



**SYCARD**  
TECHNOLOGY

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***PCCtest 450/460  
Zoomed Video Software  
User's Manual***

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## 1.0 Introduction

The Zoomed Video (ZV) interface is a unidirectional digital bus between the PC Card socket and the system's video and audio controller. As defined by PCMCIA, ZV consists of 25 signals, 19 for video and 4 for audio and 2 reserved for future use. When Zoomed Video is enabled, the host socket controller tri-states these output pins and the PC card drives these signals with the video and audio signals.

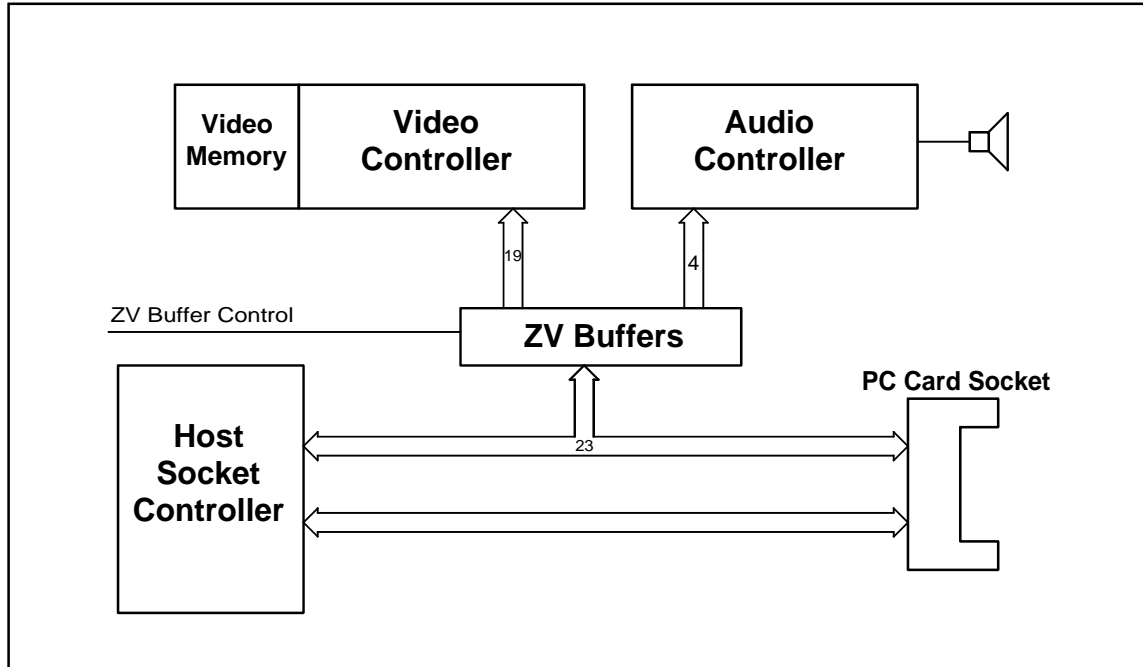


Figure 1.0-1 Zoomed Video Block Diagram

### 1.1 The Video Interface

The video portion of the interface consists of the following groups of signals:

Group	Signal Name	Number
Chrominance	UV[7..0]	8
Luminance	Y[7..0]	8
Horizontal Sync	HREF	1
Vertical Sync	VSYNC	1
Video Clock	PCLK	1

Table 1.1-1 Zoomed Video Signals

The ZV interface bypasses the host system bus (PCI, ISA or AGP) and transfers video information directly to the video subsystem memory. When the ZV port is enabled, the host systems tri-states A[25..4] and the PC card drives these signals with the video and audio signal groups shown in the above table. Video data consisting of 8 bits of Luminance and 8 bits of Chrominance are clocked by PCLK. VSYNC and HREF provide horizontal and vertical synchronization. Data is written to the video subsystem memory through the video controller chip.

## 1.2. The Audio Interface

The digital audio interface consists of four signals that send stereo audio using Pulse Coded Modulation (PCM). The audio data is transferred using the serial I<sup>2</sup>S format. The I<sup>2</sup>S data is typically sent to an integrated sound subsystem chip.

This chip performs the deserialization and conversion into an analog signal. The digital audio portion of the ZV interface consists of the following signals:

Signal Name	Description	Signals
SCLK	Serial Digital Audio Clock. Synchronous to LRCLK and SDATA	1
MCLK	Master Clock for Digital Audio, MCLK is asynchronous to LRCLK and SDATA	1
LRCLK	Left/right clock. LRCLK Low = Left Channel, LRCLK High = Right Channel	1
SDATA	Digital PCM Signal that carries the audio information.	1

**Table 1.2-1 ZV Audio Signals**

## 2.0 Testing the ZV Interface

In a production environment the ZV interface must be tested to insure that all signals are properly routed to the video and audio subsystems. A video test pattern displayed on the screen and visually verified by a test operator is a poor test of the ZV port. It is very difficult for an operator to determine a single LSB problem with the Chrominance or Luminance data.

The PCCtest 450/460 verifies the ZV interface by doing a data pattern test on all the Chrominance and Luminance signal lines.

### 2.1 The PCCtest 450/460

The PCCtest is designed to fully test the Zoomed video interface. The PCCtest unit generates a programmable video pattern designed to test all the Y and UV signals on the ZV interface. The programmable generator is capable of producing any combinations of YUV bits on the bus. For details specifications on the ZV patterns generated, refer to the PCCtest 450/460 technical reference manual.

The PCCtest audio generator produces a digital saw tooth wave designed to test the audio portion of the interface. The stereo audio signal can be set to mono left, mono right or stereo. The test operator can verify that the audio signals "moves" when switched to from one channel to the other.

#### 2.1.1 Software Description

The software to test the Zoomed Video interface is included on the PCCtest 450/460 software diskette. This diskette contains the following Zoom Video related software:

**ZVTEST.EXE** - Zoomed Video text executive  
**ZVTEST.CMD** - Text file used to specify video and audio test modules  
**ZV\_CT.EXE** - Test module for the Chip and Technology 65550 and 65554 VGA/LCD chips  
**ZV\_CT690.EXE** - Test module for the Chip and Technology 65555 and 69000 VGA/LCD chips  
**ZV\_NEO.EXE** - Test module for the Neomagic NM2093, NM2160 and NM2200 VGA/LCD chip  
**ZV\_NMG5B.EXE** - Test module for the Neomagic NM2200 ZV port B  
**ZV\_S3.EXE** - Test module for the S3 86CM65 VGA/LCD Chip  
**ZV\_SMI.EXE** - Test module for the Silicon Motion SM810, SM710, SM910  
**ZV\_TRI.EXE** - Test Module for the Trident 9385 and 9397 VGA/LCD Chips  
**ZV\_7555.EXE** - Test module for the Cirrus Logic CL-GD7555 VGA/LCD chip  
**AUDIO.EXE** - Test module for a generic Sound Blaster compatible audio chip  
**ZV\_ESS.EXE** - Test module for the ESS 1878 Audio chip.  
**ZV\_YAMA.EXE** - Test module for the Yamaha YMF715 Audio chip.  
**AUD\_CS.EXE** - Test module for the Crystal Semi CS4236B Audio chip.

*Note: PCCtest 450/460 support for ATI controllers is provided by ATI directly. Contact your ATI Field application engineer for more information.*

To install the Zoom Video support, simply copy the ZVTEST.EXE and the desired video and audio support command files to your hard disk.

*Note: For the support of custom configurations, Sycard provides source code for the video and audio modules described above. Contact Sycard Technology directly for information on obtaining these source code modules.*

PCCtest software updates, application notes and user manuals are always available on the Sycard Technology WEB site at <http://www.sycard.com> under the support page. For technical support contact Sycard Technology via email at [support@sycard.com](mailto:support@sycard.com).

## 2.2 Testing a Notebook Computer Using the PCCtest 450/460

The design of a notebook computer can have so many variables that effect the testing of the ZV interface, these include the following:

- Different Socket controller chips
- Different Video controller chips
- Various ZV buffer arrangements
- Various Audio implementations

The number of combination will grow as new chips are introduced into the market. The logistics of keeping up with these new chips and verifying test software can become a major undertaking. Sycard Technology has solved this problem by creating a modular approach to testing the Zoomed Video interface. The main test executive ZVTEST.EXE is based on the PCT450.EXE 16 bit test program. ZVTEST is responsible for initializing and powering up the socket and placing the PCCtest into ZV mode. After the socket is powered and the PCCtest initialized, the ZVTEST program will launch user specified routines to enable ZV buffers/audio logic. Once the hardware is correctly configured, a video chip specific routine is launched to test the video and audio portion of the interface. Once testing is completed, the ZVTEST program will launch a program to disable the audio and ZV buffers.

Figure 2.2-1 illustrates the architecture of the PCCtest Zoomed Video test software. The main test module, ZVTEST.EXE, reads a configuration file, ZVTEST.CFG, to obtain the file names for the various test sub-modules. ZVTEST.EXE will then enable the specified socket controller, execute the tests specified in the ZVTEST.CFG file and report the errors to the user.

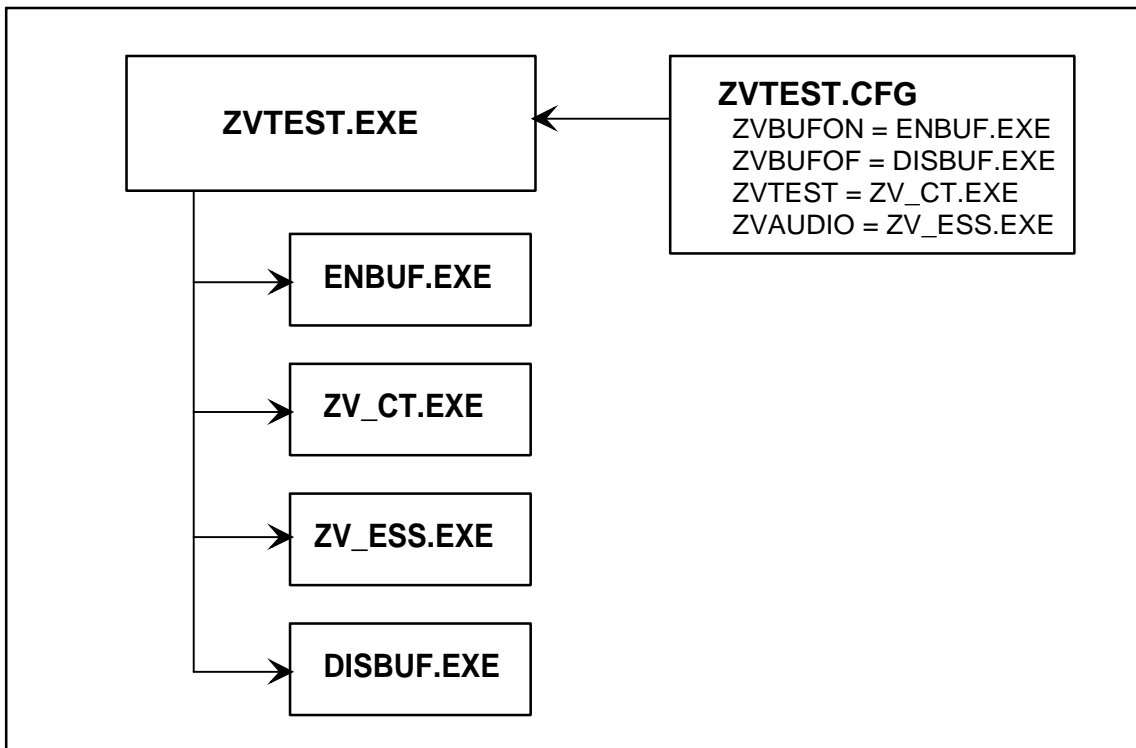


Figure 2.2-1 ZVTEST.EXE

## 2.3 ZV Test Example

This section will describe the program steps required to test the ZV interface on a sample portable computer

### Computer Specification:

Host Socket Controller: Texas Instruments PCI-1130  
 Video Controller: Chips and Technology 65550  
 Zoomed Video Buffers: 74ACT244 enabled by parallel I/O bit  
 Audio Chip: ESS ES1878

### 2.3.1 Setting up the Test Environment

The first step is to generate routines to enable and disable the ZV buffers. This routine is usually a simple executable that sets a bit to enable/disable the buffers. In this example, the customer supplied routine to enable the ZV buffers is called `zvbuf_on.exe`, while the file to disable the buffers is `zvbuf_of.exe`. The module used to test the C+T 65550 chip is called `ZV_CT.EXE`. The audio test file for the ESS chip is also supplied by the user. In this example the file name is `ZV_ESS.EXE`. Once the test modules have been obtained or created, the user can generate the configuration file, `ZVTEST.CMD`. `ZVTEST.CMD` is a text file that informs `ZVTEST.EXE` what test modules are to be used. In our example the `ZVTEST.CMD` would contain the following lines:

```
ZVBUFON_FILE zvbuf_on.exe
ZVBUFOFF_FILE zvbuf_of.exe
ZVTEST_FILE zv_ct.exe
AUDIO_FILE zv_ess.exe
```

*Note: CardBus controllers with integrated zoomed video buffers, such as the TI PCI1250 and PCI1251, do not require the ZVBUFON\_FILE and ZVBUFOFF\_FILE lines. Remove these lines from the ZVTEST.CMD file.*

### 2.3.2 Running the ZV Test

`ZVTEST` is invoked in a similar fashion to the `PCT450` and `TESTCB` programs. The user specifies the host socket controller, socket number and error listing options on the command line:

```
ZVTEST -b62 -v -0
```

This command line select the TI PCI1130 socket controller, slot 0 and the verbose option to show the progress of the test. `ZVTEST` will search the current path for `ZVTEST.CMD` which will specify the associated test files spawned by `ZVTEST`. The `ZVTEST.EXE` will print the following to the screen:

```
Sycard Technology PCCTest 450/460 Zoomed Video software v1.12
Looking for Texas Instruments PCI-1130 PCI Controller #1...
Testing Slot 0 I/O base = 150H Memory Window = D000:0
Socket Controller = Texas Instruments PCI-1130
Checking Socket Controller.....Passed
Power on delay (Vcc = 5 volt).....Complete
Basic operational test.....Passed
Performing Zoomed Video Test
PCCTest Zoomed Video Test
  Enabling Socket Controller ZV Mode.....Complete
  Enabling PCCTest ZV Mode.....Complete
  Enabling ZV Buffers.....Complete
  Enable PCCTest ZV Pattern.....Complete
  Performing Pattern Test.....Passed!
  Audio Test.....Complete
  Disabling ZV Buffers.....Complete
  Disabling PCCTest ZV Mode.....Complete
```

**Disabling Socket Controller ZV Mode.....Complete**  
**Test completed with 0 errors - PASSED**

Errors detected by the test file specified by the ZVTEST\_FILE parameter in the ZVTEST.CMD file will be passed to ZVTEST.EXE for display.

*Note: During the Zoomed Video pattern test the screen may go blank for several seconds. The actual behavior of the screen will vary from controller to controller. The ZVTEST.EXE software will save the contents of the text screen prior to running the pattern test and restore it after the test has been completed.*

### 2.3.3 Steps in Testing the ZV port

ZVTEST.EXE will perform the following steps in testing the ZV port:

1. ZVTEST will search for ZVTEST.CMD in the current directory.
2. ZVTEST will open ZVTEST.CMD for read and save the specified ZV buffer, video and audio test file names.
3. ZVTEST will power up the selected socket and initialize and I/O and memory window to allow communication between the host system and the PCCtest 450.
4. ZVTEST will perform a basic operational test of the socket controller chip.
5. The host socket controller will be placed into ZV mode (A[25:4] tri-stated)
6. ZVTEST will place the PCCtest 450/460 into Zoomed Video mode.
7. ZVTEST will spawn the executable specified by the ZVBUFON\_FILE parameter in the ZVTEST.CMD file.
8. The ZV interface on the PCCtest 450/460 will be enabled.
9. ZVTEST will spawn the executable specified by the ZVTEST\_FILE parameter in the ZVTEST.CMD file.
10. The file specified by the ZVTEST\_FILE (ZV\_CT.EXE) will place the video chip into ZV capture mode and perform a pattern test by communicating with the PCCtest 450/460.
11. ZV\_CT.EXE will return error status back to ZVTEST.EXE.
12. ZVTEST.EXE will print error status to the host system.
13. ZVTEST.EXE will spawn the executable specified by the AUDIO\_FILE parameter in the ZVTEST.CMD file (zv\_ess.exe).
14. ZV\_ESS.EXE will enable the audio circuitry in the host system and command the PCCtest 450 to emit a stereo test pattern.
15. ZV\_ESS.EXE will return any error status.
16. ZVTEST.EXE will spawn a routine specified by ZVBUFOFF\_FILE to disable the ZV buffers.
17. ZVTEST.EXE will disable the PCCtest 450/460 ZV mode.
18. ZVTEST.EXE disable the host socket controller ZV mode.
19. ZVTEST.EXE completes

## 2.4 ZVTEST.EXE Software

The ZVTEST software is an MS-DOS application distributed on the PCCtest 450/460 software floppy diskette. Included on the diskette is the test application program(s), and a READ.ME file containing information not contained in this document. The ZVTEST program has the following run time switches:



**Syntax**

```
ZVTEST -0 -1 -ax -bxx -jx -lx -nxxx -sx -v -yx
```

**Switches**

-0 Test socket 0  
 -1 Test socket 1  
 -ax PCIC Controller address select -a1 = 3E2-3E3H, -a2 = 3E3-3E4H,  
     -a3 = 3E5-3E6H  
 -bxx Select Socket controller xx = Socket controller  
     See help screen (see below) for list of supported socket controllers  
 -jx Select alternate memory window. -j1 = C800:0 - CFFF:0, -j2 = E000:0 - E7FF:0  
 -jsxxxx Select alternate memory window, xxxx = 32K Memory page  
 -lx Long power on delay (x = integer 1-32768)  
 -nxxx Select alternate I/O window  
 -sx Select PCI chip number (default = 0. 2,3, or 4 valid)  
 -v Verbose mode. Displays test progress and error messages  
 -yx Select parallel port used for PCCtest 455 external control unit

**Note:** Switches can be entered in any order and must be separated by a space.

**Note:** Running ZVTEST.EXE without any switches will display a help screen.

**Note:** \*\* The 'b' suffix on the -b6x option enables a clock for the external voltage switch. For systems that generate this externally, do not use the 'b' suffix. For additional notes on TI PCI12xx/14xx/44xx support, see Appendix C in the PCCtest 450/460 User's manual.

### 3.0 Creating the Test Modules

Because of the variations in system design, it has become necessary to require certain portions of the test software to be written and supported by the OEM or third parties. These executables are specified in the ZVTEST.CMD file.

Label	Function
ZVBUFON_FILE	Enable ZV Buffers
ZVBUFOFF_FILE	Disable ZV Buffers
ZVTEST_FILE	Execute ZV Test
AUDIO_FILE	Execute Audio Tests

**Table 3.0-1 ZVTEST Command File Description**

ZV buffer enable and disable is usually the responsibility of the system OEM. The executable that performs the actual data pattern testing of the Chrominance and Luminance signals requires detailed knowledge of the video controller architecture. Sycard Technology has worked with several video chip manufacturers to supply "canned" test software for certain chips. Sycard can also provide sample source code to those that wish to create and maintain their own test software.

#### 3.1 Creating the Zoomed Video Buffer Enable/Disable Modules

Creating executables to enable and disable the ZV buffers is fairly straightforward. A short assembly or "C" executable is usually all that is necessary to enable/disable the ZV buffers.

**Example:** In the XYZ Corp computer, the Zoomed Video buffers are enabled via bit 4 at I/O address 390H. The following "C" code for the file specified by ZVBUFON\_FILE:

```
#include <stdio.h>
#include <dos.h>

main()
{
    unsigned char temp;
    temp = inportb(0x390);
    temp = temp | 0x10;          /* Enable Zoomed Video Buffers */
    outportb(0x390,temp);
}
```

If there is no ZV buffer, or the buffers are always enabled, there is no need to specify this file name. If the ZV buffer on/off file is not specified, ZVTEST will assume that none is needed. For CardBus controllers with integrated ZV buffer, such as the TI PCI1250, no ZV enable/disable modules are required.

#### 3.2 Creating the Routines to Test the ZV Interface

The ZVTEST\_FILE parameter in the ZVTEST.CMD file specifies the ZV Video test module. Each video controller chip will have its own test executable test module. Sycard Technology provides test module for several popular video chips. Sample source code for a zoomed video test module is available from Sycard Technology. Creating a test module for a particular chip requires a good knowledge of the register set and architecture of the video controller. The test involves the following sequence:

1. Enable video controller ZV mode.
2. Configure the polarity of VSYNC and HREF
3. Command PCCtest to send specific Y/UV pattern
4. Configure video chip to capture 1 frame
5. Wait for capture to complete

6. Verify YUV pattern was correctly written into memory
7. Repeat steps 3-6 for various data patterns.
8. Disable video controller ZV mode
9. Return test status to ZVTEST.EXE

Sycard Technology provides source code for the Zoomed Video test modules. Contact Sycard Technology directly for availability. Information on how to enable and control the PCCtest's Zoomed Video/Audio logic is contained in the PCCtest 450/460 Technical Reference Manual.

### ***3.3 Creating ZV Audio Tests***

The ZV audio tests are executed by a user specified executable. The filename for the ZV audio test is specified by the AUDIO\_FILE parameter contained in the ZVTEST.CMD. The audio test executable is responsible for enabling system specific audio hardware and commanding the PCCtest 450/460 to generate various audio tones. Because of the many different audio system implementations it is up to the OEM to generate the executable to test the audio portion of the interface. Sample source code is available that show the framework for the audio test. The following example describes the functions needed in the audio test module.

1. Enable the audio subsystem
2. Enable the I<sup>2</sup>S input connected to the ZV audio signals
3. Select the mixer input
4. Set the volume for main, left and right channels
5. Command the PCCtest to output test tone to both channels
6. Command the PCCtest to output test tone to right channel
7. Command the PCCtest to output test tone to left channel
8. Prompt user to verify correct sounds
9. Disable the I<sup>2</sup>S input
10. Return test status to ZVTEST.EXE

## 4.0 Zoomed Video Test Coverage

The PCCtest 450/460 generates patterns that can fully exercise all signals on the Zoomed Video interface. Actual test coverage depends on each different video and audio chipset and the way these chips react under various error conditions. The following table describes the test coverage of the ZVTEST

PC Card Pin Number	I/O and Memory Interface Signal Name	ZV Port Interface Signal Name	Test
8	A10	HREF	ZVTEST
10	A11	VSYNC	ZVTEST
11	A9	Y0	ZVTEST
12	A8	Y2	ZVTEST
13	A13	Y4	ZVTEST
14	A14	Y6	ZVTEST
19	A16	UV2	ZVTEST
20	A15	UV4	ZVTEST
21	A12	UV6	ZVTEST
22	A7	SCLK	Note 1
23	A6	MCLK	Note 2
24::25	A[5::4]	RESERVED	Not Used
33	IOIS16#	PCLK	ZVTEST
46	A17	Y1	ZVTEST
47	A18	Y3	ZVTEST
48	A19	Y5	ZVTEST
49	A20	Y7	ZVTEST
50	A21	UV0	ZVTEST
53	A22	UV1	ZVTEST
54	A23	UV3	ZVTEST
55	A24	UV5	ZVTEST
56	A25	UV7	ZVTEST
60	INPACK#	LRCLK	AUDIO Test
62	SPKR#	SDATA	AUDIO Test

**Table 4.0-1 ZVTEST Test Coverage**

**Note 1:** The PCCtest 450/460 will generate SCLK, however absence of SCLK cannot be detected in some audio subsystems.

**Note 2:** The PCCtest 450/460 will generate a MCLK, however most audio subsystems do not use MCLK.

## ***5.0 Error Reporting***

The test executable returns status to the ZVTEST.EXE program informing the program of various error states. The type and detail of the error messages depend mainly on the testability of the video controller chip. If the video controller chip has a mechanism to determine if the VSYNC, HREF or CCLK is not active, then the test executable can pass this data to ZVTEST. In some cases, the lack of a capture is the only indication that one of these three signals has a problem.

## ***6.0 Common Problems***

The Zoomed Video test is based on the 16-bit PC Card test, PCT450/460. In order for the Zoomed Video test to work correctly, the 16-bit PC Card portion of the interface must be fully functional. Prior to running the ZVTEST software, the user should verify that the PCT450/460 software passes.

This section will describe some of the common problems encountered while trying to use the PCCtest socket tester on a known good host socket.

**ZVTEST fails with 320 errors during the pattern test** – The pattern test is the main portion of the Zoomed Video test. The ZVTEST software tests the Zoomed Video interface by sending 320 different patterns across the ZV bus and verifies that the pattern is correctly written into memory. If there are 320 errors, then the test is failing completely. The first thing to check is that the ZVTEST.CMD file is configured for the correct video chip. Another item to check is to make sure any external Zoomed Video buffers are enabled.

**The LCD is blank during the pattern test** – The Zoomed video test only verifies the path between the PC Card socket and the LCD controller chip. Displaying the captured video is usually another function of the video chip and is not tested by the ZVTEST software.



## Appendix A - PC Card Interface

Zoomed Video	16-Bit	CardBus			CardBus	16-Bit	Zoomed Video
GND	GND	GND	35	1	GND	GND	GND
CD1#	CD1#	CCD1#	36	2	CAD0	D3	D3
D11	D11	CAD2	37	3	CAD14	D4	D4
D12	D12	CAD4	38	4	CAD3	D5	D5
D13	D13	CAD6	39	5	CAD5	D6	D6
D14	D14	RFU	40	6	CAD7	D7	D7
D15	D15	CAD8	41	7	CC/BE0#	CE1#	CE1#
CE2#	CE2#	CAD10	42	8	CAD9	A10	HREF
VS1#	VS1#	CVS1	43	9	CAD11	OE#	OE#
IORD#	IORD#	CAD13	44	10	CAD12	A11	VSYNC
IOWR#	IOWR#	CAD15	45	11	CAD14	A9	Y0
Y1	A17	CAD16	46	12	CC/BE1#	A8	Y2
Y3	A18	RFU	47	13	CPAR	A13	Y4
Y5	A19	CBLOCK#	48	14	CPERR#	A14	Y6
Y7	A20	CSTOP#	49	15	CGNT#	WE#	WE#
UV0	A21	CDEVSEL#	50	16	CINT#	READY	READY
Vcc	Vcc	Vcc	51	17	Vcc	Vcc	Vcc
Vpp2	Vpp2	Vpp2	52	18	Vpp1	Vpp1	Vpp1
UV1	A22	CTRDY#	53	19	CCLK	A16	UV2
UV3	A23	CFRAME#	54	20	CIRDY#	A15	UV4
UV5	A24	CAD17	55	21	CC/BE2#	A12	UV6
UV7	A25	CAD19	56	22	CAD18	A7	SCLK
VS2#	VS2#	CVS2	57	23	CAD20	A6	MCLK
RESET	RESET	CRST	58	24	CAD21	A5	RSVD
WAIT#	WAIT#	CSERR#	59	25	CAD22	A4	RSVD
LRCLK	INPACK#	CREQ#	60	26	CAD23	A3	A3
REG#	REG#	CC/BE3#	61	27	CAD24	A2	A2
SDATA	BVD2/SPKR#	CAUDIO#	62	28	CAD25	A1	A1
BVD1	BVD1/STSCHG#	CSTSCHG	63	29	CAD26	A0	A0
D8	D8	CAD28	64	30	CAD27	D0	D0
D9	D9	CAD30	65	31	CAD29	D1	D1
D10	D10	CAD31	66	32	RFU	D2	D2
CD2#	CD2#	CCD2#	67	33	CCLKRUN#	WP/IOIS16#	PCLK
GND	GND	GND	68	34	GND	GND	GND





## Appendix B - Zoomed Video Interface

PC Card Pin Number	I/O and Memory Interface Signal Name	I/O and Memory I/O <sup>1</sup>	ZV Port Interface Signal Name	ZV Port I/O <sup>1</sup>	Comments
8	A10	I	HREF	O	Horizontal Sync to ZV Port
10	A11	I	VSYNC	O	Vertical Sync to ZV Port
11	A9	I	Y0	O	Video Data to ZV Port YUV:4:2:2 format
12	A8	I	Y2	O	Video Data to ZV Port YUV:4:2:2 format
13	A13	I	Y4	O	Video Data to ZV Port YUV:4:2:2 format
14	A14	I	Y6	O	Video Data to ZV Port YUV:4:2:2 format
19	A16	I	UV2	O	Video Data to ZV Port YUV:4:2:2 format
20	A15	I	UV4	O	Video Data to ZV Port YUV:4:2:2 format
21	A12	I	UV6	O	Video Data to ZV Port YUV:4:2:2 format
22	A7	I	SCLK	O	Audio SCLK PCM Signal
23	A6	I	MCLK	O	Audio MCLK PCM Signal
24::25	A[5::4]	I	RESERVED	RFU	Put in three state by Host Adapter No connection in PC Card
33	IOIS16#	O	PCLK	O	Pixel Clock to ZV Port
46	A17	I	Y1	O	Video Data to ZV Port YUV:4:2:2 format
47	A18	I	Y3	O	Video Data to ZV Port YUV:4:2:2 format
48	A19	I	Y5	O	Video Data to ZV Port YUV:4:2:2 format
49	A20	I	Y7	O	Video Data to ZV Port YUV:4:2:2 format
50	A21	I	UV0	O	Video Data to ZV Port YUV:4:2:2 format
53	A22	I	UV1	O	Video Data to ZV Port YUV:4:2:2 format
54	A23	I	UV3	O	Video Data to ZV Port YUV:4:2:2 format
55	A24	I	UV5	O	Video Data to ZV Port YUV:4:2:2 format
56	A25	I	UV7	O	Video Data to ZV Port YUV:4:2:2 format
60	INPACK#	O	LRCLK	O	Audio LRCLK PCM signal
62	SPKR#	O	SDATA	O	Audio PCM Data signal

1. "I" indicates signal is input to PC Card, "O" indicates signal is output form PC Card.