Table

Glossary

- **HDR**: High Dynamic Range
- **ADU**: Analog Digital Unit
- **HG**: High Gain
- **LG**: Low Gain
- **ADC**: Analog to Digital Converter

- **NUC**: Non Uniformity Correction
- **IWR**: Integrate While Read
- **ITR**: Integrate Then Read
- **FPS**: Frames Per Second
- **CDS**: Correlated Double sample

FIRST LIGHT
ADVANCED IMAGERY

1. Introduction ....

The USB 3.0 Loopback Plugs module from PassMark Software® enables to evaluate the speed of a computer USB port. This document is a user guide showing the necessary steps to install and use correctly the USB 3.0 loopback plug.

2. Driver installation ....

<u>Step 1:</u> Be sure that you have administrator rights on your computers. Drivers cannot be installed if you don't have those rights.

<u>Step 2:</u> Copy and paste the folder "USB3_0_loopback" provided in the provided USB key file on your PC desktop. You can also download the USB3.0 loopback software and driver from: https://www.passmark.com/products/usb3loopback/download.php

Firmware is already upgraded in the provided USB3.0 loopback device.

<u>Step 3:</u> Plug the USB loopback on one of the computer USB 3.0 port. According to the norm a USB 3.0 port is blue. If the LED PWR indicator does not turn on, it means that your USB port is not correctly powered by your computer.
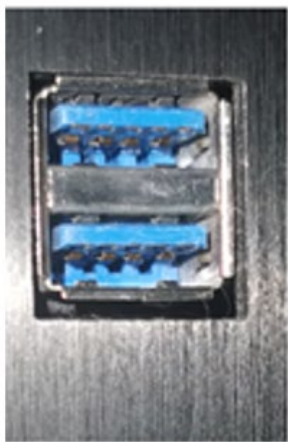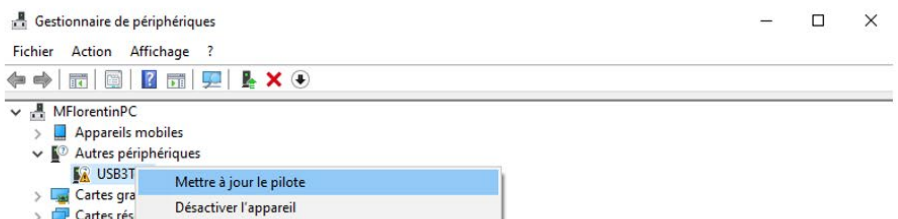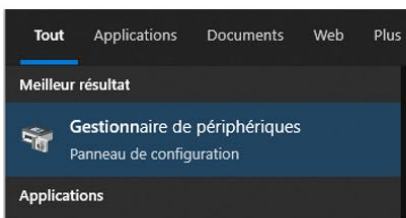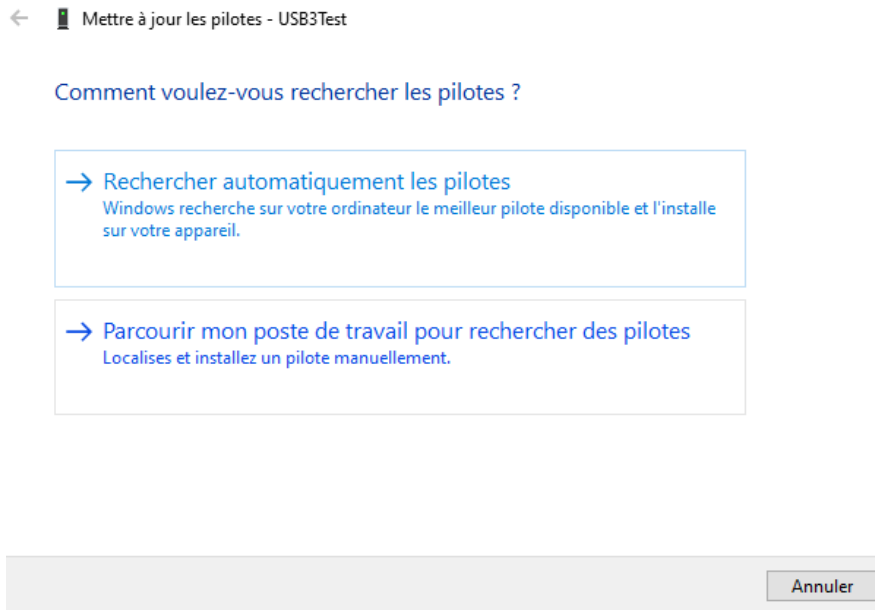

USB 3.0 Port

Led PWR is on

<u>Step 4:</u> Wait for 1 minute. Then, open Window's "device manager" tool. Right click on "USB test" located in the "other devices" section and select "driver update"
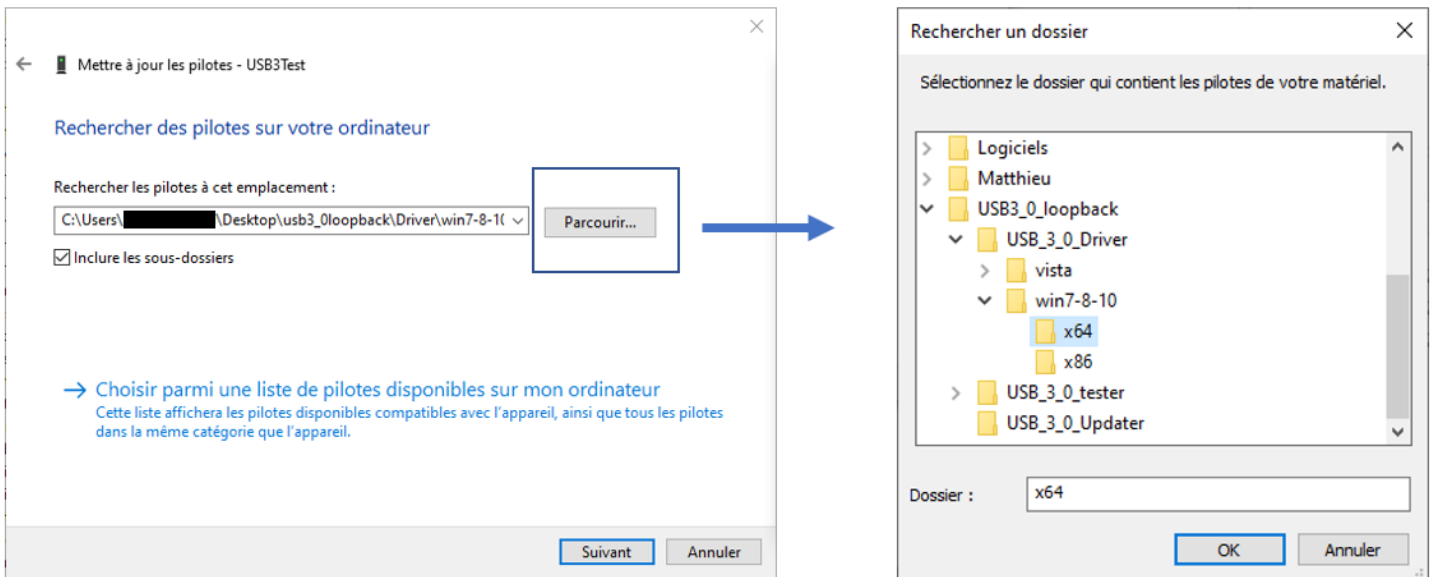
**Step 5:** Select the section "browse my workstation for drivers", drivers have to be installed manually.

Step 6: Click on "Browse" and point out to the folder where USB_3_0_Driver is located (in our case, driver → win7-8-10→X64). Then click on "OK" and click on "Next". Driver is going to be set up on your computer.
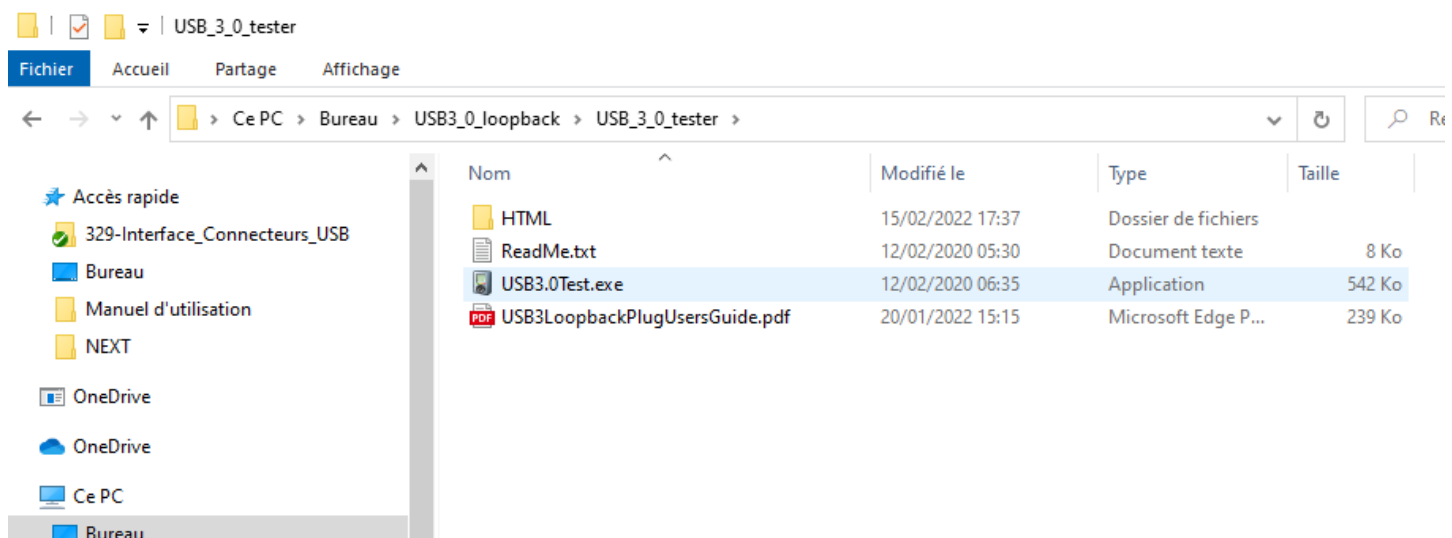
Step 7: A message indicates that the PassMark USB3.0 Loopback Plug driver installation is over. Click on "Close".
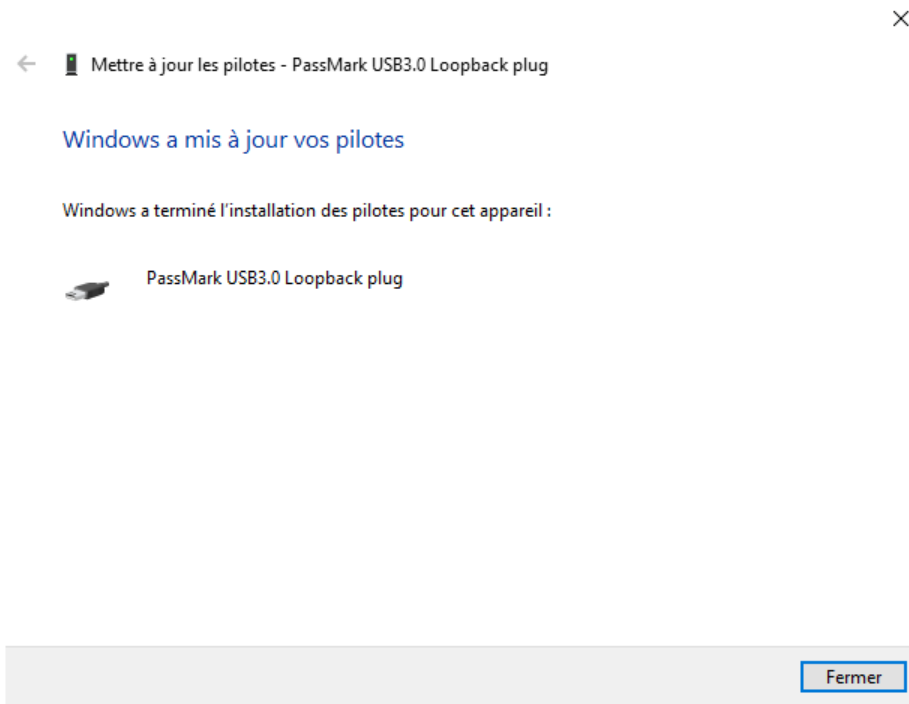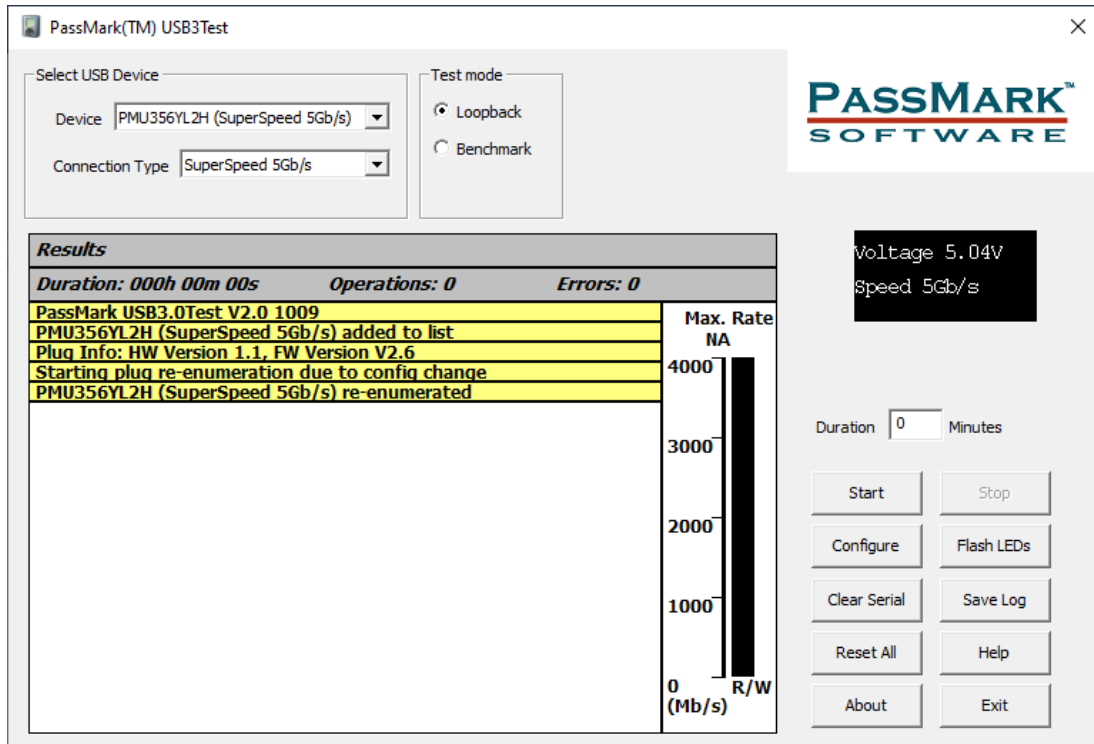

3. Evaluation of USB 3.0 port speed ....

Step 8: Go on the computer desktop where the loopback connector installation folder is located. Open the tester folder.

Step 9: Double click on USB3.0Test.exe. The following picture appears:

Step 10: Select "Benchmark" in the test mode section to test the reception data speed rate of USB port. Then click on start. When the Stop button goes from grey to black letters, you can click on it and check the average data rate on your USB port. In the example below, it is presented extremum and average Data Rate on one computer USB port obtained during a defined period. While the test is running, RX led on the USB 3.0 loopback plug is on.
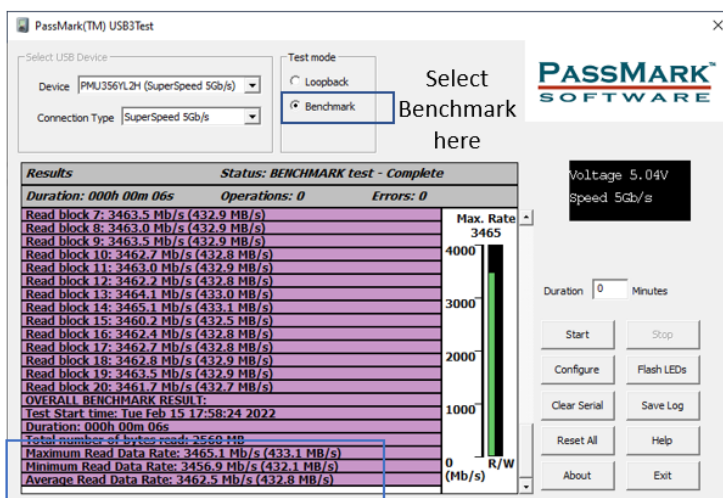
Extremum and Average Read Data Rate

4. Conclusion ....

The following USB 3.0 port speed are required for a correct operation of First Light Imaging cameras:

➔ C-RED 2 and 3 cameras with 600fps license file can require a USB 3.0 port speed of at least 395 MB/s.
➔ C-RED 2 and 3 cameras without 600fps license file can operate with 262 MB/s.

In the example above, the read data rate is 432.1MB/s in average, hence the USB port is suitable for operating a First Light Imaging camera.

An insufficient port speed will degrade the operation of the camera. Images may be lost and artefacts, such as mosaic-like images, will appear. Evaluating the speed of the port is the first step in the diagnosis of these issues. To enhance the performance of the USB 3.0 port and for a complete description of the insufficient USB 3.0 speed issue, please refer to the dedicated technical note.

For any further information, please contact First Light Imaging's support team (support@first-light.fr).

www.first-light-imaging.com