Quick Start Guide

Agilent Technologies
14763A Interharmonics
Immunity Test Application
for Windows 95, Windows 98, and
Windows NT 4.0

Agilent Technologies

Contents

Description

What the Agilent 14763A Application Will Do

The Agilent Technologies 14763A Interharmonics Immunity Test Application tests a device to the requirements of IEC document 61000-4-13.

When using Agilent 6800-series AC Power Source/Analyzers, the Agilent 14763A application generates ac mains disturbances as specified by the IEC standard, and produces a test report describing the stimulus applied to the equipment under test (EUT), as well as the response of the EUT. With the application's intuitive graphical user-interface you can:

- Set up and run interharmonic tests.
- Collect real-time test data from the Agilent AC Power Source/Analyzers.
- Monitor ongoing test results.
- Save test results.
- Terminate tests based on user-defined criteria.
- Print reports.

What the Agilent 14763A Application Will Not Do

The Agilent 14763A Interharmonics Immunity Test Application does not:

- Control instruments other than Agilent ac sources.
- Provide drivers for other GPIB instruments.
- Operate with Windows 3.1.

System Requirements

PC
- 486DX66 (minimum)
- 8 Mbytes RAM
- 4 Mbytes of disk space

32-bit Platforms
- Windows 98, Windows 95, or
- Windows NT 4.0

Supported I/O
- Agilent 82335B[1], 82340B, 82341C, 82341D,
- National Instruments AT GPIB/TNT[2]

[1]The Agilent 82335B is only supported for Windows 95 & 98, provided you have either the E2094E, E2094F, or E2094G I/O library.

[2]For National card, National NI-488.2M software or National VISA library.

Supported AC Sources
- Agilent 6812B, 6813B[3]
- Agilent 6841A, 6842A, 6843A[3]

[3]All models require firmware revision A.00.07 and up.
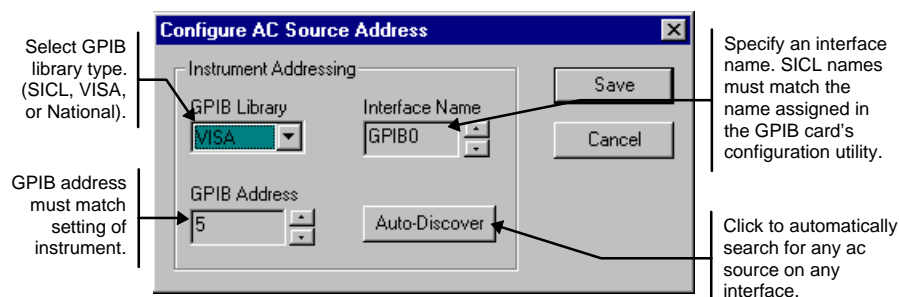
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Installing and Running the Software

NOTE: Before running the Agilent 14763A application, you must have installed and connected your ac source to the PC using the appropriate interface cable. You must also have the appropriate interface card installed and configured. If you are using an Agilent GPIB interface card, you must have the appropriate 32-bit SICL or VISA library drivers installed.

1. Place Disk #1 in the A: drive of your computer and run SETUP.EXE.

2. Follow the directions on the screen to install the software. Enter the registration number from your disk. Specify an installation directory. Select the default voltage and frequency settings for the equipment that you will be testing. The README.TXT file contains product updates or corrections that are not documented in the help file. Use any text editor to open and read this file.

3. To run the application, click on the **Start** button and select: **Programs** | **Agilent Regulatory Test Solution | Interharmonics Immunity**.

Configuring the Address

This step is necessary to establish communication with the ac source.

*   Make sure that the ac source is turned on.

*   In the **Configure** menu, click on the **AC Source Address** command.

*   Click the **Auto Discover** button.

*   If the software reports an instrument was found, click **Save**. If no instrument was found, check that all equipment including interface cards are installed correctly.

Select GPIB library type. (SICL, VISA, or National).

GPIB address must match setting of instrument.

Configure AC Source Address

Instrument Addressing

GPIB Library: VISA

Interface Name: GPIB0

GPIB Address: 5

Auto-Discover

Save

Cancel

Specify an interface name. SICL names must match the name assigned in the GPIB card's configuration utility.

Click to automatically search for any ac source on any interface.
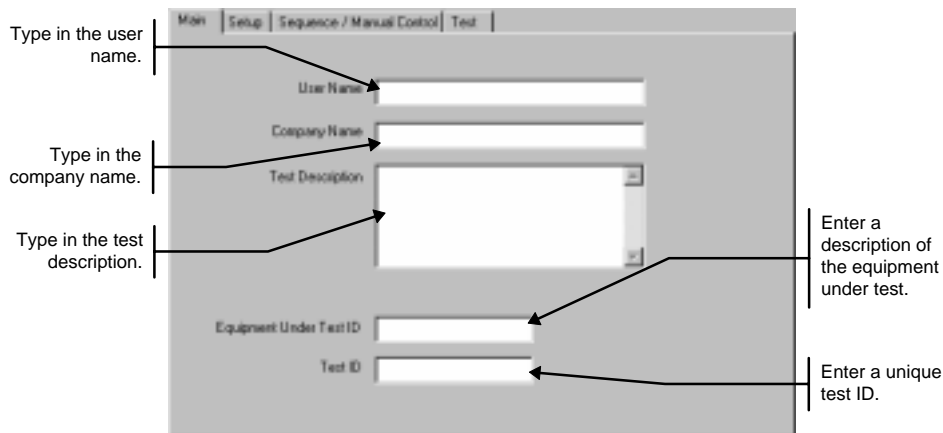
Running a Sample Test

The Agilent 14763A application comes with four sample test files that run a complete interharmonics immunity test as defined by IEC document 61000-4-13. Simply select the test that matches the equipment class, voltage, and frequency of the equipment that you are testing. Note that these files have the read-only attribute set to avoid accidental erasure or modification.

- To load one of the test sample files click **File, Open Test Setup**.

- Select one of the following .s13 files and click **Open**.

    4-13_Class2_120V_60Hz.s13 - Sets the mains voltage to 120 V, 60 Hz and executes an immunity test for normal industrial equipment (class 2).

    4-13_Class3_120V_60Hz.s13 - Sets the mains voltage to 120 V, 60 Hz and executes an immunity test for heavy industrial equipment (class 3).

    4-13_Class2_230V_50Hz.s13 - Sets the mains voltage to 230 V, 50 Hz and executes an immunity test for normal industrial equipment (class 2).

    4-13_Class3_230V_50Hz.s13 - Sets the mains voltage to 230 V, 50 Hz and executes an immunity test for heavy industrial equipment (class 3).

- Enter general information about the test you are running in the **Main** window. Include your name, company name, test description and equipment ID. This information will appear on the test report.

- Go to the **Test** screen and click on **Start Test**.

- When prompted, enter the name of a file in which to store the test results. The test will start running as soon as this action is completed. A progress bar appears on the screen to indicate the progress of the test. It indicates the percent complete as well as the time remaining. Each step of the test sequence is identified on the progress bar as it is being executed.

- While the test is running, watch the equipment under test to see if it exhibits any abnormal behavior. The Agilent 14763A application cannot directly measure the performance of the equipment being tested. It only puts up a **Manual EUT Check** dialog box that asks you to enter information about the condition of the equipment under test. If any result other than "Normal Performance" is entered, the test results will indicate that the test has failed.

- View the results of the current test in the **Test Results** box. Click on **Print Report** to obtain a printed test report.

Refer to the rest of this document for information on specific areas of the test application as well as how to edit and modify test sequences. Refer to the online help for additional information about step type definitions and parameters.
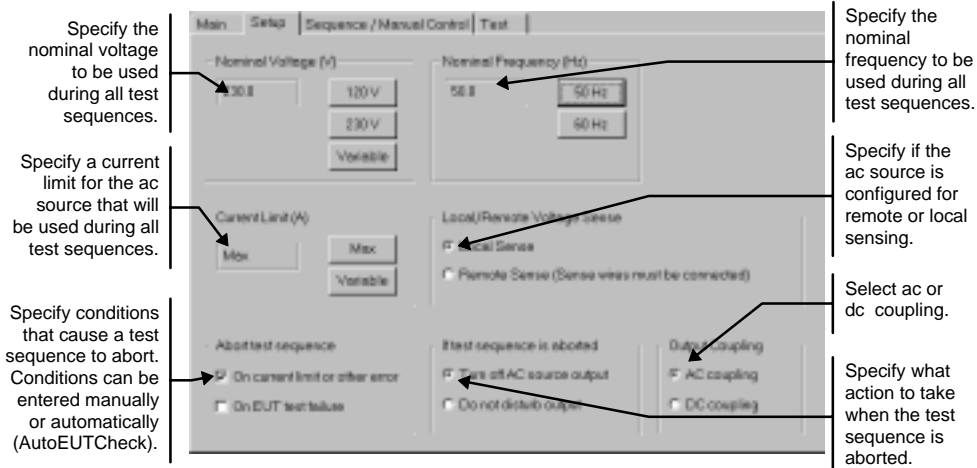
Entering General Test Information

The **Main** window appears when you first run the Agilent 14763A application. This screen lets you enter general information about the test. The information on this screen appears on the test report.

Type in the user name. → (User Name field)

Type in the company name. → (Company Name field)

Type in the test description. → (Test Description field)

Enter a description of the equipment under test.

Enter a unique test ID.

Setting Up Test Conditions

To define the nominal test conditions, go to the **Setup** screen by clicking on the **Setup** tab. This screen also lets you choose to abort a test sequence if any error conditions occur and what actions to take when the test sequence is aborted.

Specify the nominal voltage to be used during all test sequences.

Specify a current limit for the ac source that will be used during all test sequences.

Specify conditions that cause a test sequence to abort. Conditions can be entered manually or automatically (AutoEUTCheck).

Specify the nominal frequency to be used during all test sequences.

Specify if the ac source is configured for remote or local sensing.

Select ac or dc coupling.

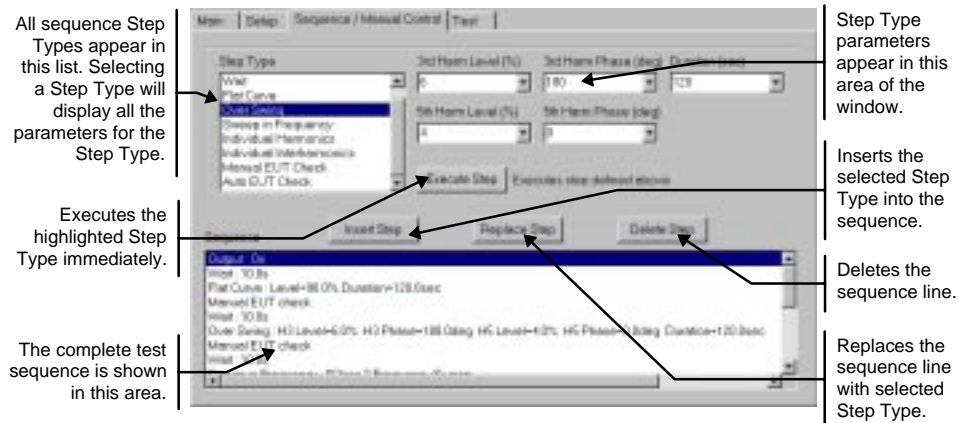Specify what action to take when the test sequence is aborted.

You cannot make any changes on this screen if the output of the ac source is on. To turn the output off, execute the **Output Off** step in the Sequence/Manual control screen. Also note that the setup parameters may change when you open an existing test setup.

Creating or Modifying the Test Sequence

To create or modify the test sequence, go to the **Sequence/Manual Control** screen by clicking on the **Sequence/Manual Control** tab.

There are two ways to run tests. You can manually apply a single **step type** to the equipment under test. You can also build and run a test sequence, which applies a sequential series of **steps** to the equipment under test. Steps perform operations such as **Output On**, **Flat Curve**, **Sweep in Frequency**, etc.

NOTE: Do **NOT** use the ac source front panel controls when using the Agilent 14763A application. Doing so may cause unpredictable results.

All sequence Step Types appear in this list. Selecting a Step Type will display all the parameters for the Step Type.

Step Type parameters appear in this area of the window.

Executes the highlighted Step Type immediately.

Inserts the selected Step Type into the sequence.

Deletes the sequence line.

The complete test sequence is shown in this area.

Replaces the sequence line with selected Step Type.

To access an existing setup:

- Click **File**, **Open Test Setup** in the menu.

- Select the desired file (setup files have an .s13 extension) and click **Open**.

- To create a new test sequence, click **File**, **New Test Setup**. This action clears the present test sequence and resets the parameters on the Setup screen to the default values.

To execute a step manually:

- In the **Step Type** box, highlight the type of step to be executed.

- Enter any required parameters for the selected step type.

- Click the **Execute Step** button.

To add a step to the sequence:

- In the **Step Type** box, highlight the type of step to be inserted. Step types are described in the on-line help.

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- If parameters are required for the selected step type, enter them in the boxes that appear. A drop-down list shows the most commonly used values, but you may also enter other values by typing them in.

- For the Sweep in Frequencies, Individual Harmonics, and Individual Interharmonics step types you must select a parameter set such as "Class 2 Frequency Sweep". If you need to create a new parameter set, click on **Edit Parameters**. This puts up a dialog box that lets you make edits and store the edits as a new parameter set.

NOTE: To permanently save the new parameter set, you must save the test setup file in which it is included. See "To save the test setup".

- In the **Sequence** box, highlight the line where you want to insert the new step. The new step will be inserted before the highlighted line. Note that all sequences contain an **End** step.

- Click the **Insert Step** button.

To change an existing step in the sequence:

- Double-click on the step to be changed in the **Sequence** list.

- Follow the editing procedure described above, but click the **Replace Step** button when you are finished editing.

To delete a step:

- Highlight the step in the **Sequence** list, and click the **Delete Step** button.

To run a test sequence:

- Go to the **Test** screen and click the **Start Test** button.

To save the test setup:

- Click **File, Save Test Setup** to save the present test setup, which includes the test sequence and all applicable parameter sets. All changes that you made in the **Sequence/Manual Control** screen will be saved to the existing test setup file.

- Click **File, Save Test Setup As** to save the test setup to a different name.

NOTE: The test setup file includes information from the Main screen, the Setup screen, and the Sequence/Manual Control screen.


Determining Pass/Fail Criteria

Since the equipment under test (EUT) can be almost any type of device, this application cannot directly measure the performance of the equipment being tested. Therefore, two steps can be added to the sequence to determine the response of the equipment under test to ac mains disturbances:

• **Manual EUT Check** – This step puts up a dialog box that asks the operator to determine the condition of the EUT and enter the information on the screen. If any result other than "Normal Performance" is entered, the test results will indicate that the test has failed.

• **Auto EUT Check** – This step automatically launches a user-written program and receives the test results. This user-written program must automatically measure the response of the EUT using whatever instrumentation is necessary and return the pass/fail results.

Running the Test Sequence

To run a test sequence, go to the **Test** screen by clicking on the **Test** tab. The results of the test are displayed in the **Test Results** box.
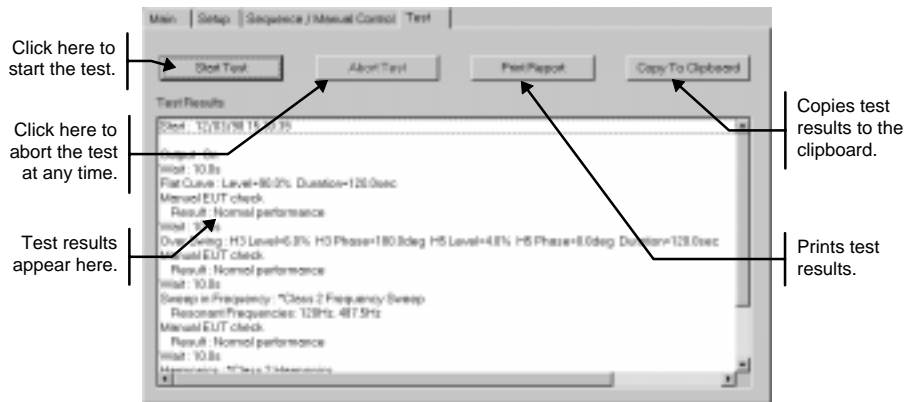
To run a test after loading or creating it:

• If you are just exercising the software, ensure that nothing is connected to the output of the ac source. If a device is connected to the output, make sure it will not be damaged by the conditions that are specified in the test sequence (for example, a mains voltage of 253V).

• Go to the **Test** screen by clicking the **Test** tab.

• Click the **Start Test** button.

NOTE: If the Start Test button is grayed out, it may be because the application is not configured to communicate with the ac source.

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- When prompted, enter the name of a file in which to store the test results. The test will start running as soon as this action is completed.

- If the test sequence contains one or more **Manual EUT Check** operations, a dialog box will pop up during the test asking you to describe the condition of the EUT. Enter the requested information and click **OK** to continue.

- View the results of the current test in the **Test Results** box.

To print test reports:

- Click the **Print Report** button.

To view the results of a previous test:

- Click **File**, **Open Test Results** in the menu.

- Select the desired result file (which has a .r13 extension) and click **Open**. All four screens will contain information from the previously run test.

Exporting Data to Other Applications

Both text and graphics may be copied from the Agilent 14763A application and pasted into other Windows applications.

- To copy the complete contents of the **Test Results** box, go to the **Test** screen and click the **Copy To Clipboard** button.

- To copy the entire test sequence to the clipboard, click the **Sequence/Manual Control** tab, then click **Edit, Copy** in the menu.

- To print a test sequence, you must first copy the sequence to the clipboard as described above. Open any text editor and paste the contents of the clipboard into the text editor. Print the test sequence from the text editor.

Step Type Definitions and Parameters

Flat Curve

Specifies the requirements for the flat curve or "clipped" sinewave.	**Clipping Level** is specified as a percentage of the total amplitude. **Duration** determines the time the flat curve is applied to the EUT in seconds.

Over Swing

Specifies an overswing waveform in terms of levels and phase angles of superimposed 3rd and 5th harmonic components	**3rd harmonic level** as a percent of the fundamental **5th harmonic level** as a percent of the fundamental **3rd hamonic phase** in relation to the fundamental **5th harmonic phase** in relation to the fundamental, and the **Duration** of the test in seconds

4-13 Sweep in Frequency

Superimposes a discrete frequency signal onto the nominal ac mains waveform. The signal is stepped in four pre-defined bands from 1/3rd times the fundamental to 20 times the fundamental at a rate no faster than 5 minutes per decade.

Edit Sweep in Frequency Parameters

Parameter Set: Class 2 Frequency Sweep

Sweep Rate (min/dec): 5.0   Resonance Dwell (sec): 120.0   ☐ Disable resonance detection

Start Freq (xf1)	Stop Freq (xf1)	Freq Step	Level (%)
0.33	2	0.0625 x f1	3.0
2	10	0.125 x f1	10.0
10	20	0.125 x f1	5.0
20	40	0.5 x f1	2.0

Insert Line   Delete Line   Close

4-13 Individual Harmonics

Superimposes an individual harmonic onto the nominal ac mains waveform. Harmonics are applied one at a time. Each harmonic frequency is applied for the specified dwell time and removed for the specified pause time.

Edit Harmonics Parameters

Parameter Set: Class 2 Harmonics

Dwell Time (sec): 5.0   Pause Time (sec): 5.0   ☑ Skip if all previous steps have passed

Harmonic #	Level (%)	Phase (deg)
2	3.0	0 and 180
3	8.0	0 and 180
4	1.5	0
5	9.0	0 and 180
6	0.0	0
7	7.5	0 and 180
8	0.0	0
9	2.5	0
10	0.0	0

Insert Line   Delete Line   Close

4-13 Individual Interharmonics

Superimposes a discrete frequency signal onto the nominal ac mains waveform. The signal is stepped in up to 20 bands. The signal dwells at each frequency for the specified dwell time and is removed in between frequency steps for the specified pause time.

Edit Interharmonics Parameters

Parameter Set: Class 2 50Hz Interharmonics

Dwell Time (sec): 5.0   Pause Time (sec): 5.0   ☑ Skip if all previous steps have passed

Start Freq (Hz)	Stop Freq (Hz)	Freq Step	Level (%)
16	100	0.0625 x f1	2.5
100	500	0.125 x f1	5.0
500	750	0.125 x f1	3.5
750	1000	0.125 x f1	2.0
1000	2000	0.5 x f1	1.5

Insert Line   Delete Line   Close

Warranty

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