

ADV7282

Installation Guide

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INTRODUCTION TO THE ADV7282 INSTALLATION GUIDE

The ADV7282 Installation Guide describes the ADV7282 evaluation board; and provides instructions for setting up the ADV7282 evaluation board, installing the required ADV7282 software, and running the scripts needed to operate the ADV7282 evaluation board.

AUDIENCE

The ADV7282 Installation Guide is intended for the use of the person installing an ADV7282 evaluation board.

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1. DESCRIPTION OF THE ADV7282 EVALUATION BOARD

The ADV7282 evaluation board consists of an ADV7282 video decoder and an ADV7391 video encoder. Analog video is fed into the analog inputs (Ain1 to Ain4). The ADV7282 evaluation board can be configured to receive many different analog video formats (refer to [Table 1](#)). The analog video from analog inputs is fed into the ADV7282 which converts it into an ITU656 digital stream.

The digital output stream of the ADV7282 is fed to headers and into the ADV7391 video encoder (refer to [Figure 1](#)). The ADV7391 converts this digital stream into an analog YPbPr output. The analog YPrPb output from the ADV7391 is fed to the Video Output header of the evaluation board.

Table 1. Acceptable Analog Video Input Formats to ADV7282 Evaluation Board

	Ain1	Ain2	Ain3	Ain4
Single-ended CVBS (NTSC, PAL, SECAM)	SE CVBS 1	SE CVBS 2	[1]	[1]
Differential CVBS	[2]	[2]	DIFF CVBS 1 (+)	DIFF CVBS 1 (-)
S-Video (YC)	S-Video 1 (Y)	S-Video 1 (C)	[3]	[3]
Component (YPbPr)		[4]	[4]	[4]

Note: The shaded areas in Table 1 indicate that modification needs to be made to the ADV7282 evaluation board before that particular video input standard can be input to that particular analog input pin.

[1] Ain3 and Ain4 can be configured to receive single-ended CVBS, but the user needs to change some resistor values on the ADV7282 evaluation board. The modification that are required in order for Ain3 and Ain4 to receive single-ended CVBS video are:

- R20, R46 and R27 should be removed.
- R33 and R35 should be replaced with 24 Ω resistors
- R28 and R29 should be replaced with 51 Ω resistors

[2] Ain1 and Ain2 can be configure to receive differential CVBS, but the user needs to change some resistor values on the ADV7282 evaluation board. When the modifications to the evaluation board are complete, the positive channel of the differential CVBS video should be fed into Ain1, and the negative channel of the differential CVBS video should be fed into Ain2.

The modification that are required in order for Ain1 and Ain2 to receive differential CVBS video are:

- R24 and R25 should be replaced with 1.3k Ω resistors
- R21 and R23 should be replaced with 430 Ω resistors
- R26 should be replaced with a 75 Ω resistor for pseudo differential CVBS or 150 Ω resistor for fully differential CVBS.
- In order to enable the diagnostic feature for the Ain1&2 inputs: R46 should be removed and a 0 Ω resistor placed in R47. Note this step is optional.

[3] Ain3 and Ain4 can be configured to receive S-video (YC), but the user needs to change some resistor values on the ADV7282 evaluation board. When the modifications to the evaluation board are complete, the luma (Y) channel should be fed into Ain1, and the chroma (C) channel should be fed into Ain2.

The modification that are required in order for Ain3 and Ain4 to receive s-video are:

- R20, R46 and R27 should be removed.
- R33 and R35 should be replaced with 24 Ω resistors
- R28 and R29 should be replaced with 51 Ω resistors

[4] It is possible to configure the ADV7282 to receive YPbPr video, but the user needs to change some resistor values on the ADV7282. When the modifications to the evaluation board are complete, the luma (Y) channel should be fed into Ain3, the Pb channel should be fed into Ain4, and the Pr channel should be fed into Ain2.

The modification that are required in order for the ADV7282 to receive YPbPr video are:

- R20, R46 and R27 should be removed.
- R33 and R35 should be replaced with 24 Ω resistors
- R28 and R29 should be replaced with 51 Ω resistors

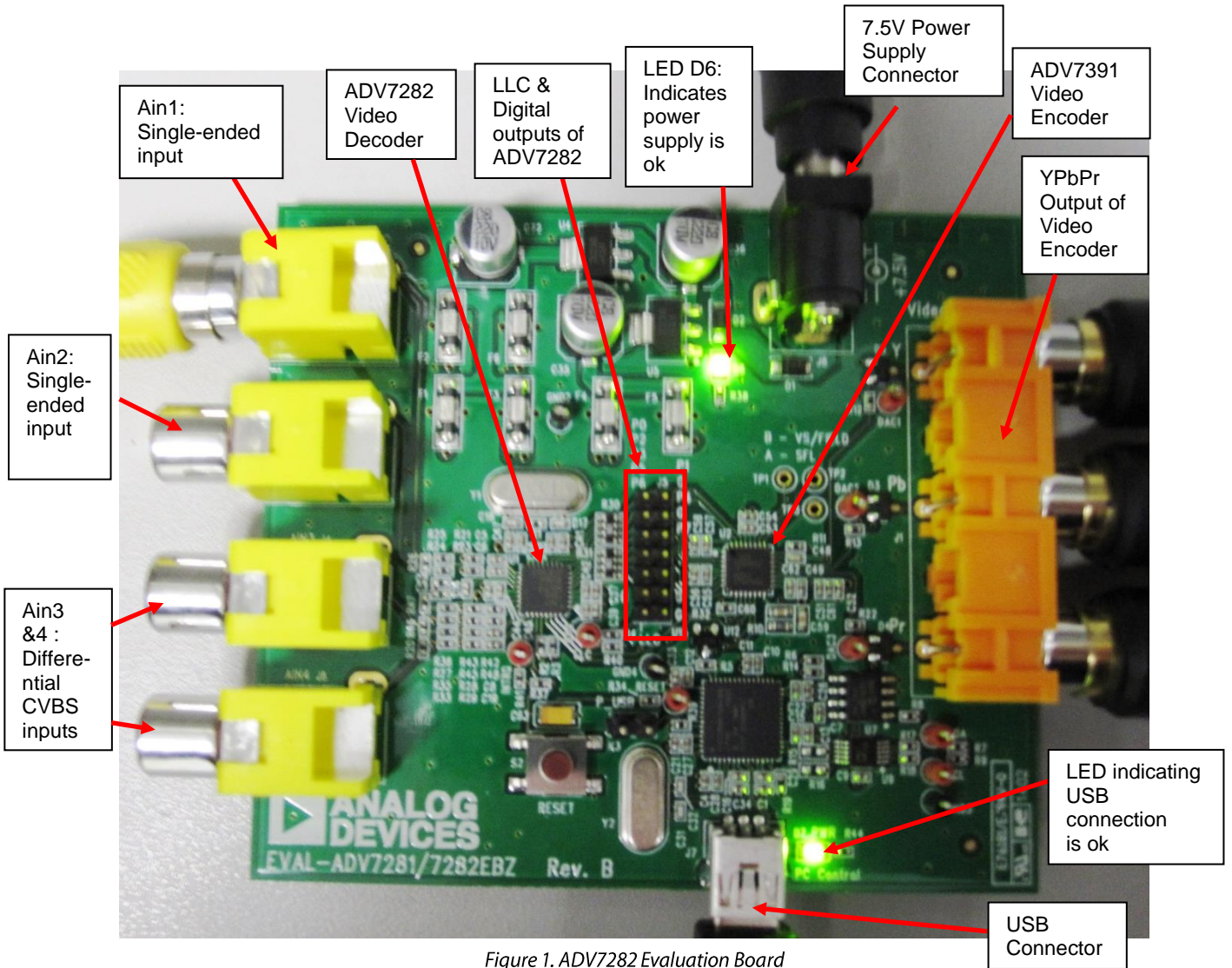


Figure 1. ADV7282 Evaluation Board

2. SETTING UP THE ADV7282 EVALUATION BOARD

The Analog Devices (ADI) DVP Eval program and ADV7282 script files are needed to operate the ADV7282 evaluation board. The DVP Eval program and ADV7282 script files are available on an ADI File Transfer Protocol (FTP) site.

The following setup process is recommended, and is described in detail in Section 2.1 to Section 2.6.

1. Download and install an FTP client.
2. Download the DVP Eval program and ADV7282 script files from the ADI FTP site.
3. Install the DVP Eval program.
4. Load the ADV7282 script files.
5. Power up the ADV7282 evaluation board.
6. Program the ADV7282 evaluation board.

2.1. DOWNLOAD AND INSTALL AN FTP CLIENT

Download and install an FTP client such as FileZilla in order to access the ADI FTP site.

1. Go to the <http://filezilla-project.org/download.php?type=client> website.
2. Download the FileZilla FTP client .exe installation file.
3. When the download is completed, run the .exe installation file and follow the onscreen instructions.

2.2. DOWNLOAD ADV7282 FILES FROM ADI FTP SITE

The DVP Eval program and ADV7282 script files are available on the ADI FTP site.

1. Open the FTP client, for example, FileZilla.
2. A quick connect bar appears near the top of the FileZilla client window. Enter the following information. (Note that the boxes are case sensitive.)
 - a. In the **Host** box, enter **ftp.analog.com**.
 - b. In the **Username** box, enter **adv728x**.
 - c. In the **Password** box enter **1dN62jy**
 - d. Leave the **Port** box blank.
3. Press the **Quickconnect** button.

FileZilla then shows two panes (refer to [Figure 2](#)). The left pane displays the Local Site Pane (that is, your computer). The right pane displays the Remote Site Pane (that is, the ADI FTP site).

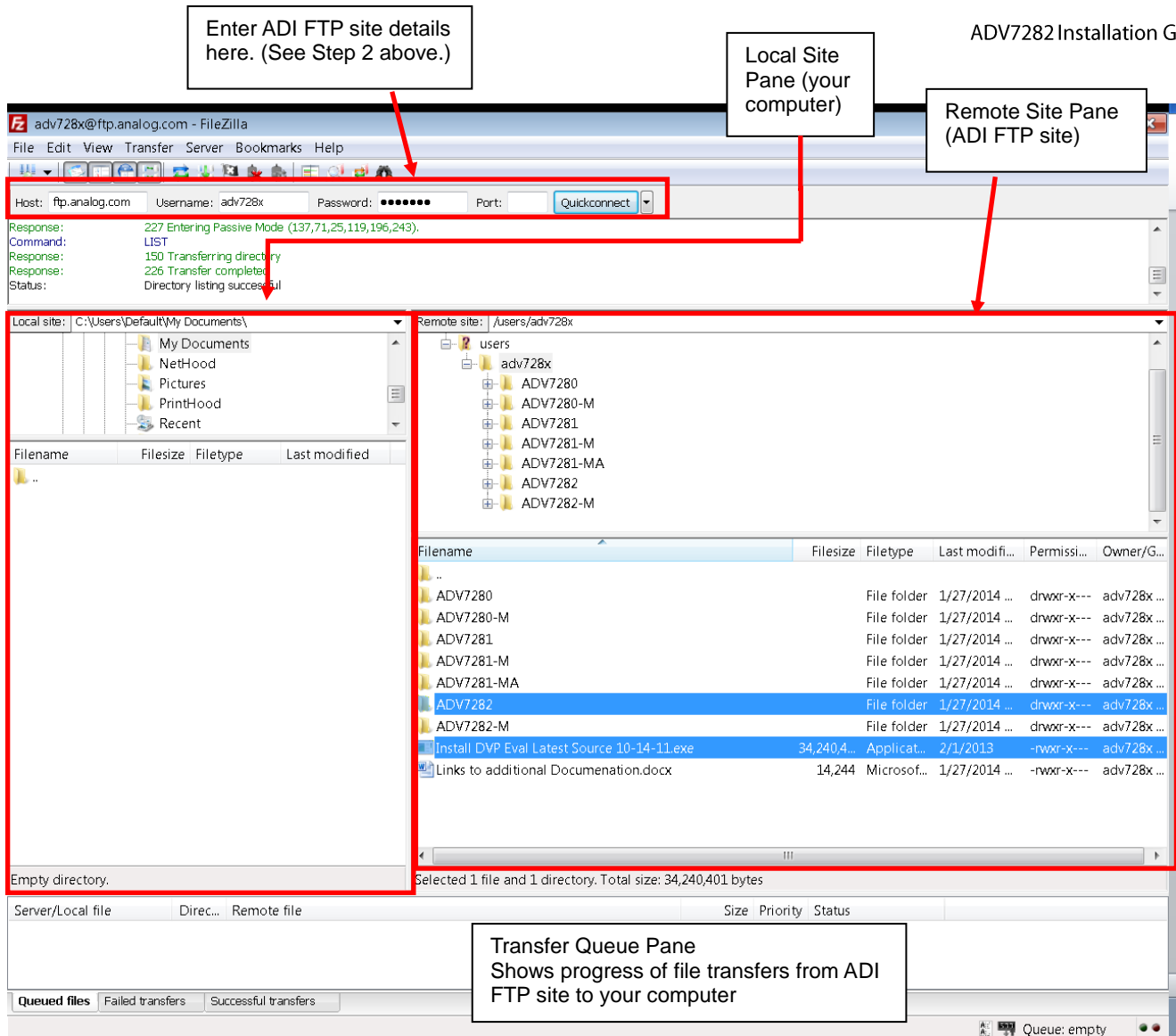


Figure 2. Image of ADI ADV7282 FTP Site

- On the Local Site Pane, navigate to where you want to drop the ADV7282 files.
- On the Remote Site Pane, select the ADV7282 folder.
Note: Do not select the ADV7282-M folder.
- Drag the ADV7282 folder to the desired location in the Local Site Pane.
The files and folders on the ADI FTP site then copy to your computer.
Note: The Transfer Queue Pane shows the progress of this copying.
- On the Remote Site Pane, select the 'Install DVP Eval Latest Source 10-14-11.exe' and drag it to the desired location in the Local Site Pane.
Note: 'Install DVP Eval Latest Source 10-14-11.exe' is a large executable file and can take a few minutes to download from the FTP site depending on the speed of your internet connection.

2.3. INSTALL THE DVP EVAL PROGRAM

1. When the transfer from the FTP site is complete (as described in Section 2.2), double click on the Install DVP Eval Latest Source 10-14-11.exe file.
2. A window appears showing a software license agreement. After you have read the agreement, press the **I Agree** button.
3. A new window appears asking if you want to add Desktop and Start Menu shortcuts. Press the **Next** button.
4. A new window (refer to [Figure 3](#)) appears, prompting to select the installation destination folder. Press the **Install** button.
Note: It is strongly recommended to use the default destination folder. Selecting a different folder can cause the DVP Eval program to not install correctly in some versions of Windows.

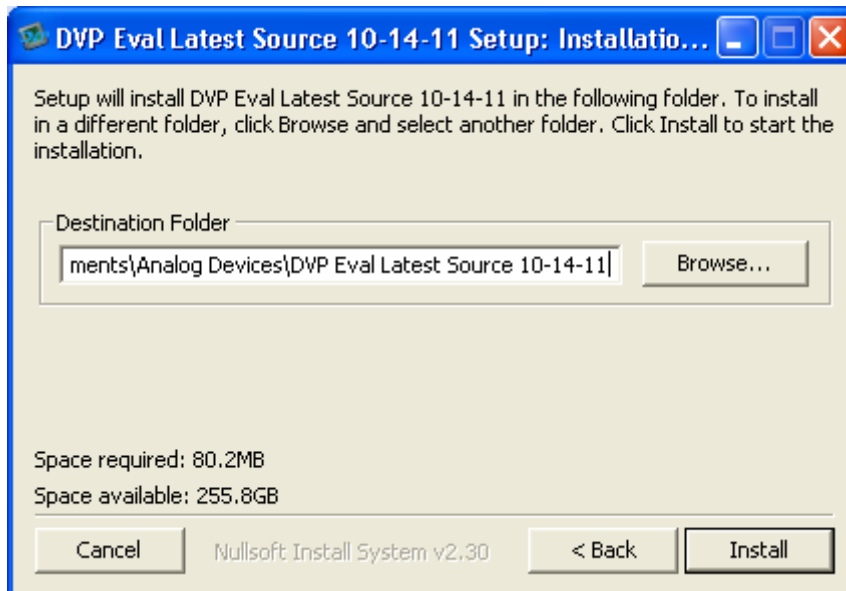


Figure 3. Installation Destination for DVP Eval Program

5. Restart your computer after the DVP Eval program is installed.

2.4. LOAD THE ADV7282 SCRIPT FILES

This section describes how to load the ADV7282 script files to the DVP Eval program.

1. Open the ADV7282 folder that you downloaded from the ADI FTP site.
2. Open the 'Software for RevB Eval Board' folder in the ADV7282 folder.
3. Copy the folder called ADV7282CUST to the following directory:
C:\Documents and Settings\USER_NAME\My Documents\Analog Devices\DVP Eval Latest Source 10-14-11\xml\New Boards.
Note: This directory may be slightly different depending on where you installed the DVP Eval program.
4. To open the DVP Eval program, select Start -> Analog Devices -> DVP Eval Latest Source 10-14-11.
5. Select File -> Update Boards.

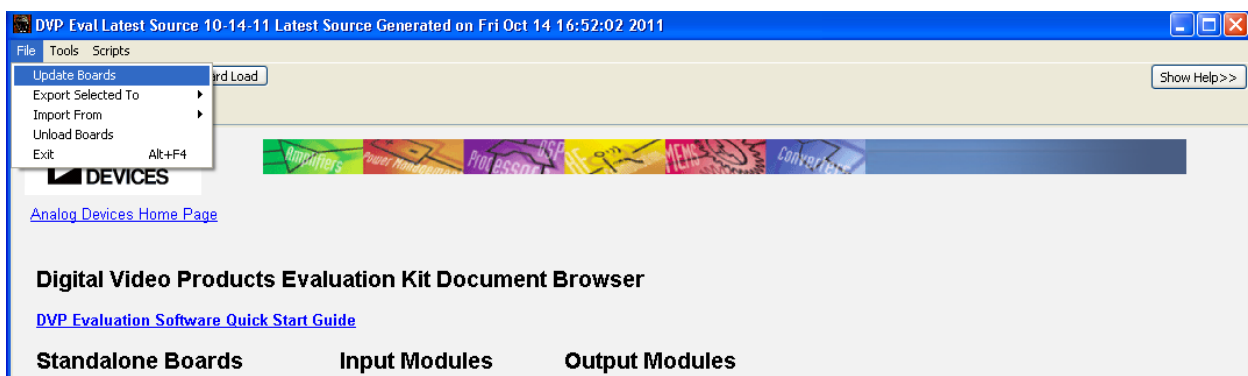


Figure 4. Update Board Files on DVP Eval Program

A number of black command prompt windows appear and then disappear. Finally, a window appears with the message “update boards successful”. Press the **OK** button.

The ADV7282 script files have been added to the DVP Eval program.

- Exit the DVP Eval program.

2.5. POWER UP THE ADV7282 EVALUATION BOARD

- Connect a mains cable to the 7.5 V supply cable included in the ADV7282 evaluation kit.
- Connect the 7.5 V supply cable to Jumper J8 on the ADV7282 evaluation board. When this is done correctly, LED D6 turns on (refer to [Figure 1](#)).
- Connect the USB cable included in the ADV7282 evaluation kit to the computer where you installed the DVP Eval program and ADV7282 script files. This cable is used to send commands from your computer to the ADV7282 evaluation board.
- Connect the other end of the USB cable to Jumper J7 of the ADV7282 evaluation board. When this is done correctly, LED D7 turns on (refer to [Figure 1](#)).
- Connect the analog video input(s) to the Ain inputs of the ADV7282 evaluation board. Refer to [Table 1](#) on how to connect these inputs.
- Connect a YPbPr cable to the Video Output connector, of the evaluation board. Connect the other end of this YPbPr cable to a television or other sink device.

Notes:

- The digital output of the ADV7282 can be probed with an oscilloscope or a digital grabbing device. The 8-bit pixel data and nominal 27MHz LLC are output to header J5. There are also a test point for the LLC pin. Refer to [Figure 1](#).
- Even after the ADV7282 evaluation board is powered up, the 28.63636 MHz crystal (Y1) will not oscillate until the ADV7282 is programmed (refer to Section 2.6).

2.6. PROGRAM THE ADV7282 EVALUATION BOARD

- To run the DVP Eval Latest Source application, select Start-> All Programs -> Analog Devices -> DVP Eval Latest Source 10-14-11.
- Press the **Choose Board** button on the top left of the DVP Eval program window and the Board Selector window appears (refer to [Figure 5](#)).



Figure 5. Board Selector Window of DVP Eval Program

- Select ADV7282CUST in the Rx section of the Board Selector window.
- Select None in the MotherBoard section.
- Select None in the Tx section.
- Press the **Load** button. A window similar to that shown in [Figure 6](#) appears.

Search:

- 0x00.4: INSEL[4:0]
- 0x01.2: SQPE
- 0x01.3: ENVSPROC
- 0x01.5: BETACAM
- 0x01.6: ENHSPLL
- 0x02.2: YPM[2:0]
- 0x02.7: VID_SEL[3:0]
- 0x03.0: SD_DUP_AV
- 0x03.5: OF_SEL[3:0]
- 0x03.6: TOD
- 0x03.7: VBI_EN
- 0x04.0: RANGE
- 0x04.1: EN_SFL_PIN
- 0x04.2: BL_C_VBI
- 0x04.3: TIM_OE
- 0x04.7: BT656-4
- 0x07.0: AD_PAL_EN
- 0x07.1: AD_NTSC_EN
- 0x07.2: AD_PALM_EN
- 0x07.3: AD_PALM_EN
- 0x07.4: AD_P60_EN
- 0x07.5: AD_M443_EN
- 0x07.6: AD_SECAM_EN
- 0x07.7: AD_SEC525_EN
- 0x08.7: CON[7:0]
- 0x0A.7: BRI[7:0]
- 0x0B.7: HUE[7:0]
- 0x0C.0: DEF_VAL_EN
- 0x0C.1: DEF_VAL_AUTO_EN
- 0x0C.7: DEF_VAL_EN

Device Address	Read	Write	Load Defaults
00 INSEL[4:0]	0 0 0 0	0 0 0 0	0x00 0
01 ENHSPLL	1 1 0 0	1 0 0 0	0xC8 1
BETACAM	0		0 0
ENVSPROC		1	1 1
SQPE		0	0 0
02 VID_SEL[3:0]	0 0 0 0	0 1 0 0	0x04 0
YPM[2:0]		1 0 0	4 4
03 VBI_EN	0 0 0 0	1 1 0 0	0xC0 0
TOD	0		0 0
OF_SEL[3:0]	0 0 1 1		3 3
SD_DUP_AV		0	0 0
04 BT656-4	0 0 0 0	0 1 1 1	0x07 0
TIM_OE		0	0 0
BL_C_VBI		1	1 1
EN_SFL_PIN		1	1 1
RANGE		1	1 1
07 AD_SEC525_EN	0 1 1 1	1 1 1 1	0x7F 0
AD_SECAM_EN	1		1 1
AD_M443_EN	1		1 1
AD_P60_EN	1		1 1
AD_PALM_EN		1	1 1
AD_PALM_EN		1	1 1
AD_NTSC_EN		1	1 1
AD_PAL_EN		1	1 1
08 CON[7:0]	1 0 0 0	0 0 0 0	0x60 128
0A BRI[7:0]	0 0 0 0	0 0 0 0	0x00 0
0B HUE[7:0]	0 0 0 0	0 0 0 0	0x00 0
0C DEF_VAL[5:0]	0 0 1 1	0 1 1 0	0x36 13
DEF_VAL_AUTO_EN		1	1 1
DEF_VAL_EN		0	0 0
0D DEF_C[7:0]	0 1 1 1	1 1 0 0	0x7C 124
0E SUB_USR_EN[1:0]	0 1 0 0	0 0 0 0	0x40 2

Figure 6. DVP Eval Program After Loading ADV7282 Board

7. Select Scripts-> ADV7282CUST to select the script you wish to run (refer to Figure 7).

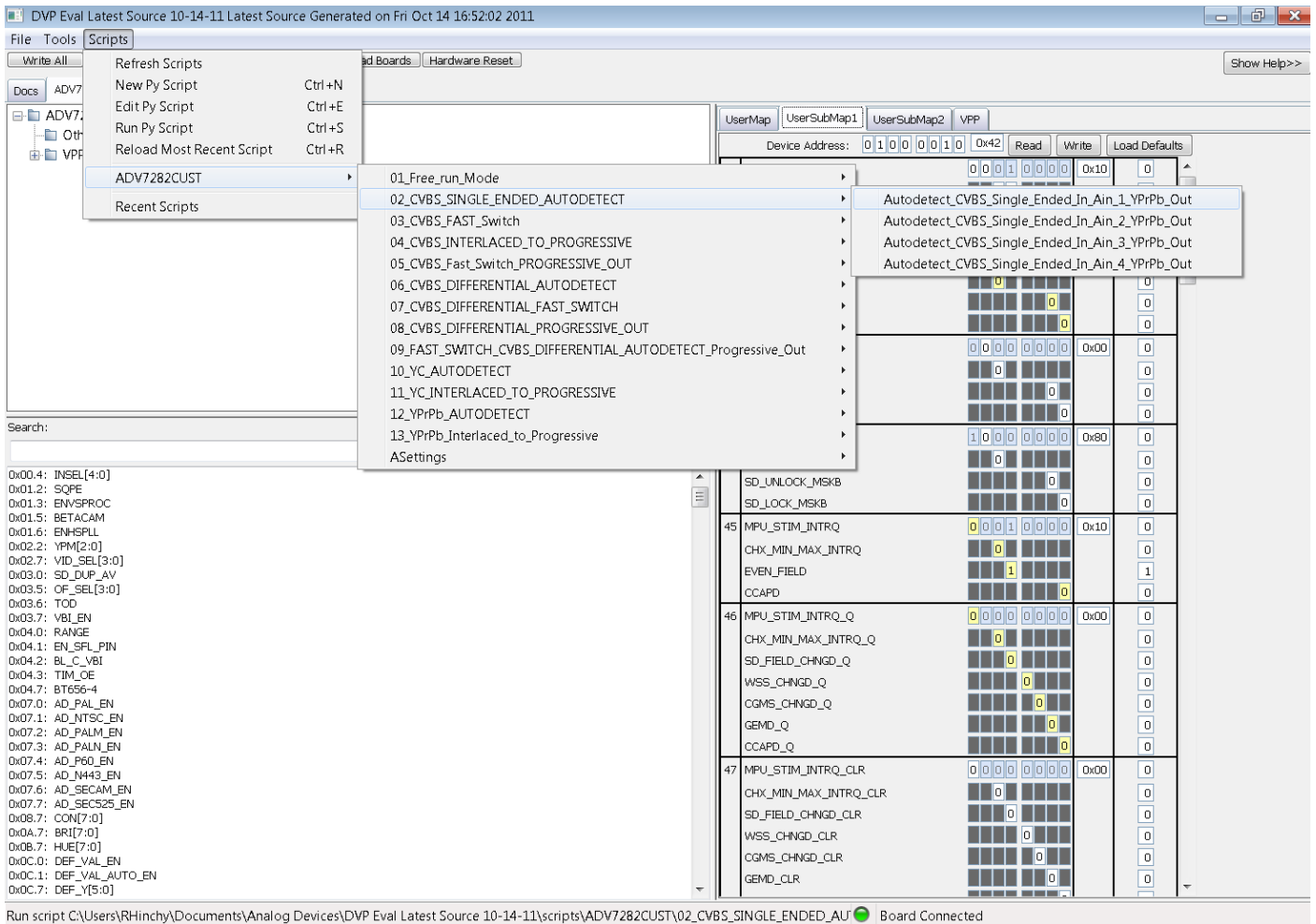


Figure 7. Running ADV7282 Script on DVP Eval Software

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REVISION HISTORY

February 2014 – Rev. A

Initial version.