

# First use of SDR Console

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## 1 Software Installation

We assume you are running an x64 Windows 10 system. Install SDR console from

<https://www.sdr-radio.com/download>

and also download and unzip the up-to date D3XX FTDI USB device drive from

<https://ftdichip.com/drivers/d3xx-drivers/>

At the time of writing, the latest drivers are

**FTD3XXDriver\_WHQLCertified\_v1.3.0.4.zip**

Plug in the *LimeSDR Mini*, using the fastest USB port that you have available. Windows will install the wrong drivers for the unit. It is necessary to go into *Device Manager*, where you should find a device

*Other Devices* → *LimeSDR-USB*

Select *Update driver* for this device, and manually point the update ah drivers you have downloaded.

If all has gone well, your device will be re-registered as

*Universal Serial Bus controllers* → *FTDI FT601 USB3.0 Bridge device*

Installation is now complete.

## 2 Aerial configuration



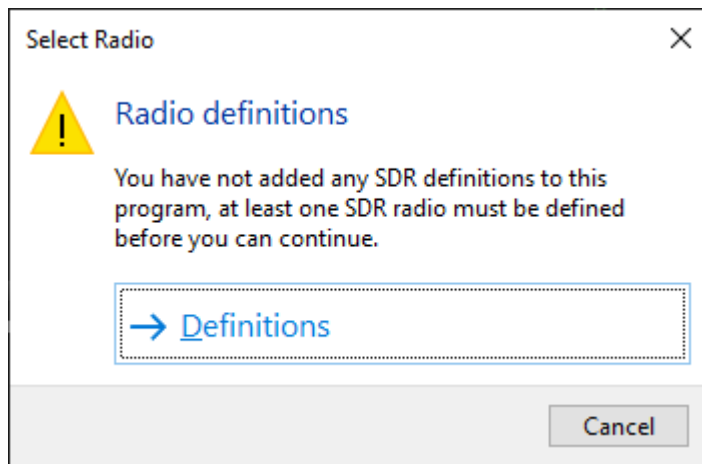
Set up your dipole aerial for a frequency of 100MHz; the two arms should be horizontal and each be about 750mm long. Using an SMA extension cable if necessary, connect it carefully to the RX connector on your LimeSDR Mini.

### 3 Running SDR Console

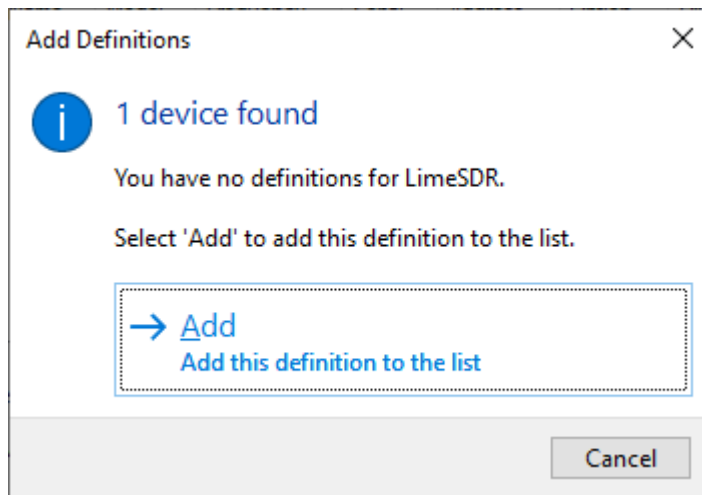
Run

*SDR-Radio.con (v3) → Console*

from the *Start* menu. It will immediately complain that you have not set up an SDR:

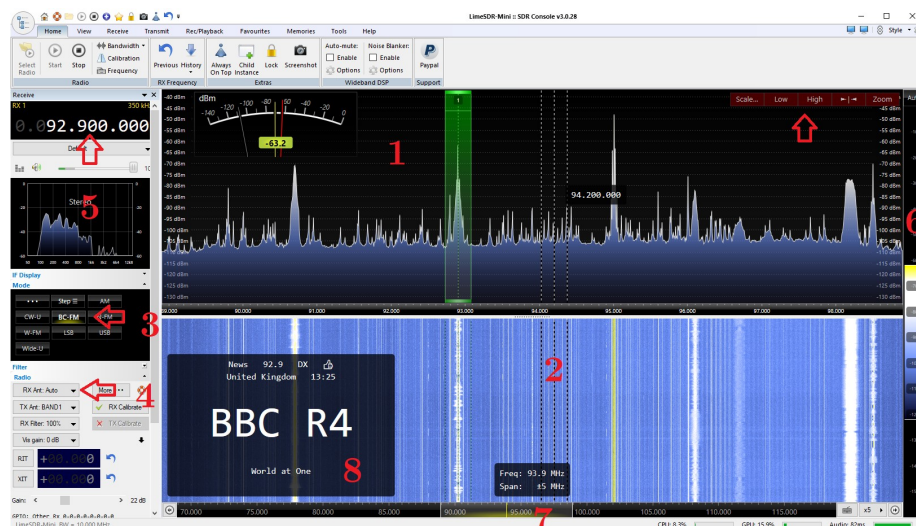


Click the *Definitions* link, and then click *Search* and select *LimeSDR* from the list. You should see:



and click *Add*, then *Save*. This returns you to the *Select Radio* dialogue; change the *Bandwidth* to 5MHz and *Start*. The system should revert to the main screen and, after a delay, the SDR will start and you will likely hear a hissing noise as you have no station “tuned in”.

## 4 The main screen



SDR Console is primarily designed to receive “analogue” speech modes. Its capabilities mimic those of a traditional *communications receiver*, but with a much enhanced display. In some cases, the display changes as the mouse hovers over different parts of the screen. We have annotated the principal features.

1. This is the main spectrum display and shows the power being received at each frequency. After a bit of experience, you will be able to guess the type of *modulation* on each signal from the shape and width of its peaks. For example, with *broadcast FM*, the peak is around 200kHz wide and has a constant area. You can *tune* the radio by moving the mouse in this area; a set of three vertical dashed lines track the mouse position. The radio jumps to this new frequency when you click the mouse.
2. The other main display is the *waterfall*. Waterfall sonar displays feature heavily in submarine movies such as *The Hunt for Red October*, and this one is similar. It uses colour and brightness to display the recent history of the spectrum. You can, for example, directly read a slow *Morse code* transmission from this display; the *on-off keying* of the Morse can be read down the display.
3. There are several different ways audio information can be impressed onto a signal. This panel lets you select between them. Here we want “BC-FM” for *broadcast frequency modulation*. Popular alternatives are AM, for long, medium and short broadcasts; LSB for amateur radio

at frequencies below 10MHz; and USB for amateur radio above 10MHz.

4. The LimeSDR Mini requires that the “RX Antenna” be set to “auto”,
5. If you hover over this panel, you can use the mouse scroll to set individual digits of the frequency.
6. This vertical panel allows you to set the colour range of the waterfall display.
7. You can move the spectrum display up and down in frequency with this horizontal panel.
8. As a bonus for broadcast FM, the RDS (*radio data service*) signal can be decoded.
9. If you move the mouse in the spectrum window, this set of five brown buttons appears temporarily. They are used to scale the spectrum in both amplitude and frequency. The “→|←” one centres the spectrum in the currently tuned frequency.

## 5 Using an RTL-SDR

The RTL-SDR is a very low-cost receive-only alternative SDR. To add it into your configuration, you must first run *Zadig* from <https://zadig.akeo.ie/>.

Within Zadig, and with the RTL-SDR plugged in, select *Options* → *List all Devices* and choose the *Bulk-In, Interface (Interface0)*. Now select the *WinUSB (Microsoft)* driver from the list to the right of the green arrow, and click *Install Driver*. Don't forget to connect YOUR aerial to this different dongle.

On SDR Console click *Select Radio* and then *Definitions.... Search* in the new window for RTL Dongle USB. This should now be found and can be added. Disable any other radios, select it, and *Start*. You will only be offered a maximum bandwidth of 3MHz, and you might do better with less. All controls should function as before, but the audio quality is likely to be noticeably worse, and RDS may not work reliably.