

GigE Vision Demo (SVDK version) Operation Manual (Windows 8.1 64bit version)

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Document Revision History

Ver.	Date	Sec.	Page	Modification	Written by	Authorized by
1.0	2016.07.07			First edition	Shimizu	Iwazaki
1.1	2016.07.28			Simplified installation process of software library and demo AP, making it one time installation (except Filter driver).	Nakamura	Iwazaki
1.2	2016.09.15			· All the installation procedure (including FilterDrive) integrated into one time installation.	Nakamura	Iwazaki

Contents

1. Outline of Operation	4
1.1. Design File Hierarchy	4
1.2. How to configure demo environment	4
2. Data Write Procedure	5
2.1. Overview	5
2.2. Connection environment	6
2.3. Writing procedure	7
2.3.1. Witting to QSPI Flash	7
2.3.2. Writing to eMMC	9
Appendix A. How to manually create FAT32 partition	17
3. Demo Environment Connection Configuration	21
4. Demo Software Installation Instructions	23
4.1. Overview	23
4.2. Execution conditions	23
4.3. Software Installation	24
4.4. Change of Network Settings	27
5. Demo AP Operation Manual	32
5.1. Overview	32
5.2. Main Console Screen	33
5.3. Operation Procedure	34
5.3.1. DemoAP Start Up	34
5.3.2. Device detection	34
5.3.3. Image transfer start	35
5.3.4. Image Transfer stop	35
5.3.5. DemoAP end	35

1. Outline of Operation

1.1. Design File Hierarchy

Described below is folder configuration of the GigE Vision Demo.

¥01_ReadyForDemo

| This folder is a set of data to be written to QSPI Flash/eMMC.
|

¥02_PCTool

| The software to be used in the personal computer is stored is stored in this folder.

| There are two sub-folders.

|

+----- ¥01_GigEVision_ReceiverTool

| GigE Vision receiving software for the demonstration is stored in this folder.

|

+----- ¥02_DataWriteTool

The software needed to write data to SVDK board is stored in this folder.

1.2. How to configure demo environment

Please follow the steps below to build the demo environment.

(1) Write a set of necessary data to SVDK board.

For the detailed procedure, please see “2. Data Write Procedure”.

(2) Connect SVDK board with GigE Vision receiver PC.

For details of how to connect, please see “3. Demo Environment Connection Configuration”

(3) Install receiver tool for GigE Vision image data to the PC.

For the detailed procedure please see “4. Demo Software Installation Instructions”.

(4) Operate demonstration of GigE Vision by operating GigE Vision receiver PC.

For details of how to use the demo please see “5. Demo AP Operation Manual”

2. Data Write Procedure

2.1. Overview

This Section describes the procedure to write the following data to QSPI Flash and eMMC on Smart Vision Development Kit (SVDK).

Data to be written to QSPI Flash;

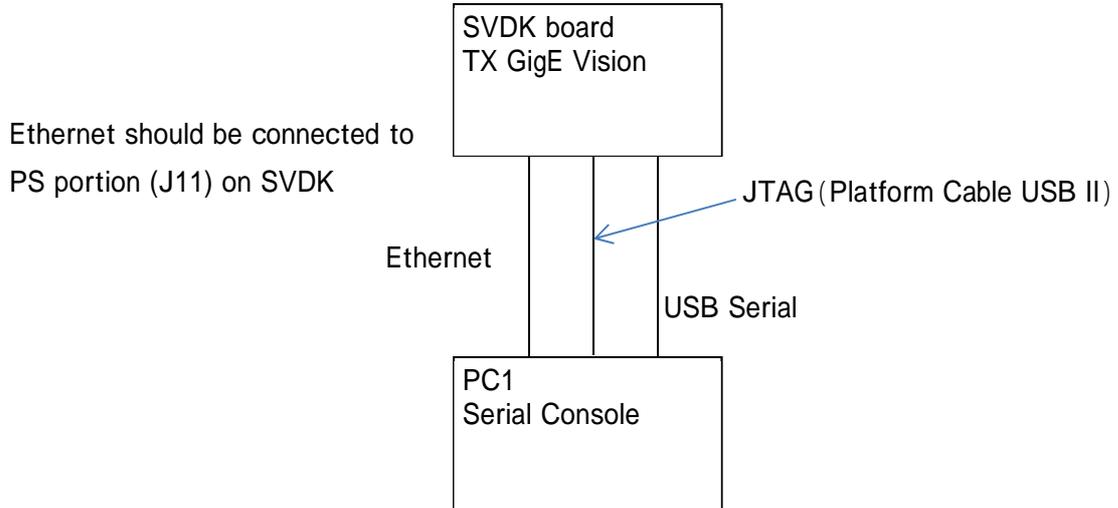
- BOOT.bin
- image.ub.bin

Data to be written to eMMC

- rootfs_emms.tar.gz
- Firm.bin
- BS.dat
- DU.dat
- XML.dat

2.2. Connection environment

Described below is the Connection environment at the time of data write.



2.3. Writing procedure

2.3.1. Writing to QSPI Flash

- (1) Connect PC and SVDK board with JTAG (Platform Cable USB II).
- (2) Turn on the power of SVDK board.
- (3) Boot up Xilinx SDK 2015.4, Windows version.
- (4) Unzip [QSPI_Write.zip] in [PCTool\DataWriteTool] folder of downloaded file, and open the following workspace using SDK.

QSPI_Write\sdk_workspace

- (5) Write the following two files (from download file) to QSPI, by using Xilinx SDK 2015.4 tool bar, Xilinx Tools → Program Flash. It will take 3 minutes with BOOT.bin and 7 minutes with image.ub.bin for writing.

- 01_ReadyForDemo\BOOT.bin
- 01_ReadyForDemo\image.ub.bin

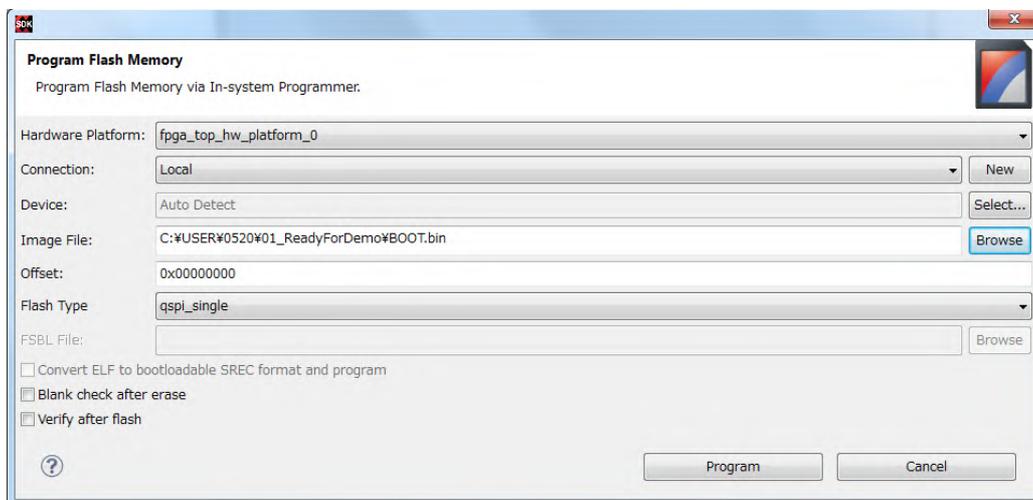
Where to write (offset) are as follow

BOOT.bin	0x00000000
image.ub.bin	0x00520000

(5)-2 How to write BOOT.bin

The file to be written : 01_ReadyForDemo\BOOT.bin

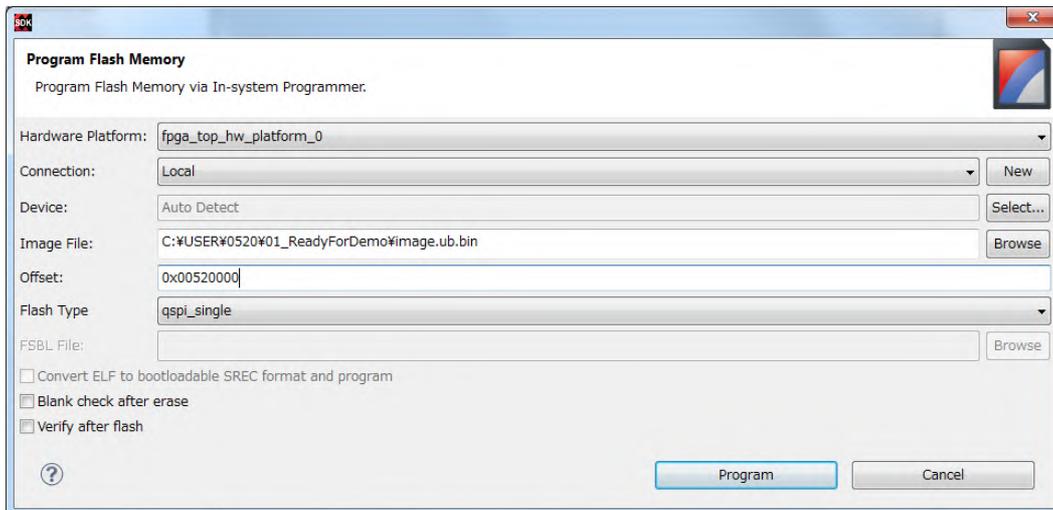
Where to write (Offset) : 0x00000000



(5)-2 How to write image.ub.bin

The file to be written : ¥01_ReadyForDemo¥image.ub.bin

Where to write (Offset) : 0x00520000



(6) Turn off the SVDK board.

(7) Close Xilinx SDK 2015.4.

(8) Disconnect JTAG (Platform Cable USB II) from SVDK board.

2.3.2. Writing to eMMC

- (1) Connect PC and SVDK board (PS portion) with LAN cable.
- (2) Connect PC and SVDK board with USB serial cable.
- (3) Turn on the power of SVDK board, and wait until the two LEDs (DS4, DS5) turn on, per fig 3-2-1 below.

(Note: LEDs flickers for a second soon after Power On. Please wait a while until the lights turn on)
 If the 5 data are already written to eMMC, 2 LED light turns on, followed by additional 2 lighting on, and all 4 LEDs turn ON showing the board is boot up, per the fig 2-3-2 below.

Fig2-3-1: State of 2 LEDs lighting

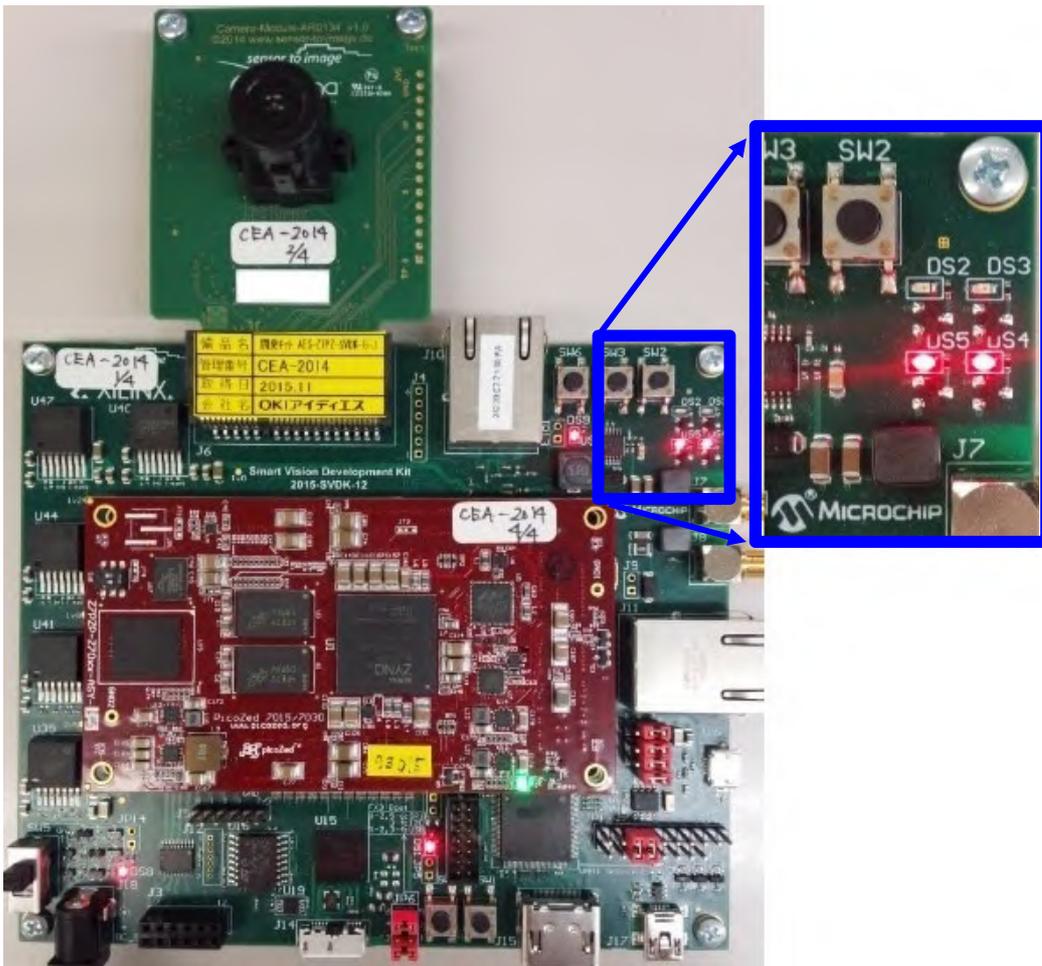
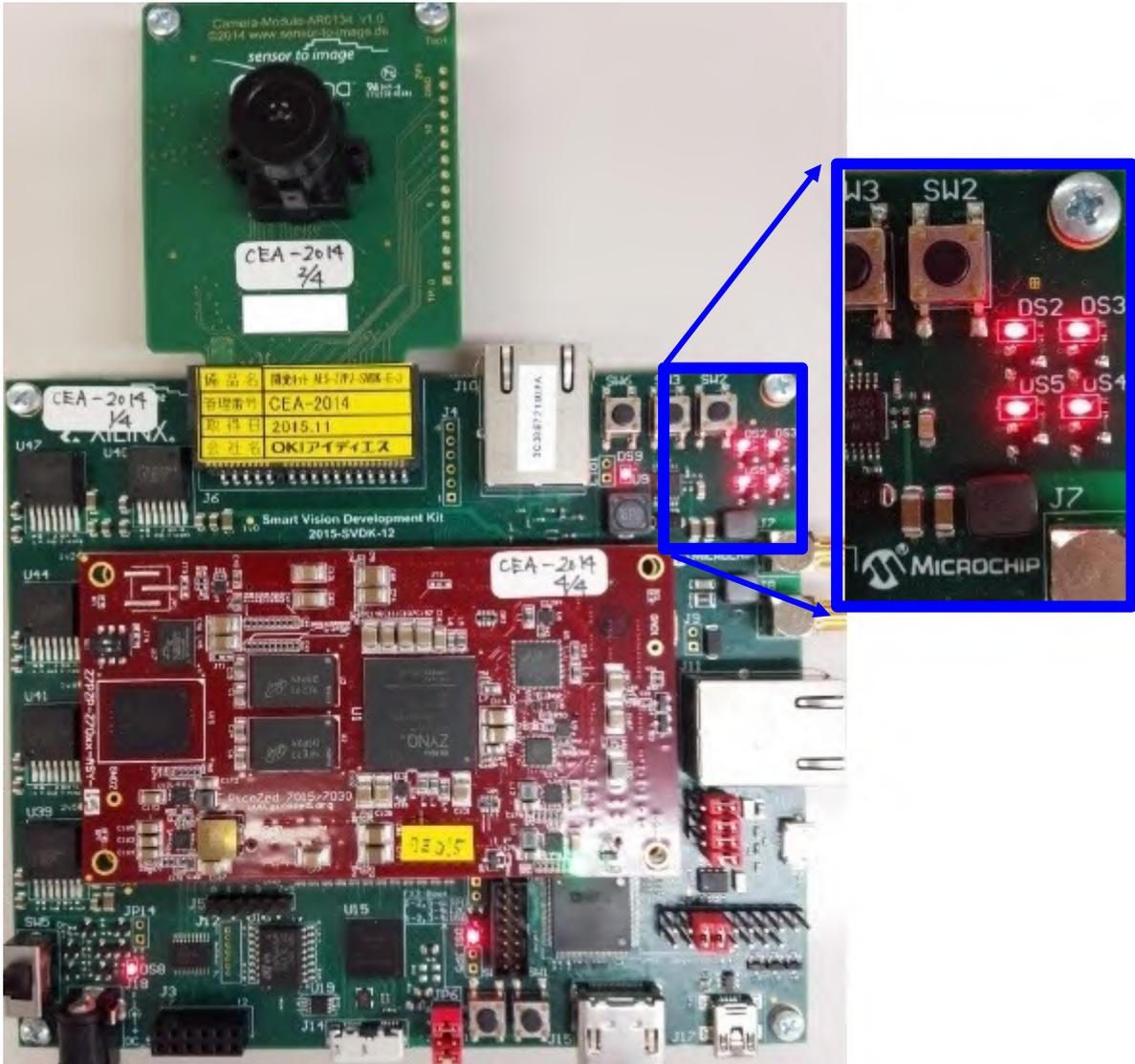
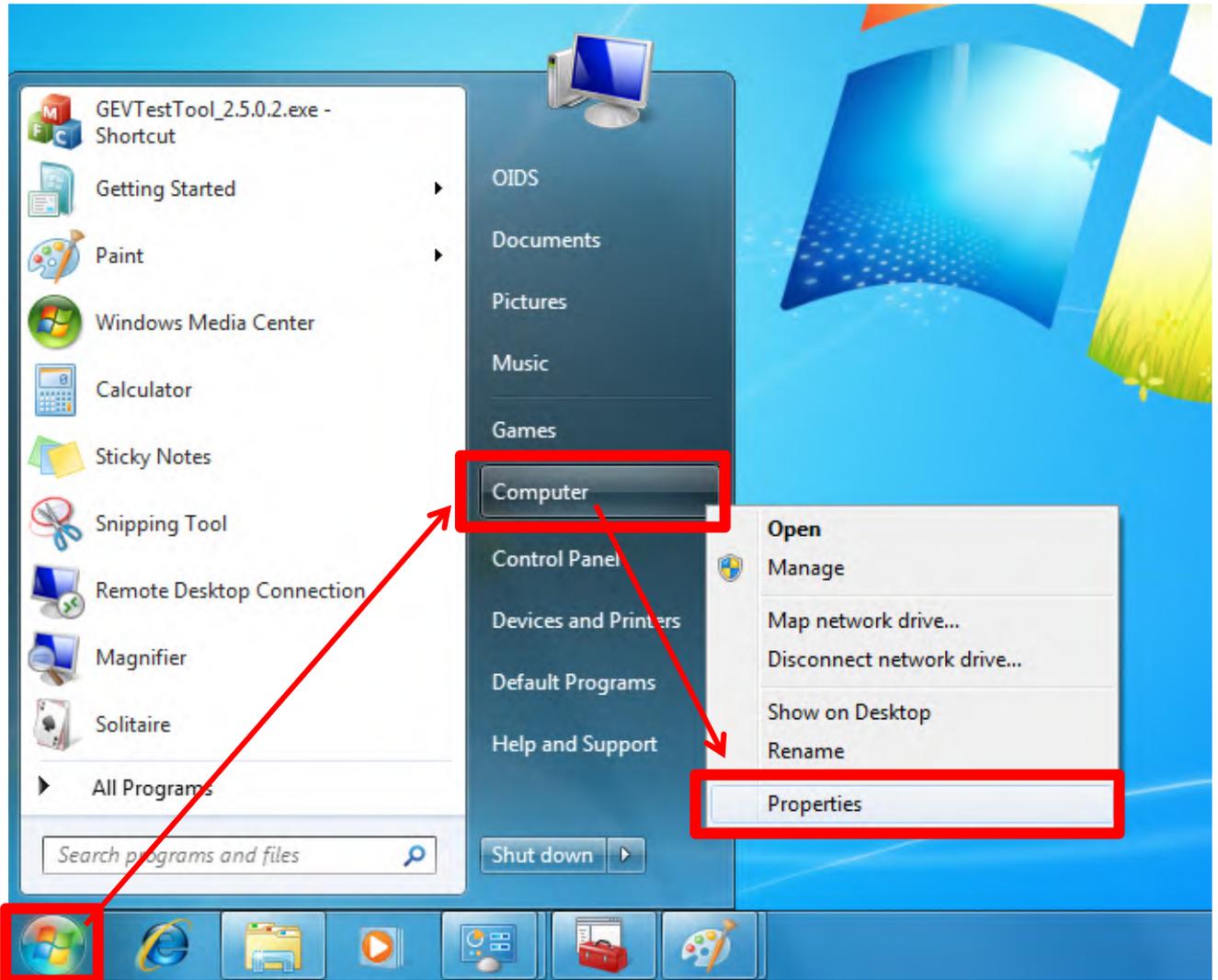


Fig2-3-2: State of all 4 LEDs lighting on

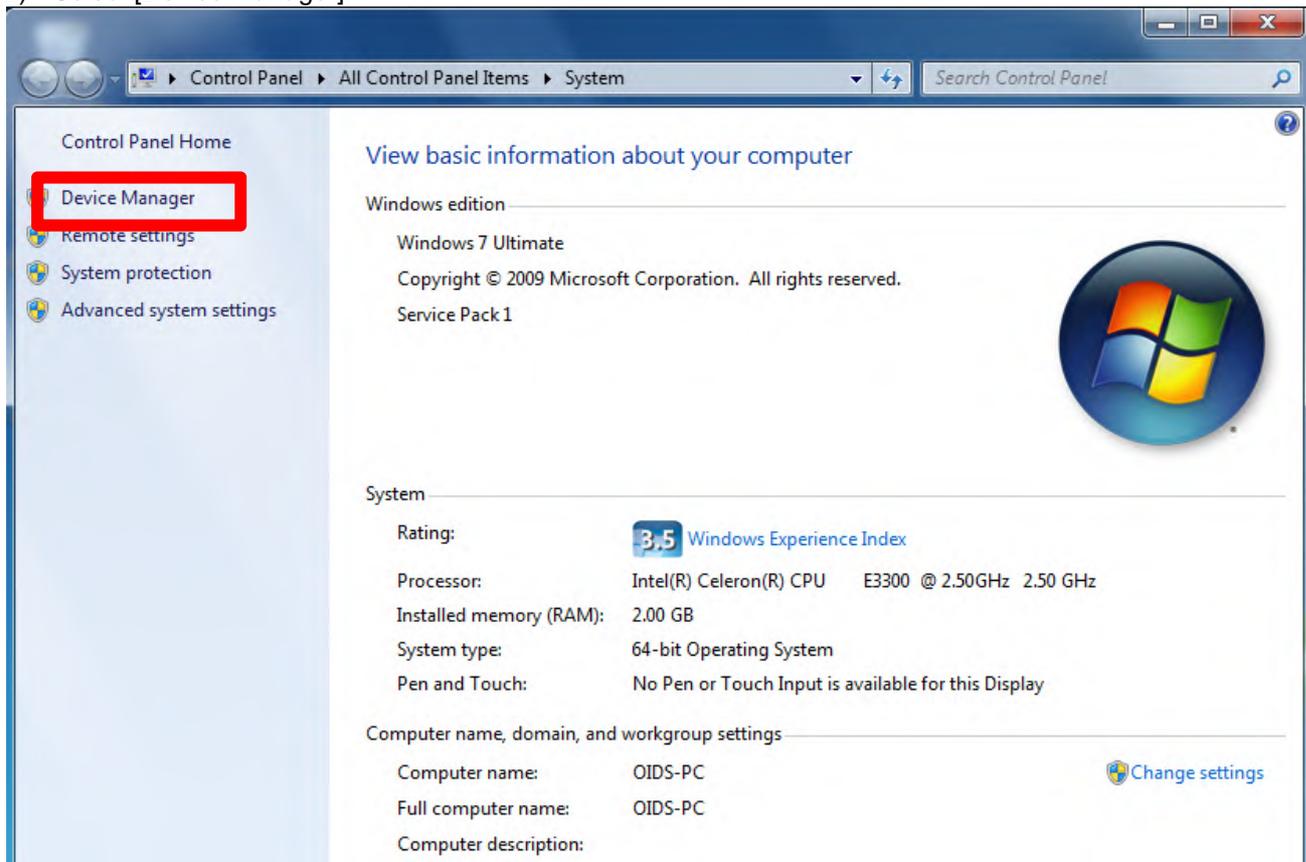


(4) Confirm COM port number (shown below is an example of Windows7)

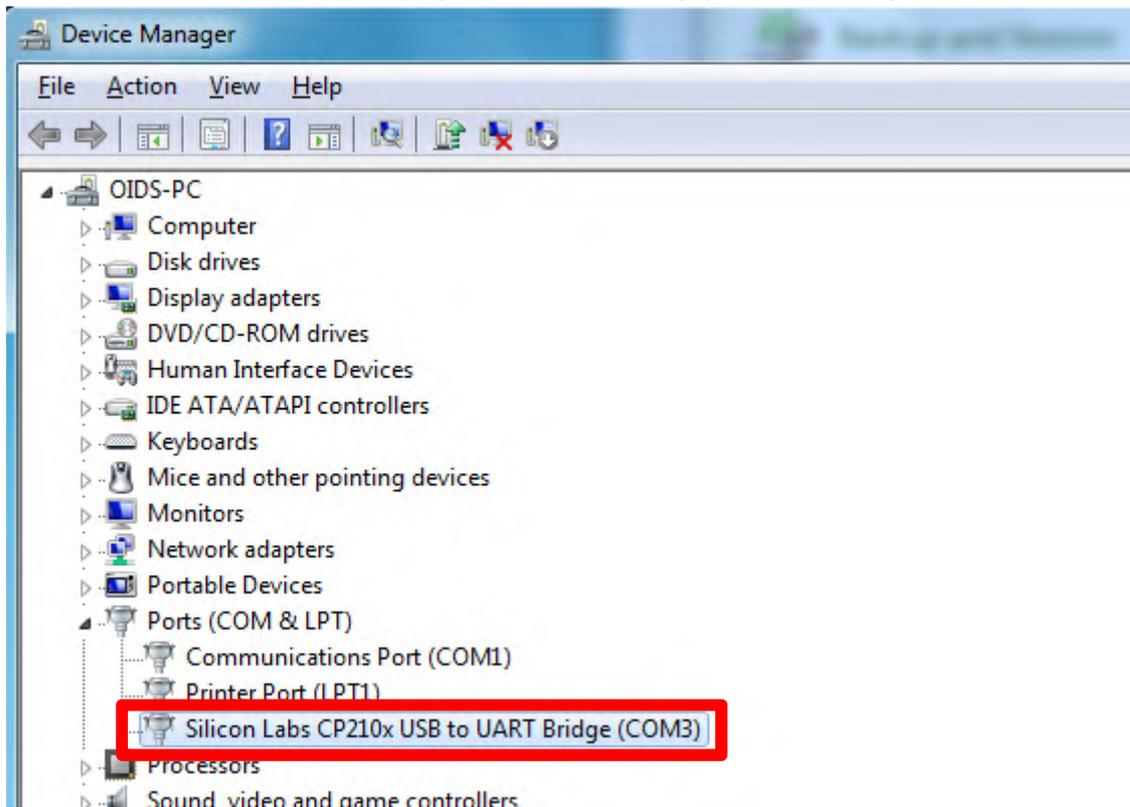
1) Right click [Computer] from Windows Start menu, select [Properties] from pull down.



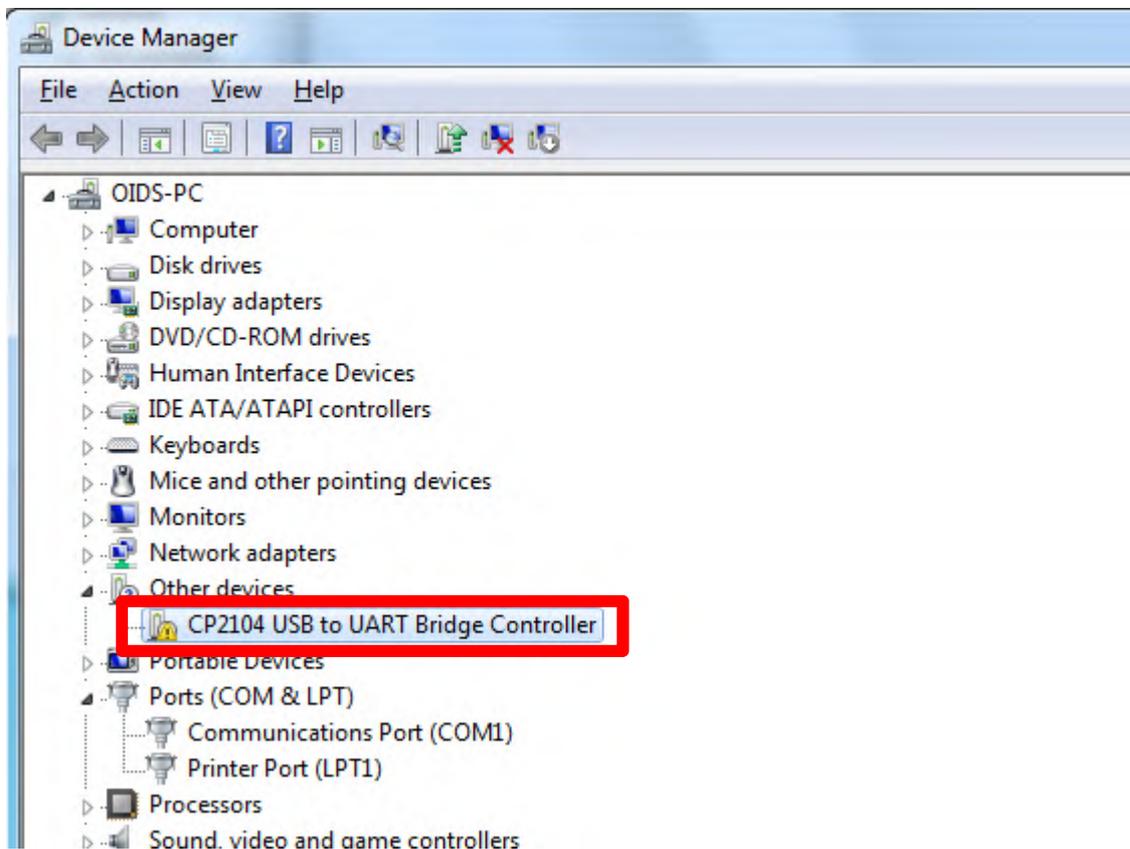
2) Select [Device Manager].



- 3) If it indicates as marked by red, (“Silicon Labs CP210x USB to UART Bridge (COMx)”), check and remember the COM number (required in the later steps). In the example below it’s “3”.

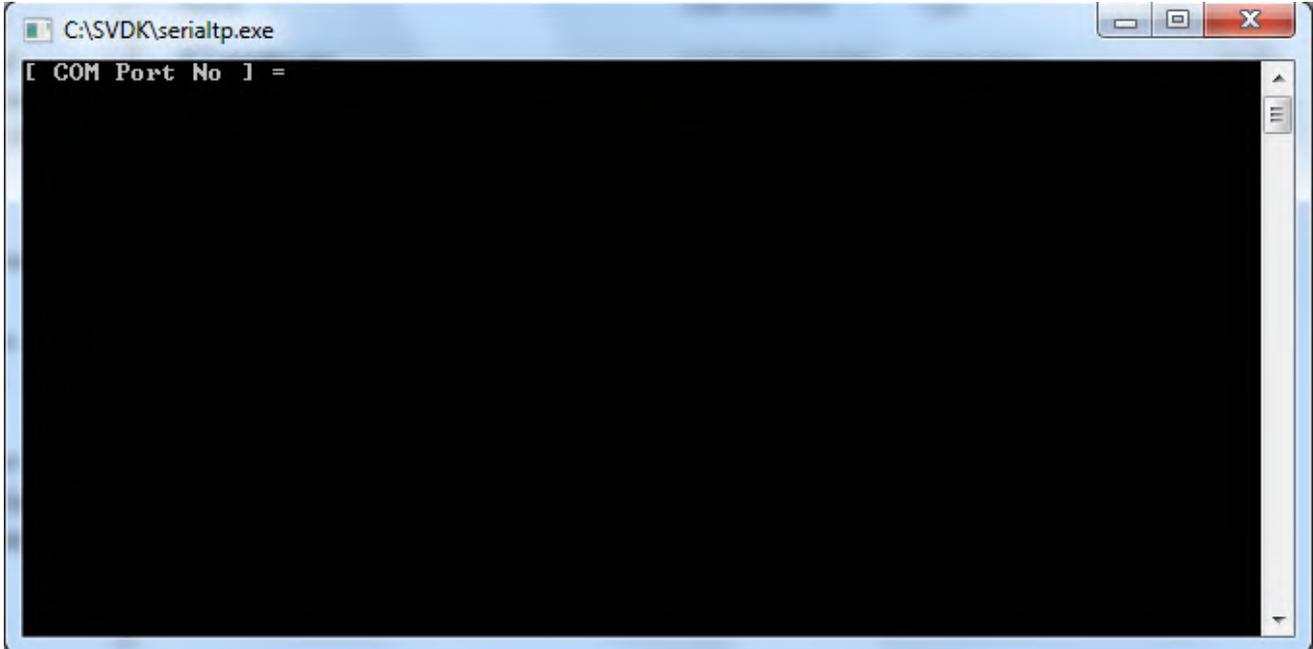


If it's indicated as the image below, you will need to download CP2104 driver from the internet and install it. After the installation, check and remember the COM number shown.

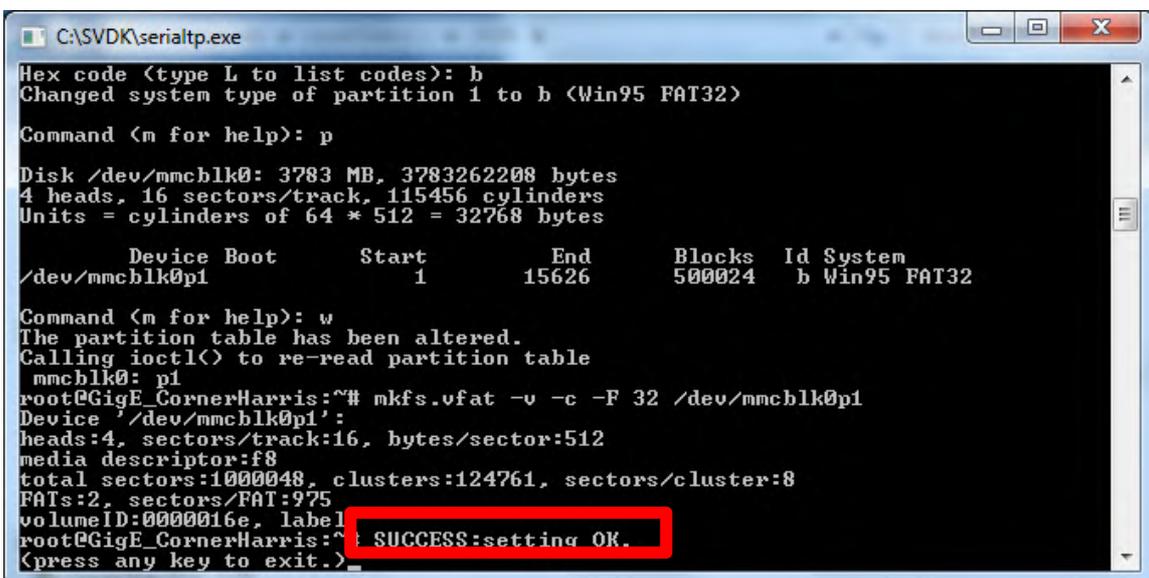


(5) Create FAT32 partition of 512MB in eMMC.

- 1) Turn off and on the power of SVDK board, and wait until two LEDs (DS4, DS5) turn on, per fig.2-3-1 above. (After the power on, the LEDs flicker a second. Wait a while until the 2 LEDs turn on)
- 2) Double click [serialtp.exe] in the [¥02_PCTool¥02_DataWriteTool] folder downloaded.
- 3) Screen shows up as follows:



- 4) Type in the COM number confirmed at step (4) above and hit return.
- 5) Wait until the process completes.
 - If the process completes successfully, “SUCCESS:setting OK” shows up (per image below). Hit any key to exit.
 - If “ERROR:res recv error” shows up, please turn off the power of SVDK board and restart from 1) above. If the process won’t compete successfully with several tries, follow the step described on Appendix-A to create FAT32 partition manually.



(6) Turn off and on the power of SVDK board and wait until two LEDs (DS4, DS5) turn on, per fig 2-3-1 above.

(After the power on, the LEDs flicker a second. Wait a while until the 2 LED turn on)

(7) Transfer 5 data from PC to eMMC of SVDK board.

- 1) Set the IP address on PC as 192.168.1.20. , and the subnet mask as 255.255.255.0
- 2) Double click [¥ 01_ReadyForDemo¥ftp_send.bat] of downloaded file.
(transfer of 5 data automatically starts)
- 3) Wait until the transfer of 5 data (BS.dat, DU.dat, Firm.bin, rootfs_emms.tar.gz, XML.dat) completes.
(until it outputs as the image below, in 2 or 3 minutes)
Hit any key to exit.

```

C:\Windows\system32\cmd.exe
C:\SUDK\emmc_data\emmc_data>ftp -s:ftpcmd.txt
ftp> open 192.168.1.100
Connected to 192.168.1.100.
220 Operation successful
User (192.168.1.100:(none)):
331 Please specify password

230 Operation successful
ftp> cd mmc
250 Operation successful
ftp> prompt
Interactive mode Off .
ftp> bin
200 Operation successful
ftp> put BS.dat
200 Operation successful
150 Ok to send data
226 Operation successful
ftn: 40968 bytes sent in 0.01Seconds 2731.20Kbytes/sec.
ftp> put DU.dat
200 Operation successful
150 Ok to send data
226 Operation successful
ftn: 132 bytes sent in 0.00Seconds 132000.00Kbytes/sec.
ftp> put Firm.bin
200 Operation successful
150 Ok to send data
226 Operation successful
ftn: 119740 bytes sent in 0.03Seconds 3741.88Kbytes/sec.
ftp> put rootfs_emms.tar.gz
200 Operation successful
150 Ok to send data
226 Operation successful
ftn: 49015647 bytes sent in 163.44Seconds 299.90Kbytes/sec.
ftp> put XML.dat
200 Operation successful
150 Ok to send data
226 Operation successful
ftn: 3476 bytes sent in 0.05Seconds 73.96Kbytes/sec.
ftp> bye
221 Operation successful

C:\SUDK\emmc_data\emmc_data>pause
Press any key to continue . . .

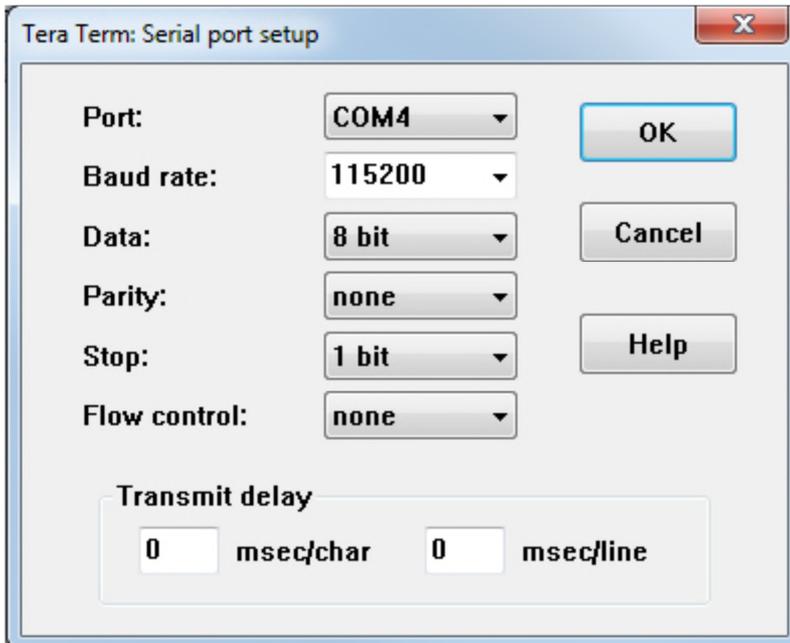
```

(8) Turn OFF the power of SVDK board.

Appendix A. How to manually create FAT32 partition

Described below is the procedure for creating FAT32 partition on eMMC by manual operation. Please follow the steps shown below in case the procedure of Section 2.3.2 (5) above does not work, as an alternative measure to create partition.

- (1) Start up the serial console and make settings. Shown below is an example of setting screen in case of using Tera Term.



- (2) Turn on the power of SVDK board and wait until two LEDs (DS4, DS5) turn on, per fig 2-3-1 above.
(After the power on, the LEDs flicker a second. Wait a while until the 2 LEDs turn on)
- (3) Login and pass word will be required. Type login and password as follows;

Login: root

Password: root

```
Built with PetaLinux v2015.4 (Yocto 1.8) GigE_CornerHarris /dev/ttyPS0
GigE_CornerHarris login: root
Password:root
login[970]: root login on 'ttyPS0'
root@GigE_CornerHarris:~#
```

(4) Type in 'fdisk /dev/mmcbk0'

```

root@GigE_CornerHarris:~# fdisk /dev/mmcbk0

The number of cylinders for this disk is set to 115456.
There is nothing wrong with that, but this is larger than 1024,
and could in certain setups cause problems with:
 1) software that runs at boot time (e.g., old versions of LILO)
 2) booting and partitioning software from other OSs
    (e.g., DOS FDISK, OS/2 FDISK)

Command (m for help):

```

(5) Type 'p'.

```

Command (m for help): p

Disk /dev/mmcbk0: 3783 MB, 3783262208 bytes
4 heads, 16 sectors/track, 115456 cylinders
Units = cylinders of 64 * 512 = 32768 bytes

    Device Boot      Start         End      Blocks   Id  System

```

Command (m for help):

(6) Type 'n'.

```

Command (m for help): n
Command action
  e   extended
  p   primary partition (1-4)

```

(7) Type 'p'.

```

p
Partition number (1-4):

```

(8) Type '1'.

Partition number (1-4): **1**
 First cylinder (1-115456, default 1):

(9) Type '1'.

First cylinder (1-115456, default 1): **1**
 Last cylinder or +size or +sizeM or +sizeK (1-115456, default 115456):

(10) Type '+512M'

Last cylinder or +size or +sizeM or +sizeK (1-115456, default 115456): **+512M**
 Command (m for help):

(11) Type 'p'.

Command (m for help): **p**

Disk /dev/mmcbk0: 3783 MB, 3783262208 bytes
 4 heads, 16 sectors/track, 115456 cylinders
 Units = cylinders of 64 * 512 = 32768 bytes

Device	Boot	Start	End	Blocks	Id	System
/dev/mmcbk0p1		1	15626	500024	83	Linux

Command (m for help):

(12) Type 't'.

Command (m for help): **t**
 Selected partition 1
 Hex code (type L to list codes):

(13) Type 'b'.

```
Hex code (type L to list codes): b
Changed system type of partition 1 to b (Win95 FAT32)

Command (m for help):
```

(14) Type 'p'.

```
Command (m for help): p

Disk /dev/mmcbk0: 3783 MB, 3783262208 bytes
4 heads, 16 sectors/track, 115456 cylinders
Units = cylinders of 64 * 512 = 32768 bytes

    Device Boot      Start         End      Blocks   Id System
/dev/mmcbk0p1          1         15626     500024    b Win95 FAT32

Command (m for help):
```

(15) Type 'w'.

```
Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table
mmcbk0: p1
root@GigE_CornerHarris:~#
```

(16) Type 'mkfs.vfat -v -c -F 32 /dev/mmcbk0p1'.

```
root@GigE_CornerHarris:~# mkfs.vfat -v -c -F 32 /dev/mmcbk0p1
Device '/dev/mmcbk0p1':
heads:4, sectors/track:16, bytes/sector:512
media descriptor:f8
total sectors:1000048, clusters:124761, sectors/cluster:8
FATs:2, sectors/FAT:975
volumeID:0000036f, label:"
root@GigE_CornerHarris:~#
```

3. Demo Environment Connection Configuration

Fig 3-1 below illustrates the connection configuration of GEV demo environment. SVDK board, HDMI monitor and GEV RX PC should be connected as show in the figure below.

Please note that LAN cable should be connected to J10, not J11.

When the connection is done, turn on the power of the board.

It takes about 30 seconds to boot up after SVDK board is powered on. (until DeviceDiscovery on GEV RX PC responds)

Please wait until 4 LEDs light up on SVDK board as is shown in Fig 3-4; all 4 LEDs lighting means that the board is successfully boot up. (After tuning the power on, 4 LEDs flickers out after lighting a second. Then 2 of them turn on, followed by another two. The board is boot up if all 4 lights are on.

SW3 button; toggle between Software/Hardware corer Harris (Hardware mode is set as default)

You can recognize the mode currently shown on the screen (HW mode or SW mode) by the color of dots on the detected feature points.

Hardware corer Harris mode: Yellow

Software corer Harris mode: Green

Fig 3-1: Connection Configuration

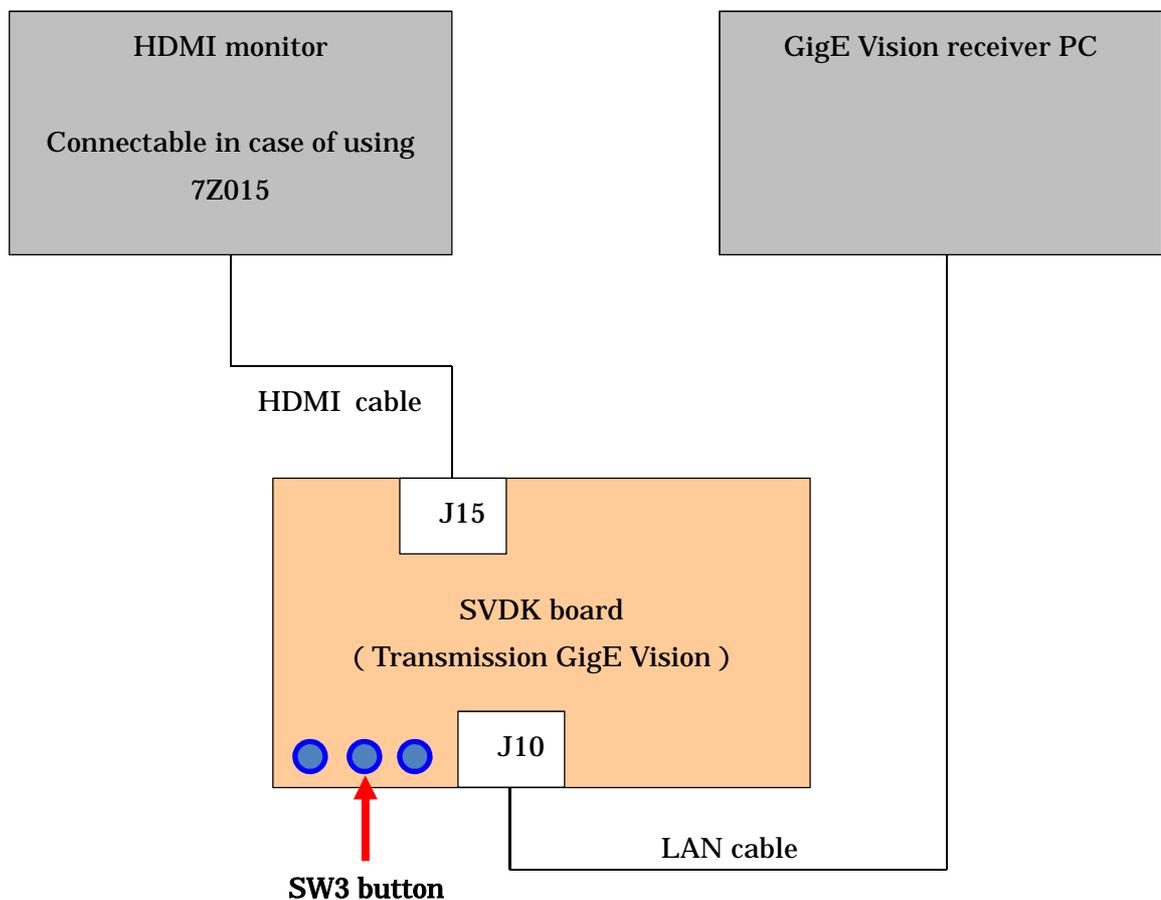


Fig 3-2: Connection of SVDK board, HDMI cable and LAN cable

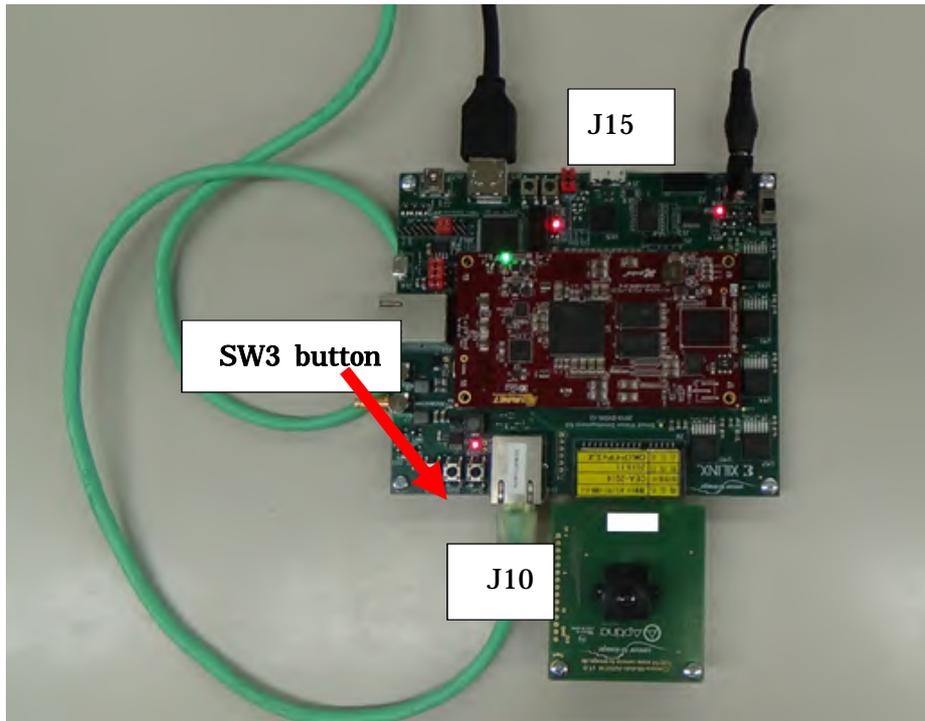
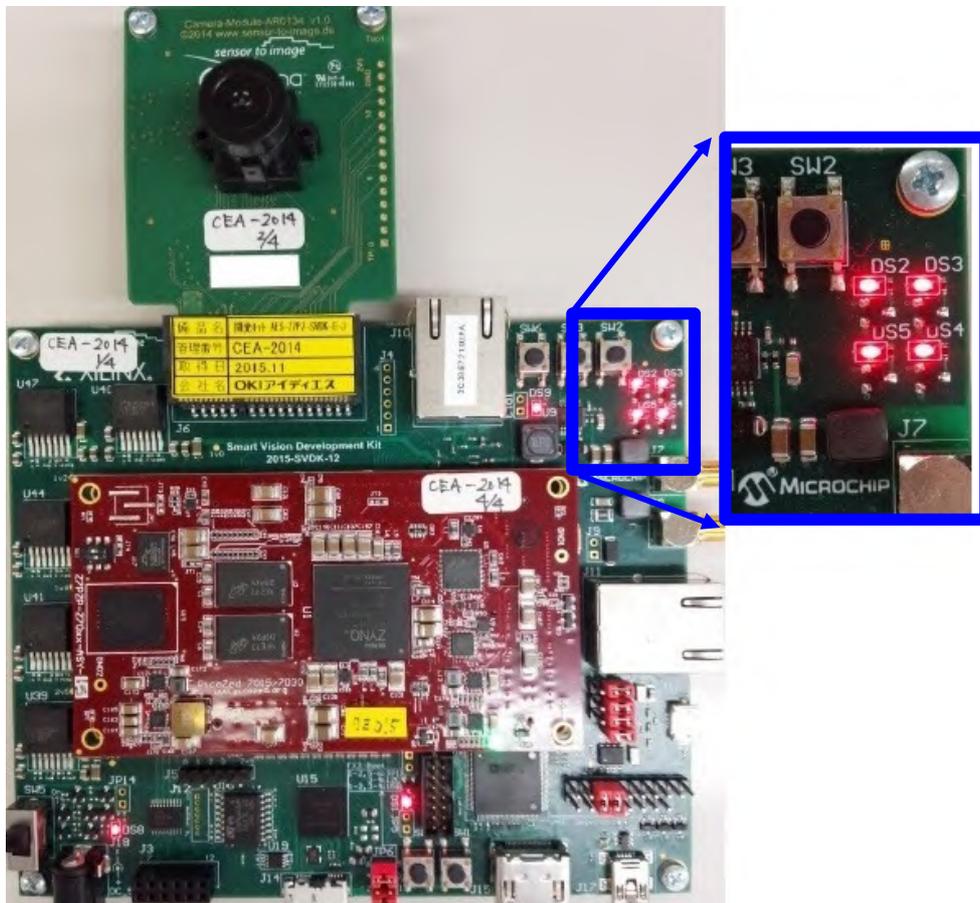


Fig 3-4: Status of LED when the board is boot up



4. Demo Software Installation Instructions

4.1. Overview

This chapter describes installation instructions of Windows 8.1 64bit version of GigE Vision demo software.

4.2. Execution conditions

Please log in by using an account of administrators right to execute.

Please note that the operation is not assured if operated other than Administrators right.

4.3. Software Installation

This section explains the procedure for installing GigE Vision demo software.

Note (1): If 【User Account Control】 dialog displayed, click “Yes.”

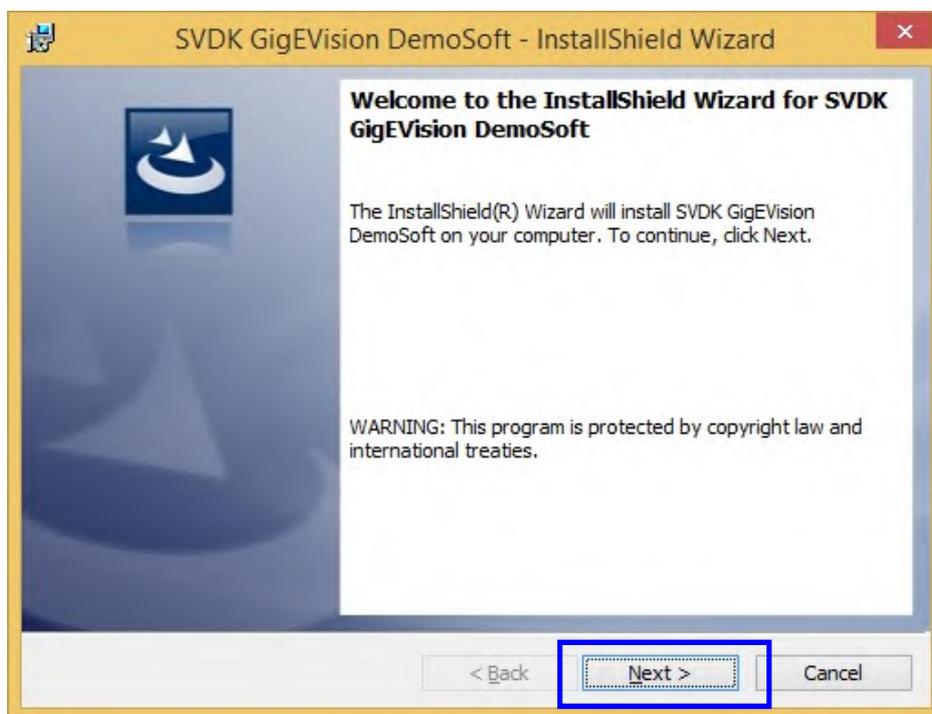
Note (2): The following section is all about operations on “Desktop screen”.

Please switch to the desktop screen.

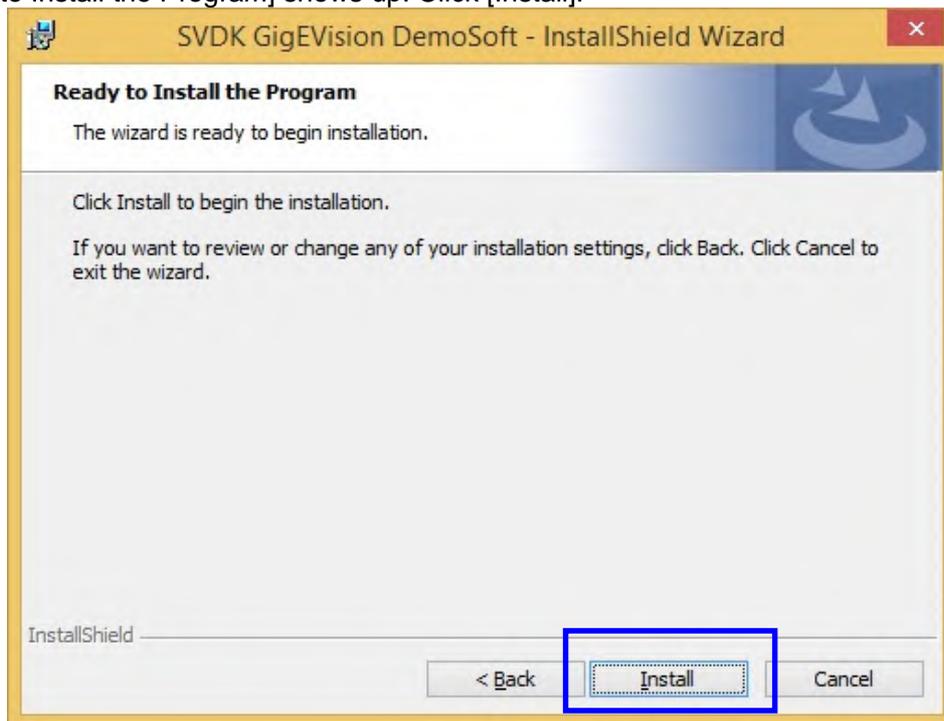
Step 1. Boot up [set up.exe] located in [¥InstallMedia¥64bit¥] folder.
UAC dialog box shows up. Click [yes].

(Language selection dialog shows up. Make sure “English[United States]” is selected. Click [OK])

Step 2. [Welcome to the InstallShield Wizard for SVDK GigE Vision DemoSoft] shows up.
Click [Next].

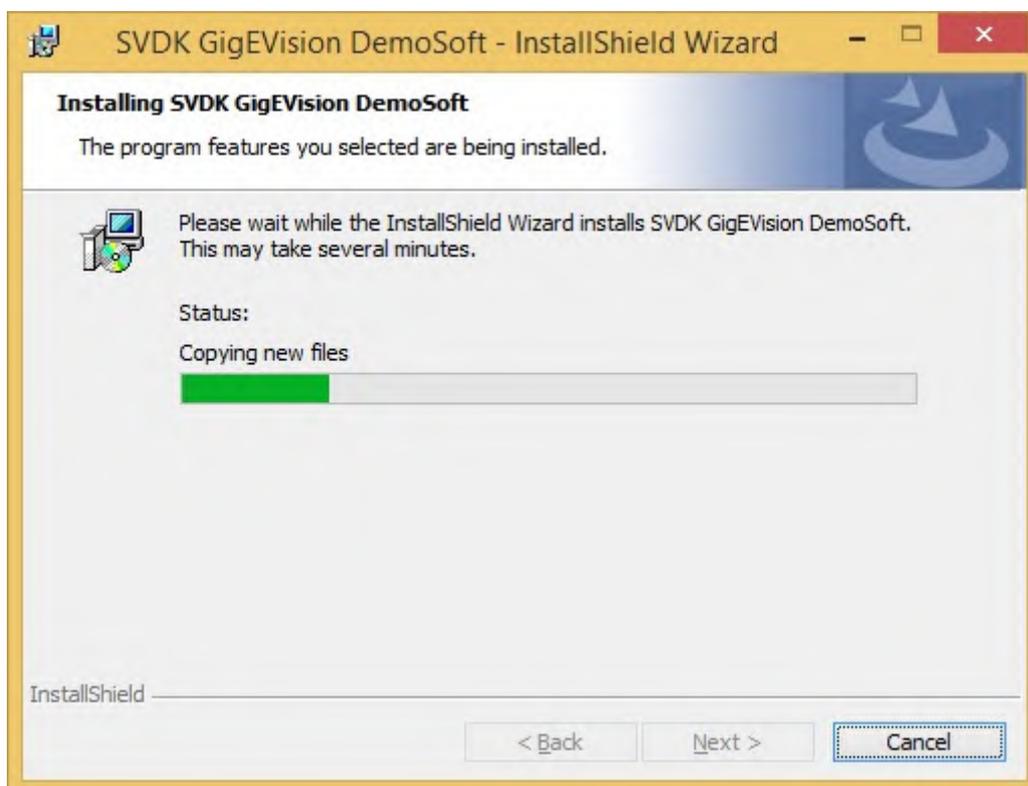


Step 3. [Ready to Install the Program] shows up. Click [Install].

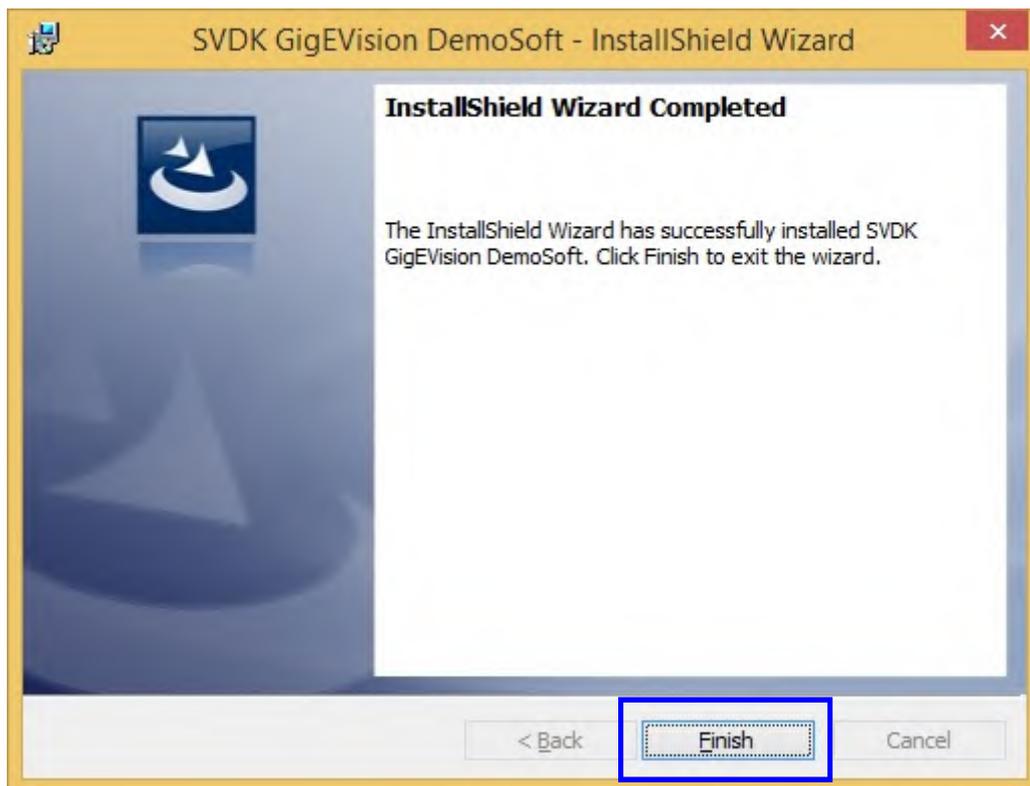


Step 4. [Installing SVDK GigEVision DemoSoft] shows up and installation starts.

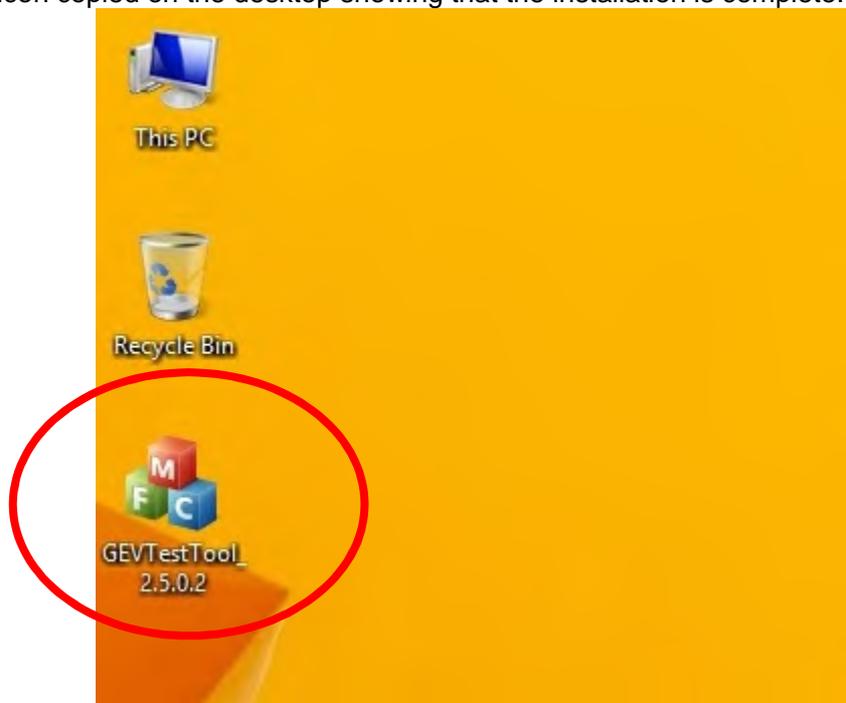
Installation typically takes a few dozens of seconds (varies depending on PC).



Step 5 [InstallShield Wizard Completed] shows up. Click [Finish]. Now installation is complete.



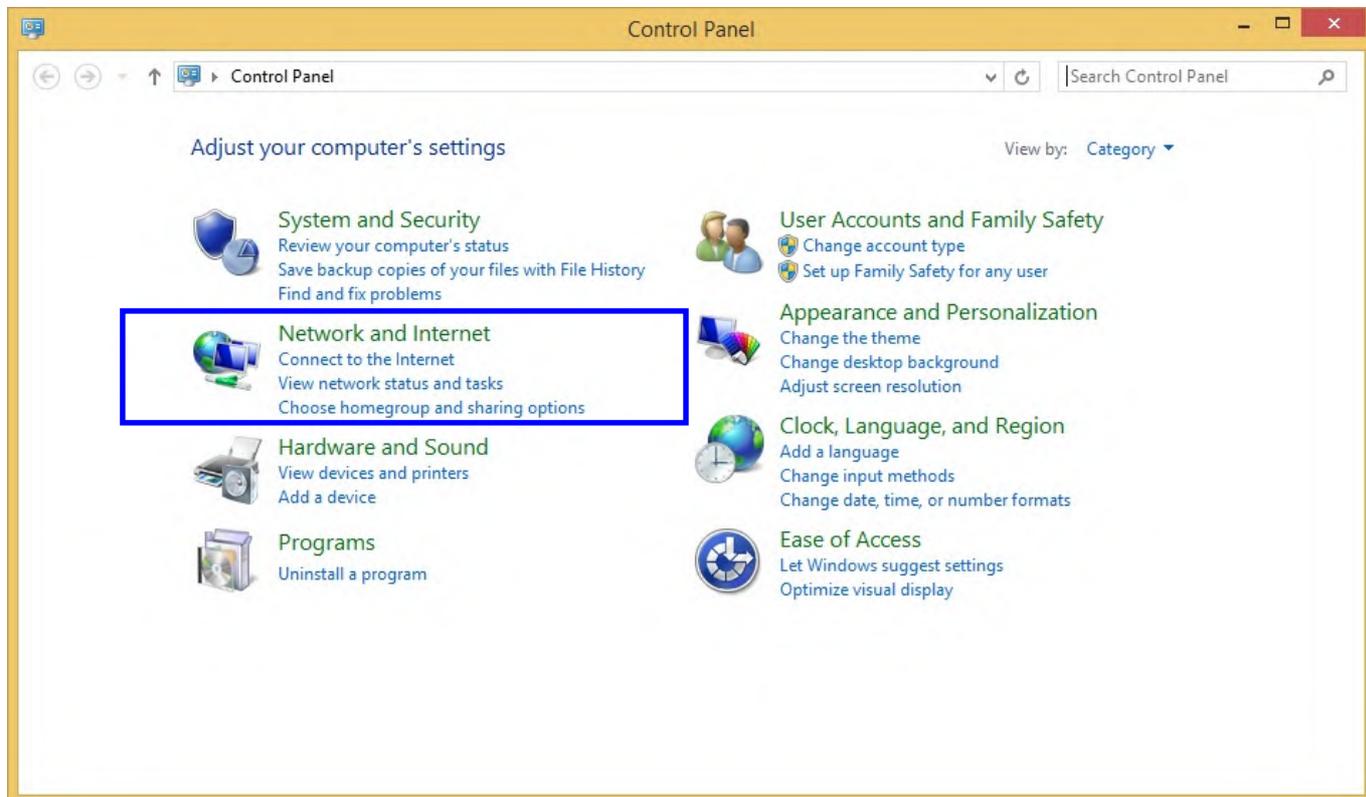
Step 6. Demo AP icon copied on the desktop showing that the installation is complete.



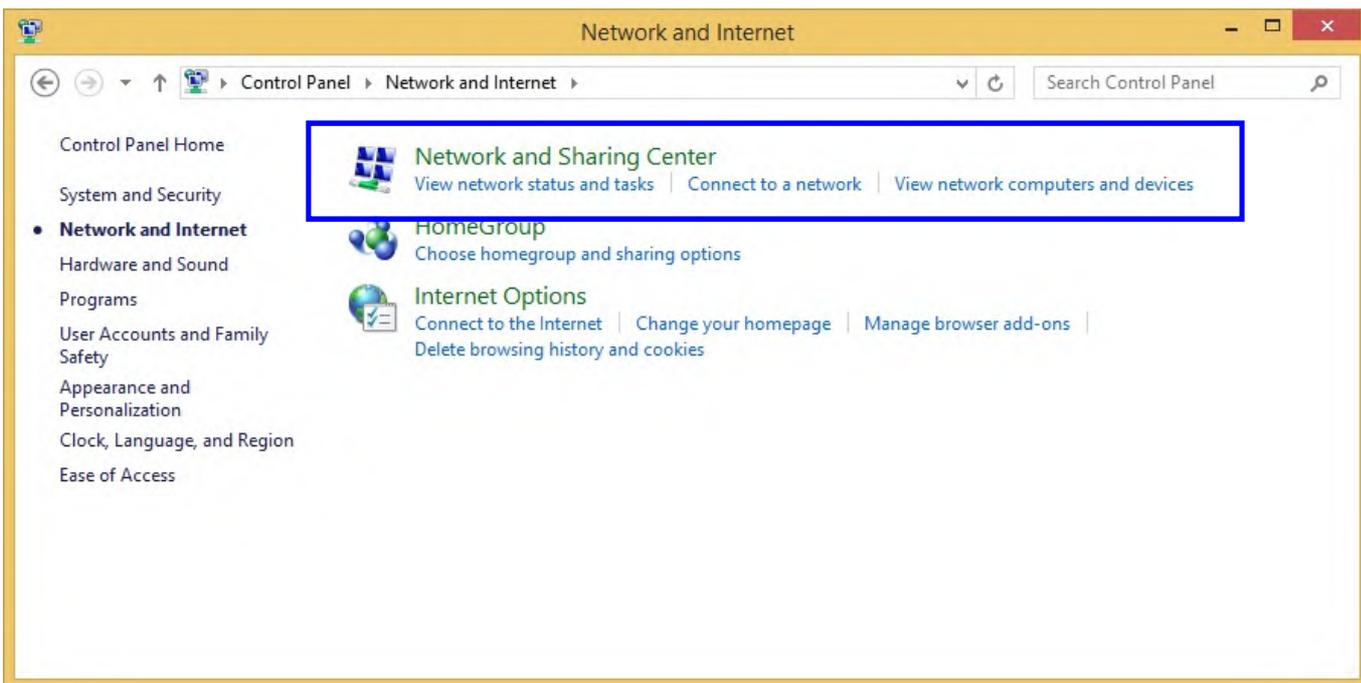
4.4. Change of Network Settings

Change the network settings to secure sufficient performance of GigEVision demo software.

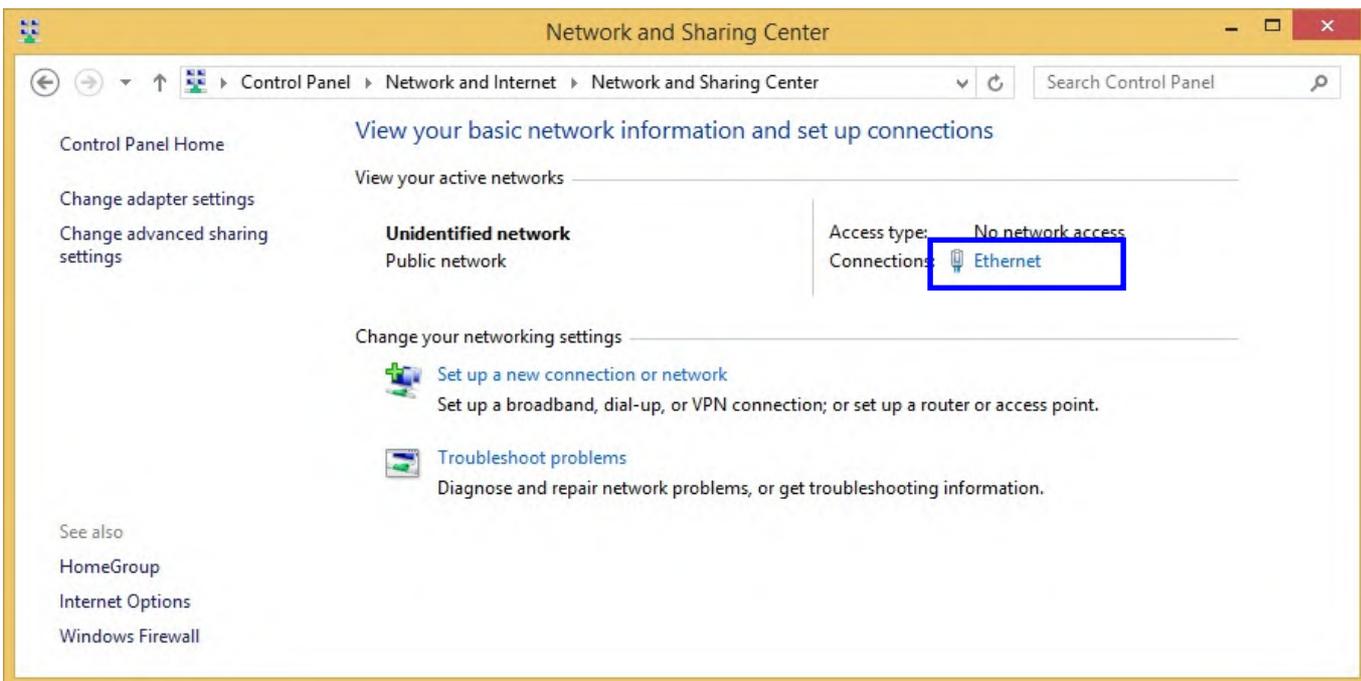
Step1. Click [Network and Internet] from [Control Panel].



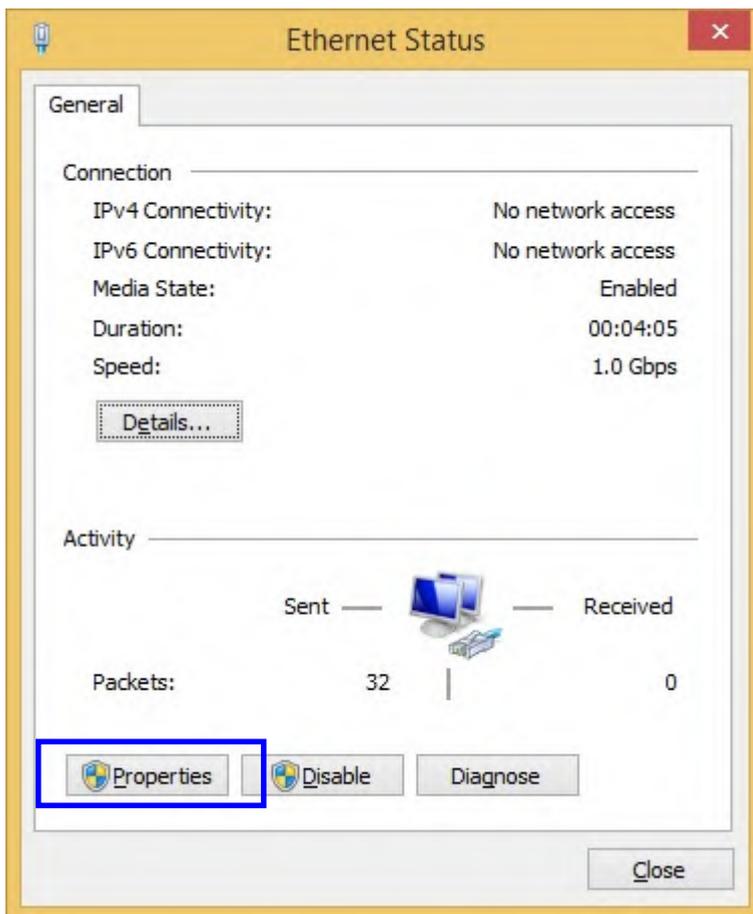
Step2. Click [Network and Sharing Center].



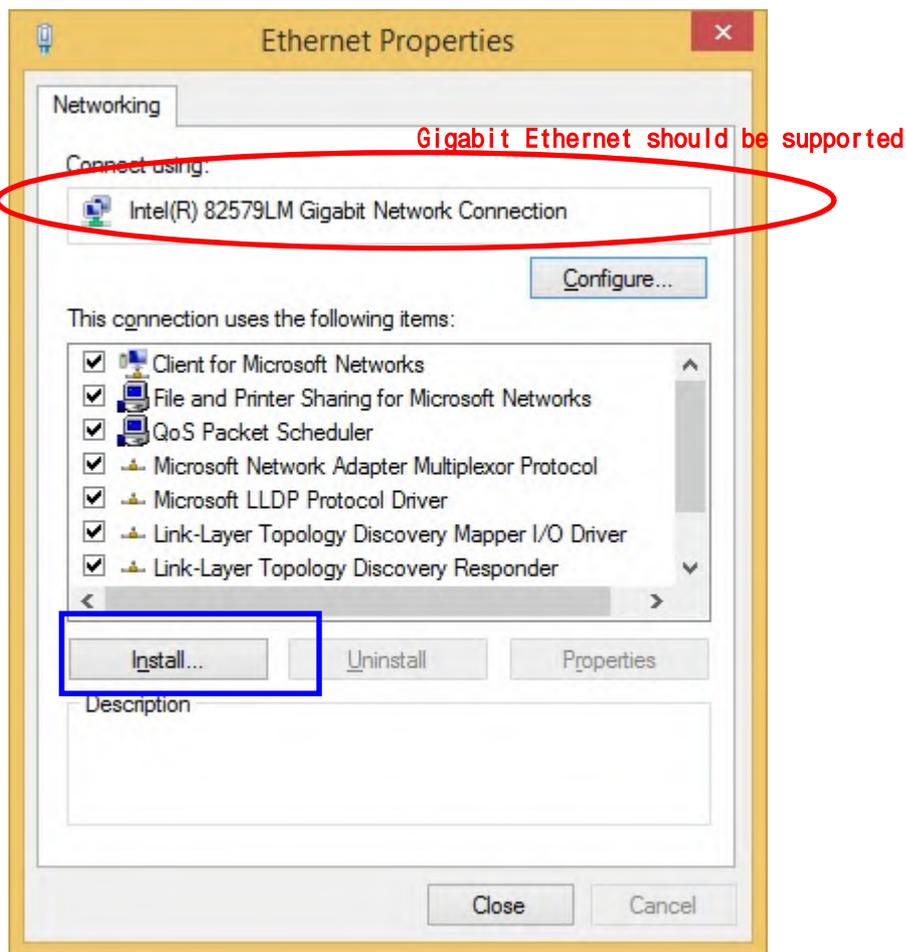
Step3. Click [Ethernet].



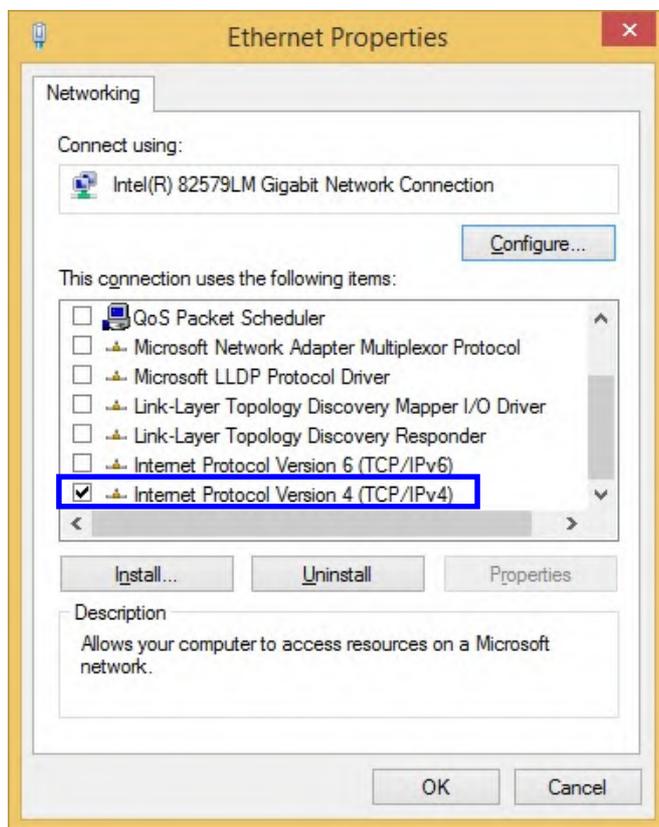
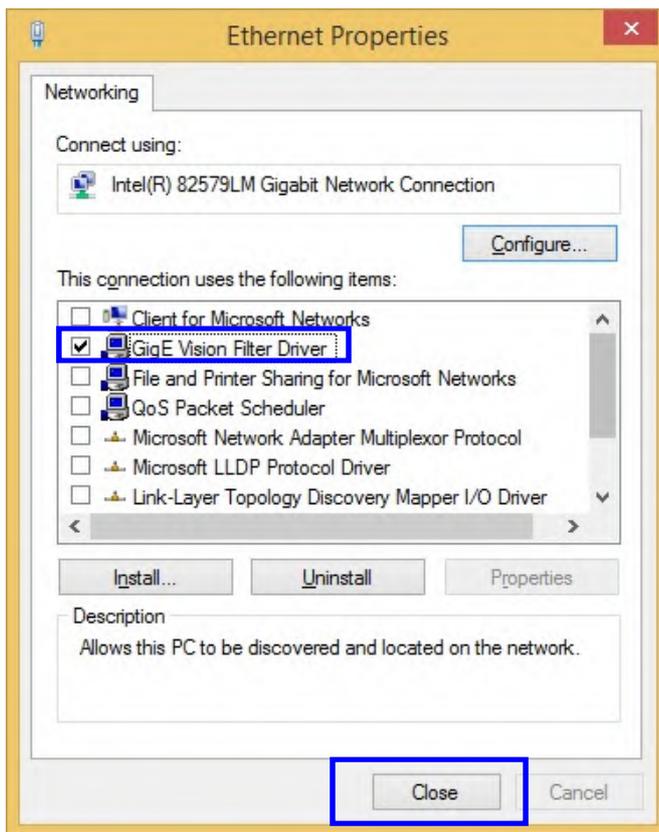
Step4. [Ethernet Status] will be displayed. Click [Properties].



Step5. [Ethernet Properties] shows up. Please confirm if the network device of [Connect using] is the one that supports GigabitEthernet.



Step6. Confirm whether checkbox of [GigE Vision Filter Driver] and [Internet Protocol Version 4(TCP/IPv4)] has checked, and uncheck the other checkboxes. Click [Close].



5. Demo AP Operation Manual

5.1. Overview

This chapter describes how to operate “GEVTestTool.exe” that is GigEVision Demo IP Windows8.1 64bit version (hereafter referred to as “Demo AP”)

5.2. Main Console Screen

Shown below is the description of Main Screen.

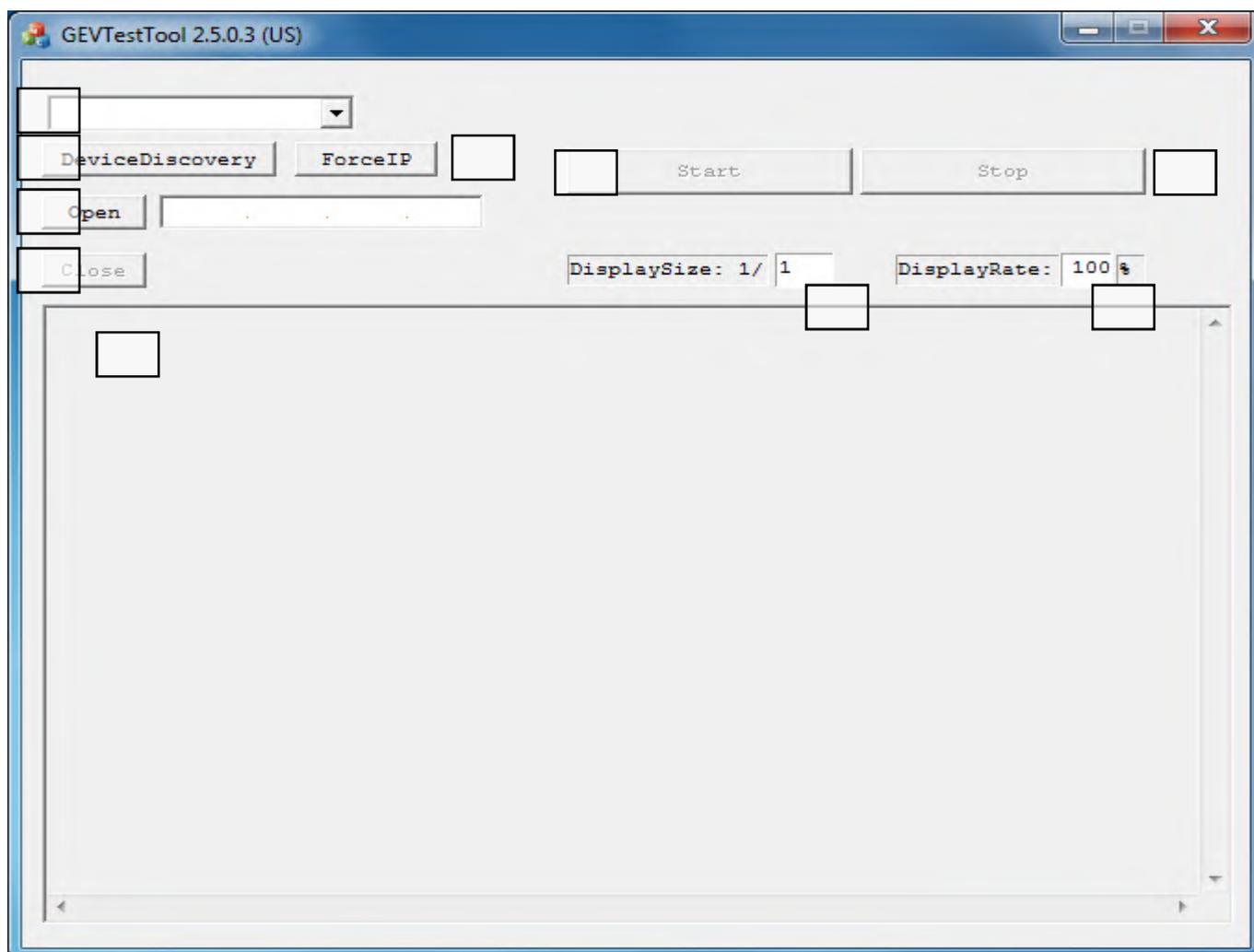


Fig 5-1 DemoAP screen

Description of console screen

#	Name	Description
	OwnIP setting	Specify the IP to be used on PC
	DeviceDiscovery	Look for device by using UDP broadcast
	ForcelP Force IP setting	Set IP to the device. Device identifies it with MAC address.
	Open	Establish connection with device. Device identifies it with IP.
	Start image transfer start	Start transferring image from device.
	Stop Image transfer stop	Stop transferring image from device.
	Close	Abandon the connection with device.
	Display size	Change the display image size to 1/X
	Display rate	Reduce the number of display image by X% (if 70 is set, 40 images out of 60 images)
	Log display window	Display operation log of TP

5.3. Operation Procedure

5.3.1.DemoAP Start Up

1. Connect GigEVision device to PC and turn ON the device.

Please see [3. Demo Environment Connection Configuration] for how to connect.

2. Execute "GEVTestTool_2.5.0.2.exe" located on the desktop.

Main console screen (as section 5.2 above) shows up.

5.3.2.Device detection

1. Set your own IP by pull down list (per section 5.2,)

- 127.0.0.1 is localhost itself, so please do not use it.

2. Click "DeviceDiscovery" button (per section 5.2,).

- If the device is discovered successfully, the window of Section 5.2, shows device information and IP address will be automatically set to the box next to "Open" button.

If it's not successful, the device might not have been boot up yet. Please be sure to wait for about 30 seconds until the board boots up, and then press "DeviceDiscovery" again.

3. Press "ForcelP" button (Per section 5.2,), and click on [Exec] button on the window that shows up.

- If it's successfully done, IP address will be automatically set to the box next to Open button.

4. Press "Open" button (per section 5.2,)

- If it's successfully done, Log is displayed, such as the following. (section 5.2,)

```

Open Success
Node Tree Get Start
Node Tree Get Success
Parameter Get Start
Parameter Get Success [ HeartbeatRate:1000 ]
Start-Up Plane Info Get Start
Start-Up Plane Info Get Success [ BootSide:0 ]
13:33:16.71      Evt: Event Occur[ MessageChOpenEvent ]
13:33:16.71      Evt: Event Occur[ StreamChOpenEvent ]

```

5.3.3. Image transfer start

1. Press “Start” (Section 5.2,) to start image transfer.

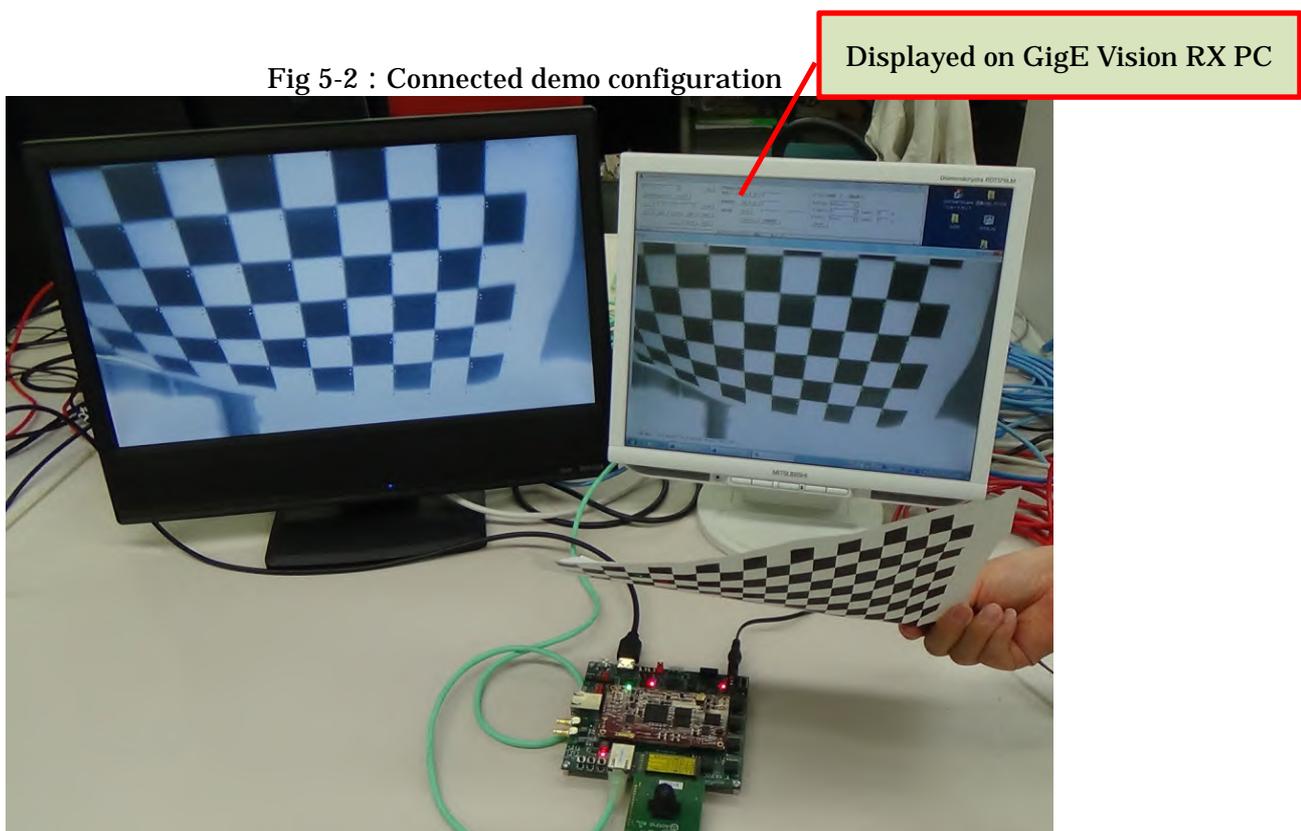
- Image display dialog shows up.
- Closing the image display dialog won’t stop the transfer.
(If it’s closed, click “start” to show it again)

Input “Display Size” (per Section 5.2,) to adjust the display size to be shown thereafter.

- The bigger the display size, the more loaded PC will be.

Input “Display rate” (per Section 5.2,) to adjust the graphic rate thereafter.

- The bigger the rate, the more loaded PC will be.



5.3.4. Image Transfer stop

1. Press “Stop” button (per Section 5.2,) to stop image transfer.

Press “Start” button to restart transferring.

5.3.5. DemoAP end

1. Press “Close” button (per section 5.2,).
2. Click [x] of main console to close and end DemoAP.