



## *Multitest*

*Installation and Quick Start Guide (ver.1.1)*

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# 1. Overview

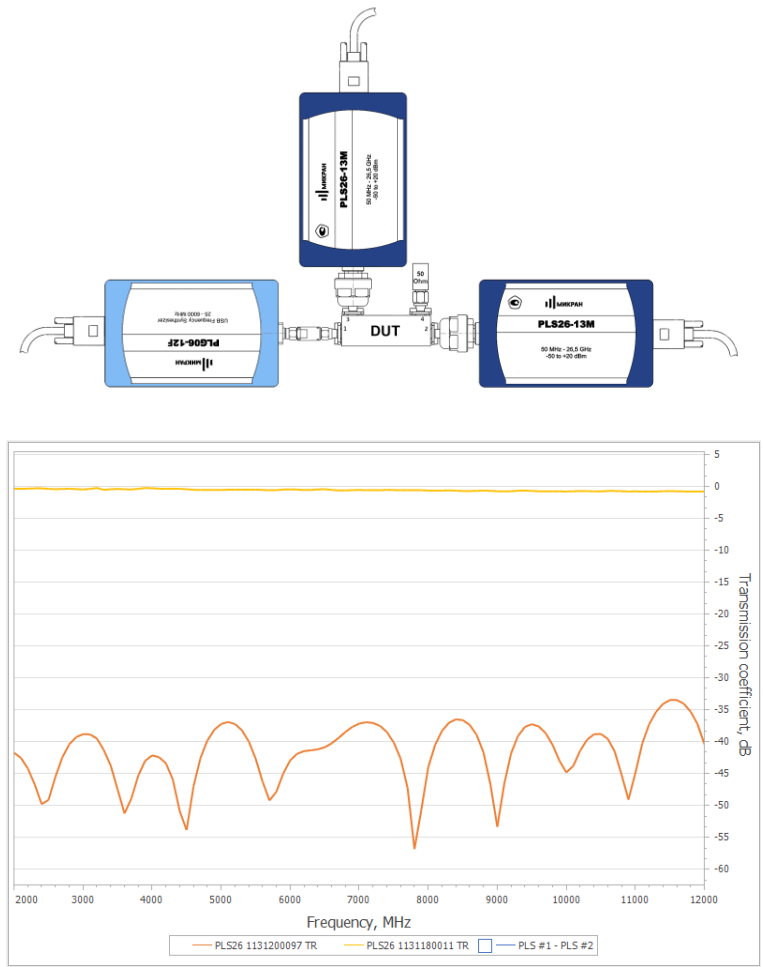
This manual describes basic information about *Multitest* software. It provides installation notes and description of interface elements.

*Multitest* unites management of multiple instruments in a single application that was specially designed for typical measurements to extend the capabilities of the PLD (Portable Lab Device) series instruments.

*Time Domain Measurements* test. Average power measurements of single or multichannel DUTs can be performed simultaneously by several PLG frequency synthesizers and PLS power sensors controlled from a single panel. Graphical representation, marker analysis and export of the measured data provide a convenient tool for developing or testing microwave and radio frequency (RF) equipment.

*Gain Measurements* test. By using a pair of PLS power sensors at once *Multitest* provides measurements of various two-port devices such as directional couplers or power dividers. Additional PLG frequency synthesizer extends signal generation capabilities. Built-in calibration procedure serves to measure and compensate an insertion loss added by the connectors or cables.

An example of the directional coupler measurement is shown at the pictures below. Insertion loss is represented by the yellow trace and isolation (the ratio of the input power to the output power of the isolated port) by the orange trace.



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## 2. Installation Notes

PC minimum system requirements for *Multitest* software are:

- Windows® 7/8/10;
- Dual-core CPU 2.4 GHz x86/x64;
- USB 2.0 or USB 3.0;
- GPU memory 512 MB;
- 2 GB RAM;
- Display resolution 1280 × 720;
- Keyboard + mouse or sensor display;
- 100 MB of free disk space for software installation.

Run *install\_multitest\_2.4.x.exe* to perform software setup. Select software language at startup and follow the instructions to complete installation procedure (Fig. 2-1)

**ATTENTION! THE SETUP PROGRAM REQUIRES WINDOWS® ADMINISTRATOR PRIVILEGES.**

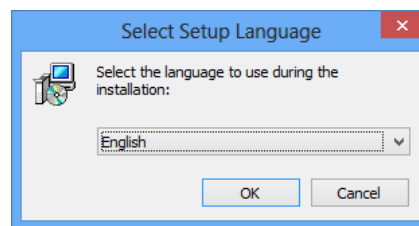


Figure 2-1 Language Selection

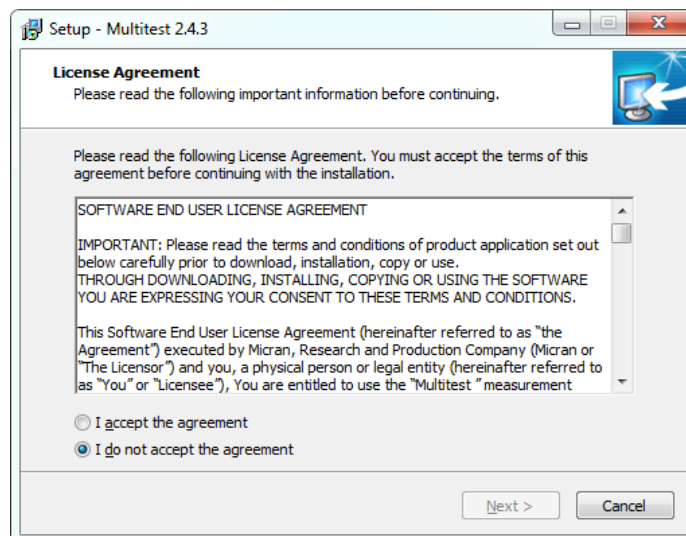


Figure 2-2 Software Installation Wizard

### 3. User Interface Description

#### 3.1 Start of the Program

Run *Multitest* software by using *Start menu* -> *Applications* -> *Micran Multitest 2.4.x* or *Windows®* desktop icon.

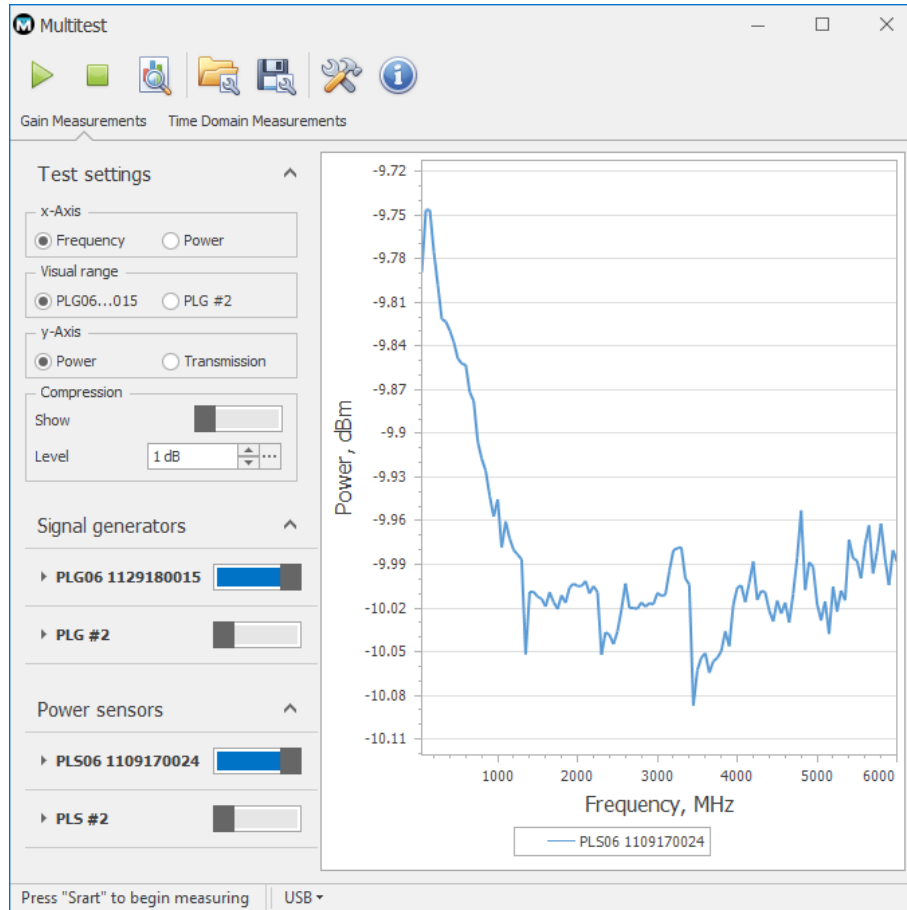


Figure 3-1 Main window of *Multitest*



The program starts without any measured data and restores settings from the last user session. The main window contains (Fig. 3-1):





- data chart;
- test selector - *Gain Measurements* and *Time Domain Measurements*;
- control panels;
- toolbar with buttons (Fig. 3-2);
- status bar.



Figure 3-2 Toolbar

The toolbar contains the following buttons:

-   – start / pause and stop the test;

-  – show *Results* window;
-  – load / save test profiles to a file;
-  – change program settings;
-  – show *About* window.

The status bar displays a hint and a drop-down addresses list of connected USB instruments (the user can copy the selected address to the clipboard).

### 3.2 Connecting the Instruments


Before starting the measurement, prepare PLS power sensors and/or PLG signal generator according to the applied instructions.

Connect the USB cable (USB mini-B connector) with the corresponding jack on the rear panel of PLS/PLG and fix it with screws. Insert the USB cable plug (USB type A) into free USB port of your PC.

When power is supplied, the red LED will light up on the rear panel of PLS/PLG, and the green one in 10 s, which means the PLS/PLG is ready for operation (Fig. 3-3). If the green LED does not light up (the red one is on), there is a problem with PLS/PLG initialization. It is necessary to check the operability of the PC USB port or USB cable.



Figure 3-3 The PLS wattmeter is ready for operation

Push the switcher  next to the instrument caption (PLG #1 e.g.). The list of all PLS power sensors or PLG signal generators connected to the PC will appear (Fig. 3-4).

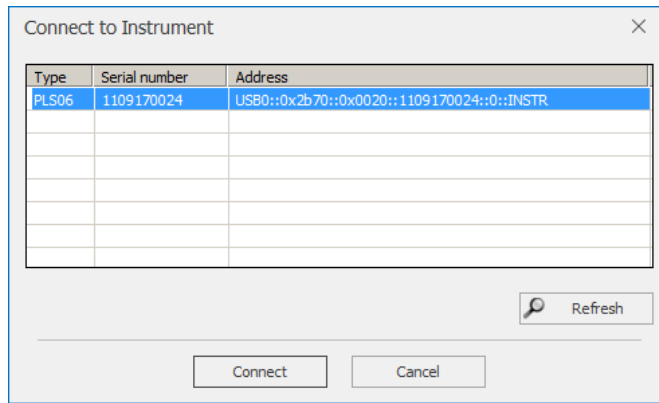




Figure 3-4 Connection window

Select the desired instrument in the list and click on the *Connect* button. To connect to a different instrument or disconnect from the current one, push the switcher  again. *Multitest* automatically recovers all connections with the previous used instruments after restarting the application.

### 3.3 Results Window

To see the measurement results, click on the button .

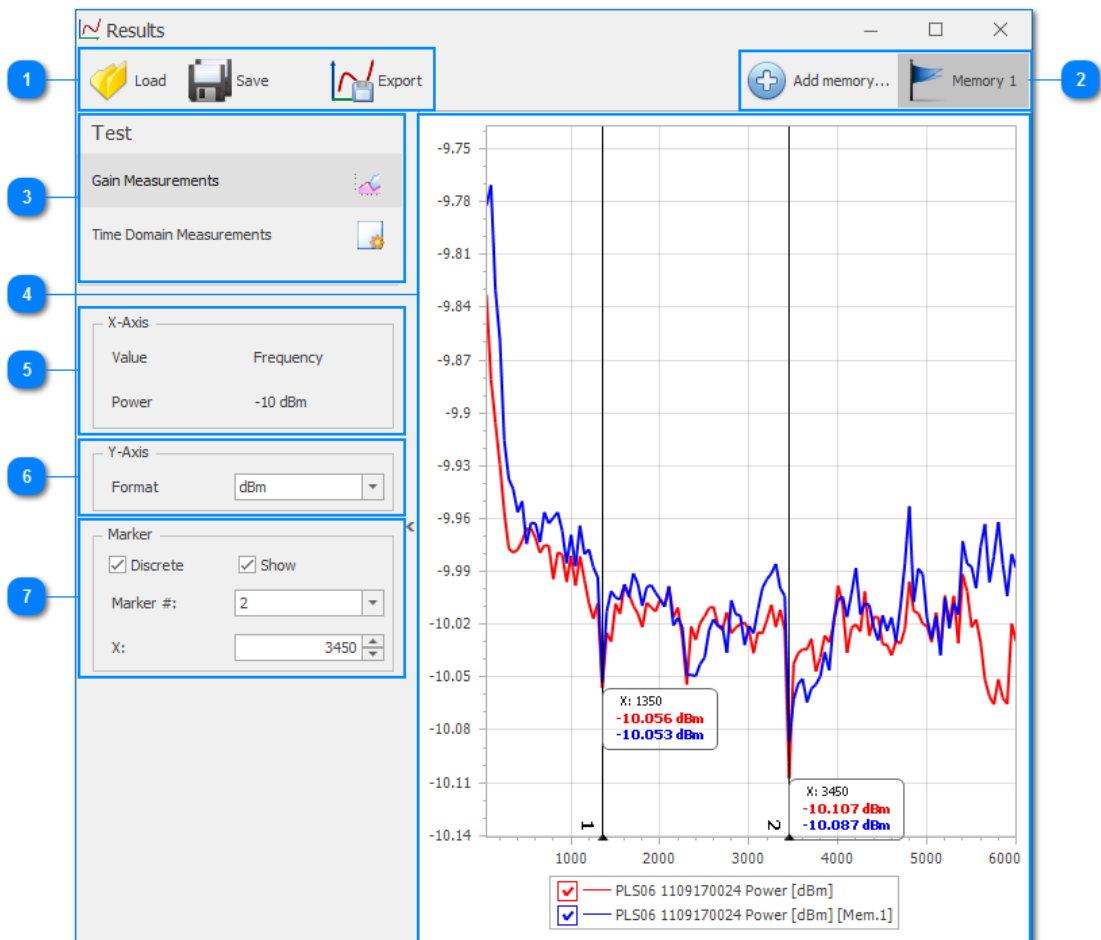







Figure 3-5 Results window

The functional window for displaying test results consists of the following elements:



1. *Toolbar* gives an access to operations with the test results. Click on the  *Load* button and select any \*.mres file to import previously stored test results. In addition to the measured data, *Multitest* results file contains test settings, i.e. measurement setup and instrument configuration. The measured data and the test settings will be saved in the *MRES* format after clicking on the  *Save* button. To export the test results to a common format (such as text *CSV/TXT* or graphic *PNG* formats) click on the  *Export* button.

2. *Memory panel*. *Multitest* allows user to create up to 4 memory traces by clicking on the  *Add memory...* button. The color of the memory trace matches the color of the flag icon. To delete a memory trace, click on the appropriate  *Memory [1-4]* button and confirm the operation. Memory traces can be hidden in the legend of the data chart and are not affected by switching between the tests.

3. *Test panel* allows you to switch between the results of different tests. Test status is showing in the hint:

- *no data* – the test is not completed;
- *completed* – the test is completed successfully;
- *saved* – the results of the test are saved to the .mres file;
- *from file* – the results of the test are loaded from the .mres file.

4. *Data Chart* displays measured data of the selected test as one or more traces. Traces can be stored to memory traces and can be analyzed with the markers. In the chart legend (bottom of the chart) some traces can be hidden. It should be noted that hiding all traces on the chart is not provided.

5. *X-Axis* panel allows you to change variable parameters of the stimulus axis and displays some test parameters.

6. *Y-Axis* panel contains a selector of the response format.

7. *Marker* panel configures specified marker on the chart. A maximum of 10 markers are available. To turn the marker, specify its number and click on the  *Show* checkbox. The stimulus of the marker can be changed in *X:* field or by dragging the marker line with the mouse. The  *Discrete* check box allows you to set the marker on the measured stimulus points only (no interpolation is used). The switching between the markers is performed by changing *Marker #* value or by mouse clicking on the marker's line on the chart. It should be noted that the markers are reset when switching between the tests.