

# **MPP PROBE**

**Model MPP3wifi**

## **Instruction Manual**



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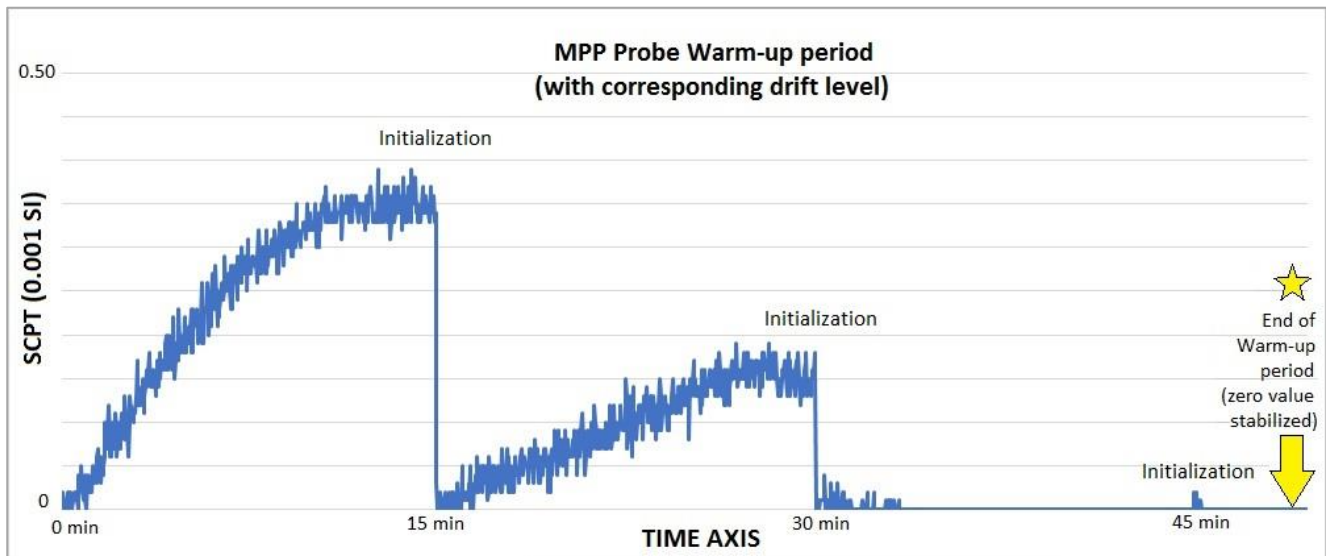
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## WARNINGS: Measure Stability and Battery Discharge

### Measure Stability (Drift)

The MPP3wifi probe is a useful geophysical instrument that will help you to get the information that you need to design an appropriate geophysical survey. In order to obtain stable values (which should be around 0) and avoid signal drift, **it is highly recommended to leave the probe ON during one hour before taking the first measurement.** After one hour, you must re-initialize the probe and then, you are ready to take measurements. To minimize the drift once you have started to take measurements, you should initialize the probe every 1, 5, 10 or 15 minutes. By default, the option 1 minute between every initialization is activated.



If you prefer to take measurements right after turning on the probe, we suggest that you initialize the probe every minute or, for best results, before each reading for the first 30 to 60 minutes.

This preventive procedure decreases the risk to take erroneous values that would be caused by weather variations or by other external causes that lead to a drift of the instrument. It is therefore very important to often re-initialize in order to maintain the «0» base value used in the calculation of the displayed values. Please take note that the values are much more stable after 20 minutes and are completely stable after 50 to 60 minutes.

### Battery Discharge

**\*\*\* When the level of the AA batteries charge is low, readings may become inaccurate and you may not be able to initialize the probe.**

The specifications described in this Instruction Manual are valid at temperatures between 0°C and 70°C. At temperatures lower than 0°C, some specifications, such as the batteries life, may differ.

## 1. Introduction

Thank you for choosing the MPP3wifi Multi Parameter Probe developed by Instrumentation GDD inc. to help you optimizing your prospecting efforts. This probe will help you to better determine the nature, the exact position as well as the intensity of magnetic/conductive horizons along your cores and samples. The simplicity of the measurement process and the automatic recording will allow you to easily obtain conductivity and magnetic susceptibility profiles corresponding to the core.

Here are the key benefits of the MPP3wifi probe:

- It provides you the ability to measure at all time the magnetic susceptibility with or without the presence of a conductor.
- Our software allows to measure in continuous mode using a time base with specific lengths of your choice.
- The new MPP web interface allows users to control the MPP probe through a web application from any device having a web browser (laptop computer, smartphone, tablet, etc.). The data are stored in the probe itself and the project files can be recalled.

The conductivity values yielded by the MPP probe are generated from our Frequency-Domain EM inbuilt system. The presence of conductive material in your core or rock sample will induce an EM response if:

- 1- It is composed of conductive minerals;  
*Refer to the literature to learn more about the electrical properties of different minerals, soils, materials... In general, the EM conductivity of pyrite < magnetite < chalcopyrite < pyrrhotite.*
- 2- Those conductive minerals are interconnected, generating a significant volume;

Note that a small vein of a very conductive mineral may yield a stronger EM conductivity than a large zone of a moderately conductive massive sulphide. In addition, for an equivalent content of conductive material, the MPP probe EM response will be proportional to the conductor's surface. You could try the following experience. *Take an aluminium paper foil (a few cm<sup>2</sup>), put the probe on the sheet and note the intensity of the anomaly. Roll the sheet in a small ball, put the probe on the ball and take the reading again. You will see that the intensity of the anomaly is higher for a larger contact surface even if the substance conductivity and quality are the same.*

The MPP probe represents a useful tool when it comes to plan an airborne, ground or borehole EM survey allowing one to validate whether or not the exploration target is conductive (EM) or not.

## 2. Equipment List

When purchasing/renting a GDD MPP probe, model MPP3wifi, ensure that it contains the following elements:

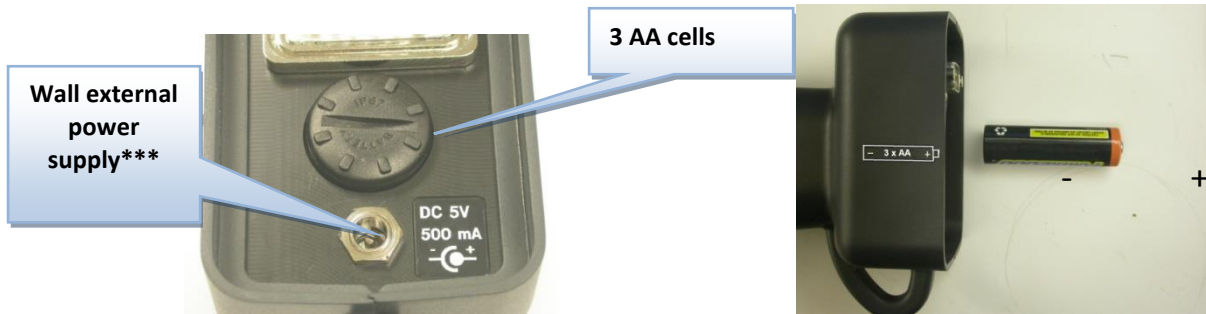


1. One (1) MPP3wifi probe
2. Four (4) rechargeable AA batteries with charger
3. One (1) set of international adapters for AA batteries charger
4. One (1) MPP wall power supply with international plug kit (universal voltage)
5. One (1) USB/serial adapter
6. One (1) standard serial communication cable
7. One (1) MPP Instruction Manual
8. One (1) MPP utilities CD-ROM / USB Stick
9. One (1) black carrying box

### 3. Batteries

#### 3.1 Supplying power to the probe

It is possible to power the MPP probe using three (3) AA batteries or the wall power supply included with the MPP set.



**\*\*\* The use of another power supply than the one provided by GDD could damage the probe.**

#### 3.2 Battery level indicator

When the probe is powered with AA batteries, it is important to verify that their capacity is sufficient. Press and hold the BI button located at the side of the probe to turn on the lights.



#### Lights signification:

| Lights on          | Status   | Time remaining **    |
|--------------------|--|----------------------|
| Red, yellow, green | The batteries are fully charged                          | 2 to 8hours          |
| Red, yellow        | The batteries are partially discharged                   | 0.5 to 2 hours       |
| Red                | The batteries are not enough charged to supply the probe | less than 30 minutes |
| No lights on       | The batteries are absent or totally discharged           | 0                    |

\*\* This information is an approximation only. The time remained depends of the type of cells and the operating conditions.

### 3.3 Recharging AA batteries

Simply put the AA batteries in the charger and plug it in the wall using the 120 V plug located at the back of the charger or another plug adapter. The AA batteries charger is designed to be used at 50/60Hz – 120/240V.





## 4 Probe buttons and switches

### 4.1 On / Off Switch

Turn on the probe with the On / Off toggle switch.



### 4.2 STAMP and MEM buttons

There are two buttons on the handle of the MPP3wifi probe. These buttons have the same utility as the **STAMP** and **MEMORY** icons of the web application and were designed to facilitate handling. See *Section 11 – Reading Modes* for more details.



### 4.3 BI button



See *Section 3.2 – Battery level indicator* to know how to use this button.

## 5 Using the MPP3wifi with a personal computer, a tablet or a smart phone

The most important advantage with the new MPP3wifi is the possibility to control de probe from any device such as a personal computer, a smart phone or a tablet.

**Important: your device must have a wireless connectivity option to be used with the MPP3wifi. If it is not the case, a USB WLAN adapter can be connected to your device. Also, the MPP application may not work on old OS versions.**

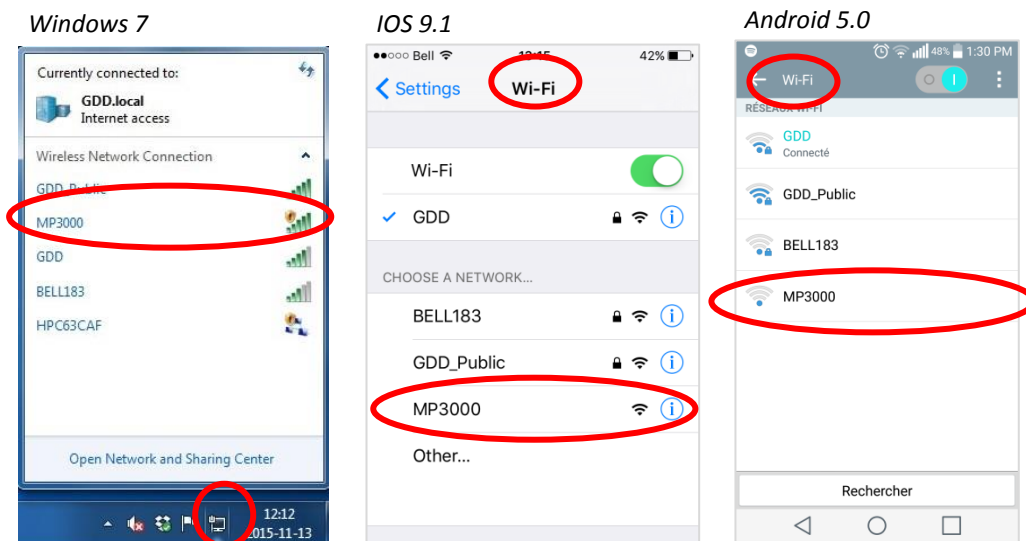
The MPP3wifi probe emits a Wi-Fi® signal enabling any device with a web browser to connect to the MPP3wifi web application. Internet access is therefore not needed. If using a smart phone in a remote environment, it is recommended to set it to *Plane mode* with Wi-Fi manually enabled to disable the roaming fees.

The MPP3wifi application is a web interface available at this IP address: 192.168.1.115.

The web application is compatible with most of the web browser: Explorer, Chrome, Mozilla, Firefox and Safari. The MPP3wifi application **is not compatible with Windows Mobile or Windows Embedded Handheld**. The recorded data are saved in the MPP3wifi probe itself. It is possible to read and record the data using one device and download the saved files with another device later.

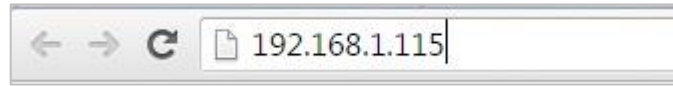
### 5.1 Connecting your device to the MPP3wifi web application

1. Power up your MPP probe.
2. Open the Network Connection manager of your device. Select the MPP network (corresponding to the serial number of your MPP probe).



Refer to the user's guide of your device to know how to select a network.

3. Open a web browser and enter the IP address 192.168.1.115 in the address bar.



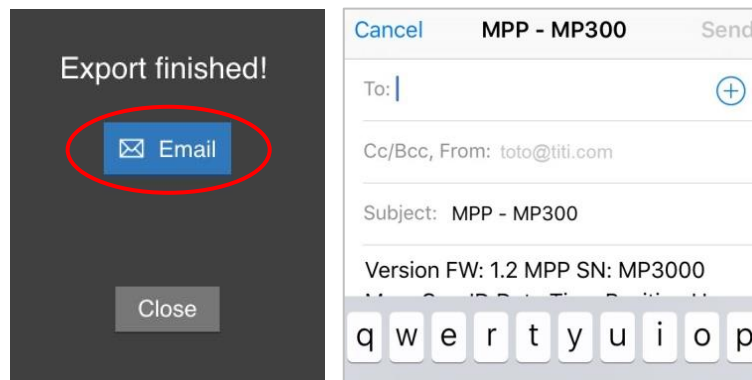
4. The MPP web application appears.

## 5.2 Restrictions using IOS (iPhone or iPad)

- We recommend to use *Safari* when using an iPhone with the MPP Probe, the web application is more stable on *Safari* browser than on *Chrome* browser.



- The sound of the MPP web application is not available on iPhone but is enabled on iPad.
- It is not possible to download a file from the MPP web application on IOS (iPhone or iPad). However, when clicking on the download file icon, the data will be converted into an email.

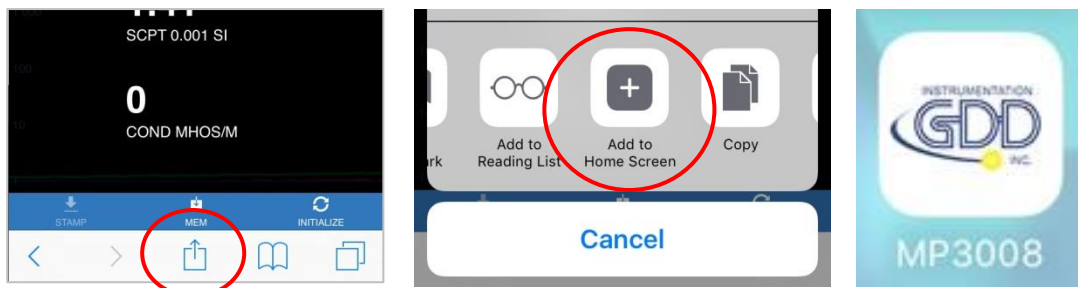


The data are in the body of the message:

```
Version FW: 1.2 MPP SN: MPP3wifi
Mem CoreID Date Time Position U Diameter Half HF_Response Scpt:0.001_SI Cond:Mhos/m
1 1 27/10/2015 09:13:13 1.00 m 25.40 Yes 0 859 0.0
2 1 27/10/2015 09:13:24 2.00 m 25.40 Yes 0 16.0 0.0
3 1 27/10/2015 09:13:43 3.00 m Wall 200 0.00 60183.7
4 1 27/10/2015 09:14:02 4.00 m Wall 180 87.2 3497.8
5 1 27/10/2015 09:14:10 5.00 m Wall 40 0.87 963.9
6 1 27/10/2015 09:14:20 6.00 m Wall 1000 0.00 60537.8
7 1 27/10/2015 09:14:46 7.00 m 25.40 Yes 500 55.8 61977.5
8 1 27/10/2015 09:15:01 8.00 m Wall 0 955 0.0
9 1 27/10/2015 09:15:09 9.00 m Wall 0 1144 0.0
10 1 27/10/2015 09:15:18 10.00 m Wall 0 934 0.0
11 1 27/10/2015 09:15:32 11.00 m Wall 200 0.00 60122.2
12 1 27/10/2015 09:17:10 12.00 m Wall 1000 0.00 60540.3
13 1 27/10/2015 09:17:44 13.00 m 25.40 Yes 500 55.6 61625.2
14 1 27/10/2015 09:17:59 14.00 m Wall 0 953 0.0
15 1 27/10/2015 09:18:12 15.00 m Wall 0 1138 0.0
16 1 27/10/2015 09:18:23 16.00 m Wall 0 952 0.0
17 1 30/10/2015 10:28:00 14.00 m Wall 1 0.67 0.0
18 1 30/10/2015 10:28:01 15.00 m Wall 1 0.81 0.0
19 1 30/10/2015 10:28:02 16.00 m Wall 1 0.87 0.0
20 1 30/10/2015 10:28:06 17.00 m Wall 1 1.22 0.0
```

Considering the files are saved in the probe itself, it is also possible to connect the probe to another device and download all the files later.

- When using an iPhone, the status bar and the toolbar of the web browser still appear in front of the MPP3wifi application. To prevent this, we recommend to create a MPP application icon on the main screen.



## 6. Quick Start

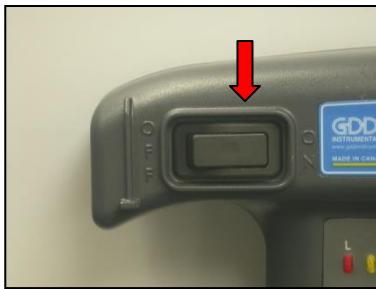
1. Insert three (3) fully charged AA batteries into the probe.
2. Turn on the probe.
3. Connect your device to the *MPP3wifi* web application using the IP address 192.168.1.115 (*Section 5.1 – Connecting your device to the MPP3wifi web application*).
4. Click on the project settings icon to identify your project and set the parameters (*Section 9 – Settings*).
5. Move away the probe from any conductive or magnetic material (point it in the air) and click on *INITIALIZE*.
6. Take and record readings. (*Section 11 – Reading modes*)
7. Open the *Tools* menu and click on *Memory* to export your saved file (*Section 10 - Toolbar*).

## 7. Starting

\*\*\* It is highly recommended to leave the probe ON during one hour before taking the first measurement.



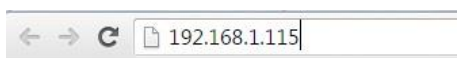
1. Turn and pull the cap of the battery holder, and insert 3 AA batteries into the probe. Push and turn the cap to close it. Or, plug the wall external power supply in the power jack.



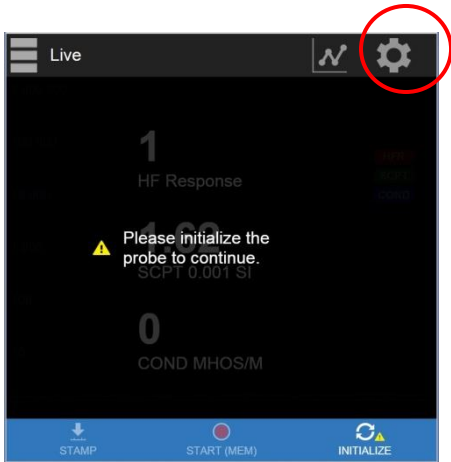
2. Turn on the probe with the On/Off switch placed on the right side of the probe.



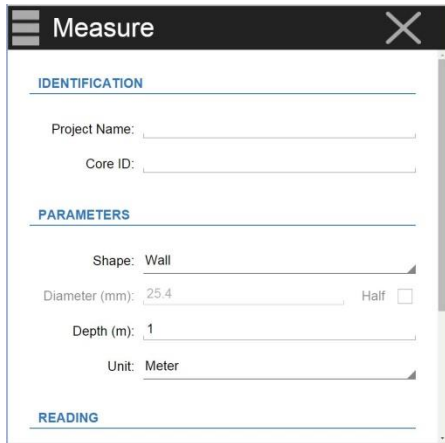
3. Connect your device (smart phone, tablet or computer) to the MPP Wi-Fi<sup>®</sup> network (corresponding to the serial number of your MPP3wifi).



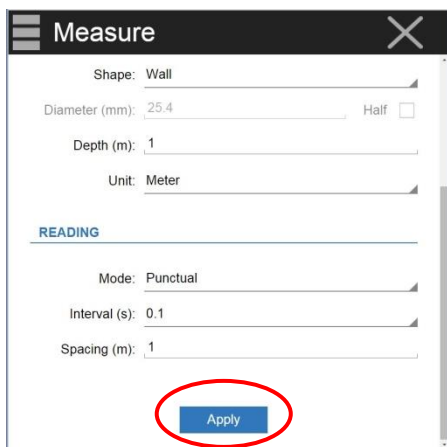
4. Open a web browser and enter the IP address 192.168.1.115 in the address bar.



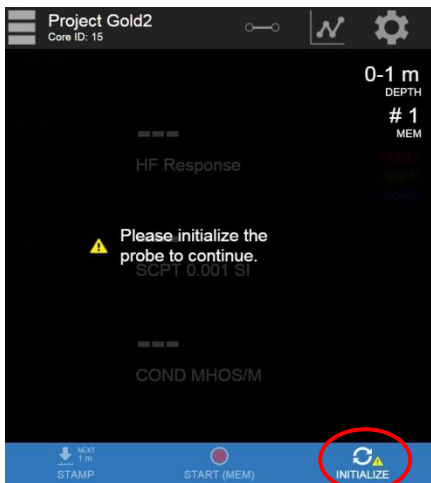
5. Open the *Settings* menu to set the parameters of your project. You can also open an existing project or use the probe in *Live* mode (saving option disabled).



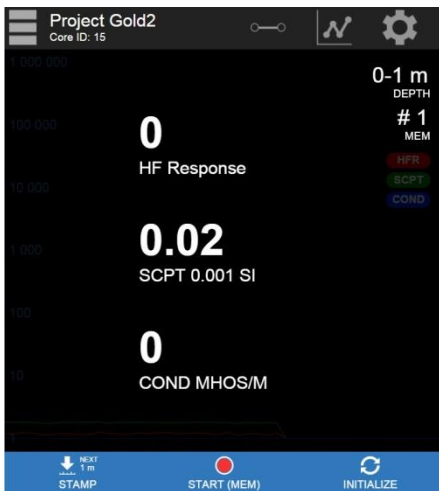
6. Enter the name of your project, the number or the name of the core sample, the shape of the core sample, the starting depth and the measurement unit of the parameters.



7. Set the reading mode (*Punctual* or *Continuous*), the *interval* between two recordings (for the *Continuous* mode only) and the *spacing* between two stamps (for both modes). Click *Apply* when finished.



8. Once the setting is completed, come back to the main screen, keep the end of the probe far from metal objects (point it towards the sky) and initialize it by clicking *INITIALIZE*.



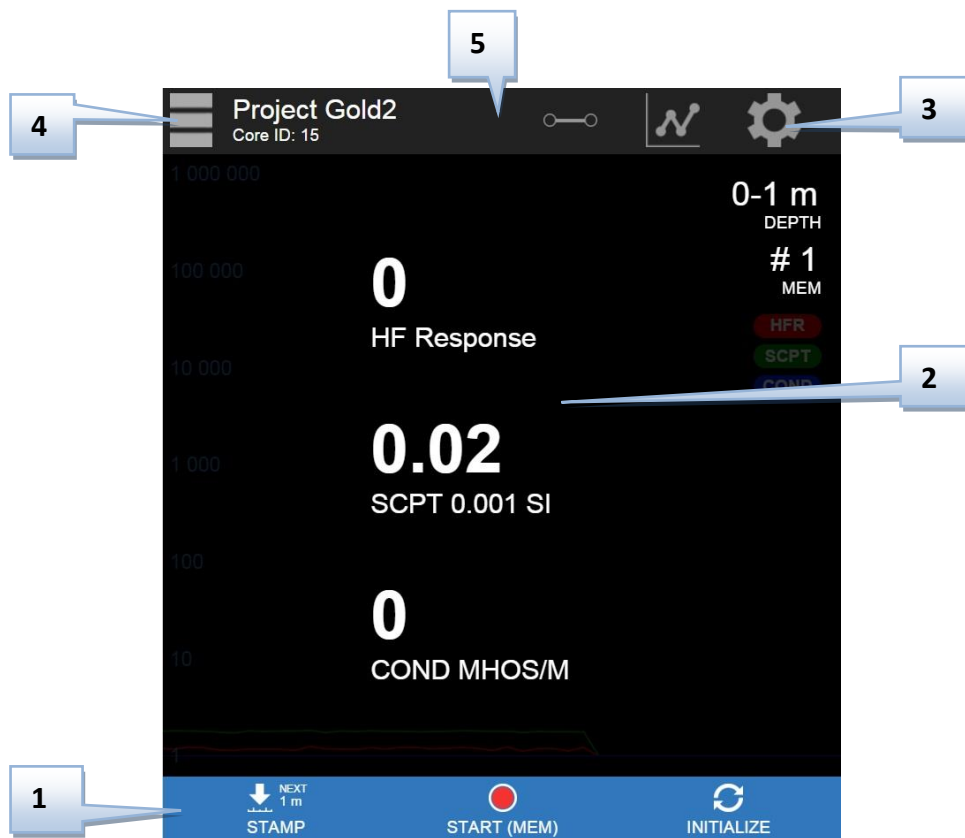
9. The reading screen appears. You are ready to take readings according to the reading mode you chose (see *Section 11 – Reading modes*).

If the readings do not appear, see *Section 15 – Troubleshooting*.



## 8. Main screen

The *Main* screen is the main control center of the MPP3wifi web application. It contains the *Control bar* (1), the *Readings section* (2), the *Settings menu* (3), the *Toolbar* (4) and the *Status bar* (5).



Several times per second, the probe measures and displays three (3) physical properties which are:

**HF RESPONSE:** Conductor response measured in Hertz (Hz). It measures high frequency variations. Its value increases with the quantity of conductive material in the sample. It decreases with the distance between the probe and the sample.

**SCPT 0.001 SI:** Magnetic susceptibility is a constant ( $\times 10^{-3}$ ). SI = International system of units. Its value increases with the quantity of magnetite in the sample and decreases with the distance between the probe and the sample. It is important to note that, with or without the presence of a conductor, the MPP3wifi probe will measure the magnetic susceptibility value at all times.

**COND MHOS/M:** Conductivity measured in MHOS/M. It is independent on the quantity of conductive material in the sample (HF Response) and independent on the distance between the probe and the sample.

In the right upper corner of the *Readings* section, you can find the depth of the next reading (*Punctual* mode) or the depth of the two points between which the readings are currently taken (*Continuous* mode).

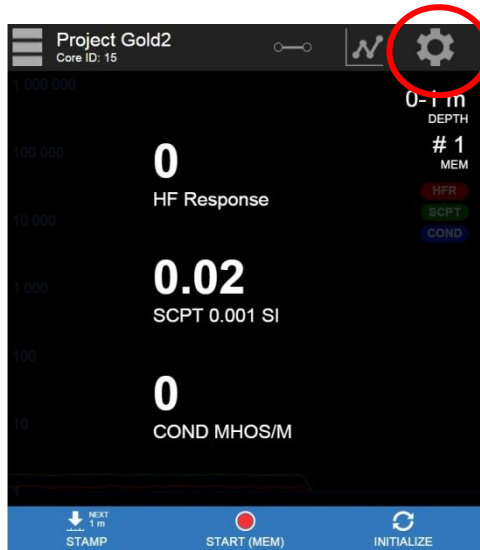


The MEM number corresponds to the number of the last saved reading. Each saved reading and/or marked point (*stamp*) is associated to a memory number.



## 9. Settings

To set the parameters of the project, open the *Settings* menu (settings icon).



The *Settings* window appears :

The 'Measure' settings window is shown with four numbered callouts:

- 1** points to the 'IDENTIFICATION' section, which includes fields for 'Project Name:' and 'Core ID:'.
- 2** points to the 'PARAMETERS' section, which includes 'Shape: Wall', 'Diameter (mm): 25.4' with a 'Half' checkbox, 'Depth (m): 1', and 'Unit: Meter'.
- 3** points to the 'READING' section, which includes 'Mode: Punctual', 'Interval (s): 0.1', and 'Spacing (m): 1'.
- 4** points to the 'Apply' button at the bottom of the window.

## 1: Identification

These fields allow you to identify your project. The *Project Name* is the name of the output file (.gdd file) and the *Core ID* is the name or the number of the sample to be analyzed. The name of each core sample appears in the output file (.gdd file).



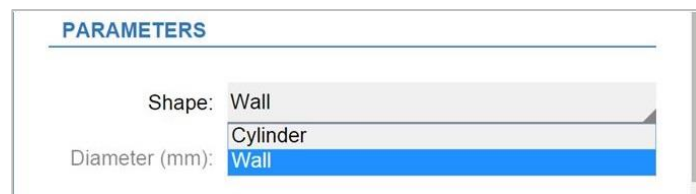
IDENTIFICATION

Project Name: \_\_\_\_\_

Core ID: \_\_\_\_\_

## 2: Parameters

For a flat surface, select *Wall*.



PARAMETERS

Shape: Wall

Diameter (mm): Wall

For a cylindrical core sample, select *Cylinder* and enter the diameter of the core in millimeters. Select *Half* if you have a half core sample.



Shape: Cylinder

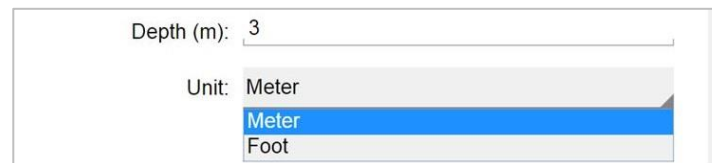
Diameter (mm): 43

Half

Half sample

The *Depth* is the starting depth of the project and where the first reading must be taken/marked. This value increments automatically following the *Spacing* set in the *Reading* section.

The *Unit* is the unit used to measure the depth and the spacing (meter or foot).



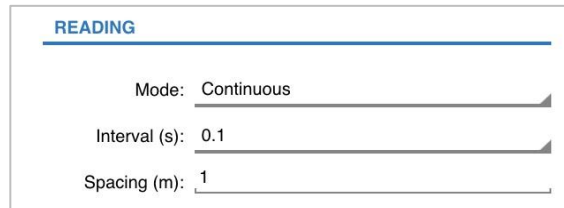
Depth (m): 3

Unit: Meter

### 3: Reading

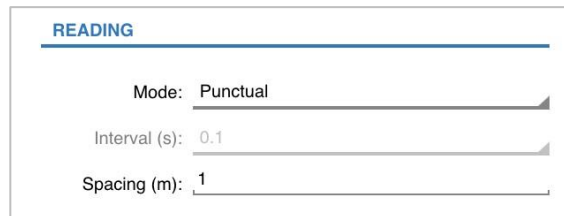
Select the reading mode you want to use: *Punctual* or *Continuous* (see Section 11 – Reading modes) to know how to use these two reading modes.

For the *Continuous* mode, enter the interval of time between two recorded readings. The *Spacing* is the distance between two points marked by pressing the *Stamp* button.



The screenshot shows a menu titled "READING" with a blue underline. Below the title, there are three settings: "Mode: Continuous", "Interval (s): 0.1", and "Spacing (m): 1". Each setting is followed by a horizontal line with a small triangle on the right side, indicating a dropdown or input field.

For the *Punctual* mode, the *Spacing* is the distance between two readings recorded and marked by pressing the *MEM* button.



The screenshot shows a menu titled "READING" with a blue underline. Below the title, there are three settings: "Mode: Punctual", "Interval (s): 0.1", and "Spacing (m): 1". Each setting is followed by a horizontal line with a small triangle on the right side, indicating a dropdown or input field.

### 4: Apply

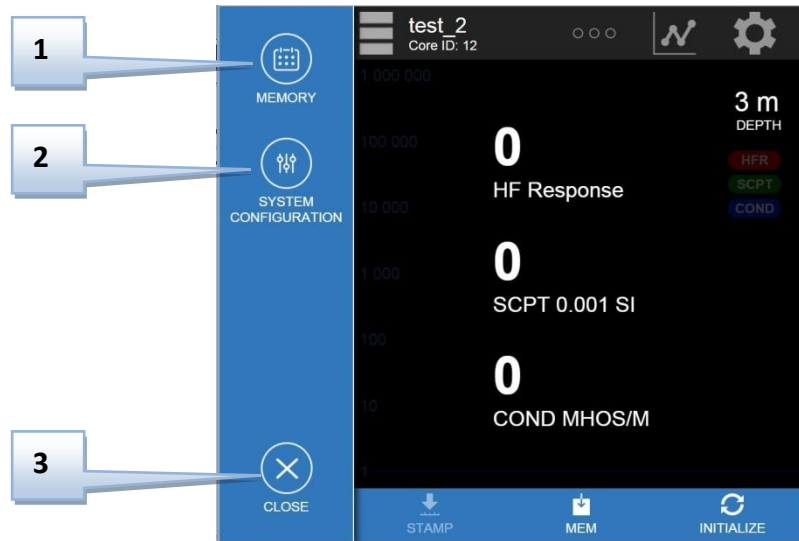
Click *Apply* when you have finished setting the parameters.



## 10. Toolbar

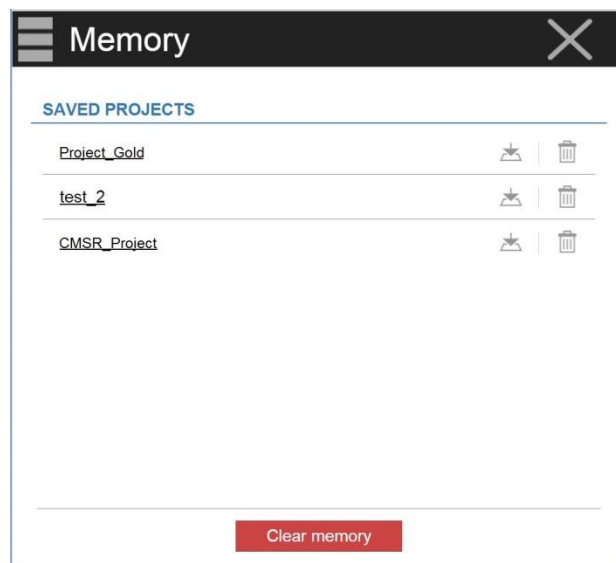
Click on the *Toolbar* icon  to open the *Toolbar*.

The *Toolbar* appears:



### 1: Memory

The Memory window allows visualizing the projects that have been saved on the internal memory of your MPP3wifi probe.



To export a file from the MPP3wifi to your device, click on the *Export File* icon (see *Section 5.2 – Restrictions using IOS* to know how to proceed when using an iPhone).



Example of an exported file (punctual mode for a half core sample with a diameter of 43mm)

| Mem | CoreID  | Date       | Time     | Position U | Diameter | Half | HF_Response | Scpt:0.001_SI | Cond:Mhos/m |
|-----|---------|------------|----------|------------|----------|------|-------------|---------------|-------------|
| 1   | 2015-01 | 01/10/2015 | 16:36:42 | 3.00 m     | 43.00    | Yes  | 14          | 6.07          | 50688.4     |
| 2   | 2015-01 | 01/10/2015 | 16:36:48 | 4.00 m     | 43.00    | Yes  | 14          | 6.16          | 49970.2     |
| 3   | 2015-01 | 01/10/2015 | 16:36:50 | 5.00 m     | 43.00    | Yes  | 14          | 6.14          | 50744.9     |
| 4   | 2015-01 | 01/10/2015 | 16:36:51 | 6.00 m     | 43.00    | Yes  | 14          | 6.20          | 50104.7     |

To delete one saved project, click on the trash bin icon on the same line of this project. **Note that if you delete a project, it is not possible to reload it on the probe later on.**



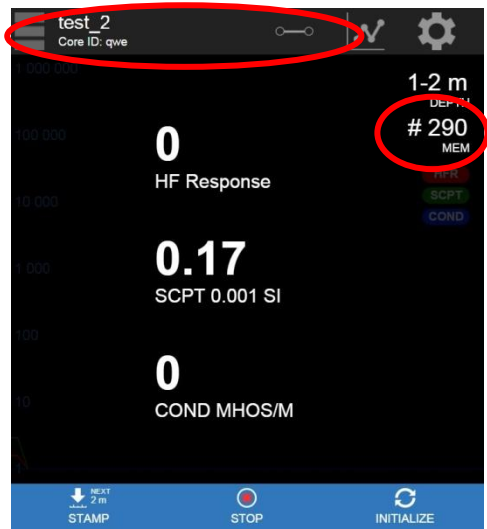
To delete all projects, click on *Clear memory*.



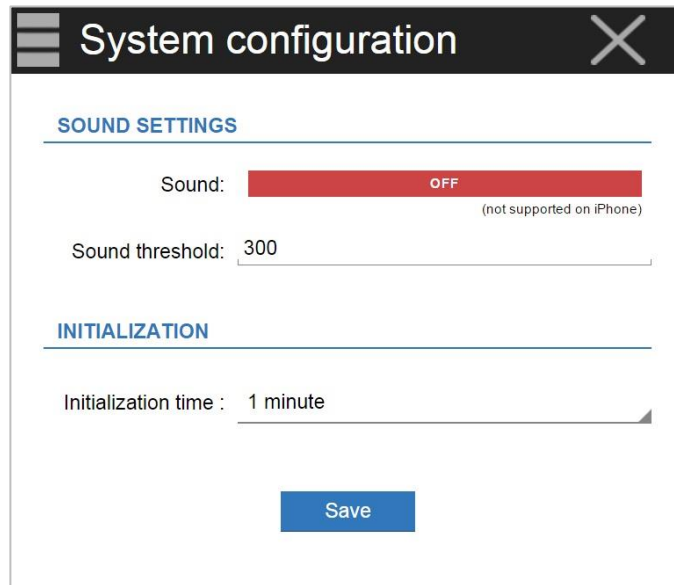
It is also possible to open a saved project in order to continue to record readings on an existing project. Click on the name of the project to import it on the main screen.



All settings of the project are automatically imported as the current settings and the number of memories already saved in this project appears on the main screen.



## 2: System configuration

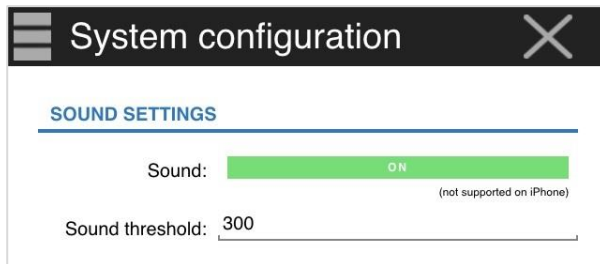


The screenshot shows a 'System configuration' window with a dark header and a white body. The 'SOUND SETTINGS' section has a red 'Sound' bar labeled 'OFF' with '(not supported on iPhone)' below it, and a 'Sound threshold' input field set to '300'. The 'INITIALIZATION' section has an 'Initialization time' input field set to '1 minute'. A blue 'Save' button is at the bottom.

### Sound Settings

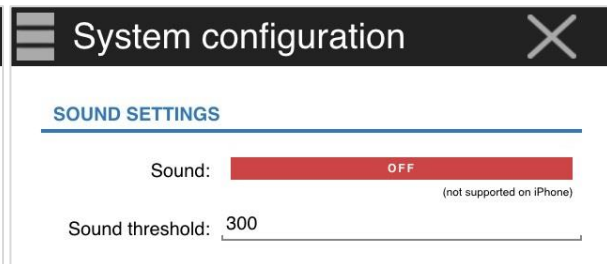
This window allows activating or deactivating the sound you hear when a conductive material is detected. Click on the *Sound* bar to activate (green) or deactivate (red) the sound. You can set a threshold detection value associated to the HF RESPONSE. For values higher than the threshold value, the instrument will beep. The default threshold is set to 300. **Take note that this feature is not supported on iPhone.**

*Sound activated*



This screenshot shows the 'System configuration' window with the 'Sound' bar turned green and labeled 'ON'. The 'Sound threshold' is set to '300'. The text '(not supported on iPhone)' is visible below the bar.

*Sound deactivated*



This screenshot shows the 'System configuration' window with the 'Sound' bar turned red and labeled 'OFF'. The 'Sound threshold' is set to '300'. The text '(not supported on iPhone)' is visible below the bar.



## Initialization

The INITIALIZATION is the operation that restores the readings to zero.

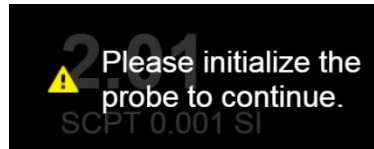
**Remember: it takes at least 60 minutes for the probe to warm-up.** Before that time is reached, you should initialize the probe every minute or before each reading. After the probe is properly warmed up, it is possible to set a longer time between two initializations. The default time is one minute. Otherwise, you could also set the time for either 5, 10 or 15 minutes.



After one minute (or else if you have changed the initialization time), a warning signal flashes to indicate that you need to initialize the probe.



You have 30 seconds to initialize the probe from the moment the warning signal begins to flash, then the probe stops to take measurement and ask to initialize before continuing.



Click on *Save* to save the system configuration.



## 11. Reading modes

There are four (4) possible reading modes with the MPP3wifi : *Live*, *Punctual*, *Continuous* and *Graph*.

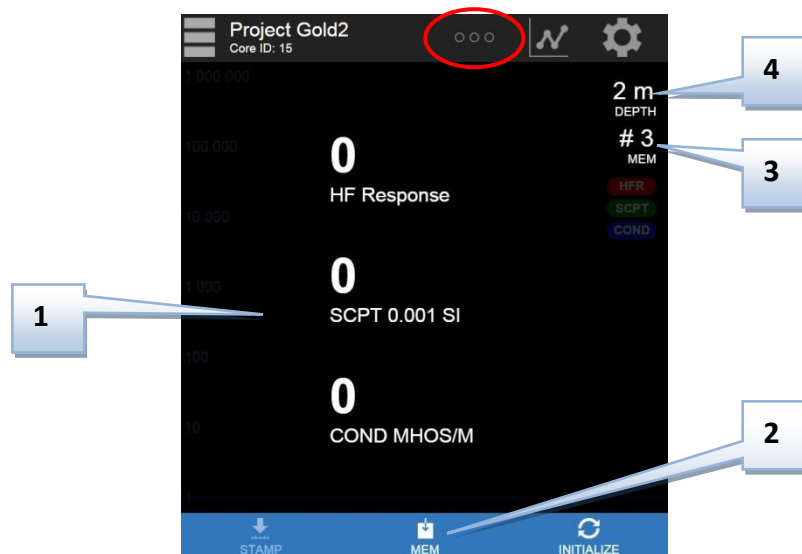
### .1 Live mode

This mode is possible only when the memory of the probe contains no project. This mode allows you to take spontaneous readings without saving. The readings in this mode can be viewed in digital or graphical format (see *Section 11.4 – Graph mode* to know more about the graphical format).



### .2 Punctual mode

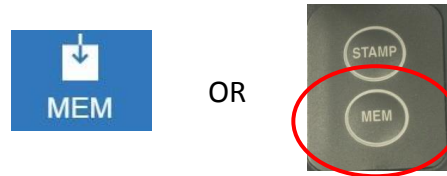
The  symbol indicates that you are in the *Punctual* mode.



#### 1: Readings section

This space shows the values of the readings. If the values increase by themselves (without measurements), initialize the probe to restore the values to zero before taking a new reading (see *Warnings – Measure Stability* at the beginning of this Manual). For more details about the signification of the readings, see *Section 12 – Readings interpretation*.

## 2: MEM icon/button



To record a reading, click on the *MEM* icon or press the *MEM* button of the probe. The depth shown in *Depth* section will increase according to the *Spacing* set in the *Settings* menu after each time the *MEM* button is pressed.

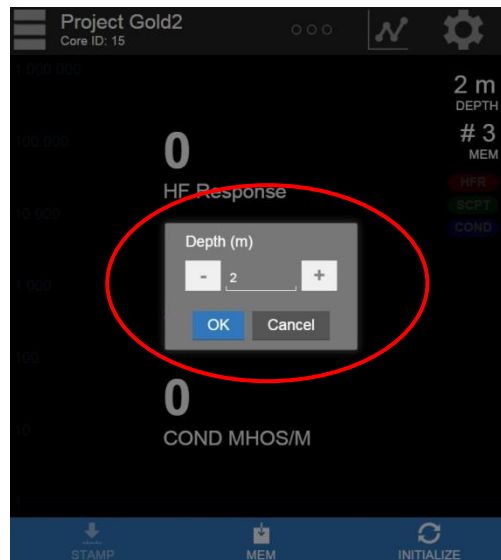
**Take note that in the *Punctual* mode, the *STAMP* icon (or *STAMP* button of the probe) is not activated. The *MEM* function records AND increments the distance simultaneously.**

## 3: MEM number

This number corresponds to the number of the last saved reading. Each saved reading and/or marked point (*stamp*) is associated to a memory number.

## 4: Depth section

This section shows the depth at which the next reading will be taken and recorded. The first point is the starting *Depth* set in the *Settings* menu. After each reading/recording, the depth increases according to the *Spacing* set in the *Settings* menu. For irregular distances between the readings, it is possible to set the distance manually before each reading by clicking on the *Depth* section and writing the depth in the pop-up window. You have to confirm the new entry by clicking on the *OK* button.





### 5: Initialization warning

By default, this warning icon appears every minute. When it appears, a probe initialization is required. If the probe is not initialized after 30 seconds, the message *Please initialize the probe to continue* will appear and the readings will stop. The readings will resume when the probe will be initialized (you just need to press on the *INITIALIZE* icon). It is possible to change the time between two initializations in the *System Configuration* menu of the *Toolbar* (see *Section 10 - Toolbar*).

### 6: Probe low battery icon


This message indicates that the charge of the AA batteries is not sufficient to supply the probe. The batteries must be replaced. **When the level of the batteries charge is low, the value of the readings could be inaccurate.**

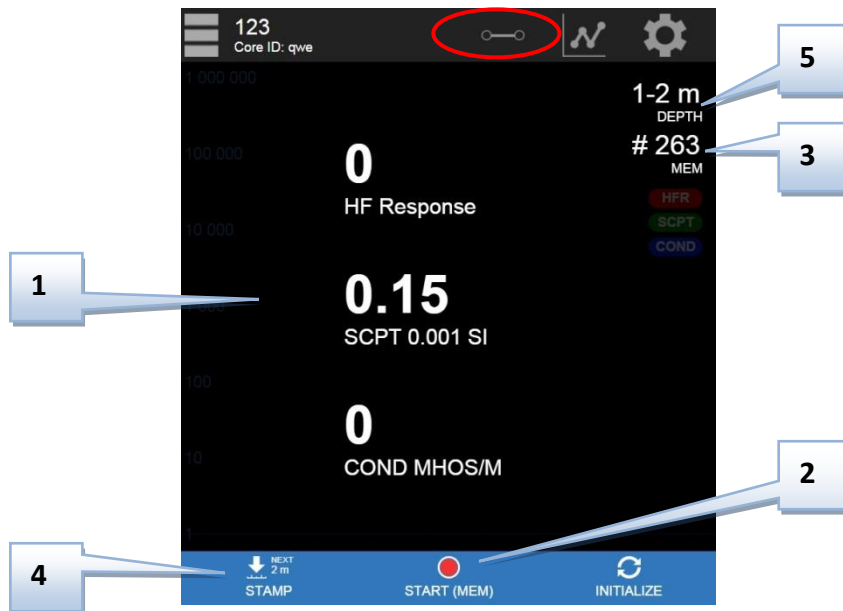
### Recommendations:

- Make sure that the contact between the core sample and the end of the probe is the same for each reading you take. Otherwise, you will obtain different values if you repeat your reading with a different angle or a different position of a couple of millimetres (see *Section 12 - Readings interpretation*).

### .3 Continuous mode

In this mode, the readings are recorded automatically according to the recording frequency you need (every second, every five seconds, etc.). Marking different positions along the core sample will help you to have a more accurate graphic (in *Microsoft Excel* software or else).

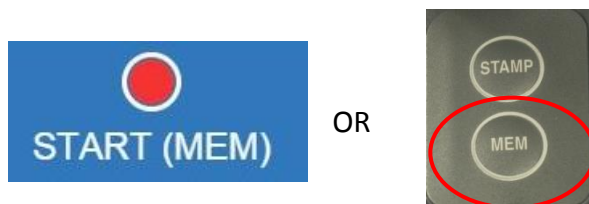
The  symbol indicates that you are in the *Continuous* mode.



#### 1 : Readings section

This space shows the values of the readings. If the values increase by themselves (without measurements), initialize the probe to restore the values to zero before taking a new reading (see *Warnings – Measure Stability* at the beginning of this Manual). For more details about the signification of the readings, see *Section 12 – Readings interpretation*.

#### 2: MEM icon/button



In this mode, the *MEM* button becomes the *START* button on the web interface because the readings are recorded automatically according to the recording frequency you need (*Interval* field in the *Settings* menu: every second, every five seconds, etc.). To start the recording, click on this icon or press the *MEM* button of the probe. **The *MEM* button is not used to record one reading at a time in this mode.** When the recording is activated, the *START* button turns to the *STOP* button. Click on *STOP* or press the *MEM* button to stop the recording.



### 3: MEM number

This number corresponds to the number of the last saved reading. Each saved reading and/or marked point (*stamp*) is associated to a memory number.

### 4: STAMP icon

Use this icon or the *STAMP* button of the probe to mark a position. The positions marked will allow you to create an accurate graph with your data on your personal computer. The more marks that you have, more precise the graph will be (in *Microsoft Excel* software or else). The positions to be marked are defined with the starting *Depth* and the *Spacing* of the *Settings* menu. The *Stamp* icon indicates the point where the next mark must be done.



OR

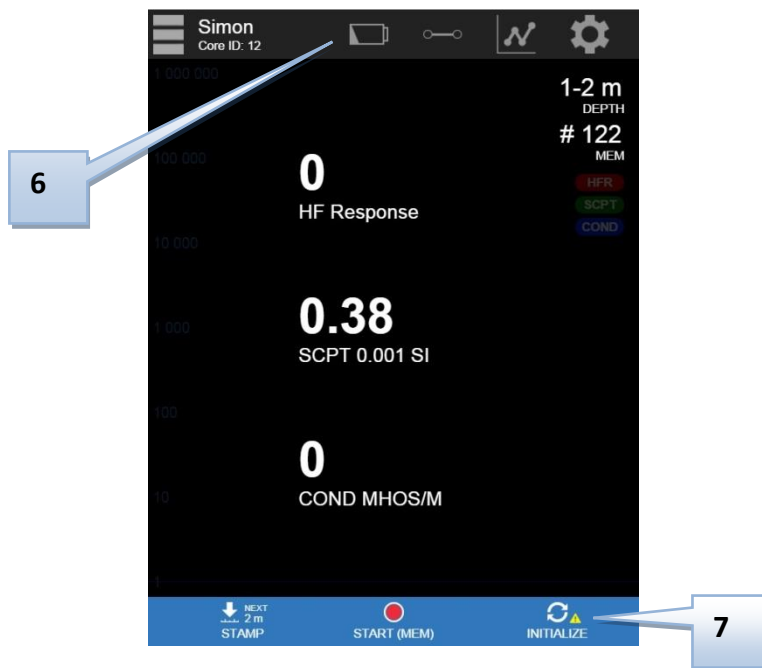
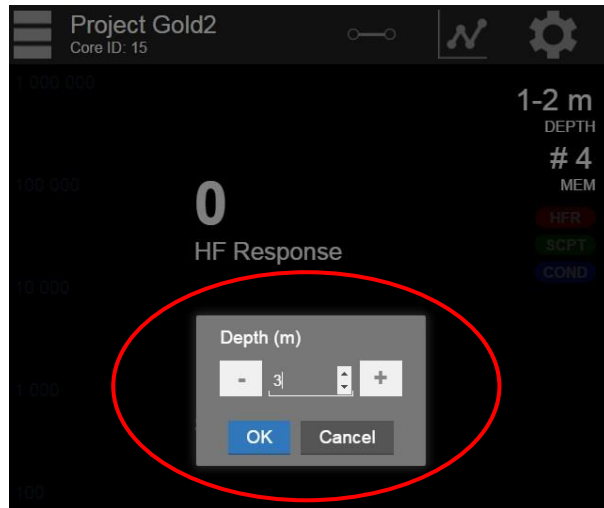


### 5: Depth section

This section shows the interval of the depth where the readings are currently recorded. The first point of the first interval is the starting *Depth* set in the *Settings* menu. The second point of the first interval is the next point to be marked (*stamp*) according to the *Spacing* set in the *Settings* menu. After each *Stamp*, the depth increases according to the *Spacing* set in the *Settings* menu. Then, the first point of the following intervals corresponds to the last *Stamp* and the second point of the following intervals corresponds to the next point to be marked (*stamp*).



If you need to change the value of the next point to be marked, you can click on the *Depth* field and change the first point of the interval manually. **Note that the *Stamp* will mark the second point of the interval and not the first point.** You can also change the starting *Depth* and the *Spacing* in the *Settings* menu (see *Section 9 – Settings*).



## 6: Initialization warning

By default, this warning icon appears every minute. When it appears, a probe initialization is required. If the probe is not initialized after 30 seconds, the message *Please initialize the probe to continue* will appear and the readings will stop. The readings will resume when the probe will be initialized (you just need to press on the *INITIALIZE* icon). It is possible to change the time between two initializations in the *System Configuration* menu of the *Toolbar* (see *Section 10 - Toolbar*).

## 7: Probe low battery icon

This message indicates that the charge of the AA batteries is not sufficient to supply the probe. The batteries must be replaced. **When the level of the batteries charge is low, the value of the readings could be inaccurate.**

### Recommendations:

- Keep a constant speed to move the probe along the core sample to obtain a real output graph, and make sure that the contact between the core and the end of the probe is the same for each reading you take.
- If the conductivity of some points on the core seems to be very high (999999), check if this conductivity is true by reading again slowly the conductivity of these points with the MPP probe.

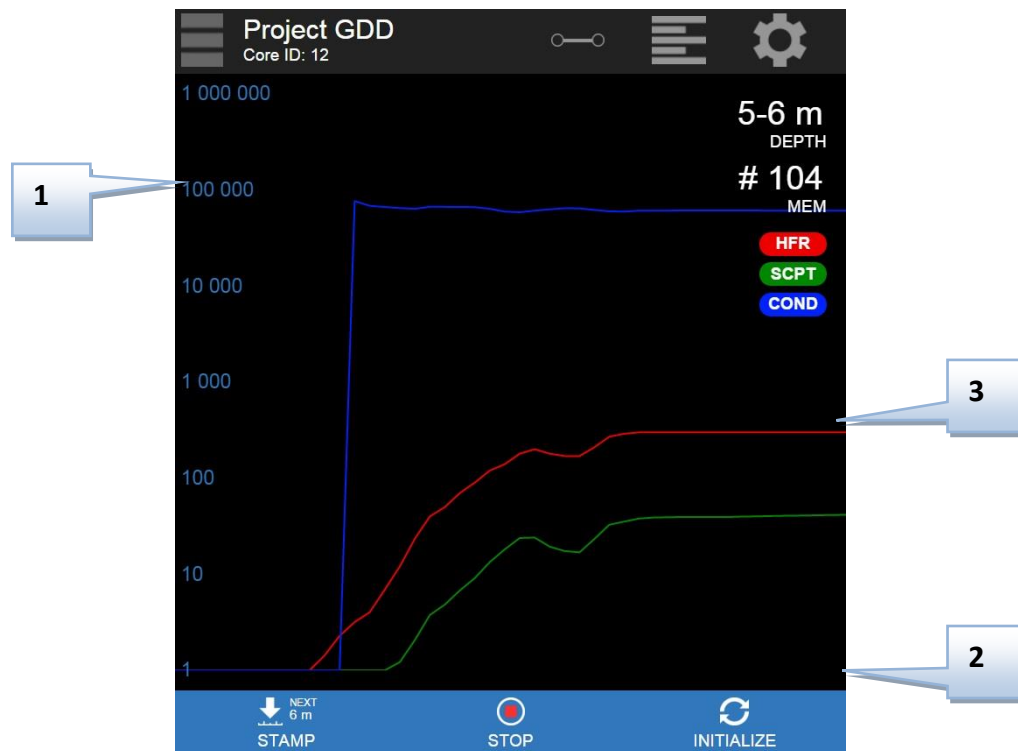


## .4 Graph mode

The *Graph* mode is always accessible from the other three (3) modes (*Live*, *Punctual* and *Continuous*).



The graph mode allows you to visualize the readings graphically in real time. The curves of HF Response, magnetic susceptibility and conductivity are shown simultaneously. All other features (*Control Bar* icons, *Depth*, *# MEM*, etc.) work according to the current mode (*Live*, *Punctual* or *Continuous*). See Sections 11.1, 11.2 and 11.3 for more details.



### 1: Vertical axis

This axis has a logarithmic scale (from 0 to 1,000,000). The axis units are Hertz and MHOS/M. The magnetic susceptibility has no unit but the values shown are  $10^3$  times higher than the real values (i.e. they are plotted in SI instead of  $SI^{-3}$ ).

### 2: Horizontal axis

This axis has a time scale. The curves appear according to the motion of the probe on the core sample.

### 3. Measurement curves

- **RED:** HF Response or HFR (Hertz)
- **GREEN:** Magnetic susceptibility or SCPT ( $10^{-3}$  SI)
- **BLUE:** EM Conductivity or COND (Mhos/m)

### .1 HF/COND Distinction

In the case of conductive sulphides: The HF response provides an indication of sulphides quantity. The Conductivity (Mhos/m) provides an indication of sulphides quality. The conductivity of a small and a large aluminium foil will be similar but the HF response will increase with the size of the aluminium surface.

### .2 Results Signification

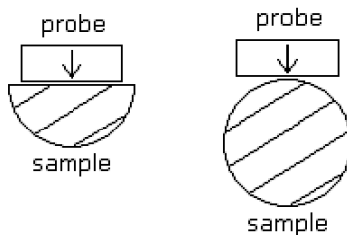
**HF RESPONSE:** the number in this window represents the value of the HF response.

**SCPT 0.001 Magnetic Susceptibility:** the number in this window represents the value of the magnetic susceptibility.

**COND MHOS/M Calculated Conductivity:** it is important to note that in the presence of magnetite in the sample, the MPP3wifi probe may overestimate the conductivity value. In addition, the « > » sign appearing before conductivity value indicates that real conductivity is higher than 999999 S/m. It is recommended to repeat the measurements at those locations after reinitializing to make sure these readings are reliable.

### .3 Sample Shape and Distance

The measured values could depend on the shape of the sample. For an equivalent content of conductive/magnetic ore, the response will increase with an increasing surface of contact. In the same way, the response will decrease with an increasing distance between the probe and the sample, the probe has to be in contact with the sample.



## ➤ MPP3wifi Software update

### .1 Requirements

- PC running on windows equipped with a Wi-Fi® card (or USB WLAN adapter)
- Serial COM port available or a USB-to-Serial adapter
- Standard serial communication cable
- Firmware update file *.hex* (provided by GDD)
- Web pages update file *.bin* (provided by GDD)
- Firmware Downloader tool (provided on GDD)

### .2 Updating the firmware

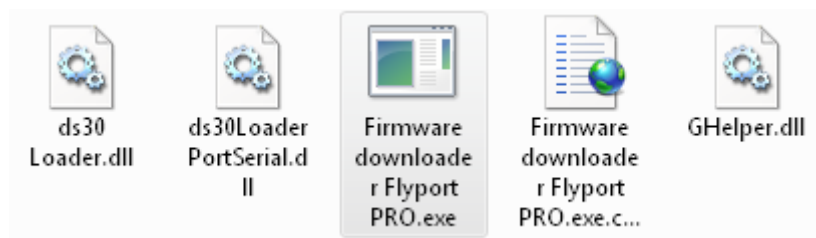
1. Connect the DB9 connector of the probe to a PC using the USB-to-Serial converter (if required) and the serial cable.



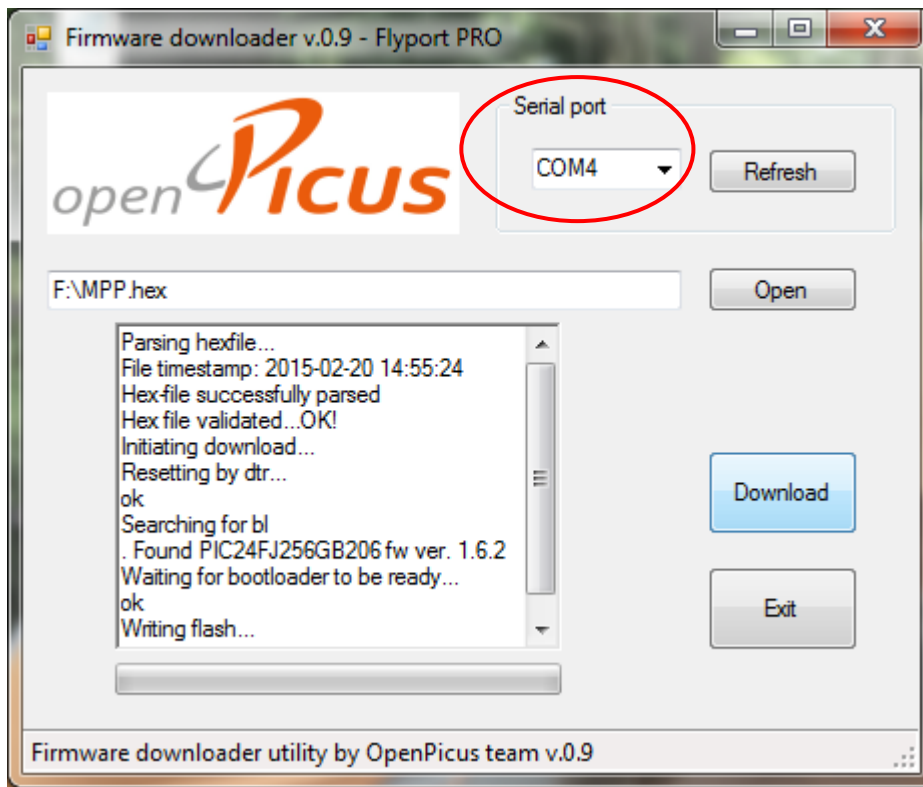
2. Turn ON the MPP3wifi probe.



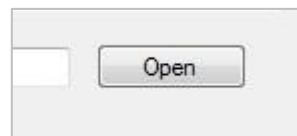
3. Copy the *Firmware Downloader Flyport PRO* tool on your computer and double clic on the program to open it.



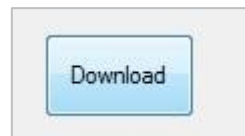
4. In the main window, select the serial port.



5. Click on the *Open* button and select the firmware update file *MPP.hex*



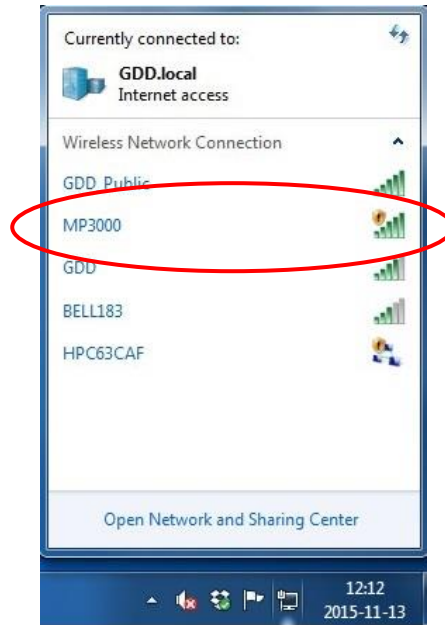
6. Click on the *Download* button



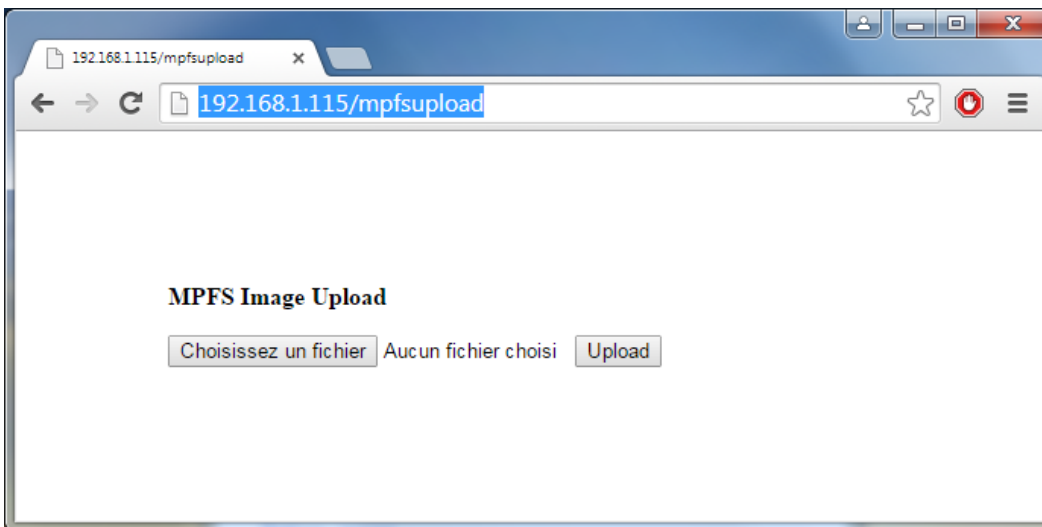
Once finished, the message *Download completed successfully* will be displayed

### .3 Updating the web application

1. Open the *Network Connection* manager, then select the MPP3wifi probe's network and click on *Connect*.



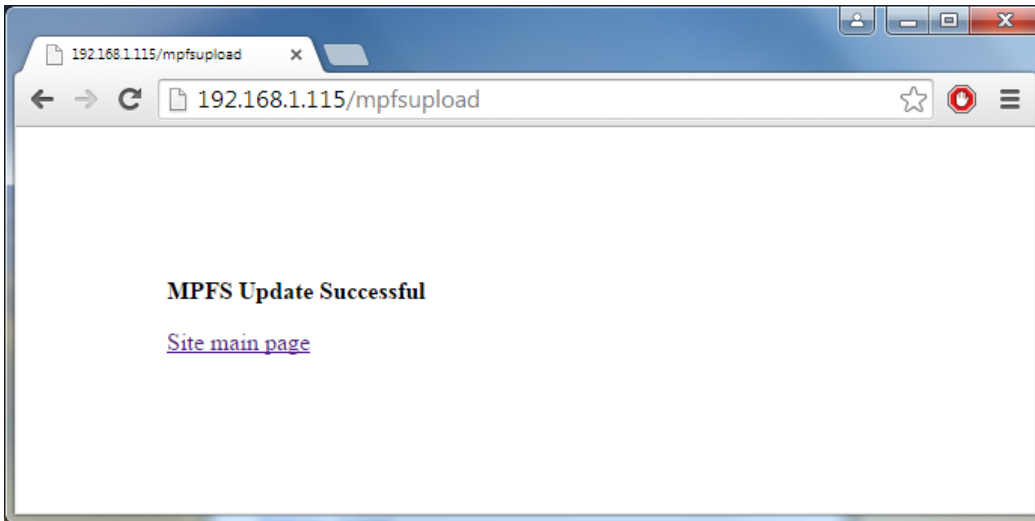
2. Open the web browser and enter the following address in the navigation bar :  
192.168.1.115/mpfsupload



3. Select the web pages *.bin* file and clic on *Upload*



4. The update is completed once this page is displayed



### Important

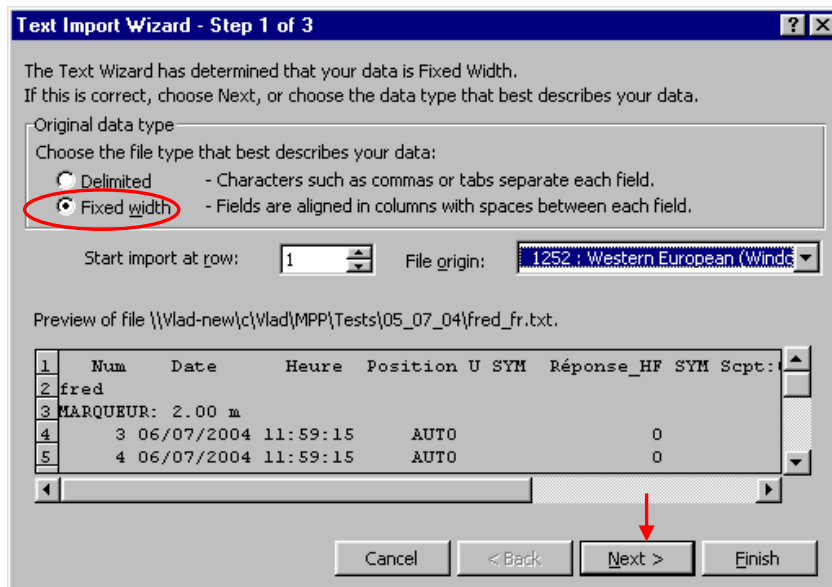
- It is recommended to clear the browser's cache history. Browsers store elements of webpages to speed up the loading of the webpage during your next visit, which could cause improper visualisation of the updated web pages.
- Close all the programs that keep trying to connect to the internet when connected to the MPP Wi-Fi<sup>®</sup> network. Otherwise the application could be very slow or unresponsive.

## ➤ Importing a file in Microsoft Excel

Open the *Microsoft Excel* software.  
In the toolbar, select *File* and *Open*.

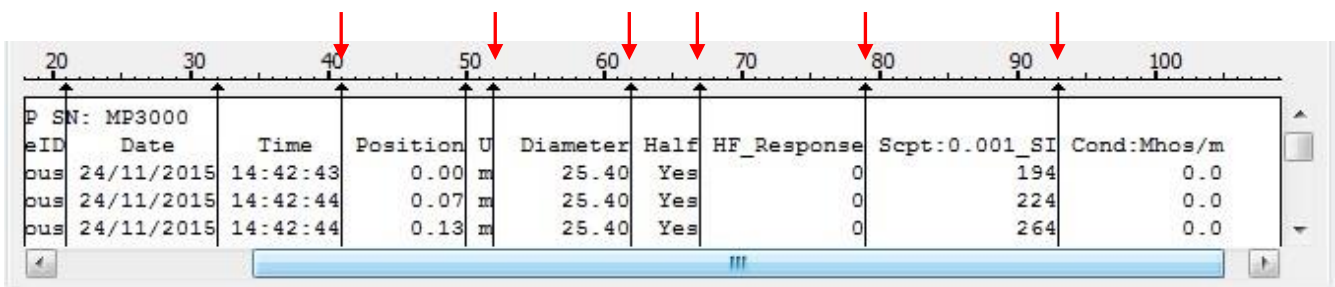
In *Type of files*, select *All Files (\*.\*)*. In *Look in*, you have to localize your file. This is very important in order to find the file you need. The file extension is *.txt*. Then select the file you want to open and click on *Open*.

You should now see *Text Import Wizard – Step 1 of 3*. Select *Fixed width*. Select *Next*.

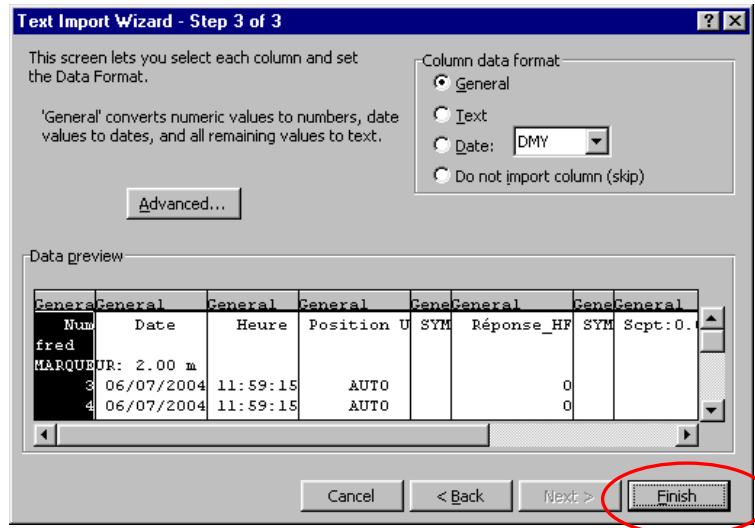


*Text Import Wizard – Step 2 of 3*.

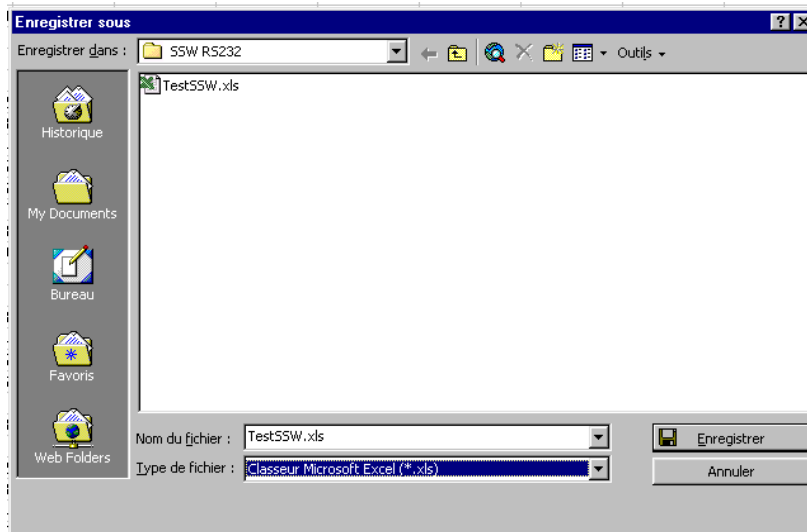
Make sure that break lines separate the different titles. Click *Next*.



Text Import Wizard – Step 3 of 3. Select Finish.



Save your file in Excel format.





### .1 Errors while trying to connect to the MPP3wifi application

#### ➤ **Problem:**

The MPP Wi-Fi<sup>®</sup> Network (MP3XXX) does not appear in the Network Connection manager of my device.

#### ✓ **Solutions :**

- Make sure that the probe is ON.
- Check if AA batteries are sufficiently charged by pushing on the BI button of the probe. If no lights are on or if only the red light is on, replace the batteries or use the external power supply provided by GDD.
- Make sure that Wi-Fi<sup>®</sup> is enabled on your device.

#### ➤ **Problem:**

The MPP Wi-Fi<sup>®</sup> Network (MP3XXX) appears in the Network Connection manager of my device but it is impossible to connect.

#### ✓ **Solutions:**

- Verify if there is another device connected to the MPP3wifi probe. Only one device can be connected at a time with the MPP3wifi probe.
- If there are too many Wi-Fi<sup>®</sup> devices around the MPP3wifi probe, move away from the other devices and try to connect.
- Make sure that AA batteries are sufficiently charged.

➤ **Problem:**

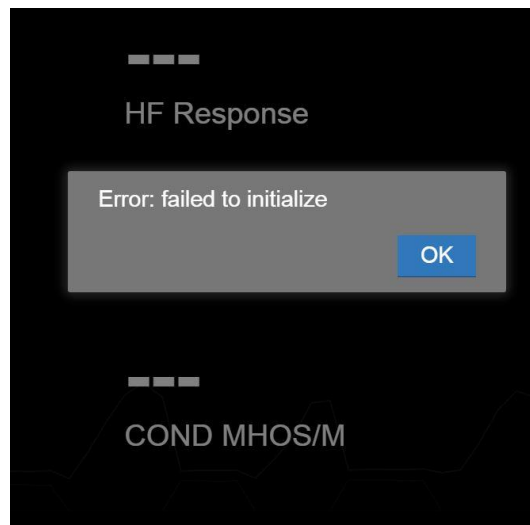
The MPP3wifi application works very slowly.

✓ **Solutions :**

- Close all the programs that keep trying to connect to the internet when connected to the MPP Wi-Fi® network. Otherwise the application could be very slow or unresponsive.

➤ **Problem:**

When trying to initialize the probe, a *failed to initialize* message appears.

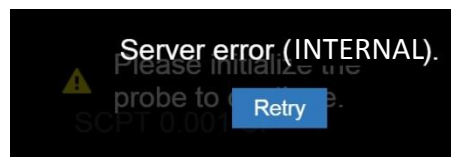


✓ **Solutions :**

- Make sure that your device is still connected to the MPP Wi-Fi® Network.
- If the Wi-Fi® connection stopped to work, make sure that AA batteries are sufficiently charged and that the MPP3wifi probe is still ON.

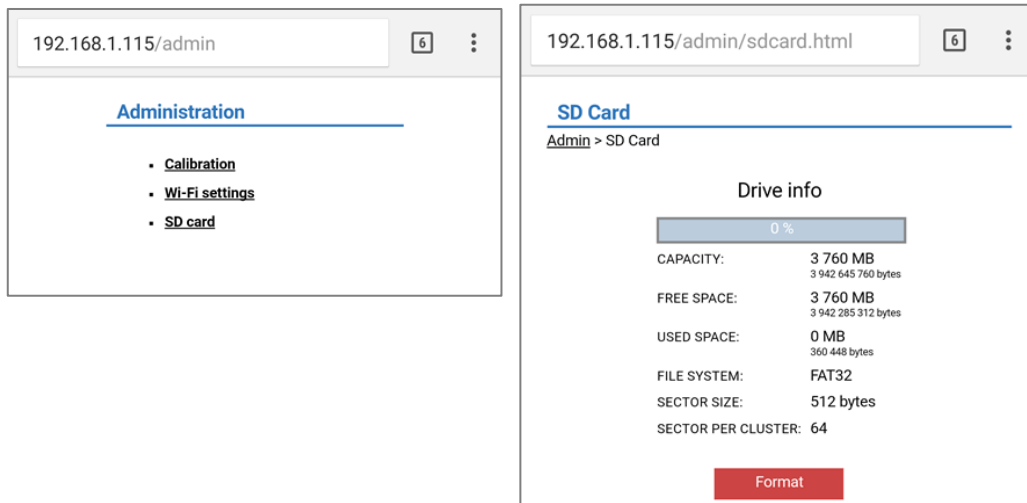
➤ **Problem:**

The message *Server error (INTERNAL)* appears.



✓ **Solutions:**

- Connect your device to the MPP3wifi
- Go to the web address: *192.168.1.115/admin*
- Click on **SD card** and Click on “Format”



**\*\*\* WARNING: This procedure will erase all the data from the MPP3wifi probe \*\*\***

**.2 Errors during the measuring process**

➤ **Problem:**

After initialization, the readings seem to be unstable.

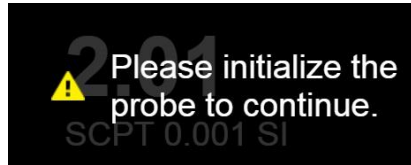


✓ **Solutions:**

- As mentioned in the *Warnings* section at the beginning of this Instruction Manual, it is highly recommended that you leave the probe ON for one hour before taking the first readings.
- If it is impossible to wait for one hour before taking measurement, re-initialize the probe frequently (see *Section 10 – Toolbar*).

➤ **Problem:**

The message *Please initialize the probe to continue* appears during measuring process.

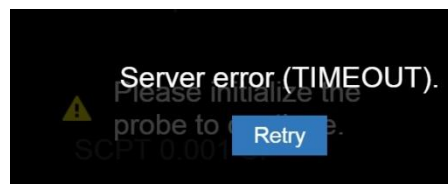


✓ **Solutions:**

- Move away the probe from any conductive or magnetic material (point it in the air) and try to initialize the probe again by clicking on the *INITIALIZE* icon (see *Section 10 – Toolbar*).

➤ **Problem:**

The message *Server error (TIMEOUT)* appears.



✓ **Solutions:**

- This message can appear if there is no activity after a while or if the MPP3wifi probe has been turned OFF accidentally. Click on *Retry* to restart the MPP3wifi application.
- Verify if your device is still connected to the MPP Wi-Fi<sup>®</sup> network, then close the MPP3wifi application and open it again.
- If your device is no longer connected to the MPP Wi-Fi<sup>®</sup> network or if the MPP Wi-Fi<sup>®</sup> network is no longer available, make sure that the MPP3wifi probe is ON and that the AA batteries are sufficiently charged.

**If none of these solutions suggested in the *Section 15 – Troubleshooting* can resolve your problem, contact Instrumentation GDD –Technical Support (see *Section 16 – Technical Support*).**

## ➤ Technical Support

If you encounter a problem not described in this manual, do not hesitate to contact **Instrumentation GDD Inc.** for help at:

Tel.: +1 (418) 877-4249  
Fax: + 1 (418) 877-4054  
Toll free line: 1-877-977-4249 (in Canada)  
e-mail: [support-technique@gdd.ca](mailto:support-technique@gdd.ca) or [gdd@gdd.ca](mailto:gdd@gdd.ca)

Emergency out of business hours:

Home phone: + 1 (418) 657-5870  
Cell phone: +1 (418) 261-5552

Home phone: +1 (418) 658-8539  
Cell phone: +1 (418) 570-3408

Any GDD MPP probe that breaks down while under warranty or service will be replaced free of charge upon request for the duration of repairs, subject to instruments availability, except for shipping charges. This service is subject to instrument availability but we have been able to honour this commitment up to now.

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*Version: manual-MPP3wifi-2017-08-21-EN.docx*

### 17.1 FCC – United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two (2) conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to the MPP3wifi that are not expressly approved by Instrumentation GDD inc. could void the user's authority to operate the equipment.

### 17.2 Industry Canada

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two (2) conditions :

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

### 17.3 Europe

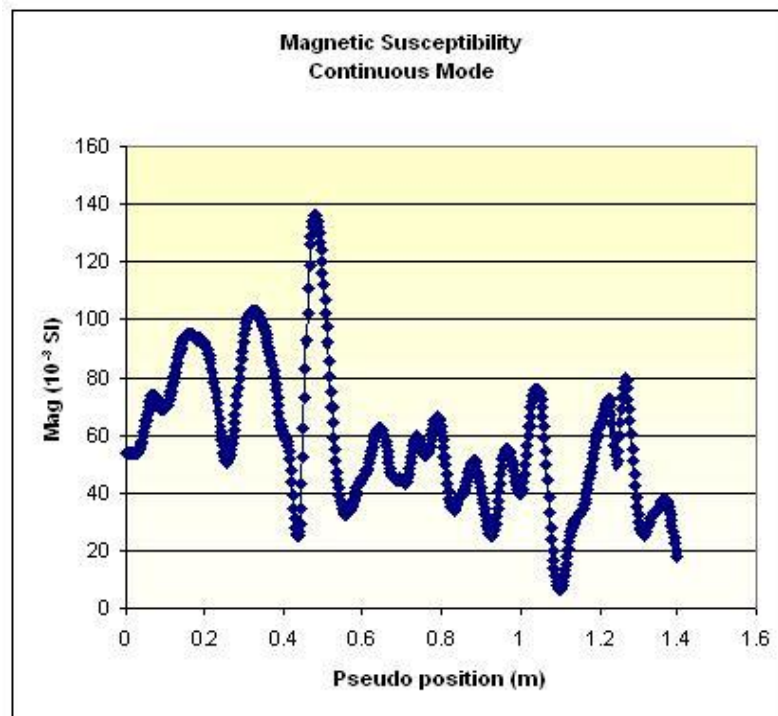
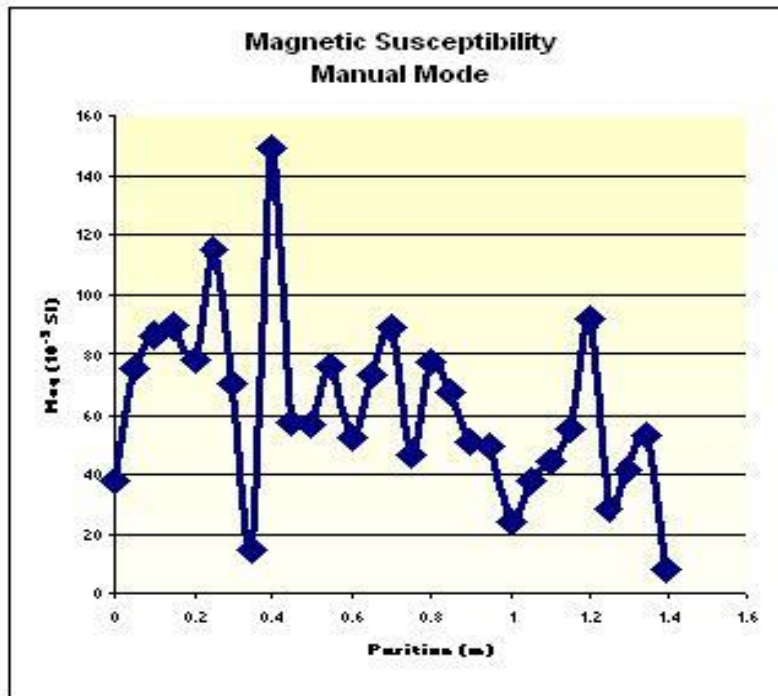
This device contains a transmitter module that conforms to the emission standard EN 300 328 V1.7.1.

## Annex 1 : Example of a Dumped File

| Version       | FW:         | 1.2      | MPP        | SN:      | MP3000   |   |          |      |             |               |             |  |
|---------------|-------------|----------|------------|----------|----------|---|----------|------|-------------|---------------|-------------|--|
|               | Mem         | CoreID   | Date       | Time     | Position | U | Diameter | Half | HF_Response | Scpt:0.001_SI | Cond:Mhos/m |  |
|               | 1           | 2R_1     | 24/11/2015 | 14:42:43 | 0.00     | m | 25.40    | Yes  | 0           | 194           | 0.0         |  |
|               | 2           | 2R_1     | 24/11/2015 | 14:42:44 | 0.07     | m | 25.40    | Yes  | 0           | 224           | 0.0         |  |
|               | 3           | 2R_1     | 24/11/2015 | 14:42:44 | 0.13     | m | 25.40    | Yes  | 0           | 264           | 0.0         |  |
|               | 4           | 2R_1     | 24/11/2015 | 14:42:44 | 0.20     | m | 25.40    | Yes  | 0           | 221           | 0.0         |  |
|               | 5           | 2R_1     | 24/11/2015 | 14:42:44 | 0.27     | m | 25.40    | Yes  | 0           | 107           | 0.0         |  |
|               | 6           | 2R_1     | 24/11/2015 | 14:42:45 | 0.33     | m | 25.40    | Yes  | 0           | 61.6          | 0.0         |  |
|               | 7           | 2R_1     | 24/11/2015 | 14:42:45 | 0.40     | m | 25.40    | Yes  | 0           | 94.5          | 0.0         |  |
|               | 8           | 2R_1     | 24/11/2015 | 14:42:45 | 0.47     | m | 25.40    | Yes  | 0           | 128           | 0.0         |  |
|               | 9           | 2R_1     | 24/11/2015 | 14:42:45 | 0.53     | m | 25.40    | Yes  | 0           | 167           | 0.0         |  |
|               | 10          | 2R_1     | 24/11/2015 | 14:42:45 | 0.60     | m | 25.40    | Yes  | 0           | 177           | 0.0         |  |
|               | 11          | 2R_1     | 24/11/2015 | 14:42:46 | 0.67     | m | 25.40    | Yes  | 0           | 228           | 0.0         |  |
|               | 12          | 2R_1     | 24/11/2015 | 14:42:46 | 0.73     | m | 25.40    | Yes  | 0           | 251           | 0.0         |  |
|               | 13          | 2R_1     | 24/11/2015 | 14:42:46 | 0.80     | m | 25.40    | Yes  | 0           | 288           | 0.0         |  |
|               | 14          | 2R_1     | 24/11/2015 | 14:42:46 | 0.87     | m | 25.40    | Yes  | 0           | 241           | 0.0         |  |
|               | 15          | 2R_1     | 24/11/2015 | 14:42:47 | 0.93     | m | 25.40    | Yes  | 0           | 230           | 0.0         |  |
| <b>STAMP:</b> | <b>1.00</b> | <b>m</b> |            |          |          |   |          |      |             |               |             |  |
|               | 17          | 2R_1     | 24/11/2015 | 14:42:47 | 1.00     | m | 25.40    | Yes  | 0           | 221           | 0.0         |  |
|               | 18          | 2R_1     | 24/11/2015 | 14:42:47 | 1.07     | m | 25.40    | Yes  | 0           | 142           | 0.0         |  |
|               | 19          | 2R_1     | 24/11/2015 | 14:42:47 | 1.14     | m | 25.40    | Yes  | 0           | 182           | 0.0         |  |
|               | 20          | 2R_1     | 24/11/2015 | 14:42:47 | 1.21     | m | 25.40    | Yes  | 0           | 85.0          | 0.0         |  |
|               | 21          | 2R_1     | 24/11/2015 | 14:42:48 | 1.29     | m | 25.40    | Yes  | 0           | 45.2          | 0.0         |  |
|               | 22          | 2R_1     | 24/11/2015 | 14:42:48 | 1.36     | m | 25.40    | Yes  | 0           | 44.6          | 0.0         |  |
|               | 23          | 2R_1     | 24/11/2015 | 14:42:48 | 1.43     | m | 25.40    | Yes  | 0           | 48.1          | 0.0         |  |
|               | 24          | 2R_1     | 24/11/2015 | 14:42:48 | 1.50     | m | 25.40    | Yes  | 0           | 67.8          | 0.0         |  |
|               | 25          | 2R_1     | 24/11/2015 | 14:42:49 | 1.57     | m | 25.40    | Yes  | 0           | 83.9          | 0.0         |  |
|               | 26          | 2R_1     | 24/11/2015 | 14:42:49 | 1.64     | m | 25.40    | Yes  | 0           | 78.0          | 0.0         |  |
|               | 27          | 2R_1     | 24/11/2015 | 14:42:49 | 1.71     | m | 25.40    | Yes  | 0           | 75.2          | 0.0         |  |
|               | 28          | 2R_1     | 24/11/2015 | 14:42:49 | 1.79     | m | 25.40    | Yes  | 0           | 79.6          | 0.0         |  |
|               | 29          | 2R_1     | 24/11/2015 | 14:42:49 | 1.86     | m | 25.40    | Yes  | 0           | 87.7          | 0.0         |  |
|               | 30          | 2R_1     | 24/11/2015 | 14:42:50 | 1.93     | m | 25.40    | Yes  | 0           | 90.7          | 0.0         |  |
| <b>STAMP:</b> | <b>2.00</b> | <b>m</b> |            |          |          |   |          |      |             |               |             |  |
|               | 32          | 2R_1     | 24/11/2015 | 14:42:50 | 2.00     | m | 25.40    | Yes  | 0           | 88.3          | 0.0         |  |
|               | 33          | 2R_1     | 24/11/2015 | 14:42:50 | 2.07     | m | 25.40    | Yes  | 0           | 92.3          | 0.0         |  |
|               | 34          | 2R_1     | 24/11/2015 | 14:42:50 | 2.14     | m | 25.40    | Yes  | 0           | 83.3          | 0.0         |  |
|               | 35          | 2R_1     | 24/11/2015 | 14:42:51 | 2.21     | m | 25.40    | Yes  | 0           | 56.9          | 0.0         |  |
|               | 36          | 2R_1     | 24/11/2015 | 14:42:51 | 2.29     | m | 25.40    | Yes  | 0           | 29.0          | 0.0         |  |
|               | 37          | 2R_1     | 24/11/2015 | 14:42:51 | 2.36     | m | 25.40    | Yes  | 0           | 13.2          | 0.0         |  |
|               | 38          | 2R_1     | 24/11/2015 | 14:42:51 | 2.43     | m | 25.40    | Yes  | 0           | 11.2          | 0.0         |  |
|               | 39          | 2R_1     | 24/11/2015 | 14:42:51 | 2.50     | m | 25.40    | Yes  | 0           | 9.54          | 0.0         |  |
|               | 40          | 2R_1     | 24/11/2015 | 14:42:52 | 2.57     | m | 25.40    | Yes  | 1           | 6.43          | 0.0         |  |

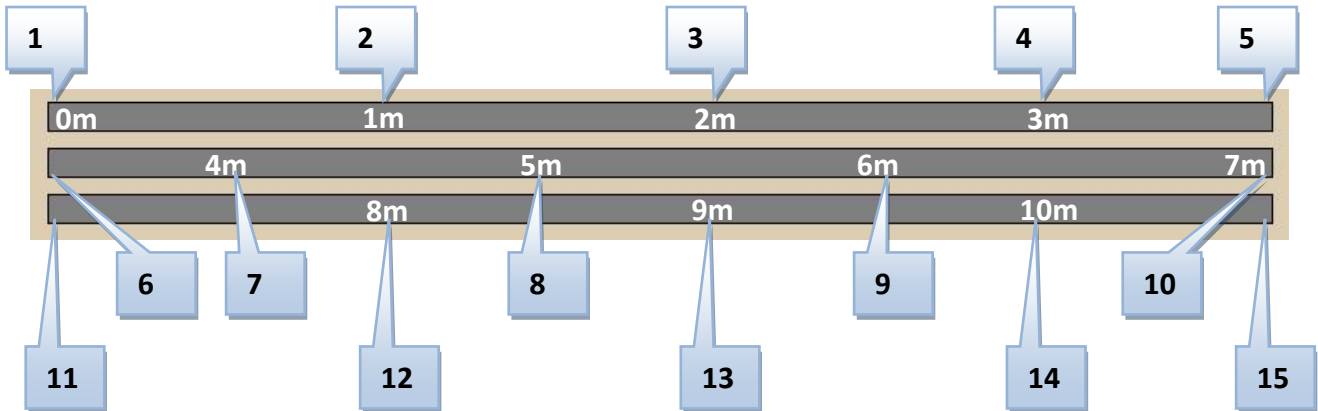
The readings are equally distributed between two marked points (*stamp*) in the *Continuous* mode. This is how the position of each reading is determined and it is thus important to move the probe with a constant speed along the core sample.

## Annex 2 : Graphics from Punctual and Continuous Modes





## Annex 3 : Example of a step by step process in *Continuous* mode



### Settings :

(see Section 9 – Settings for more details)

|                                      |  |
|--------------------------------------|--|
| <b>IDENTIFICATION</b>                |  |
| Project Name:                        | Step_by_Step   |
| Core ID:                             | 3R   |
| <b>PARAMETERS</b>                    |  |
| Shape:                               | Cylinder   |
| Diameter (mm):                       | 25.4 <input type="checkbox"/> Half <input checked="" type="checkbox"/> |
| Depth (m):                           | 0  |
| Unit:                                | Meter  |
| <b>READING</b>                       |  |
| Mode:                                | Continuous   |
| Interval (s):                        | 0.5  |
| Spacing (m):                         | 1  |
| <input type="button" value="Apply"/> |  |

## System Configuration (Toolbar) :

**Important :** we highly recommend to warm-up the probe 50-60 minutes before taking measurement to avoid any drift in the readings. If you can not warm-up the probe, set the *Initialize time* to 1 minute. If the probe has been warmed-up, set the *Initialize time* to 15 minutes.

(see Section 10 – Toolbar for more details)



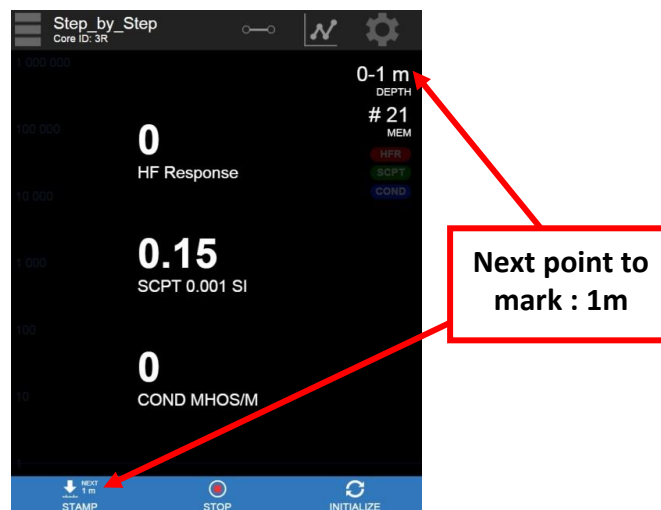
All along the process, if the program ask to initialize, press on *MEM* on the probe to stop recording (or click on the *STOP* icon of the MPP3wifi application). Then, move the probe away from any conductor and initialize the probe by clicking on *INITIALIZE*. Then, put back the probe on the core samples and press *MEM* to restart the recording (or click on *Start (MEM)* of the MPP3wifi application).



## Step-by-Step process :

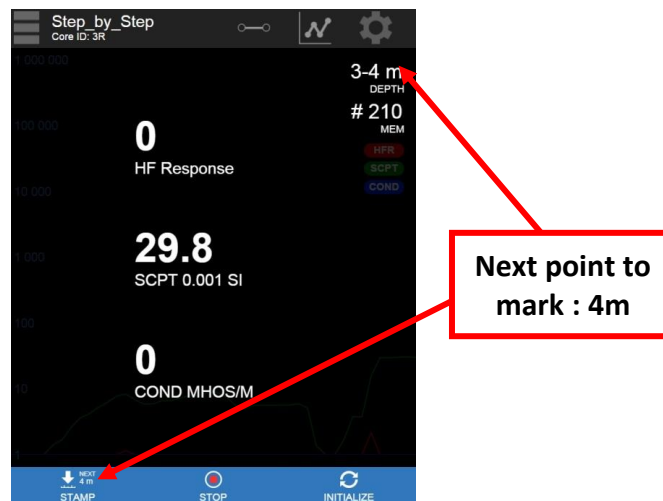
### Step 1 : Starting

1. Move the probe away from any conductor and initialize the probe by clicking on *INITIALIZE*.
2. Place the end of the probe (sensor) on the core samples at the beginning of the row and press *MEM* on the probe (or click on the *Start (MEM)* icon of the MPP3wifi application) to start the recording and then, move the probe along the core samples. **You need to press MEM and start to move the probe right away to avoid having many recorded readings at the same place on the core samples.**



### Steps 2, 3 and 4: Stamping

3. Keep a constant speed to move the probe along the core sample to obtain a real output graph (*Microsoft Excel* or else), and make sure that the contact between the core and the end of the probe is the same for each reading you take.
4. Each time you reach a point to mark (every meter according to the *Spacing* set in the *Settings*), press *STAMP* on the probe (or click on the *Stamp* icon of the *MPP3wifi* application). The interval of *Depth* increments of one meter after each *stamp*.

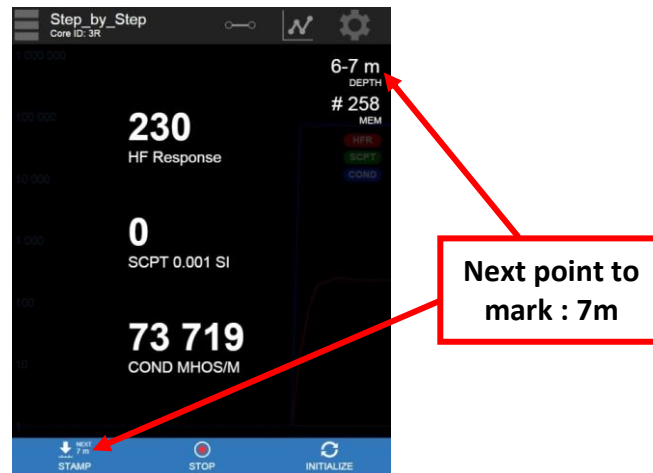


### Steps 5 and 6: Moving the probe from the first row to the second row

5. Once the probe is at the end of the first row, press *MEM* to stop the recording (or click on the *STOP* icon of the *MPP3wifi* application).
6. If you did not initialize the probe for a while, move the probe away from any conductor and click on *INITIALIZE*.
7. Move the probe at the beginning of the second row.
8. Press on *MEM* on the probe to restart the recording (or click on the *Start (MEM)* icon of the *MPP3wifi* application) and then, move the probe along the core samples of the second row.

### Steps 7, 8 and 9: Stamping

9. See *Steps 2, 3 and 4*.

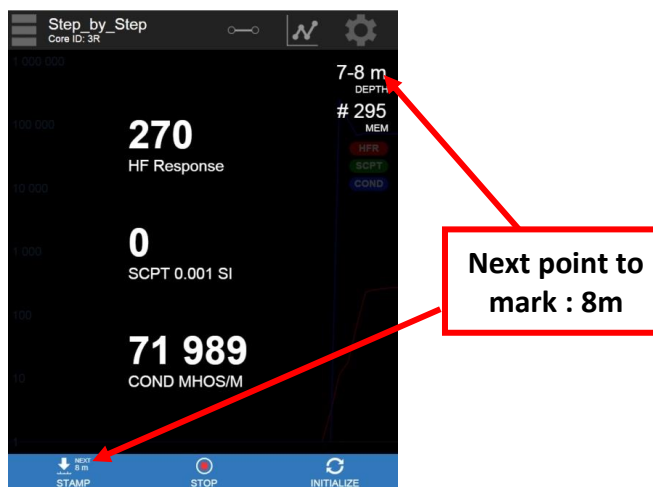


### Step 10: *Stamping* and moving the probe from the second row to the third row

10. Once the probe is at the end of the second row, press *MEM* to stop the recording (or click on the *STOP* icon of the MPP3wifi application).
11. Press *STAMP* to mark the 7m point (or click on the *Stamp* icon of the MPP3wifi application). Stopping the recording before marking the last point of the row prevents recording too many readings at the same place caused by many operations to do at the same time.

### Step 11: Restarting the recording

12. See *Step 1*.



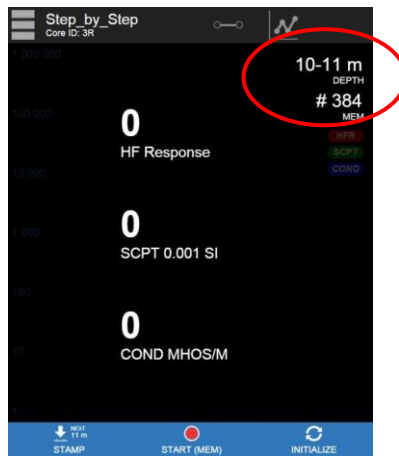
### Steps 12, 13 and 14: *Stamping*

13. See *Steps 2, 3 and 4*.



### Step 15: Finish

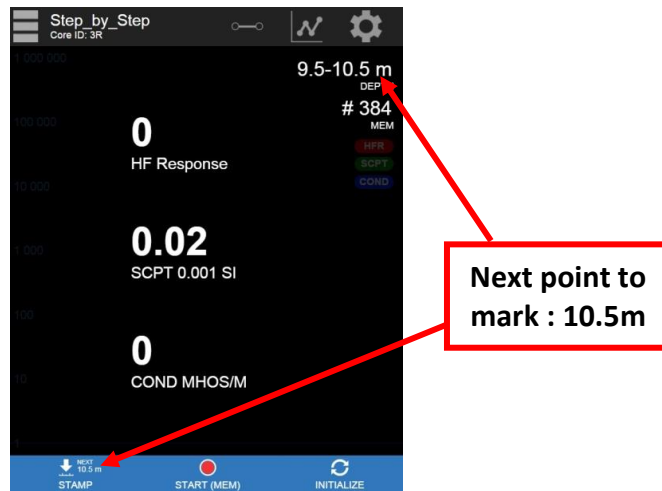
14. Once the probe is at the end of the third row, press *MEM* to stop the recording (or click on the *STOP* icon of the *MPP3wifi* application).
15. According to the *Spacing* set in the *Settings*, the next point to mark is 11m. However, the third row stops at 10.5m. It is therefore possible to change the next point to mark manually. Click on the *Depth* section to change the next point to mark (*stamp*).



16. The next *Stamp* must be done at 10.5m. Considering that the next point to mark is the second point of the interval of *Depth*, enter 9.5m as the first point of the interval.



17. The next point to be marked is now 10.5m.



18. Press *STAMP* to mark the 10.5m point (or click on the *Stamp* icon of the MPP3wifi application).



**Memory :**

You can now export your saved file (see *Section 10 – Toolbar* for more details).

