

SP605 Restoring Flash Contents

December 2009

Overview

- **Xilinx SP605 Board**
- **Software Requirements**
- **SP605 Setup**
- **Restoring the CompactFlash**
- **Restoring SP605 Platform and BPI Flash**
- **References**

Note: This presentation applies to the SP605

SP605 Restoring Flash Contents Description

▪ Description

- The ISE iMPACT tool is used to restore the onboard non-volatile memories with the contents used in the [SP605 Getting Started Guide](#) (UG525) for the SPI Flash and the BIST for the BPI Flash. A zip file is also provided to restore the SP605 CompactFlash card.

▪ Reference Design IP

- Uses XTP065 PCIe output files to program SPI Flash
- Uses XTP062 BIST output files to program the CompactFlash

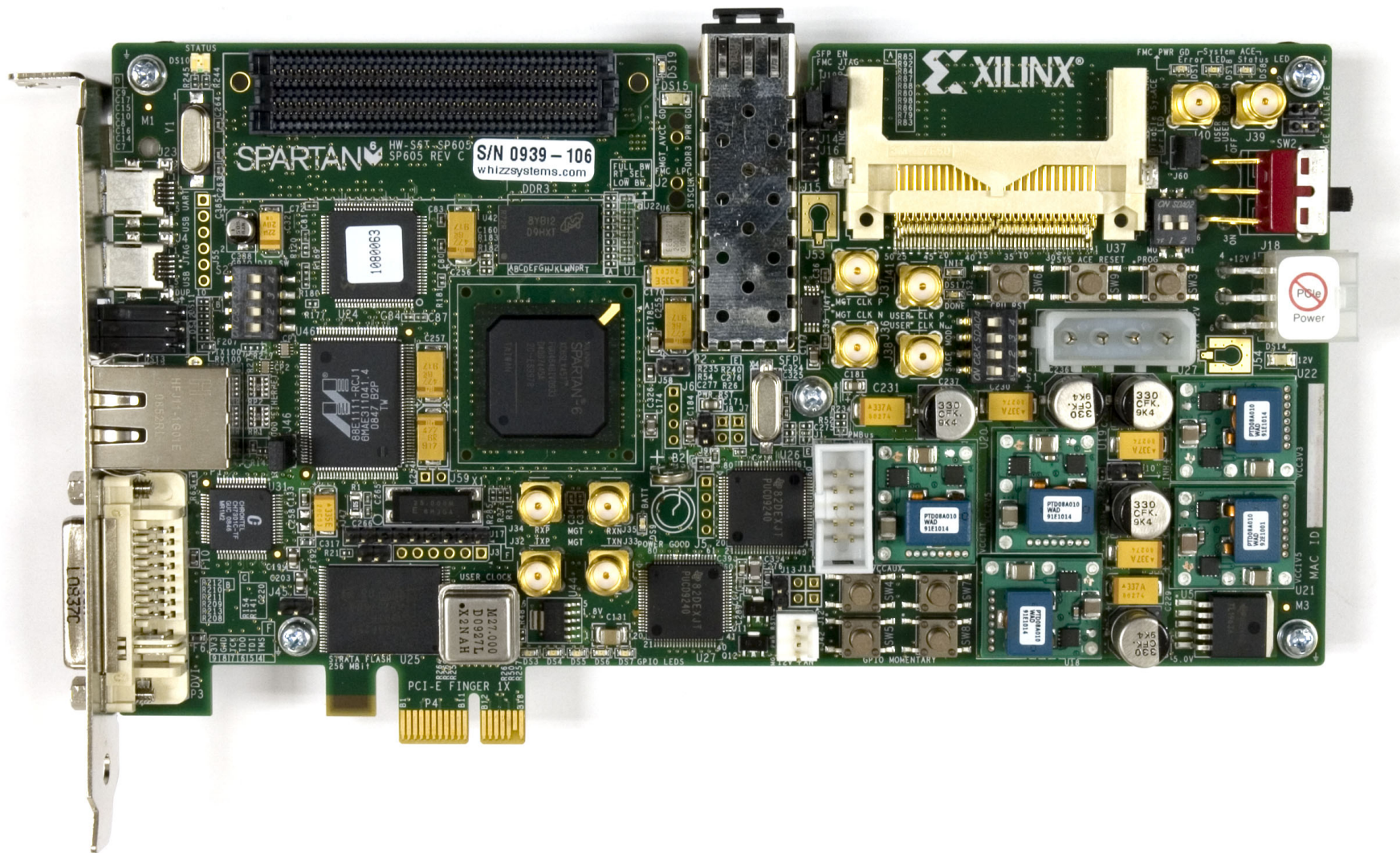
▪ Reference Design Source and Applications

- See [XTP065](#) and [XTP062](#)

▪ Files for Flash Restoration

- SPI and BPI Flash: [rdf0030.zip](#)
- CompactFlash: [rdf0031.zip](#)

Xilinx SP605 Board



ISE Software Requirement

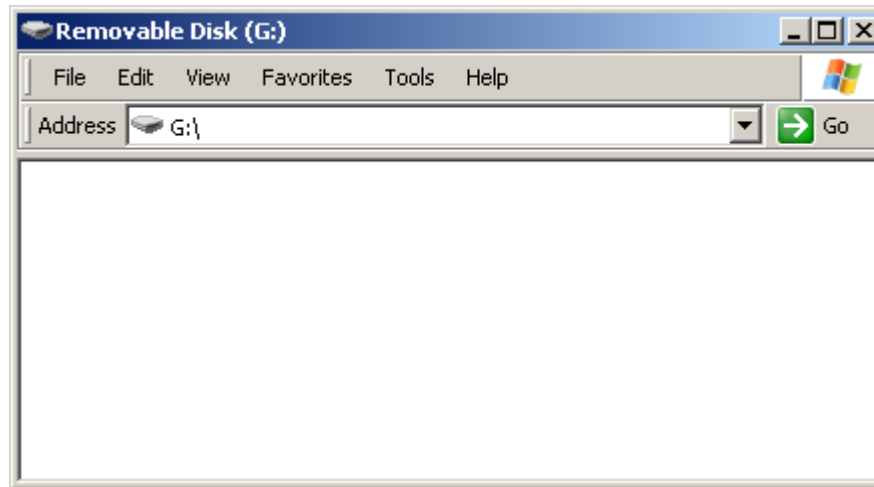
- Xilinx ISE 11.4 software



Restoring SP605 CompactFlash

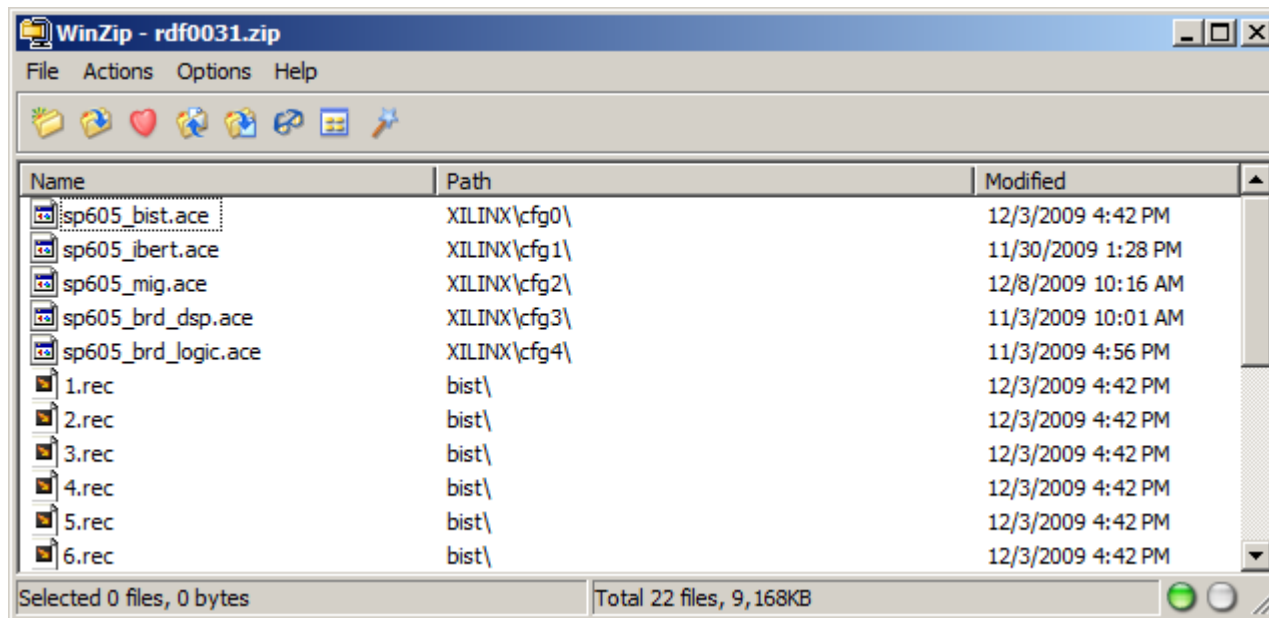
Restoring SP605 CompactFlash

- Use a CompactFlash reader to mount the SP605 CompactFlash as a disk drive
- Delete all files on this drive



Restoring SP605 CompactFlash

- Unzip the rdf0031.zip file to your CompactFlash drive
 - <https://secure.xilinx.com/webreg/clickthrough.do?cid=140332>

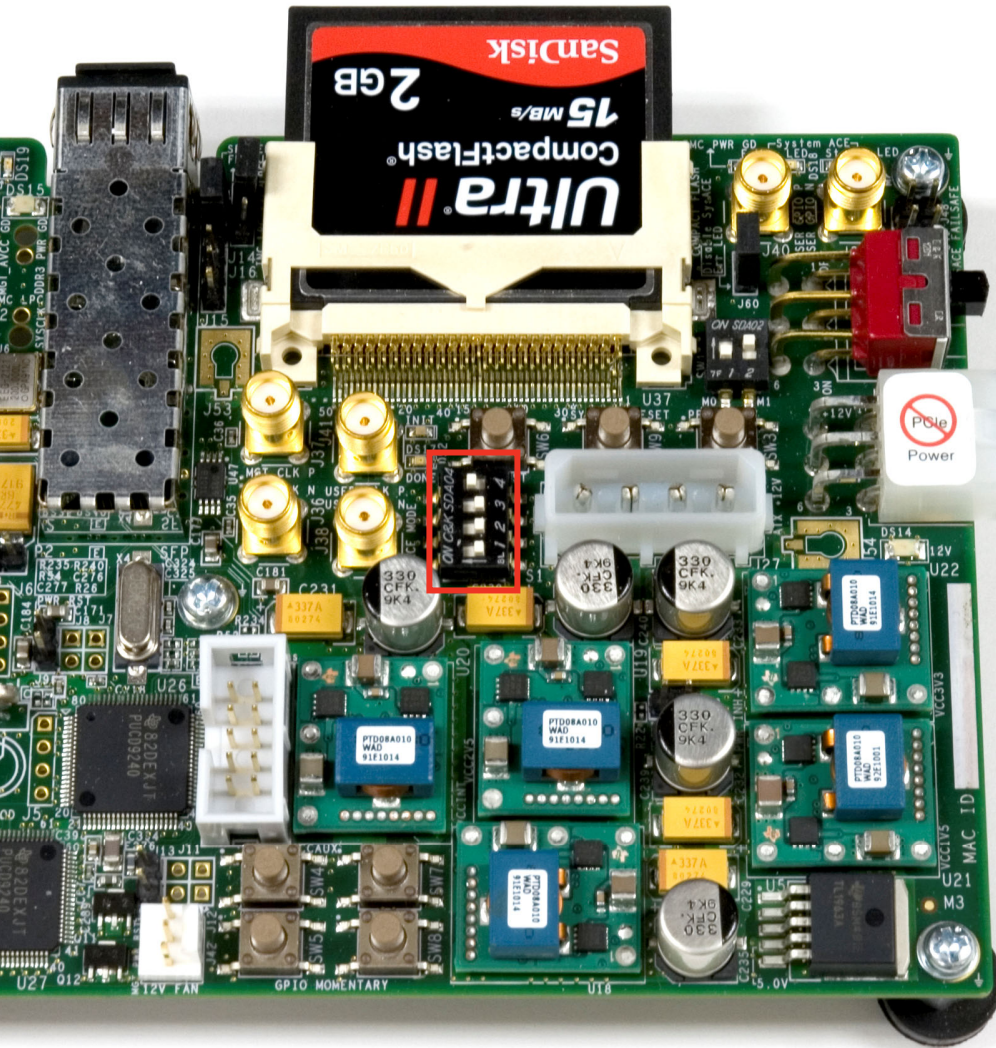


Restoring SP605 CompactFlash

- **After Restoring the CompactFlash, five designs are available:**

- CFG0 – Built-In Self Test (BIST)
 - See [XTP062](#) – SP605 BIST Flash Application for details
- CFG1 – IBERT
 - See [XTP066](#) – SP605 GTP IBERT Design Creation for details
- CFG2 – MIG
 - See [XTP060](#) – SP605 MIG Design Creation for details
- CFG3 – BRD DSP
 - See [UG525](#) – SP605 Getting Started Guide for details
- CFG4 – BRD Logic
 - See [UG525](#) – SP605 Getting Started Guide for details

Built-In Self Test (BIST)



■ To use the Built-In Self Test Application

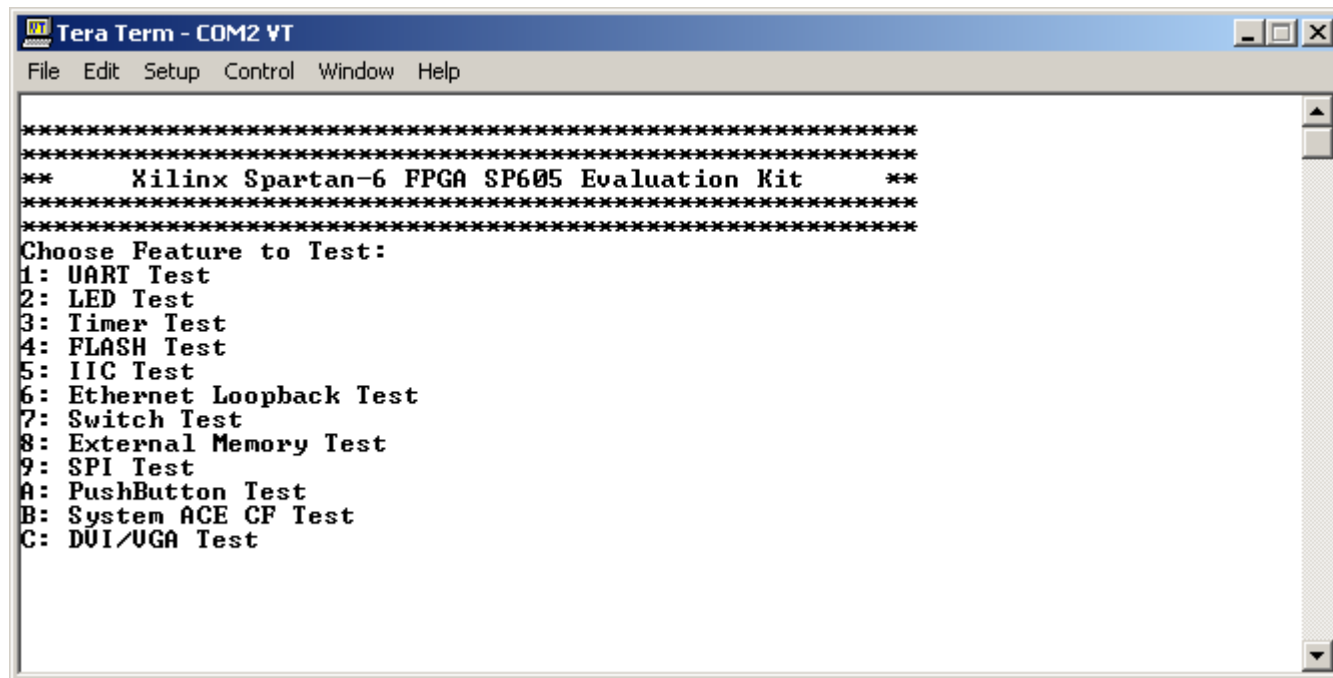
- Set the DIP SW to 1000 (top to bottom) as seen here

4 3 2 1
1 0 0 0

- Open a Terminal Window

SP605 Built-In Self Test (BIST)

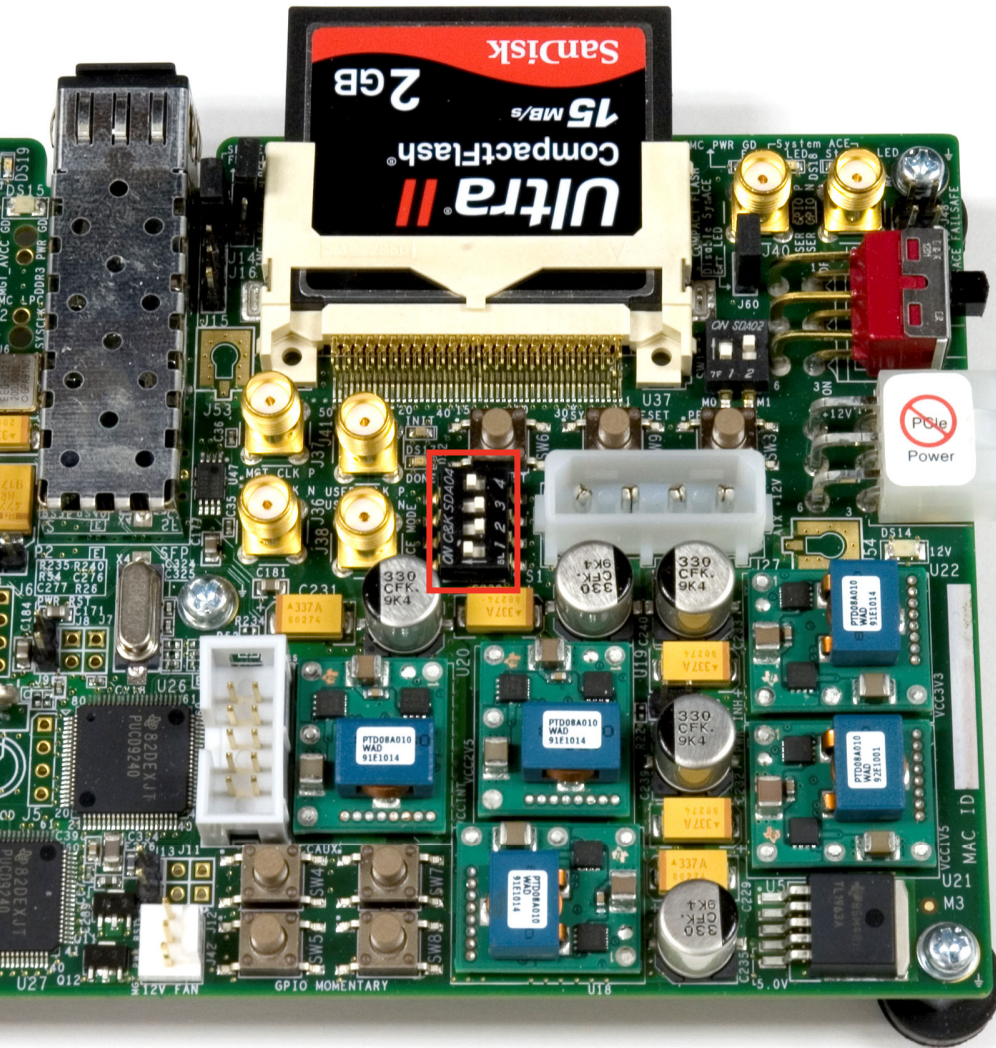
- See [XTP062](#) – SP605 BIST Flash Application for details



```
Tera Term - COM2 VT
File Edit Setup Control Window Help

*****
*****
**      Xilinx Spartan-6 FPGA SP605 Evaluation Kit      **
*****
*****
Choose Feature to Test:
1: UART Test
2: LED Test
3: Timer Test
4: FLASH Test
5: IIC Test
6: Ethernet Loopback Test
7: Switch Test
8: External Memory Test
9: SPI Test
A: PushButton Test
B: System ACE CF Test
C: DVI/UGA Test
```

SP605 IBERT



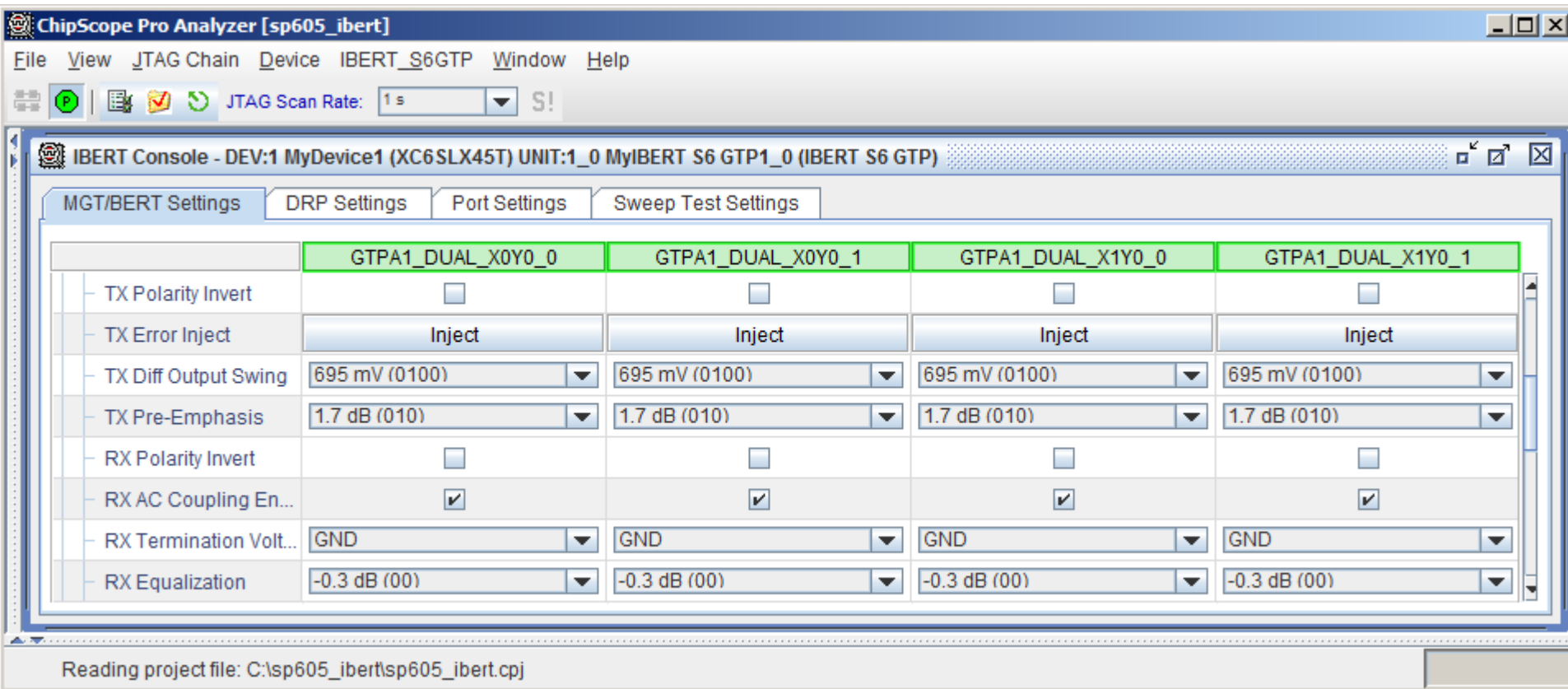
■ To use the IBERT Application

- Set the DIP SW to 1001 (top to bottom) as seen here

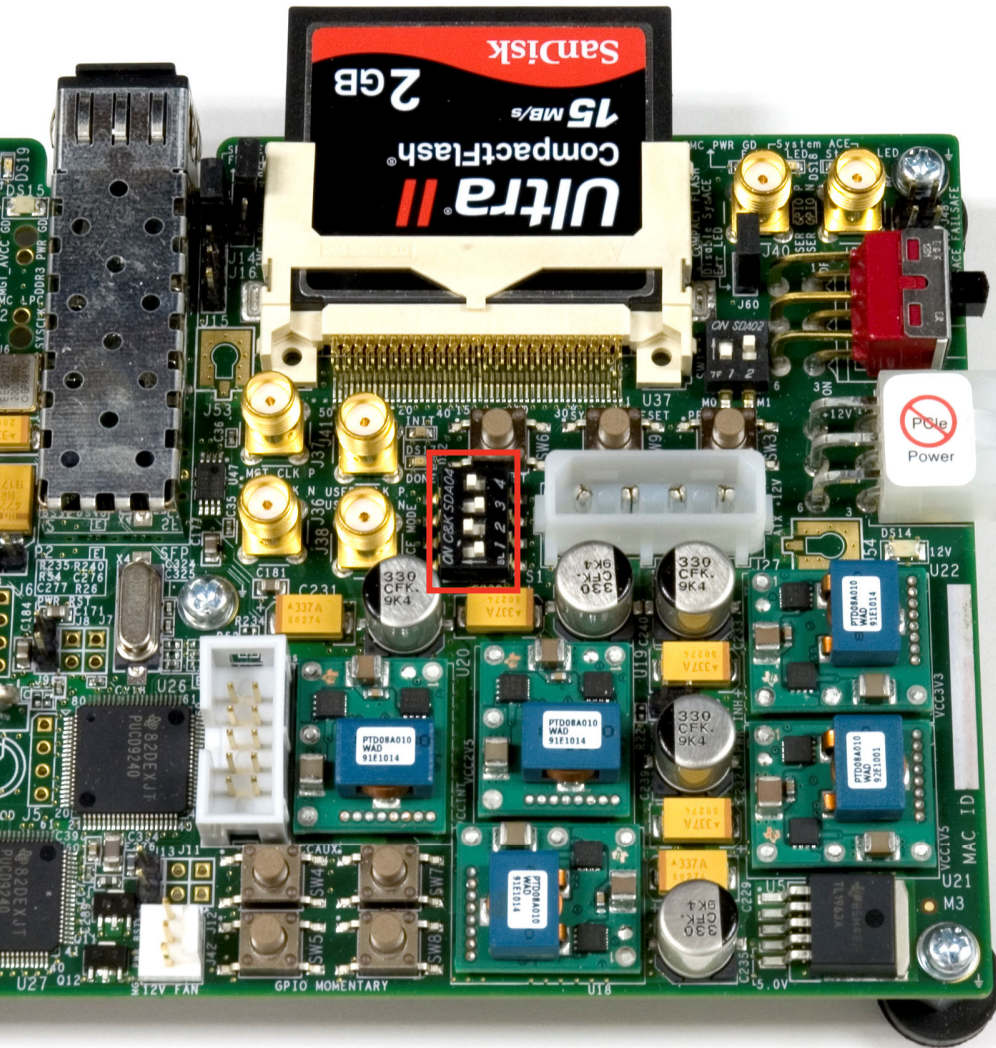
4	3	2	1
1	0	0	1

SP605 IBERT

- See [XTP066](#) – SP605 GTP IBERT Design Creation for details



SP605 MIG



■ To use the MIG Application

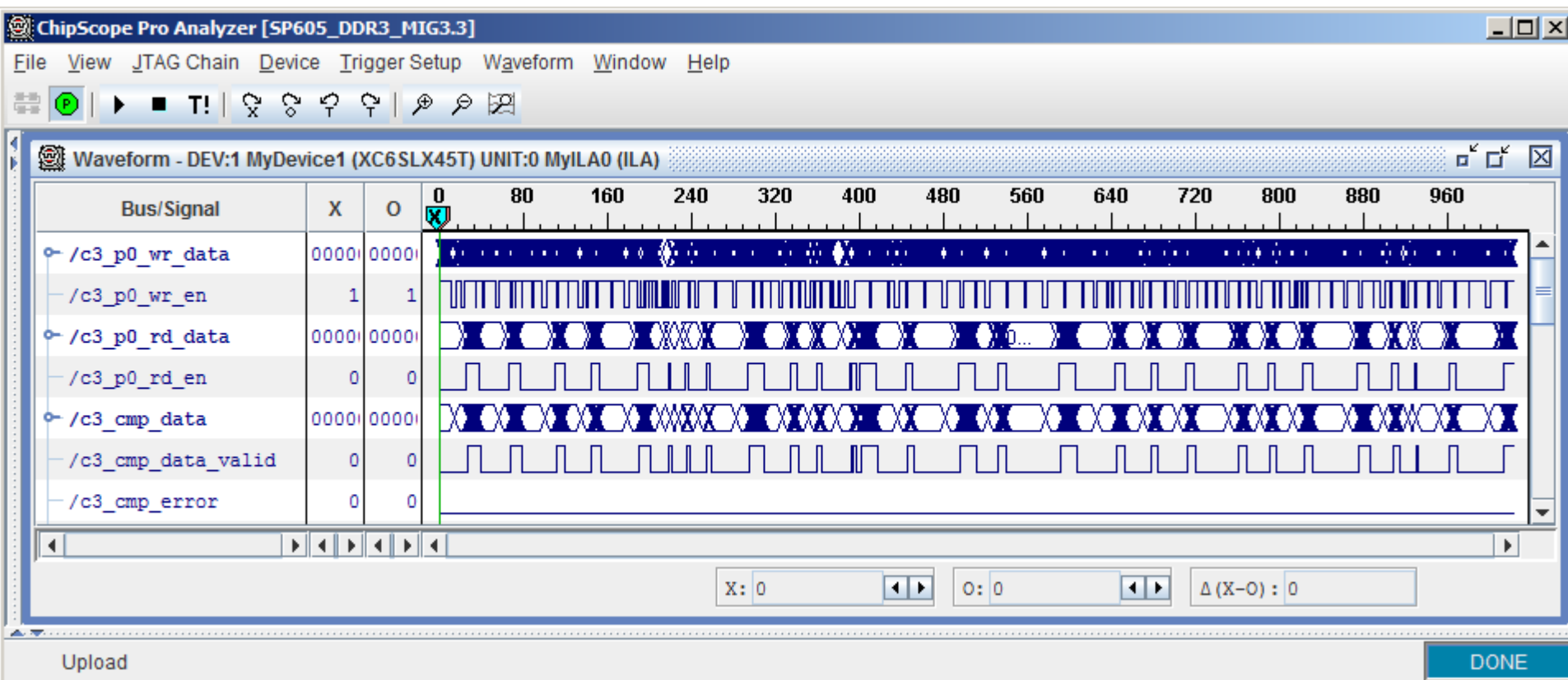
- Set the DIP SW to 1010 (top to bottom) as seen here

4	3	2	1
1	0	1	0

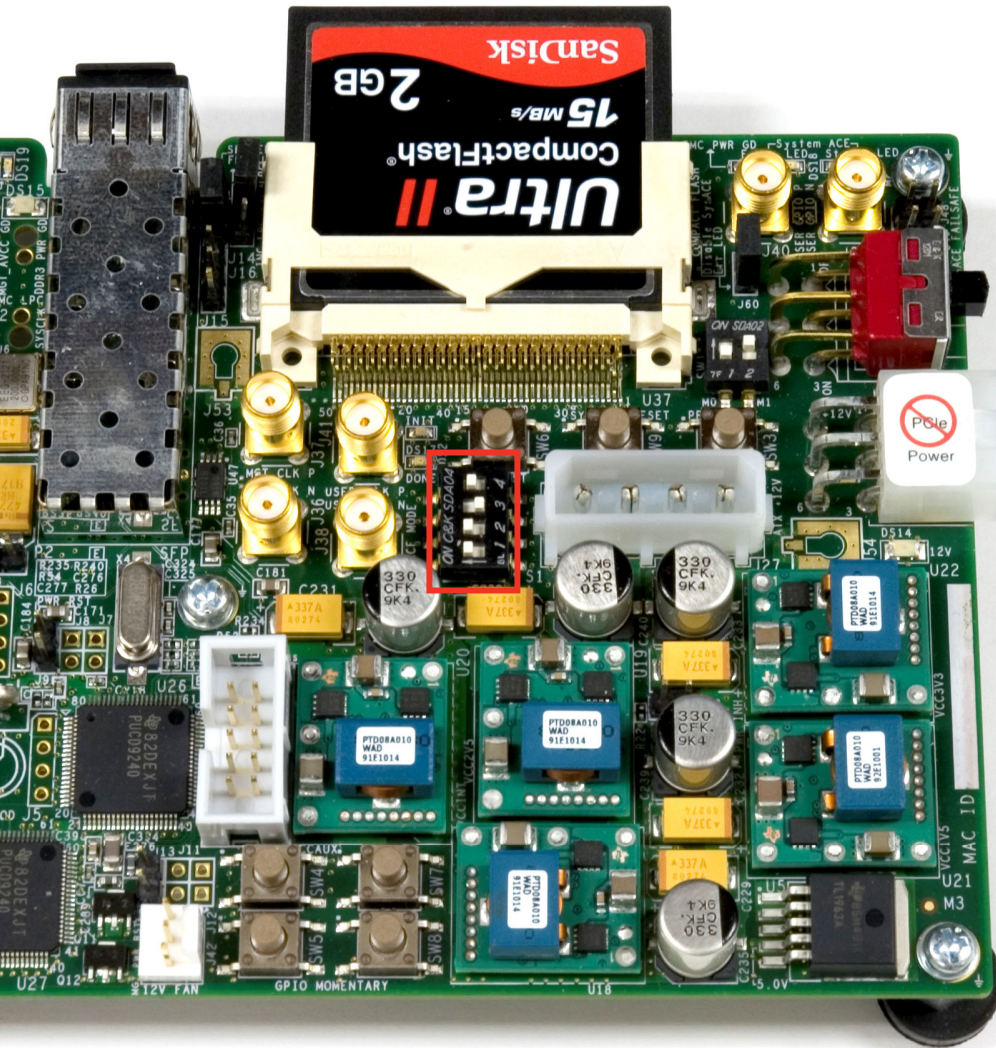
Note: Presentation applies to the SP605

SP605 MIG

- See [XTP060](#) – SP605 MIG Design Creation for details



SP605 BRD

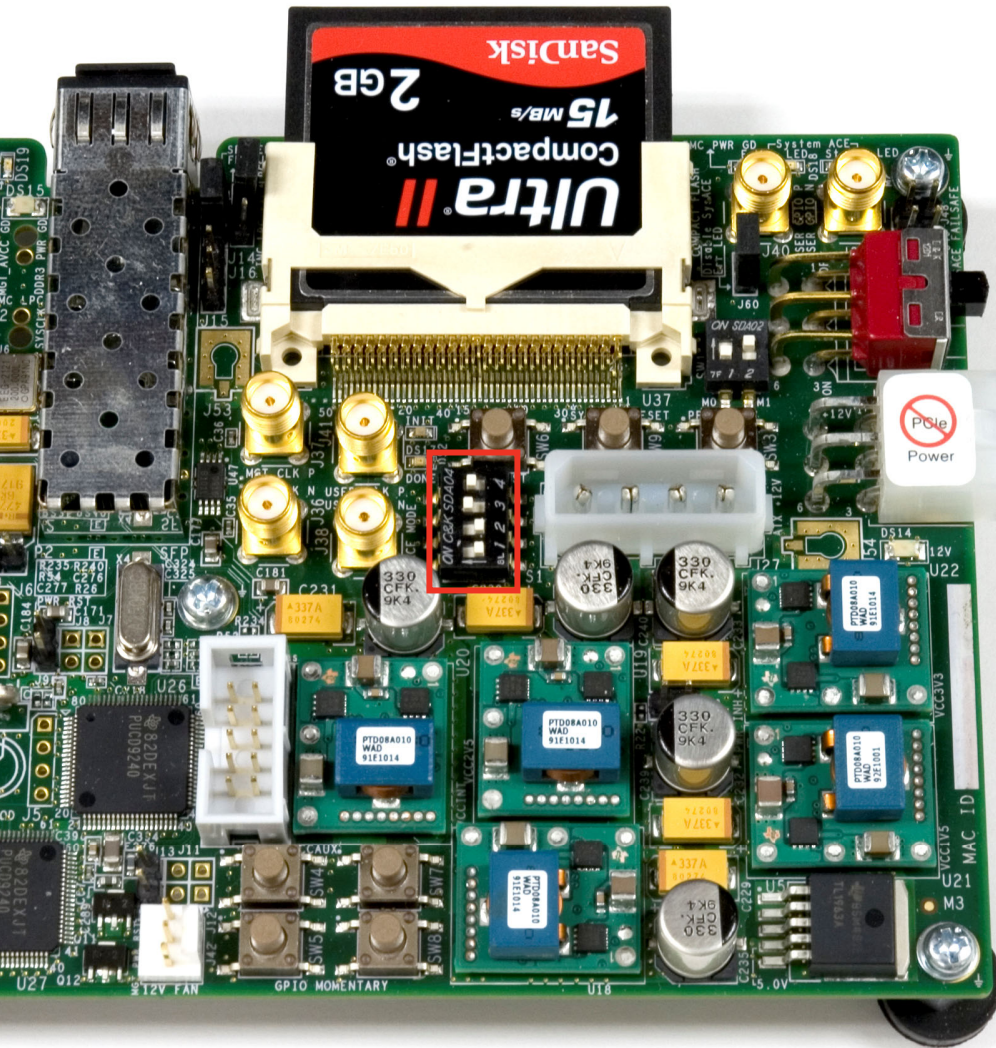


■ To use the BRD DSP Application

- Set the DIP SW to 1011 (top to bottom) as seen here

4	3	2	1
1	0	1	1

SP605 BRD



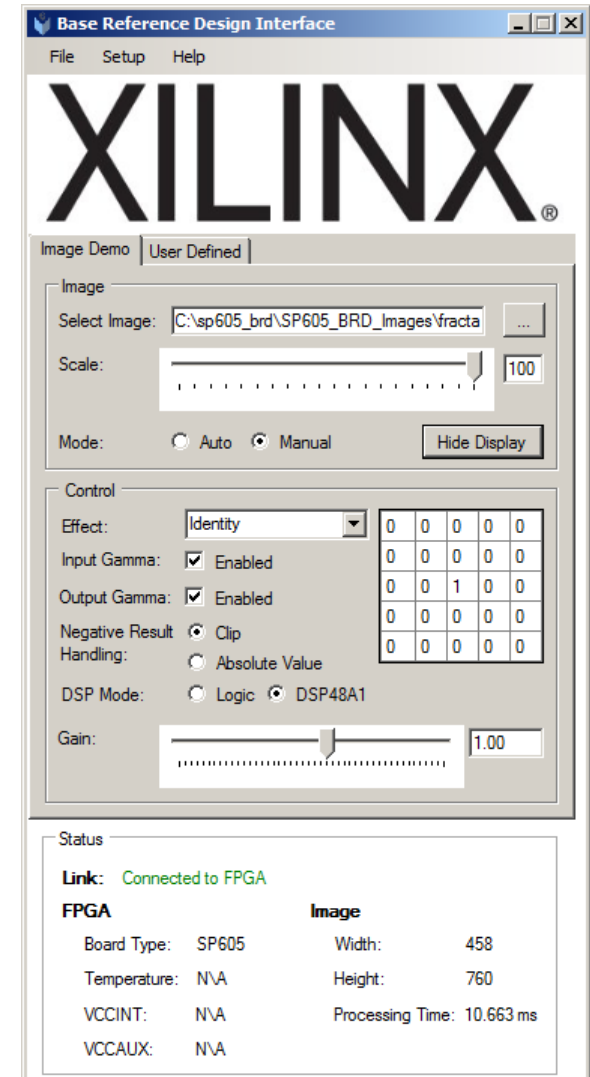
■ To use the BRD Logic Application

- Set the DIP SW to 1100 (top to bottom) as seen here

4	3	2	1
1	1	0	0

SP605 BRD

- See [UG525](#) – SP605 Getting Started Guide for details

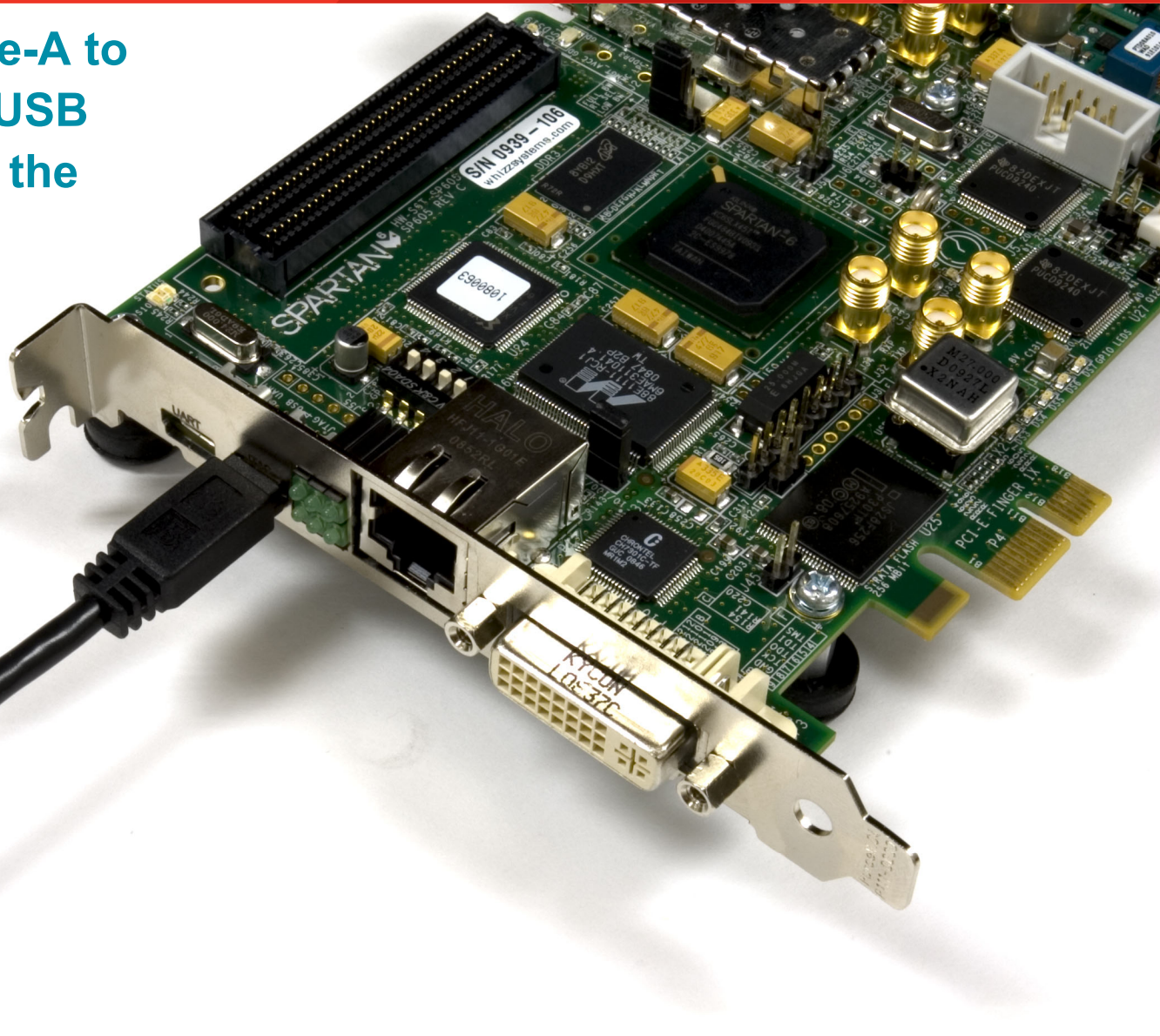


Note: Presentation applies to the SP605

Restoring SP605 Platform and BPI Flash

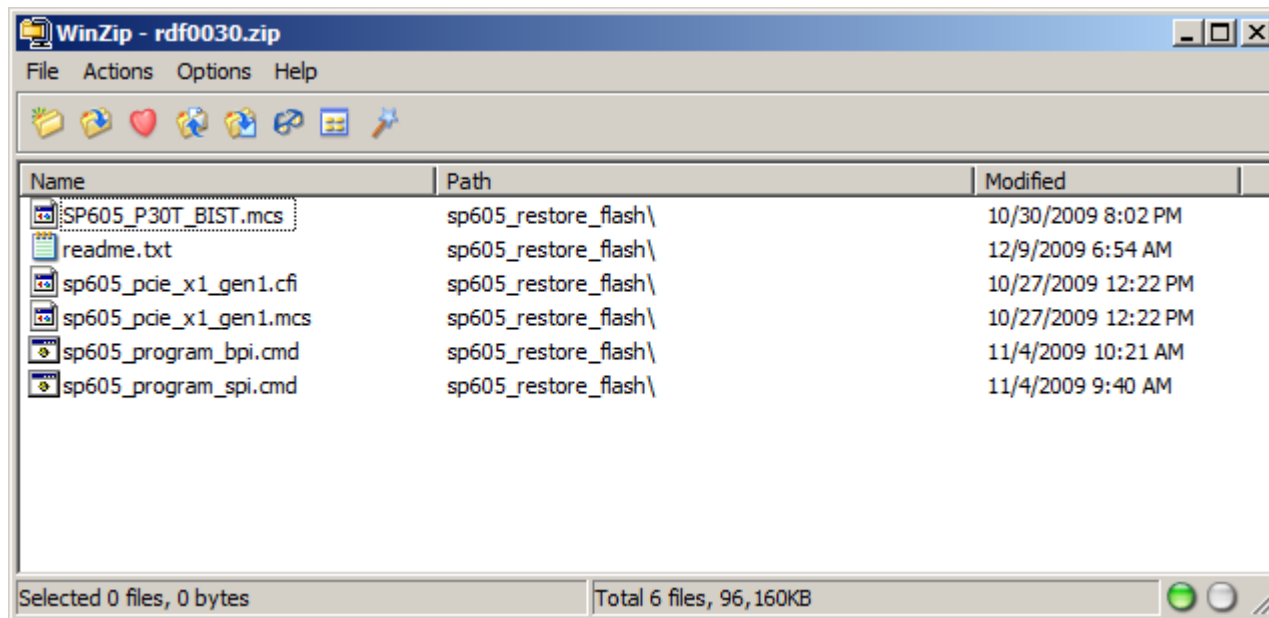
Restoring SPI and BPI Flash

- **Connect a USB Type-A to Mini-B cable to the USB JTAG connector on the SP605 board**
 - Connect this cable to your PC
 - Power-On SP605



Restoring SPI and BPI Flash

- Unzip the rdf0030.zip file to your C:\ drive

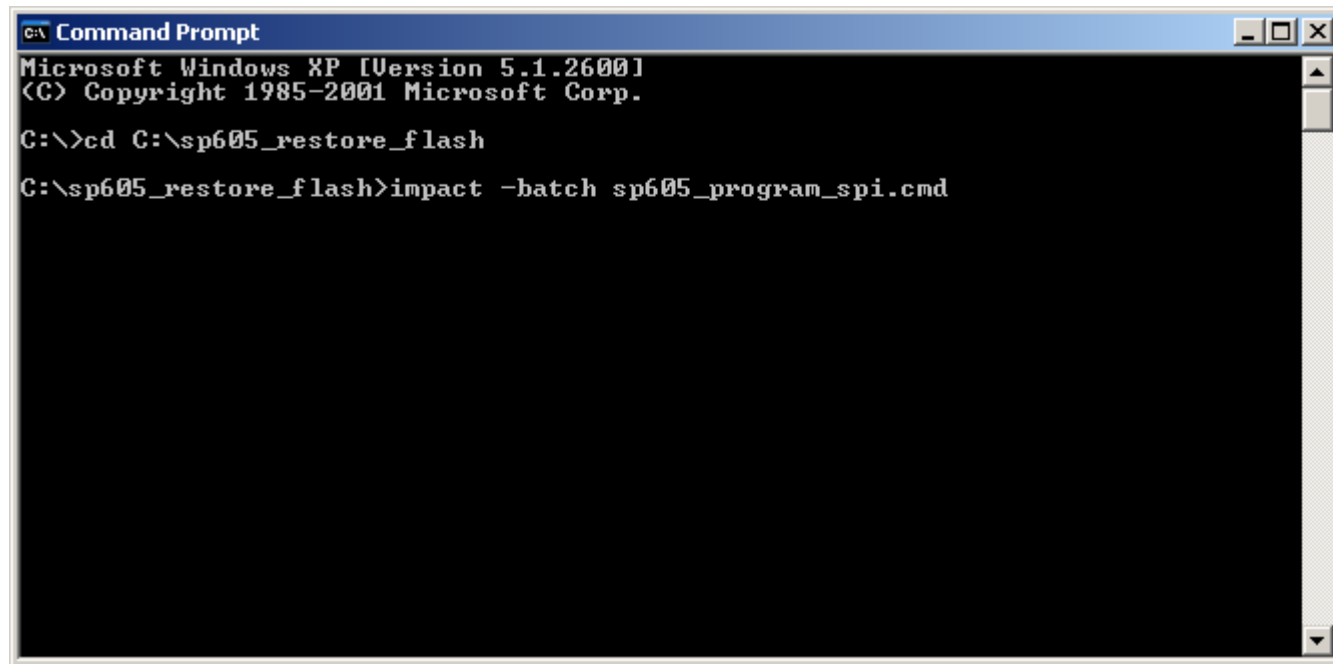


Restoring SPI and BPI Flash

- **Program the SPI Flash**

`cd C:\sp605_restore_flash`

`impact -batch sp605_program_spi.cmd`



```
C:\> Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

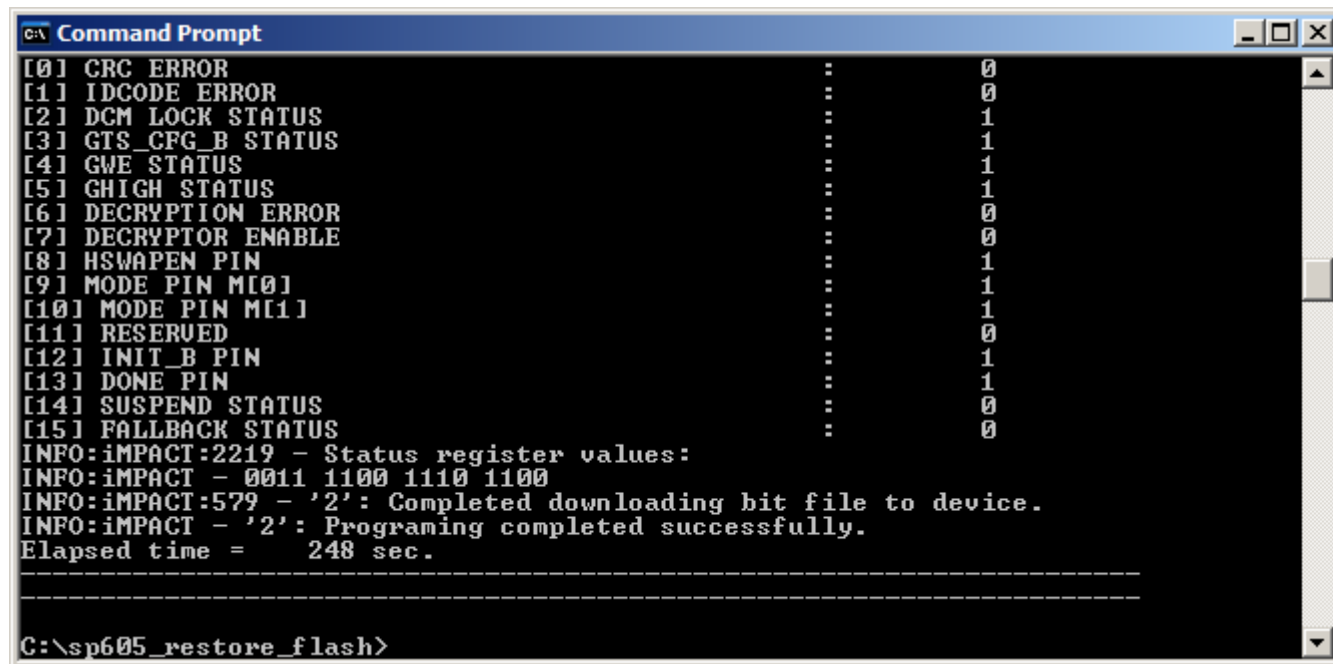
C:\>cd C:\sp605_restore_flash

C:\sp605_restore_flash>impact -batch sp605_program_spi.cmd
```

Note: Takes about 4 minutes

Restoring SPI and BPI Flash

- SPI Flash programmed successfully

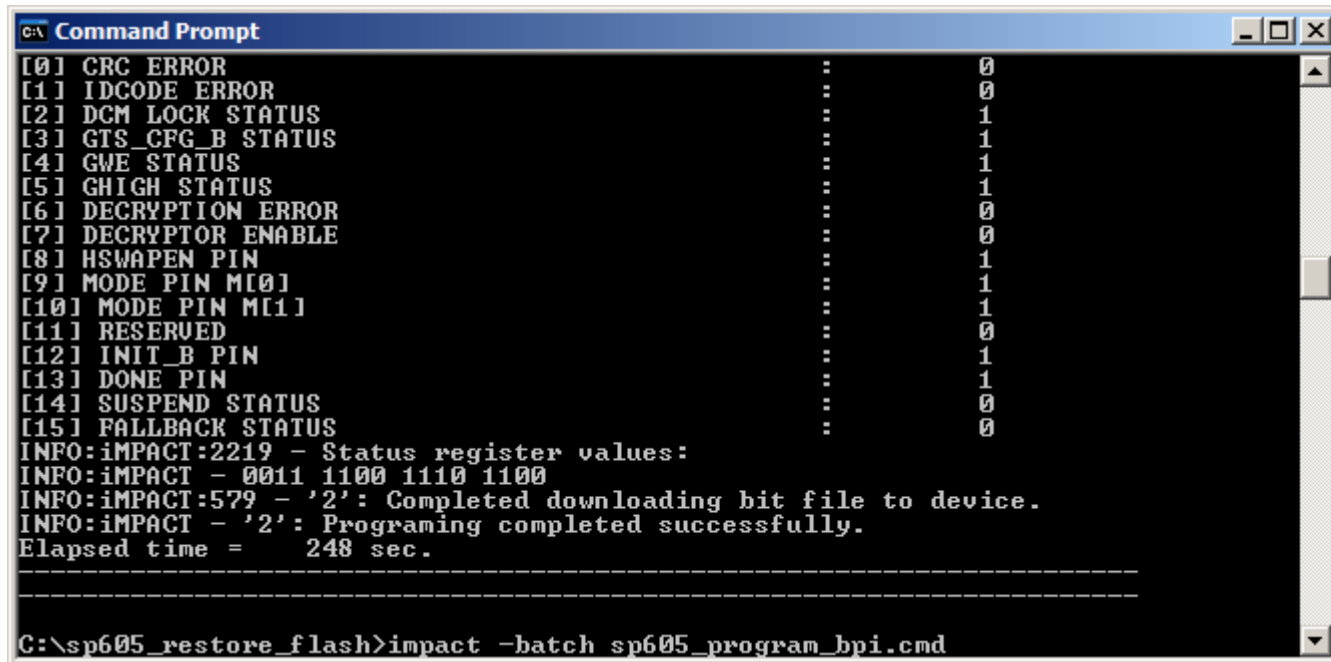


```
C:\ Command Prompt
[0] CRC ERROR : 0
[1] IDCODE ERROR : 0
[2] DCM LOCK STATUS : 1
[3] GTS_CFG_B STATUS : 1
[4] GWE STATUS : 1
[5] GHIGH STATUS : 1
[6] DECRYPTION ERROR : 0
[7] DECRYPTOR ENABLE : 0
[8] HSWAPEN PIN : 1
[9] MODE PIN M[0] : 1
[10] MODE PIN M[1] : 1
[11] RESERVED : 0
[12] INIT_B PIN : 1
[13] DONE PIN : 1
[14] SUSPEND STATUS : 0
[15] FALLBACK STATUS : 0
INFO:IMPACT:2219 - Status register values:
INFO:IMPACT - 0011 1100 1110 1100
INFO:IMPACT:579 - '2': Completed downloading bit file to device.
INFO:IMPACT - '2': Programing completed successfully.
Elapsed time = 248 sec.
-----
C:\sp605_restore_flash>
```

Restoring SPI and BPI Flash

- Program the BPI Flash

`impact -batch sp605_program_bpi.cmd`

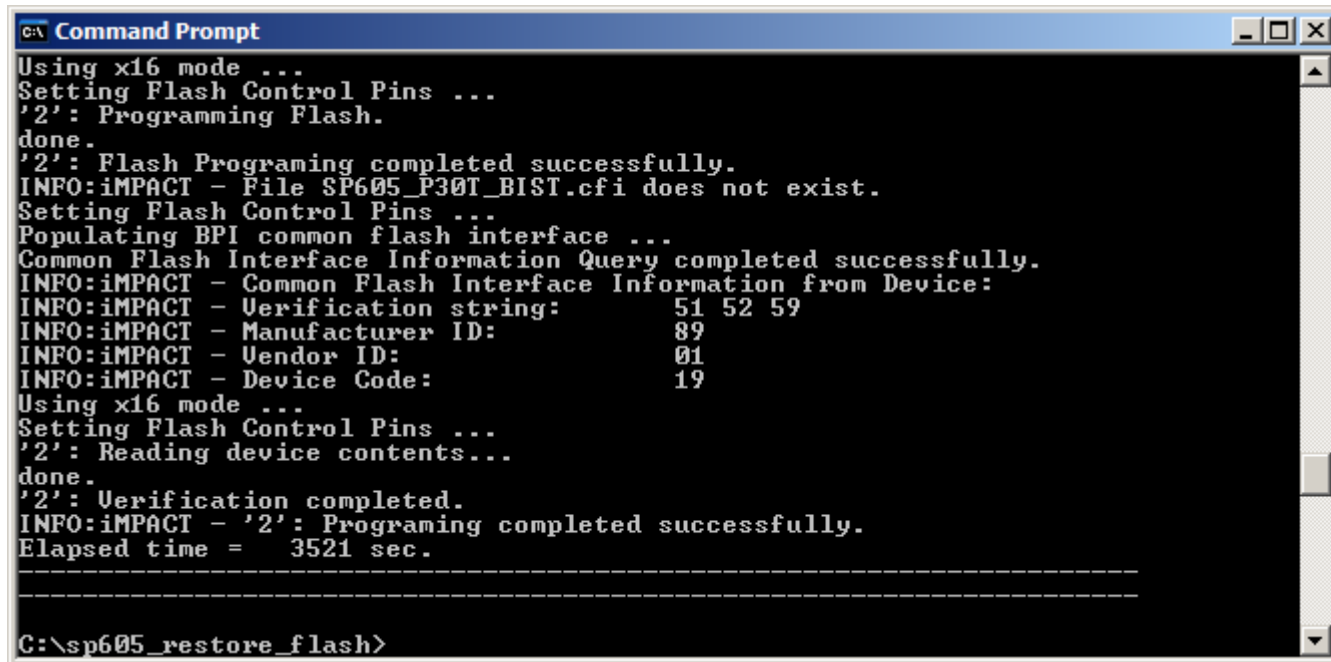


```
C:\ Command Prompt
[0] CRC ERROR : 0
[1] IDCODE ERROR : 0
[2] DCM LOCK STATUS : 1
[3] GTS_CFG_B STATUS : 1
[4] GWE STATUS : 1
[5] GHIGH STATUS : 1
[6] DECRYPTION ERROR : 0
[7] DECRYPTOR ENABLE : 0
[8] HSWAPEN PIN : 1
[9] MODE PIN M[0] : 1
[10] MODE PIN M[1] : 1
[11] RESERVED : 0
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INFO:IMPACT:2219 - Status register values:
INFO:IMPACT - 0011 1100 1110 1100
INFO:IMPACT:579 - '2': Completed downloading bit file to device.
INFO:IMPACT - '2': Programing completed successfully.
Elapsed time = 248 sec.
-----
C:\sp605_restore_flash>impact -batch sp605_program_bpi.cmd
```

Note: Takes about 60 minutes

Restoring SPI and BPI Flash

- BPI Flash programmed successfully



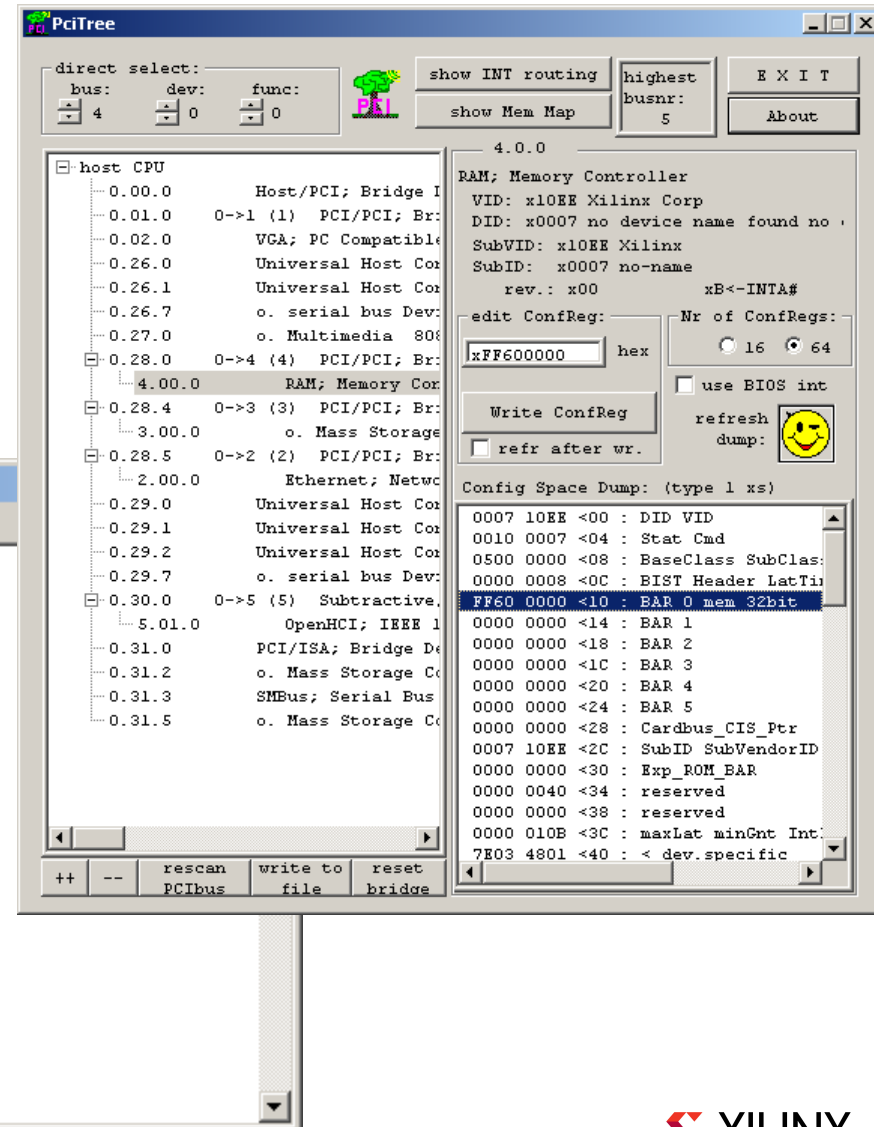
```
C:\ Command Prompt
Using x16 mode ...
Setting Flash Control Pins ...
'2': Programming Flash.
done.
'2': Flash Programming completed successfully.
INFO:iMPACT - File SP605_P30T_BIST.cfi does not exist.
Setting Flash Control Pins ...
Populating BPI common flash interface ...
Common Flash Interface Information Query completed successfully.
INFO:iMPACT - Common Flash Interface Information from Device:
INFO:iMPACT - Verification string:      51 52 59
INFO:iMPACT - Manufacturer ID:         89
INFO:iMPACT - Vendor ID:               01
INFO:iMPACT - Device Code:             19
Using x16 mode ...
Setting Flash Control Pins ...
'2': Reading device contents...
done.
'2': Verification completed.
INFO:iMPACT - '2': Programing completed successfully.
Elapsed time = 3521 sec.
-----
C:\sp605_restore_flash>
```

Restoring SPI and BPI Flash

- After Restoring the flash, two designs are loaded in Flash
 - BPI – Built-In Self Test (BIST)
 - [XTP062](#) – BIST Flash Application
 - SPI – PCIe x1 Gen1 Design
 - [XTP065](#) – PCIe x1 Gen1 Design Creation

```
Tera Term - COM2 VT
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4: FLASH Test
5: IIC Test
6: Ethernet Loopback Test
7: Switch Test
8: External Memory Test
9: SPI Test
A: PushButton Test
B: System ACE CF Test
C: DVI/UGA Test
```



References

References

▪ Spartan-6 Configuration

- Spartan-6 FPGA Configuration User Guide

http://www.xilinx.com/support/documentation/user_guides/ug380.pdf

▪ SP605 Documentation

- SP605 Built-In Self Test Flash Application

http://www.xilinx.com/support/documentation/boards_and_kits/xtp041.pdf

- SP605 Getting Started Guide

http://www.xilinx.com/support/documentation/boards_and_kits/ug523.pdf

- SP605 Base System Reference Design Flash Application

http://www.xilinx.com/support/documentation/boards_and_kits/xtp042.pdf

Documentation

Documentation

- **Spartan-6**

- Spartan-6 FPGA Family

- <http://www.xilinx.com/products/spartan6/index.htm>

- **SP605 Documentation**

- Spartan-6 FPGA SP605 Evaluation Kit

- <http://www.xilinx.com/products/devkits/EK-S6-SP605-G.htm>

- SP605 Hardware User Guide

- http://www.xilinx.com/support/documentation/boards_and_kits/ug526.pdf

- SP605 Reference Design User Guide

- http://www.xilinx.com/support/documentation/boards_and_kits/ug527.pdf