MPB	**MPB S.r.l.** Via Giacomo Peroni 400/402 00131 Rome - Italy	Tel +39 0641200744 Fax +39 0641200653 info@gruppompb.com
		www.gruppompb.uk.com

Quick Start Manual

PIRS

Quick start Manual Version: 1.1
Updated to the Software Version: 1.0.0
Updated to Firmware Version: 1.01

SAFETY NOTES

Read before using the product

MPB works to provide the best safety conditions available and complies with the latest safety standards.
The instrumentation described in this manual was produced, tested and left the factory in conditions that fully comply with European standards.
To ensure the correct use of the product, these general instructions must be read and applied before and for any use of the instrumentation.
The PIRS is made for industrial environments and should be used by authorized staff only.
MPB disclaims any responsibility for a use of the device different from explained in the manual.
In order to keep the 24 months warranty, please do not remove the seals of the instrument.

Declaration of conformity

(according to EMC 89/336/EEC directive and low voltage 73/23/EEC)

This is to certify that the product: PIRS
complies with the following European standards:

Safety: EN 61010-1 (undated reference, applies to all editions)
EMC emissions: EN 61326-1 (undated reference, applies to all editions)
EMC immunity: EN 61326-1 (undated reference, applies to all editions)

This product complies also with the 2014/35/CE Low voltage directive requirements and with 2014/30/EU Electromagnetic compatibility and with R0HS 2011/65/EU

MPB S.r.l.

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1. General information

1.1. Introduction

The PIRS (Portable Immunity Radiation System) is an innovative system to generate amplified CW signals with calibration feedback.

1.2. System description

The PIRS can be used for Pre compliance Radiated Immunity Test (in accordance to the IEC 61 000-4-3) and to generate the electric fields with intensity among 1 V/m and 30 V/m inside shielding rooms, TEM and GTEM Cells, anechoic and semi anechoic chambers. Thanks to its batteries power supply and its 8 hours autonomy (in generation and continuous power amplification), it can be used with extreme ease in any environment, mostly in “Situ” to perform Radiated Immunity Test on high dimensions devices hardly to transport inside anechoic chambers or test labs.

Figure 1

1.3. System composition and optional accessories

Standard composition:

- PIRS
- Protective bag

Options:

- Tripod support NMR-01
- Tower up to 4m NMR-03
- Log periodic antenna LP-02
- Biconical antenna BC-01
- Biconical log periodic antenna BL-01
- PIRS converter
- RF Power meter
- Broadband meter

1.4. Technical specifications

Frequency Range	10 kHz … 3 GHz
Resolution	1 Hz
Connectorization	N-Type
Max output power (Typ)	37 dBm @1 MHz
Min output power (Typ)	3 dBm @ 3 GHz
Display	graphic 240x128
I/O interface	USB, fiber optic
Reference Standards	IEC 61000-4-3 (pre-compliance)
Operating Temperature	-10°…40°C
Certificate of Calibration	Standard; LAT
Dimensions	30 x 15 x 8 cm
Weight	1.7 kg
Power	8 batteries 18650 rechargeable and replaceable by the operator
Custom list	From 128 to 500 points each
Auto calibration - Set point - Feedback tolerance	With sample probe or with mathematical model Configurable for each list via software Minimum user defined 2.5% (Typ 5%)
Feedback - **With sample probe** - **With power meter**	Configurable from one second minimum Freq. freely configurable via PC Freq. available on the antenna certificate
Persistence generation	Configurable from one second minimum
Compatibles tools	8053B, OR03, WBM, 6630F0A+6630

Technical specifications may change without notice

2. Operating principles

2.1. Block diagram

The block diagram below represents the PIRS:

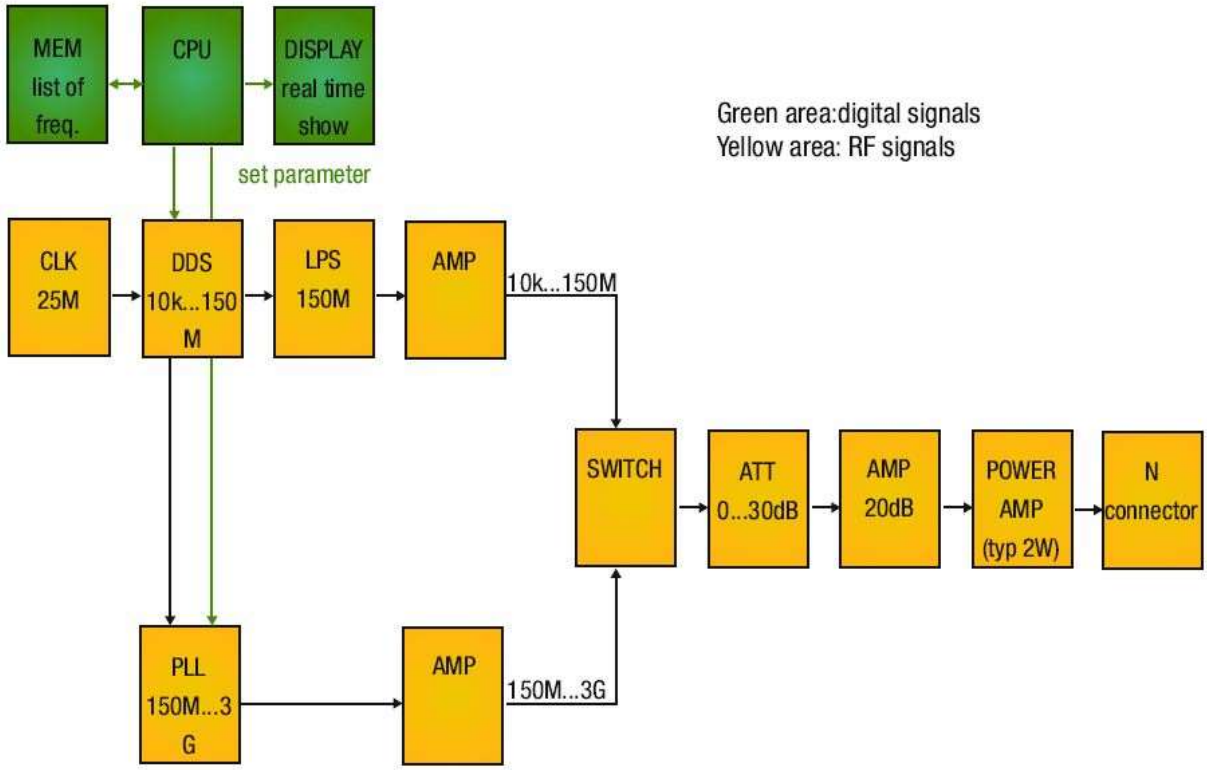

Figure 2

2.2. Working principles of PIRS

The PIRS is an instrument design to speed up the generation of known electromagnetic fields. Carrying out the proper calibration, using a sample probe (see cap 4Calibration) it is possible to create, at selected frequencies, a table of power that the PIRS must generate in order to have a target filed, chose by the operator. The field generated will be a function of the distance of the object to be radiated, the type of antenna and the environment.
By the PIRS the operator creates a quite field area in which to immerse the instrument he wants to test.

3. Software

3.1. Installation

Launch the setup file (setup.exe) and eventually click **YES/Execute** in the pop up window.
Please note that the PIRS SW can require to be “executed as administrator”.
Follow the steps as in the following figures.

Figure 3

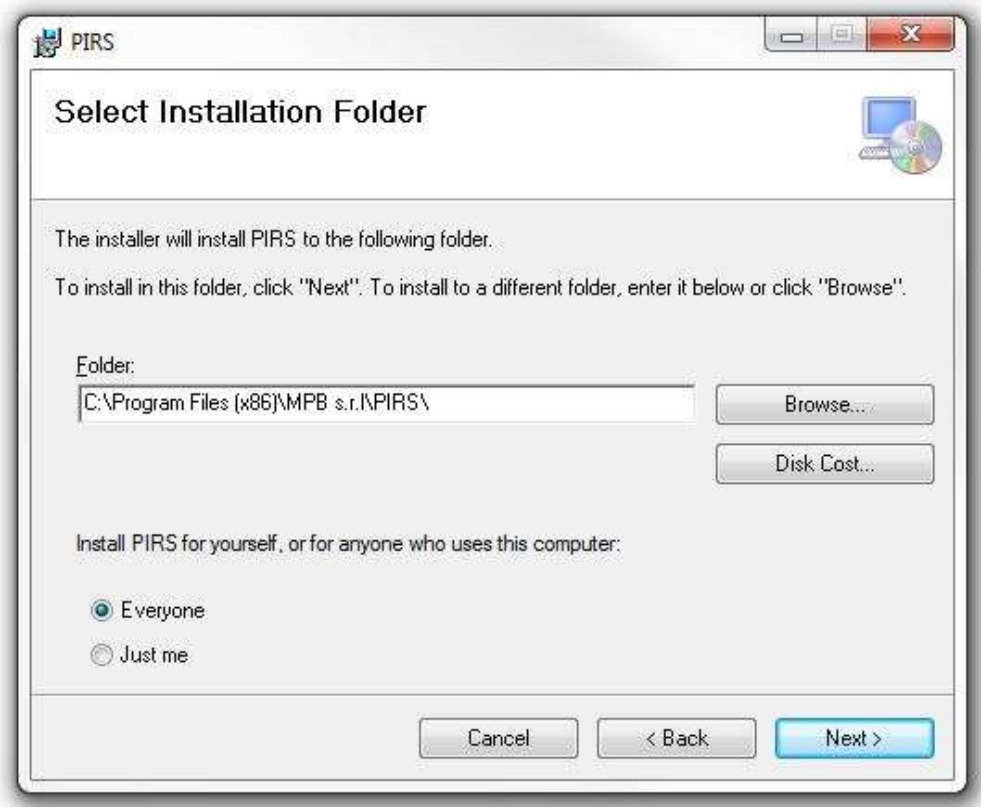

Figure 4

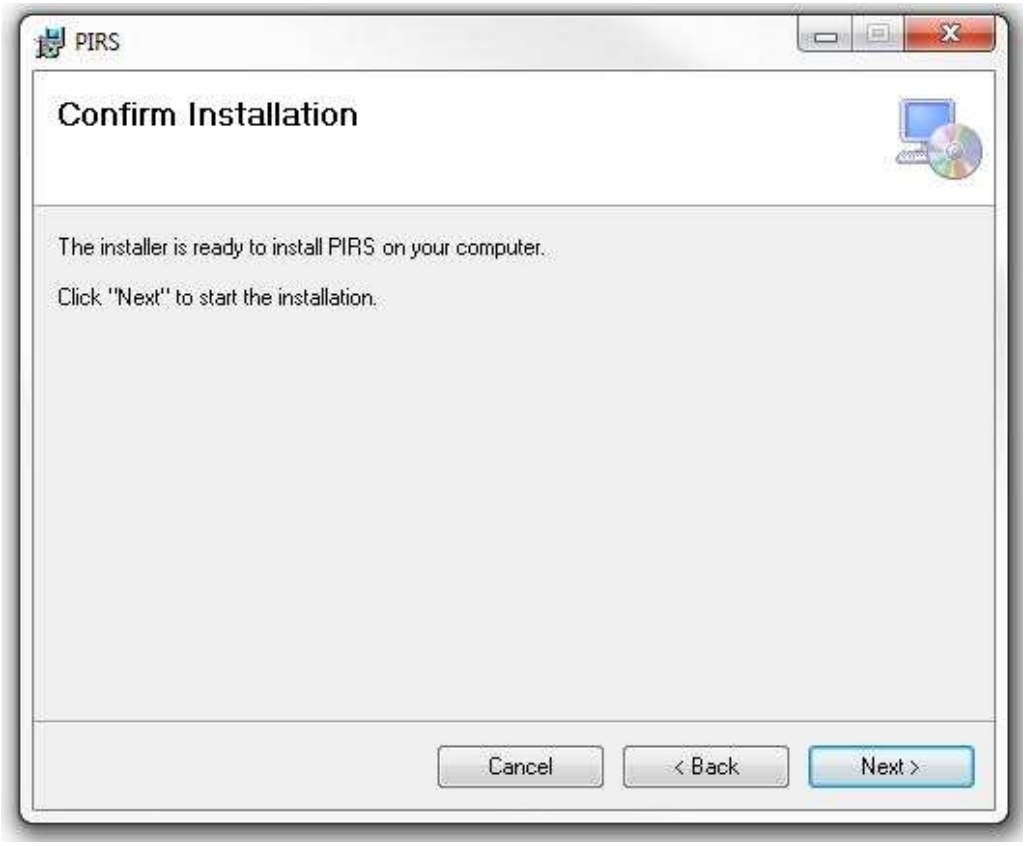

Figure 5

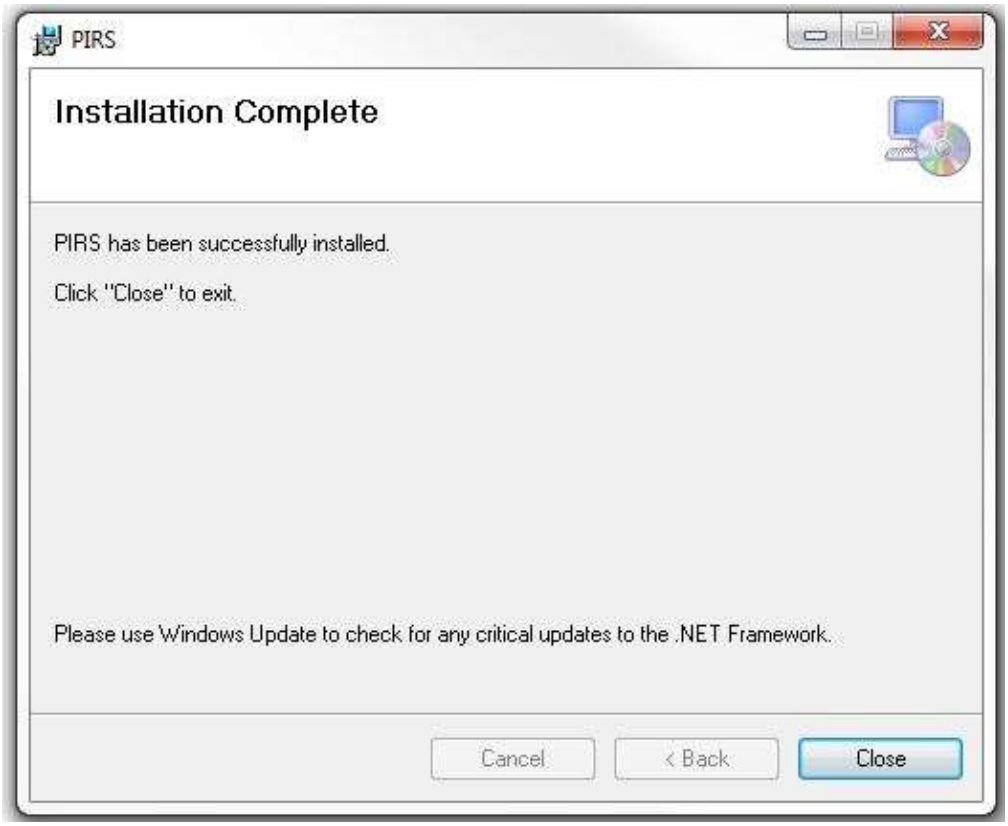

Figure 6

3.2. Connecting the instrument

1) Start the PIRS Software, connect the USB cable to the computer and to the instrument: at the first connection, wait for the driver installation, at the end of which a notification of the operating system will appear

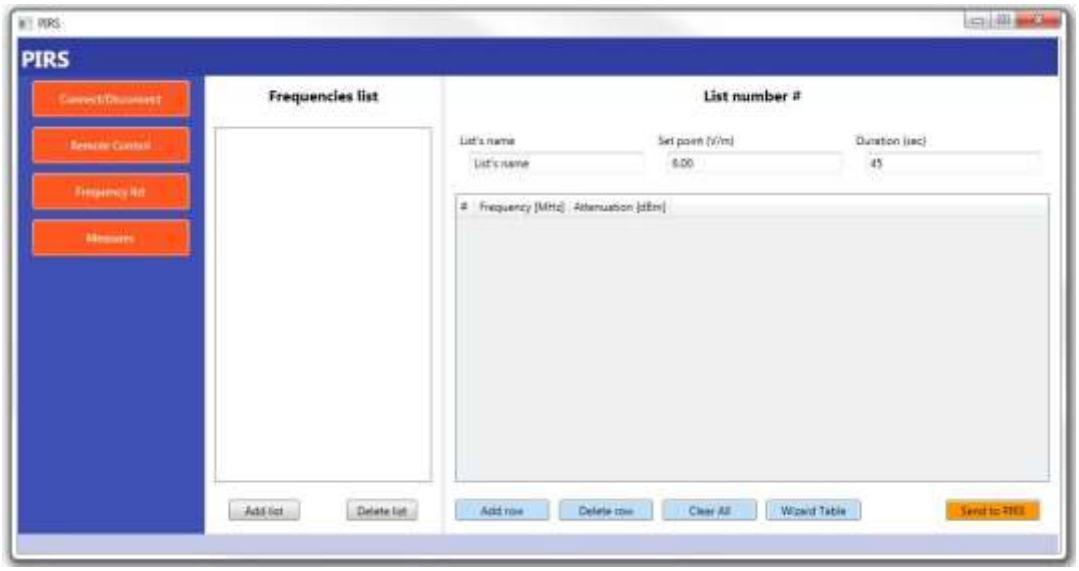

Figure 7

2) Click on the **Connect** button and, in case of successful connection, the list of frequency lists saved in the PIRS will appear in the software.

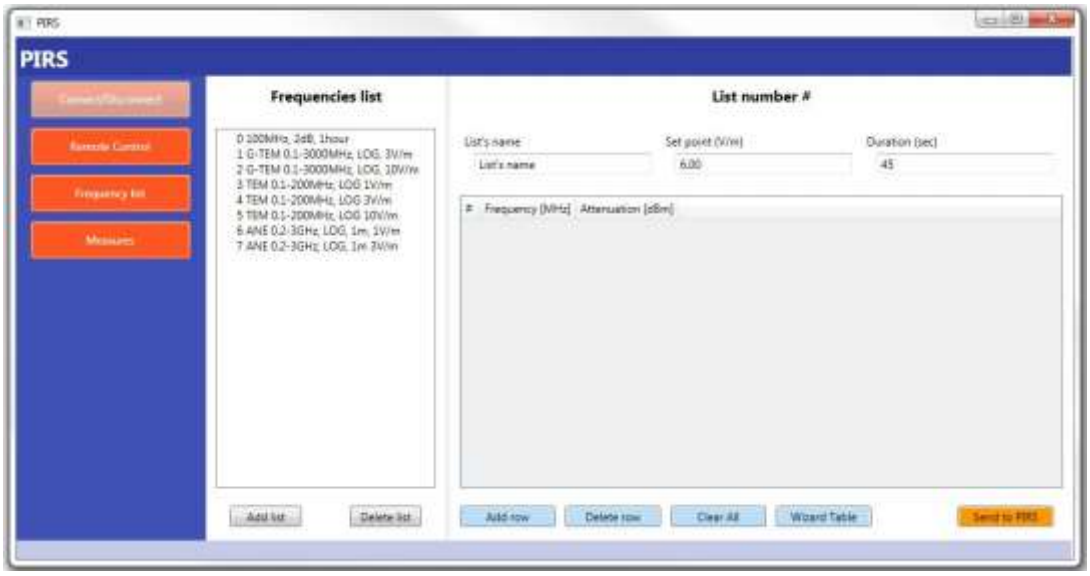

Figure 8

3.3. New list creation

1. Click “Add list”
2. Double click on the button ”New List”
3. Move on the right box called “List Number ##“
4. Set the list name
5. Set the electric field set point
6. Set the duration of the signal generation
7. Click “Add row” to insert a new frequency list
8. Click “Send to PIRS” to save the list in the instrument

3.4. Edit list

To modify a frequency list, double click on the list in the frequency list box and change the parameters in the right panel called “List number ##”

3.5. Delete list

To delete a list, selects it in the frequency list box and click on the Delete list

3.6. Delete frequency

To delete a frequency from the list, select the frequency you want to delete and click on the delete row button.

3.7. Add frequency

To add a frequency click on the add row button and modify the value you want to insert.

3.8. Delete all frequency from list

To delete all frequency list, click on the clear all button.

3.9. Wizard table

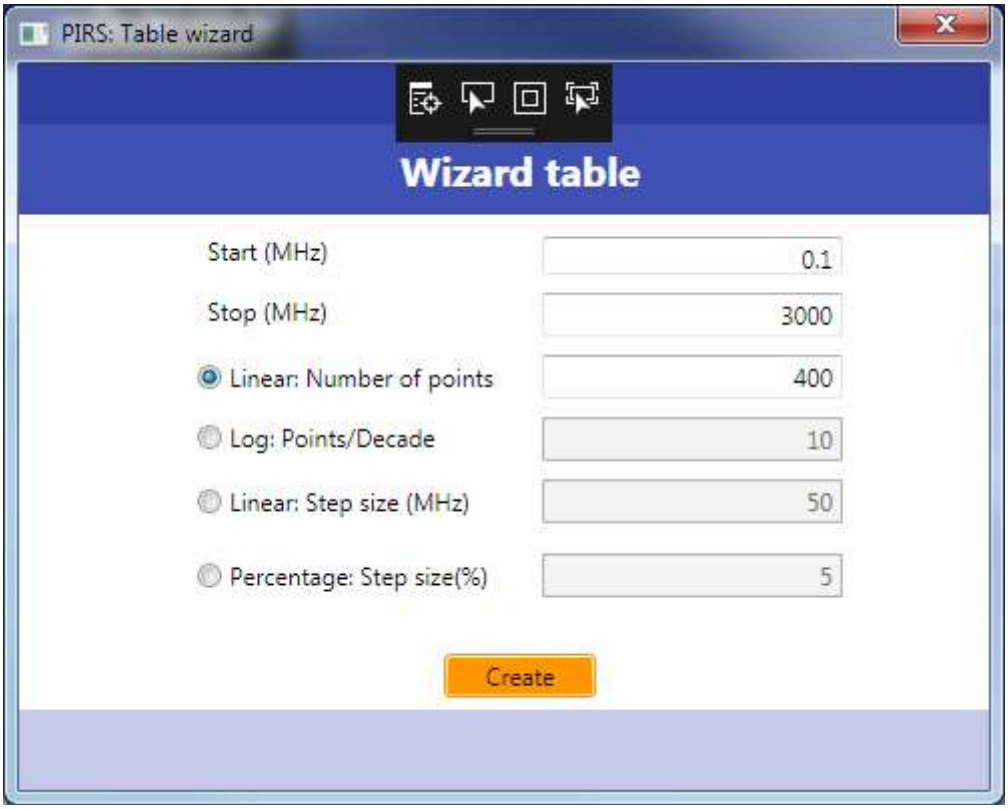

Figure 9

This tool allows you to create a new frequency list by entering:

- The start frequency
- The stop frequency
- The list type (Linear, logarithmic percentage etc)
- Click on “create” to return to the previous window and create the list frequencies

4. Calibration

4.1. General

The calibration procedure is essential before making the measurements. To carry out the generation of the chosen field target it is first necessary for PIRS to associate all the frequencies with the necessary dBm of power that it must be supply according to the chosen setting.
For this compilation process it is essential to use a meter that reads the filed level of a sample probe

4.2. Quiet zone pre-saved

The calibration lists are already saved in the instrument. The calibration is carried out by MPB according to the customer's requests. With these configurations the operator only needs to reproduce the same calibration setup and perform the measurement as show in cap 5

4.3. Quiet zone with sample probe

The PIRS must be configured according to the setting show below.

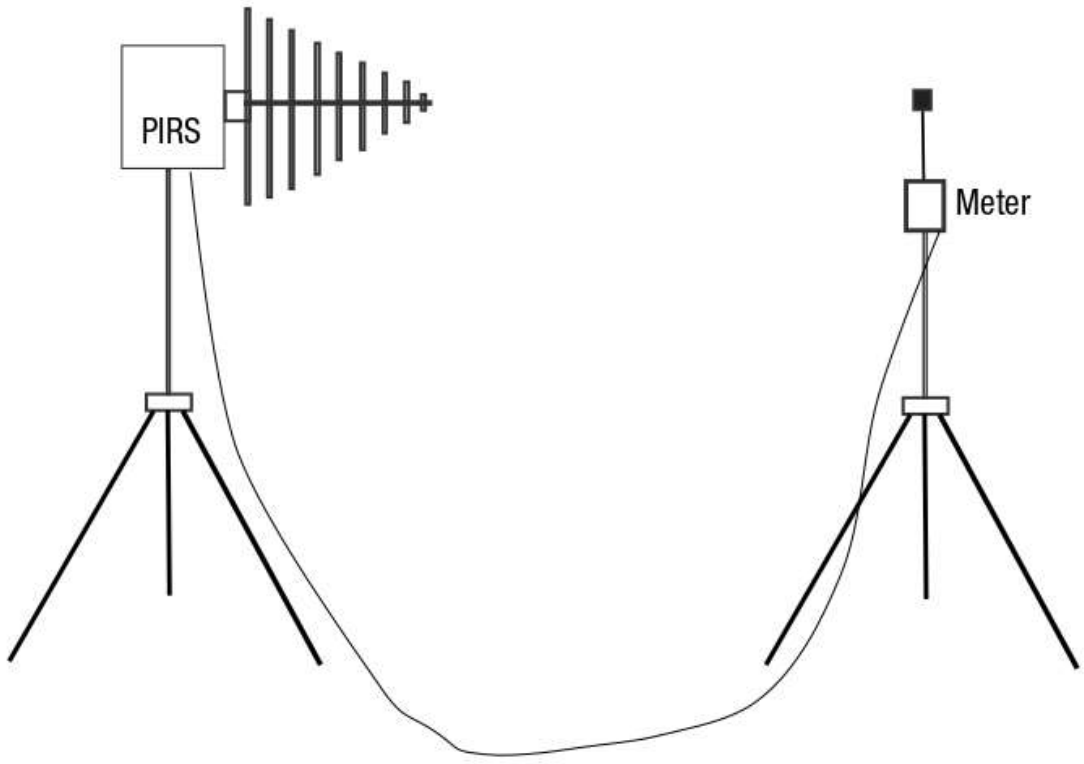

Figure 10

You will need to use:

- PIRS
- Antenna
- Fiber optic (with or without converter according to the type of meter connected)
- tripods
- meter
- sample probe.

Place the PIRS whit the antenna at the desired distance you need to follow the step below:

- Turn on the PIRS
- Connect the optical fiber
- Turn on the meter
- Press the button CAL (F3) of the PIRS
- Press the button List (F4) and select the desired pre-located frequency list (see chapter 3.3)
- Press Enter (F4) to select
- Press Start (F2) to calibrate and wait until the end of the procedure

5. Measures

Now, after the calibration the PIRS can generate the choose field. Place the object to be irradiated in the position in which the sample probe was located as show in the picture below.

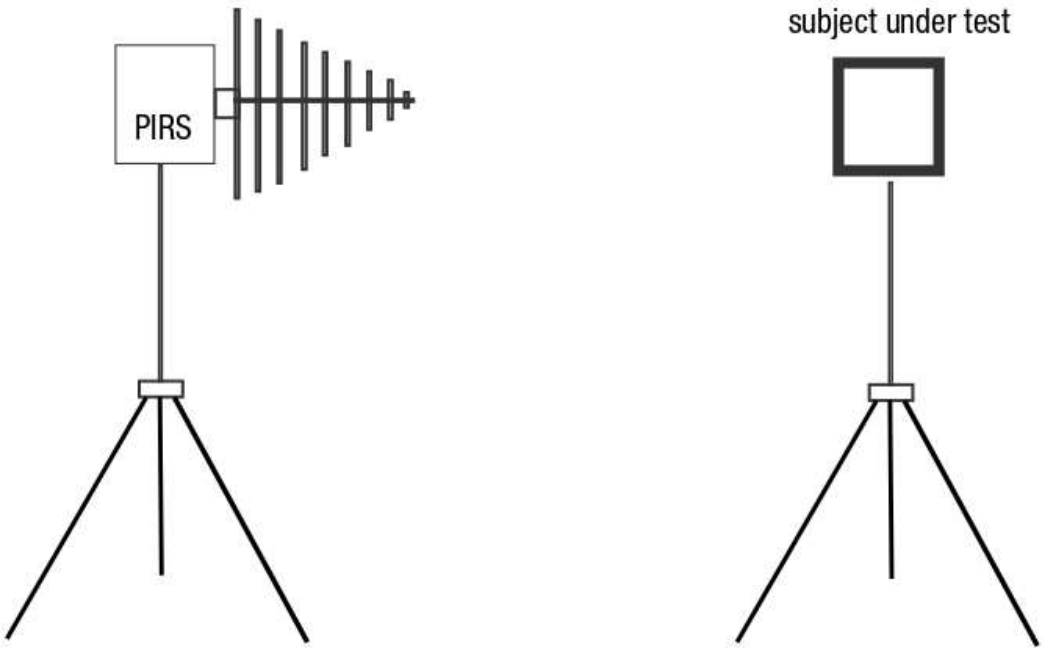

Figure 11

5.1. setup

For the generation of a known field to a stored frequency list it is necessary to maintain exactly the same positioning of the various elements as in the previous step of calibration (see chapter 4).

- Turn on the PIRS
- Press button GEN (F2)
- Press button LIST (F4)
- With UP (F2) and Down (F3) choose the list and press ENTER (F4)
- Press START (F2) to begin with the field generation
- Wait until the process is finished.

Further information: www.gruppompb.uk.com
Technical information: assistenza@gruppompb.com
Phone +39 06 41200744