a problem is presented by the relatively large areas to be monitored which would require significant resources using the traditional method of manual measurements. Another problem may arise where there is a need for long term monitoring. In this case, several sensors may be displayed in a defined area for variable periods of time and there is a need to easily create and remove fixed multi-sensor stations. In the past whenever a strong field was measured, there was little difficulty in the identification of the source. Nowadays, with the proliferation of antennas everywhere this might not be the case, and the discriminating frequency(s) and the origin (direction) of the source will always need to be determined. All of these challenges can now be overcome with a series of optional tools:

ADF Kit:

This kit is composed of 3 lightweight directional antennas (30-250, 220-1200, 800-3000MHz) which enable the operator to distinguish the frequency of any interference and have a higher degree of accuracy in establishing the direction of the source compared to traditional Log Periodic antennas.

SWAPE:

This software package will allow the operator to perform measurements and save data in connection to an external GPS, enabling fast measurements from a mobile station such as a minivan with no worry of linking a location to a single measurement.



The package also permits the operator to synchronise and automate "broadband measurements" from the APE15 (or other AP probes) with "narrowband measurements" from the ADF antennas. Together with FBR08 it allows the operator to simultaneously display data and create an electromagnetic map with up to 8 sensors connected.

FBR08:

This multi-channel serial interface, together with the SWAPE software package, allows the operator to connect up to 8 sensors of the AP series, enabling the monitoring of a large area in real time. Customised multi-channel interfaces are available based on the number of sensors to be controlled (FBRxx).

