Xitron Technologies 2503AH LabView Applications Manual

February 1996

Revision A

<u>INSTALLATION REQUIREMENTS</u>
1. A 386 or better processor.
2. A math co-processor.
3. Windows version 3.11 or Windows NT ver 3.51.
4. 12 MEG of hard disk free.
5. 8 MEG of RAM minimum.
6. A National Instruments board and driver installed, *configured and fully working under Windows

<u>INSTALLATION INSTRUCTIONS</u>
1. Create a C:\XITRON subdirectory on your hard disk.
2. The Install program will copy the files from the disks to this subdirectory.

<u>FILES INCLUDED:</u>

LVDEVICE.DLL	This is the LabView Dynamic Link Library supplied by LabView and is required to run the executables.
GPIBDRV	This is the GPIB driver file supplied by LabView and is required to run the executables.
WAVDISP.EXE	This is a Windows executable file for the waveform display application.
AUTO_AD.EXE	This is a Windows executable file for the Automatic Class A/D determination application.
IEC1000.EXE.	This is a Windows executable file for the IEC1000 testing application.
IEC5552.INI	This is the saved settings for IEC1000-3-2.
IEC5553.INI	This is the saved settings for IEC1000-3-3.
2PLTINFO.INI	This is the saved plot information file for IEC1000-3-2.
3PLTINFO.INI	This is the saved plot information file for IEC1000-3-3.
AUTOAD.INI	This is the saved plot information file for AUTO_AD.EXE

All examples were written with National Instruments LabView for Windows version 3.1.1 and tested with a National Instrument's AT-GPIB/TNT card on a 386 with a math co-processor, running Windows for Workgroups 3.11. Additional testing was performed on a 486DX2/66 laptop with a National Instruments PCMCIA card, a AMD 386-40 desktop with 8 meg of ram and a DX4-100 running Windows NT 3.51 w/ 40 meg of ram.

*The GPIB configuration used during development is provided later in this manual.

General notes:

1. It is recommended that only one application be executed at a time. While it is possible to execute multiple copies, the results are unknown and system memory may become unstable.

2. A black arrow in the upper left corner or the window indicates a program is running. A white arrow indicates the program is stopped. Pressing a white arrow (or selecting RUN from the Operate menu) will start a program executing.
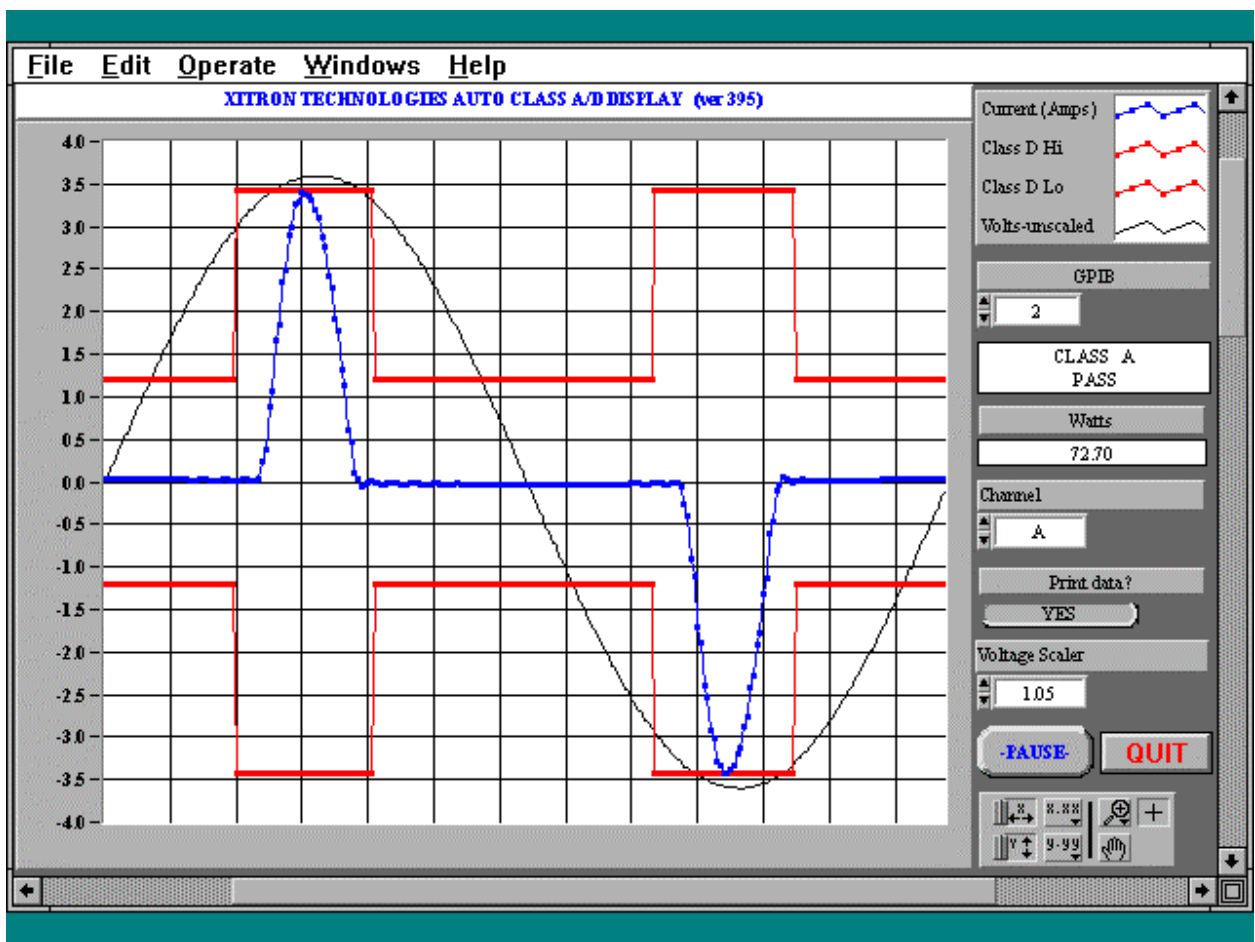
AUTO_AD.EXE

This application:

1. Sets the unit up for IEC1000-3-2 testing.
2. Reads the first through fortieth harmonic and the phase relationship of each harmonic to the fundamental.
3. *Performs an inverse FFT on the data to produce the waveform.
4. Displays the waveform
5. *Checks the waveform/harmonics against the requirements of Class A and Class D and select the appropriate class.
6. *Tests the data against the chosen class and Pass or Fail the data.

*Note: The application automatically detects the firmware version of the unit and if firmware 3.95 or greater is installed in the unit, the waveform is supplied by the unit, the computer no longer performs the inverse FFT. Additionally, the unit will perform the Class requirement, switch to the proper Class, test the data and report the status. The computer becomes a display device only.
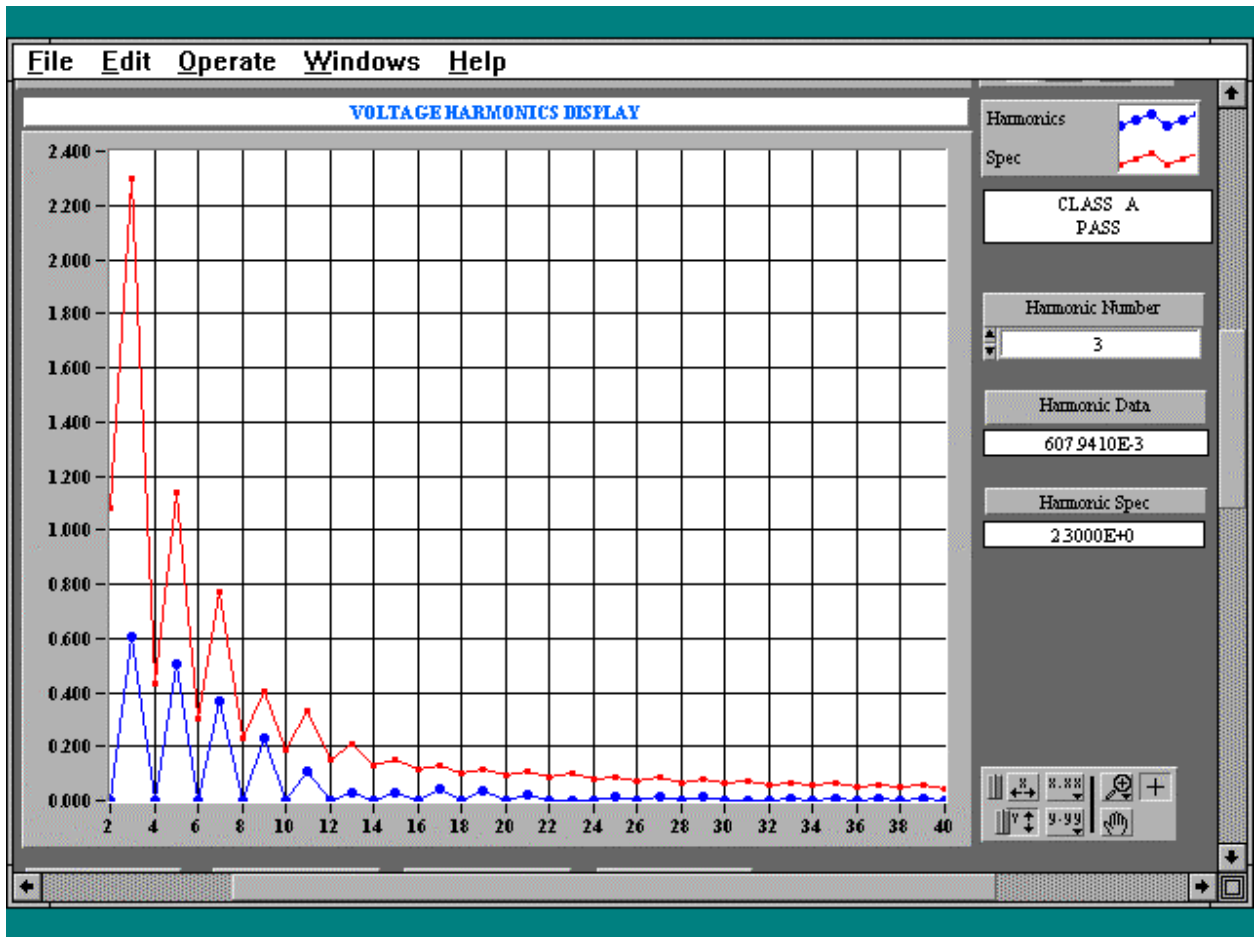
This is the main screen:

The display shows the current waveform, the voltage waveform and the special window for

IEC1000-3-2 Class D. The user may select the channel and whether to print the numeric data or not. The voltage waveform is initially scaled to match the peak of the current waveform. Additional scaling is provided by the Voltage Scalar control.

This is the second screen, located below the main screen.

This screen shows the harmonics as plotted against the class limit. The Harmonic number control allows the user to select one harmonic and see the actual numeric data. The plot palette, located is the lower right corner, may be used to enable/disable autoscaling of the x axis and the y axis. Scale precision is also available through this control. A zoom tool allows the user to select and view plot areas at higher resolution. Note: When autoscaling is enabled (the default) it may override a user selection.

The third screen is only visible if the Print Data control (main screen) is set to YES. It is located below the second screen:

Harmonic #	DATA	SPEC	STATUS
2nd	1.208E-3	1.026E+0	pass
3d	607.789E-3	2.301E+0	pass
4th	1.143E-3	419.572E-3	pass
5th	501.580E-3	1.140E+0	pass
6th	1.017E-3	304.990E-3	pass
7th	368.016E-3	769.929E-3	pass
8th	784.005E-6	245.476E-3	pass
9th	230.570E-3	399.827E-3	pass
10th	592.636E-6	194.019E-3	pass
11th	111.141E-3	329.673E-3	pass
12th	388.846E-6	144.002E-3	pass
13th	27.258E-3	210.130E-3	pass
14th	293.910E-6	117.818E-3	pass
15th	32.115E-3	150.327E-3	pass
16th	196.915E-6	99.761E-3	pass
17th	46.638E-3	132.204E-3	pass
18th	175.540E-6	100.733E-3	pass
19th	38.419E-3	118.125E-3	pass
20th	91.372E-6	77.900E-3	pass
21th	18.808E-3	106.672E-3	pass
22th	109.478E-6	65.084E-3	pass
23th	1.144E-3	97.368E-3	pass
24th	107.504E-6	70.513E-3	pass
25th	13.520E-3	89.883E-3	pass

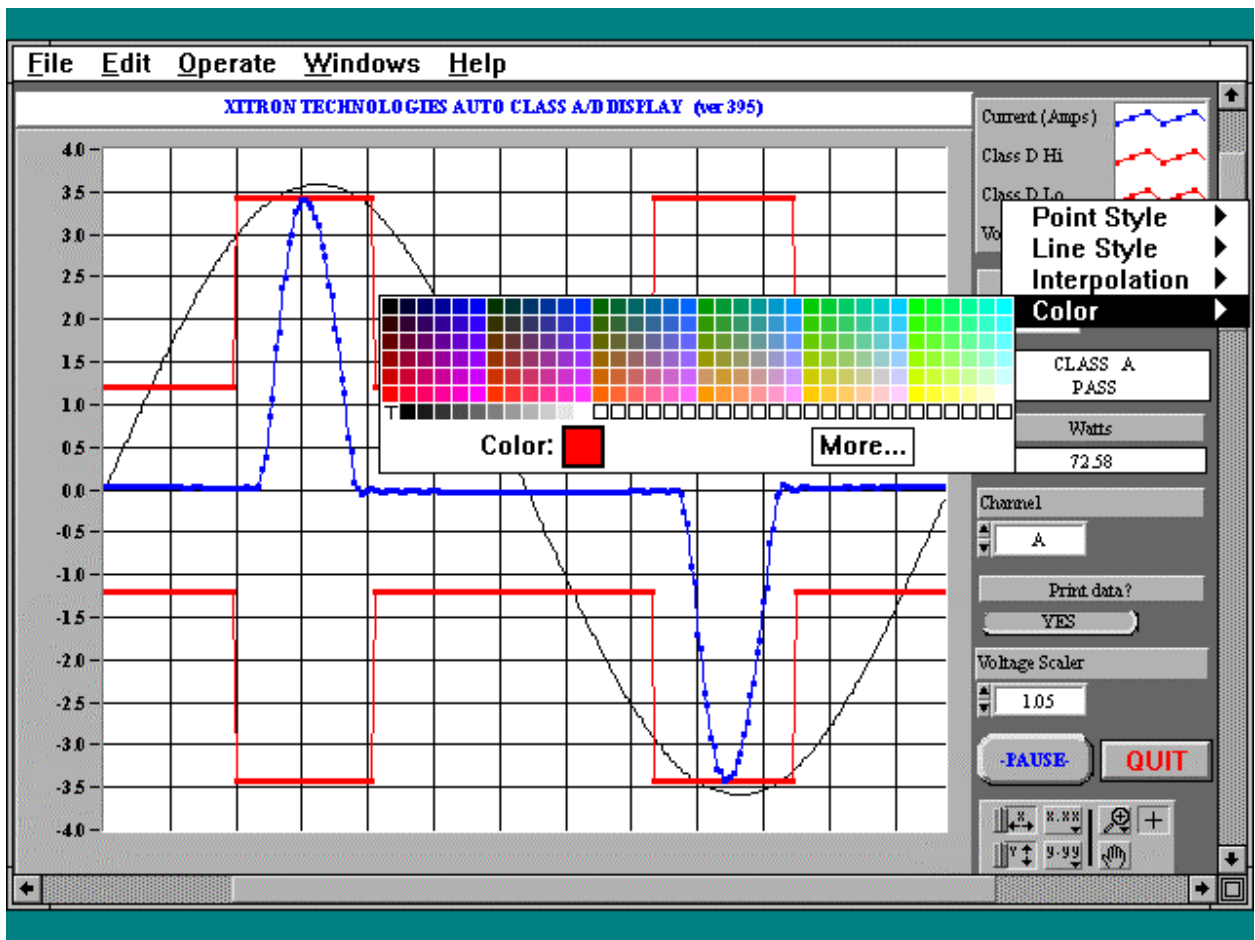File Edit Operate Windows Help

PASS: <80% of Spec
marginal: >=80% of Spec
FAIL: > 100% of Spec

Marginal trip point (%)

80

This screen shows the data points for all forty harmonics. The Marginal Trip point control will allow the user to set a level between pass and fail. Any setting above 100% will disable the control.

All plot information (point style, line style, interpolation and color) is stored upon completion of each test. If the user wishes to change the plot information, place the mouse pointer over the line to change in the legend and press the right mouse button. This activates a pop up menu, allowing the user to change the settings. Upon completion of a test (any length) the present plot information is written to a file and is used as the default for the next test.
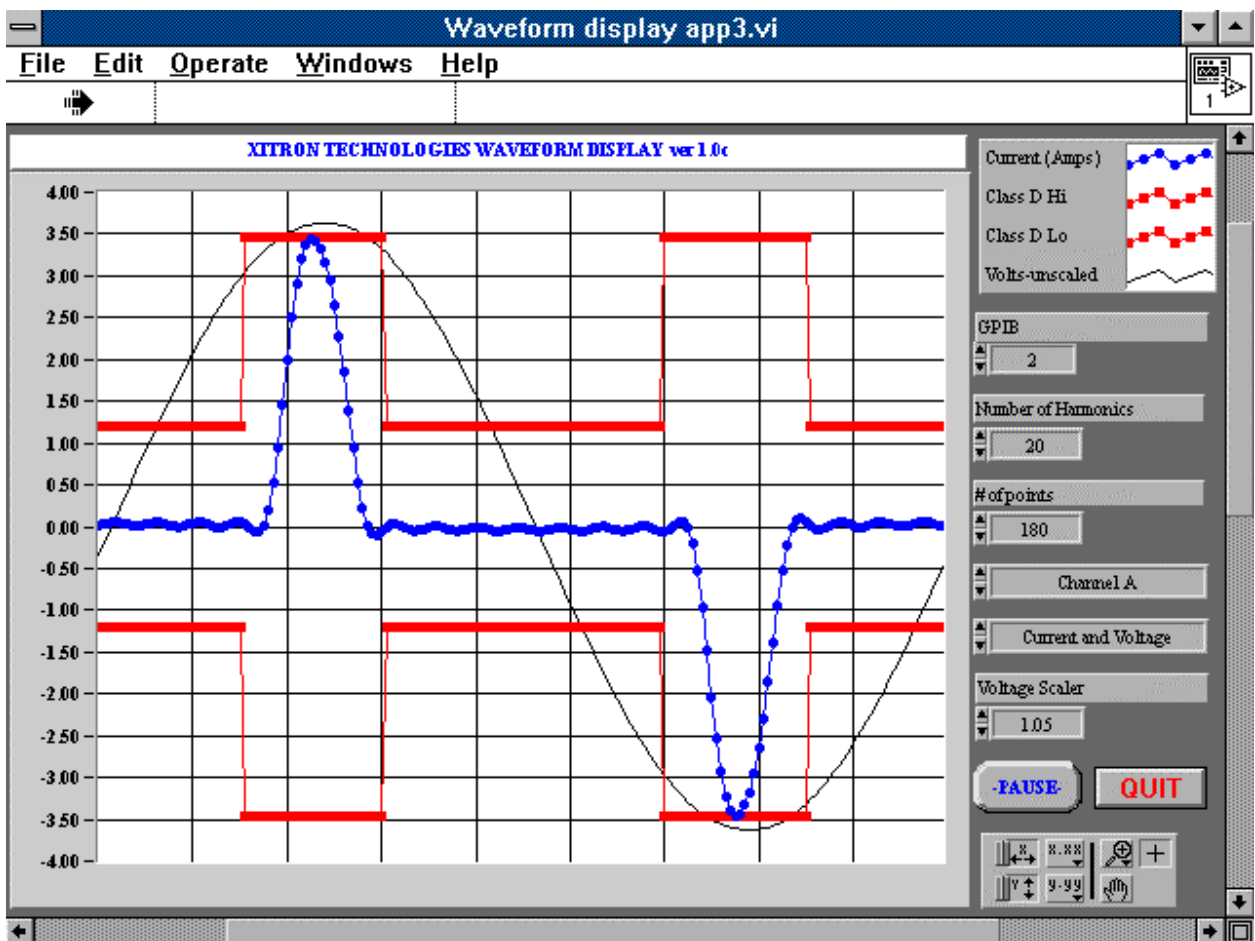

The color in the lower left corner of the color pallet is labeled "T". This is a transparent color and may be used to make lines invisible. Additionally, if you chose a white color on a white background, this could make the line very difficult to see…..
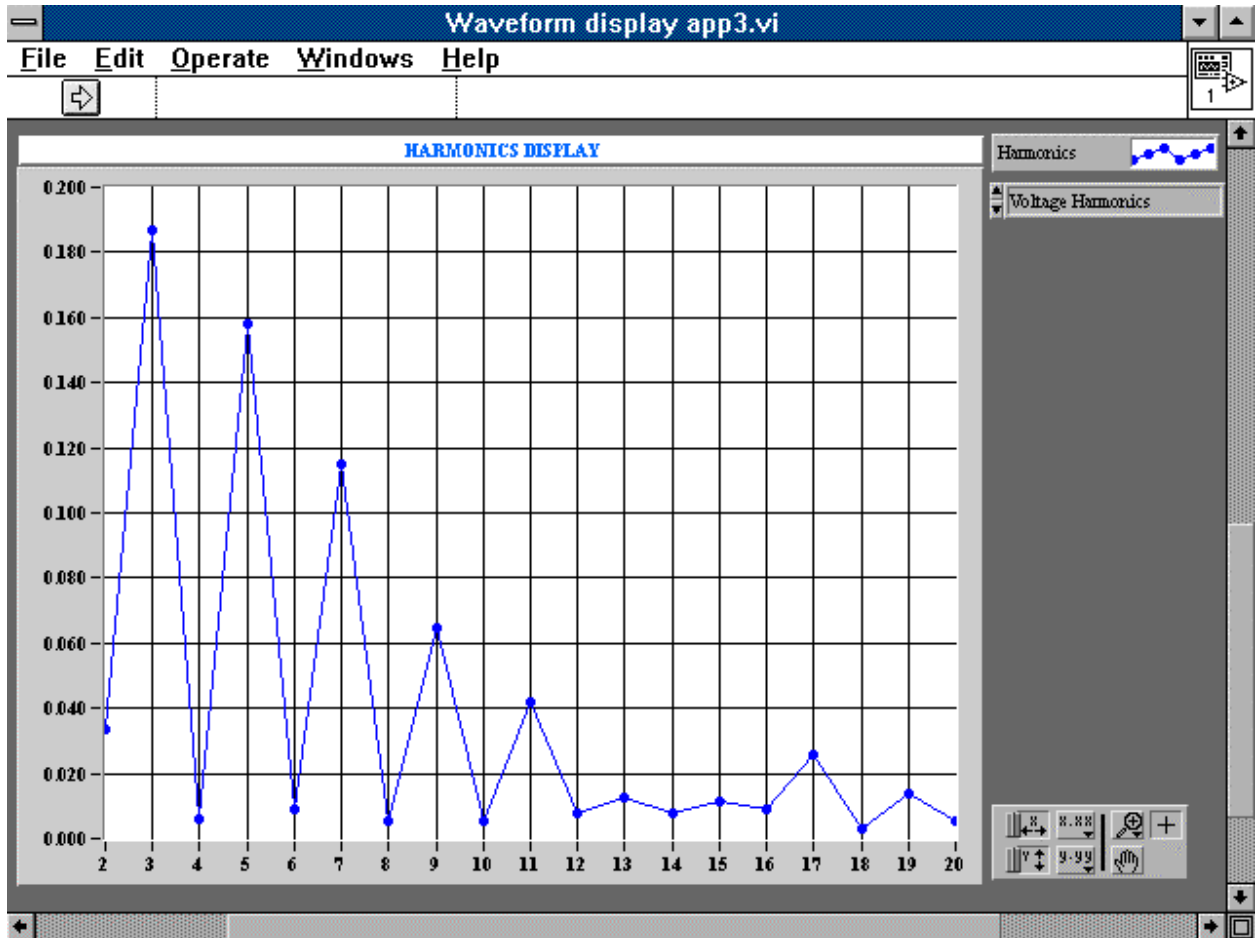
WAVDISP.EXE

This application reads up to 49 harmonics and phases and performs an inverse FFT on the data and displays the resulting waveform. The user may select the number of harmonics to use, the number of points in the FFT (45 to 360), the channel to use and whether to include voltage harmonics and phases in the waveform display. This program does not alter the unit configuration. If harmonic analysis is disabled or restricted within the unit, the results will reflect missing data, i.e. if you ask for 20 harmonics, but the unit is limited to 5, your data will only include through the fifth harmonic. Update rates are highly dependent upon the number of harmonics used, the number of points used and the speed of the computer. Twenty harmonics and 180 points will display most waveforms at an acceptable update rate.

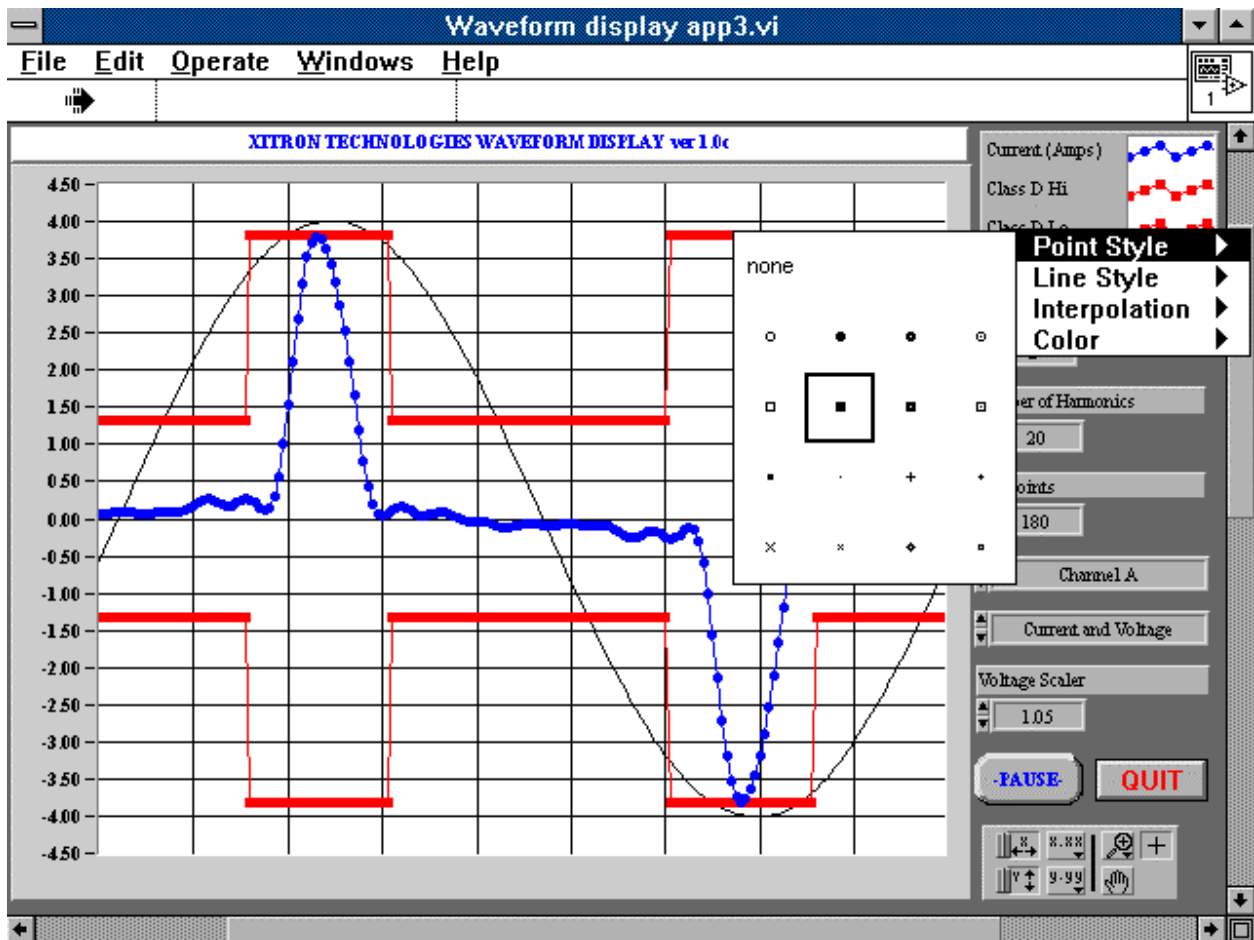This is the main screen. The black arrow indicates the program is running.

The display shows the current waveform, the voltage waveform and the special window for IEC1000-3-2 Class D. The voltage waveform is initially scaled to match the peak of the current waveform. Additional scaling is provided by the Voltage Scale control. The plot palette, located is the lower right corner, may be used to enable/disable autoscaling of the x axis and the y axis. Scale precision is also available through this control. A zoom tool allows the user to select and view plot areas at higher resolution. Note: When autoscaling is enabled (the default) it may override a user selection.

This is the second screen, located below the main screen. This screen is presently showing a white arrow, indicating the program is stopped.

This screen plots the harmonic data. This user may display current harmonics or voltage harmonics. Note: the voltage choice is disabled if the Current and Voltage control on the main screen is set to Current Only.

All plot information (point style, line style, interpolation and color) is stored upon completion of each test. If the user wishes to change the plot information, place the mouse pointer over the line to change in the legend and press the right mouse button. This activates a pop up menu, allowing the user to change the settings. Upon completion of a test (any length) the present plot information is written to a file and is used as the default for the next test.

The color in the lower left corner of the color pallet is labeled "T". This is a transparent color and may be used to make lines invisible. Additionally, if you chose a white color on a white background, this could make the line very difficult to see. The above example shows the Point Style settings.

IEC1000.EXE

This application configures the unit to perform IEC1000-3-2 and IEC1000-3-3 testing. Flicker testing (IEC1000-3-3) requires a unique mode of operation and requires a reset to exit this mode. A button in the opening screen commands a remote reset. Xitron's default IEEE address is 2. If your unit has been changed, adjust the address for the reset here.

Note: Booting the unit into a saved Flicker mode configuration is highly discouraged. Flicker mode is a unique mode and should always be entered from a non-flicker mode and then configured to ensure proper operation. This application properly configures the unit from any non-flicker mode to the required flicker configuration.

This is the opening screen:

IEC1000-3-2

This application configures the unit for IEC1000-3-2 (IEC555.2) testing and allows user entry into several fields in the SETUP screen. Once this screen has been accessed, the values are saved as default values for consequent tests. If SETUP has not been accessed, the RUN button will bring up the SETUP screen automatically.

The user may enter data into several fields that will be printed on the test report. Additional selections are:

Class   Choose the type of test (steady state or fluctuating) and the class you wish to test to. The example has been set for automatic detection of class A or D in the steady state mode.

Test Time   The length of time you want the test to run.

No of Phases   One, two or three phases.

Check Source   The unit can measure the source and determine if it meets the requirements for testing. If it does not, an error message will identify the worst failure point.

Send to Output File Allows logging the raw data to the hard disk.

Update Rate   A time delay, used to limit the amount of data going to the hard disk.
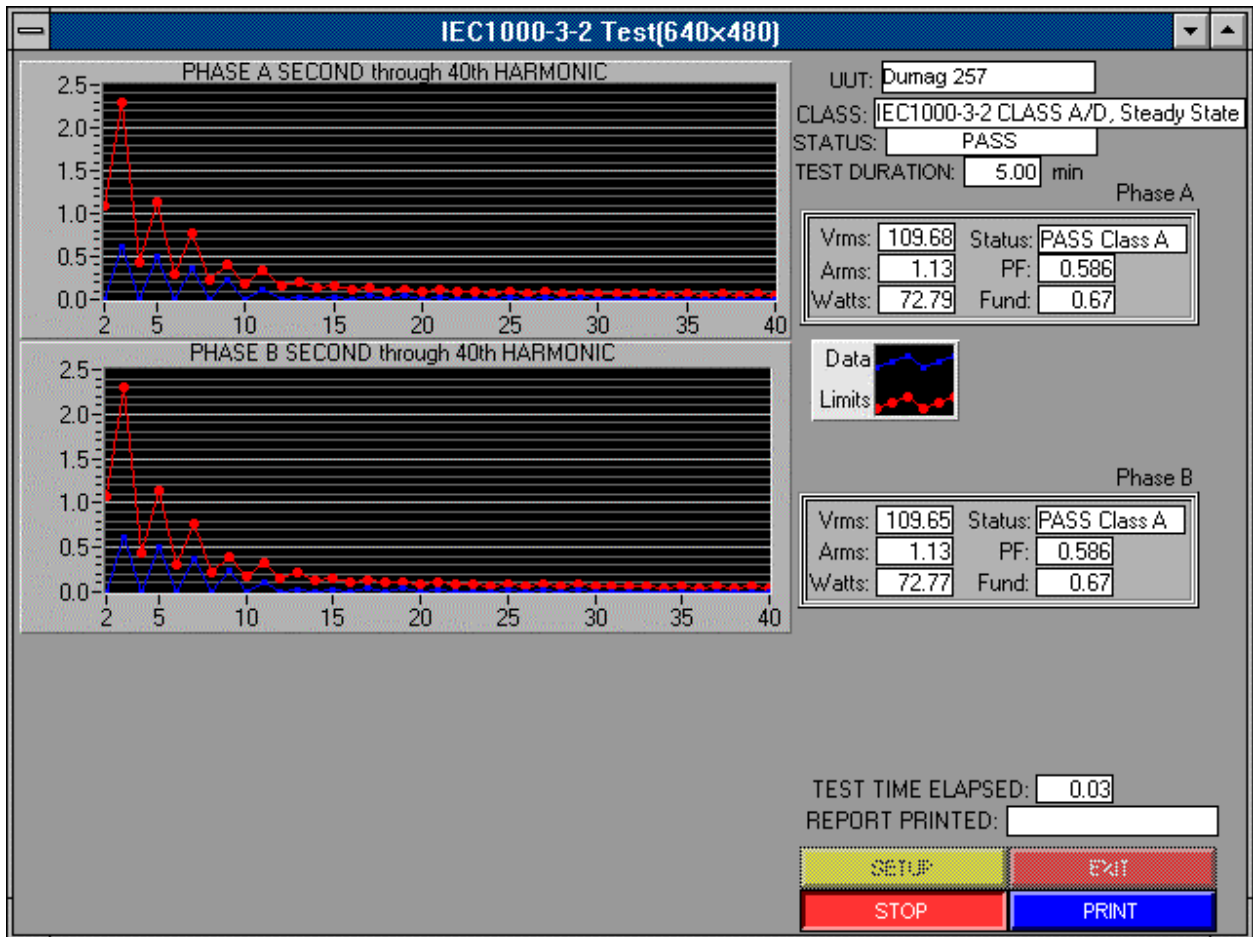
Stop on Failure   If you want to terminate the test immediately upon measuring a fail condition, set this to YES.

GPIB Address   Set this to your units IEEE address.

This is the main test screen:

Upon completion of the test, you may print a test report by pressing the print button. The exit button will take you back to the opening screen. All plot information (point style, line style, interpolation and color) is stored upon completion of each test. If the user wishes to change the plot information, place the mouse pointer over the line to change in the legend and press the right mouse button. This activates a pop up menu, allowing the user to change the settings. Upon completion of a test (any length) the present plot information is written to a file and is used as the default for the next test.

IEC1000-3-3

This application will configure the unit for IEC1000-3-3 (IEC555.3) testing and allow user entry into several fields in the SETUP screen. Once this screen has been accessed, the values are saved as default values for consequent tests. If SETUP has not been accessed, the RUN button will bring up the SETUP screen automatically.

This is the IEC1000-3-3 Setup Screen:

The user may enter data into several fields that will be printed on the test report. Additional selections are:

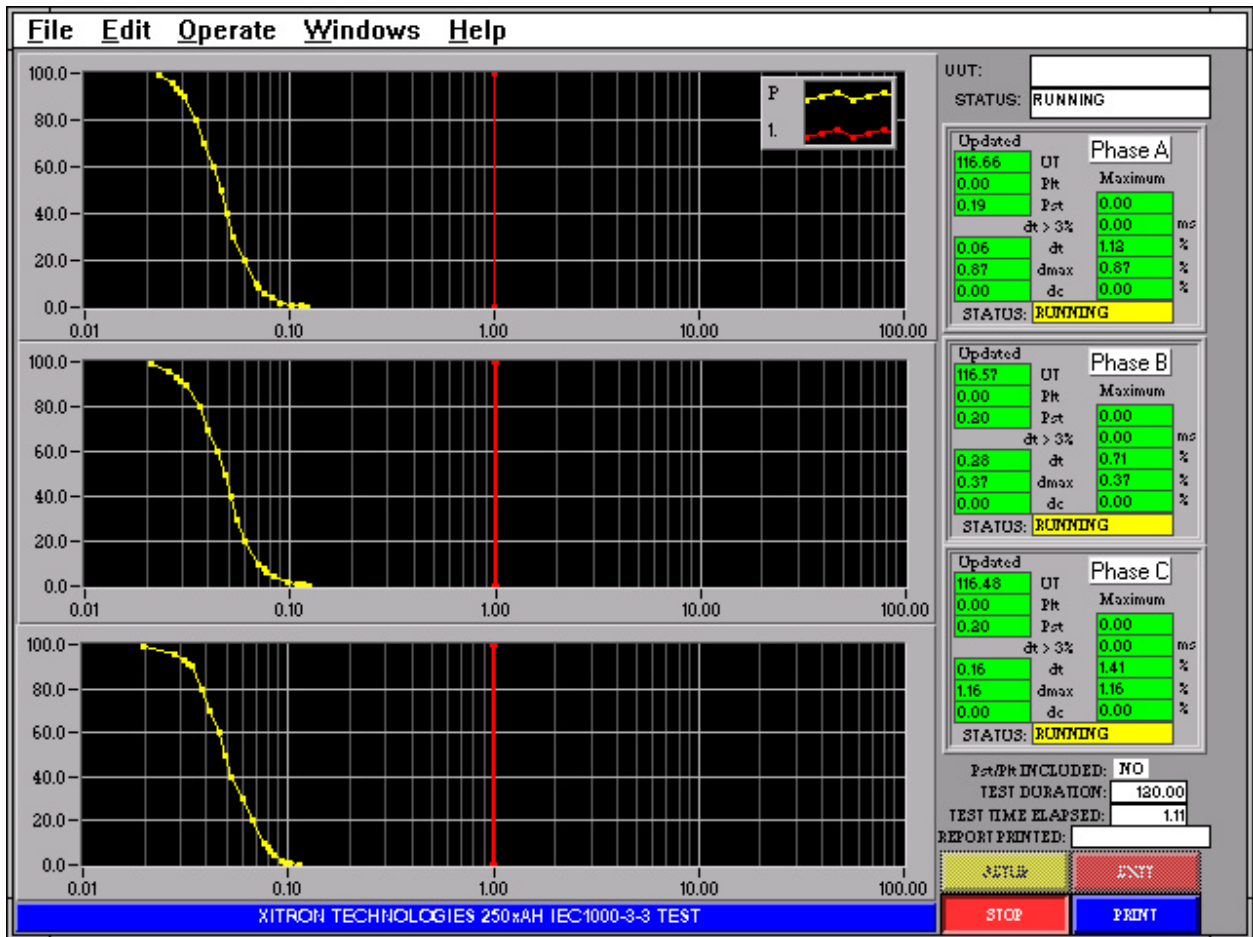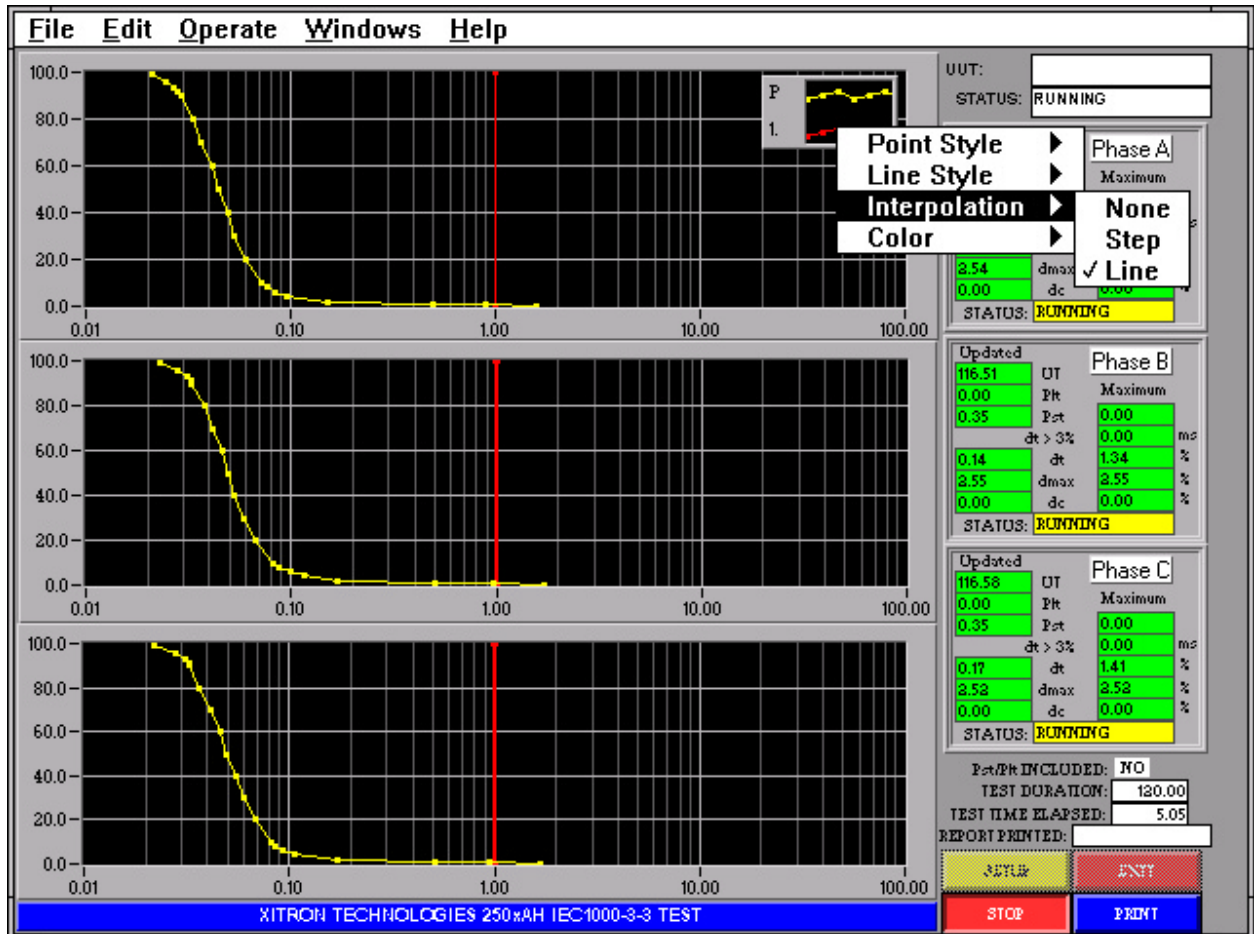|	
Use Pst & Plt	If Pst and Plt are to be used in the Pass/Fail decisions, set this switch ON.
Test Time	The length of time you want the test to run.
No of Phases	One, two or three phases.
Send to Output File	Allows logging the raw data to the hard disk.
Update Rate	A time delay, used to limit the amount of data going to the hard disk.
GPIB Address	Set this to your units IEEE address.

The Main screen:

Upon completion of the test, the test report may be printed by pushing the print button.

All plot information (point style, line style, interpolation and color) is stored upon completion of each test. If the user wishes to change the plot information, place the mouse pointer over the line to change in the legend and press the right mouse button. This activates a pop up menu, allowing the user to change the settings. Upon completion of a test (any length) the present plot information is written to a file and is used as the default for the next test.

The color in the lower left corner of the color pallet is labeled "T". This is a transparent color and may be used to make lines invisible. Additionally, if you chose a white color on a white background, this could make the line very difficult to see. The above example shows the Interpolation choices.

This is the setup used for the GPIB driver.

National Instruments   GPIB0 Configuration   AT-GPIB/TNT Ver 2.5

Primary GPIB Address	0
Secondary GPIB Address	NONE
Timeout	10sec
Terminate Read on EOS	Yes
Set EOI with EOS on Writes	No
Type of compare on EOS	7-bit
EOS byte	0Ah
Send EOI at end of Write	Yes
System Controller	Yes
Assert REN when SC	No
Enable Auto Serial Polling	Yes
Enable CIC Protocol	No
Bus Timing	500ns
Cable Length for High Speed	Off
Parallel Poll Duration	Default
Use this GPIB interface	Yes
Base I/O Address	02C0h
Interrupt Level	11
DMA Channel	NONE
DMA Transfer Mode	Demand

National Instruments   DEV2 Configuration   AT-GPIB/TNT Ver 2.5

Primary GPIB Address	2
Secondary GPIB Address	NONE
Timeout setting	10sec
Serial Poll Timeout	3sec
Terminate Read on EOS	No
Set EOI with EOS on Writes	No
Type of compare on EOS	7-bit
EOS byte	00h
Send EOI at end of Write	Yes
Enable Repeat Addressing	Yes