



# KC705 Restoring Flash Contents

October 2014

XTP198

# Revision History

Date	Version	Description
10/08/14	10.0	Recompiled for 2014.3.
06/09/14	9.0	Recompiled for 2014.2. AR54939 fixed.
04/16/14	8.0	Recompiled for 2014.1.
12/18/13	7.0	Recompiled for 2013.4.
10/23/13	6.0	Recompiled for 2013.3. Added AR54939.
06/19/13	5.0	Recompiled for 2013.2.
04/03/13	4.0	Recompiled for 2013.1.
02/22/13	3.1	Added AR53420.
12/18/12	3.0	Recompiled for 2012.4. Added AR53392.
10/23/12	2.0	Recompiled for 2012.3. Added AR52368.
09/20/12	1.0	Initial version. Added AR50886.

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# Overview

- Xilinx KC705 Board
- Software Requirements
- KC705 Setup
- Restoring KC705 P30 BPI Flash
- References

# KC705 Restoring Flash Contents Description

## ► Description

- Vivado is used to restore the onboard non-volatile memories with the contents used in the [KC705 Getting Started Guide](#) (UG883) for the P30 Linear BPI Flash

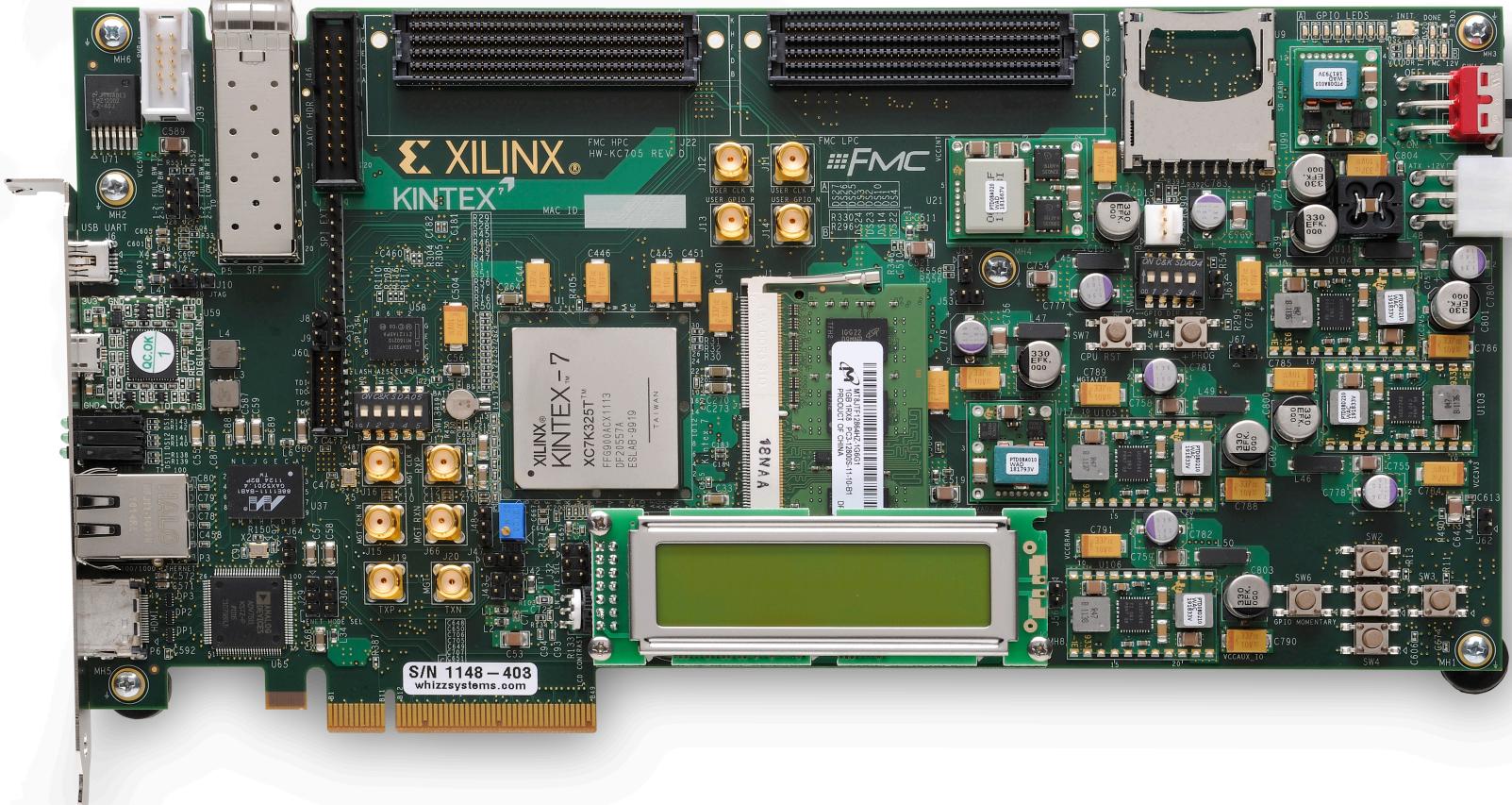
## ► Reference Design Source and Applications

- BPI Slot #1 [UG882](#) Targeted Reference Design
- BPI Slot #2 MIG XTP196
- BPI Slot #3 IBERT XTP200
- BPI Slot #4 BIST XTP195

## ► Files for Flash Restoration

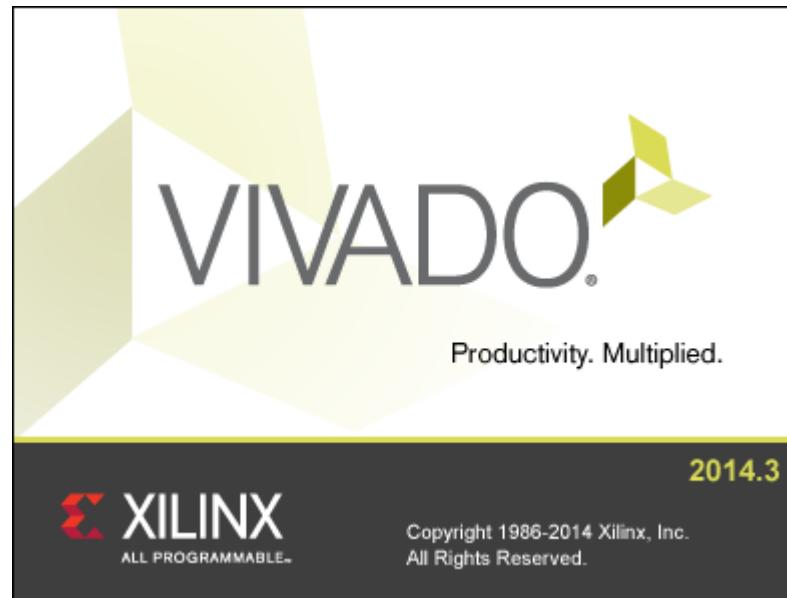
- KC705 Restoring Flash Design Files (2014.3 C) ZIP file
- The KC705 QSPI Flash is available for user applications
- Available through <http://www.xilinx.com/kc705>

# Xilinx KC705 Board



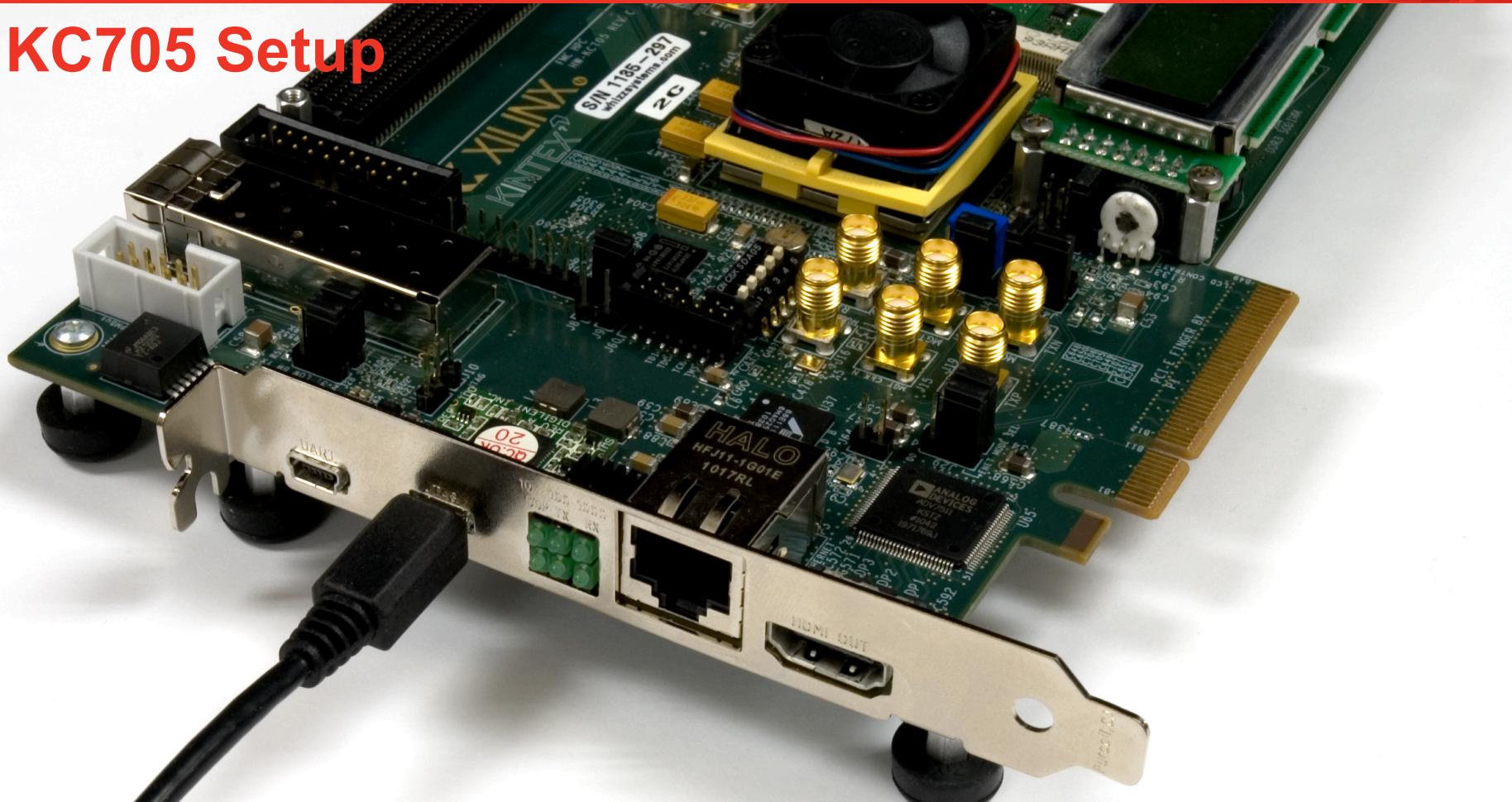
# Vivado Software Requirements

- Xilinx Vivado Design Suite 2014.3, Design Edition



# Restoring KC705 P30 BPI Flash

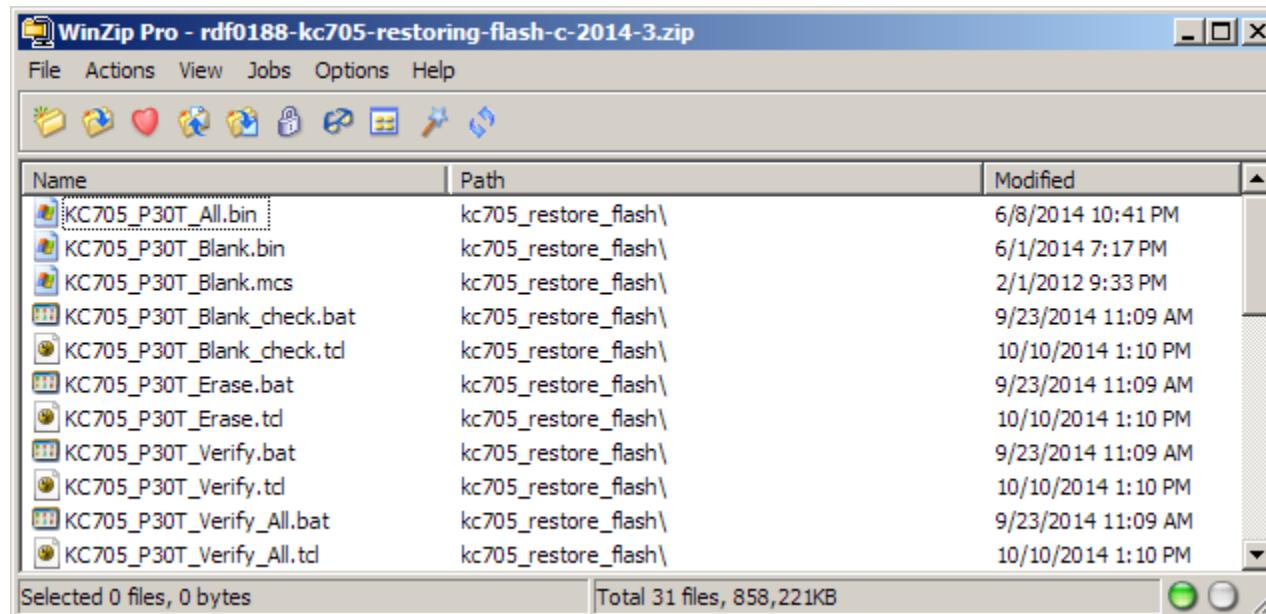
# KC705 Setup



- ▶ **Connect a USB Type-A to Micro-B cable to the USB JTAG (Digilent) connector on the KC705 board**
  - Connect this cable to your PC
  - Power on the KC705 board

# Restoring KC705 P30 BPI Flash

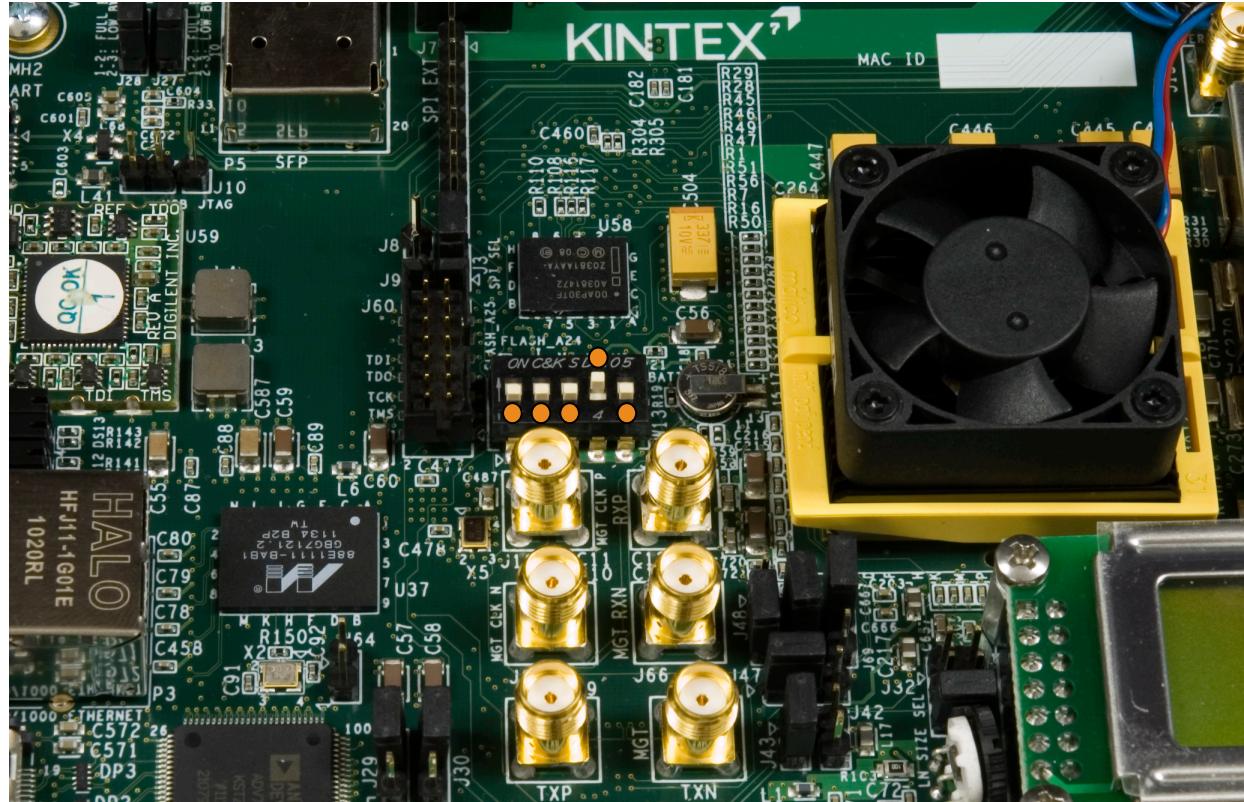
- Unzip the KC705 Restoring Flash Design Files (2014.3 C) ZIP file to your C:\ drive
  - Available through <http://www.xilinx.com/kc705>



# Restoring KC705 P30 BPI Flash

## ► Set SW13 to 00010 (1 = on, Position 1 → Position 5)

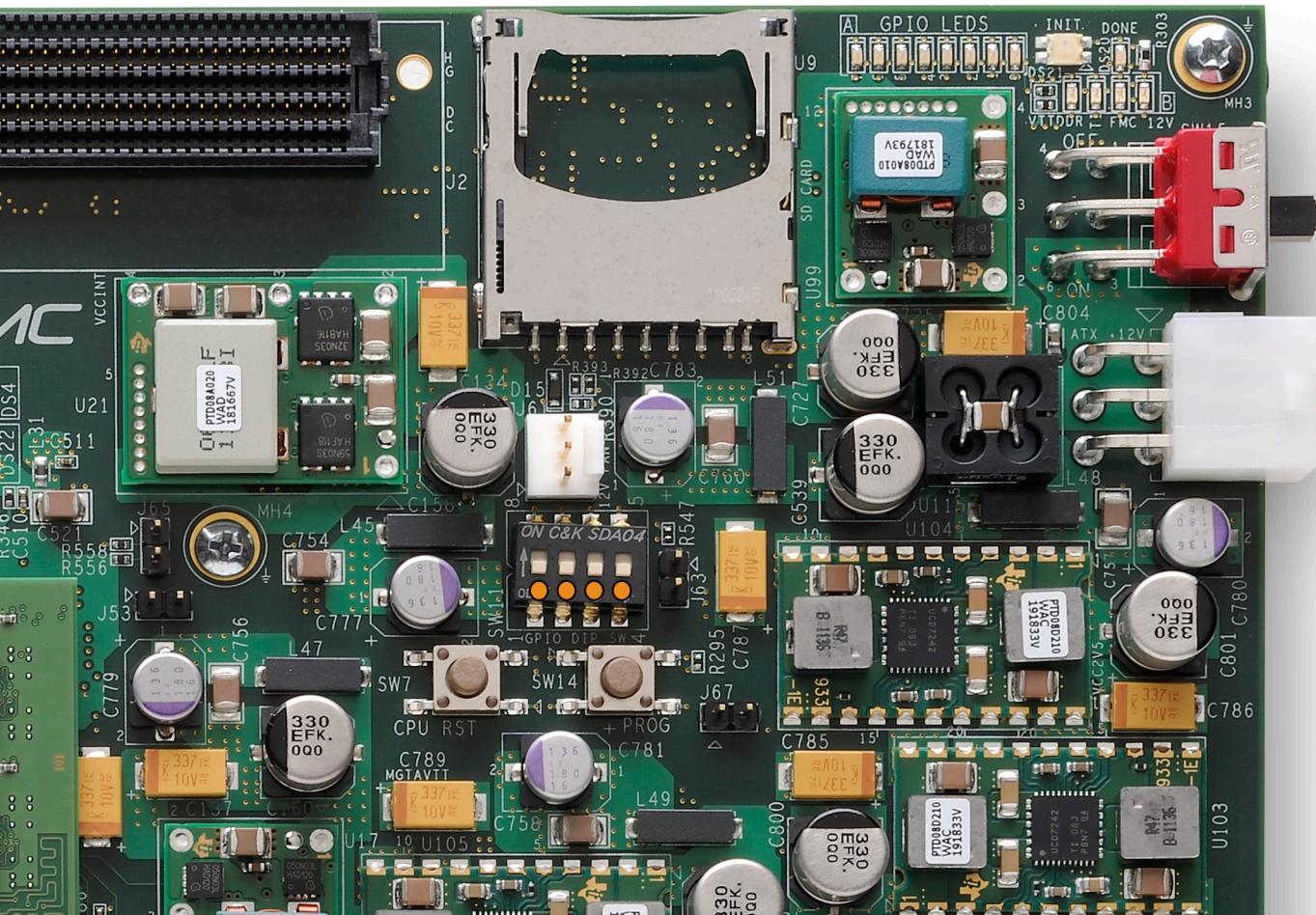
- This enables Master BPI configuration from the BPI P30 Flash
- Flash A25, A24 = 00
- FPGA mode pins M[2:0] = 010



# Restoring KC705 P30 BPI Flash

## ► Set SW11 to 0000 (1 = on, Position 1 → Position 4)

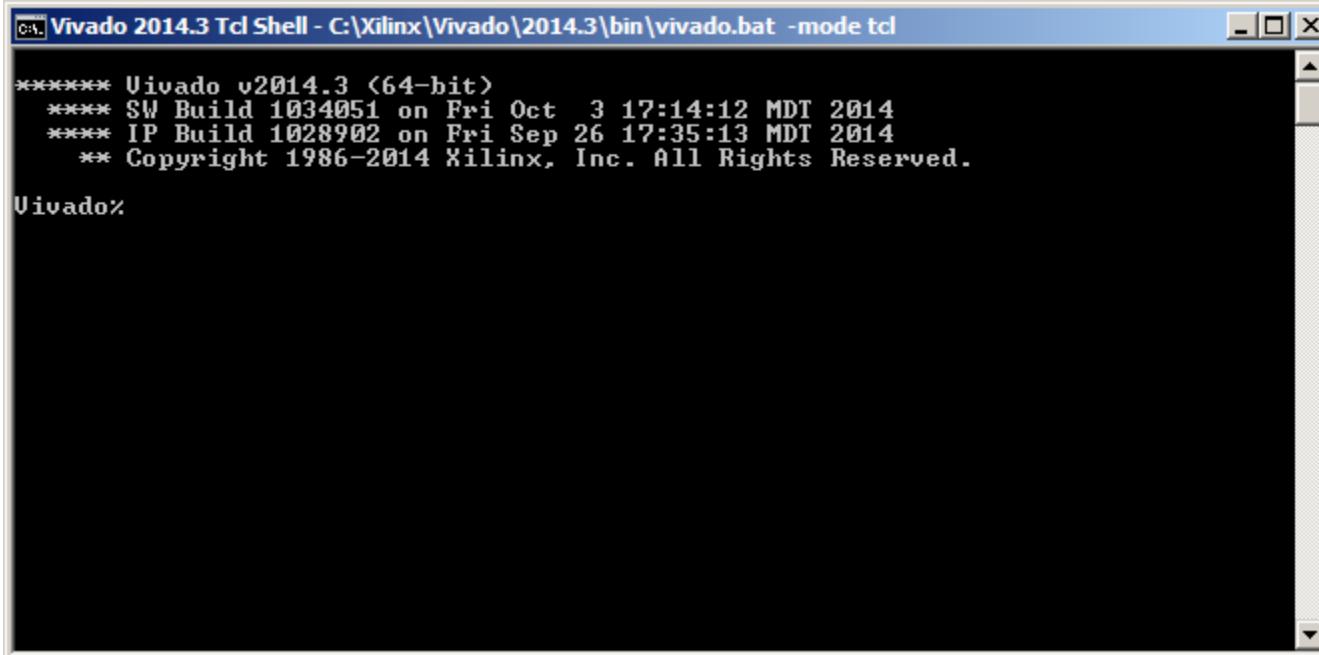
- Some SW11 settings can cause the MultiBoot design to interfere with PROM programming



# Restoring KC705 P30 BPI Flash

## ► Open a Vivado Tcl Shell:

**Start → All Programs → Xilinx Design Tools → Vivado 2014.3 →  
Vivado 2014.3 Tcl Shell**



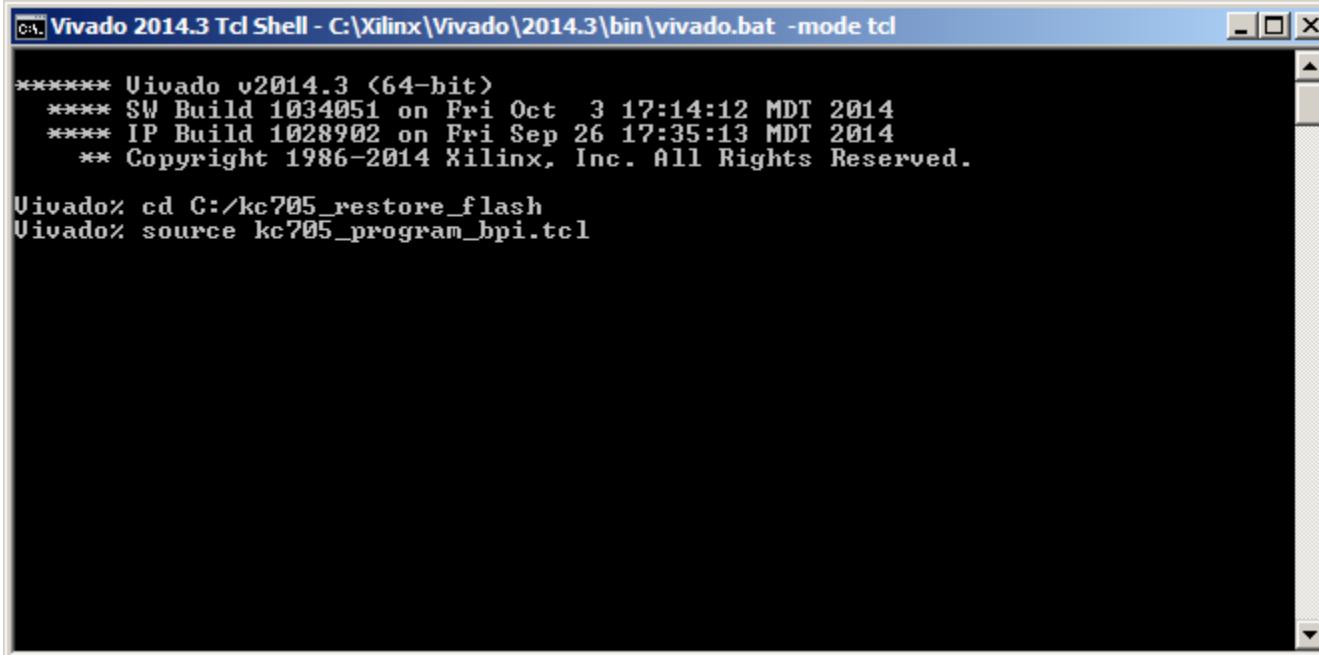
```
04 Vivado 2014.3 Tcl Shell - C:\Xilinx\Vivado\2014.3\bin\vivado.bat -mode tcl
***** Vivado v2014.3 (64-bit)
***** SW Build 1034051 on Fri Oct  3 17:14:12 MDT 2014
***** IP Build 1028902 on Fri Sep 26 17:35:13 MDT 2014
** Copyright 1986-2014 Xilinx, Inc. All Rights Reserved.

Vivado%
```

# Restoring KC705 P30 BPI Flash

- In the Vivado Tcl Shell type:

```
cd C:/kc705_restore_flash  
source kc705_program_bpi.tcl
```



The screenshot shows a Windows command-line interface window titled "Vivado 2014.3 Tcl Shell - C:\Xilinx\Vivado\2014.3\bin\vivado.bat -mode tcl". The window displays the following text:

```
***** Vivado v2014.3 (64-bit)  
***** SW Build 1034051 on Fri Oct  3 17:14:12 MDT 2014  
***** IP Build 1028902 on Fri Sep 26 17:35:13 MDT 2014  
** Copyright 1986-2014 Xilinx, Inc. All Rights Reserved.  
Vivado> cd C:/kc705_restore_flash  
Vivado> source kc705_program_bpi.tcl
```

# Restoring KC705 P30 BPI Flash

## ► After Restoring the flash, four designs are loaded in Flash

- BPI Slot #1 UG882 Targeted Reference Design
  - See UG882 – Kintex-7 FPGA Base Targeted Reference Design User Guide
- BPI Slot #2 MIG
  - See XTP196 - KC705 MIG Tutorial
- BPI Slot #3 IBERT
  - See XTP200 - KC705 GTX IBERT Tutorial
- BPI Slot #4 BIST
  - See XTP195 - KC705 BIST Tutorial

## References

# References

## ► KC705 TRD

- Kintex-7 FPGA Base Targeted Reference Design User Guide – UG882
  - [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/kc705/2014\\_2/ug882\\_K7\\_Base\\_TRD.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/kc705/2014_2/ug882_K7_Base_TRD.pdf)

## ► 7 Series Configuration

- 7 Series FPGAs Configuration User Guide
  - [http://www.xilinx.com/support/documentation/user\\_guides/ug470\\_7Series\\_Config.pdf](http://www.xilinx.com/support/documentation/user_guides/ug470_7Series_Config.pdf)

# Documentation

# Documentation

## ► Kintex-7

- Kintex-7 FPGA Family
  - <http://www.xilinx.com/products/silicon-devices/fpga/kintex-7/index.htm>
- Design Advisory Master Answer Record for Kintex-7 FPGAs
  - <http://www.xilinx.com/support/answers/42946.htm>

## ► KC705 Documentation

- Kintex-7 FPGA KC705 Evaluation Kit
  - <http://www.xilinx.com/products/boards-and-kits/EK-K7-KC705-G.htm>
- KC705 Getting Started Guide
  - [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/kc705/2014\\_2/ug883\\_K7\\_KC705\\_Eval\\_Kit.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/kc705/2014_2/ug883_K7_KC705_Eval_Kit.pdf)
- KC705 User Guide
  - [http://www.xilinx.com/support/documentation/boards\\_and\\_kits/kc705/ug810\\_KC705\\_Eval\\_Bd.pdf](http://www.xilinx.com/support/documentation/boards_and_kits/kc705/ug810_KC705_Eval_Bd.pdf)