

PCCTest Application Note:  
Creating Zoomed Video buffer control executables for the  
PCCTest 450 ZVTEST.EXE program

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The PCCTest 450 ZVTEST.EXE program requires two customer supplied executables to enable and disable the Zoomed Video buffers between the PC card slot and the video subsystem. These two executables are specified in the ZVTEST.CMD text file as follows:

```
ZV_BUFON_FILE zv_bufon.exe
ZV_BUFOF_FILE zv_bufof.exe
```

If the system design does not include Zoomed Video buffers or the buffers are always enabled, then these files are not required and may be removed from the ZVTEST.CMD file.

Since there has been no standard for Zoomed Video buffering, it is impossible to create a "generic" zv\_bufon.exe and zv\_bufof.exe. Sycard Technology does not supply these executables, nor do we plan to. Each user of the PCCTest 450 must create their own version of these files depending on how the engineers have designed their system.

There are many ways to control Zoomed Video buffers in a typical notebook computer. These include the following:

- General purpose I/O embedded in a customer supplied ASIC
- GPIO pin on the video controller chip
- Keyboard microcontroller controlled GPIO pin

The user of the PCCTest 450 must first determine how the ZV buffers are being controlled. Once that information has been obtained, the user must create a DOS executable that will enable and disable these buffers. In most cases, the Zoomed Video buffer ON/OFF routines can be created using any of standard Assembly or C programming environment. Sycard uses Borland Turbo C++ version 3.0 or Borland C++ version 4.5 to create these executables. Other customers have used Microsoft C++ or Visual C++ to create similar executables. The following examples illustrate the code required to

**Example 1:** XYZ computer with Zoomed Video buffers consist of 74HC244 buffers controlled by a parallel port bit at address 110H bit 0. When bit 0 is low then the Zoomed Video buffers are enabled.

Program: zv\_bufon.c

```
#include <stdio.h>
void main()
{
    unsigned char tempc;
    tempc = inportb(0x110);
    tempc = tempc & 0xfe;          /* Enable ZV Buffer */
    outportb(0x110,tempc);
}
```

Program: zv\_bufof.c

```
#include <stdio.h>
void main()
{
    unsigned char tempc;
    tempc = inportb(0x110);
    tempc = tempc | 0x01;        /* Disable ZV Buffer */
    outportb(0x110,tempc);
}
```

**Example 2:** ABC computer with Zoomed Video buffers controlled by a General Purpose I/O bit (GPIO) on the Chips and Technology 65554 VGA/LCD controller chip. The Zoomed Video buffers consist of Quick Switch parts with chip enables connected to the GPIO bit 0 of the 65554. The Quick Switch parts are enabled with a low to the control pin.

Program: zv\_bufon.c

```
#include stdio.h
void main()
{
    unsigned char tempc;
    _disable();                /* Disable interrupts */
    /******
    /* Configure ACTI/GPIO_0 pin as output */
    /******
    outportb(0x3d0,0x0c);
    tempc = inportb(0x3d1);
    tempc = tempc | 0x18;      /* GPIO_0 is output */
    outportb(0x3d1,tempc);

    /******
    /* Configure GPIO_0 direction bit */
    /******
    outportb(0x3d6,0x62);
    tempc = inportb(0x3d7);
    tempc = tempc | 0x01;     /* GPIO_0 is output */
    outportb(0x3d7,tempc);

    /******
    /* Configure GPIO_0 data bit */
    /******
    outportb(0x3d6,0x63);
    tempc = inportb(0x3d7);
    tempc = tempc & 0xfe;    /* Set GPIO_0 bit low */
    outportb(0x3d7,tempc);

    _enable();                /* Enable interrupts */
}
```

Program: zv\_bufon.c

```
#include stdio.h
void main()
{
    unsigned char tempc;
    _disable();                /* Disable interrupts */

    /******
    /* Configure GPIO_0 data bit */
    /******
    outportb(0x3d6,0x63);
    tempc = inportb(0x3d7);
    tempc = tempc | 0x01;    /* Set GPIO_0 bit high */
    outportb(0x3d7,tempc);

    _enable();                /* Enable interrupts */
}
```