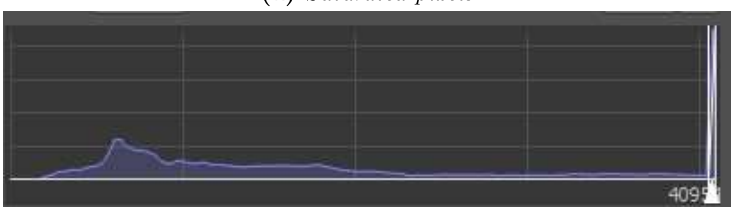
Appendix C

Exposure

This document describes how to set up the exposure time in order to have no saturated pixels.

1. Under `LUTs`, on the right-hand side (the histogram), drag up the lower limit to only display the brightest pixels. The margin to use is at the user's discretion

(a) *Saturated pixels*



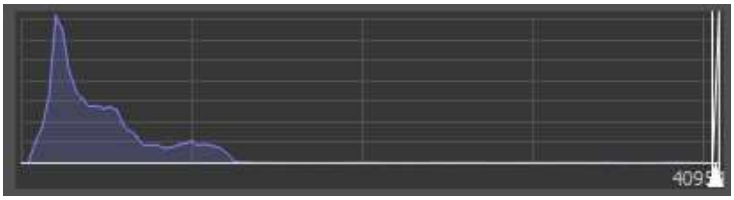
(b) *Modified histogram*

Figure C.1: *Saturated pixels visualization with selection by the histogram.*

2. Under `Basic` set the gain to 0.
3. Under `Basic` set the exposure time such as no pixels is displayed (the ones selected by the histogram). The exposure time should be as high as possible under the display threshold,

but also lower than 5ms in order to fix the atmospheric aberrations. 1ms or lower is perfect for the application. The gain can be adjusted if necessary.

(a) *No more saturated pixels*

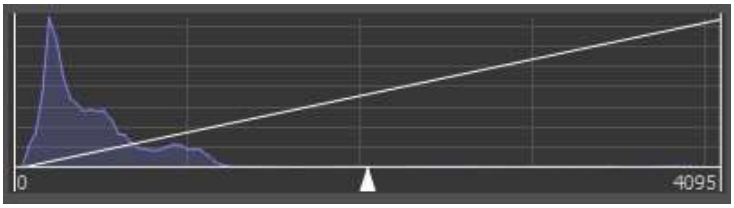


(b) *Modified histogram showing no pixels above the threshold value.*

Figure C.2: *Saturated pixels visualization with selection by the histogram. None is left*

4. Under `LUTs`, on the right-hand side (the histogram), drag down the lower limit to the minimum

(a) *Whole frame without any saturated pixel*



(b) *Histogram of the pixels values*

Figure C.3: *Whole frame visualization without selection by the histogram*

There is now no more saturated pixels. From an artistic standpoint, the picture might look under exposed, but from a scientific one, every pixel as a usable value which is the only thing that matters. The figure hereunder shows the reference object without the light in the background as a reference.

Figure C.4: *Reference object without background light over exposing pixels*