SDR

Raspberry Pi

Driver

```
sudo apt install -y rtl-sdr

# The kernel will otherwise grab the dongle as a TV tuner.
echo 'blacklist dvb_usb_rtl28xxu' | sudo sudo tee /etc/modprobe.d/rtl-sdr-blacklist.conf
sudo reboot

rtl_test
```

GUI

```
sudo apt install -y gqrx-sdr
sudo apt install -y sdrpp
sudo apt install -y soapysdr-module-rtlsdr soapysdr-tools

SoapySDRUtil --find

sudo apt install -y dump1090-mutability
# Not L-band, but confirms reception sensitivity:
# If you see aircraft at 1090 MHz → RF chain works.


sudo apt install -y iridium-toolkit
rtl_power -f 1525M:1660M:1M -g 40 lband.csv

sudo apt install -y gnuplot
gnuplot -e "plot 'lband.csv' using 1:2 with lines"
```

Results

```
stefan@berry:~ $ SoapySDRUtil --find
######################################################
##     Soapy SDR -- the SDR abstraction library     ##
######################################################

[INFO] [UHD] linux; GNU C++ version 14.2.0; Boost_108300; UHD_4.8.0.0+ds1-2
ALSA lib control.c:1575:(snd_ctl_open_noupdate) Invalid CTL pulse
[...]
```

```
Found Rafael Micro R820T tuner
Found device 0
  driver = rtlsdr
  label = Generic RTL2832U OEM :: 00000001
  manufacturer = Nooelec
  product = NESDR SMArt v5
  serial = 00000001
  tuner = Rafael Micro R820T
```

Dump

```
4. Testing L-Band Reception in GQRX
Important GQRX settings for L-band:

Sample rate: 2.4 MSPS

Gain: 40–49 dB

Enable Bias-T if your antenna needs it (RTL-SDR Blog v5 supports it)

Enable Bias-T:

rtl_biast -b 1


(Disable with -b 0)

Tune to:

Inmarsat: 1539–1545 MHz

Iridium: 1620–1626.5 MHz

You should see:

Narrowband carriers

Bursty signals every few seconds (Iridium)

5. SpyServer vs Local Processing
When SpyServer is useful

✔ If you want:

Heavy DSP on your PC

DragonOS GUI tools

Remote access
```

When SpyServer is not needed

✔ If you can:

Run GQRX locally

Capture IQ (rtl_sdr)

Decode with CLI tools

SpyServer is available as a Debian package:
sudo apt install -y spyserver

Config file:

/etc/spyserver.conf

But I recommend installing this last, once local testing succeeds.

6. Minimal “Everything Works” Checklist

 rtl_test passes
 GQRX shows FM broadcast
 Noise floor changes when antenna is connected
 Signals visible around 1.5–1.6 GHz
 Bias-T enables L-band patch

Once all of those pass → your setup is solid.

7. Recommended Install Summary (copy/paste)
```
sudo apt install -y \
rtl-sdr \
gqrx-sdr \
soapysdr-tools \
soapysdr-module-rtlsdr \
iridium-toolkit \
dump1090-mutability \
gnuplot
```

If you want, next I can:

Give exact GQRX profiles for Inmarsat & Iridium

Help configure SpyServer for DragonOS

Recommend L-band decoders that still don’t require compiling

Help optimize USB power & Pi thermal stability

```
Just tell me which direction you want to go 
```