

HP 35639A Data Viewer User's Guide



**Part Number 35639-90000
Microfiche Number E1485-90200**

**Printed in U.S.A.
Print Date: April, 1994**

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8600 Soper Hill Road Everett, Washington 98205-1298 U.S.A.



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Overview

With the HP 35639A Data Viewer you can examine test results on your personal computer, generate reports, and automate the printing and plotting of your data.

Examining test results

The HP 35639A Data Viewer lets you view measurement data on your PC. If the data is on a LAN it is available to anyone with a personal computer and the HP 35639A Data Viewer. You can examine the data, compare data from different instruments, or compare old and new data.

The following marker types and display types allow you to examine data on your personal computer just as on the instrument that took the data.

Markers (ten maximum):

- Absolute
- Relative
- Peak search

Display functions:

- Real
- Imaginary
- Magnitude
- Log magnitude
- dB
- dBm
- Intensity
- Phase
- Unwrapped phase
- Nichols
- Polar
- Vector (Nyquist)
- I-Eye
- Q-Eye
- Trellis-Eye
- Symbol Table

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Generating reports

With the HP 35639A Data Viewer you can generate reports using your test data. Use the Windows clipboard to "paste" your HP 35639A Data Viewer displays into any Windows word processor.

Using the HP 35639A Data Viewer you can customize the displays to look just the way you want. You can then save your custom configuration as a named trace template. You can re-use the template later to save time and to give your reports a consistent look.

Customizable display attributes:

- Trace text fonts
- User text fonts
- Line, text, marker, and grid colors
- Line widths
- Line types
- Grid styles

Printing and plotting

With the HP 35639A Data Viewer's Page Mode, you can:

- Create plots or prints of your data with multiple displays per page
- Lay out as many displays as you want
- Locate the displays on the page however you want
- Annotate the page with arrows and your own text
- Add a page title
- Print or plot the page
- Paste the page into a word processor document

You can automate the layout process by saving the page layout as a page template. Then you can select multiple files to be automatically printed using the template.

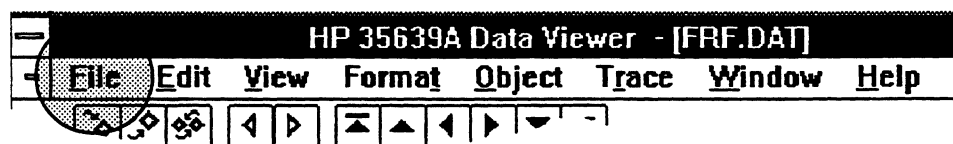
Supported products

The HP 35639A Data Viewer supports the following products:

- HP 3560A
- HP 3562A
- HP 3563A
- HP 3566A
- HP 3567A
- HP 35665A
- HP 35670A
- HP 3569A
- HP 3587S
- HP 3588A
- HP 3589A
- HP 89410A
- HP 89440A
- HP 89441A

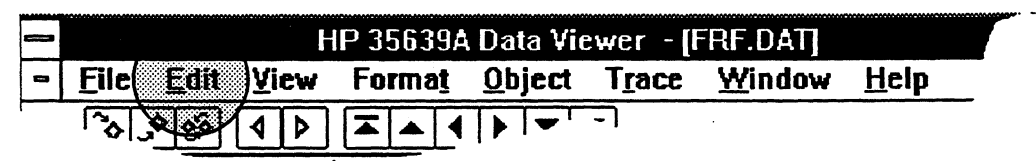
Menu Bar

The File menu



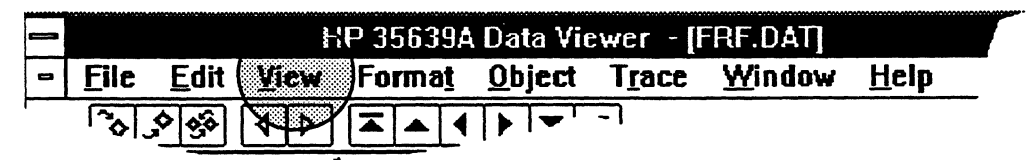
	First level	Second level	Dialog boxes
File	New	Page Trace	
	Open	Data... Page... Trace...	Open dialog box Open dialog box Open dialog box
	Close		
	Close Data		Close Data dialog box
	Save As	Data... Page... Trace... Graphics...	Save As dialog box Save As dialog box Save As dialog box Save As dialog box
	Save As Default	Page Trace Clear	
	Batch Convert...		Convert dialog box
	Print...		Print dialog box
	Batch Print...		Batch Print dialog box
	Preferences		
		Freq Domain...	Frequency Domain dialog box
	Exit		

The Edit menu



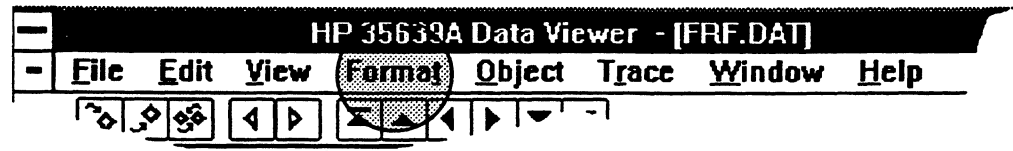
	First level	Second level	Dialog boxes
Edit	Undo		
	Copy Data		
	Copy Bitmap		
	Delete		
	Erase Page		

The View menu



	First level	Second level	Dialog boxes
View	Full Page		
	Actual Size		
	Zoom...		Zoom dialog box
	Ruler		
	Tool Bar		
	Status Bar		

The Format menu



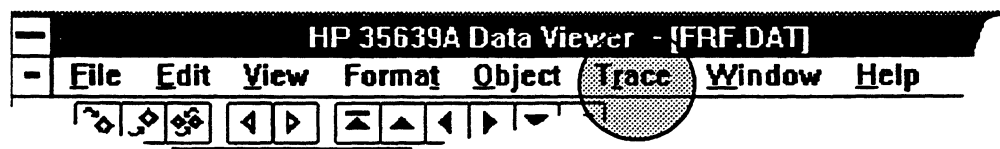
First level	Second level	Dialog boxes
Format		
Trace Font...		Font dialog box
User Font...		Font dialog box
Color...		Color dialog box
Trace Line		
	Hairline	
	0.5 Point	
	1 Point	
	1.5 Point	
	2 Point	
	2.5 Point	
	3 Point	
	Other...	Other Size dialog box
Marker Line		
	Hairline, etc.	
Grid Line		
	Hairline, etc.	
User Line		
	Hairline, etc.	
Page Setup...		Page Setup dialog box
Layout Traces...		Layout Traces dialog box

The Object menu



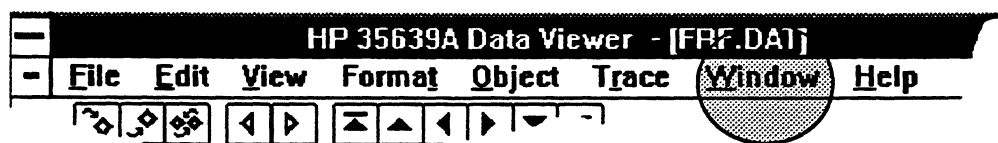
	First level	Second level	Dialog boxes
Object	Add	Trace	
		Text	
		Line	
	Move		
	Select		
	Edit...		Title dialog box
	Lock		
	Unlock		

The Trace menu



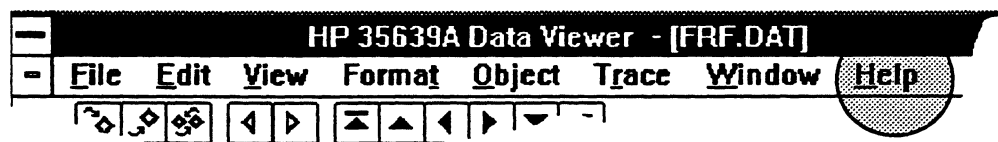
First level	Second level	Dialog boxes
Trace		
Result...		Select Result dialog box
Title...		Title dialog box
Draw...		Draw dialog box
Grid...		Grid dialog box
Overlay...		Overlays dialog box
Waterfall...		Waterfall dialog box
Coordinate		
	Y...	Y coordinates dialog box
	X...	X coordinates dialog box
Scale		
	Y...	Y Scale dialog box
	X...	X Scale dialog box
	Polar...	Polar dialog box
	Vector...	Vector dialog box
	Phase Center...	Phase Center dialog box
Unit		
	Y...	Y Frequency Units dialog box
	X...	X Frequency Units dialog box
Marker	Setup...	Marker Setup dialog box
Marker	Multiple...	Multiple Markers dialog box
Marker	Peak...	Peak Markers dialog box
View/Edit SDF...		View/Edit SDF dialog box

The Window menu



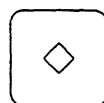
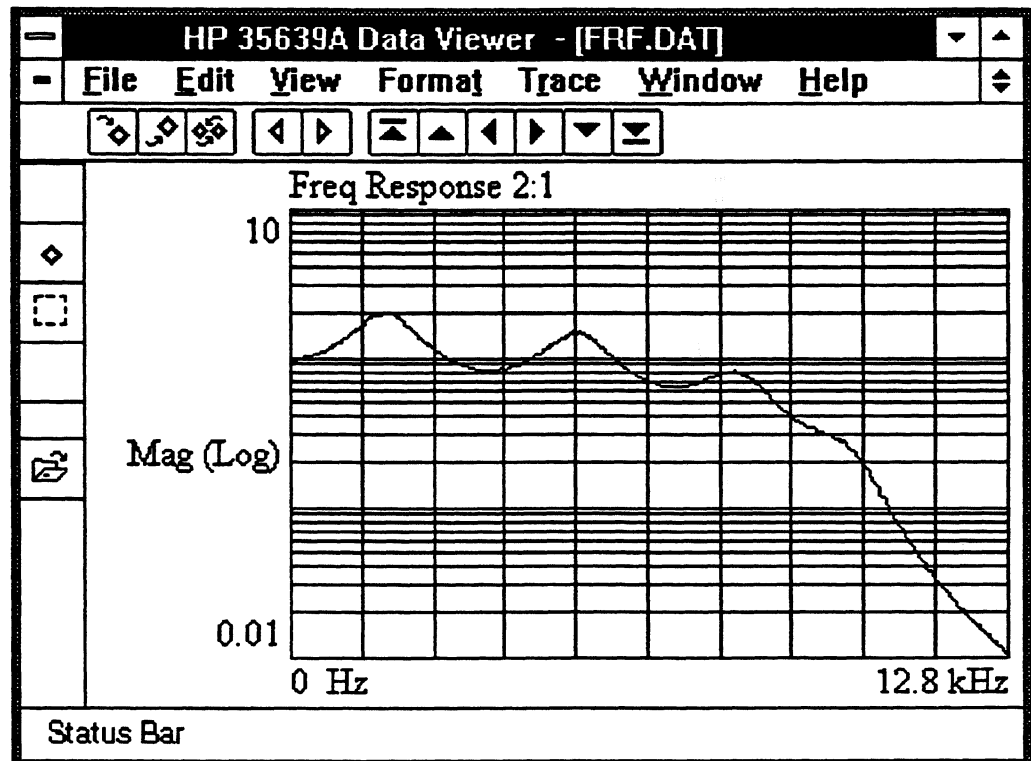
First level	Second level	Dialog boxes
Cascade		
Tile Vertically		
Tile Horizontally		
Arrange Icons		
Close All		
Refresh		
<i>list of open windows</i>		

The Help menu

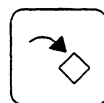


First level	Second level	Dialog boxes
Help		
Help...		Help system
About...		About dialog box
Register...		Register dialog box
Feedback...		Feedback dialog box

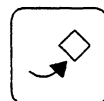
Toolbar - Marker Mode



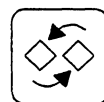
Add, remove, or move markers on trace.



Add another marker to the trace.



Remove a marker from the trace.



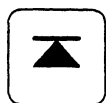
Add or remove a multiple markers.



Move marker left one point.



Move marker right one point.



Move marker to peak.



Move marker to next larger peak.



Move marker left to next peak.



Move marker right to next peak.



Move marker to next smaller peak.

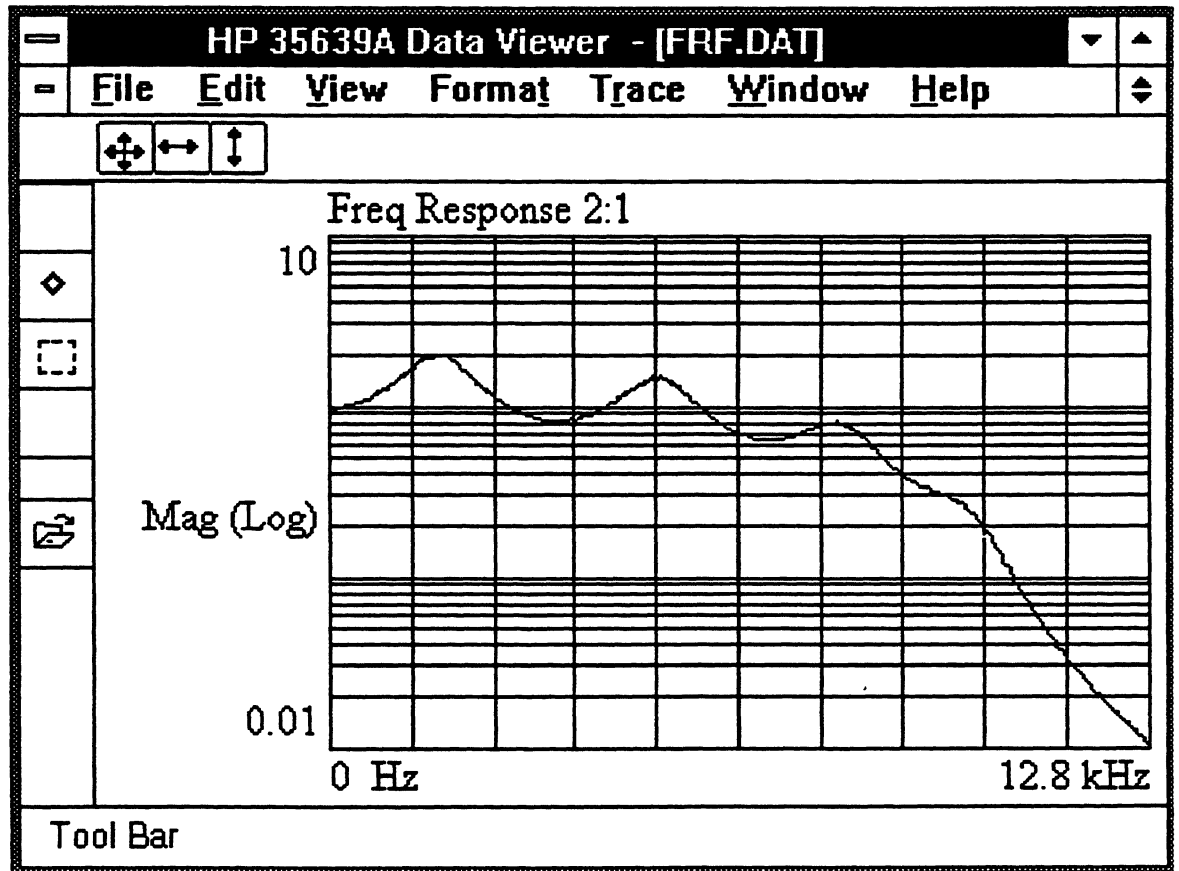


Move marker to minimum.



File Open data.

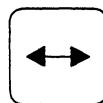
Toolbar - Change Scale



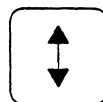
Change X or Y data scale on the trace.



Drag the cursor to scale in both the X and Y directions.

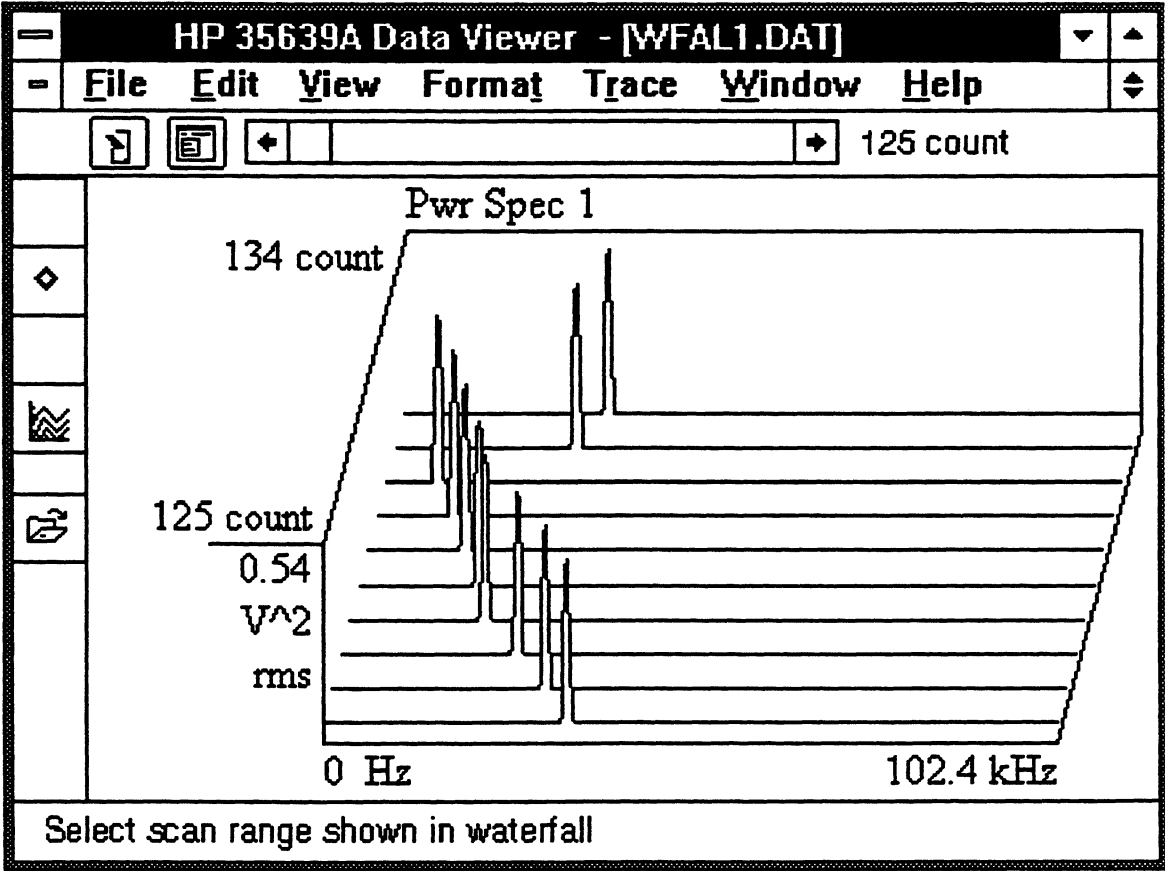


Drag the cursor to scale in the X direction.



Drag the cursor to scale in the Y direction.

Toolbar - Waterfall



Change waterfall of the trace.



Show waterfall On/Off.

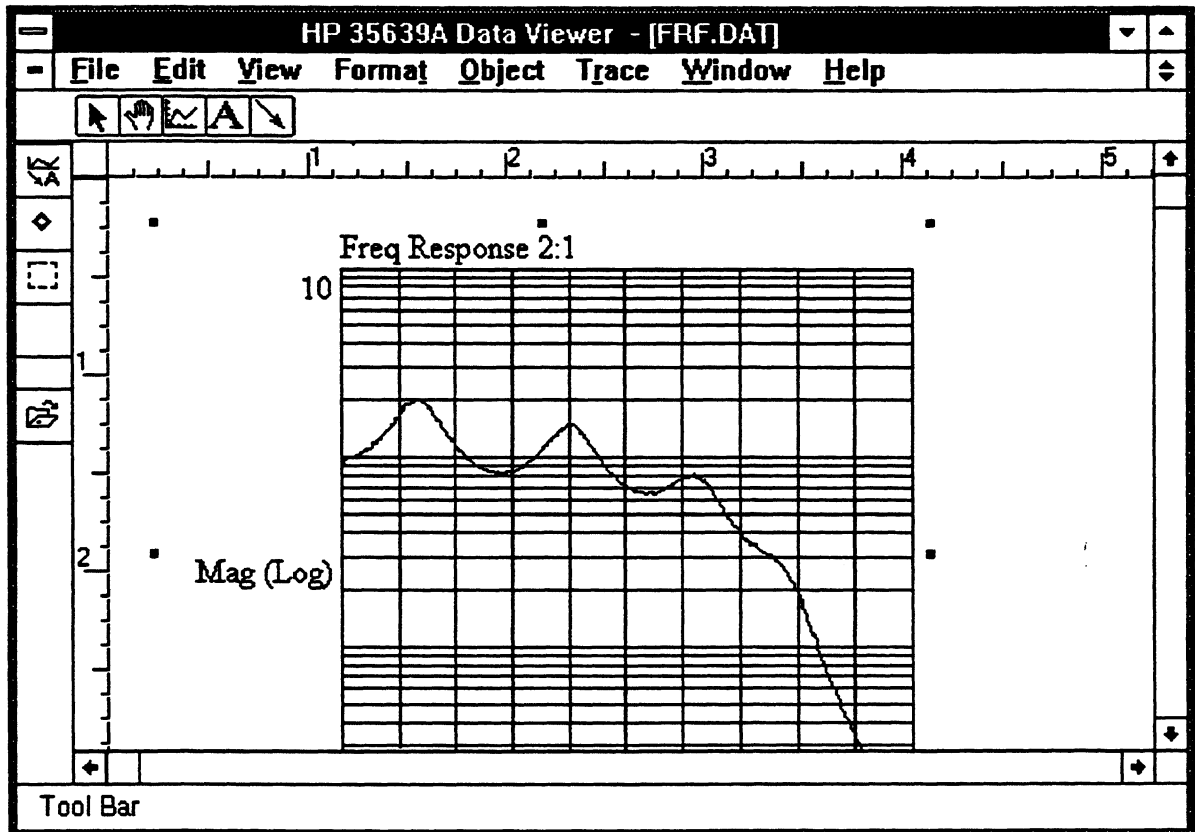


Select waterfall scan range, skew & hide lines (dialog box).



Select trace scan (slider).

Toolbar - Page Mode



Add or move traces, text, or lines.



Change trace, text, or line



Move or re-size trace, text, or line.



Add a trace to the page.



Add user text to the page.



Add a user line (or arrow) to the page.

Example Tasks

The following pages contain a number of example tasks which you can use to become more familiar with using the HP 35639A Data Viewer.

Note

All of these examples assume that the default frequency domain is set to Magnitude. To ensure that it is, click File, then click Preferences, then click Frequency Domain. In the Frequency Domain dialog box, click the Magnitude radio button. Then click OK.

Example task 1: Opening multiple files

- 1 Click File, then click Open, then click Data. (Another way to do this is to click on the "open folder" button on the vertical tool bar.)
- 2 Select the first four files in the File Name box. To do this, click on the first file, then hold down the Shift key while clicking on the fourth file.

You can also select the files by dragging (holding down the mouse button while moving the mouse) across them.

- 3 Add two more files which are not adjacent to the first four. To do this, hold down the Ctrl (control) key while clicking on them. You should now have six files highlighted.
- 4 Click OK.
- 5 Click Window, then click Tile Vertically

Your screen should look similar to the illustration on the next page.

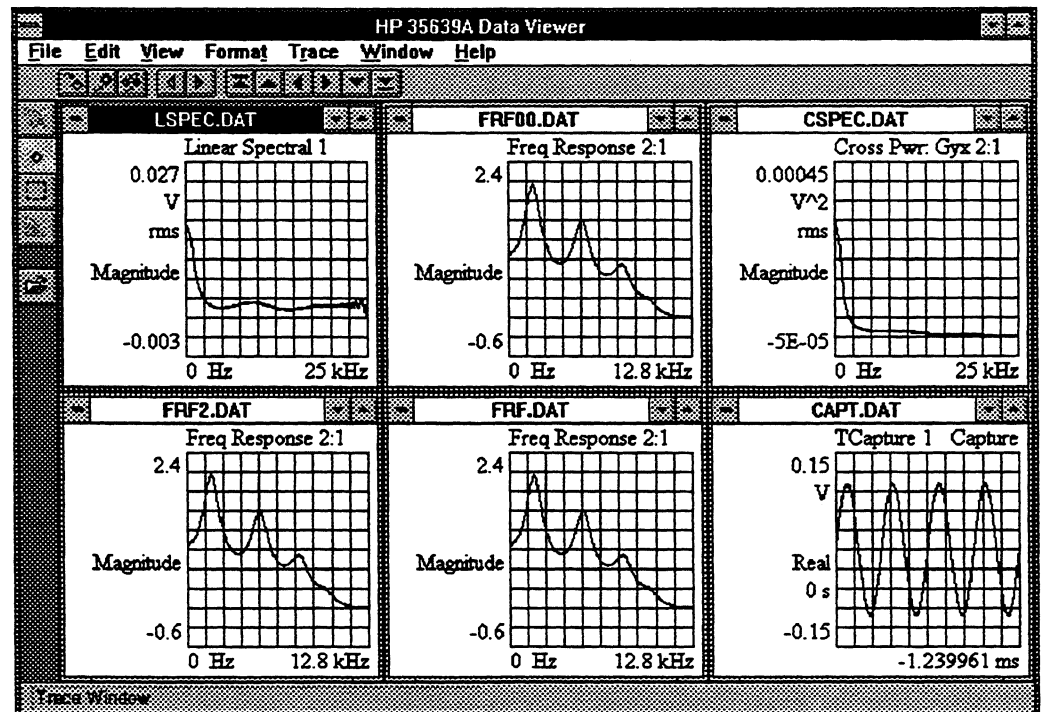


Figure 1. Opening multiple files

Example task 2: Using markers

- 1 Click Window, then click Close All to clear the display.
- 2 Click File, then click Open, then click Data. (Or click on the button which has an icon of an open file.) Select the FRF.DAT file and click OK.
- 3 Click on the word "Magnitude" next to the vertical axis. This will open a dialog box for Y Coordinates. Click on LogMag and click OK.

Be sure that the result field (above the upper left corner of the graph) shows "Freq Response". If it is not, click on the result shown to change it.

Notice that the cursor changes to a pointing-hand shape when you point to "Magnitude" or "Freq Response"; this indicates a "hot spot", a place where you can click to change the display.

Note

Notice the **status bar** at the bottom of the screen. When you point the cursor to a hot spot on the display or to a button on the tool bar, the status bar gives you a short description of what the hot spot or button does.

- 4 Place a marker on the trace. To do this, click the marker button (diamond-shaped icon on the side tool bar); this displays the marker tools (buttons) on the top tool bar. Click on the "peak marker" tool (triangle with a bar over it). This places a marker on the peak.
- 5 Place a second marker. This time use the "drop a marker" tool (diamond with a curved-down arrow). The new marker it will appear at the Y-axis. Move the new marker by clicking or dragging along the trace. Notice the marker readout (above the the main display). The X and Y values change as you move the marker. Move the new marker to 8 kHz.

Now your display should look similar to the illustration on the next page.

- 6 Click on the marker readout text for the active (moveable) marker. The text for the active marker is bright red and is surrounded by a box. This opens a dialog box where you can type in a new X value. Type in "10000" or "10k" (no quotes). This is another way to move the marker.

To make a different marker active, click on its marker readout text.

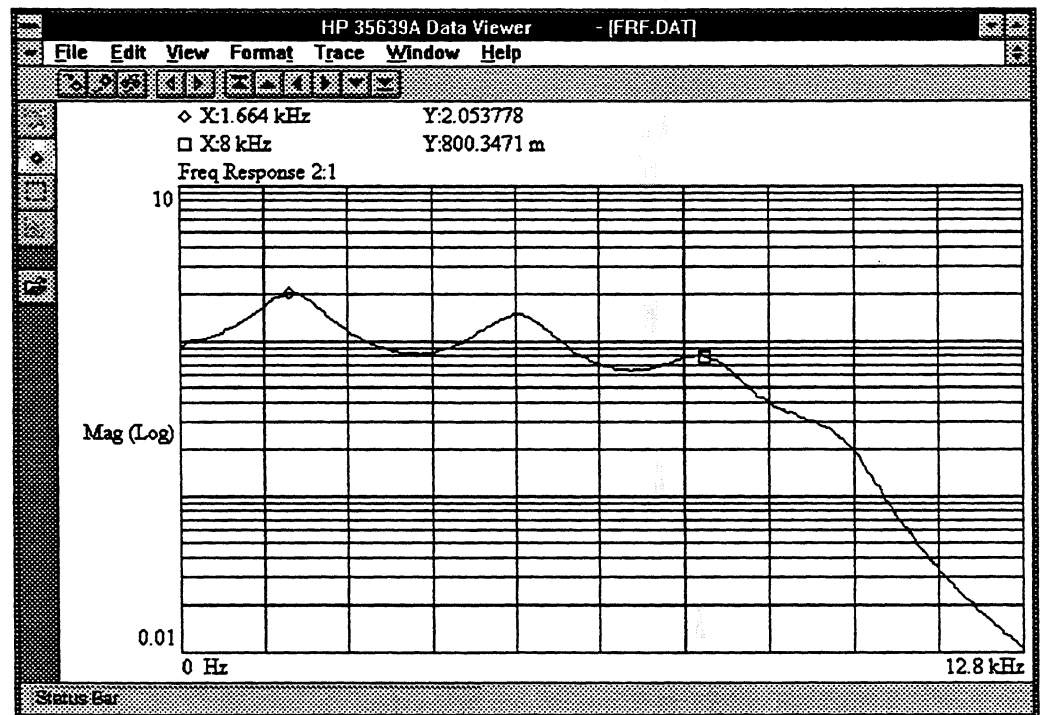


Figure 2. Using markers

7 The marker-movement buttons on the toolbar move the marker as follows:

icon	description
solid triangle pointing left	marker to next peak to the left
solid triangle pointing right	marker to next peak to the right
triangle pointing up	marker to next higher peak
triangle pointing down	marker to next lower peak
triangle pointing down, with a bar	marker to minimum
triangle pointing up, with a bar	marker to overall peak
hollow triangle pointing left	marker one bin (one data point) left
hollow triangle pointing right	marker one bin right

Experiment with these buttons to move the markers.

Example task 3: Advanced markers

- 1 Start with the Frequency Response display as in the previous task. Click the "double diamond" button. This opens a dialog box for Multiple Markers.
- 2 In the Multiple Markers dialog box click Remove All and OK to remove all markers from the trace.
- 3 Click the "double diamond" button again. In the dialog box select "3 markers" and OK. This opens a dialog box for Marker Setup.
- 4 In the Marker Setup dialog box click "peak search" and OK. This places three markers on the trace.
- 5 Click the "double diamond" button again. In the Multiple Markers dialog box click OK. In the Marker Setup dialog box at "Annotation" select "Minus Mkr 1".
- 6 Click OK. This creates a marker whose readout shows its distance from Marker 1. (Marker 1 is the marker whose readout appears highest in the list above the display.)
- 7 Using the mouse, move the new marker to a position 2.24 kHz to the right of Marker 1.

Your screen should look similar to the illustration on the next page.

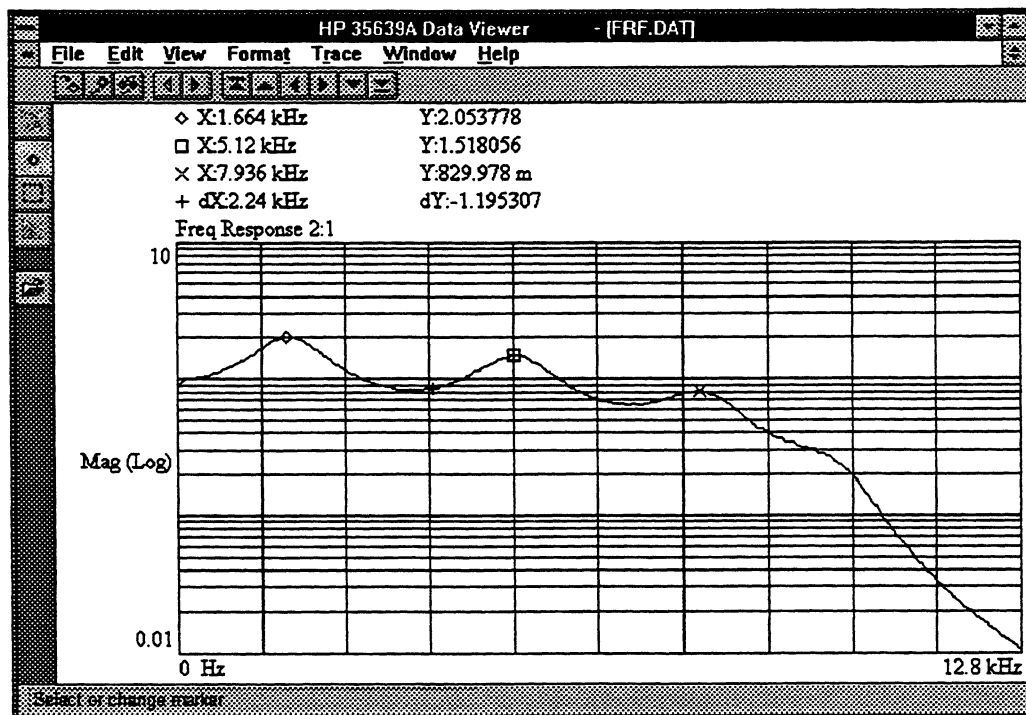


Figure 3. Advanced markers

Example task 4: Saving a template

You can save the settings you have created to a template. You can then recall the template later to apply the same settings to other data.

- 1 Start with the screen set up as at the end of the previous task.
- 2 Click File, then click Save As, then click Trace....
- 3 In the File Name box, type in a name for your trace (for example: MYTRACE.TRC). Then click OK.
- 4 Click File, then click New, then click Trace. The display will show a blank trace.
- 5 To recall the trace template: click File, then click Open, then click Trace. Select the name of your trace file (for example, MYTRACE.TRC) , then click OK.
- 6 To recall the data: click File, then click Open, then click Data. Select FRF.DAT, then click OK.

Your display should now be similar to the illustration on the next page, except that the markers will not appear.

- 7 Click File, then click Close to close the recalled template and display the original trace.

You can also make your settings the default so they will appear whenever you start your HP 35639A Data Viewer. To do this click File, then click Save As Default, then click Trace. To restore the original defaults click File, then click Save As Default, then click Clear.

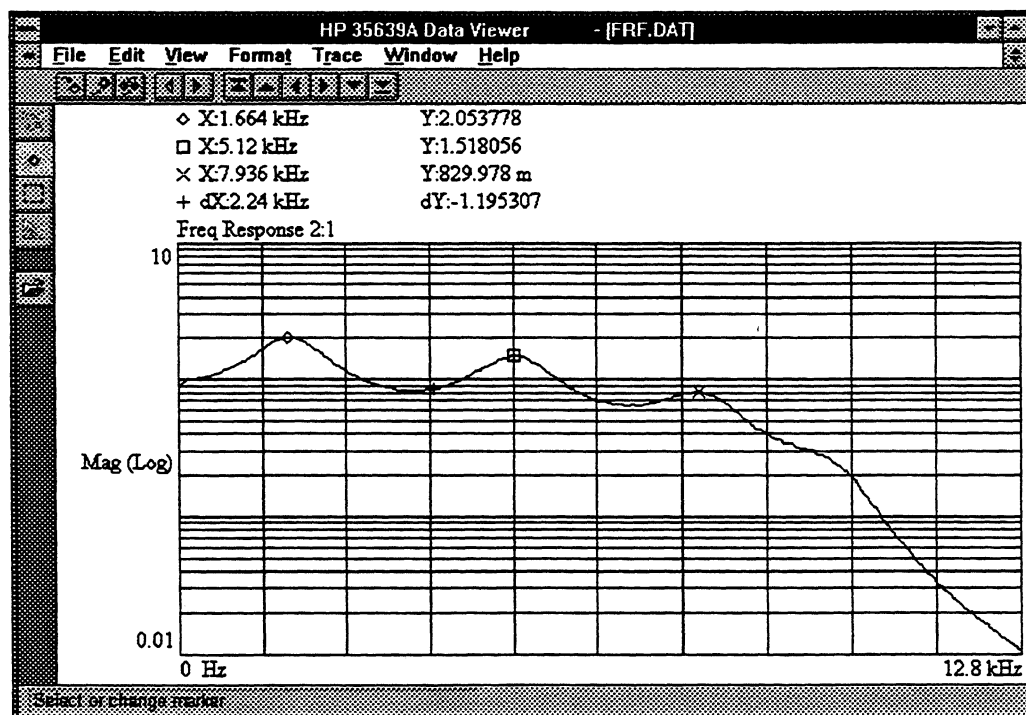


Figure 4. Saving settings to a template

Example task 5: Overlaid traces

- 1 Start with the screen set up as at the end of the previous task.
- 2 Click on the result field (currently "Freq Response"), this opens the Select Result dialog box. In the Result box, select Output Power. Then click Add Overlay. Then click OK.
- 3 Click on the "drop a marker" tool (diamond with a curved-down arrow) to add a marker to the new trace, at 0 kHz. Use the mouse to move the marker along the trace to 4 kHz.
- 4 Click on the result field for "Freq Response". If the marker readout for the relative marker ("+ dX: 2.24 kHz") is not already active, click on it to make it active. (The active marker text is shown by a box around it.) Use the mouse to move the "+" marker along the trace. This is how you can select an active trace and active marker.

Your screen should look similar to the illustration on the next page.

Notice that a box around the result field shows which of the two traces is active. Also the bright red marker readout text and a box surrounding the marker text show which marker is active for each trace.

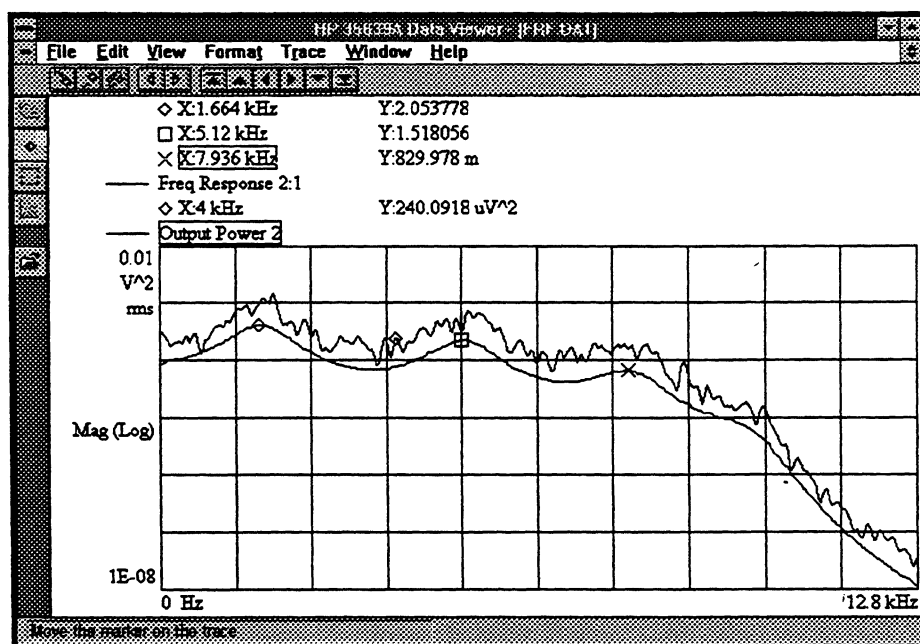


Figure 5. Overlaid traces

Example task 6: The waterfall display

- 1 Click Window, then click Close All to clear the display.
- 2 Click File, then click Open, then click Data. Select the WFAL1.DAT file, then click OK.
- 3 Click on the waterfall tools button (the icon is a graph with multiple lines). This makes the waterfall tools available.
- 4 Click on the toggle button (the "light switch" icon) to show the waterfall display.

The next three steps show an example of changing the skew angle.

- 5 Click the "Waterfall dialog box" button. This is the button just to the right of the toggle button.
- 6 In the Waterfall dialog box select "Skew", then change the angle from 15 to 30 (degrees). Then click OK. Notice how the display changes to show the new skew angle.
- 7 Repeat the previous steps to return the skew angle to 15 degrees.

The next three steps show an example of changing the baseline.

- 8 Click the "Waterfall dialog box" button.
- 9 In the Waterfall dialog box select "Trace", then change the baseline from 0 to 20 (percent). Then click OK. Notice how the display changes.
- 10 Repeat the previous steps to return the baseline to 0.

The next three steps show an example of changing the annotation on the waterfall display.

- 11 Click the "Waterfall dialog box" button.
- 12 In the Waterfall dialog box select "Annotation". Then click on the check box labeled: "Tick Marks". Then click OK. Notice how the display changes.
- 13 Repeat the previous steps to turn off tick marks.

The next three steps show an example of using markers with the waterfall display.

- 14 Click the Marker Tools button (small diamond) to display the marker tools on the upper toolbar.
- 15 Click the double-diamond button to open the Multiple Markers dialog box. Click OK to add one marker. This opens the Marker Setup dialog box. Click the "Peak Search" checkbox and click OK. The marker appears on the display and marker readout text appears above the display.
- 16 Use the slide bar in the upper tool bar to move the marker to different scan lines. Set the slider so that the reading to the right of the bar reads: "130 count".

Your screen should look similar to the illustration below.

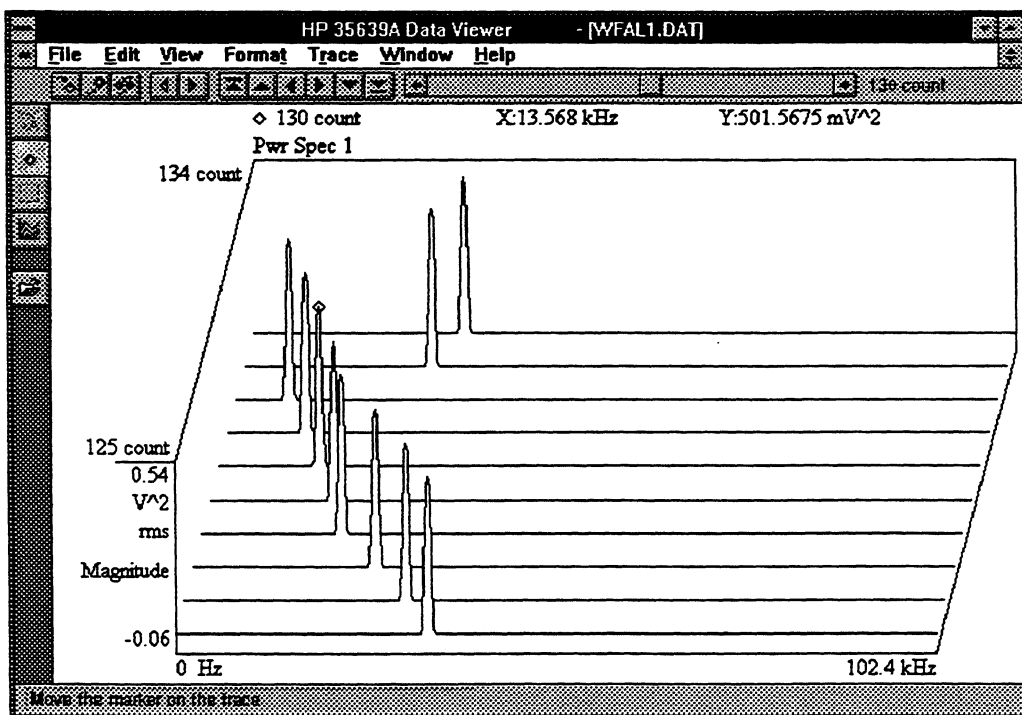


Figure 6. Waterfall display

Example task 7: Generating a report

- 1 Click Window, then click Close All to clear the display.
- 2 Click File, then click Open, then click Data. Select the FRF.DAT file, then click OK.
- 3 Add three peak markers. To do this click the marker tools button (single diamond), then click the multiple markers tool (double diamond). In the Multiple Markers dialog box select "3 markers" and click OK. In the Marker Setup dialog box select "Peak Search" and click OK.
- 4 Change the size and typeface of the text on your display. To do this click Format, then click Font, then select Font style Bold and Size 14 (points). Then click OK.
- 5 Change the color of the marker symbols and marker readout text for the inactive markers. To do this click Format, then click Color. In the Colors dialog box, click the radio button for "Inactive Mkr". Change the color to black by sliding all three color sliders to zero (that is, to the bottom of the bar). Notice the "Color" box which shows the resulting color. Click OK.
- 6 Add a title to your graph. To do this click Trace, then click Title. In the Title dialog box, click the "User" radio button. Then click in the "User Title" box and type in a title for your graph (for example: My Report). Click OK.

Change the color scheme to optimize colors on your printer. Click Format, then Color to open the Colors dialog box. For a color printer, click Color Schemes box and select Color Printer. For a black-and-white printer, click Color Schemes box and select Monochrome.

- 7 Change the Y-axis annotation from the left to right side. To do this click Trace, then click Grid. In the Grid dialog box, in the "Y Annotation" group of radio buttons, click "Right Side". Then click OK.
- 8 Copy your graph to the Windows Clipboard and paste it into a word processor document. To do this click Edit, then click Copy Graphics; this copies your display to the Clipboard. Open any Windows-compatible word processor (for example Microsoft® Write™. In the word processor press Ctrl-V on the keyboard to paste the contents of the clipboard into the word processor document.

Your screen should look similar to the illustration on the next page, depending on how you set up your HP 35639A Data Viewer and word processor windows.

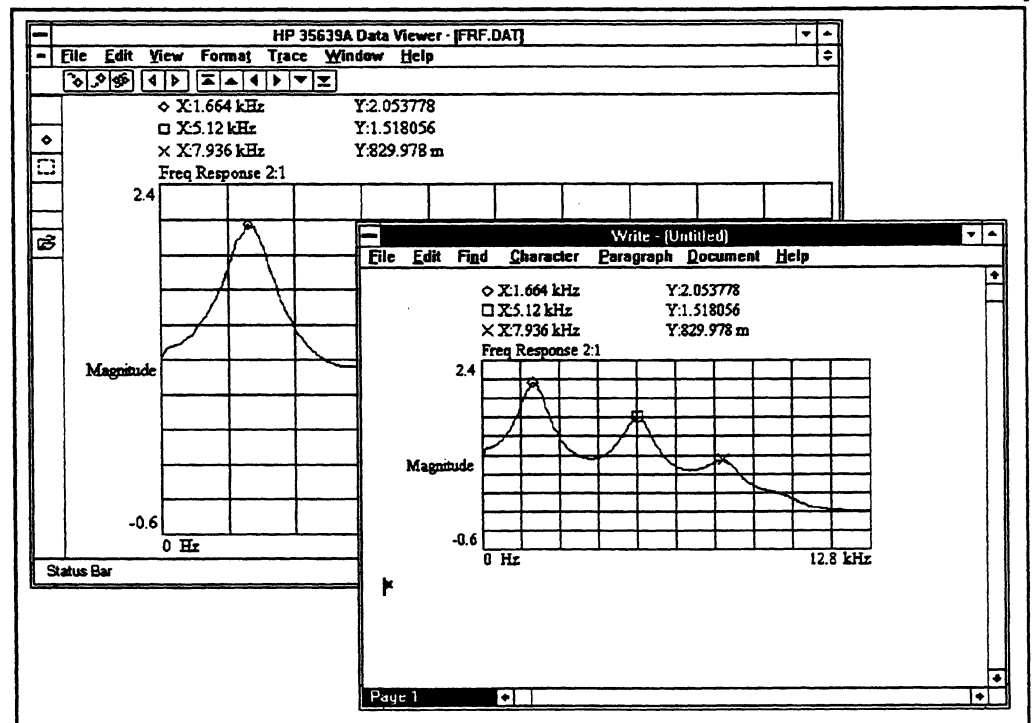


Figure 7. Generating a report

Return to the HP 35639A Data Viewer and experiment with other ways to change your display. In the Format menu, try Font, Colors, Trace Line, Marker Line and Grid Line. In the Trace menu, try Title, Draw, and Grid.

Example task 8: Using Page Mode

- 1 Click File, then click New, then click Page.
- 2 Click Format, then click Layout Traces. In the Layout Traces dialog box, select Rows: 2 and Cols (columns): 2. Then click OK.
- 3 Click View, then click Full Page to see the entire page on the screen.
- 4 Click File, then click Open, then click Data. Select the FRF.DAT file and click OK.

The data is now shown in the first display. Also, all of the measurement results in the data file FRF.DAT are available to all the displays on the page.

- 5 Click on the word "Magnitude" next to the vertical axis. This will open a dialog box for Y Coordinates. Click on LogMag and click OK.
- 6 On the upper-most display on the right-hand side of the page, click on the word "Empty" just above the graph. This will open the Select Result dialog box. Click on the word "Empty" in the Result box and select "Freq Response" from the list. Then click OK.
- 7 Click on the word "Magnitude" next to the vertical axis. In the Y Coordinates dialog box, click on "Phase". Then click OK.
- 8 On the lower display on the left-hand side of the page, click on the word "Empty". In the Select Result dialog box, replace "Empty" with "Coherence". Then click OK.
- 9 On the lower display on the right-hand side of the page, replace "Empty" with "Cross Power".

Your screen should look similar to the illustration the next page.

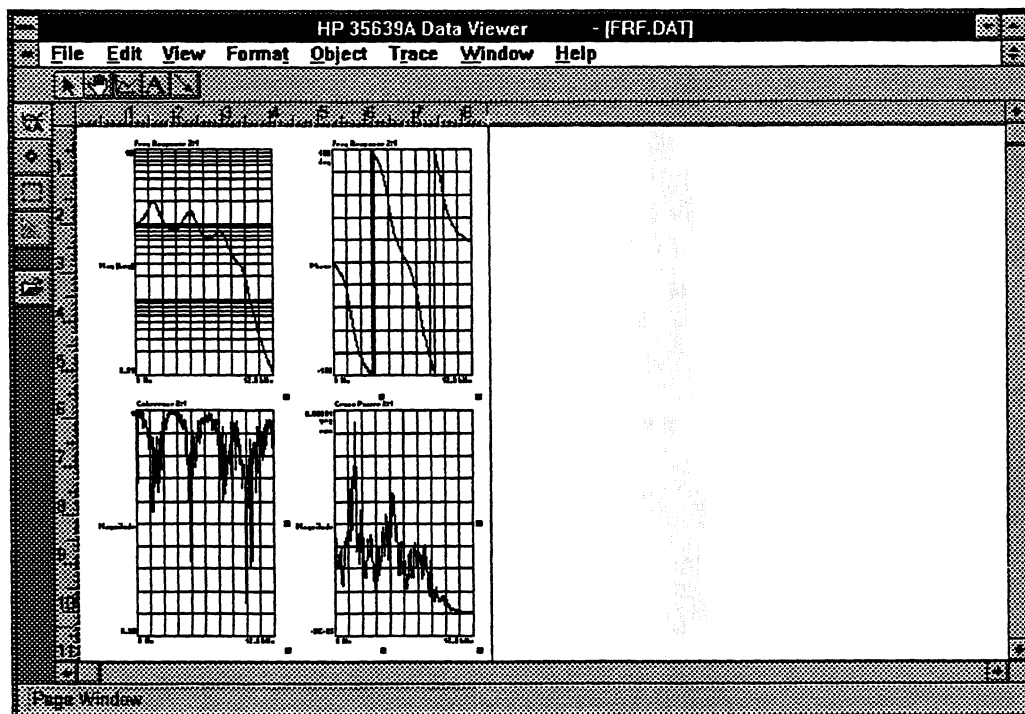


Figure 8. Using page mode

Example task 9: Adding Annotation

You can add annotation only in Page Mode.

- 1 Start with the Page display as in the previous task.
- 2 Click on View and click on Actual Size to turn off Full Page view.
- 3 Click on the "add or move..." button (the icon is a graph with an arrow and a letter "A").
- 4 Click on the "add a user line" button (a downward-pointing arrow). Then drag the mouse cursor to draw an arrow pointing to the trace in the upper-left display.

If you wish to delete an annotation (arrow or text) that you have added to the display: click on the item to select it, then click Edit and Delete (or press the Delete key on the keyboard).

- 5 Add text to your display. To do this click on the "add user text" button (the icon is the letter "A"). Then drag the mouse on the display to create a text box. Double-click in the text box (or press Enter) to open the Text dialog box. Type in a line or two of text (for example "This is a trace."). Then click OK. If necessary use the "move or re-size..." button (the icon is an open hand) to stretch the text box to display all of your text. To stretch the text box, place the cursor on one of the eight "handles" of the box and drag the handle with the cursor.
- 6 Move the text to the line up with the arrow you created earlier. To do this, click on the "move or re-size..." (hand) button, then use the hand-shaped cursor to drag the text box to the position you want.
- 7 Change your user text to italic typeface. To do this click Format and User Font. In the Font dialog box change "Regular" to "Italic". Then press OK.

Your screen should look similar to the illustration the next page.

Experiment with adding more annotations to your display.

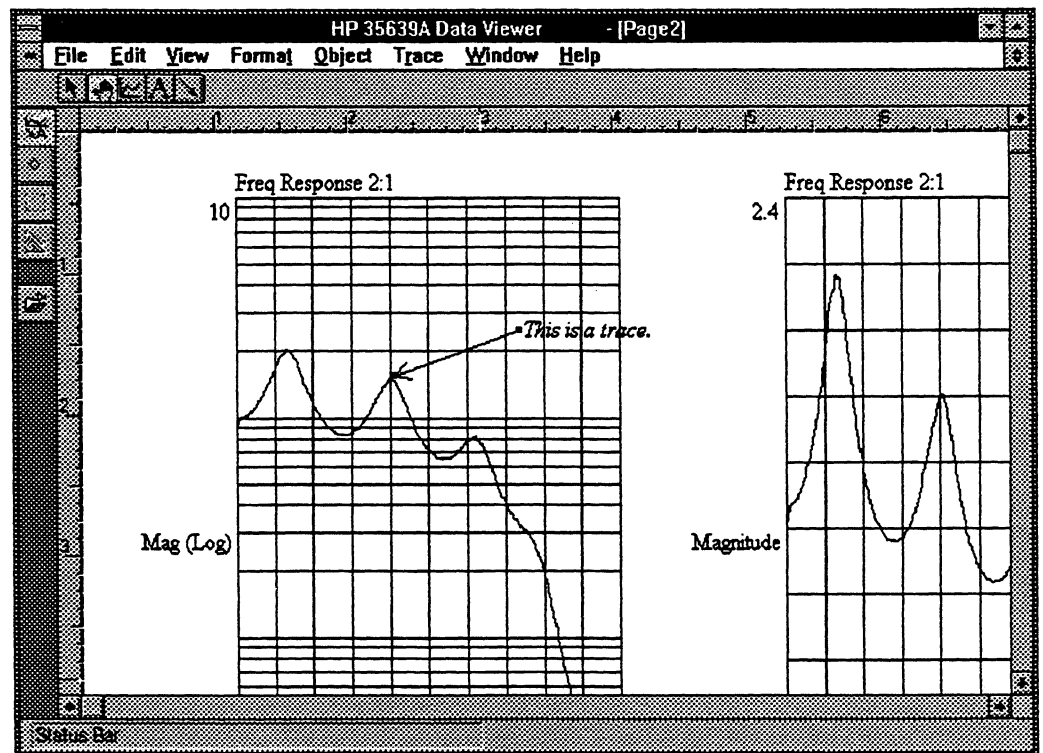


Figure 9. Adding annotation

Example task 10: Batch printing

- 1 Click Window, then click Close All to close all previous windows. Click File, then click New, then click Page to set up a new page. Click View and Full Page if necessary to see the entire page.
- 2 Click Format, then click Layout Traces. In the Layout Traces dialog box, type in a page title (for example: "This is a Title"). Leave the trace layout at 3 rows and 2 columns. Then click OK.
- 3 Click Format, then click Colors. In the Colors dialog box click the Color Schemes box and select Monochrome. This select a black-and-white color scheme.
- 4 Click File and Batch Print. In the Batch Print dialog box select FRF.DAT and click OK.
- 5 In the second Batch Print dialog box, select the List radio button and click the Select button. This opens the Select Result dialog box which includes a list of measurement results listed by number. To see the corresponding results for your data file listed by name, click From File and click FRF.DAT. Then click OK.
- 6 On the list of results click Freq Response, Coherence, Input Power, and Cross Power. The dialog box now indicates that your selected list is "List: 0:2,4". That is: results 0 thru 2, and result 4. Click OK to close the Select Result dialog box.
- 7 Back in the Batch Print dialog box, in the "Channels" group of radio buttons, click First. Click OK to close the Batch Print dialog box.
- 8 In the Print dialog box, click OK to start the batch print.

Your print-out should look similar to the illustration the next page.

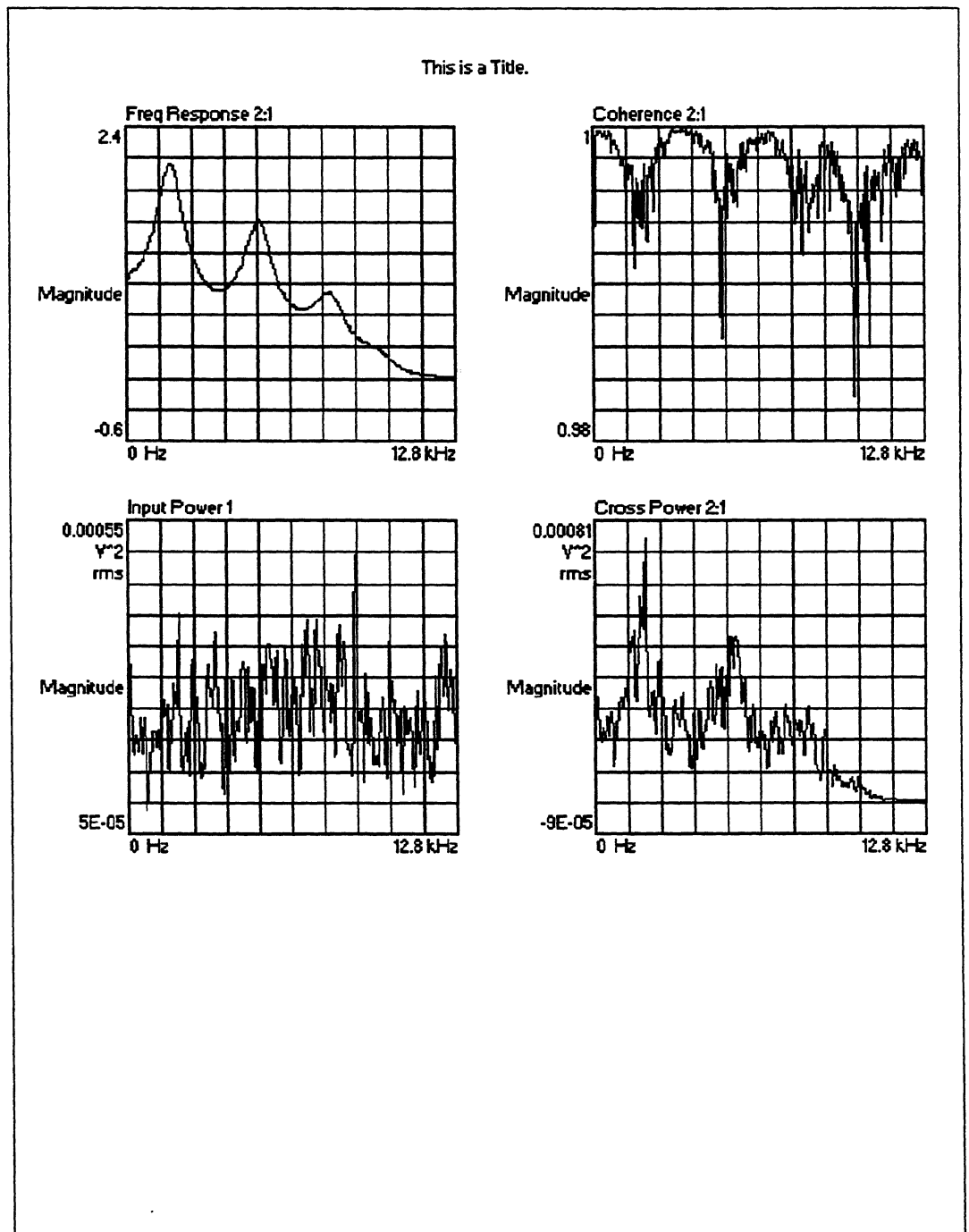


Figure 10. An example of batch printing

Example task 11: Using polar plots

- 1 Click Window, then click Close All to clear the display.
- 2 Click File, then click Open, then click Data. Select the FRF.DAT file, then click OK.
- 3 Click the Y-axis coordinate ("Magnitude"). In the Y Coordinates dialog box, select Polar. Then click OK.
- 4 Click Trace, then click Draw. In the Draw dialog box, click "Z annotation". Then click OK.
- 5 Click the Marker Tools button. Then click the marker "double-diamond" button. In the Multiple Markers dialog box, click OK. In the Marker Setup dialog box, click the "X" box and type in "5120". This sets the X value of the markers to 5.12 kHz. Click OK.
- 6 Click Trace, then click Scale, then click Polar. In the Polar Scale dialog box, click "Marker" (in the Center section) and click the "Offset data" checkbox.scale. Click OK.

Your screen should look similar to the illustration on the next page.

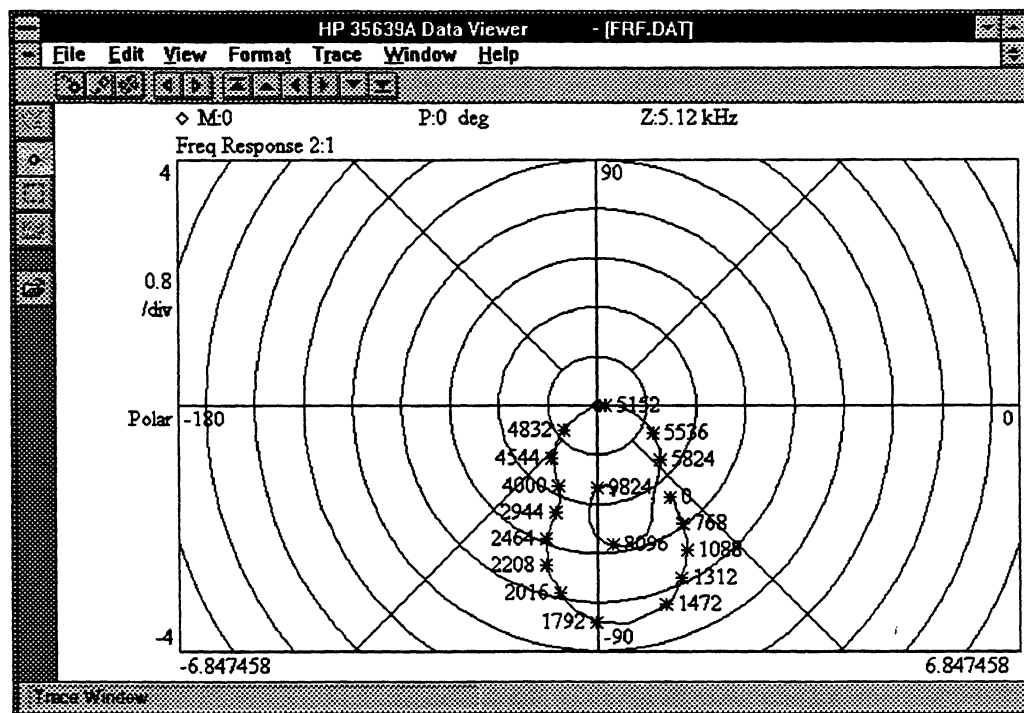


Figure 11. Polar plot

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