Important information!

Workflow:

You will typically connect to the Multi Spectral Camera [MSC] over Wi-Fi. The MSC acts as access point for Wi-Fi network with SSID "*Payload 102G*" and password "*Heimdall*", with IP address 10.0.0.1 and subnet mask 255.255.255.0 To provide your computer with an IP address, DHCP server that will assign you an IP from 10.0.0.2 to 10.0.0.254. The MSC runs a DHCP server from http://www.dhcpserver.de/cms/.

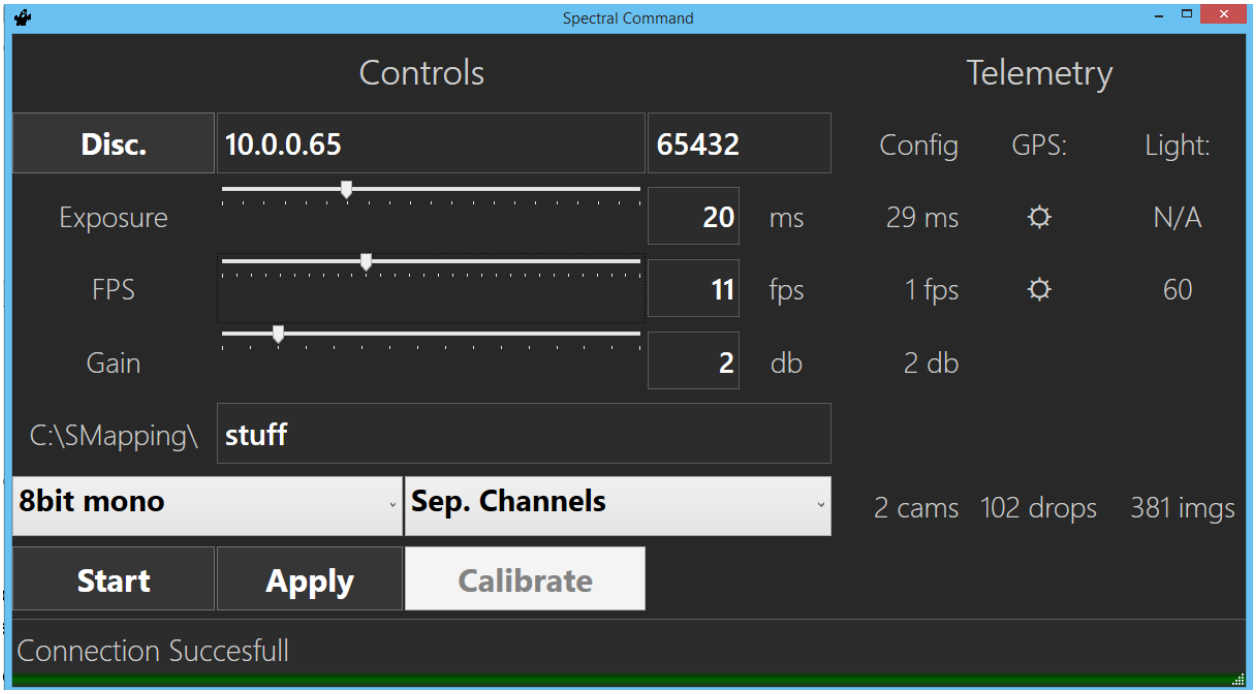
MSC should be configured to connect to home/office Wi-Fi. It hosts a Wi-Fi network and joins yours At The Same Time. The purpose of hosting Wi-Fi is to allow connecting to the MSC in the field. It can then be brought home or into the office, where it will connect to available Wi-Fi to makes downloading the images from it more convenient. When it joins another Wi-Fi, it's IP is whatever DHCP assigns to it. To help you locate MSC on your network, Windows Network Discovery is active on all networks, Private and public, to help compatibility.

Folder with all the images is available as a network share "*SMapping*". It can be read by anyone on the network, Private or public, so do not connect MSC to random Wi-Fi networks! To write or delete from the folder you must sign in. There are two accounts: standard account "*Heimdall*" with password "*asteroidsareamyth*" and admin account "*Satan"* with *classified*. Configurations of the MSC is done through remote desktop, with the same account. They are both local accounts, it is possible to add your Microsoft account and benefit from OneDrive syncing MSC images. However beware of MSC trying to download all your OneDrive files – it has very limited local storage.

MSC runs windows where most of automatic processes, such as updates and virus scans are disabled. This is to prevent them from interfering with economically important activity. To keep MSC as stable, in terms of software, as possible, it is recommended not to install any extra unnecessary software on to it. We do not expect MSC to encounter many security risks when doing it's normal activities You should run updates manually, occasionally. In case software on MSC is not functioning, please use system image on the supplied flash-drive to recover it to a functional condition.

High Spectre is the program that runs on the Multispectral Camera [MSC]. Using Task Scheduler it is run on startup, and listens for connections on every network interface, on port 65432. High Spectre will check how many Ximea cameras are attached, and use all that are available. Because it's using Ximea API, it will only work with Ximea cameras. It automatically uses the highest resolution the camera has.

Spectral Command is used to connect to the MSC. It can be used to set Gain (ISO or brightness adjustment done by the ADC), FPS, and Exposure. Motion blur is only affected by exposure, don't try to reduce it by increasing FPS! The two concepts are independent. Exposure scale is exponential for convenience.



Right panel labelled "Telemetry" displays settings and status of the MSC, and is updates once a second. Left Panel allows you to control MSC and it's settings.

"Apply" button will send setting to the MSC. You should see updated settings in the left panel. If that doesn't happen, you know something went wrong!

Start button begins imaging, images will be saved to *C:\SMapping\FolderName*. If you do not choose a folder name, the folder will be named "**min*.*hour* on *day*.*month**"

You get feedback on number of cameras connected to the MSC, Number of frames (images) taken, and number of frames dropped. Dropped frames are images that where not taken, and typically mean that FPS you have set exceeds the system capability.

To summarise, there are three levels of security for your MSC:

1. Access to the network where MSC resides allows one to read images that were taken, but not modify or delete them. It also allows one to control the imaging activity.
2. Logging into network share with account "Heimdall" allows one to modify and delete images. Logging into remote desktop with the same account provides standard user access, one can for instance restart the HighSpecter application
3. Logging into remote desktop with account "Satan" provides administrator level access

Known problems:

High Spectre

1. The UI only displays one of the IP addresses on which connections are being accepted
2. There was an error where *tcp_listener* would become null and accept no connections. It is though that the error has been fixed, but you should keep this in mind.
3. Right now the program swallows exceptions, and has no log file.
4. “normal” exceptions, which are fully handled by the program, such as disconnects, are poorly distinguished from “abnormal” – i.e. those that actually break things.
5. If the computer is approaching 100% cpu or disk usage the program will crash. I bet it has something to do with the fact that the program makes no attempt to slow down no matter how many unfinished concurrent attempts there are to write to disk. DO NOT EXCEED 10 FPS
6. Program is not designed to connect to more than one Spectral Command, doing so may lead to spontaneous gravitational singularity.
7. Only “*8bit mono*” format, with “*Separate Channels*” is supported at the moment.
8. If cameras are unplugged while the program is running, it will probably crash. There is no provision for re-initialising the cameras.
9. Imaging is paused while cameras are configured and initialised. The program still counts this as drops.
10. HIghSpecter needs a bunch of Ximea files in one folder with it, or it will not start. Which ones of these files are useful and which ones are not is not clear yet.
11. GPS is not implemented

Spectral Command:

1. port does not get saved - no clue why
2. folder path does not get saved
3. reports ordinary disconnect as error in status bar
4. if ordered to connect to a router/fridge/google it will report successful connection, no matter how the object communicated to it, you can only deduce that you connected to something wrong because the your commands will not have any effect.
5. Feedback bar never clears
6. If feedback is longer than one like you get overflow
7. Calibration button does nothing
8. Apply button should be bout to a key on a keyboard