Connecting the ADALM Pluto to the Local Area Network (LAN)

Matthias, DD1US, March 4th 2019, Updated September 19th 2022

The ADALM Pluto SDR features an embedded TCP-IP stack.

Thus, the only thing needed to connect your Pluto to your LAN is to add an USB 2.0 OTG adapter cable with external power input and an USB-Ethernet adapter.

Here is a picture of my setup:

ADALM Pluto (upper left) connected by a USB OTG adapter cable (lower left) to a USB-Ethernet adapter (lower right). By the additional port of the Y-cable the USB-Ethernet adapter and the Pluto are powered by a 5V power supply.

I am using the following USB 2.0 Hi-Speed OTG Y-adapter cable

Here is a link to the source on Ebay which I used:

https://www.ebay.de/itm/USB-OTG-Y-Adapterkabel-mit-Stromeinspeisung-A-Buchse-Micro-B-Stecker-Buchse/112349822778?ssPageName=STRK%3AMEBIDX%3AIT&_trksid=p2057872.m2749.l2649

The price was 2.60 Euros plus shipping.

The USB-Ethernet adapter is a USB3GIG from LINKSYS. This adapter is an USB3 adapter supporting up to 1Gigabit/s on the network. I have chosen this in case I want to use it in the future also for the other purposes. The ADALM Pluto is actually only supporting USB2.

I bought the USB-Ethernet adapter on Ebay for 12 Euros.

As power adapter I am using an older power supply from Blackberry which supplies 5V, 850mA. I had measured the output of this power supply and was surprised how clean the 5V DC is.

Here is the setting in the config.txt file of the ADALM Pluto. You will find it as ASCII file in the virtual drive which is mounted when you connect the ADALM Pluto by USB with your PC:

 # Analog Devices PlutoSDR Rev.B (Z7010-AD9363)

 # Device Configuration File

 # 1. Open with an Editor

 # 2. Edit this file

 # 3. Save this file on the device USB drive

 # 4. Eject the device USB Drive

 # Doc: https://wiki.analog.com/university/tools/pluto/users/customizing

[NETWORK]

hostname = pluto

ipaddr = 192.168.2.1

ipaddr_host = 192.168.2.10

netmask = 255.255.255.0

[WLAN]

ssid_wlan =

pwd_wlan =

ipaddr_wlan =

[USB_ETHERNET]

ipaddr_eth =

netmask_eth = 255.255.255.0

[SYSTEM]

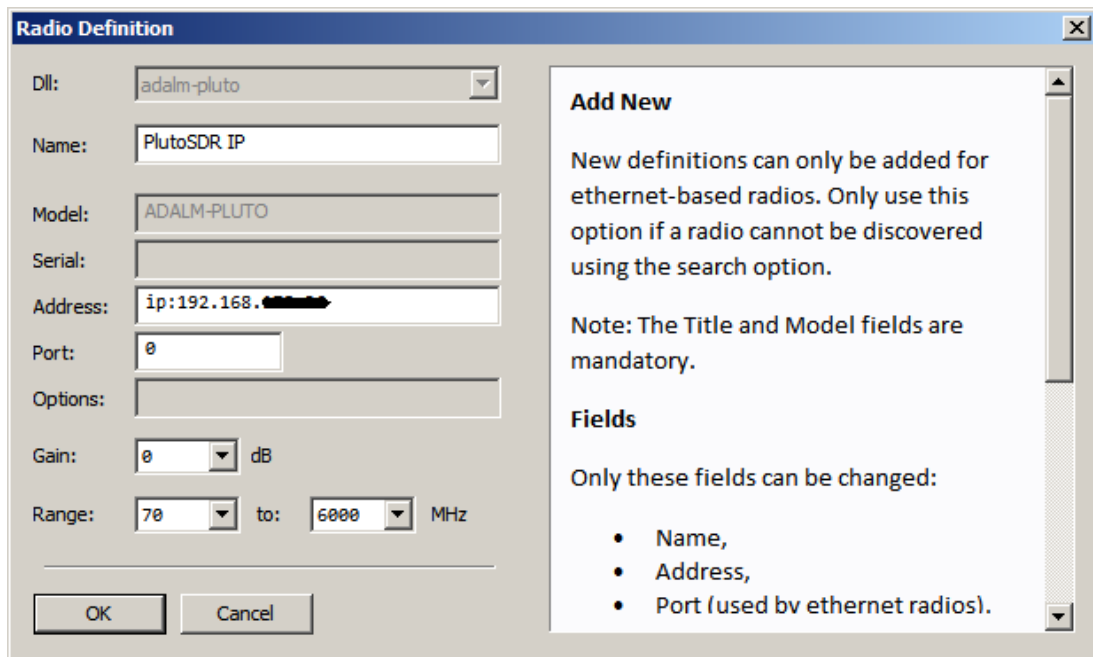*xo_correction =*

udc_handle_suspend = 0

[ACTIONS]

diagnostic_report = 0

dfu = 0

reset = 0

calibrate = 0

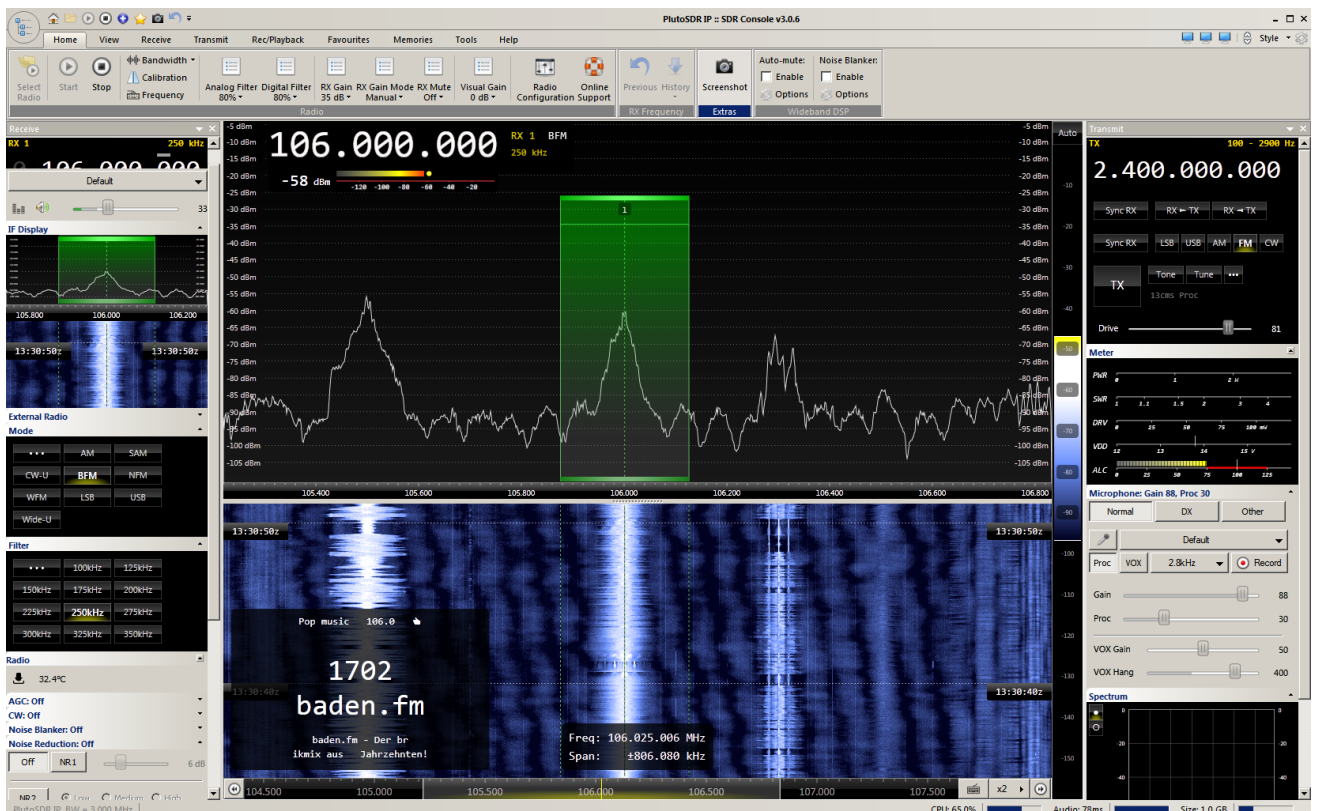Do not set the parameter ipaddr_eth =

Leaving this open will result in the Pluto obtaining an IP-address from the DHCP server.

Setting up SDR-Radio:

Check in your Router which IP-address is given to the Pluto and enter it in the in Radio-Definitions Setup-Window of SDR-Console:
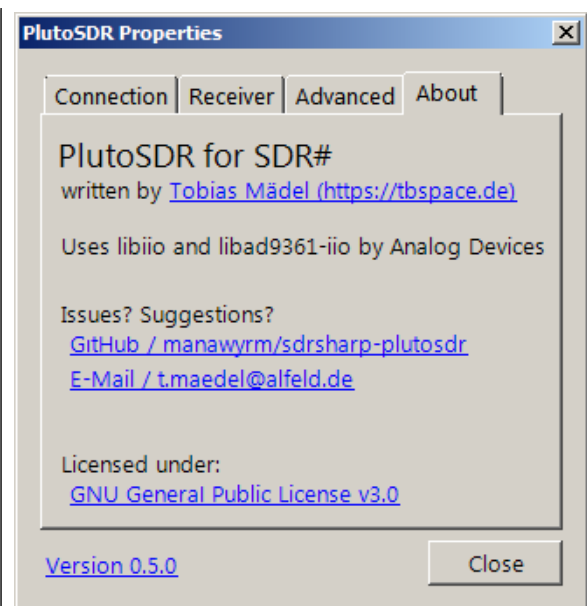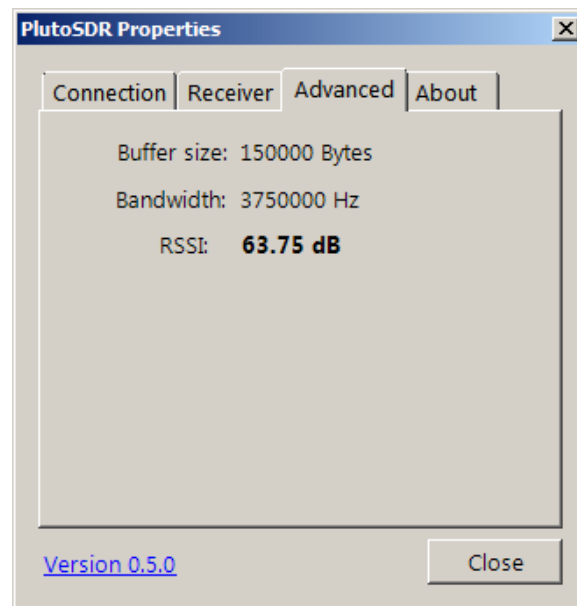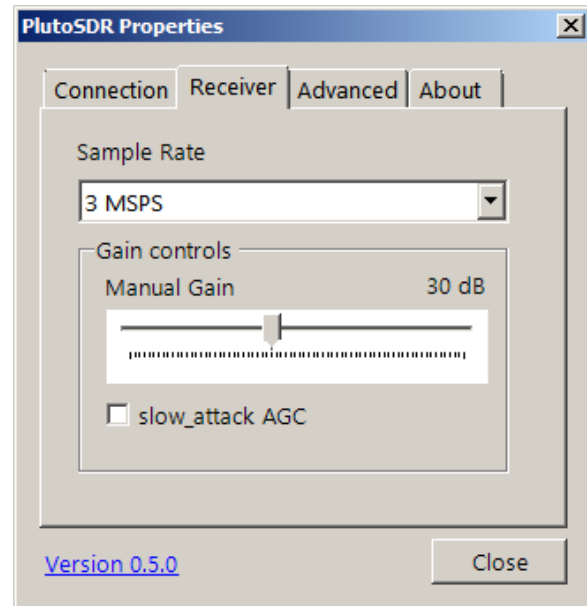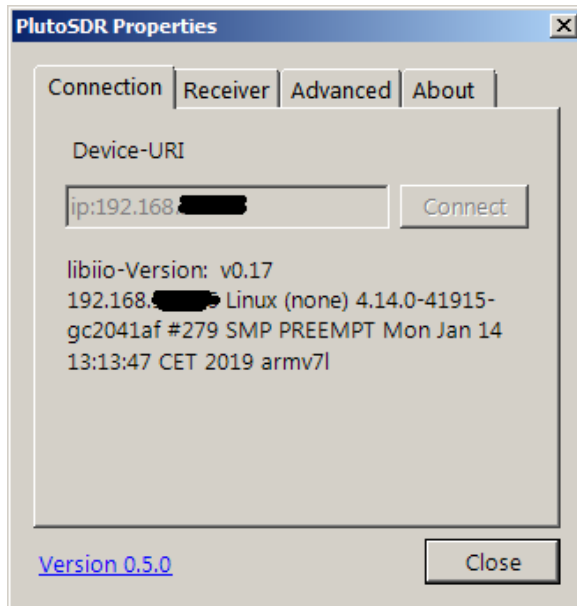

That's all. Now you can run the ADALM Pluto on your LAN and you can access it from any PC using SDR-Radio. Here is a screenshot of SDR-Console receiving a local broadcast station with the Pluto on the LAN:
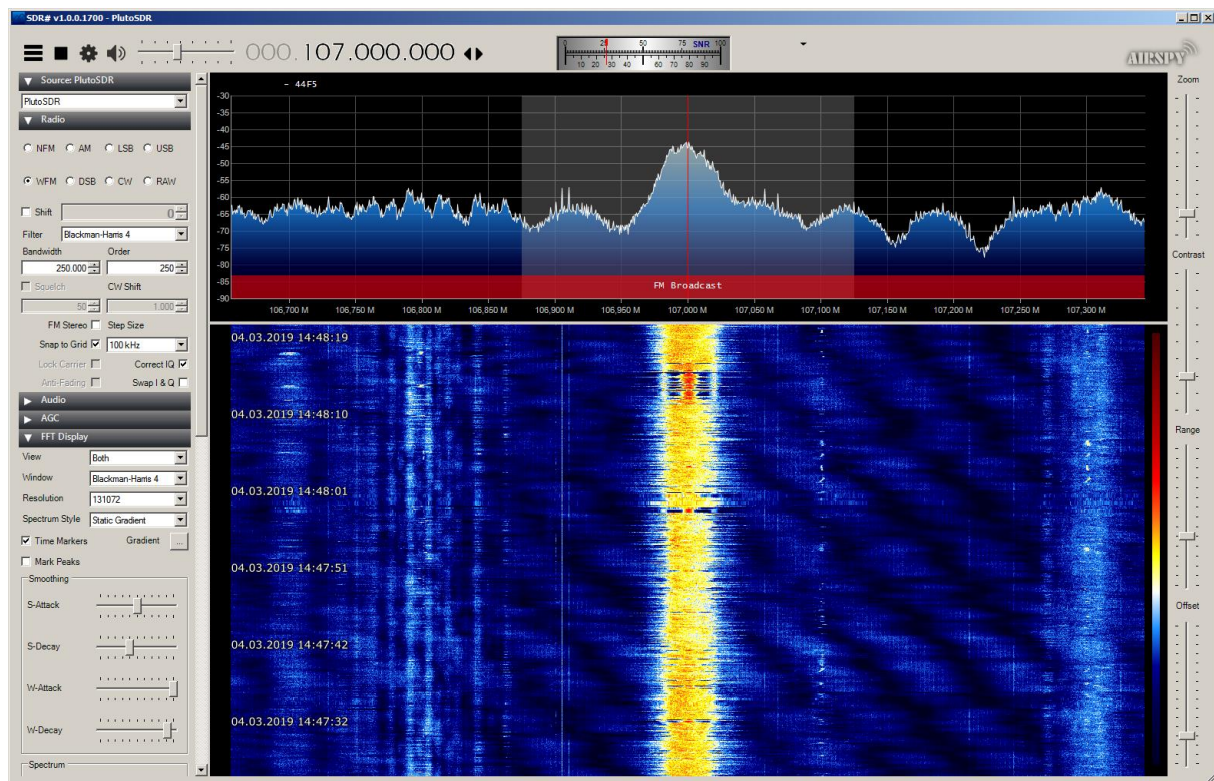
Setting up SDR#:

Here are the settings in SDR#:

PlutoSDR Properties ✕

| Connection | Receiver | Advanced | About |

Device-URI

[ip:192.168.■■■■] [Connect]

libiio-Version: v0.17
192.168.■■■■ Linux (none) 4.14.0-41915-
gc2041af #279 SMP PREEMPT Mon Jan 14
13:13:47 CET 2019 armv7l

Version 0.5.0   [Close]

PlutoSDR Properties ✕

| Connection | Receiver | Advanced | About |

Sample Rate

[3 MSPS ▼]

Gain controls
Manual Gain   30 dB

☐ slow_attack AGC

Version 0.5.0   [Close]

PlutoSDR Properties ✕

| Connection | Receiver | Advanced | About |

Buffer size: 150000 Bytes

Bandwidth: 3750000 Hz

RSSI: **63.75 dB**

Version 0.5.0   [Close]

PlutoSDR Properties ✕

| Connection | Receiver | Advanced | About |

PlutoSDR for SDR#
written by Tobias Mädel (https://tbspace.de)

Uses libiio and libad9361-iio by Analog Devices

Issues? Suggestions?
GitHub / manawyrm/sdrsharp-plutosdr
E-Mail / t.maedel@alfeld.de

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Version 0.5.0   [Close]

6

Here is a screenshot of SDR# receiving a local broadcast station with the Pluto on the LAN:

Update 1: A radio amateur had problems, getting his Pluto connected to his Router. He could see the Pluto listed as a network device in his router but could not ping nor connect it. It turned out that he had set the IP-address to the same address as the router, which of course did not work.

Update 2: A radio amateur had also problems, getting his Pluto connected to his Router. He had assigned his Pluto a fixed IP address via the USB connection. Thus, the Pluto was not accessible via the IP address which he got via the Ethernet connection. After resetting the IP address back to the default 192.168.2.1 via USB, the Pluto was also accessible via the Ethernet connection using the IP address assigned to the Pluto by DHCP.

Update 3: A radio amateur had also problems, getting his Pluto connected to his Router. He was using the default IP address 192.168.2.1. and tried to connect to a Speedport Router from Telekom. It turned out that the Speedport default IP address range is 192.168.2.x which is in conflict with the Pluto. The solution is to change either the IP address of the Pluto or assing a different IP address range to the Speedport. [NETWORK] and the [USB_ETHERNET] CAN NOT BE SET TO THE SAME SUB-NET.

Here are some hints from Hubertus DC1OP concerning the new Pluto version C and D:

The description of how to connect the USB/Network Interface (OTG) to the Pluto obviously refers to the first Pluto revision. In the meantime, Plutos are supplied with the designation PCB Rev. C on the housing sticker, but the board bears the designation D. (Please check the blue box).

With this version, the Y-cable solution described does not work. Instead, the Pluto is connected as follows:

- OTG (in my case USB to fast Ethernet adapter from Berrybase) into the left USB data socket as seen from the rear.
- 5V power into the USB power socket on the right.
- The OTP is now powered by the Pluto.

A few more remarks:
When the Pluto is powered via the USB power socket and nothing is connected to the USB data socket (i.e. idle), approx. 1V is present here. When the OTG is plugged in, the voltage rises to 5V.

In the Pluto Config file there is the possibility for 3 entries under USB_ETHERNET:
[USB_ETHERNET]
ipaddr_eth =
netmask eth = 255.255.255.0   (is already entered)
gateway_eth = e.g. 192.168.2.1 here e.g. the router IP has to be inserted if both networks,
i.e. [NETWORK) and [USB_ETHERNET) are to be used independently of each other [*].

If ipaddr_eth is not used, the DHCP server of the router sets the IP address, otherwise a free fixed IP within the router network can be set here.

[*] = Example: TX operation with portsdown [NETWORK], patches etc. via [USB_ETHERNET).

If you have any question or comments please send me an Email to the address given below.

Kind regards

Matthias

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