RAECO Rents

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Thank You for Attending Today's Webinar:

Electromagnetic Field Measurements for Radio Frequency Safety

Your Host

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Featured Speaker

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WAVECONTROL

Safety, Quality, Service

Wavecontrol
General presentation

Public safety – Worker’s safety

Index

About Wavecontrol

19 years
(since 1997)

+40
countries

ISO 9001
Certified
company

5 continents

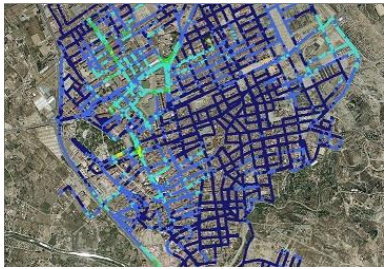
+2000
Delivered
instruments

ISO 17025
Accredited calibration
lab

Continuous
R+D

Distribution Network

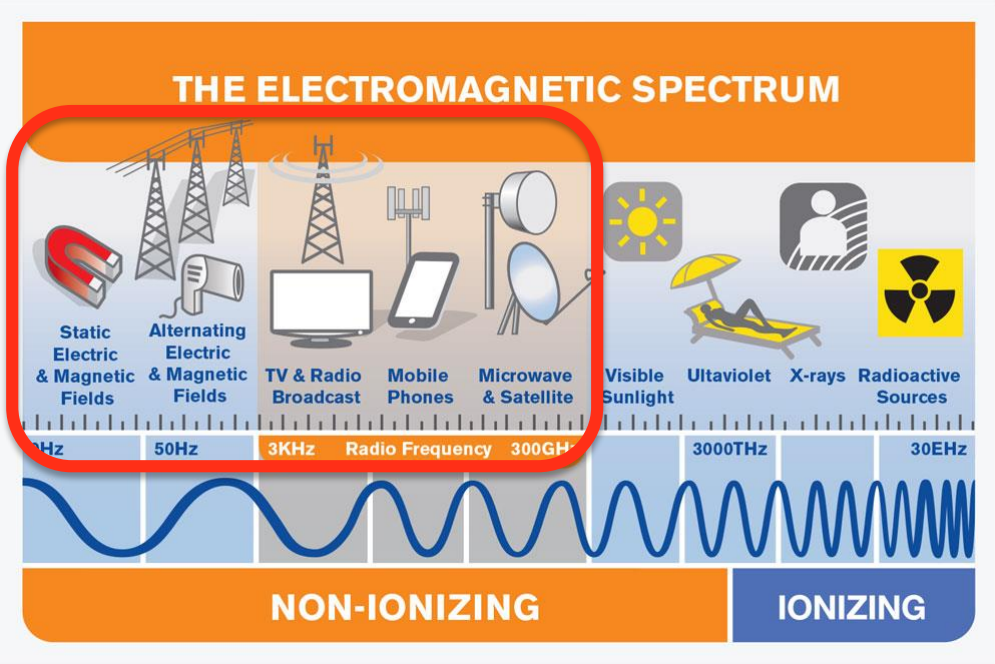
Wavecontrol products



Index

Electromagnetic spectrum

The electromagnetic spectrum is the description of the overall electromagnetic radiation sorted by frequency.



Non Ionising Radiation (NIR)

radiation that does not carry energy to ionize matter. Electric and magnetic fields occur naturally within the body in association with nerve and muscle activity.

Ionising Radiation (IR)

radiation with enough energy to ionise matter by removing electrons from their states linked to the atom and breaking molecular bonds.

Index

Regulations and standards

- ICNIRP: As an independent organization, ICNIRP provides scientific information and science-based advice on protection from EMF through a wide range of publications and guidelines.

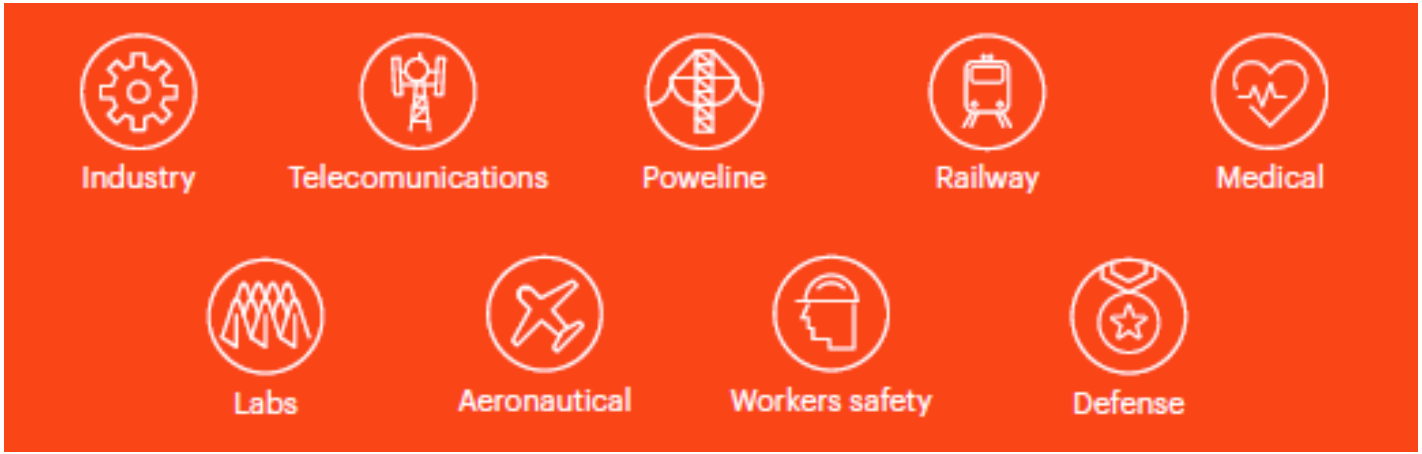
- OSHA: The American US congress created the Occupational Safety and Health Administration (OSHA) to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. It conducts research and makes recommendations to protect workers from proven and possible EMF health risks.

Index

Sectors

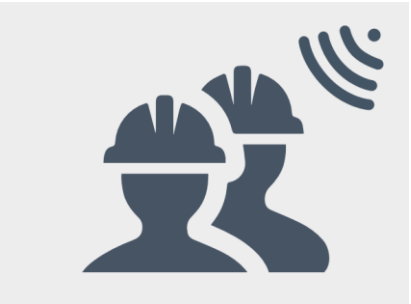
Applications	Standard	Frequency range	Probe
Dielectric heating	EN 50519	High frequency	Broadband
Induction heating	EN 50519	Low/High frequency	Selective / Broadband
Welding	EN 50444 EN 50445 EN 50505	Low frequency	Selective
Detection of articles and people	EN 50364 EN 62369-1 EN 50357	Low/High frequency	Selective / Broadband
Energy production and distribution	EN 62110	Low frequency	Selective
Transport and traction systems	EN 50500	Low frequency	Selective
Transmitters and Telecom Base Stations	IEC 62232 EN 50400 EN 50401 EN 50492	High frequency	Broadband
Radio / TV broadcasting	EN 50496 EN 50554	Low/High frequency	Selective / Broadband
Medical applications	IEC 60601	Low/High frequency	Selective Broadband

Where?



Everywhere!

Basic standards



EN 50499	Procedure for the assessment of the exposure of workers to electromagnetic fields
EN 50413	Basic standard on measurement and calculation procedures for human exposure to electric, magnetic and electromagnetic fields (0 Hz - 300 GHz)
IEC 61786-1	Measurement of DC magnetic, AC magnetic and AC electric fields from 1 Hz to 100 kHz with regard to exposure of human beings - Part 1: Requirements for measuring instruments

Telecommunication and broadcasting

EN 50400	Basic standard for fixed equipment for radio transmission (110 MHz - 40 GHz)
EN 50401	Product standard for fixed equipment for radio transmission (110 MHz - 40 GHz)
EN 50492	Basic standard for the in-situ measurement of EMF related to human exposure in the vicinity of base stations
IEC 62232	Determination of RF field strength and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure
EN 50496	Workers' exposure to EMF and assessment of risk at a broadcast site
EN 50554	In-situ assessment of a broadcast site related to general public exposure to EMF

Energy

EN 62110	Magnetic field levels generated by AC power systems – Measurement procedures with regard to public exposure

Railway

EN 50500	Measurement procedures of magnetic field levels generated by electronic and electrical apparatus in the railway environment with respect to human exposure

Industry

Standard	Scope
EN 50519	Assessment of workers' exposure to electric and magnetic fields of industrial induction heating equipment
EN 50505	Basic Standard - resistance welding and allied processes
EN 50444	Basic Standard - arc welding and allied processes
EN 50445	Product family standard - resistance welding, arc welding and allied processes

Plastic sealer
(dielectric heating)

Capacitor banks

Industry

Induction heating

Electrochemical processes

Industry	Frequency range
Smelting	50 Hz; 2 kHz, 10 kHz
Induction heating	50 Hz – 8 MHz
Dielectric heating	10-110MHz
Electrochemical process	50 Hz; 300 Hz; 600 Hz and 900 Hz
Welding	Arc welding: 50 Hz Resistance welding: 100-500kHz Plastic welding: 27.12 MHz
Microwave drying	27 MHz and 2450 MHz
Semiconductor production	300 kHz-10 MHz; 40-68 MHz; 2.45GHz

Medical

IEC 60601	Medical electrical equipment

Medical application	Frequency range
Magnetic Resonance Imaging	0.024 -65 kHz; 10-400 MHz
Diathermy	27 MHz ; 2.45 GHz
Hyperthermia	434 MHz ; 70 MHz
Electrosurgery	300-600 kHz ; 13.5 MHz ; 27 MHz

MRI

Electrosurgery

Deep hyperthermia

Microwave diathermy

Index

Wavecontrol products

cMonitEM
Compact Monitoring

MonitEM
Continuous Monitoring

SMP2
EMF meter

MapEM
Electromagnetic Maps

SMP2: Electromagnetic Field Meter

Isotropic, Linearity, RMS ...
high-accuracy field probes

2 INSTRUMENTS IN 1:
Minimize your investment

Broadband measurement (1 Hz - 18 GHz)
Spectrum analysis - FFT (1 Hz - 400 kHz)

Easy steps for a compliant assessment of standards (ICNIRP, IEEE-95, SC6, 2013/35/EU, ...)

SMP2 integrates the **Weighted Peak Method (WPM)** technique allowing to check compliance with all the limit lines of the Directive, both for E and H fields. Low Action level, High Action level, Limb Action level.

Real time peak detection and display up to 400 kHz
ideal for welding applications

Max Hold and Cursor on screen
fast and easy FFT analysis overview

SMP2: Electromagnetic Field Meter

Integrated GPS (optional)

Firmware upgradable
Simply download and install – minimal downtime

Screenshot function
perfect for your report

Graphical display in real time
obtain a quick overview on the field.

USB, F.O.
Download, remote control

SMP2 : Field probes

Low frequency probes
WP400: 1 Hz – 400 kHz (E & H)
WP50: 10 Hz – 3 kHz (E & H)

Mobile bands probe
GSM, UMTS, LTE
E field

Magnetic field probe
300 kHz – 60 MHz
H field

High frequency probes
100 kHz –3, 6, 8, 18 GHz
E field

High Frequency probes WPF

Measure from 100 kHz to 18 GHz

Telecom, microwaves, defence, airports, medical,

Electric field

and magnetic in far-field conditions

Measurement method

Broadband and RMS (by standards)

Low Frequency probe WP400

Measure from 1 Hz to 400 kHz
covers industrial applications

Electric and Magnetic field
on a single probe

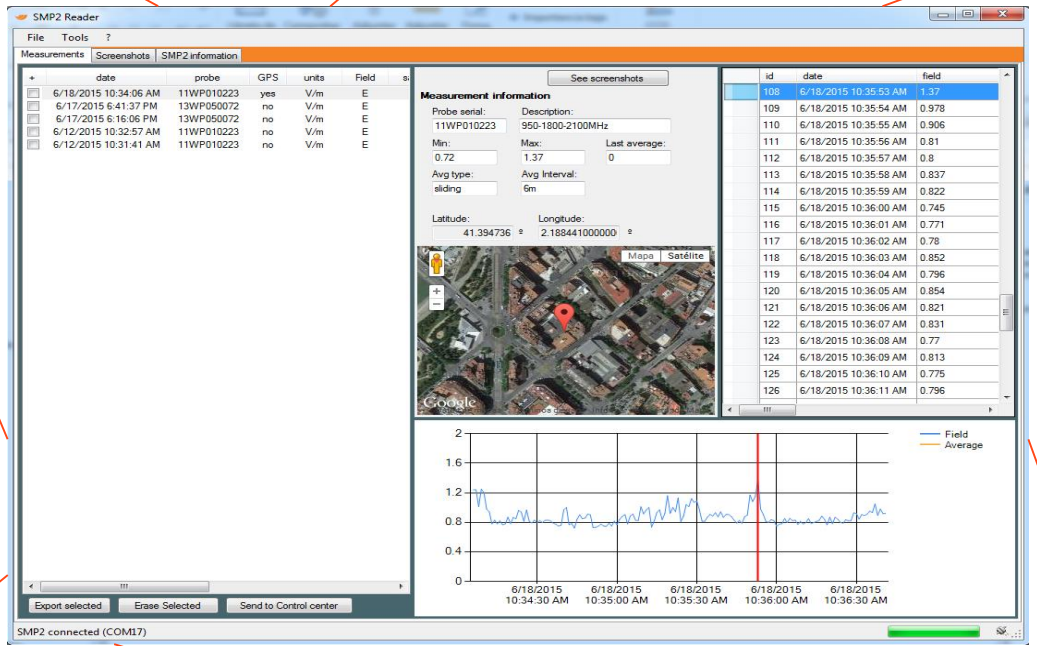
4 measurement methods
Broadband, spectrum analysis, single frequency log and weighted measurements (WPM)

Software PC: SMP2 Reader

Displaying measurements in **graph** and **table format**.

Displaying **stored** screenshots.

Displaying **SMP2** information.



Exporting measurements and screenshots to **excel files**.

Sending measurement directly to a **web server**

Downloading **stored measurements**

Remote control the SMP2 for **live measurement**. (available only with fiber optics connection)

MonitEM: continuous EMF monitoring unit

Continuous monitoring 24/365

Robust and environmental protection **IP66**

AC / DC Power

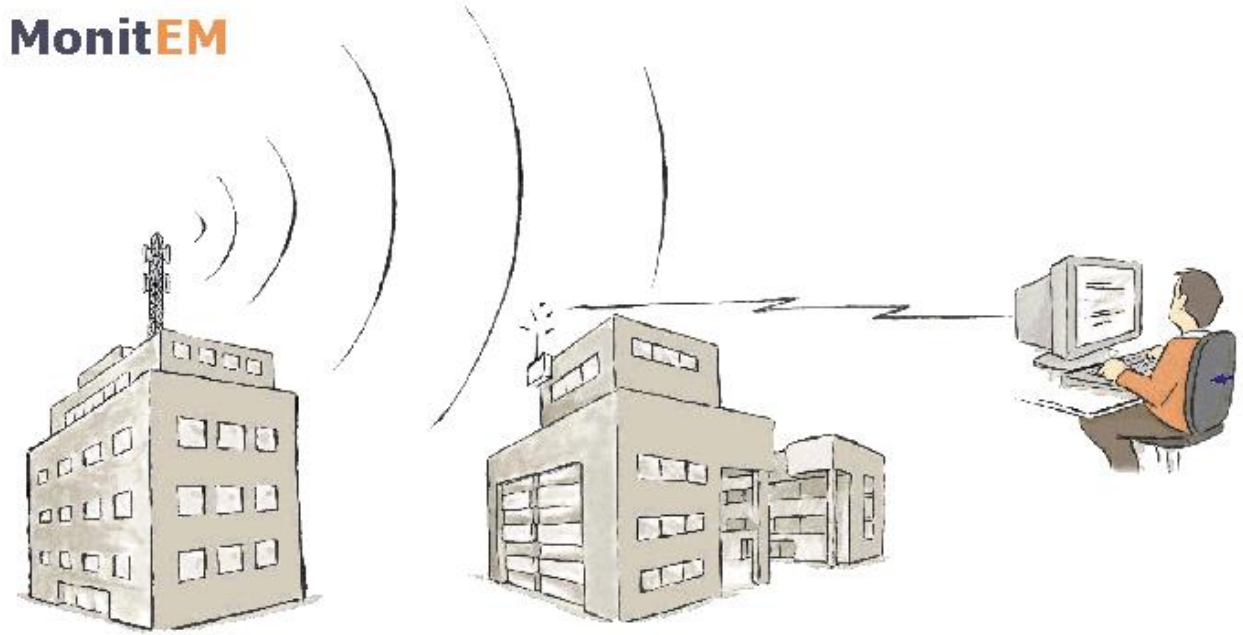
Easy to install

Broadband measurement: BTS antenna, broacasting TV/Radio, High power lines

Autonomous: solar panel for battery power

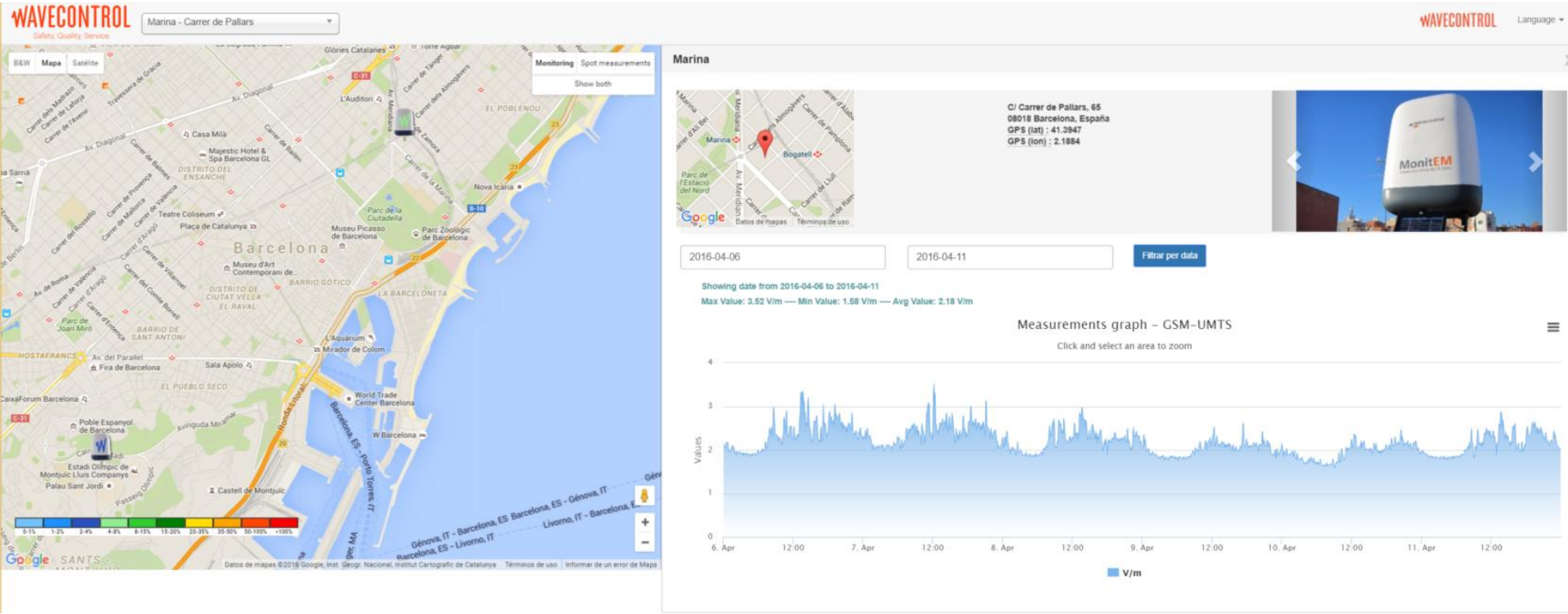
In accordance with recommendation ITU-K.83

MonitEM: continuous EMF monitoring unit



EMF source	MonitEM	Control center
BTS antenna Broadcasting antenna Power lines	Sensitive locations	Reception, recording and data analysis

MonitEM: control center



MonitEM: continuous EMF monitoring unit

cMonitEM: continuous EMF monitoring unit

cMonitEM

Indoor EMF monitoring

Continuous monitoring of mobile telephone and Wi-Fi levels indoors

Mobile bands or WiFi

Street level installation

Integrated GPRS/3G

MapEM: electromagnetic drive test

Easy to set up

Quick EMF maps of cities

Locate warm areas

Index

Wavecontrol SMP2 to Narda NBM-550

ADVANTAGES OF SMP2

Display light sensor

Integrated GPS

Screen shot function

Large 4 GB memory

User interface

Colour screen

Better Price

ADVANTAGES OF NBM-550

Voice recording

One-hand operation

60 GHz probe

Replaceable batteries

Wavecontrol SMP2 to Narda ELT-400

ADVANTAGES OF SMP2 + WP400

Integrated FFT

E & H measurement

Integrated GPS

User friendly

Colour screen

Graph display

PC controlled measurement

State of the art equipment (2014)

ADVANTAGES OF ELT-400

Low reader influence

Longer market presence

Wavecontrol SMP2 to EMDEX II

ADVANTAGES OF SMP2

Isotropic probes

Fully compliant with Standards

Weighted Peak Evaluation

FFT

E & H measurement for LF

Up to 18 GHz with additional probes

ADVANTAGES OF EMDEX II

Price

Wavecontrol SMP2 to Microrad NHT-3D

ADVANTAGES OF SMP2

E & H measurement in 1 probe

Time domain analysis (WPM)

Analysis on meter

Screen and graph display

Calibration

ADVANTAGES OF NHT-3D

Probes measuring at 0 Hz

Probes up to 40 GHz

Battery replacement

Thank you

WAVECONTROL

Safety, Quality, Service

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RAECO Rents

Treat yourself to better rental service.

Upcoming Webinar:

Vibration Measurement 101

Monday, October 31 at 9am CST

Featured Speaker

Bob Selwyn
Sensidyne

Webinar invitation e-mail coming soon...