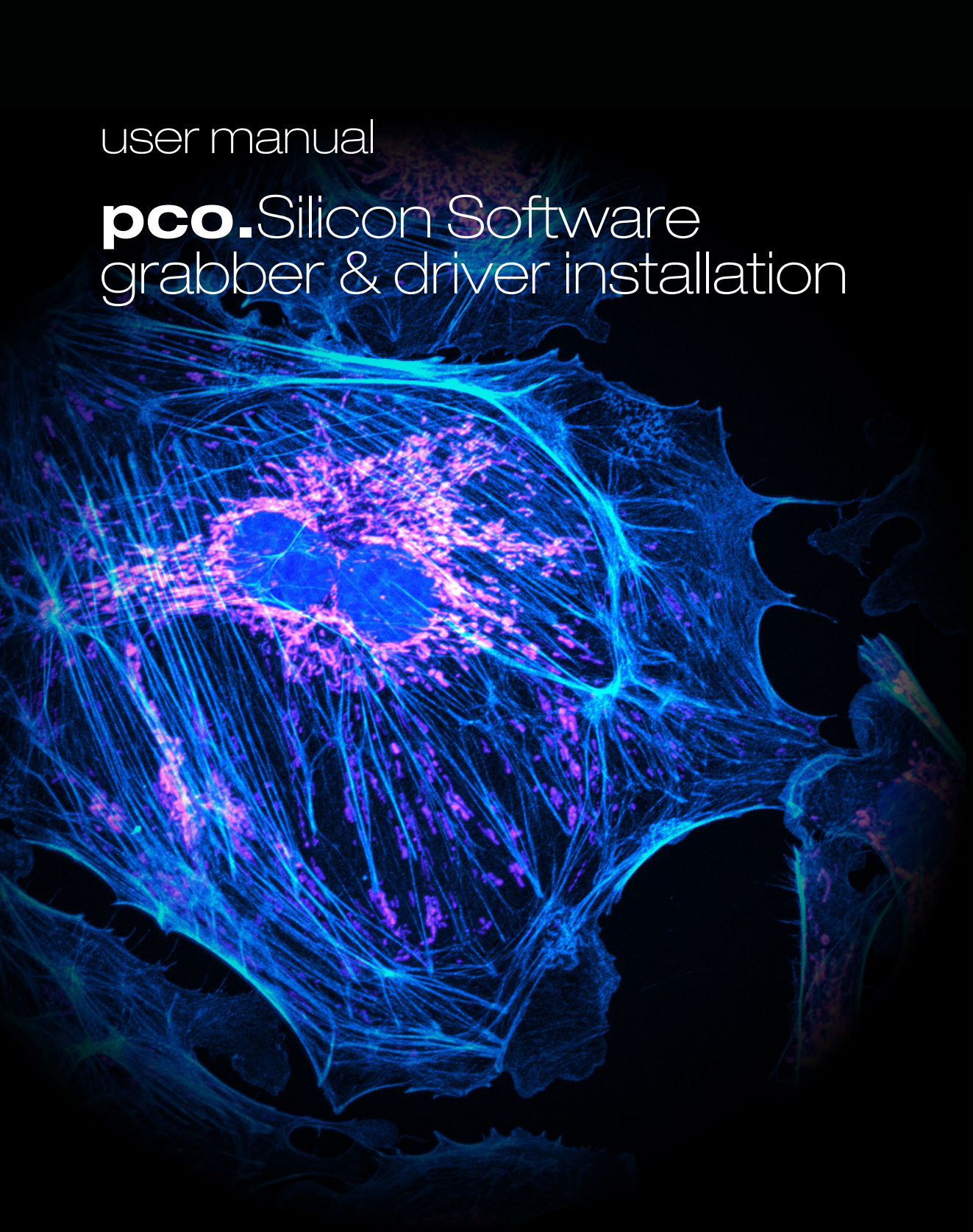
user manual

pco.Silicon Software grabber & driver installation



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Excelitas PCO GmbH asks you to carefully read and follow the instructions in this document.
For any questions or comments, please feel free to contact us at any time.

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Contents

1 Introduction

Instructions for installing and testing the ***Silicon Software microEnable IV (mEIV)*** Camera Link grabber card and the ***Silicon Software micro Enable V (mEV)*** CLHS FOL grabber card for Microsoft Windows and Linux (Ubuntu 20.04) operating systems.

These cards are required to be able to use a pco.edge with Camera Link interface or CLHS FOL interface.

Frame grabber installation must be performed by a technican, because high voltages can occur on single parts of your computer.

On 64bit systems by default 64bit and 32bit Runtime is installed. Optional only the 64bit runtime can be installed.

Silicon Software mEIV AD4/VD4 grabber card (for Linux only VD4 grabber card)

Note: Deactivate power saving settings of your computer.
The variables for ambient temperature must be observed and sufficient air flow to the grabber card must be ensured in the computer, see SiSo documentation.

1.1 Installation order

Steps	Description
First step **Runtime**	**Install Silicon software runtime installation** See chapter **2**
Second step **Grabber card**	**Install grabber card to your computer** See chapter **4**
Third step **microDiagnostics**	**Run microDiagnostics Tool** See chapter **5**
Fourth step **Firmware upgrade**	**Update the firmware of your grabber card** Follow the instructions
Fourth step **Firmware upgrade**	**mEIV grabber** See chapter **5.1**
Fourth step **Firmware upgrade**	**mEV grabber** See chapter **5.2**
Fifth step **Performance**	**Apply board & Performance test** See chapter **5.3**
Final step	**Start camware**

2 Installing runtime

2.1 Linux

Install the PCO SiliconSoftware Grabber Runtime debian package pco.siso-runtime_5.7.5_amd64.deb using

```
sudo dpkg -i pco.siso-runtime_<version>_amd64.deb
```

or

```
sudo apt-get install ./pco.siso-runtime_<version>_amd64.deb
```

After installation has finished your system needs to be rebooted.

2.2 Windows

Start PCO SiliconSoftware Grabber Runtime Installation package
`PCO_DI_SILICONSOFTWARERUNTIME_<version>.exe`
and follow the instructions.

The installer package includes the installation of the SiliconSoftware Runtime and all necessary applet packages and files, which are necessary to work with pco.cameras.

Follow the steps in this order.

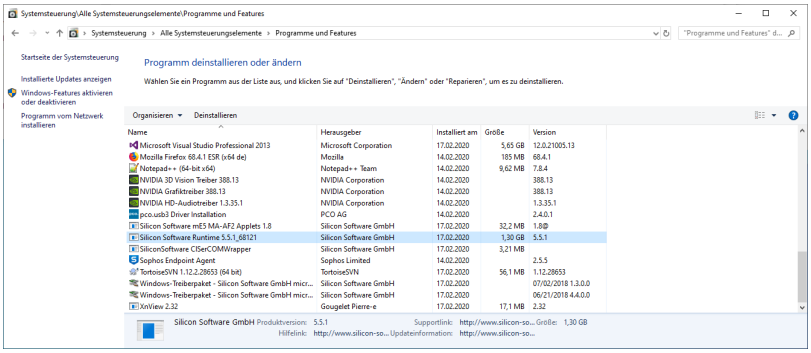

Figure 2.1: uninstall former versions.

Uninstall former versions of Silicon Software runtime.
e.g. use link from programs and features in control panel.

Figure 2.2: start.

Start installation.

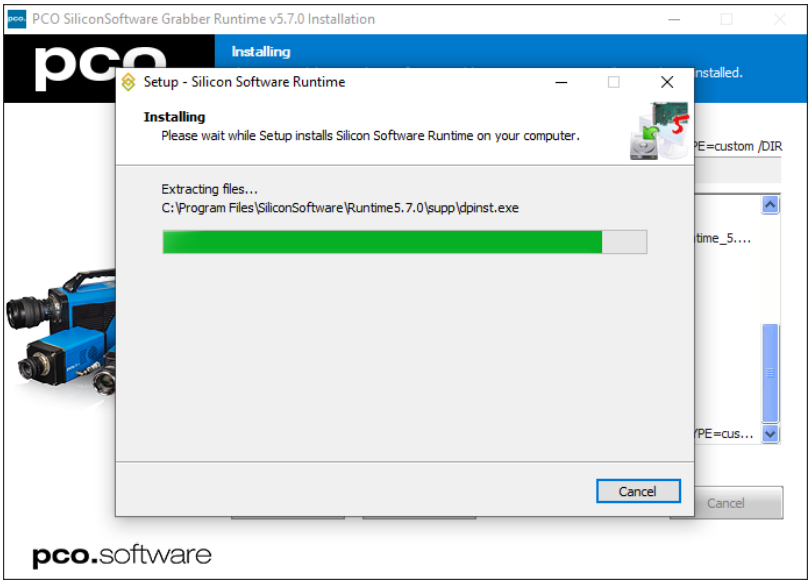

Figure 2.3: 64-bit version.

Setup Silicon Software 64Bit is executed.

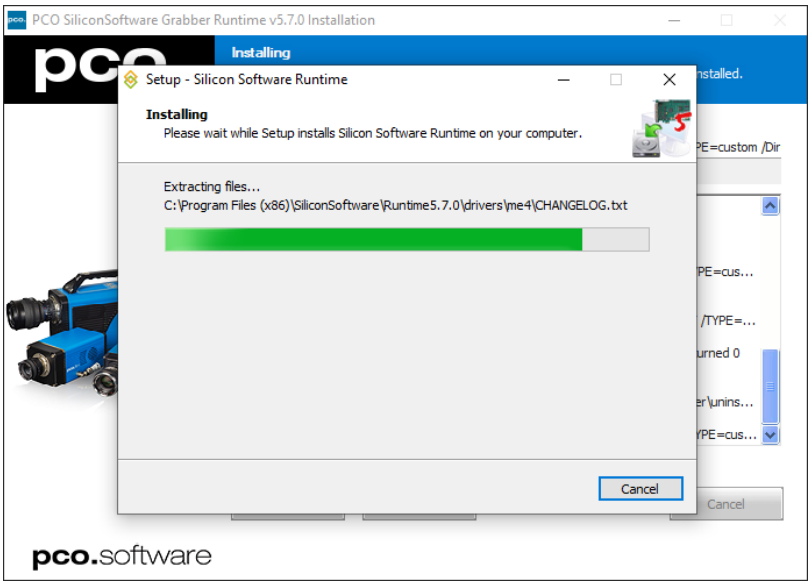

Figure 2.4: 32-bit version.

Setup Silicon Software 32Bit is executed.

Figure 2.5: finished installation.

Installation is finished. Start the ***microDiagnostics*** tool (see chapter **5**).

3 Uninstalling runtime

3.1 Linux

Uninstall the PCO SiliconSoftware Grabber Runtime using

```
sudo dpkg --purge pco.siso-runtime
```

or

```
sudo apt-get purge pco.siso-runtime
```

After uninstallation has finished your system needs to be rebooted.

3.2 Windows

Either use link from ”Programs and Features” in ”Control Panel” or start Installation Package PCO_DI_SILICONSOFTWARERUNTIME_5_7_3.exe again and use remove option of maintenance page.

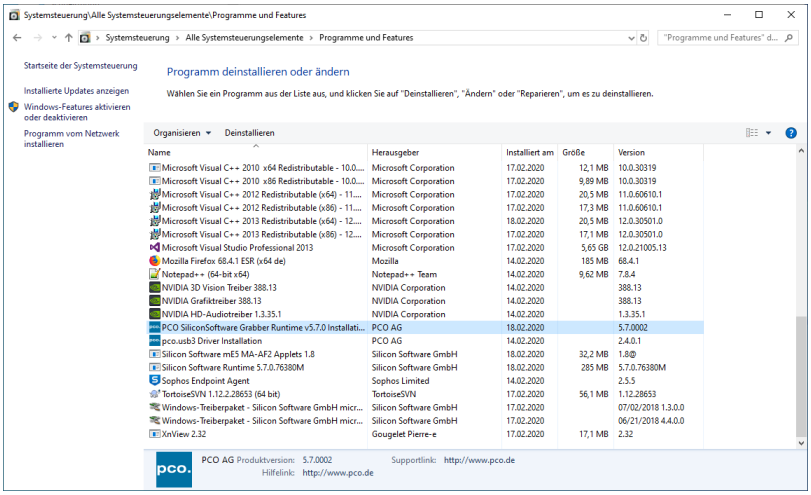

Figure 3.1: uninstall runtime.

Uninstall from Control Panel.

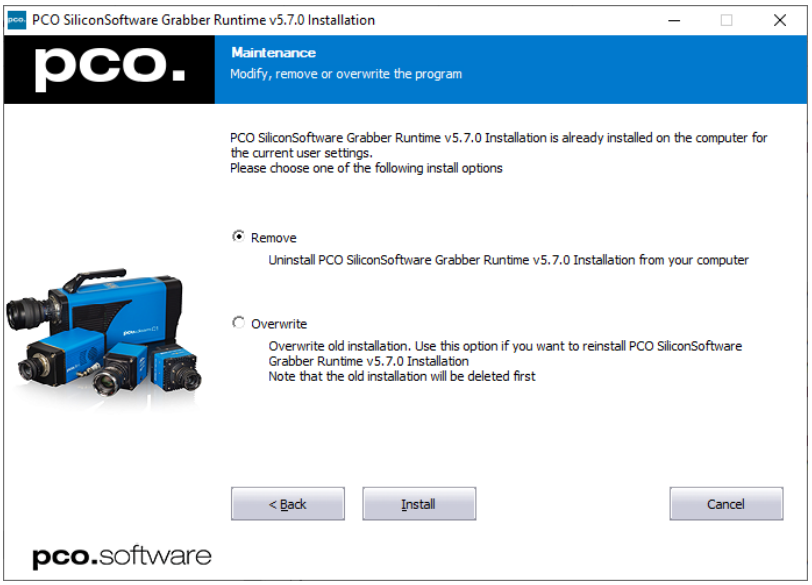

Figure 3.2: remove package.

Uninstall with installation package.

4 Install grabber card to PC

The Silicon Software frame grabber card must be installed to your computer.

Electric shock warning due to voltage parts inside.
Risk of injury due to electric shock.

- Always pull mains plug before opening the computer.

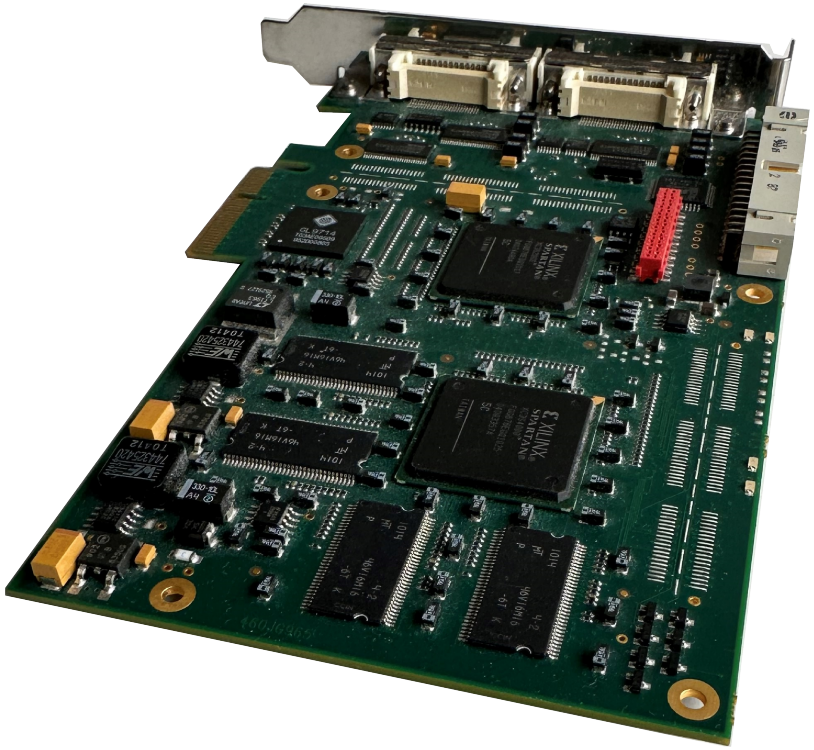

Figure 4.1: mEIV.

Installation of ***new components*** to a computer should only be performed by a ***technician*** or ***qualified personal***.

- ***Shutdown*** your computer.
- ***Unplug*** it from mains.
- ***Open*** the computer case.
- ***Install*** the frame grabber card to a propper slot.
- ***mEIV:*** PCI Express x4 (Gen1), DMA900.
- ***Start*** your computer.

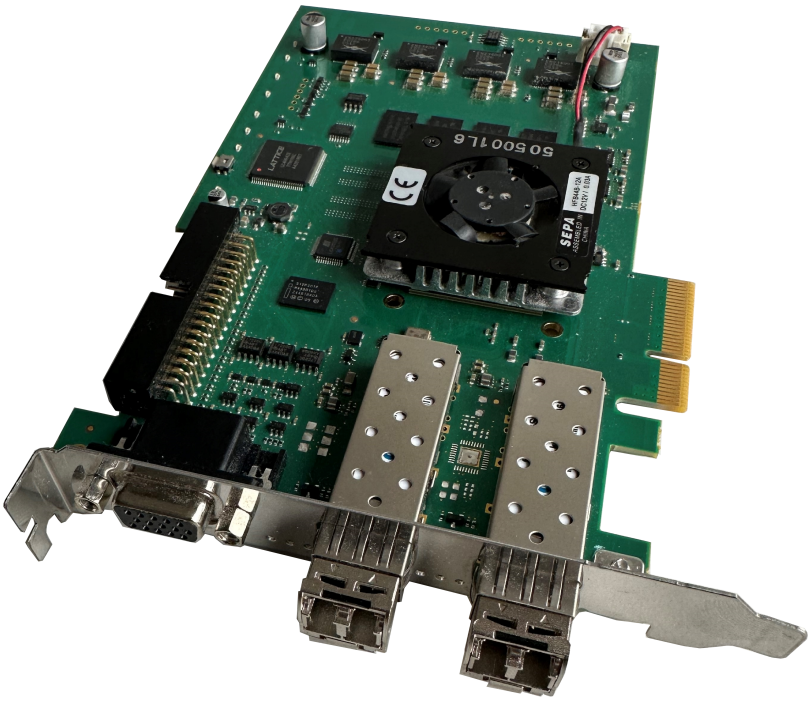

Figure 4.2: mEV.

Installation of ***new components*** to a computer should only be performed by a ***technician*** or ***qualified personal***.

- ***Shutdown*** your computer.
- ***Unplug*** it from mains.
- ***Open*** the computer case.
- ***Install*** the frame grabber card to a propper slot.
- ***mEV:*** PCI Express x4 (Gen2), DMA1800.
- ***Start*** your computer.

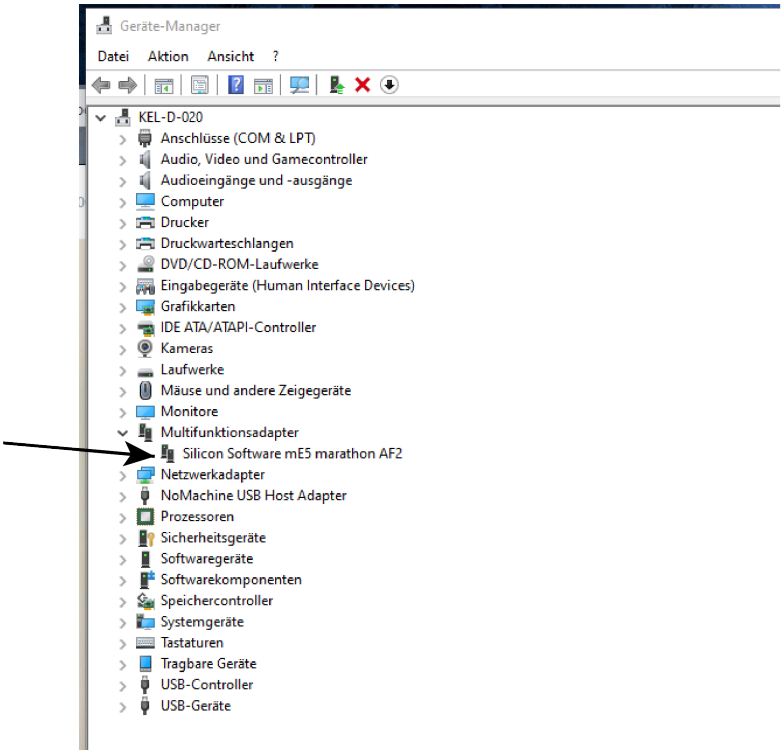

Figure 4.3: device manager 1. (Windows only)

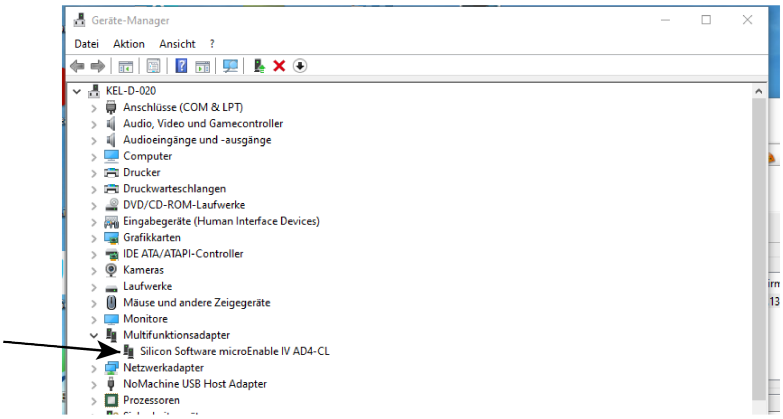

Figure 4.4: device manager 2. (Windows only)

Device manager (Windows only):

The grabber card should be displayed within the device manager. If the device is not shown this way, please reinstall the ***Silicon Software device driver***.

Windows short-cut for device manager: press windows + pause/break key.

5 Micro diagnostics tool

microDiagnostics Tool works with mEIV (AD4 / VD4) and mEV frame grabber cards.

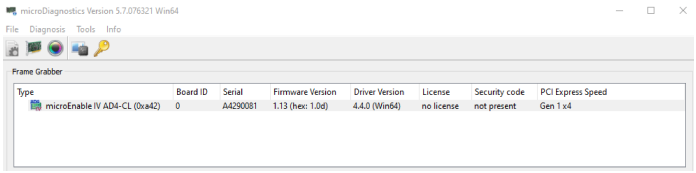

Figure 5.1: microDiagnostics.

Run various diagnostic routines directly on the frame grabber, including ***Applets*** test, ***Board*** test, ***Performance*** test.

Linux On Linux the microDiagnostics tool can be started simply by calling
`microDiagnostics`
in the terminal.

5.1 MEIV grabber firmware upgrade

Upgrade to the latest firmware for your Silicon Software ***mEIV*** frame grabber.

This is only necessary, if the latest firmware is not installed to your frame grabber!

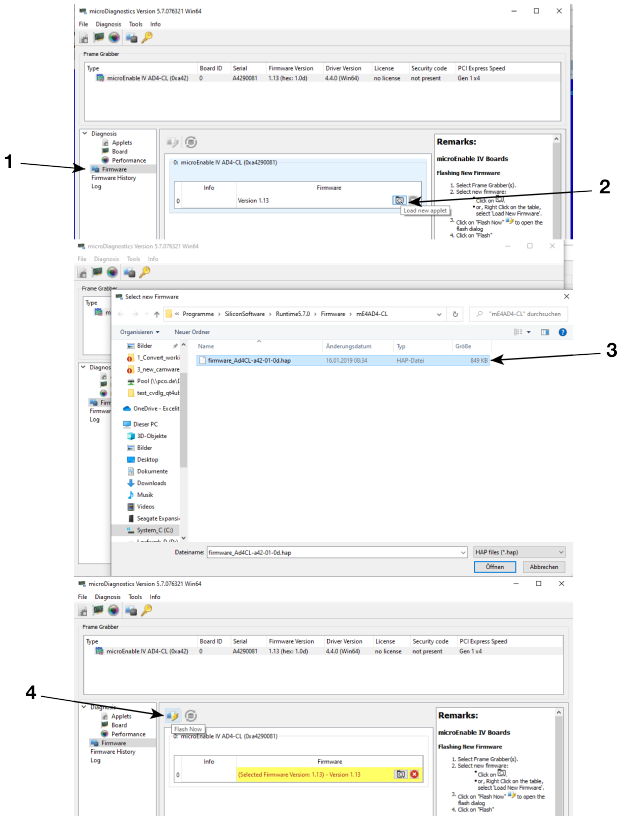

Figure 5.2: microdiagnosticstool.

- Click ***Firmware***. (1)
- Click ***Load new applet***. (2)
- Select the appropriate hap file. (3)
- Click ***Flash now***. (4)

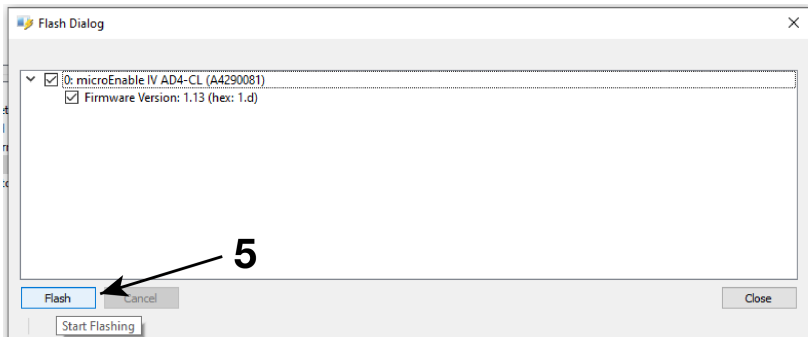

Figure 5.3: flash dialog 1.

Flash dialog opens.

- Click ***Flash***. (5)

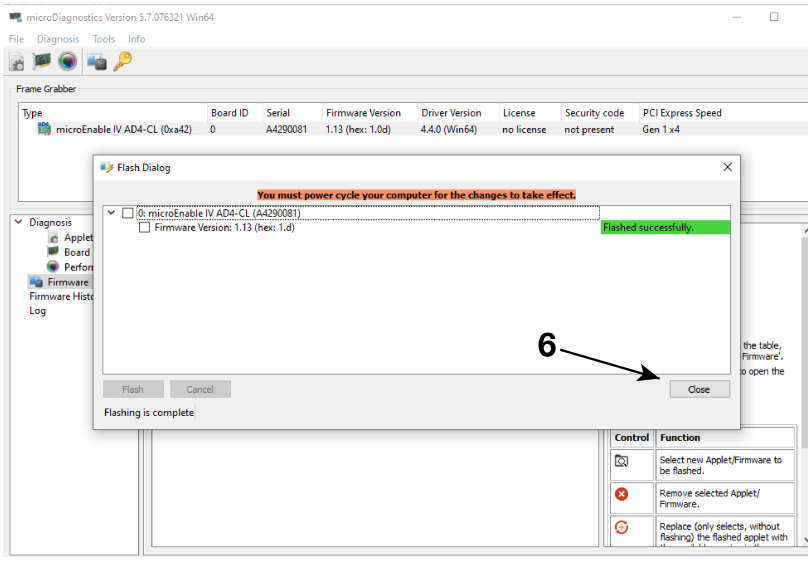

Figure 5.4: flash dialog 2.

Now it is successfully flashed.

- ***Close*** this dialog. (6)

You must ***shut down*** (a restart is insufficient) your computer ***completely*** after the firmware upgrade for the changes to take effect.

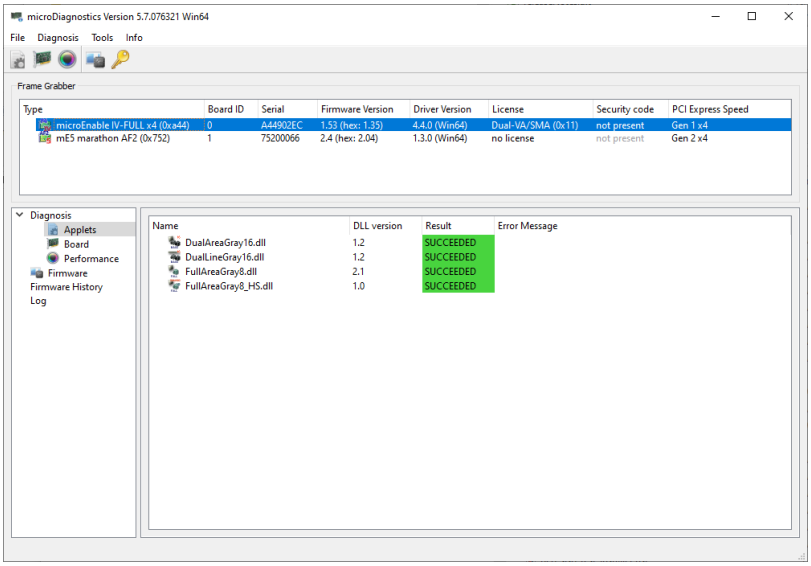

Figure 5.5: select diagnosis.

Last step:
Select Diagnosis -> Applets

Result must be: ***succeeded***.

5.2 MEV grabber firmware upgrade

Preparations

All steps described in the following chapter for the meV marathon AF2 grabber can also be used in the same way for the meV VF2 grabber.

Latest firmware applet for the grabber card is already copied during installation. Check firmware version on the grabber card using the microDiagnostics software is described below.
PCO cameras only use firmware applet Acq_DualCLHSx1AreaRAW.

Firmware upgrade

This is only necessary, if the latest firmware is not installed to your frame grabber!

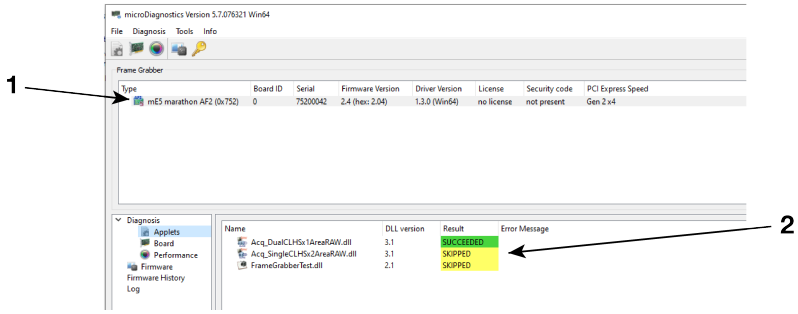

Figure 5.6: MEV grabber 1.

First test, if a proper firmware is installed.

Select Diagnosis -> Applets (1)

If test result for Acq_DualCLHSx1AreaRAW.dll respectively libAcq_DualCLHSx1AreaRAW.so is ***skipped*** an update is required. (2)

Select Diagnosis -> Firmware.

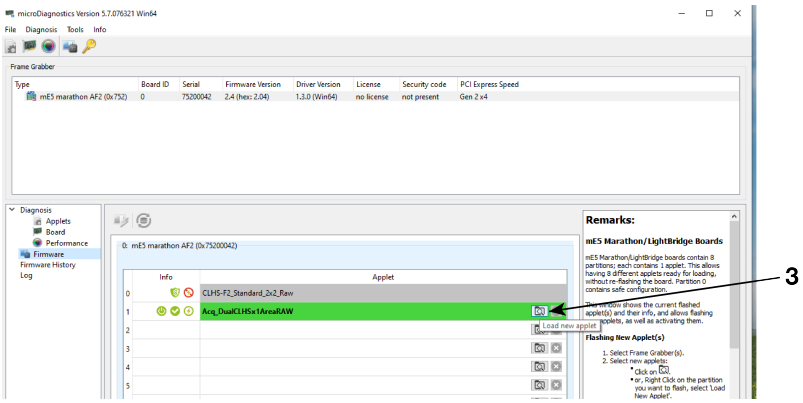

Figure 5.7: MEV grabber 2.

The current ***Applet*** must be updated.

Click ***Load new applet*** (3) and select the new Acq_DualCLHSx1AreaRAWDLL.

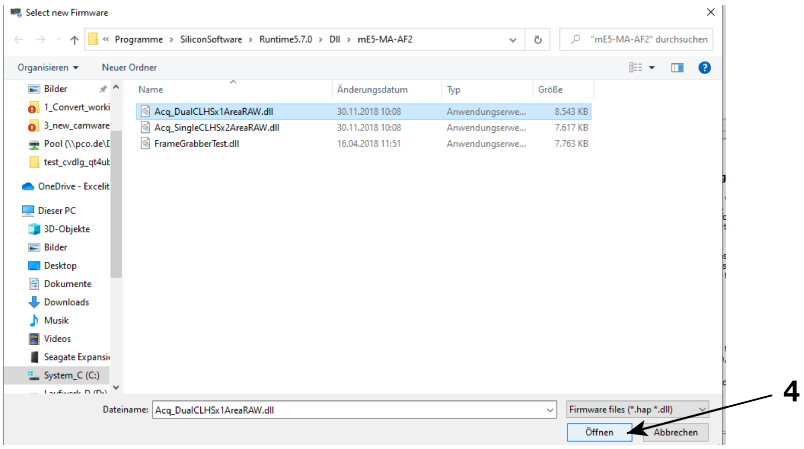

Figure 5.8: MEV grabber 3.

Click ***Open***. (4)

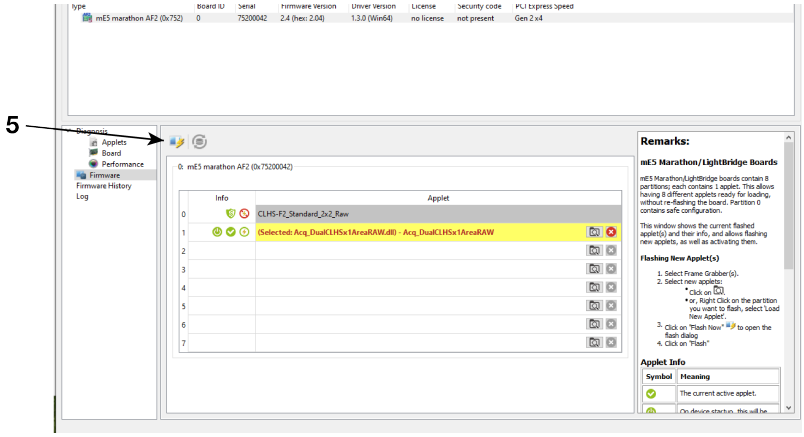

Figure 5.9: MEV grabber 4.

Click ***Flash now***.(5)

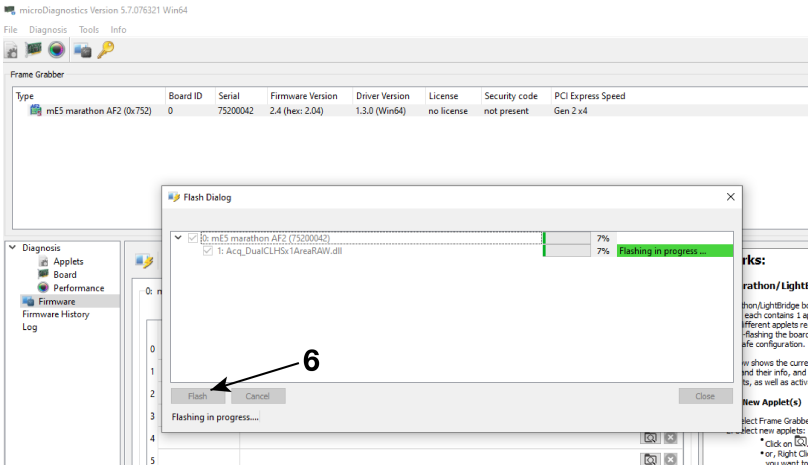

Figure 5.10: MEV grabber 5.

Flash dialog opens.

Click ***Flash***. (6)

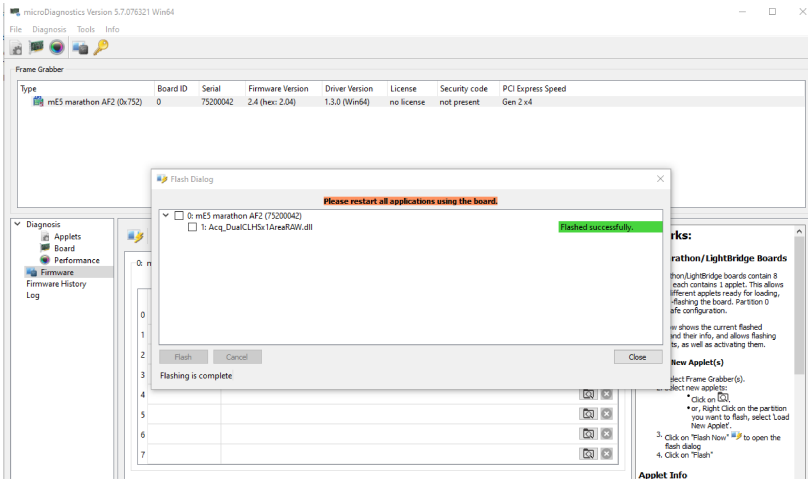

Figure 5.11: MEV grabber 6.

Now it is successfully flashed.

Close this dialog. (7)

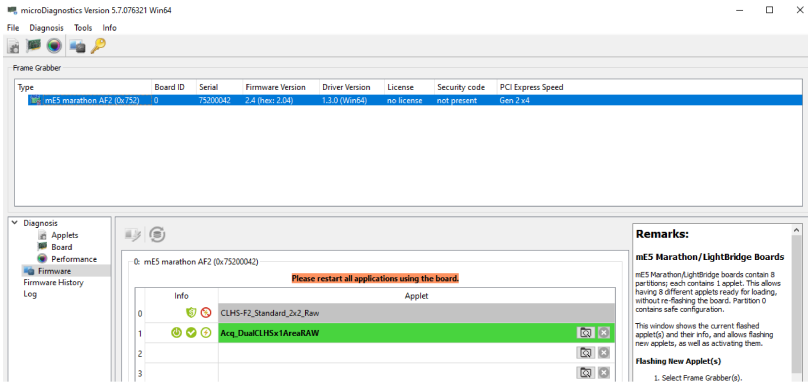

Figure 5.12: MEV grabber 7.

Restart all applications using the board.

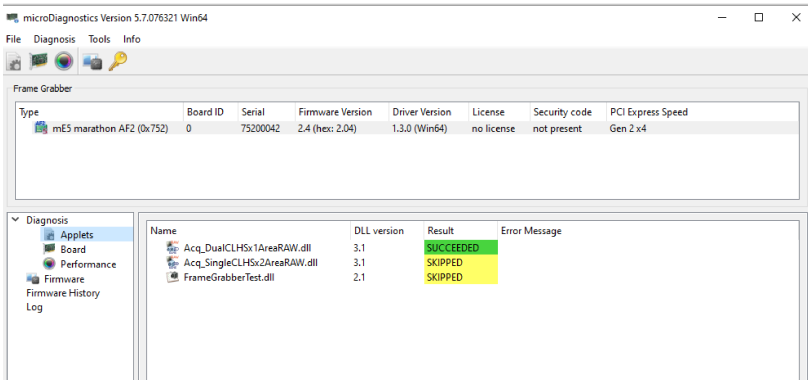

Figure 5.13: MEV grabber 8.

Select Diagnosis -> Applets.

Now the ***Result*** is ***succeeded***.

5.3 Performance test

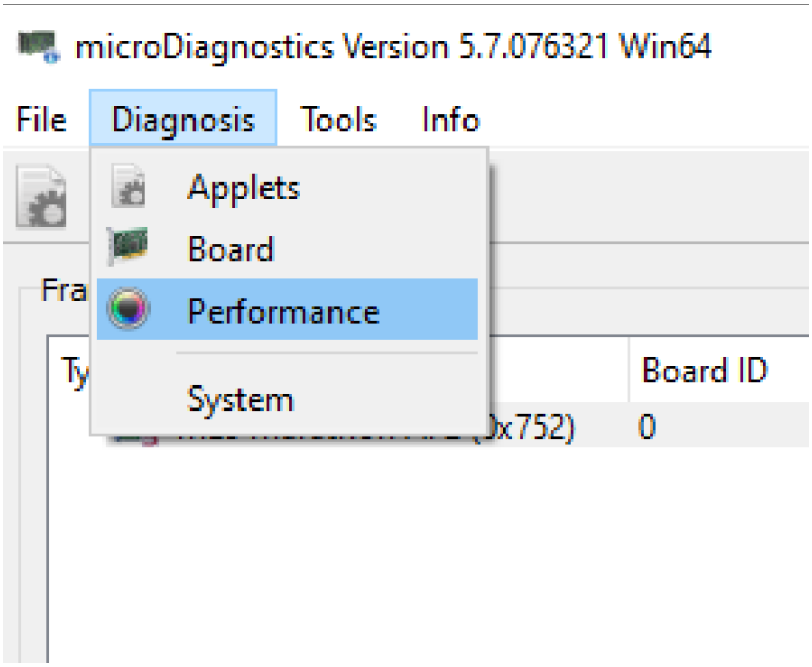

Figure 5.14: Test 1.

To test the board, open ***Diagnosis*** menu and click ***Board*** (1) to start the test.

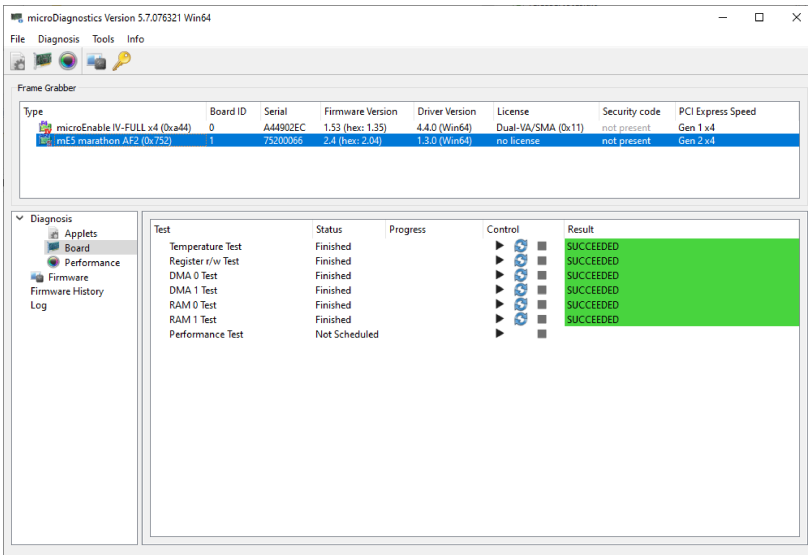

Figure 5.15: Test 2.

All tests should ***succeed***.

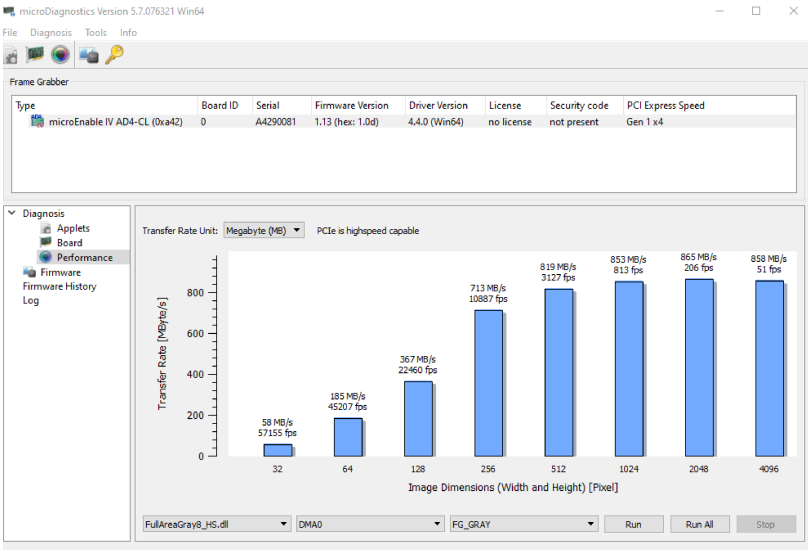

Figure 5.16: Test 3.

Test the performance: click ***Performance*** (2) to start the test.

It is mandatory that the board ***PCIe is highspeed capable***. Otherwise the board is probably not able to transfer the necessary data rate.

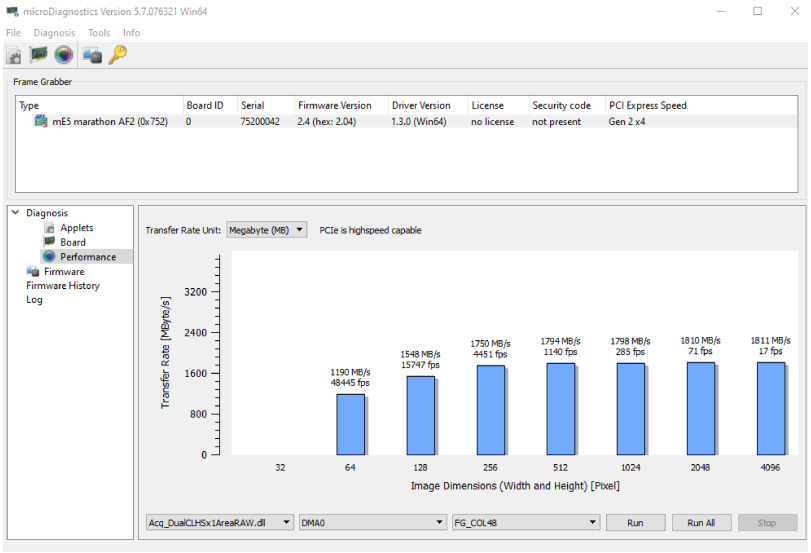

Figure 5.17: Test 4.

These two screenshots show achievable data rates for mEIV (3) and mEV (4) boards.

For further information or problems with mainboards please contact PCO ***support*** section.

6 About Excelitas PCO

PCO, an Excelitas Technologies® Corp. brand, is a leading specialist and Pioneer in Cameras and Optoelectronics with more than 30 years of expert knowledge and experience of developing and manufacturing high-end imaging systems. The company's cutting edge sCMOS and high-speed cameras are used in scientific and industrial research, automotive testing, quality control, metrology and a large variety of other applications all over the world.

The PCO® advanced imaging concept was conceived in the early 1980s by imaging pioneer, Dr. Emil Ott, who was conducting research at the Technical University of Munich for the Chair of Technical Electrophysics. His work there led to the establishment of PCO AG in 1987 with the introduction of the first image-intensified camera followed by the development of its proprietary Advanced Core technologies which greatly surpassed the imaging performance standards of the day.

Today, PCO continues to innovate, offering a wide range of high-performance camera technologies covering scientific, high-speed, intensified and FLIM imaging applications across the scientific research, industrial and automotive sectors.

Acquired by Excelitas Technologies in 2021, PCO represents a world renowned brand of high-performance scientific CMOS, sCMOS, CCD and high-speed cameras that complement Excelitas' expansive range of illumination, optical and sensor technologies and extend the bounds of our end-to-end photonic solutions capabilities.

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