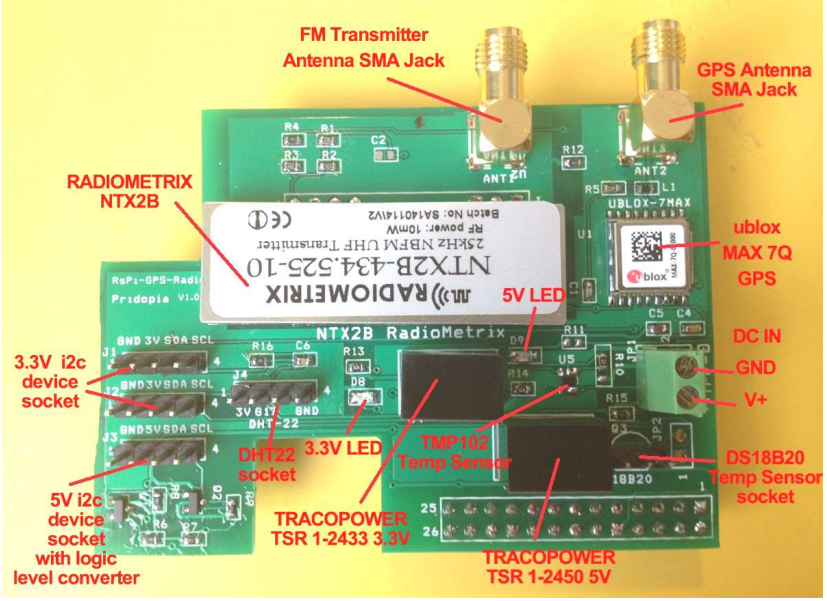
P-HAB (High-Altitude Balloon) 5V User Manual



DC input use DC 9V ~12V

1. Enable serial Port

Raspberry Pi Serial Port Usage

The serial port on the Raspberry Pi is configured as default for console input/output. This allows you to login and interact with the Raspberry Pi via the serial port but you cannot use the serial port with your programs.
To use the serial port with other programs and hardware such as modems, arduino boards etc you need to disable the console login.

To Disable Serial Port Login

You need to edit two files in order to use the serial port with your own programs.
When the Raspberry Pi boots, the bootup information is sent to the serial port.
You can disable this by editing the**/boot/cmdline.txt** file
The contents of the file look like this

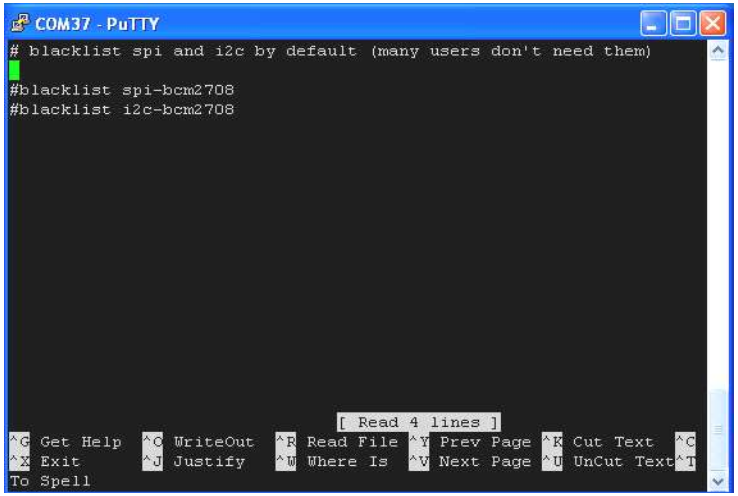
dwc_otg.lpm_enable=0 console=ttyAMA0,115200
kgdboc=ttyAMA0,115200 console=tty1 root=/dev/mmcblk0p2 rootfstype=ext4
elevator=deadline rootwait
Remove all references to ttyAMA0 so the file looks like this:
dwc_otg.lpm_enable=0 console=tty1 root=/dev/mmcblk0p2 rootfstype=ext4
elevator=deadline rootwait
Save the file to save your changes.
The second file to edit is **/etc/inittab**
Edit using: **sudo nano /etc/inittab**
The /etc/ inittab file has the command which enables the login prompt which needs to be disabled.
Near the end of the file will be a line similar to this:
respawn:/sbin/getty -L ttyAMA0 115200 vt100
Disable this line by adding a # character to the beginning.
#respawn:/sbin/getty -L ttyAMA0 115200 vt100
Save the file.
You should then reboot your raspberry pi with the following command

sudo shutdown -r now

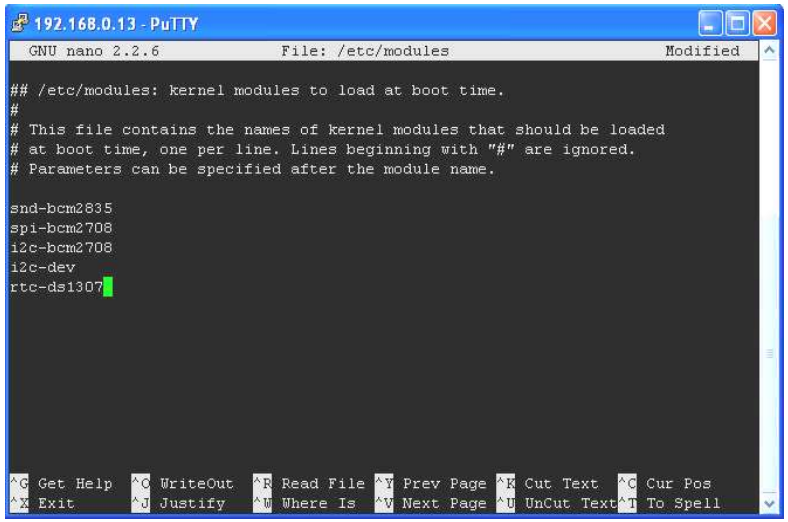
Serial port setting detail in our web site
http://www.pridopia.co.uk/rs-pi-set-serial.html

`1.Make sure your I2C driver are enable`
To enable it all you need to do is comment out a line by putting # in front

`sudo nano /etc/modprobe.d/raspi-blacklist.conf`



2. Add i2c-dev in /etc/modules by use
sudo nano /etc/modules



3. Next install the python-smbus python module:

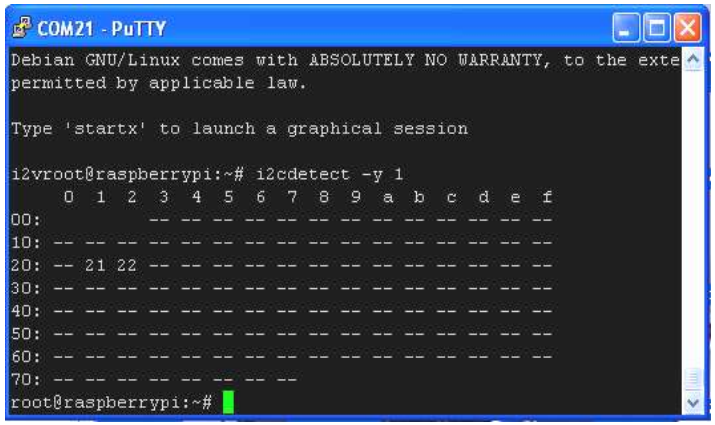
sudo apt-get install python-smbus

sudo apt-get install i2c-tools

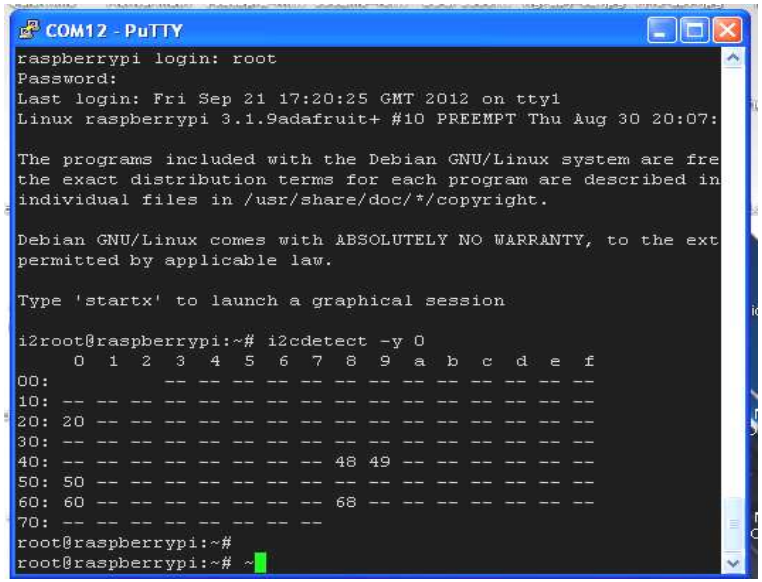
Now you are ready to use the i2c with python.

If you already install I2c driver ,

i2cdetect -y 1 - for Raspberry Pi V2 Board



i2cdetect -y 0 - for Raspberry Pi V1 Board



Download HAB software

wget http://pridopia.co.uk/pi-pgm/Installer-hab.tar
tar xf Installer-hab.tar
python Install.py ---- install necessary software for HAB
python Install-Edu.py -- install eduhab auto-login-autorun

The eduhab.py send GPS location, tmp102, DS18B20, BMP085, DHT22 information through FM UHF Transmitter, the eduhab.py have 3 commands

eduhap.py -s short data stream mode send GPS location and BMP085 Temp only ,

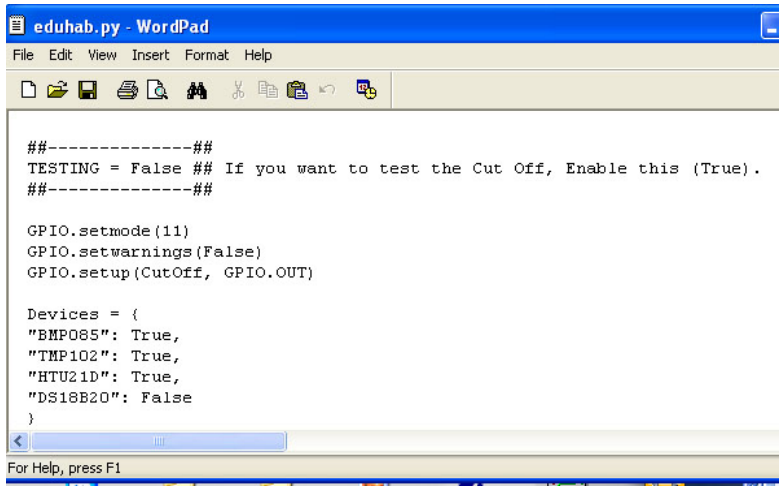
but all logs save to SD card

eduhab.py -p send data also take photos every 30sec

eduhab.py -c prid change the data stream "twick" to "prid"

- 18B20 1-wire Temp sensor have problem when working together with camera, if you don't use camera you can use 18b20 Temp sensor.
- DHT22 use GPIO 17 , we change to i2c base
  HTU21D Digital Temp & Humidity Sensor

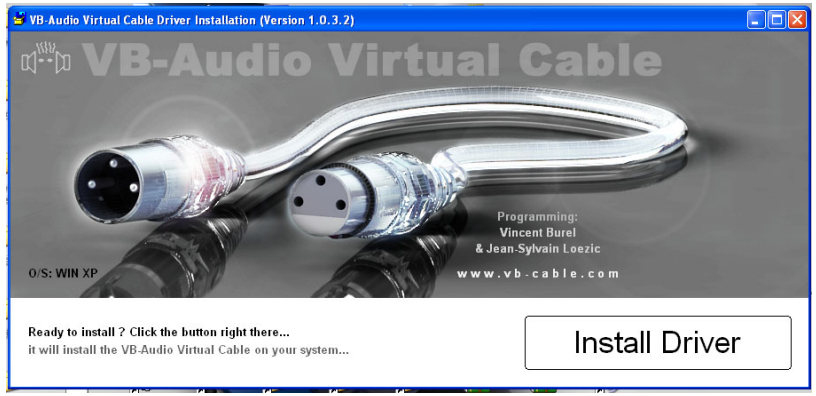
If you don't have "BMP085", & "HTU21D" sensors setting to False in eduhab.py



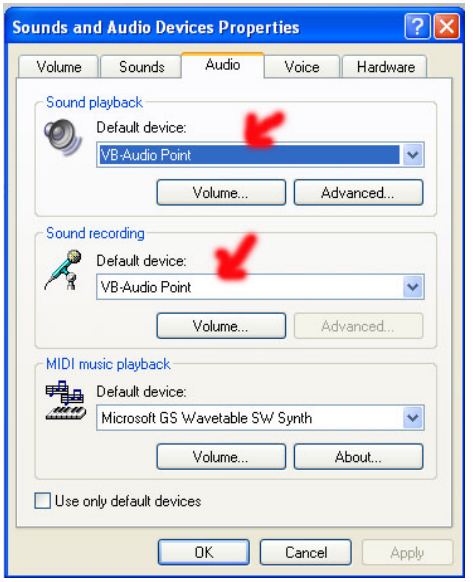
Test & Monitor program

Win xp sdr-inatll.zip dl-fldigi-dl3.1 VBCABLEDriver PAck42b

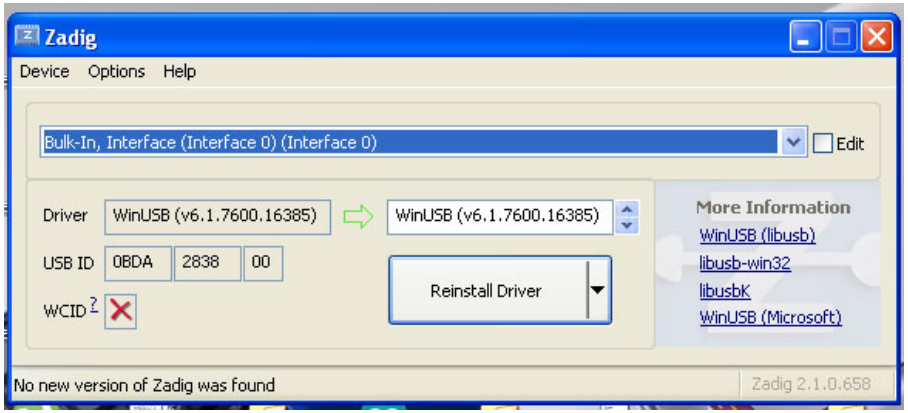
Install VBCable Driver



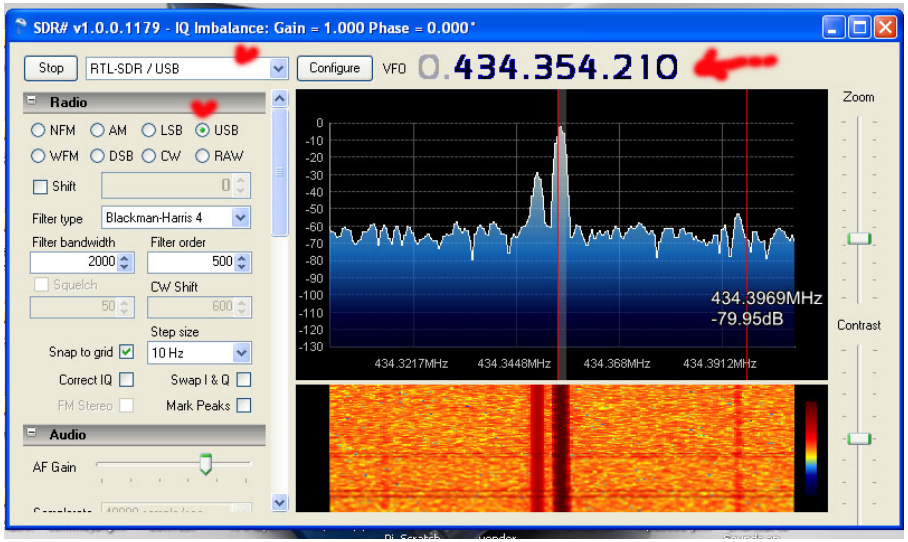
Install VBCable Audio Driver
Software will auto detect your OS -- WinXP
Click "Install Driver"



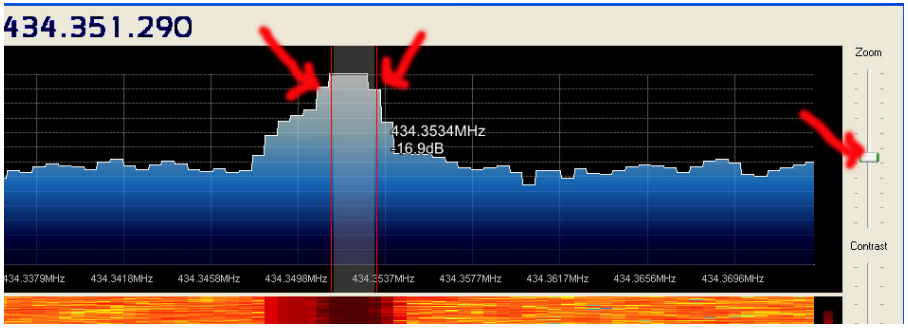
In Setting-> control panel -> Sounds and Audio Devices
Audio -> Sound playback -> VB-Audio Point
Audio -> Sound recording -> VB-Audio Point



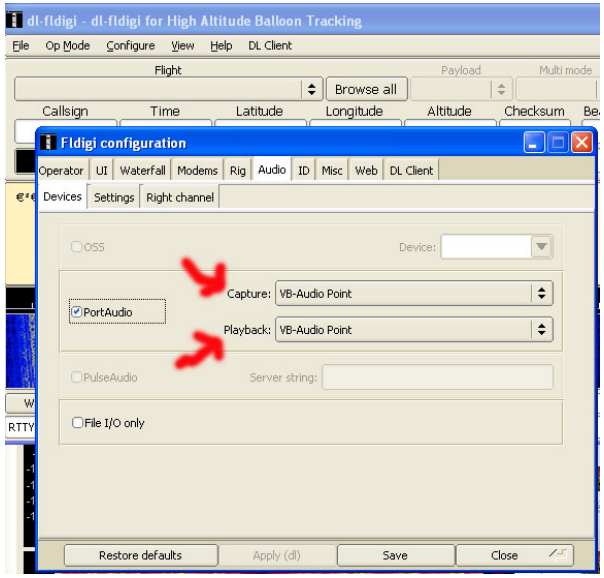
In options choose List all Devices ->
Choose Bulk-In, Interface (Interface0) (Interface0)
Click "Install Driver"



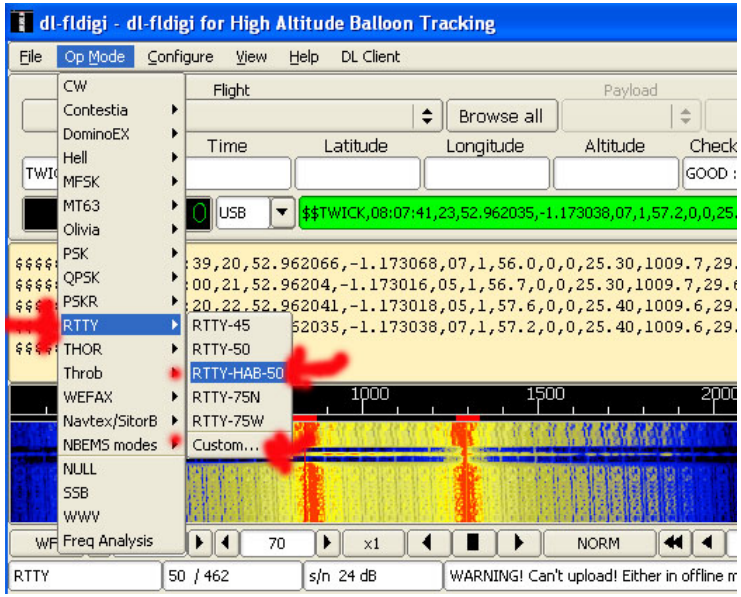
Choose RTL-SDR /USB → radio choose USB -> Click “Play”



Adjust the wide and Contrast



In configure -> Sound card → PortAudio
Capture : choose VB-Audio Point
Playback: choose VB-audio Point



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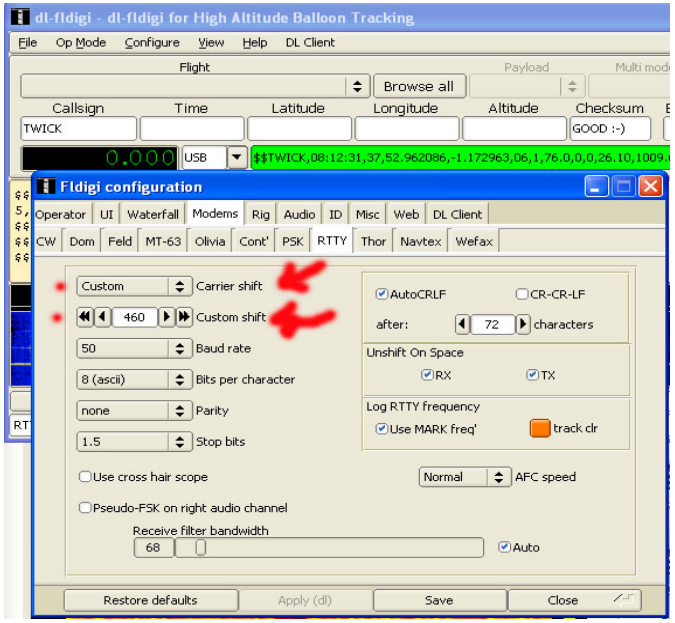
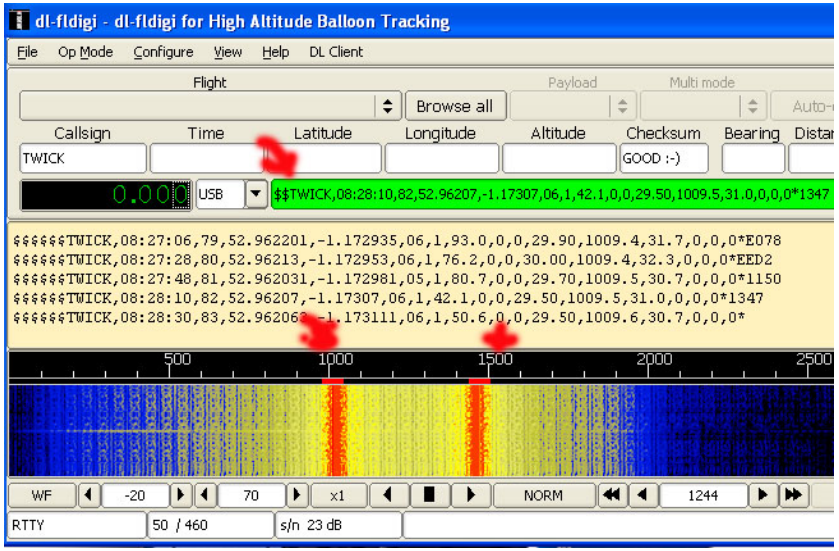
Choose RTTY -> RTTY HAB-50-> & Custom

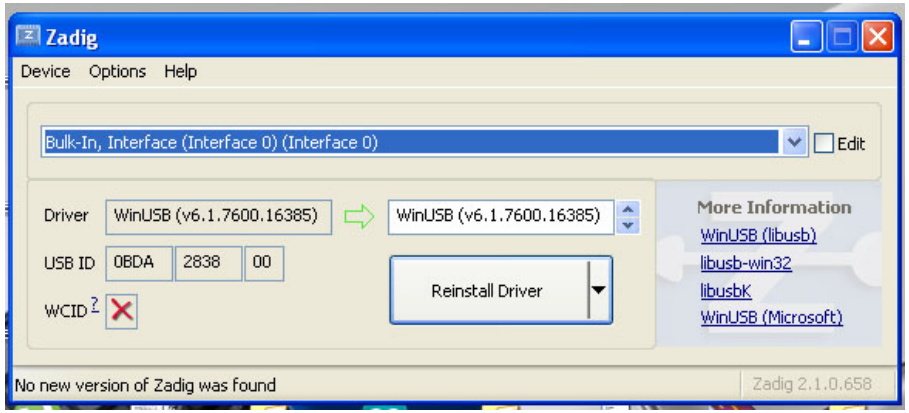


Change shift to about 455 ~ 460



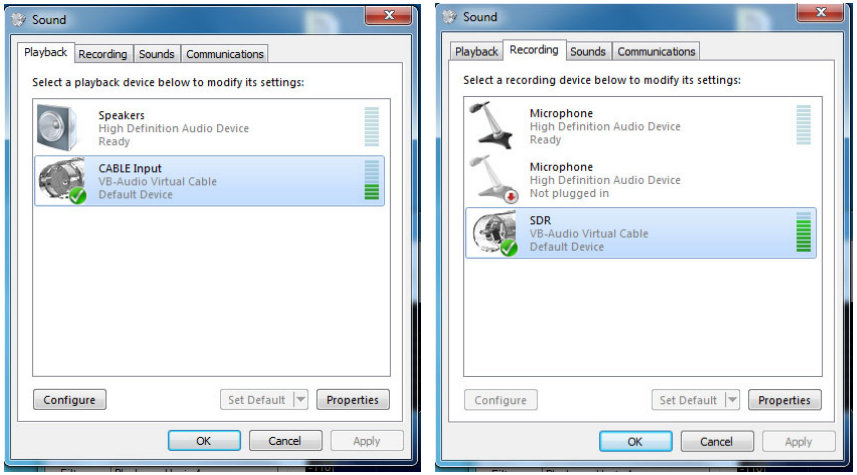
Win7 Setting

Install Zadig

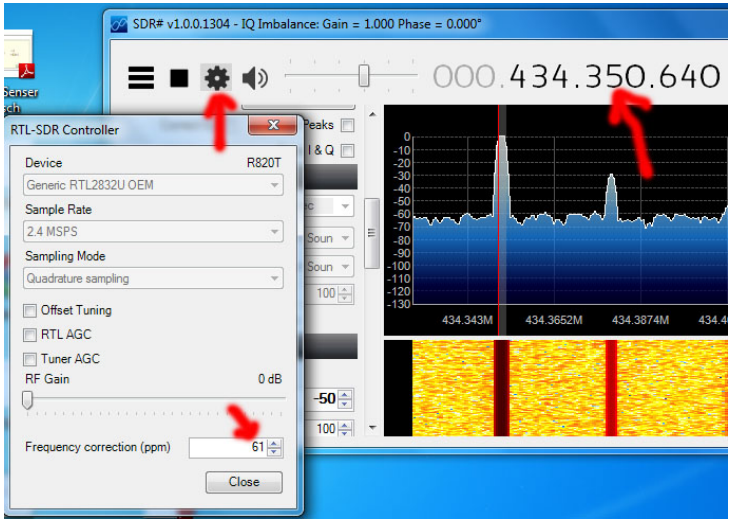


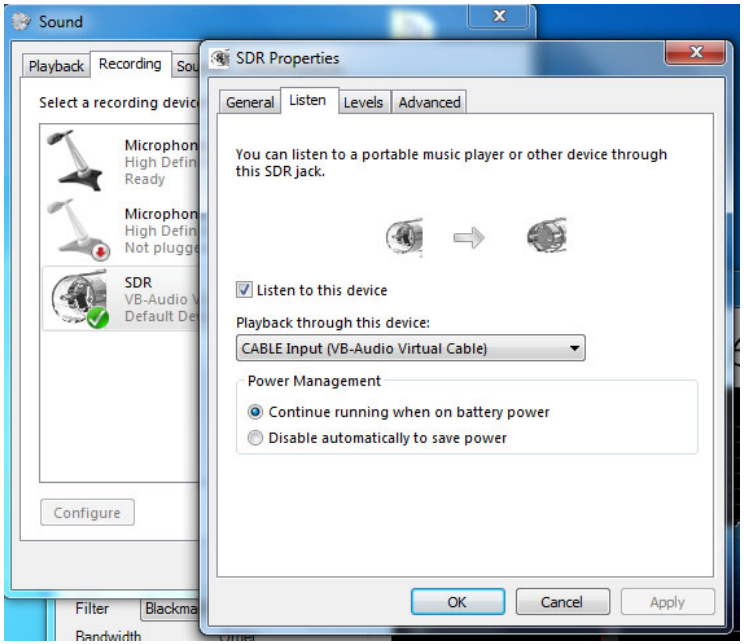
In options choose List all Devices ->
Choose Bulk-In, Interface (Interface0) (Interface0)
Click "Install Driver"

Install VBCable Audio Driver
Software will auto detect your OS -- Win7
Click "Install Driver"



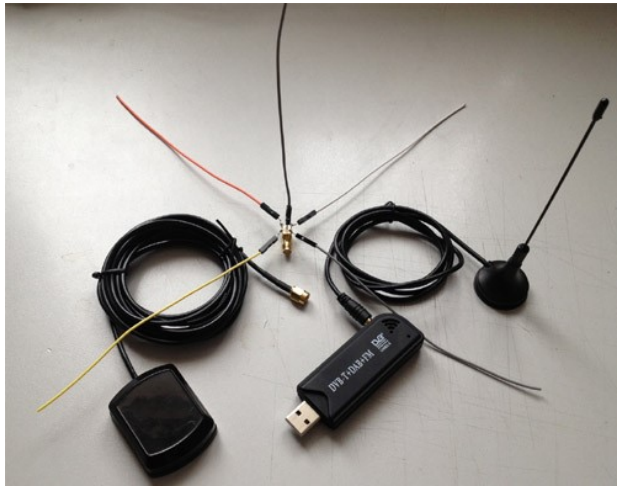
Setting Cable Input as default & SDR as default in “Recording”





In Listen choose playback through this device as “CABLE Input (VB-Audio Vistual Cable)

Adjust Frequency correction(ppm) as the label in NTX2B-FA 434.xxx



GPS antenna & FM antenna &

USB SDR Encoder (RTL2832U-based DVB-T devices (RTL-SDR)

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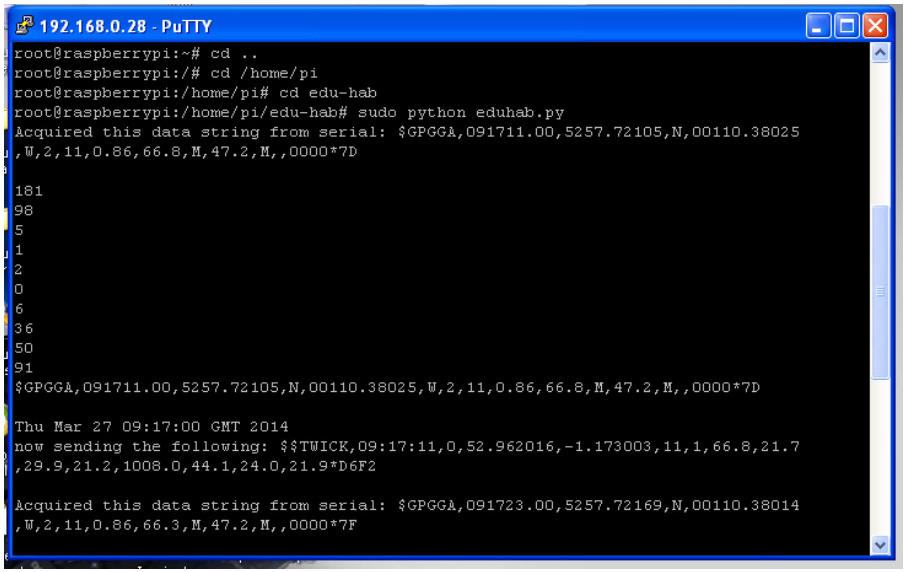
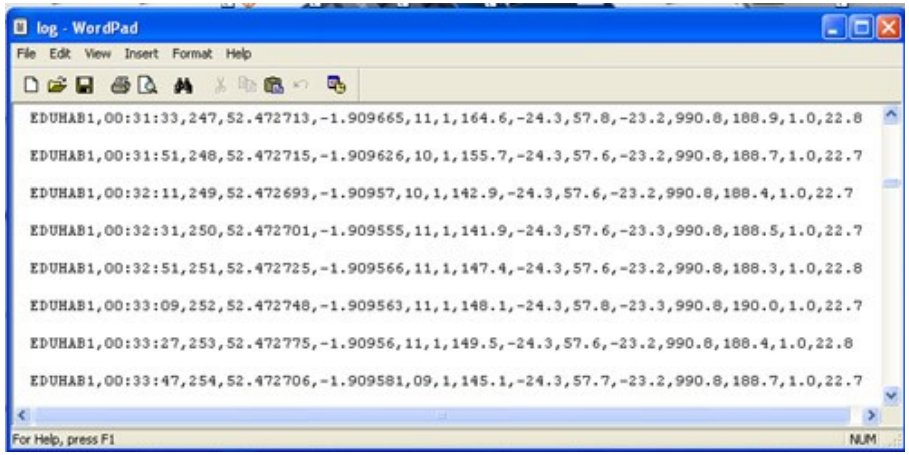




data format

EDUHAB1,00:33:27,253,52.472775,-1.90956,11,1,149.5,-24.3,57.6,-23.2,990.8,188.4,1.0,22.8

EDUHAB1 callsign

00:33:27 TIME

253 LOG COUNTER

52.472775,-1.90956 latitude, longitude GPS location

11 satellites --- ublox Max 7Q GPS module

1 flightmode --- ublox Max 7Q GPS module

149.5 altitude --- ublox Max 7Q GPS module

-24.3 -24.3 -24.3 -24.3 -24.3 -24.3 temp DHT22 - Temp External GPIO17

57.6 humidity DHT22 - Humidity GPIO 17

-23.2 temp2 BMP085 - Temp External i2c adress 77dress 77

990.8 pressures2 BMP085 - Pressure i2c adress 77

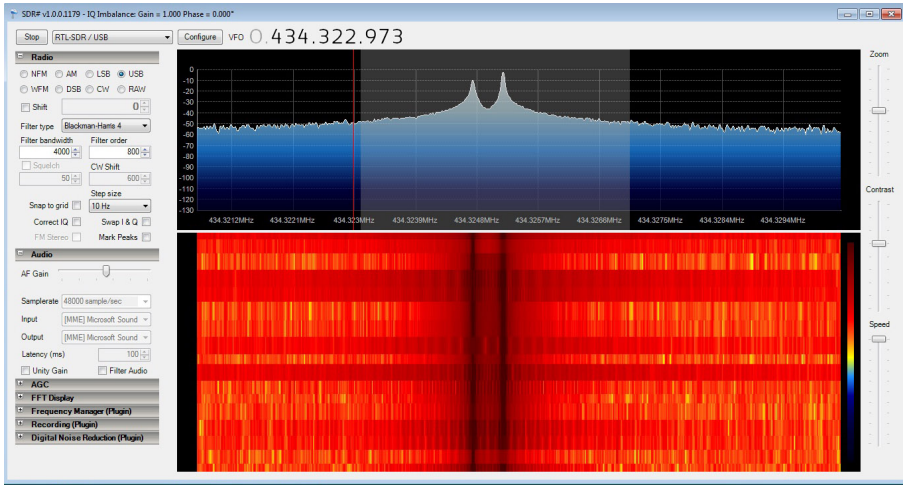
188.4 alt2 BMP085 - altitude i2c adress 77

1.0 temp3 TMP102 - on board Temp i2c address 49

22.8 temp4 DS18B20 - Temp External 1-Wire GPIO 4

Tracking using a SDR software-defined radio (SDR)

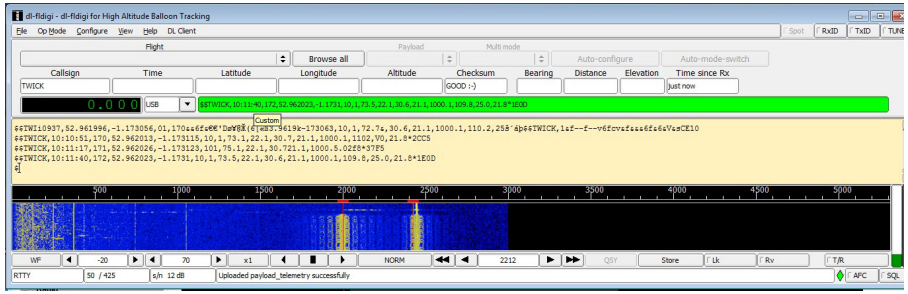
Run sdrsharp.exe and you will see the following window



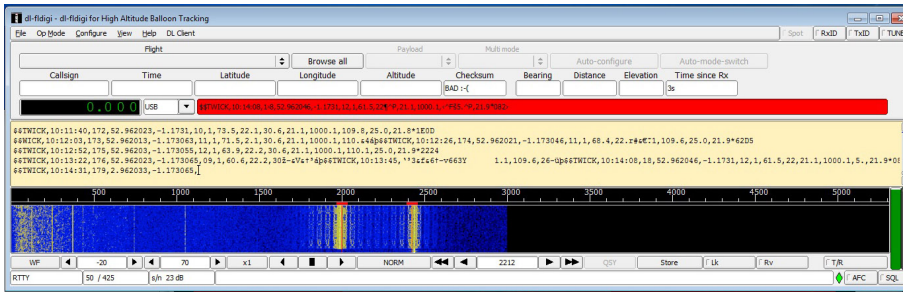
open DL-Fldigi, click Configure → Sound Card Click Capture → SDR(Virtual Audio Cable)

You should now be able to click on the payload as normal and decode :

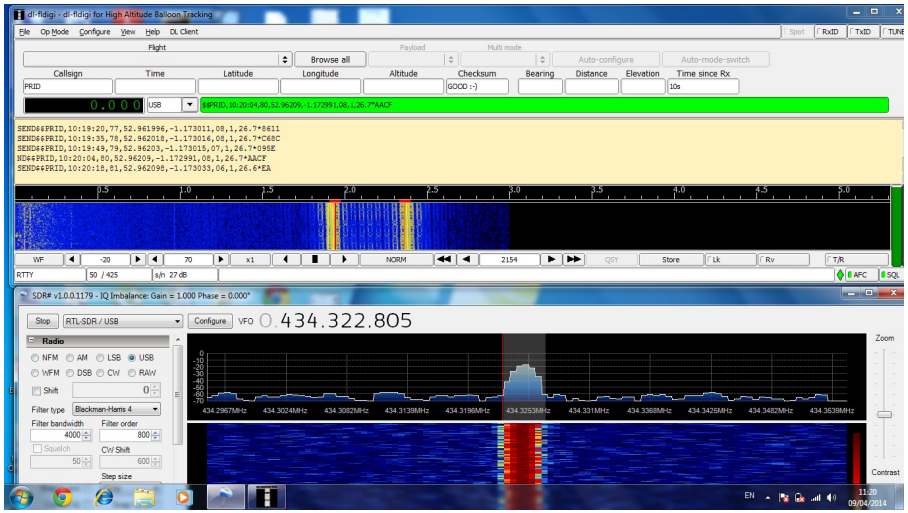
received data with checksum ok



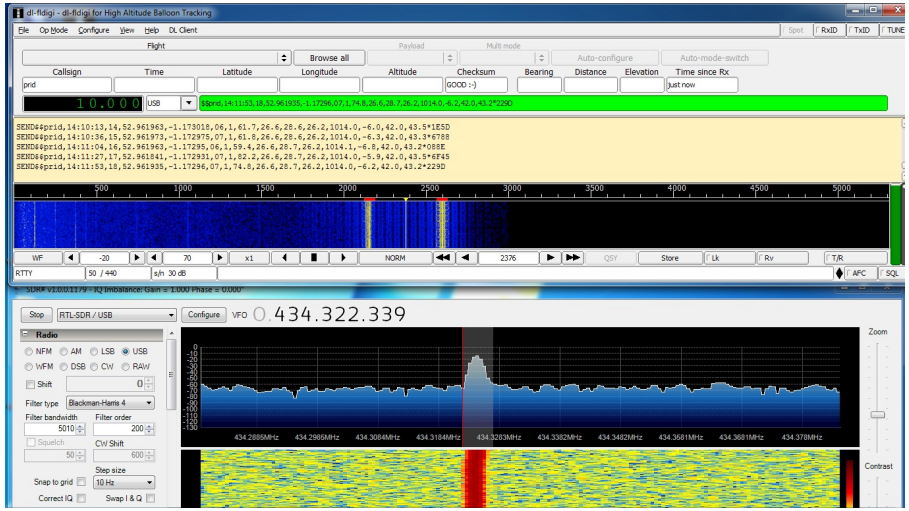
received data with checksum error



short data stream mode



full data stream mode



Track balloon online