

## Addendum for PolyMask Option

If the PolyMask option is present, the Pass/Fail test menus are slightly modified. The modifications, and PolyMask operation, are described in the following pages.

### TESTING CONDITIONS

When a PolyMask test is executed in the oscilloscope, the test is WYSIWYG. That is, the test for inclusion or exclusion is performed at the screen pixel level. First, the mask is drawn onto a virtual screen of the same resolution as the display. Then each sample point's virtual screen position is tested for coincidence with the mask.

While the definition of the mask is truly geometric (lines and fills), the test is not made at higher spatial resolution than the screen. For the purpose of testing, the fill operations are essential, since the test is pixel-for-pixel coincidence. However the option to show the polygons as filled or not, is inconsequential.

## SETUP POLYMASK

```

CHANGE TEST
-----
On line
 1 2 3 4 5
Action

Test on
Param Mask
PolyMask --

LOAD MASK

True if
all points
some points

of
 1 2 3 4
  A B C D

are
inside
outside

associated
with trace 1

```

When the PolyMask option is present in the oscilloscope, you can access it by pressing the **Cursors/Measure (Measure Tools** on Waverunner) menu and then selecting Pass/Fail testing. This menu allows you to select PolyMask testing on up to 5 channels and traces simultaneously. Alternatively, you can combine testing on parameters, standard masks, and PolyMask.

When you select PolyMask testing, the additional softkey, **Load Mask** is available. Pressing this key brings up the "Load Mask" menu.

This menu allows you to load a file containing a mask from the floppy disk, hard disk (if present) or a PCMCIA memory card. Once loaded, the mask is associated with the selected trace.

The "**CHANGE TEST**" menu also enables you to set the appropriate test conditions. You may choose a specific channel on which to perform a test, such as setting up the signal to pass or fail the test based on whether some or all points fall inside or outside the mask. The mask will always be associated with the selected channel.

As with other LeCroy tolerance mask testing programs, a specific action may be taken if the signal fails the test. You may choose to stop the test, store the results, dump the image to an external hardcopy or drive, activate a loud "beep," or output a 10  $\mu$ s pulse at the CAL BNC.

Colored circles highlight the points of failure. The quantity of circles, their color, and whether they will be displayed or not, inside or outside the mask, are integral parts of the mask. You must define them prior to loading the mask in the oscilloscope.

### XY Testing

In the case of XY testing, signals from 2 channels are tested at the same time. This mode is useful for many applications, including power measurements.

Pressing the DISPLAY button opens a menu where you can modify the display from the normal 8x10 grid to the square 8x8 XY mode. Masks that are intended for XY testing must be designed for that purpose. (The MaskMaker utility has a special XY mode for creating those masks.) Next, in the "CHANGE TEST" menu, select the appropriate XY in the **of** box.

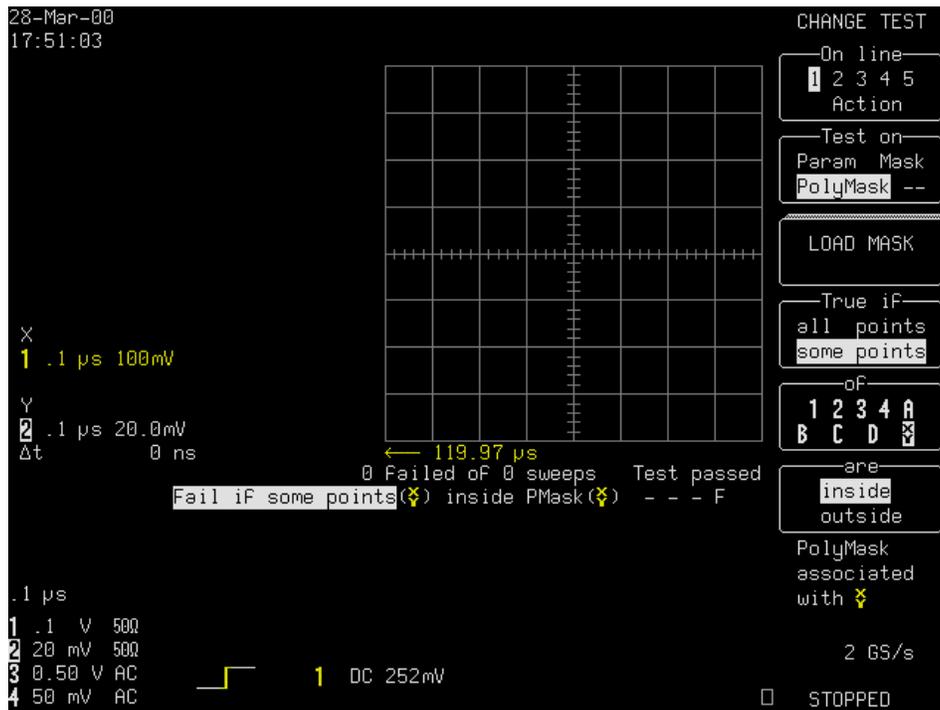


Figure 1. Display of XY testing mode

## LOAD MASK Menu

```

LOAD MASK
  From
  HDD Card
  Flopy

For trace 1

Show PMask
only if test
  always

DO RECALL
10BASE-T.MSK

File
DC-12   MSK
10BASE-T MSK
GIGA-1  MSK
GIGA-2  MSK
100BASET MSK

08-Feb-00
14:29:08
Size 920

```

Masks previously created on a PC, either with the MaskMaker graphic utility or an ASCII text editor, may be loaded into the Oscilloscope by Diskette or Memory Card.

The loaded mask is associated with the trace that will be tested against it (it does not go into a memory trace and is always associated with the trace for which it is loaded).

The “**Show PMask**” section determines if the mask is displayed whenever its associated trace is turned on, or only when it is turned on and Pass/Fail testing is active.

The **DO RECALL** key reads the selected mask (files with \*.msk extension) from the floppy disk or memory card.

## MASK FILE FORMAT

The file format for any PolyMask is an ASCII text file. Each line begins with the word MASK followed by a space. Then a “keyword-value pair” that sets the keyword state to the specified value, or causes the keyword action to occur. The commands or keywords permit setting the color, or filling a region described by a coordinate.

Blank lines and comment lines (first character is a single quote ') are allowed.

**Note:** Coordinates are nominally divisions, and for normal masks the origin (0,0) is located at the left and vertical center of the grid. That is, a typical grid is  $\pm 4$  divisions vertically, and 0 to 10 divisions horizontally. For XY masks however, the grid format is 8x8 and the origin (0,0) is located at the bottom left corner.

The following is an example of a specific mask:  
The specified file extension must be **\*.msk**

```
`this masks color will be "BLUE"
MASK COLOR,BLUE
`use filling (otherwise the masks appear as a line drawing)
MASK DISP_FILLED,YES
`horizontal units of specified coordinates shall be "divisions"
(default)
MASK HORIZONTAL_UNIT,DIV
`horizontal units of specified coordinates shall be "divisions"
(default)
MASK VERTICAL_UNIT,DIV
` show a maximum of 20 colored circles and only if they fall inside
the mask
MASK SHOW_FAIL,INSIDE,20 ` move virtual drawing pen to this (x,y)
coordinate (with pen "up")
MASK MOVETO,0.2,-2
` draw from previous pen coordinate to this new (x,y) coordinate
(with pen down)
MASK DRAWTO,0.2,3
MASK DRAWTO,0.8,3
MASK DRAWTO,0.8,-2
MASK DRAWTO,0.2,-2
`fill mask for area enclosing this (x,y) coordinate
MASK FILL,0.5,0
`move (don't draw) to this new (x,y) coordinate
MASK MOVETO,1.2,-3
`draw etc. etc.
MASK DRAWTO,1.2,2
MASK DRAWTO,1.8,2
MASK DRAWTO,1.8,-3
```

```
MASK DRAWTO,1.2,-3
`fill mask for area enclosing this (x,y) coordinate
MASK FILL,1.5,0
```

The Mask File commands format is identical to the remote commands, except that they do not have the channel or trace prefixes. See the Remote manual for a complete description.

## POLYMASK COMMANDS –FILE FORMAT

**NOTE:** MASK can also be used as a remote command but it requires a channel or trace prefix. See the “MASK” entry in the Waverunner Remote Command Manual for a complete description.

**MASK**

Command/Query

**DESCRIPTION**

For PolyMask:

MASK COLOR allow you to select two colors: one for the mask and one for displaying circles around sample points outside the mask.

MASK DISP\_FILLED selects whether the mask is filled or not. During testing, the mask will always be filled, regardless of the state of this selection.

MASK DRAWTO draws a line from the current position to a new position. It is a command only.

MASK FILL fills the enclosed polygram from starting position. It is a command only.

MASK MOVETO Moves the cursor to a new position without drawing a line. It is a command only.

**COMMAND SYNTAX**

MASK COLOR <mask colors> , <error color>

See the following table for choice of colors.

MASK DISP\_FILLED <state>

<state> : = {YES,NO}

MASK DRAWTO <x\_value>,<y\_value>

<x\_value> : = 0 to 10 divisions (-4 to +4 divisions for XY Plot)

<y\_value> : = -4 to +4 divisions

MASK FILL <x\_value>,<y\_value>

<x\_value> : = 0 to 10 divisions

<y\_value> : = -4 to +4 divisions

MASK MOVETO <x\_value>,<y\_value>  
 <x\_value> := 0 to 10 divisions  
 <y\_value> := -4 to +4 divisions

**QUERY SYNTAX**

MASK? COLOR

MASK? DISP\_FILLED

**EXAMPLE (GPIB)**

MASK COLOR, BLUE, RED

<b>COLOR CHOICES FOR MASK COLOR</b>			
<b>NOTATION</b>			
<b>&lt;color&gt;</b>	<b>Color</b>	<b>&lt;color&gt;</b>	<b>Color</b>
WHITE	White	OCSPRAY	Ocean Spray
CYAN	Cyan	ICEBLUE	Ice Blue
YELLOW	Yellow	PASTBLUE	Pastel Blue
GREEN	Green	PALEBLUE	Pale Blue
MAGENTA	Magenta	SKYBLUE	Sky Blue
BLUE	Blue	ROYLBLUE	Royal Blue
RED	Red	DEEPBLUE	Deep Blue
LTGRAY	Light Gray	NAVY	Navy
GRAY	Gray	PLUM	Plum
SLGRAY	Slate Gray	PURPLE	Purple
CHGRAY	Charcoal Gray	AMETHYST	Amethyst
DKCYAN	Dark Cyan	FUCHSIA	Fuchsia
CREAM	Cream	RASPB	Raspberry
SAND	Sand	NEONPINK	Neon Pink
AMBER	Amber	PALEPINK	Pale Pink
OLIVE	Olive	PINK	Pink
LTGREEN	Light Green	VERMIL	Vermilion
JADE	Jade	ORANGE	Orange

LMGREEN	Lime Green	CERISE	Cerise
APGREEN	Apple Green	KHAKI	Khaki
EMGREEN	Emerald Green	BROWN	Brown
GRGREEN	Grass Green	BLACK	Black
<object>	<b>Display Object</b>	<object>	<b>Display Object</b>
BACKGND	Background	CURSOR	cursors
C1 . . C4	Channel Traces	WARNING	Warning Messages
TA . . TD	Function Traces	NEUTRAL	Neutral color
GRID	Grid lines	OVERLAYS	Menu background color in FULL SCREEN

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