

## 4 VM connection issues

### 4.1 USRP in VirtualBox

Tested on:

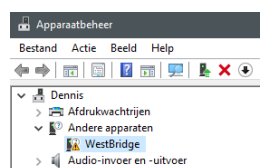
- Windows 10 machine with VirtualBox 6.1
- Linux Ubuntu 20.04.1 LTS image
- Ettus USRP B200/B210 SDR

**Note that you need to have the USRP connected to a USB 3.0 port preferably.**

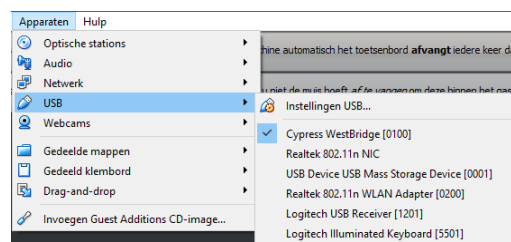
Execute the following steps:

- Install VirtualBox: [6]
- Install a Linux VM: [7]
- Install the VirtualBox Extension Pack
- Install GRC as stated in section 1

When connecting the USRP to the Windows machine it will not be recognized. However when going into Device Manager, you see a device called Cypress Westbridge (i.e. the USB host controller chip of the USRP).



Also when you connect this device in VirtualBox, the same name shows. Note that you will not get this device working from here in your VM.

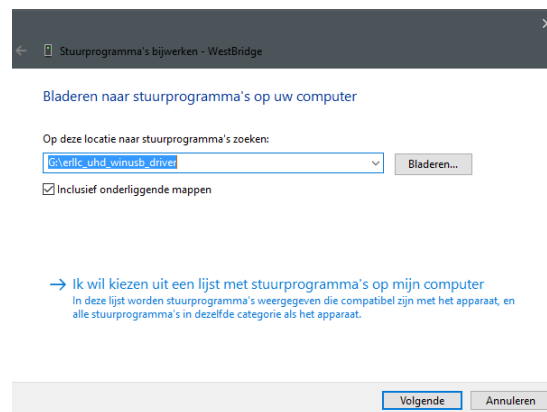


To get it working in VirtualBox, you need to install the USRP driver on Windows (in this case the host machine). Go to the following source to download the Windows driver:

[http://files.ettus.com/binaries/misc/erllc\\_uhd\\_winusb\\_driver.zip](http://files.ettus.com/binaries/misc/erllc_uhd_winusb_driver.zip)

General page: [https://files.ettus.com/manual/page\\_install.html](https://files.ettus.com/manual/page_install.html)

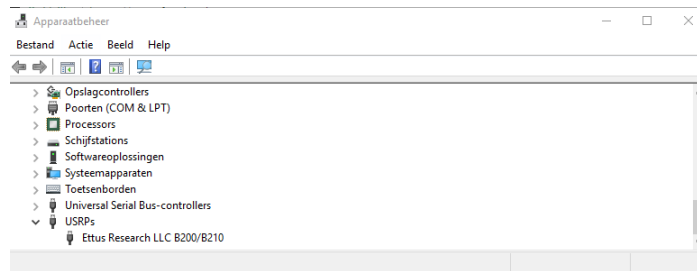
Go to **Device Manager** (⌨+X) in Windows and manually select the driver that you have downloaded.



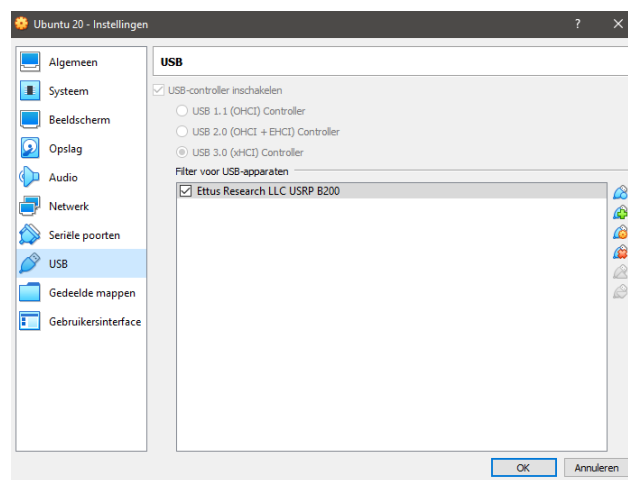
Windows might tell you that there is a problem. This is not the case. Just unplug and replug the USRP and/or reboot your PC. Afterwards it will show up in **Device Manager**.



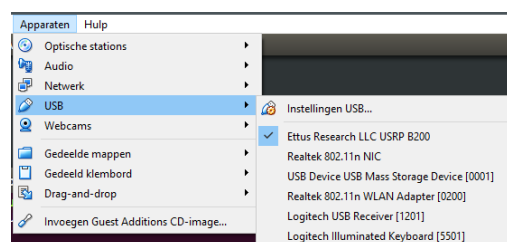
When opening the **Device Manager**, the USRP should be visible now.



Open VirtualBox. Add the device by creating a filter and make sure to select the USB 3.0 Controller. It could be that the Ettus Research LLC USRP B200 option is not available, shutdown and reboot the VM to fix this.



When the VM is booted go to **Devices** and select **USB**. The Cypress Westbridge name should be changed.

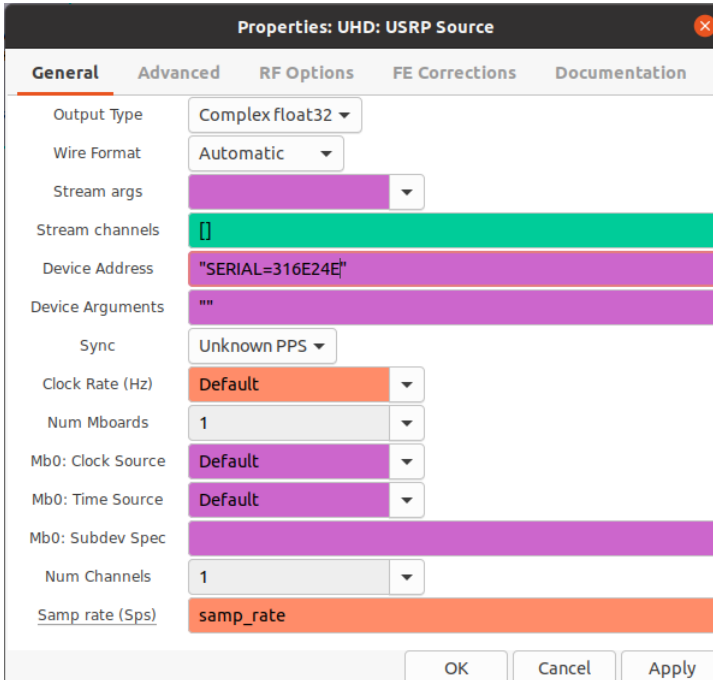


Open a terminal in the VM and execute the following command. This should properly state the device.

```
dennis@dennis-VirtualBox: ~
dennis@dennis-VirtualBox:~$ uhd_find_devices
[INFO] [UHD] linux; GNU C++ version 9.3.0; Boost_107100; UHD_3.15.0.0-release
-----
-- UHD Device 0
-----
Device Address:
  serial: 316E24E
  name: MyB210
  product: B210
  type: b200

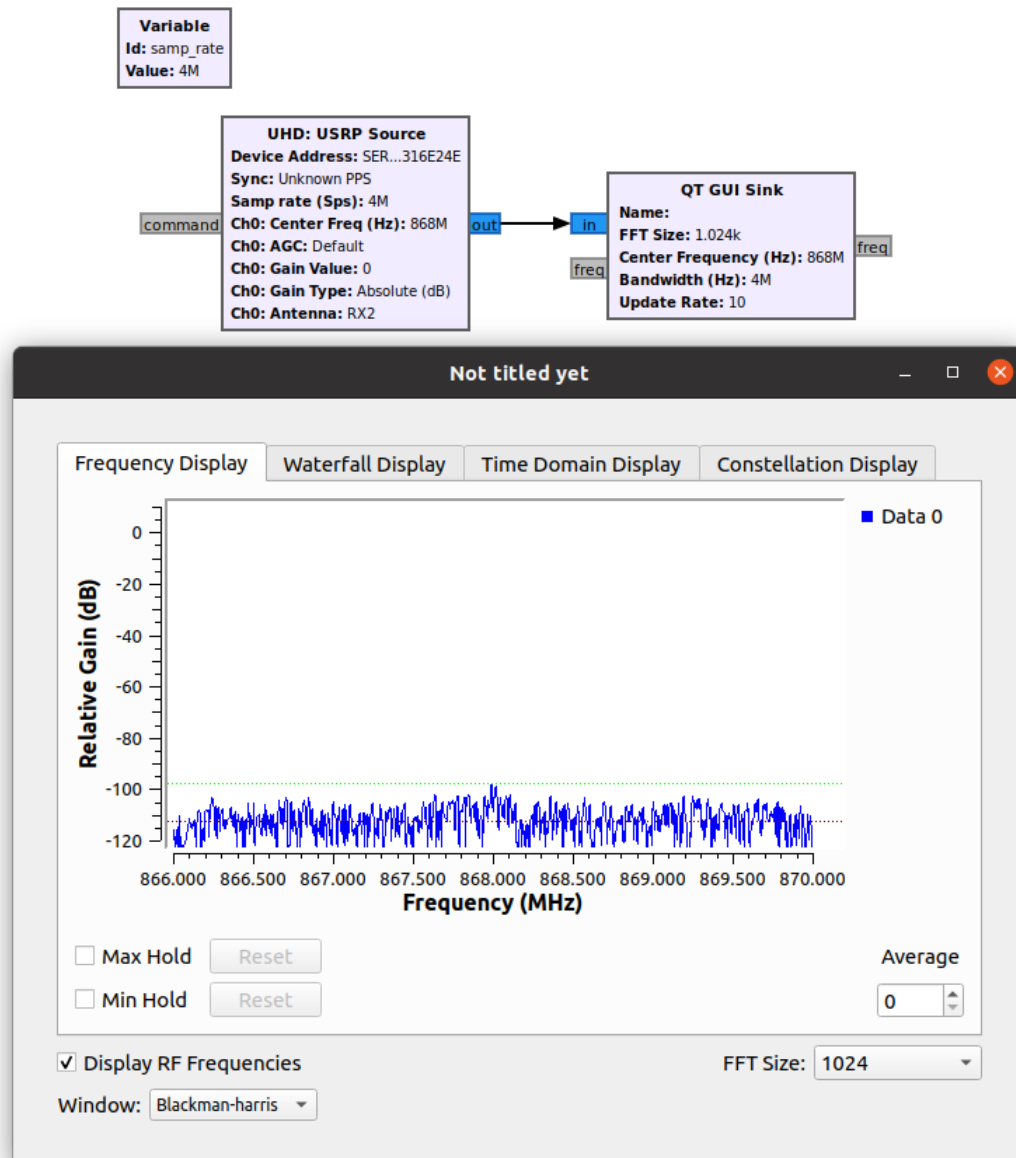
dennis@dennis-VirtualBox:~$
```

Create a GRC flowgraph with a USRP source and a GUI sink. Change the **Device Address** to the corresponding address of the USRP:



Properties: UHD: USRP Source				
General	Advanced	RF Options	FE Corrections	Documentation
Output Type	Complex float32			
Wire Format	Automatic			
Stream args				
Stream channels	[]			
Device Address	"SERIAL=316E24E"			
Device Arguments	""			
Sync	Unknown PPS			
Clock Rate (Hz)	Default			
Num Mboards	1			
Mb0: Clock Source	Default			
Mb0: Time Source	Default			
Mb0: Subdev Spec				
Num Channels	1			
Samp rate (Sps)	samp_rate			
<div>OK Cancel Apply</div>				

Now you can run the flowgraph:



## 4.2 USRP in VMware

Tested on:

- Windows 10 machine with VMWare Player or Workstation [8]
- Linux Ubuntu LTS version
- Ettus Research USRP B200/B210 SDR

Install Ubuntu in VMware.

Install GNU Radio Companion.

The same issues seem to appear in VMware (Workstation Pro/Player). This is resolved the same way as in section 4.1. The approach could deviate slightly due to the fact that VMWare works a bit different than VirtualBox.

## References

- [1] Gnuradio. *GNU Radio - The Free & Open Source Radio Ecosystem · GNU Radio*. URL: <https://www.gnuradio.org>.
- [2] Gnuradio. *gnuradio*. URL: <https://github.com/gnuradio/gnuradio/releases>.
- [3] Gnuradio. *install from source*. URL: <https://wiki.gnuradio.org/index.php?title=InstallingGR>.
- [4] Gnuradio. *install with pybombs*. URL: <https://github.com/gnuradio/pybombs/blob/master/README.md>.
- [5] Gnuradio. *gnuradio*. URL: <https://github.com/gnuradio/gnuradio>.
- [6] *Download Oracle VM VirtualBox | Oracle*. URL: <https://www.virtualbox.org>.
- [7] *Download Ubuntu Desktop | Ubuntu*.
- [8] *Download VMware Workstation Player | VMware*. URL: <https://www.vmware.com/products/workstation-player/workstation-player-evaluation.html>.