

# RF - SAFETY



**SMP2:** New portable system for EMF assessment

# About Wavecontrol

## Activity

RF Safety and EMF  
assessment

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17 years

Founded in 1997

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8 engineers R&D

18 employees

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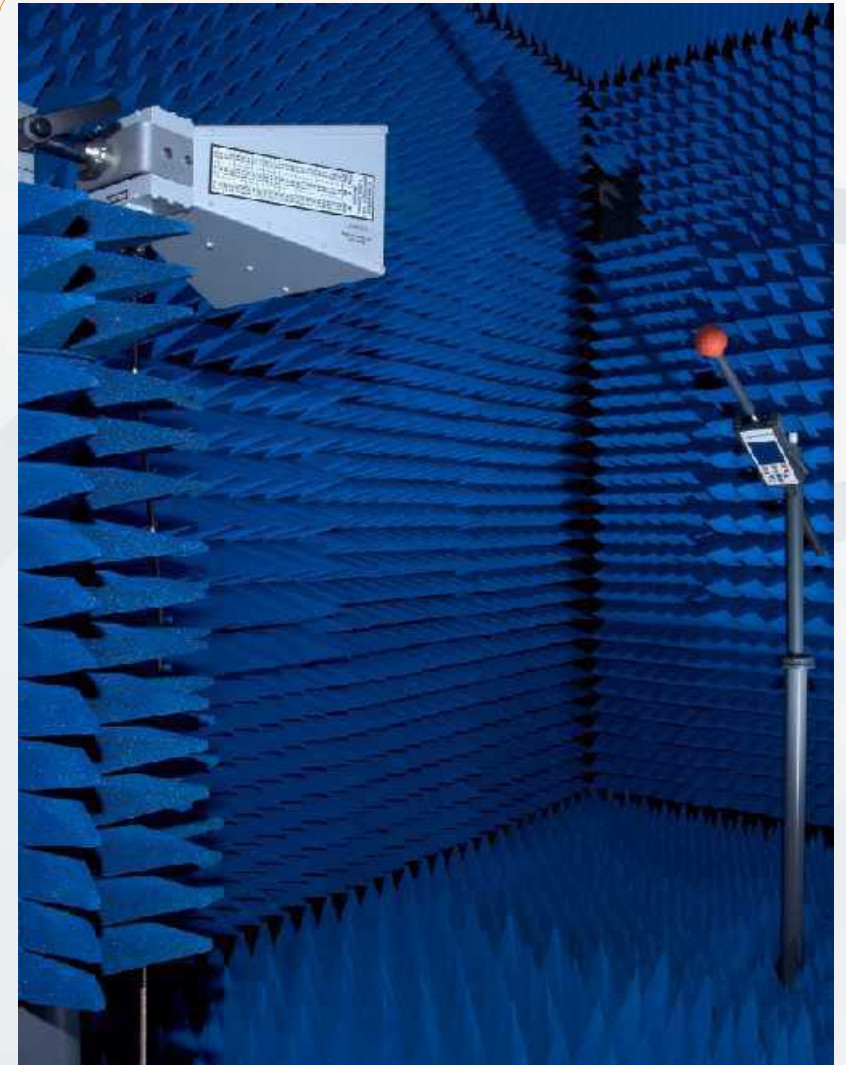
+35 country

Using our solutions

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ISO 17025 et ISO 9001

Accredited certifications





+ 15 projects ITU-T K.83

+ 5 years uninterrupted

+ 500 installed units



# Continuous EMF Monitoring



Broadband Equipment = **Escalability**

Solar, GPRS = **Easy Installation**

24/365 = **Information**

Internet = **Communication**



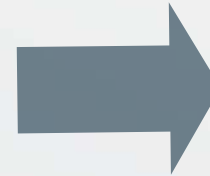
## Continuous EMF Monitoring



Telecom Development = Social & Economic Development



**Distrust & Fear**



### ITU-T k.83 Recommendation

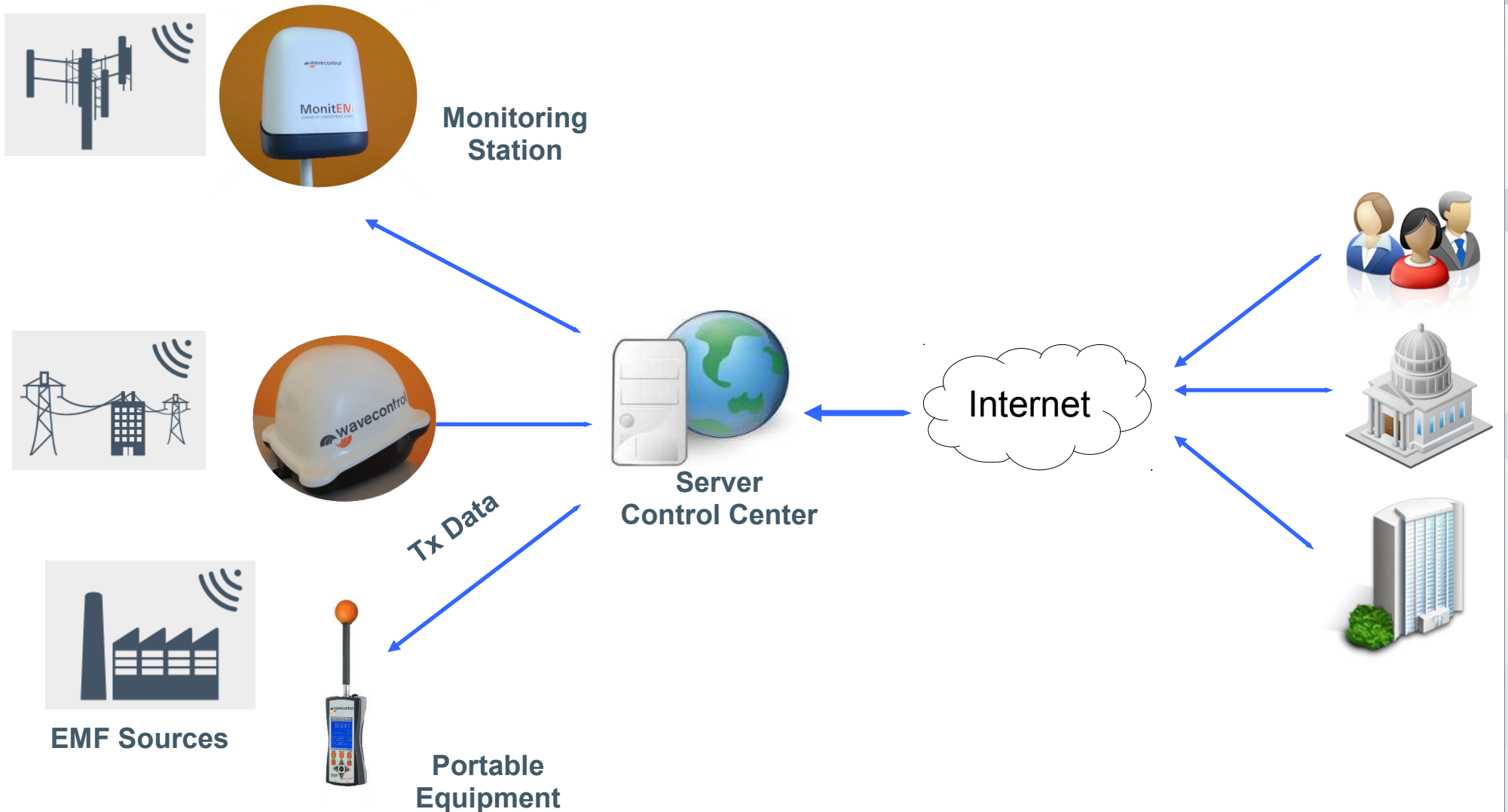
**Objective** Measurements = **Public or Independent body**

**Reliable** Measurements = **Compliance with Norms**

**Continuous** Measurements = **24/365**

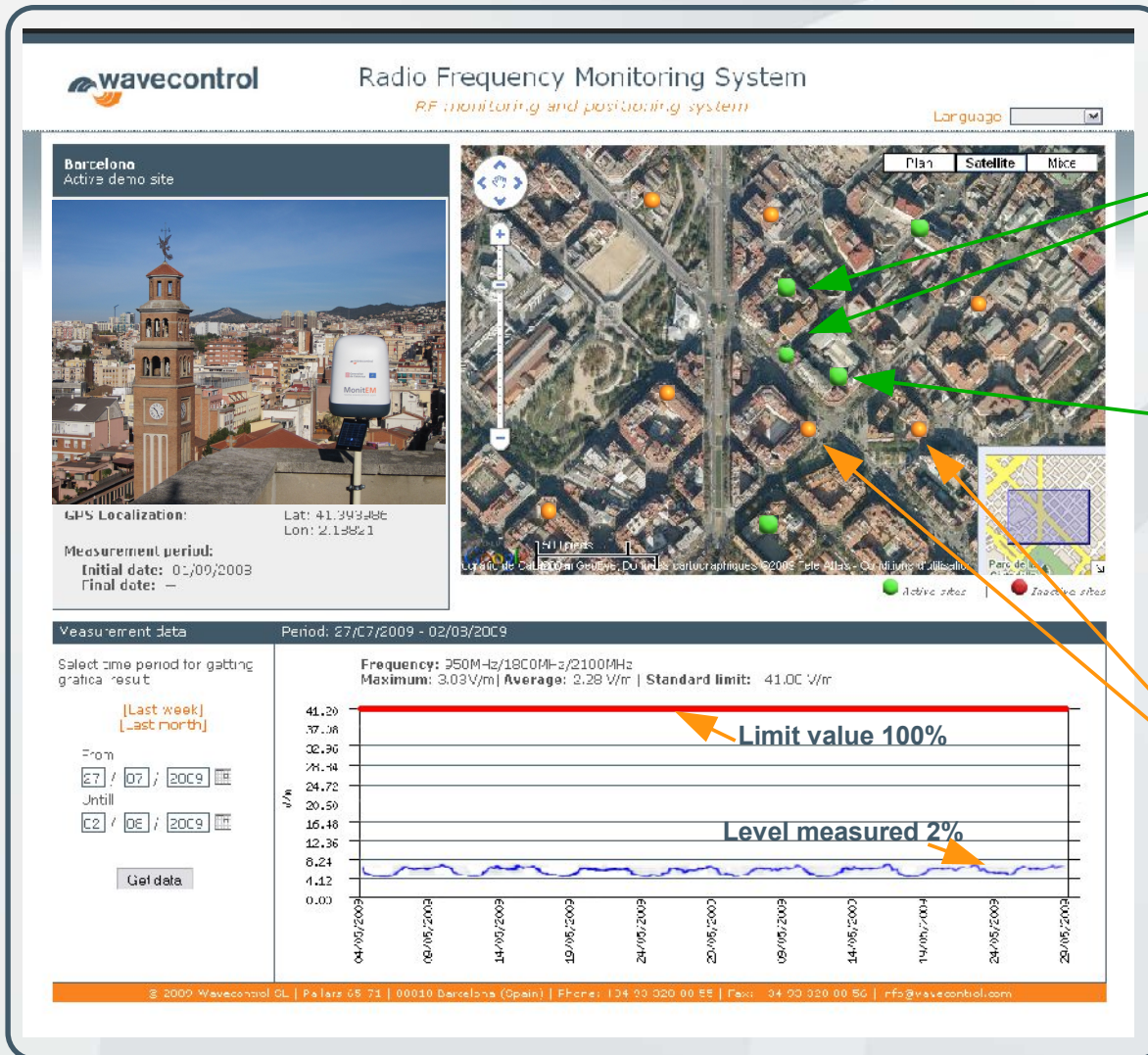
**AND Appropriate Communication**

# Products: Control Center





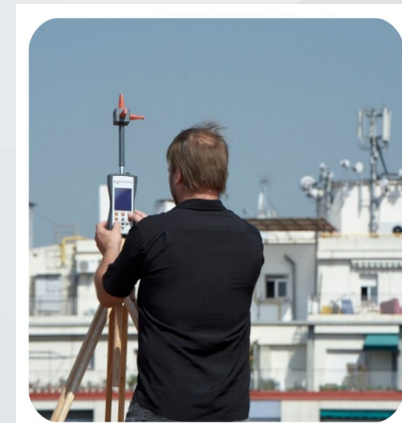
## Automatic Integration of Data Powerful Communication Tool



Example: monitoring of **mobile telephony** radiation near an area of social conflict



Example: radiation monitoring of **Wifi** in a school



Example: **spot** measurement in a house

# Products: Control Center



## Administration Interface to remotely manage the monitoring stations

**SMRF**  
**Sistema de Monitorización de Radio Frecuencia**

Vegueria: Barcelona 
Comarca:  
[CT] [ES] [EN] [FR]

**LUGARES** Activos Inactivos

<input type="checkbox"/>  <b>Badalona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM051</b> <input type="button" value="Datos Estación"/> Peticiones Programación Av. Doctor Bassols, 77-A	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM024</b> <input type="button" value="Datos Estación"/> Peticiones Programación Av. Mare de Déu de Montserrat, 167, àtic-1º	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM053</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Bordeus, 22-24	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM044</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Cavallers, 16-18
<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM016</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Consell de Cent, 16	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM045</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Gomis, 96 Àtic	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM056</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Muntaner, 577	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM018</b> <input type="button" value="Datos Estación"/> Peticiones Programación C/ Rubén Darío, 50-54 Àtic 1a
<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM022</b> <input type="button" value="Datos Estación"/>	<input type="checkbox"/>  <b>Barcelona</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM050</b> <input type="button" value="Datos Estación"/>	<input type="checkbox"/>  <b>Calella</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM031</b> <input type="button" value="Datos Estación"/>	<input type="checkbox"/>  <b>Canet de Mar</b> <input type="button" value="Datos Lugar"/> <input type="button" value="Informes"/> <input type="button" value="Gráficas"/> <input type="button" value="Desactivar"/> <hr/> Estación: <b>05WM041</b> <input type="button" value="Datos Estación"/>

**Mapas disponibles**

- Catalunya
- Canet de Mar
- Eixample (Barcelona)
- Poblenou (Barcelona)

**Estaciones disponibles**

- **05WM027 [X]**

**Consultas**

Seleccionar filtro para realizar consulta en los lugares seleccionados:

Medidas recibidas periódicamente

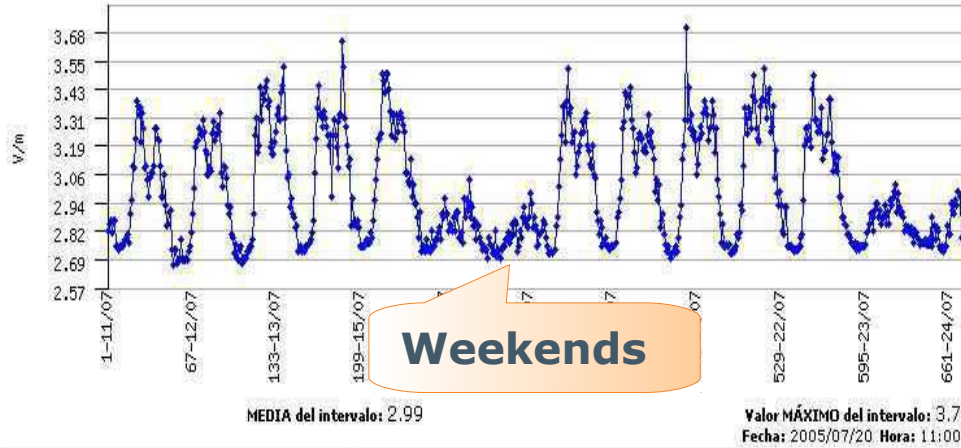
List of Locations



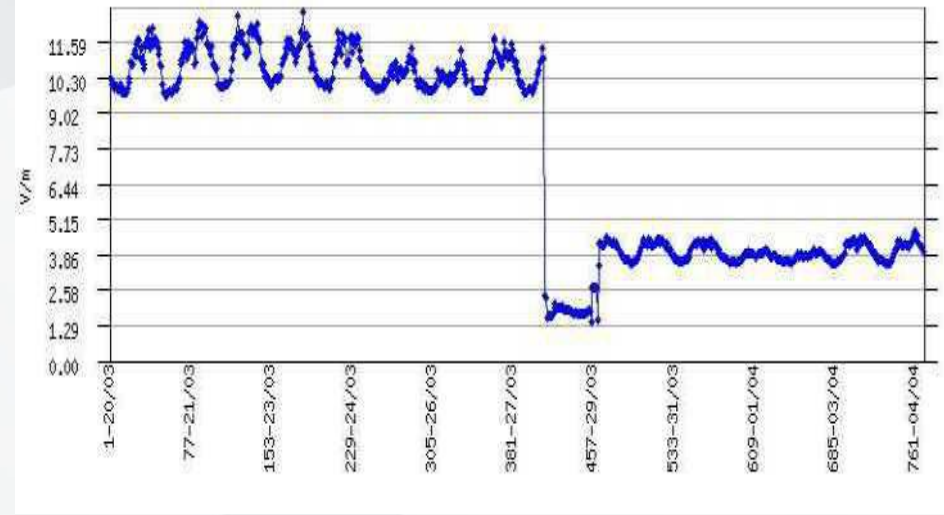
# Examples

## Graph #1: University Area

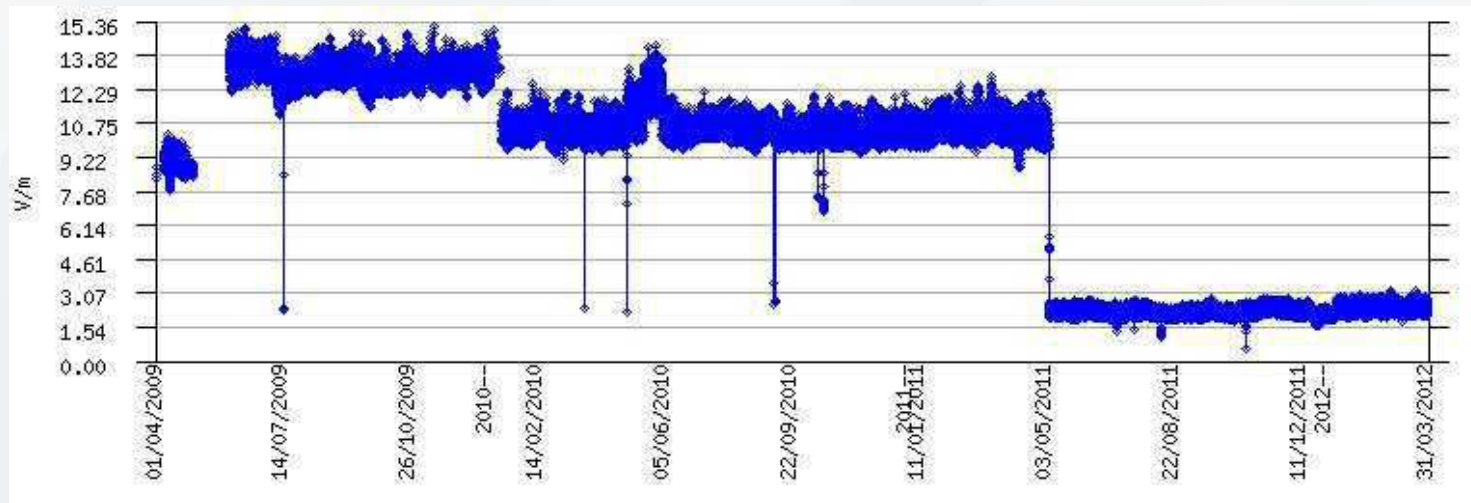
C/ Cavallers, 16-18 Barcelona [ [Volver a la página principal](#) ] [ [Escoger nuevo intervalo](#) ]



## Graph #2: Reduce Radiation Levels



## Graph #3: Long Term Measurements (3 years). Evolution of Technology



# New Directive 2013/35/EU

Exposition to EMFs



Directive 2013/35/EU



Employers vs Workers

Assessment / Calculation  
EMF

# SMP2: Measurement

NEW

➔ **Broadband measurement from 1 Hz to 18 GHz**

➔ **Spectrum analysis from 1 Hz to 400 kHz**

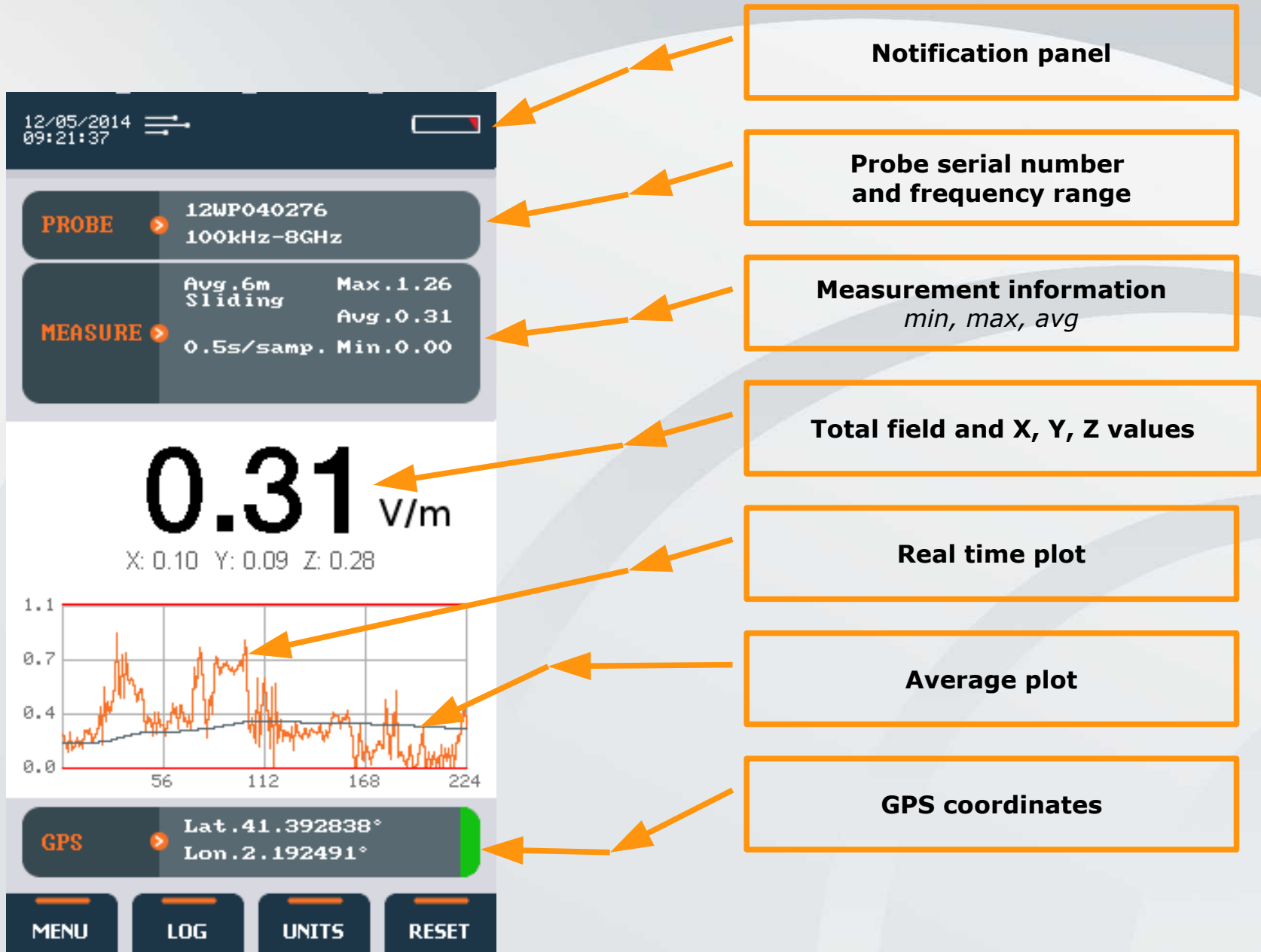
➔ **Shape Time Domain in real time**



# SMP2: New product



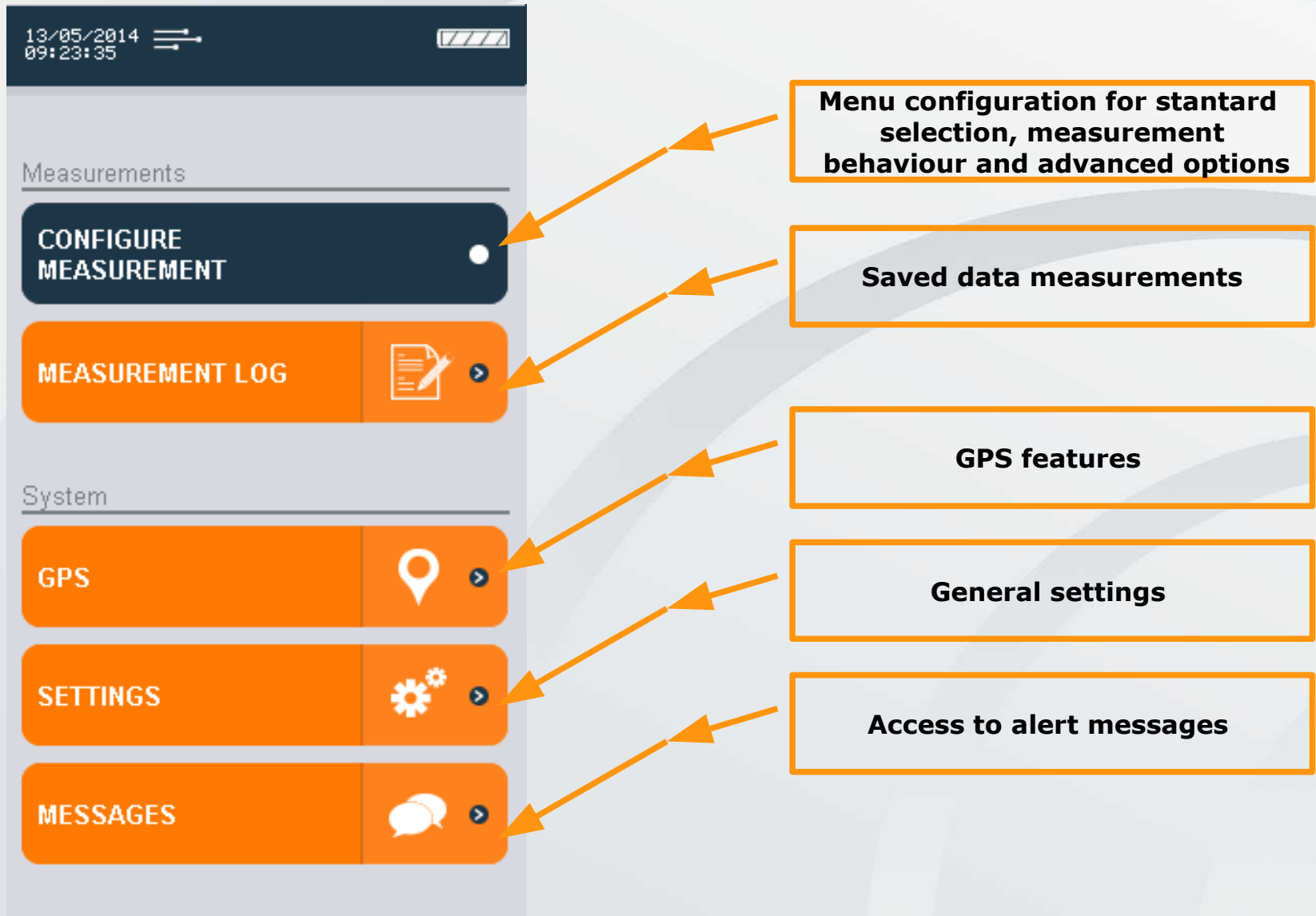
# SMP2: User interface



The screenshot displays the SMP2 user interface with the following components and callouts:

- Notification panel:** Located at the top right, containing a battery level indicator.
- Probe serial number and frequency range:** Displays "12WP040276" and "100kHz-8GHz" under the "PROBE" section.
- Measurement information:** Shows "Avg. 0.31", "Max. 1.26", "Sliding", and "0.5s/samp. Min. 0.00" under the "MEASURE" section.
- Total field and X, Y, Z values:** Displays a large "0.31 V/m" reading and coordinates "X: 0.10 Y: 0.09 Z: 0.28".
- Real time plot:** A line graph showing fluctuating data points over time.
- Average plot:** A smoother line graph representing the average of the real-time data.
- GPS coordinates:** Shows "Lat. 41.392838°" and "Lon. 2.192491°" under the "GPS" section.
- Navigation buttons:** "MENU", "LOG", "UNITS", and "RESET" are located at the bottom of the interface.

# SMP2: User interface



The image shows a mobile application interface for SMP2. At the top, a dark blue header displays the date and time: 13/05/2014 09:23:35, along with a hamburger menu icon and a battery level indicator. Below the header, the interface is divided into two main sections: 'Measurements' and 'System'. The 'Measurements' section contains three items: 'CONFIGURE MEASUREMENT' (dark blue button with a white dot), 'MEASUREMENT LOG' (orange button with a document icon and a right arrow), and 'GPS' (orange button with a location pin icon and a right arrow). The 'System' section contains three items: 'SETTINGS' (orange button with a gear icon and a right arrow) and 'MESSAGES' (orange button with a speech bubble icon and a right arrow). To the right of the interface, five callout boxes with orange borders and arrows pointing to specific UI elements provide descriptions: 'Menu configuration for standard selection, measurement behaviour and advanced options' points to the 'CONFIGURE MEASUREMENT' button; 'Saved data measurements' points to the 'MEASUREMENT LOG' button; 'GPS features' points to the 'GPS' button; 'General settings' points to the 'SETTINGS' button; and 'Access to alert messages' points to the 'MESSAGES' button.

**Menu configuration for standard selection, measurement behaviour and advanced options**

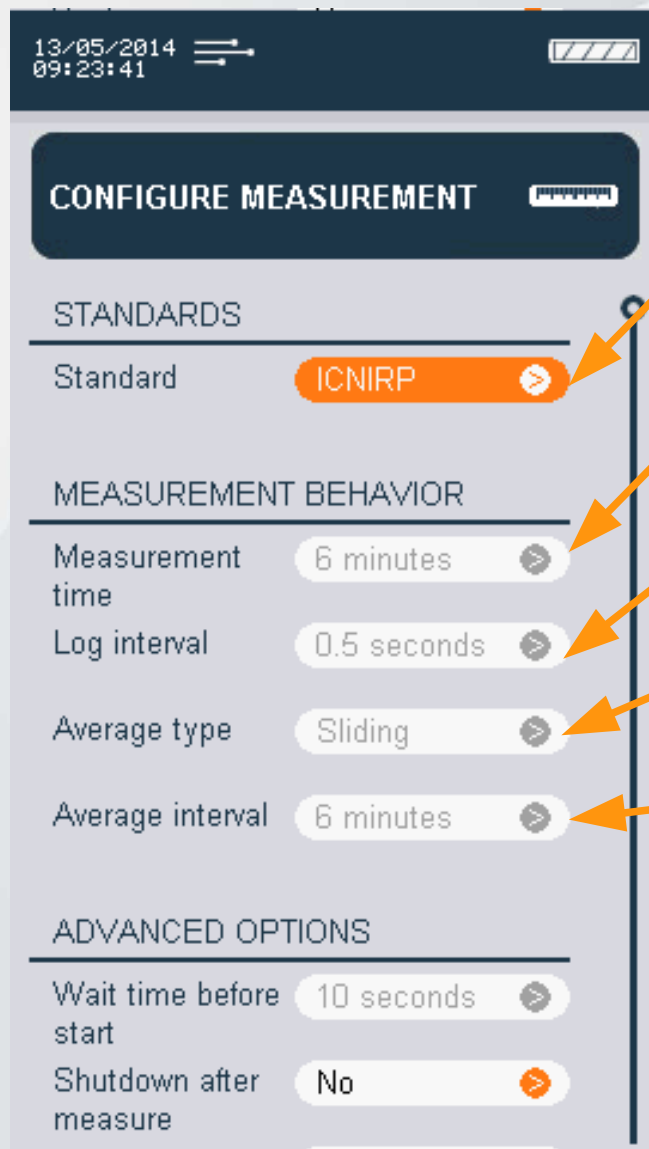
**Saved data measurements**

**GPS features**

**General settings**

**Access to alert messages**

# SMP2: User interface



**Automatic setup of Measurement**  
according to the selected  
standard




**Set the maximum time  
measurement (inlimited included)**

**Select the interval between  
samples saved in memory**

**Select the average type**

**Several average time intervals  
are available from 10 s to 30 min**

# SMP2: Probes

-  Broadband: WP50, WP400, WPF3, WPF6, WPF8, WPF 18
-  Spectrum analysis: WP400
-  Mobile telephone spectrum probe: WPT





# SMP2: Connections

Push-pull connector

Mini USB ports

Coaxial jack connector

**Fiber optics I/O**

➔ Connecting probes

➔ Data downloading

➔ Charging battery

➔ Remote control (+10 m.)



# SMP2: New software

Main tabs for selecting information

Sample details

Measurement list

The screenshot shows the SMP2 Reader software interface. At the top, there are tabs for 'Measurements', 'Snapshots', 'Live Measurement', and 'SMP2 information'. The 'Measurements' tab is active, displaying a list of measurements with columns for date, GPS status, units, samples, average interval, average type, and log int. Below the list are buttons for 'Reload', 'Export selected', 'Send to Control center', and 'Erase Selected'. The 'SMP2 information' tab is also visible, showing 'Samples information' with a table of data and a graph below it. The graph plots 'field' (blue line) and 'average' (orange line) values over time.

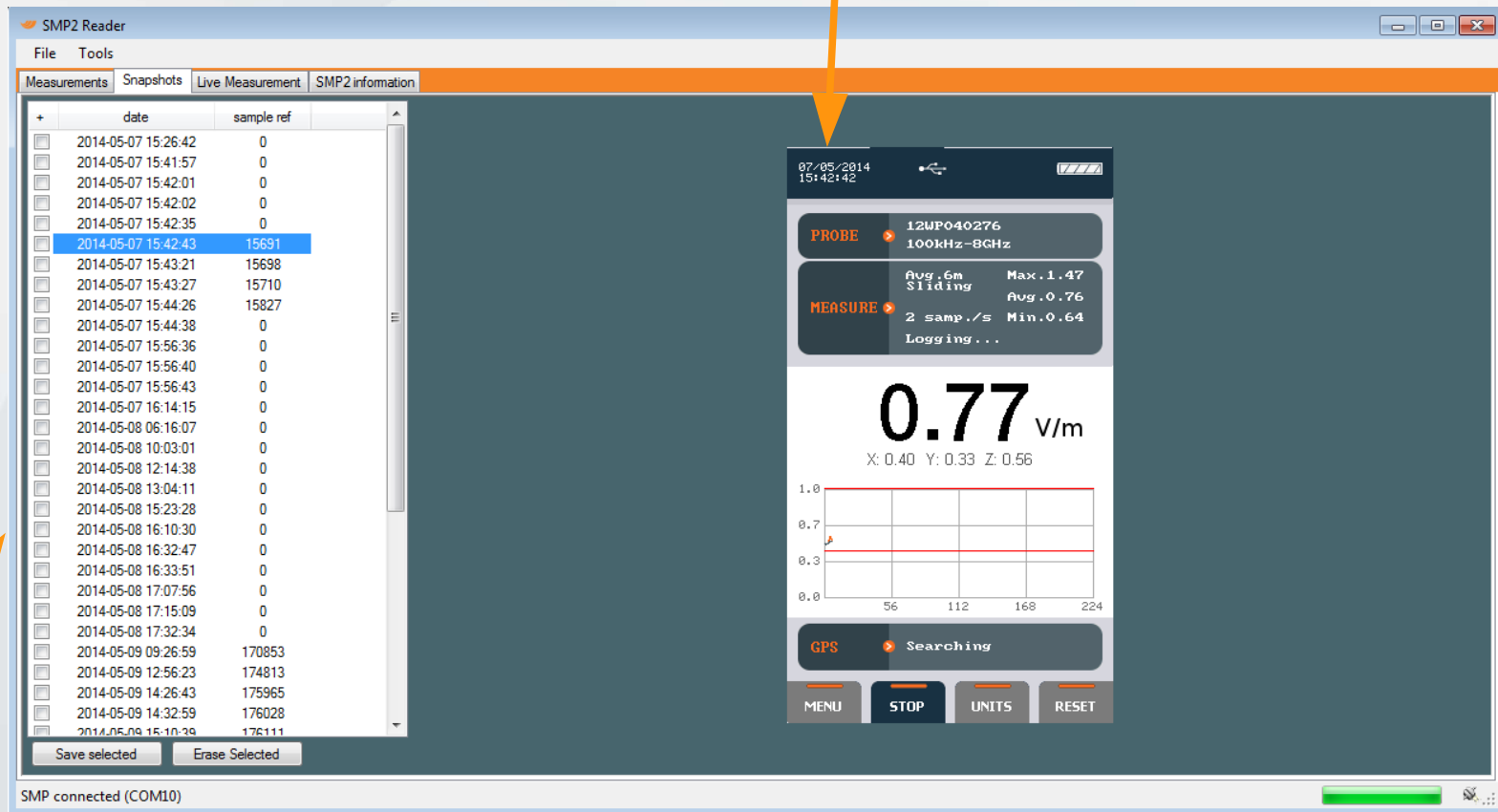
id	Date	Field	Average	x	y	z	Latitude
1	2014-05-12 11:24:44.5	1.042598	1.042598	0.743137	0.562214	0.467625	
2	2014-05-12 11:24:45.0	1.027801	1.035199	0.769402	0.540306	0.415288	
3	2014-05-12 11:24:45.5	1.043875	1.038091	0.774411	0.560616	0.419131	
4	2014-05-12 11:24:46.0	1.035839	1.037528	0.796233	0.5345	0.391518	
5	2014-05-12 11:24:46.5	1.076259	1.045274	0.807962	0.567774	0.427976	
6	2014-05-12 11:24:47.0	1.095021	1.053565	0.807962	0.582636	0.454577	
7	2014-05-12 11:24:47.5	1.090983	1.058911	0.814106	0.584953	0.430473	
8	2014-05-12 11:24:48.0	1.087499	1.062484	0.802462	0.577978	0.452382	
9	2014-05-12 11:24:48.5	1.105275	1.067239	0.818178	0.603959	0.432957	
10	2014-05-12 11:24:49.0	1.087686	1.069284	0.815465	0.588796	0.414	
11	2014-05-12 11:24:49.5	1.066868	1.069064	0.812063	0.573288	0.387429	
12	2014-05-12 11:24:50.0	1.047878	1.067299	0.801772	0.548508	0.392873	
13	2014-05-12 11:24:50.5	1.047289	1.065759	0.802462	0.54442	0.39557	
14	2014-05-12 11:24:51.0	1.011422	1.061878	0.783632	0.536995	0.347178	
15	2014-05-12 11:24:51.5	1.017157	1.058897	0.790656	0.53948	0.344141	

Actions

Field and average graphs

# SMP2: New software

selected snapshot



The screenshot shows the 'SMP2 Reader' application window. On the left, there is a 'Snapshots' tab with a table listing various measurements. The selected row is highlighted in blue. On the right, a detailed view of the selected snapshot is shown, including probe information, measurement parameters, a large numerical reading, and a small graph.

checkbox	date	sample ref
<input type="checkbox"/>	2014-05-07 15:26:42	0
<input type="checkbox"/>	2014-05-07 15:41:57	0
<input type="checkbox"/>	2014-05-07 15:42:01	0
<input type="checkbox"/>	2014-05-07 15:42:02	0
<input type="checkbox"/>	2014-05-07 15:42:35	0
<input checked="" type="checkbox"/>	2014-05-07 15:42:43	15691
<input type="checkbox"/>	2014-05-07 15:43:21	15698
<input type="checkbox"/>	2014-05-07 15:43:27	15710
<input type="checkbox"/>	2014-05-07 15:44:26	15827
<input type="checkbox"/>	2014-05-07 15:44:38	0
<input type="checkbox"/>	2014-05-07 15:56:36	0
<input type="checkbox"/>	2014-05-07 15:56:40	0
<input type="checkbox"/>	2014-05-07 15:56:43	0
<input type="checkbox"/>	2014-05-07 16:14:15	0
<input type="checkbox"/>	2014-05-08 06:16:07	0
<input type="checkbox"/>	2014-05-08 10:03:01	0
<input type="checkbox"/>	2014-05-08 12:14:38	0
<input type="checkbox"/>	2014-05-08 13:04:11	0
<input type="checkbox"/>	2014-05-08 15:23:28	0
<input type="checkbox"/>	2014-05-08 16:10:30	0
<input type="checkbox"/>	2014-05-08 16:32:47	0
<input type="checkbox"/>	2014-05-08 16:33:51	0
<input type="checkbox"/>	2014-05-08 17:07:56	0
<input type="checkbox"/>	2014-05-08 17:15:09	0
<input type="checkbox"/>	2014-05-08 17:32:34	0
<input type="checkbox"/>	2014-05-09 09:26:59	170853
<input type="checkbox"/>	2014-05-09 12:56:23	174813
<input type="checkbox"/>	2014-05-09 14:26:43	175965
<input type="checkbox"/>	2014-05-09 14:32:59	176028
<input type="checkbox"/>	2014-05-09 15:10:39	176111

Selected snapshot details:

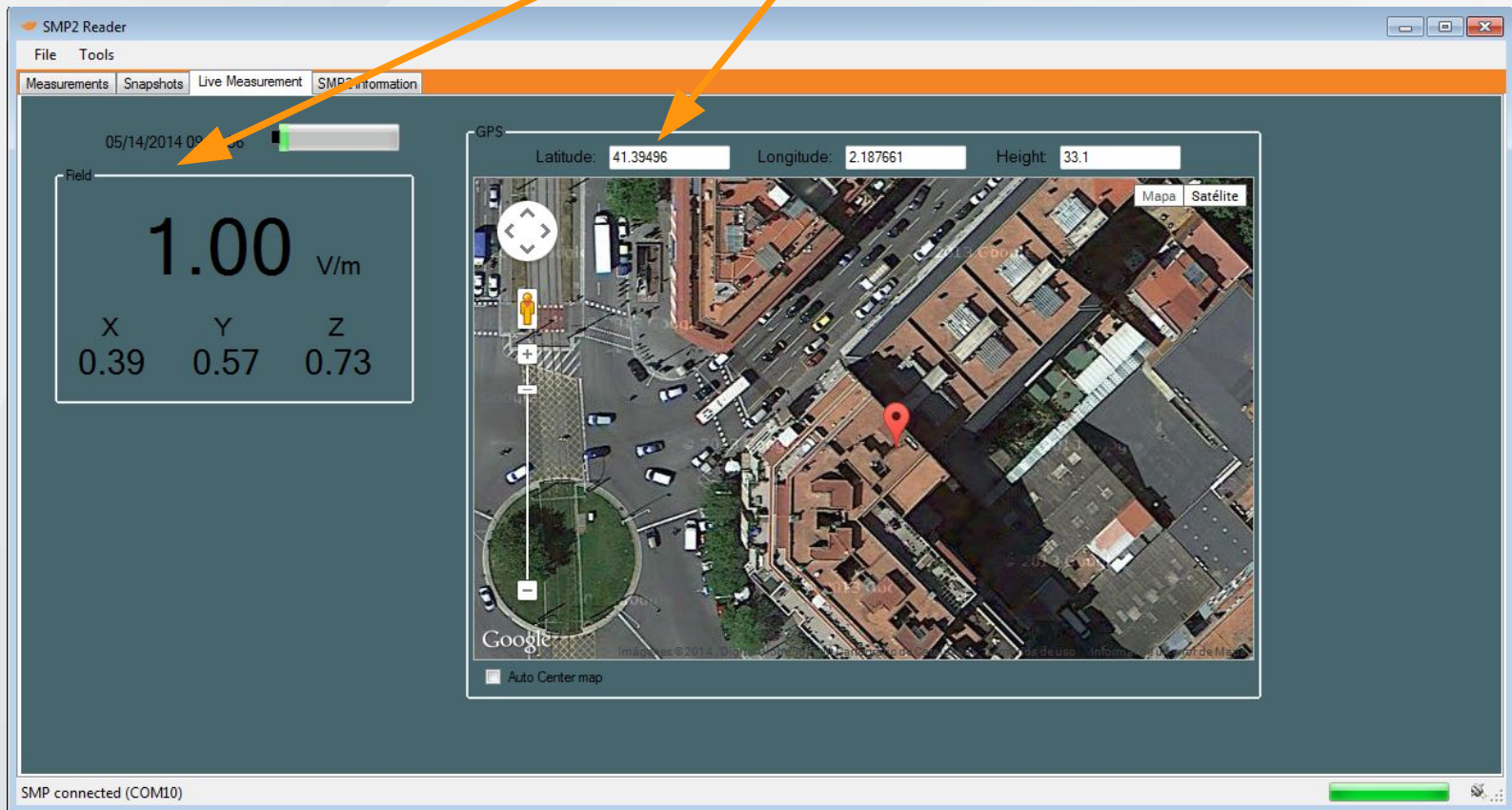
- PROBE: 12WP040276, 100kHz-8GHz
- MEASURE: Avg. 6m Sliding, Max. 1.47, Avg. 0.76, 2 samp./s, Min. 0.64, Logging...
- 0.77 V/m
- X: 0.40 Y: 0.33 Z: 0.56
- GPS: Searching
- Buttons: MENU, STOP, UNITS, RESET

List of snapshots

# SMP2: New software

Instantaneous field lecture

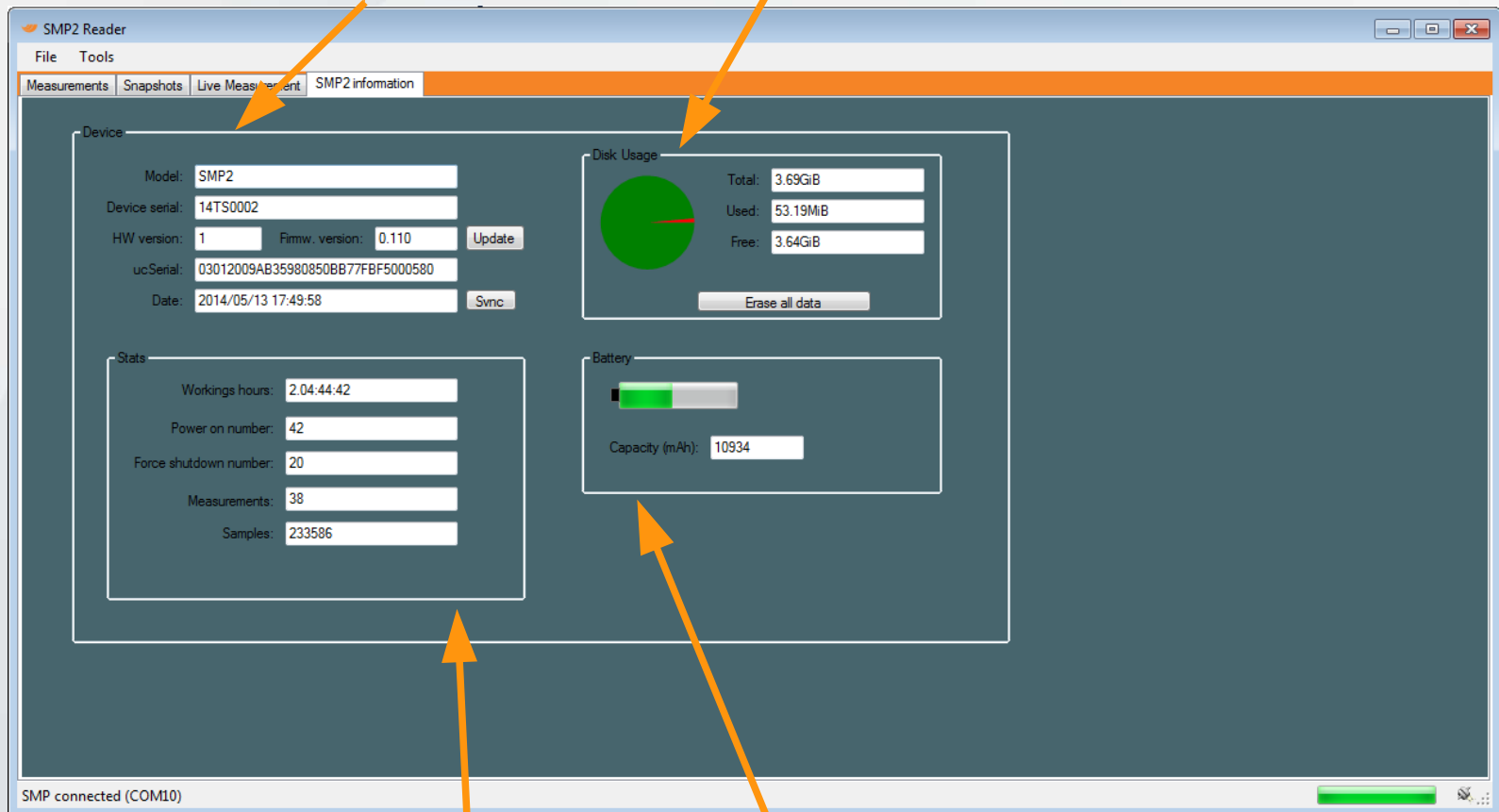
Window to indicate numerical and visual GPS position



# SMP2: New software

Window to show device informations

Window to show disc informations



The screenshot shows the 'SMP2 Reader' application window. The interface is divided into several sections:

- Device Information:** A form with fields for Model (SMP2), Device serial (14TS0002), HW version (1), Firmw. version (0.110), ucSerial (03012009AB35980850BB77FBF5000580), and Date (2014/05/13 17:49:58). There are 'Update' and 'Sync' buttons.
- Disk Usage:** A green pie chart showing disk usage. Text indicates Total: 3.69GiB, Used: 53.19MiB, and Free: 3.64GiB. An 'Erase all data' button is present.
- Stats:** A list of statistics: Workings hours (2:04:44:42), Power on number (42), Force shutdown number (20), Measurements (38), and Samples (233586).
- Battery:** A battery level indicator and a field for Capacity (mAh) showing 10934.

At the bottom left, it says 'SMP connected (COM10)' and there is a green progress bar at the bottom right.

Window to show general device statistics

Battery information

**Thank you**