



NOAA Satellite

Tracking and Decoding

By: N7FNV – Samuel Yanz



Table of Contents

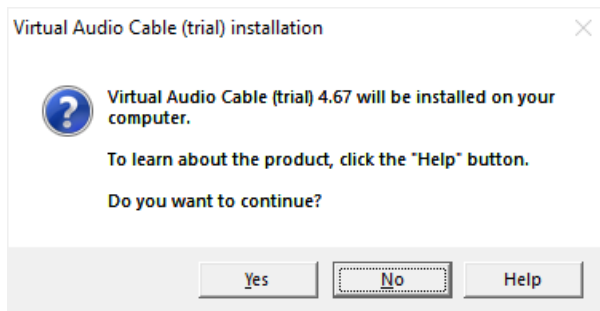
Virtual Audio Cable Setup	2
VAC 4.67 Installation	2
Virtual Audio Cable Installation.....	4
AirSpy SDR# Sharp Studio	5
AirSpy Studio Installation.....	5
Zadig Setup.....	5
AirSpy Studio Settings.....	6
Orbitron 3.71	10
Orbitron 3.71 Installation.....	10
SDRSharpDDE Plugin Installation	10
Orbitron Settings and Config.....	10
WXtoImg 2.1.1.02	15
Installation	15
Keplers-Updater	15
WXtoImg Setup and Config.....	16
Additional Information	17
WxtoImg Upgrade Key Info.....	17

Virtual Audio Cable Setup

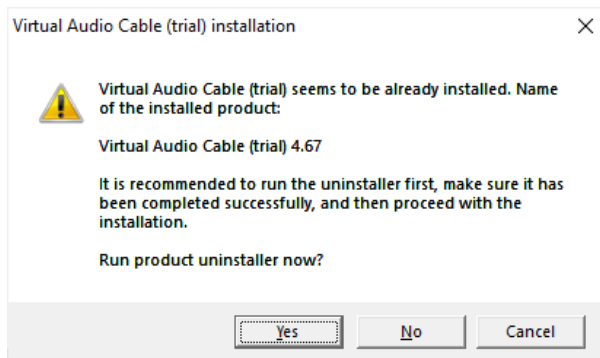
There are two virtual audio cables to choose from that I have found and have tested both. They both seem to have no differences so I have included them in this guide.

VAC 4.67 Installation

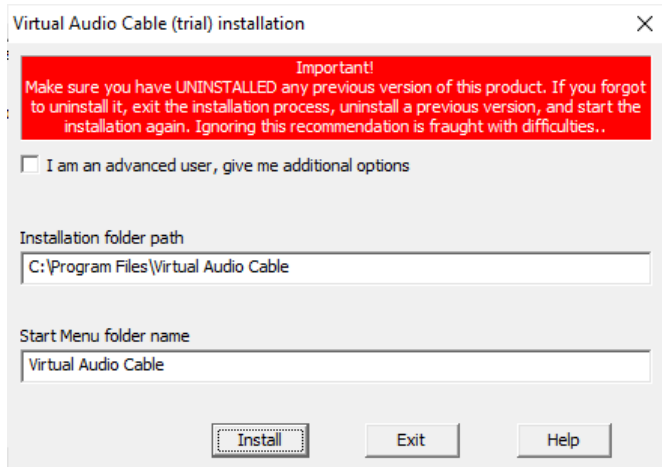
- Open vac467.exe to Install the Virtual Audio Cable
- Click **Yes** to continue



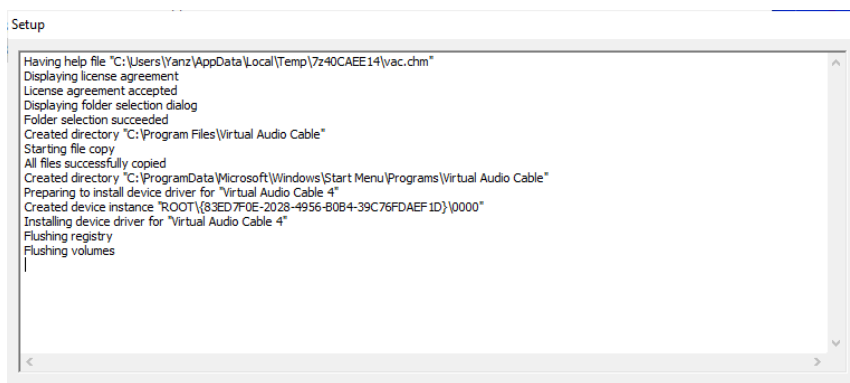
- Click **Yes** to Run the installer now



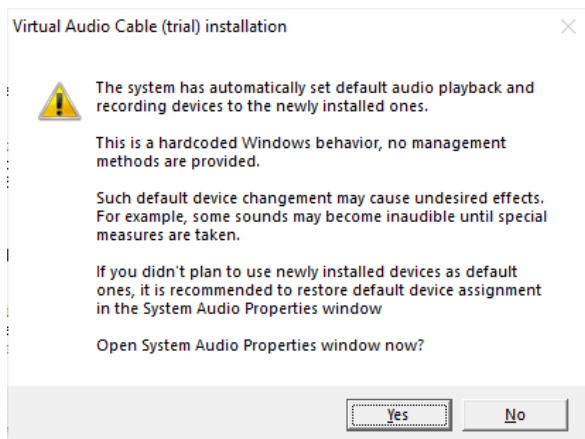
- Click **Install** to continue



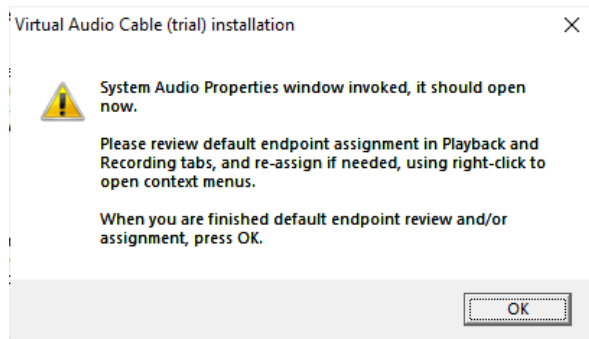
- The installation will start and you should have some information scrolling in the window



- Click **No** in the following window that pops up



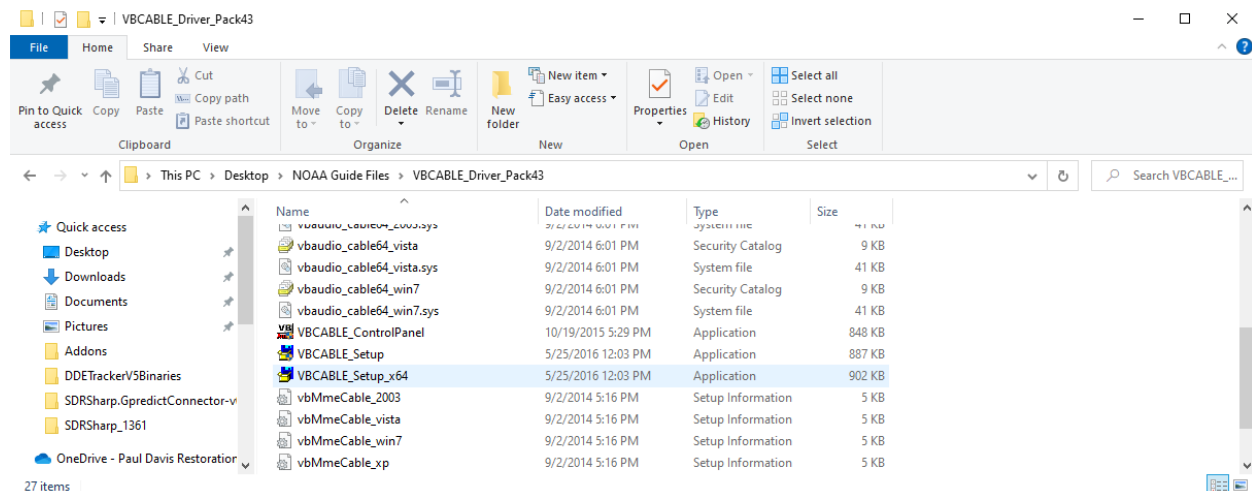
- Click **OK** to continue



- Click **OK** once again to complete the Virtual Audio Cable Installation
- You may have to reboot your computer to complete the installation

Virtual Audio Cable Installation

- Launch in Administrative mode - VBCable_Setup.exe or VBCable_Setup_x64.exe depending on the OS you are running



- Reboot your computer to complete installation of Virtual Audio Cable

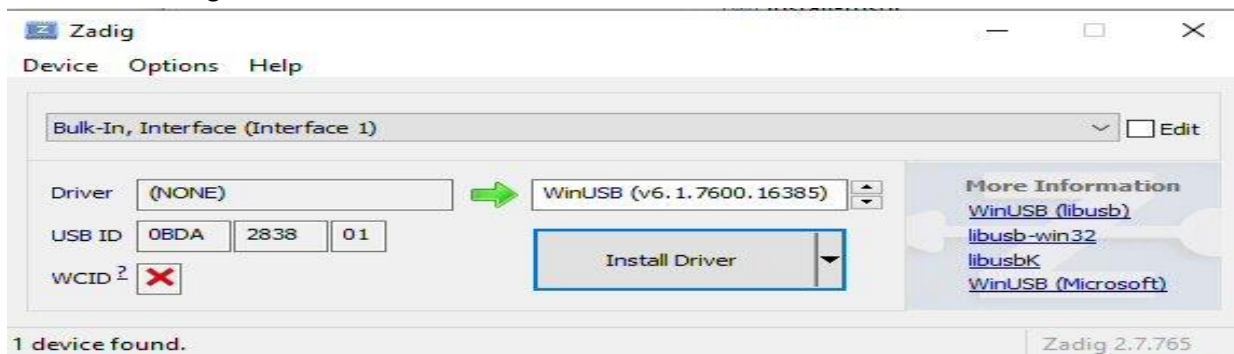
AirSpy SDR# Sharp Studio

AirSpy Studio Installation

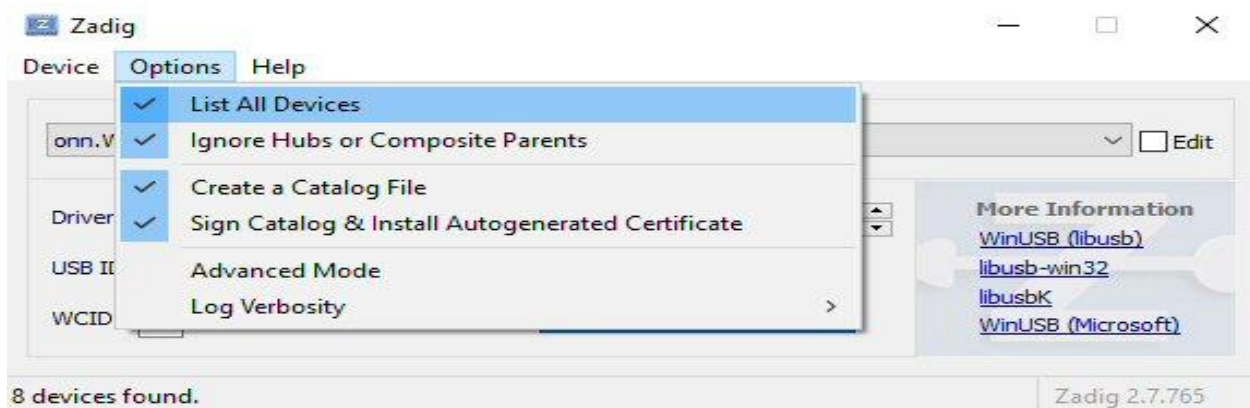
- Install AirSpy SDR# Studio v1.0.0.1888
- Choose a Directory and Folder for this installation and Install
- When installation completed, close the window
- Navigate to the SDR Sharp folder you just created where SDR Sharp was installed

Zadig Setup

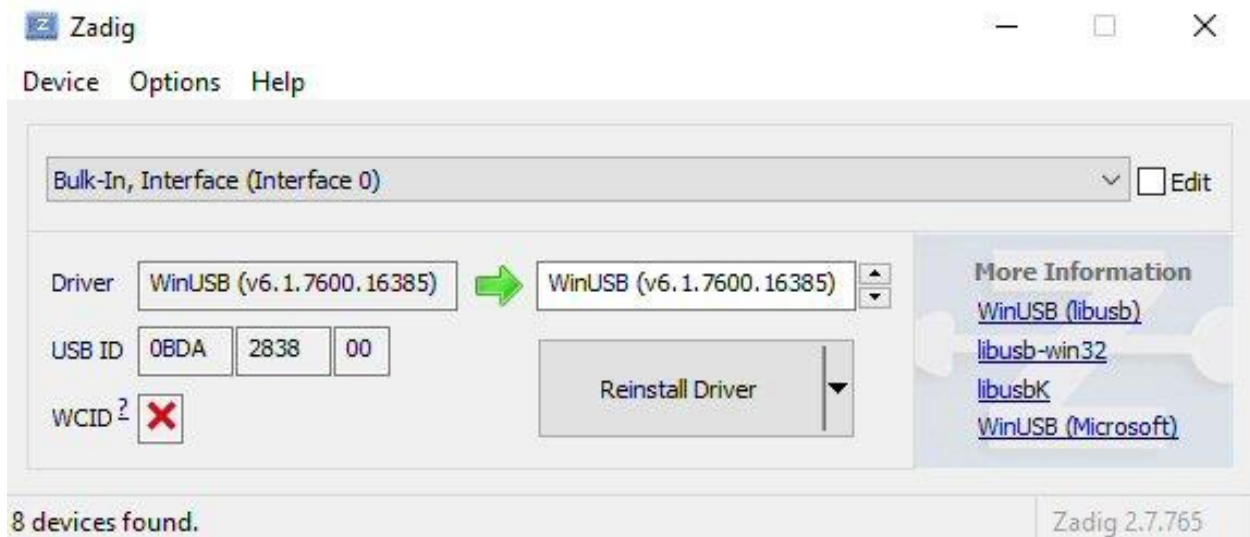
- Run Zadig.exe in the bin folder



- Click Options and then List all Devices



- Select **Bulk-In, Interface (Interface 0)** from the drop down box
Make sure the USB ID shows **OBDA 2838 00** and click Install Driver
- You should see the WinUSB driver in both boxes as shown below



- Close Zadig.exe

AirSpy Studio Settings

- Navigate to the SDRSharp folder you created and run the install-rtlsdr.bat file

```

C:\WINDOWS\system32\cmd.exe
creating: tmp\rtl-sdr-release\x32/
inflating: tmp\rtl-sdr-release\x32/convenience_static.lib
inflating: tmp\rtl-sdr-release\x32/libusb-1.0.dll
inflating: tmp\rtl-sdr-release\x32/pthreadVC2-w32.dll
inflating: tmp\rtl-sdr-release\x32/rtlsdr.dll
inflating: tmp\rtl-sdr-release\x32/rtlsdr.lib
inflating: tmp\rtl-sdr-release\x32/rtlsdr_static.lib
inflating: tmp\rtl-sdr-release\x32/rtl_adsb.exe
inflating: tmp\rtl-sdr-release\x32/rtl_eeprom.exe
inflating: tmp\rtl-sdr-release\x32/rtl_fm.exe
inflating: tmp\rtl-sdr-release\x32/rtl_power.exe
inflating: tmp\rtl-sdr-release\x32/rtl_sdr.exe
inflating: tmp\rtl-sdr-release\x32/rtl_tcp.exe
inflating: tmp\rtl-sdr-release\x32/rtl_test.exe
creating: tmp\rtl-sdr-release\x64/
inflating: tmp\rtl-sdr-release\x64/convenience_static.lib
inflating: tmp\rtl-sdr-release\x64/libusb-1.0.dll
inflating: tmp\rtl-sdr-release\x64/pthreadVC2-w64.dll
inflating: tmp\rtl-sdr-release\x64/rtlsdr.dll
inflating: tmp\rtl-sdr-release\x64/rtlsdr.lib
inflating: tmp\rtl-sdr-release\x64/rtlsdr_static.lib
inflating: tmp\rtl-sdr-release\x64/rtl_adsb.exe
inflating: tmp\rtl-sdr-release\x64/rtl_eeprom.exe
inflating: tmp\rtl-sdr-release\x64/rtl_fm.exe
inflating: tmp\rtl-sdr-release\x64/rtl_power.exe
inflating: tmp\rtl-sdr-release\x64/rtl_sdr.exe
inflating: tmp\rtl-sdr-release\x64/rtl_tcp.exe
inflating: tmp\rtl-sdr-release\x64/rtl_test.exe
1 file(s) moved.
Press any key to continue . . .

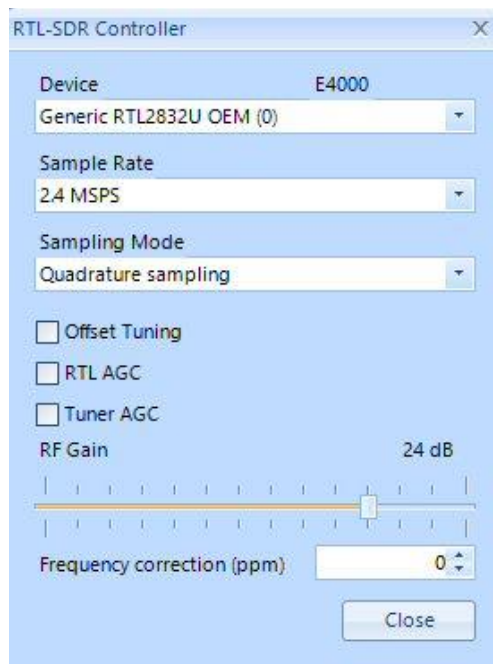
```

- Press any key to close the command window
- Launch the SDRSharp.exe file in the bin folder

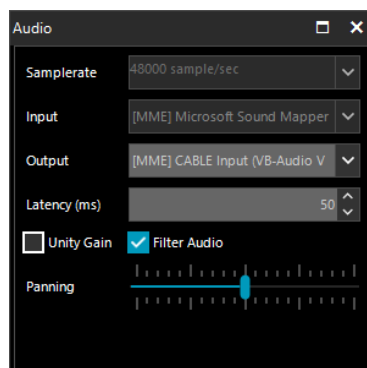


- Make sure the Radio settings are as follows
 - Modulation mode – **WFM**
 - Shift – **Off**
 - Filter – **Blackman-Harris 4**
 - Squelch – **Off**
 - Stereo – **Off**
 - Snap to Grid – **Off**
 - Correct IQ – **Off**
 - Invert Spectrum – **Off**
- Make sure the Source settings are as follows
- In the dropdown box, select your source
(This guide is based on the **RTL-SDR USB Dongle**)

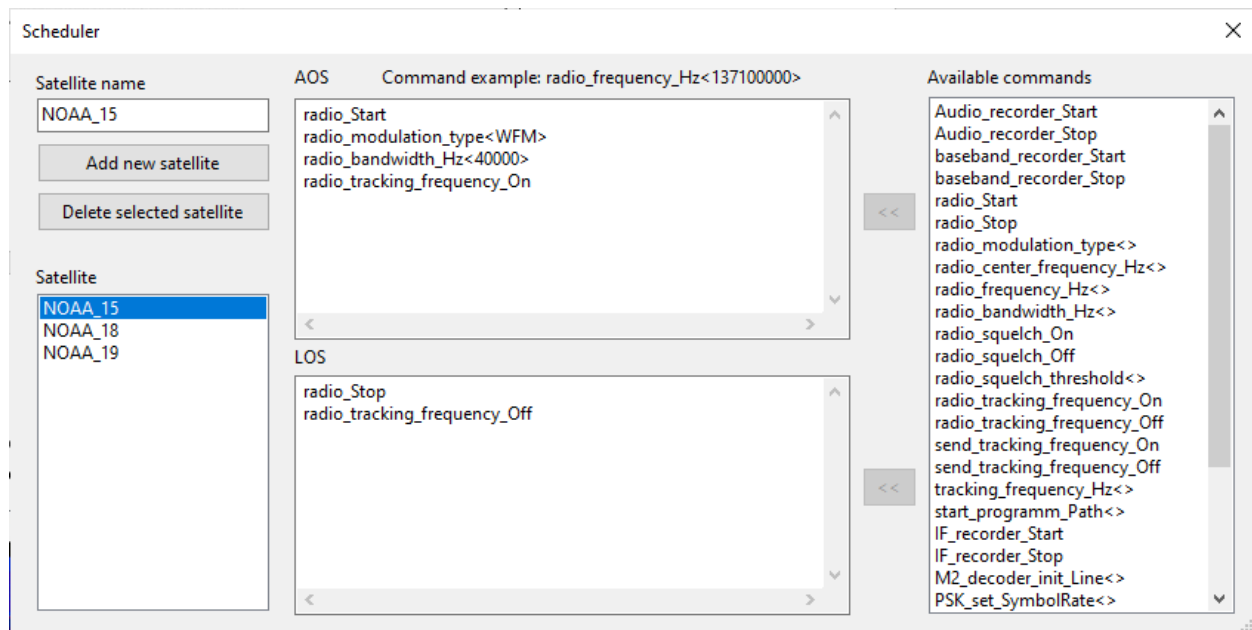
- Now click on the Cog in the upper left area
- If all went well thus far, you should have your dongle or source listed in the first drop down box



- Make sure the following settings are as follows
 - Sample Rate – **2.4 MSPS**
 - Sampling Mode – **Quadrature sampling**
 - Offset Tuning – **Off**
 - RTL AGC – **Off**
 - Tuner AGC – **Off**
 - RF Gain – **24 dB**
- Open SDR# Sharp and in the upper left menu control, select Audio
- Depending on which VAC you installed, Change the Output audio to:
 - **[MME] CABLE Input (VB Audio Cable)** or **[MME] Line 1 (Virtual Audio Cable)**
- Remove checkmark from Filter Audio



- In the upper left menu control, select Tracking DDE Client v1.2
- Change the minimum elevation to **10.0**
- Click Config
- In the Scheduler window add the 3 satellites and make sure to label them as follows
 - NOAA_15
 - NOAA_18
 - NOAA_19
- Add the following to each AOS and LOS boxes like below



- Close the scheduler window and put a check mark in Scheduler in the SDR# Sharp window/ Tracking DDE Client Box to enable

Orbitron 3.71

Orbitron 3.71 Installation

- Install Orbitron 3.71
- Choose a Directory and Folder for this installation and Install
- When installation completed, close the window

SDRSharpDDE Plugin Installation

- Navigate to the Orbitron folder you just created where Orbitron was installed
- Navigate to the config folder
- Open Setup.cfg using notepad
- Scroll to the bottom of the file and insert the following lines as is

[Drivers]

SDRSharp = SDRSharpDriverDDE.exe

- Change the location of SDRSharpDriverDDE.exe to the location of yours.

It will be located in the **SDRSharp\Plugins\DDETrackerRtlSDRu** folder

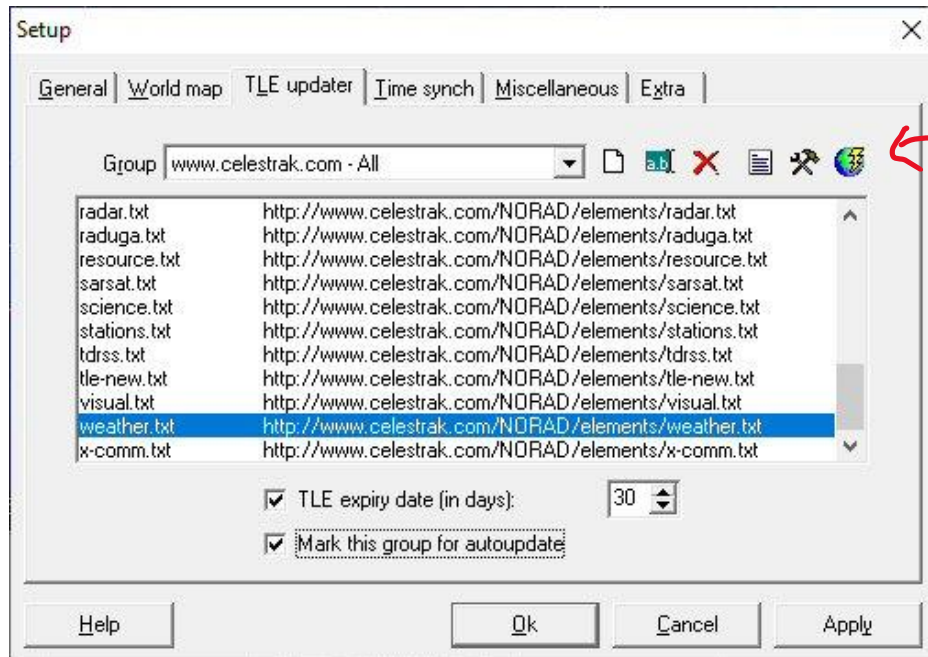
Mine will be the following for example:

[Drivers]

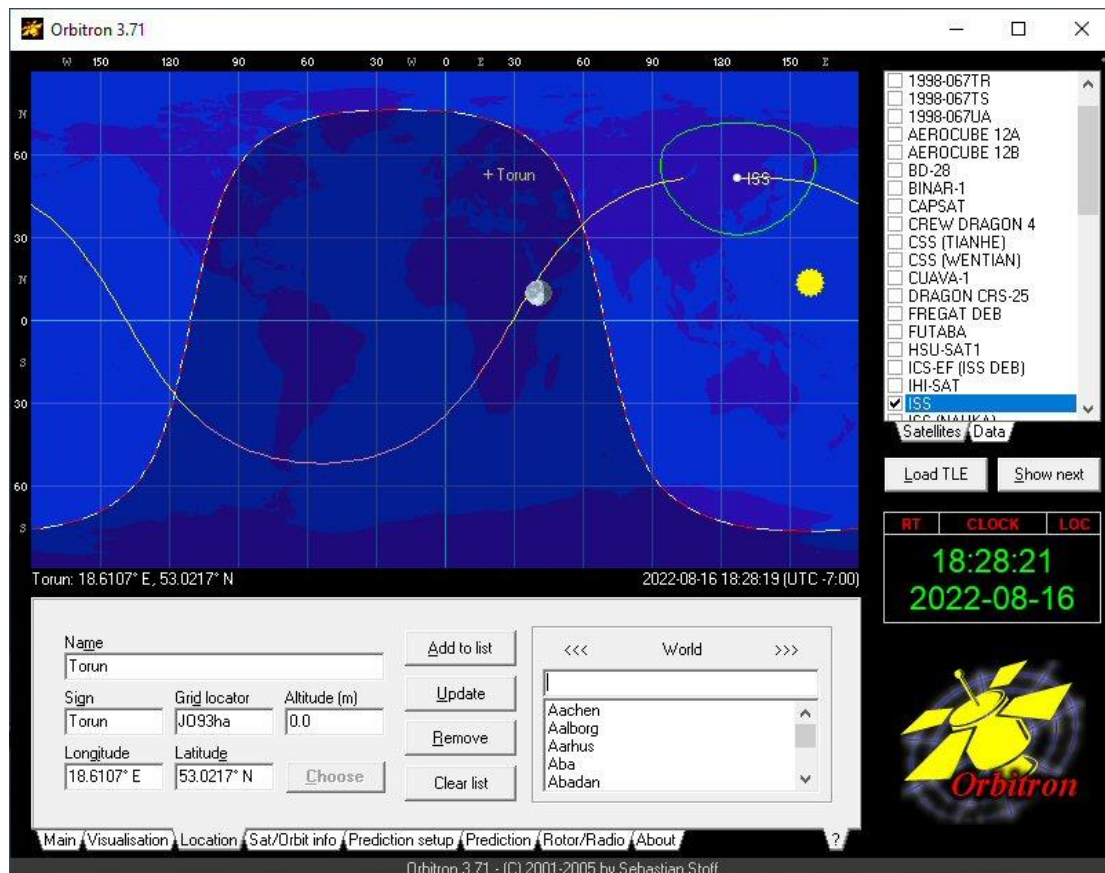
SDRSharp = D:\Program Files (x86)\WX\SDRSharp\Plugins\DDETrackerRtlSDRu\SDRSharpDriverDDE.exe

Orbitron Settings and Config

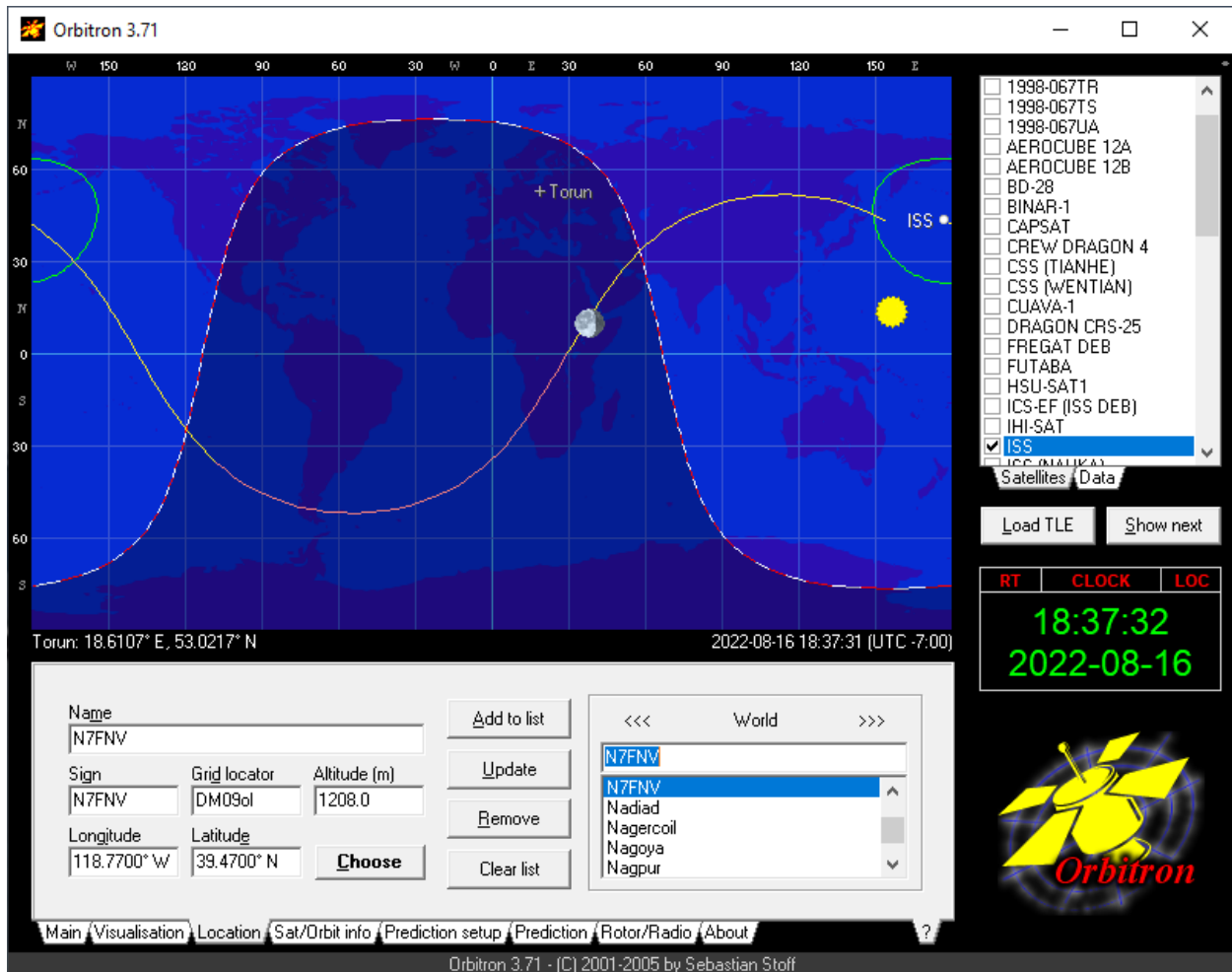
- Launch Orbitron 3.71
- Select the Main tab in the Orbitron Window
- Make sure Real time and Local is selected
- Click on the hammer/wrench or press **(ALT-F5)** to open the settings window
- Select the TLE Updater tab
- Scroll down to **weather.txt** and select the **Mark this group for autoupdate**
- Click on the Lightning Globe in upper right to update the TLE files as shown below



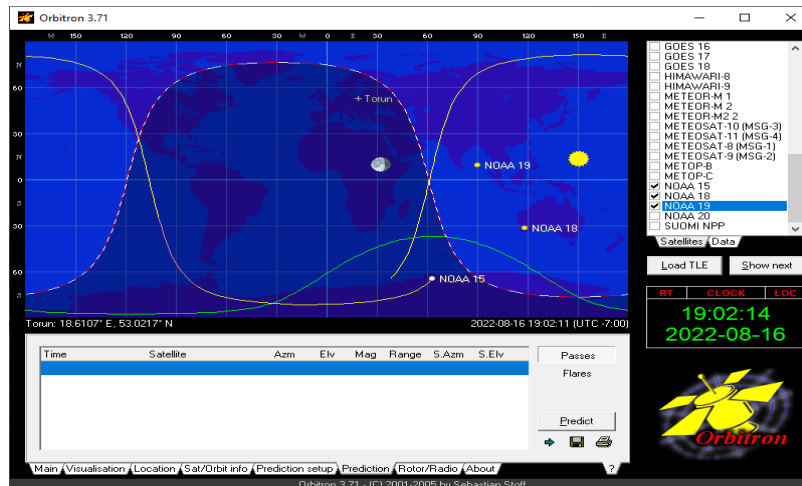
- Click on Apply and then OK
- Switch to the Location tab in the Orbitron window



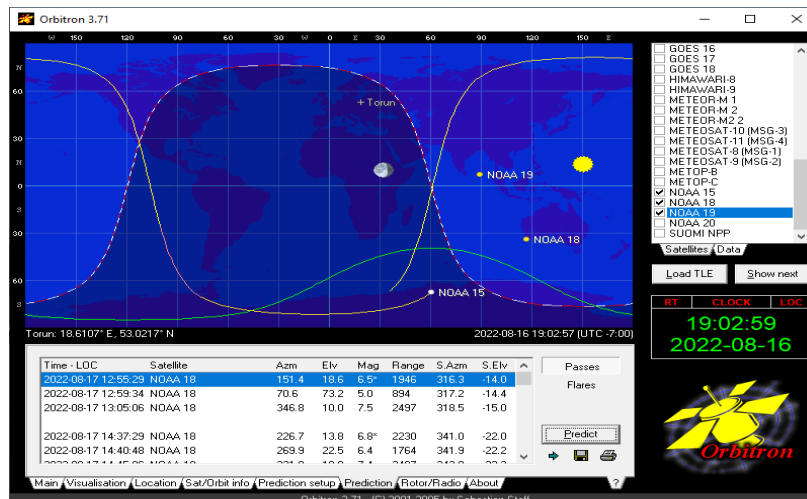
- Edit the following information:
 - Name – Whatever you want to call your station
 - Sign – What you want to appear on the global map
 - If you know your Grid Locator you can enter it or skip if you know the Lat/Long
 - Altitude – Enter your altitude in meters



- Click add to list and Click Choose to set you location on the map for Sat passes
- Select the Load TLE button on the right below the current satellite list
- Select weather.txt in the list and click open
- Scroll down in the list and select the following
 - NOAA 15
 - NOAA 18
 - NOAA 19
- You should see the three satellite being tracked on the map now
- Click on the Prediction tab in Orbitron



➤ Click on Predict



- It will populate the NOAA Satellite Pass list in Orbitron
- Click on the Rotor/Radio tab in Orbitron
- Double click on NOAA 15 in the right hand satellite list

Make the following changes to each of the three satellite:

NOAA 15

Change the DnLink/MHz to **137.620000**

Change the DnLink mode to **FM-W**

Change the Driver to **SDRSharp**

NOAA 18

Change the DnLink/MHz to **137.912500**

Change the DnLink mode to **FM-W**

Change the Driver to **SDRSharp**

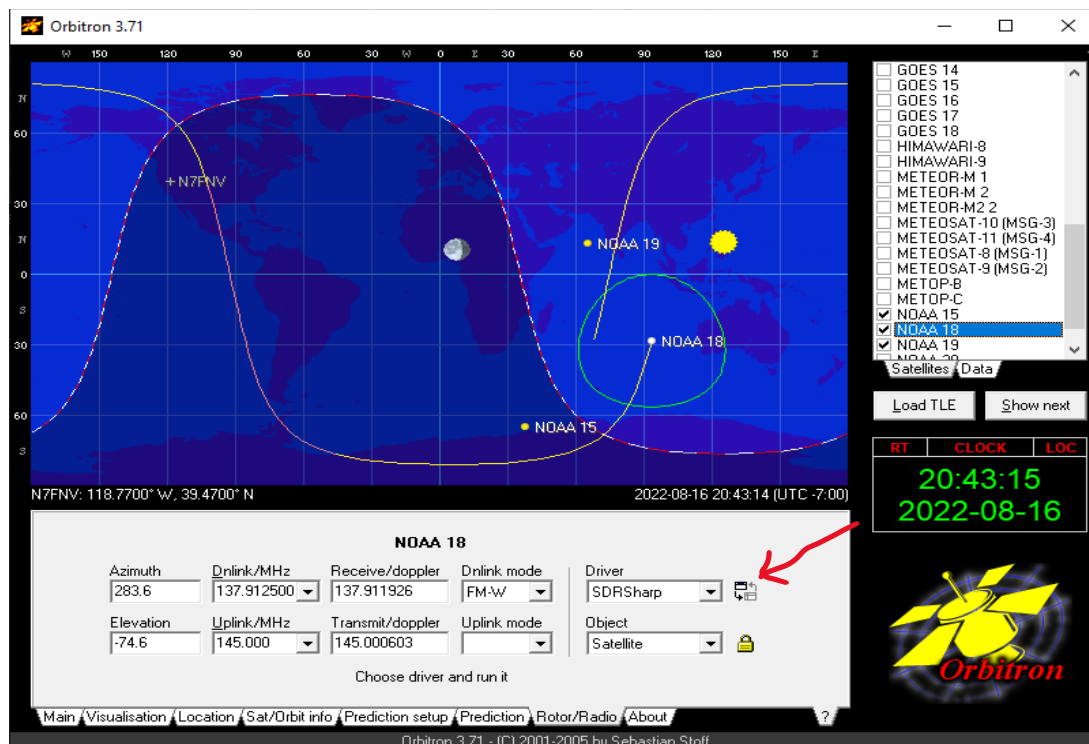
NOAA 19

Change the DnLink/MHz to **137.100000**

Change the DnLink mode to **FM-W**

Change the Driver to **SDRSharp**

➤ To send data to SDR# Sharp, click on the enable button like the image below



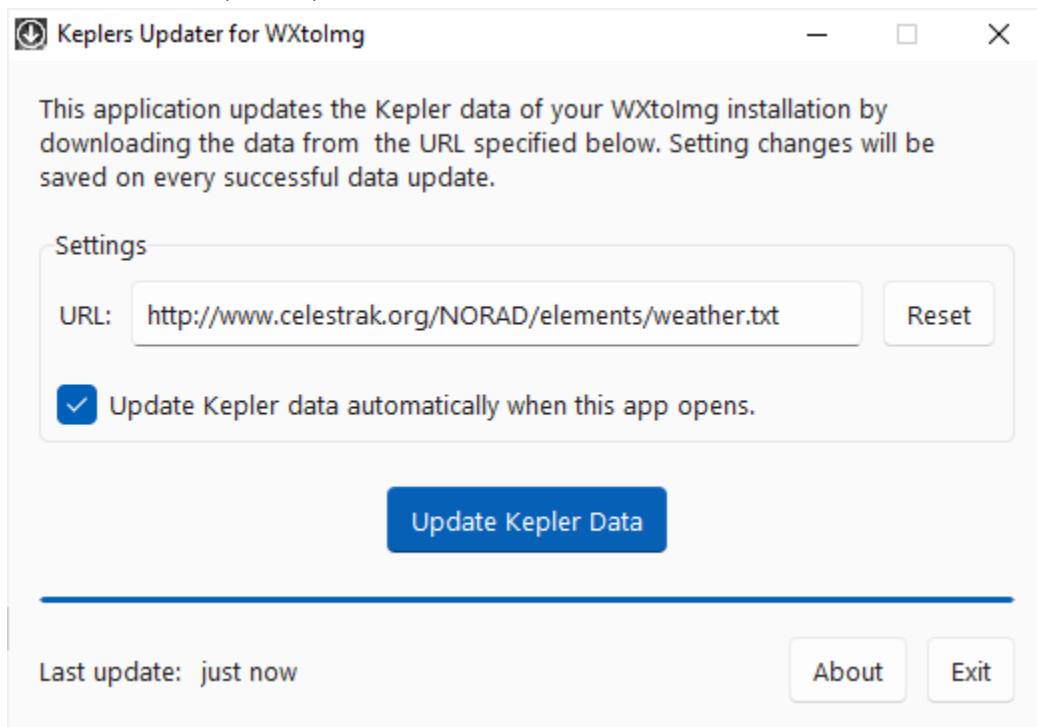
WXtoImg 2.1.1.02

Installation

- Install **wxinst21102-beta.exe**

Keplers-Updater

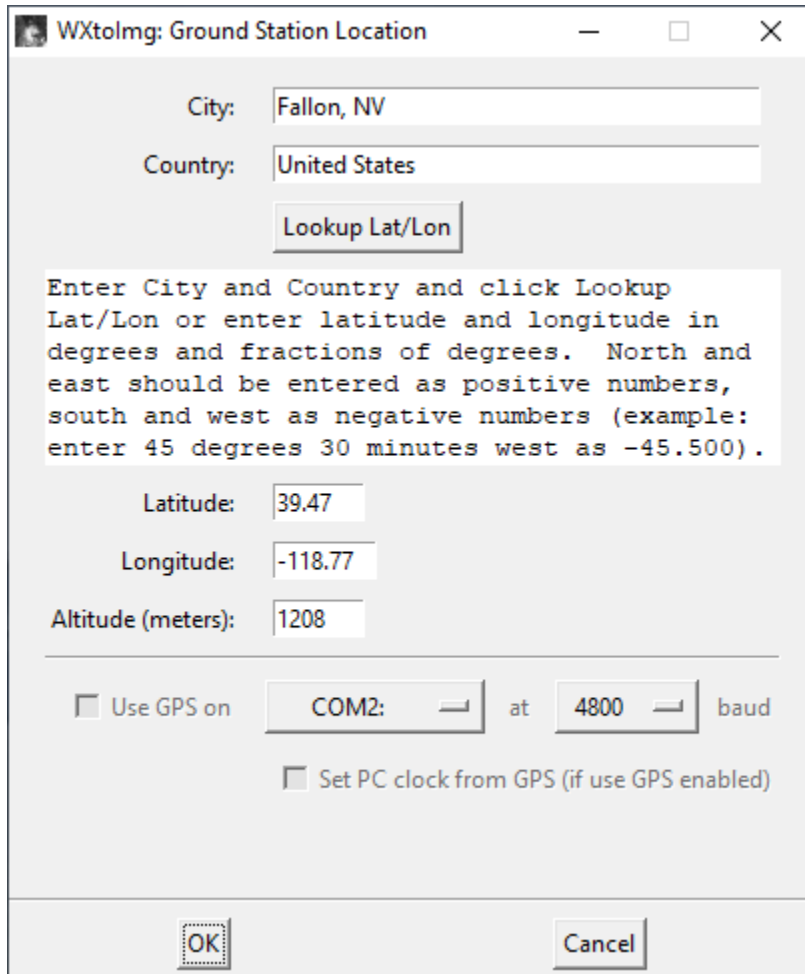
- Copy Keplers-Updater.exe into your WXtoImg installation folder
- Launch Keplers-Updater



- Put the check mark in Update Kepler data automatically and click up Kepler Data
- Close Keplers-Updater

WXtoImg Setup and Config

- Launch WXtoImg
- Edit the Station Location settings to your location and Lat/Long



The screenshot shows the 'WXtoImg: Ground Station Location' dialog box. It has a title bar with a minimize button, a maximize button (disabled), and a close button. The dialog contains the following fields and controls:

- City:** A text box containing 'Fallon, NV'.
- Country:** A text box containing 'United States'.
- Lookup Lat/Lon:** A button located below the Country field.
- Instructions:** A text area with the following text: 'Enter City and Country and click Lookup Lat/Lon or enter latitude and longitude in degrees and fractions of degrees. North and east should be entered as positive numbers, south and west as negative numbers (example: enter 45 degrees 30 minutes west as -45.500).'.
- Latitude:** A text box containing '39.47'.
- Longitude:** A text box containing '-118.77'.
- Altitude (meters):** A text box containing '1208'.
- Use GPS on:** A checkbox that is currently unchecked.
- COM2:** A dropdown menu showing 'COM2:'.
- at:** A text label.
- 4800:** A text box containing '4800'.
- baud:** A text label.
- Set PC clock from GPS (if use GPS enabled):** A checkbox that is currently unchecked.
- OK:** A button at the bottom left.
- Cancel:** A button at the bottom right.

- Close the Calibration Window

Additional Information

Wxtolmg Upgrade Key Info

2018 Professional Edition Upgrade Key

Full Name: Kevin Schuchmann

Email Address: Enter your email address

Upgrade Key: CGHZ-PP9G-EAJZ-AWKK-NDNX

