SAT-Groundstation for 2m and 70cm – HB9RYZ

Antennas from Antenna Amplifiers (70cm) and Anjo (2m)

2m
YA014408 8-Element Anjo YAGI (144-146 MHz, G=12.4dBi) 3.13m, 8 Elements, 2 kW PEP

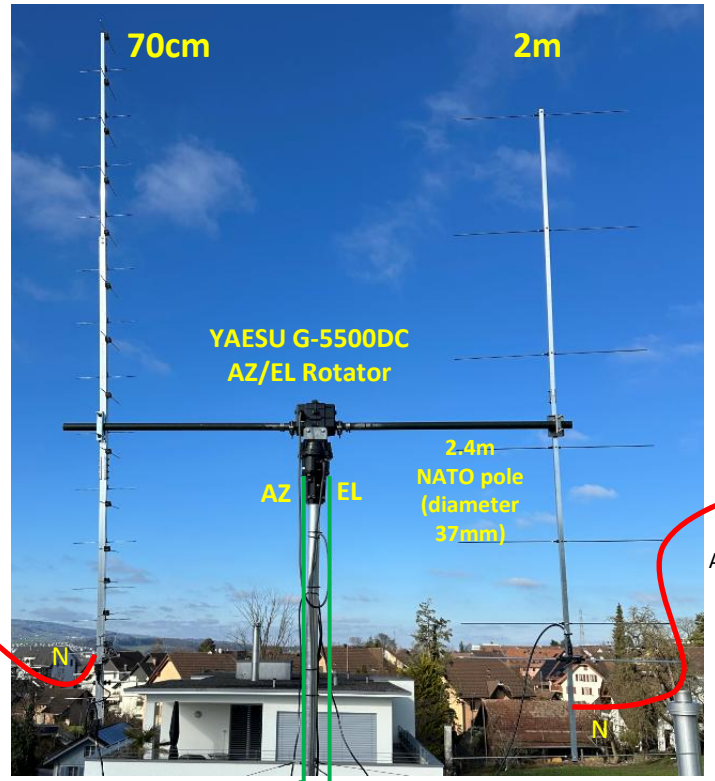
70cm
PA432-CROSS-30-3.5AP (432-440 MHz, G=16.7 dBi) 3.5m, 2 x 15 elements, 850 Watt PEP

- **Right Circular** (RHCP) for **70cm** YAGI (SAT, E-Sporadic, Tropo)
- **Horizontal for 2m** YAGI (SAT, E-Sporadic, Tropo)
- ICOM IC-9700 with 100W
- Contest2-144 144-148 MHz Super Loss Input Bandpass Filter with LNA (300W) incl. Bias-Tee for IC-9700 **(+24.9 dB**) – Antenna Amplifiers
- Contest2-432 430-450 MHz Super Loss Input Bandpass Filter with LNA (150W) incl. Bias-Tee for IC-9700 **(+ 20.5 dB**) – Antenna Amplifiers
- YAESU G-5500 AZ/EL Rotator
- ARS-USB Box from EA4TX to control the YAESU AZ/EL-Rotator
- EA4TX Raspberry Pi Server for Web-GUI to control the YAESU AZ/EL-Rotator via Web-Browser with the Remote Rotator Web-GUI on Raspberry Pi
- SatTrack from OZ9AAR and SAT32PC SAT-Tracking Software

SAT-Groundstation JN47FE

3.5m
2x15 (30) Element
16.7 dBi Gain
Right Circular (RHCP) Polarization

PA432-CROSS-30-3.5AP
BIG-LEO KIT



3.13 m
8 Element
12.4dBi Gain
Horizontal Polarization

YA014408 8-Element
Anjo YAGI

Satellite Tracking App SatTrack and SATPC32

virtual Serial Port

ARSVCOM

TCP-Port 6001

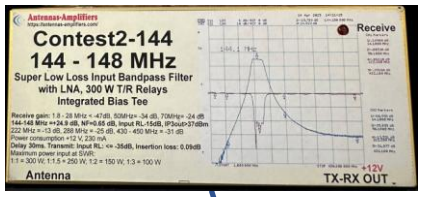
EA4TX Raspberry Pi with remoteRotator

USB

EA4TX ARS-USB BOX

8-pol

Contest2-144 144-148 MHz Super Loss Input Bandpass Filter with LNA (300W) incl. Bias-Tee for IC-9700 **(+24.9 dB)** – Antenna Amplifiers



4m Aircell 7

N

N

15m Ecoflex 10+

N

DG-503 70cm

1m H-155

N

70cm
(N)

IC-9700

1m H-155

2m
(PL)

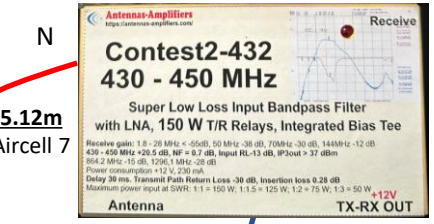
N

DG-503 2m

N

15m Ecoflex 10+

N



5.12m Aircell 7

N

Contest2-432 430-450 MHz Super Loss Input Bandpass Filter with LNA (150W) incl. Bias-Tee for IC-9700 (+ 20.5 dB) – Antenna Amplifiers

6-pol

6-pol

2x 6-pol Wire (15m)

IC-9700, G-5500, LBV-Tracker, ARS-USB EA4TX

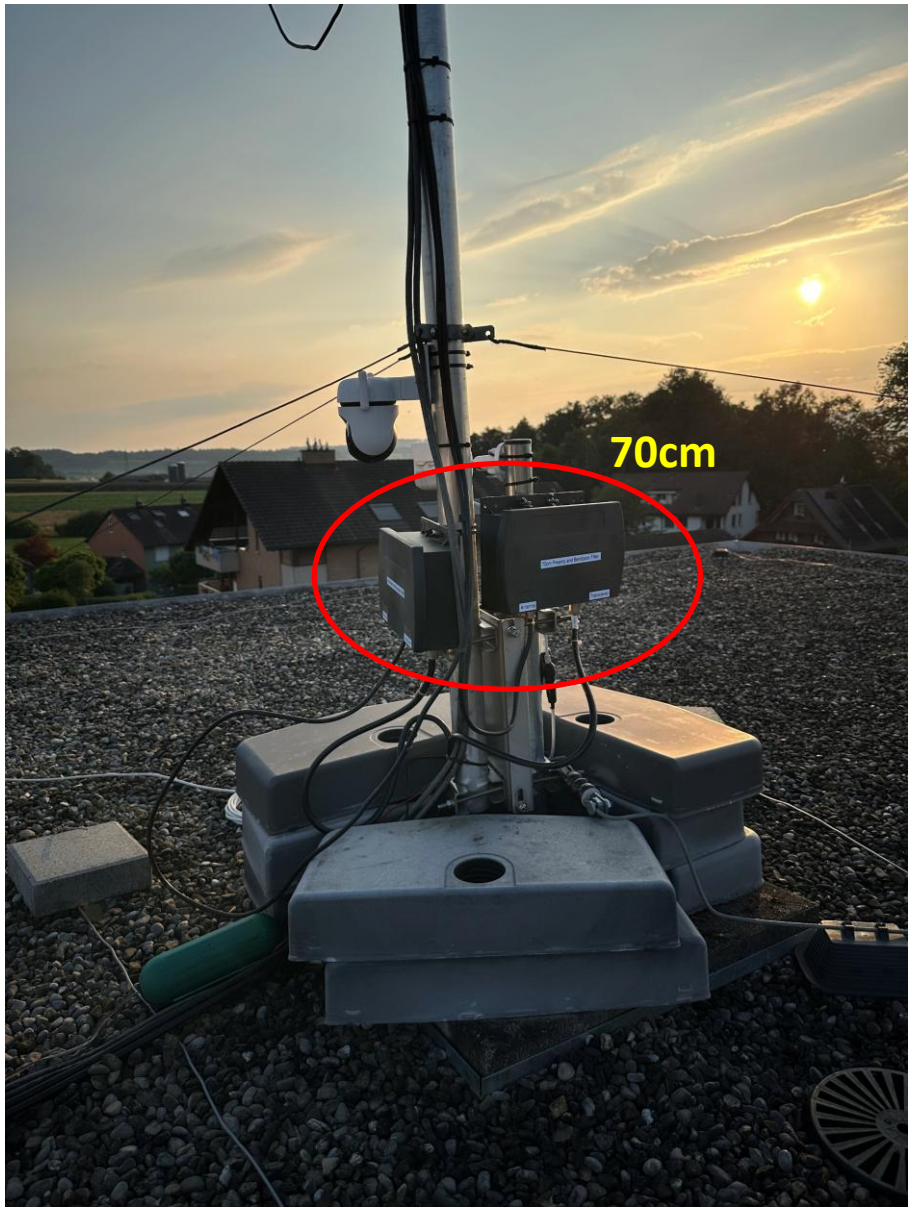
EA4TX ARS-USB BOX

SAT-Groundstation JN47FE

2m = 8 element, 3.13 Boom, Gain = 12.4dBi, horizontal
70cm = 2 x 15 element, 3.5m Boom, Gain = 16.7 dBi, Right Circular (RHCP) Polarization
Antenna Amplifiers Preamps with low loss Bandpass Filter and Bias-T

HB9RYZ www.hb9ryz.ch 5. July 2025

SAT-Groundstation JN47FE



New since 5. July 2025

Due to crosstalk on the RS-44 satellite (UP 145 MHz, Down 435 MHz), I have installed a bandpass filter incl. preamplifier and DC-Bias-T on both 2m and 70cm.

2m

Contest2-144 144-148 MHz Super Loss Input Bandpass Filter with LNA (300W) incl. Bias-Tee for IC-9700 **(+24.9 dB**) from Antenna Amplifiers

70cm

Contest2-432 430-450 MHz Super Loss Input Bandpass Filter with LNA (150W) incl. Bias-Tee for IC-9700 **(+ 20.5 dB**) from Antenna Amplifiers

SAT-Groundstation JN47FE

- **2m = 8 element, 3.13m Boom, Gain = 12.4dBi, horizontal**
- **70cm = 2 x 15 element, 3.5m Boom, Gain = 16.7 dBi, (RHCP)**
- **Antenna Amplifiers Preamps with low loss Bandpass Filter and Bias-T**

SAT-Groundstation for 2m and 70cm

YAESU G-5500 AZ/EL Rotor, ICOM IC-9700 (100W), ARS-USB Box from EA4TX with Raspberry Pi Server for Web-GUI

Windows

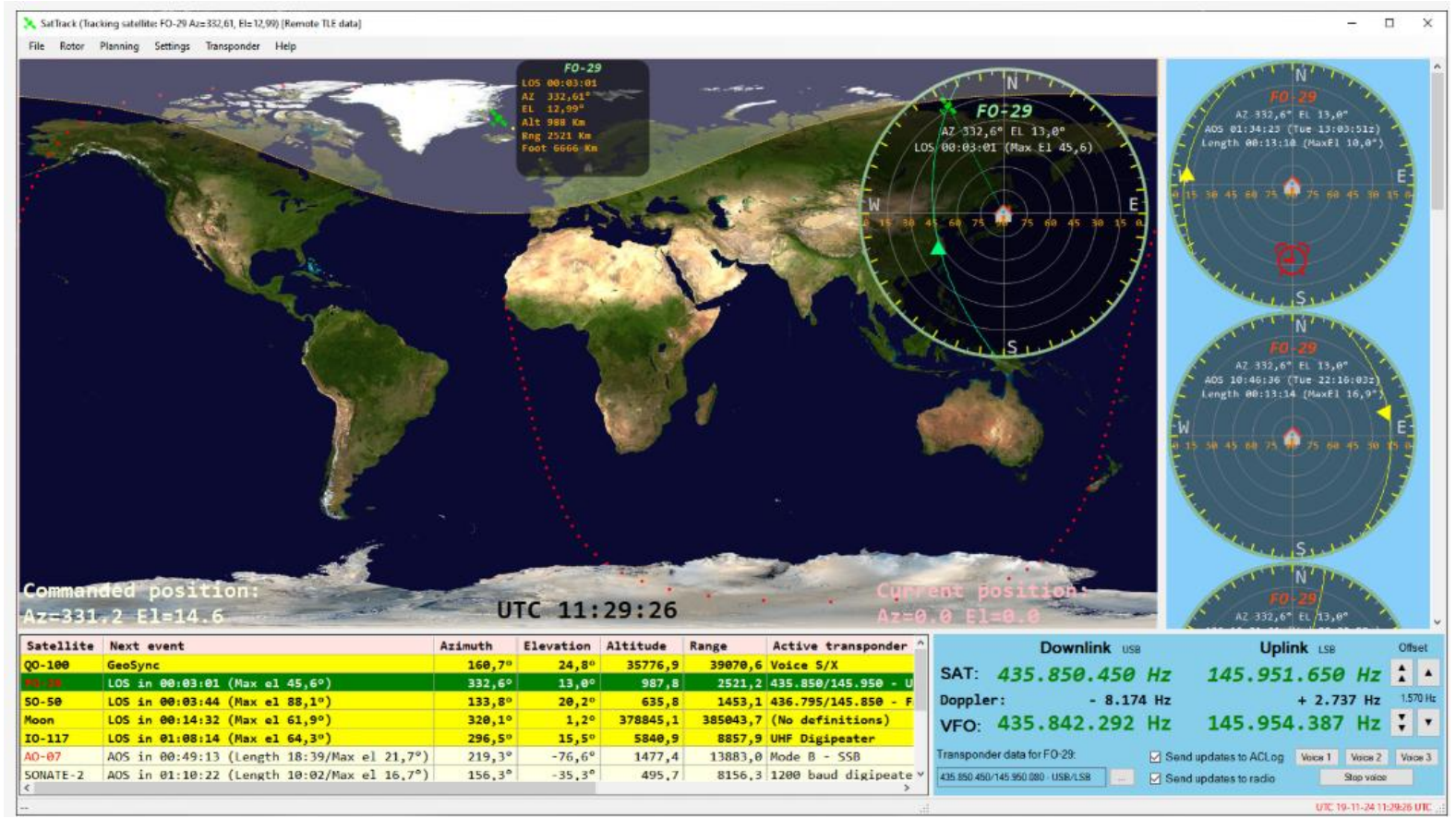
Satellite Tracking «SatTrack» from Carsten OZ9AAR

https://www.moonbounce.dk/hamradio/sattrack.html

Windows SatTrak from OZ9AAR

SatTrack will do the following:

1. Track a satellite in realtime and show calculated values for it
2. Track the moon and the sun
3. Show a list of selected satellites, ordered so that the ones rising first will be at the top of the list
4. Control your ICOM IC-9700 (and a few other ICOM radios like IC-910 and IC-706, you test it yourself) radio according to the defined transponder(s) for the satellite being tracked
5. Control your Yaesu GS-232B, PstRotator or URC rotorcontroller so you antennas will follow the tracked sat
6. Show the footprint of the currently selected satellite on a map
7. Fetch updated TLE elements from the internet at defined intervals (or use a local file)
8. Inject data (name, frequency etc) for the currently tracked satellite into log program ACLog
9. Make it easy for you to make small adjustment to the uplink frequency to put you "on the spot"
10. Allow you to set alarms (voice messages) for upcoming passes of specific satellites and specific passes
11. Give voice announcements whenever a satellite is about to rise
12. Fetch current status from AMSAT satellite status page for a selected satellite and present this in a readable way
13. Help you plan satellites and passes and alarms for these in the "Future passes" planner
14. Import/export transponder definitions, can also import SQF file from SatPC32 and use that

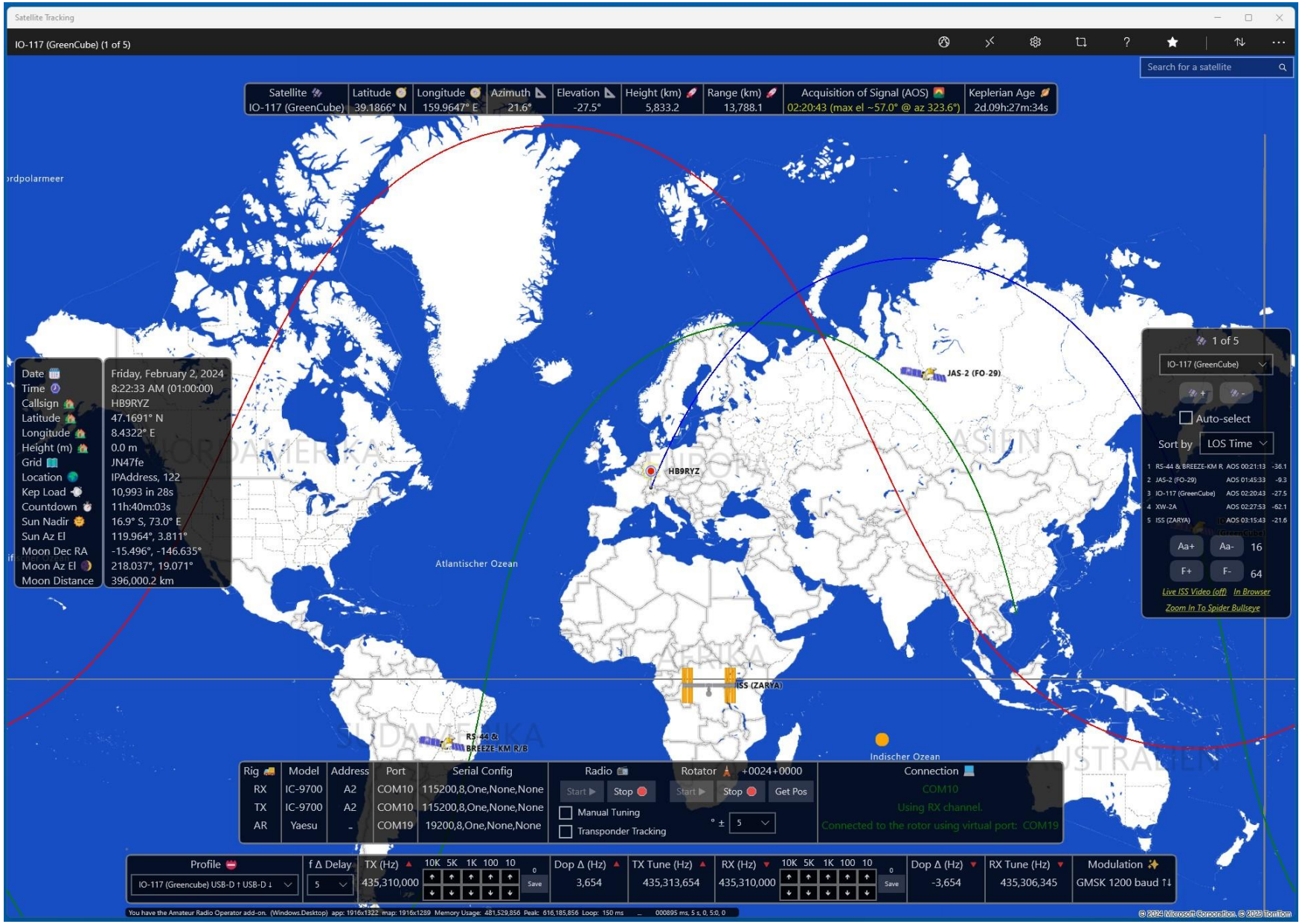


Windows

Satellite Tracking App from KarhuKoti

https://apps.microsoft.com/detail/9WZDNCRDNDF7?hl=en-us&gl=US

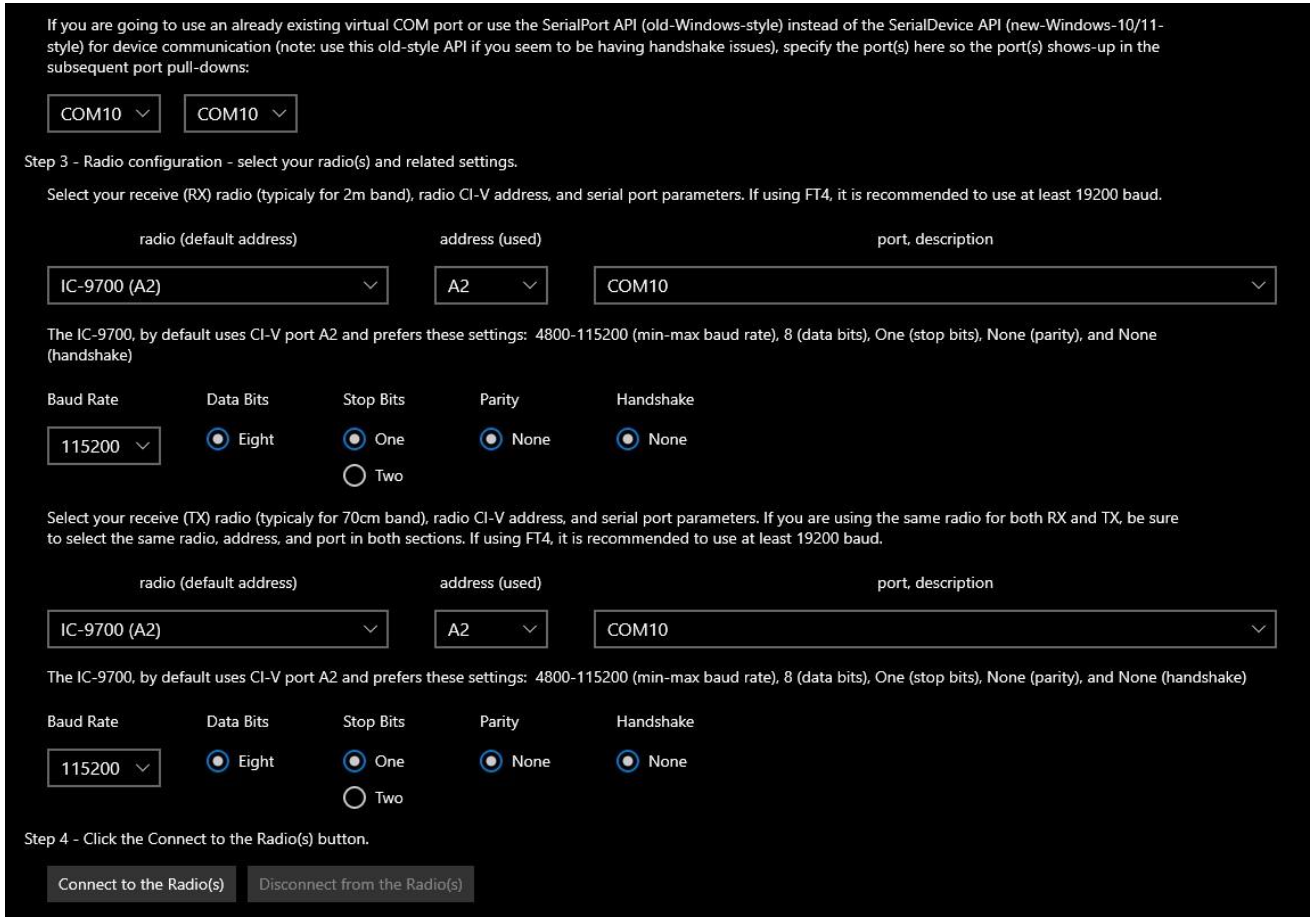
Microsoft Windows Satellite Tracking App



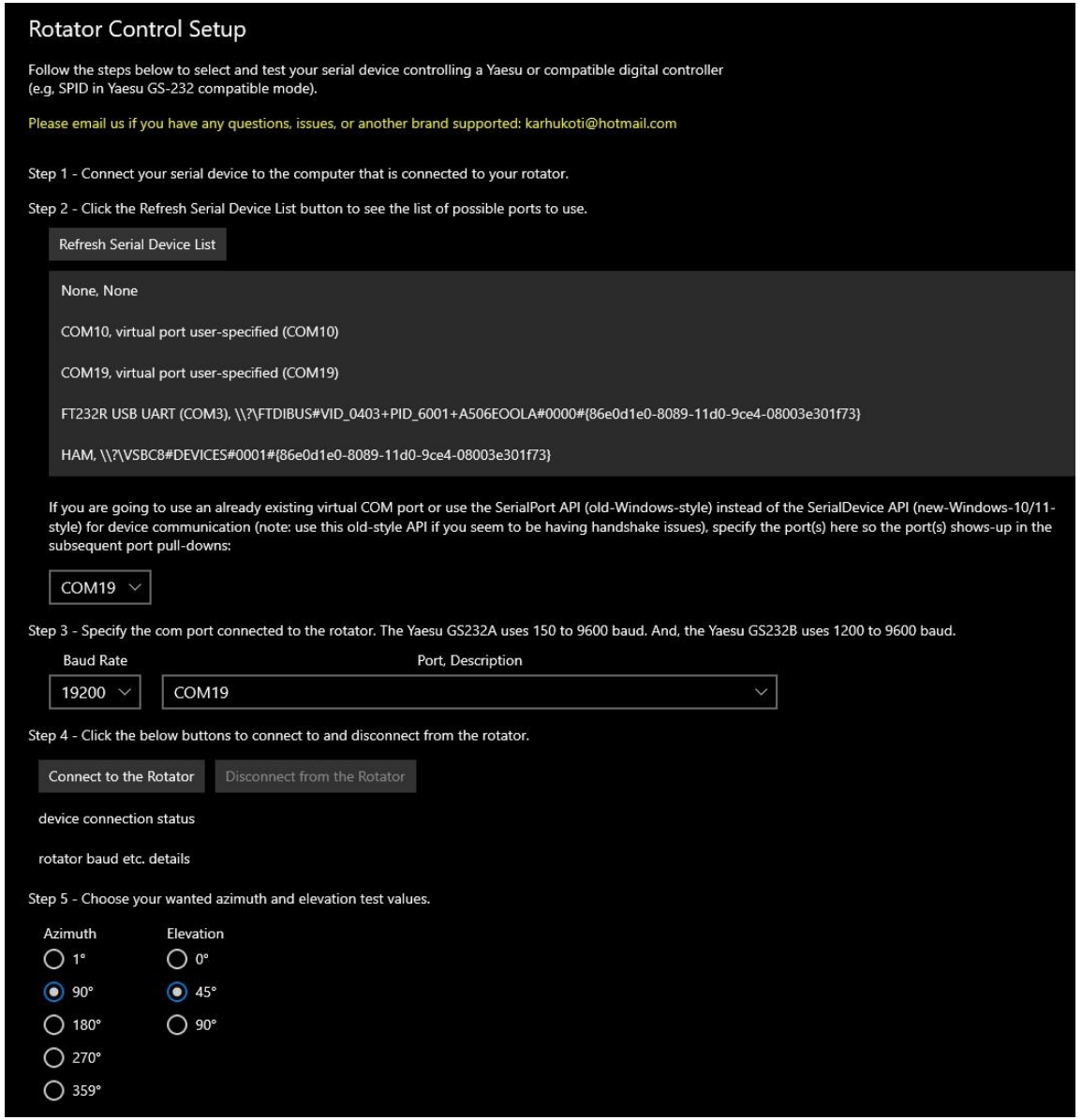
HB9RYZ www.hb9ryz.ch 2. February 2024

Microsoft Windows Satellite Tracking App

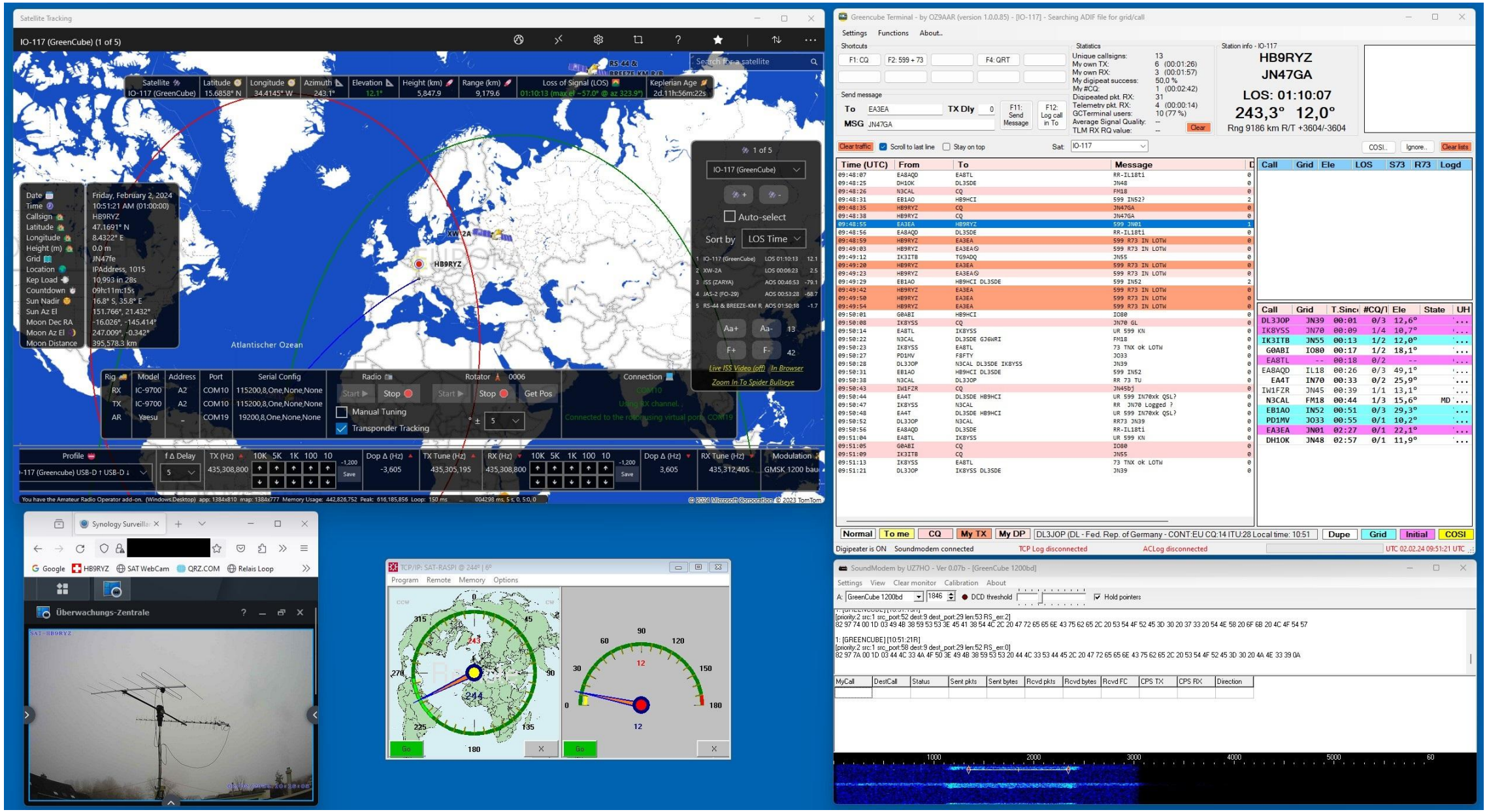
IC-9700 Configuration via VSPE and Omnirig



Rotator EA4TX Configuration via ARSVCOM Virtual COM-Port



Microsoft Windows Satellite Tracking App – Tracking Greencube (IO-117) Digi-SAT



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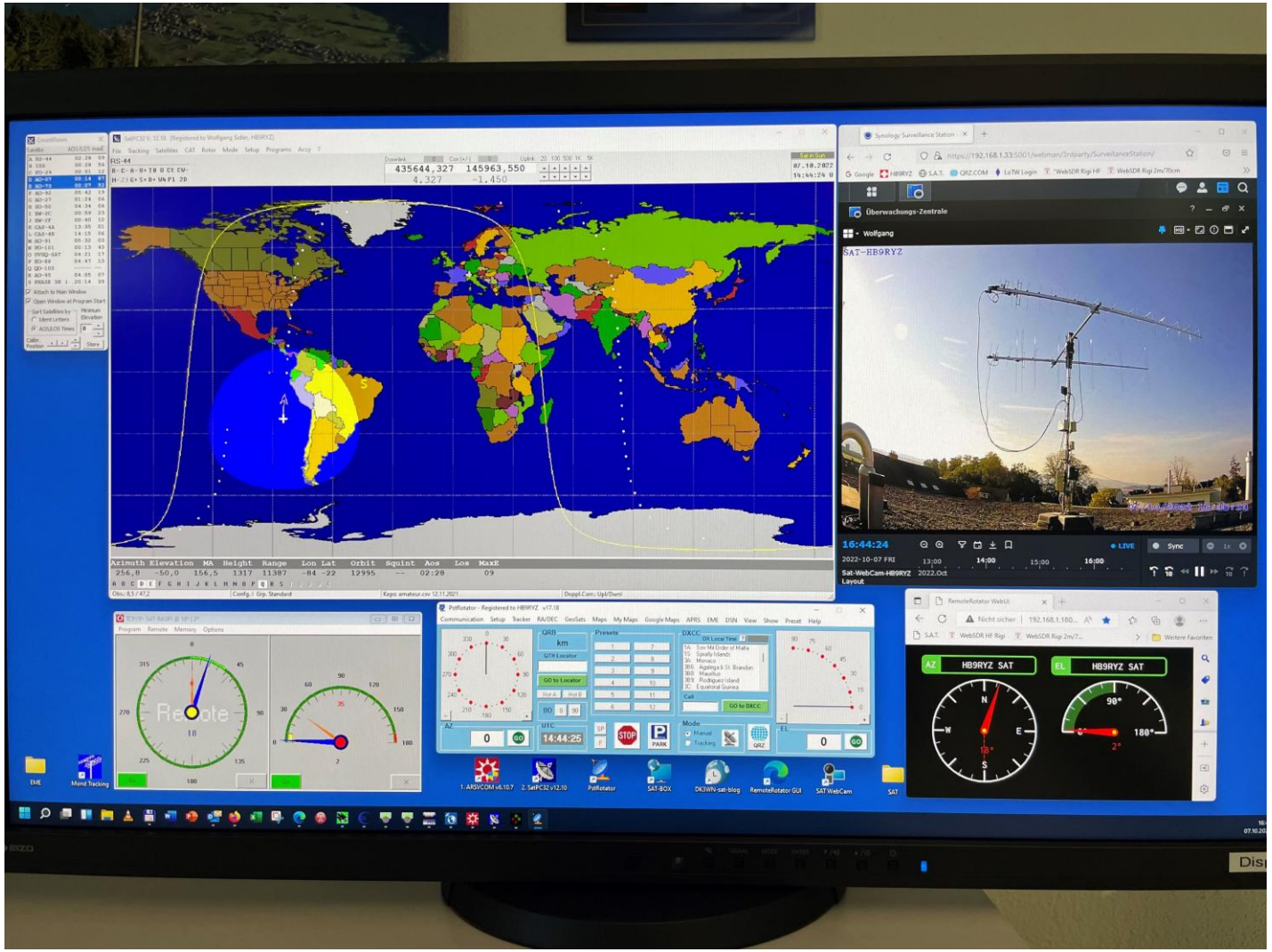
SATPC32 v12.10

with ARS-USB Box EA4TX and Raspberry Pi3 with remoteRotator from DH1TW

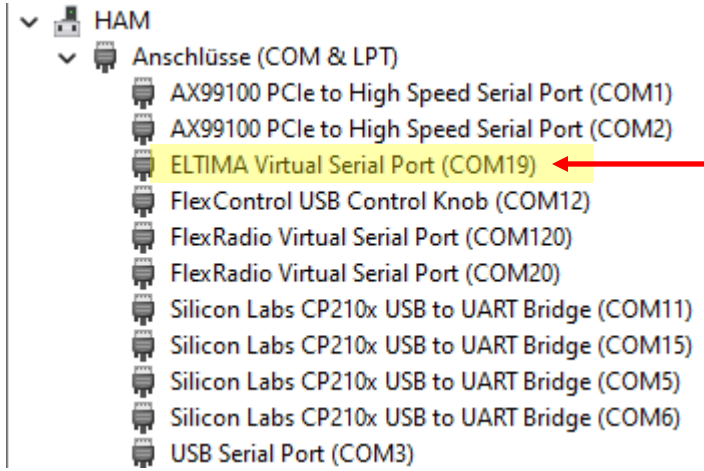
EA4TX ARS-USB Box: https://ea4tx.com/en/tienda/antenna-rotator-system/ars-usb-ae/
SATPC32 Software: https://www.dk1tb.de/indexeng.htm

SATPC32 Satellite Tracking Software from Erich DK1TB

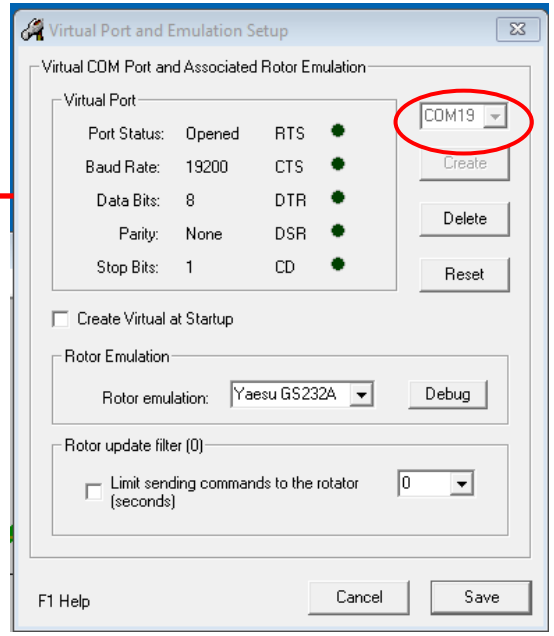


SATPC32 SAT-Tracking Software, SAT WebCam, RemoteRotator Web-GUI, PSTRotator

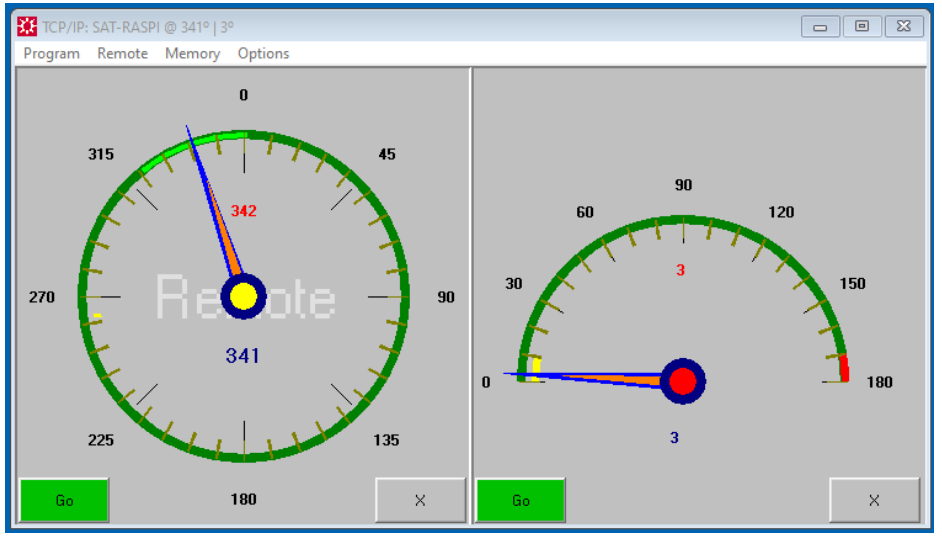
EA4TX ARS-USB Box (Virtual Serial Port) and SATPC32 Setup



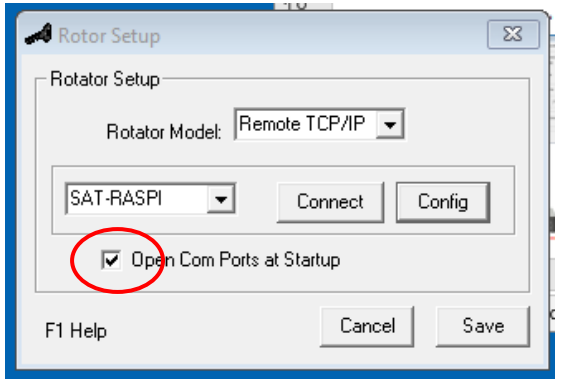
The Rotators are controllled via the Virtual Serial Port COM 19 (ARSVCOM).

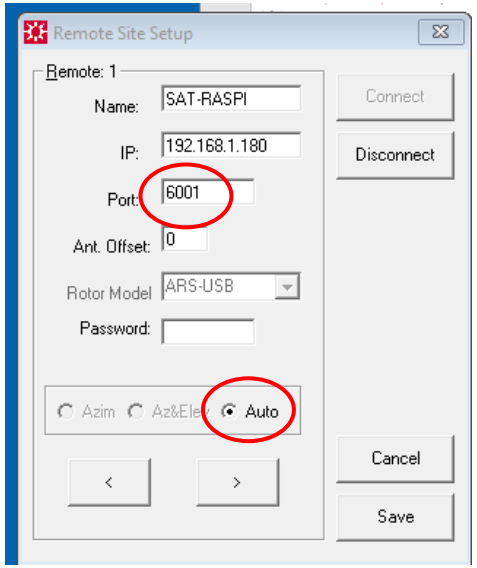


v6.10.7



Thats for the Raspberry Pi IP-Connection





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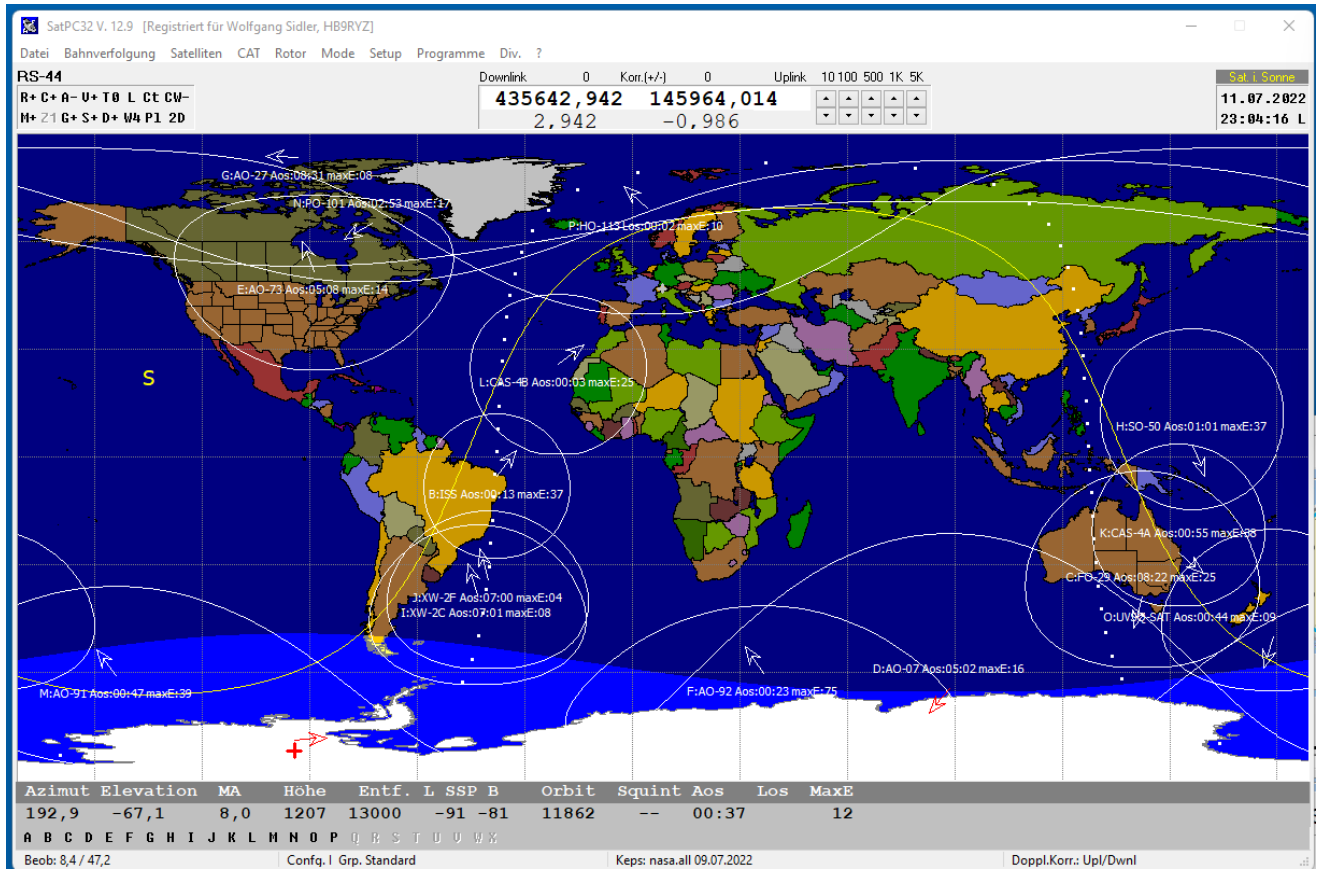
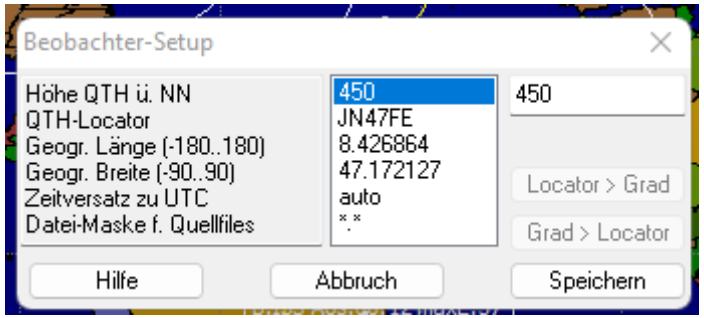
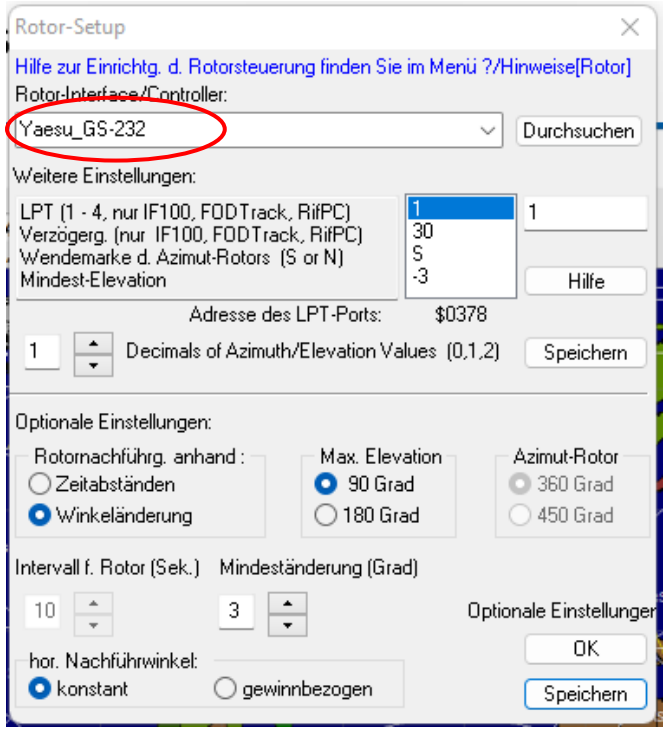
EA4TX ARS-USB Box (Virtual Serial Port) and SATPC32 Setup

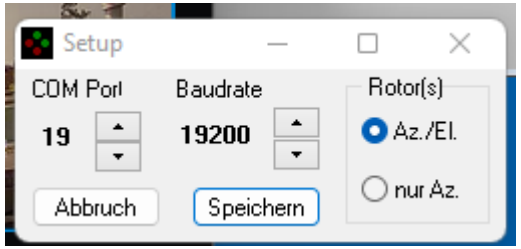
SATPC32 v12.10







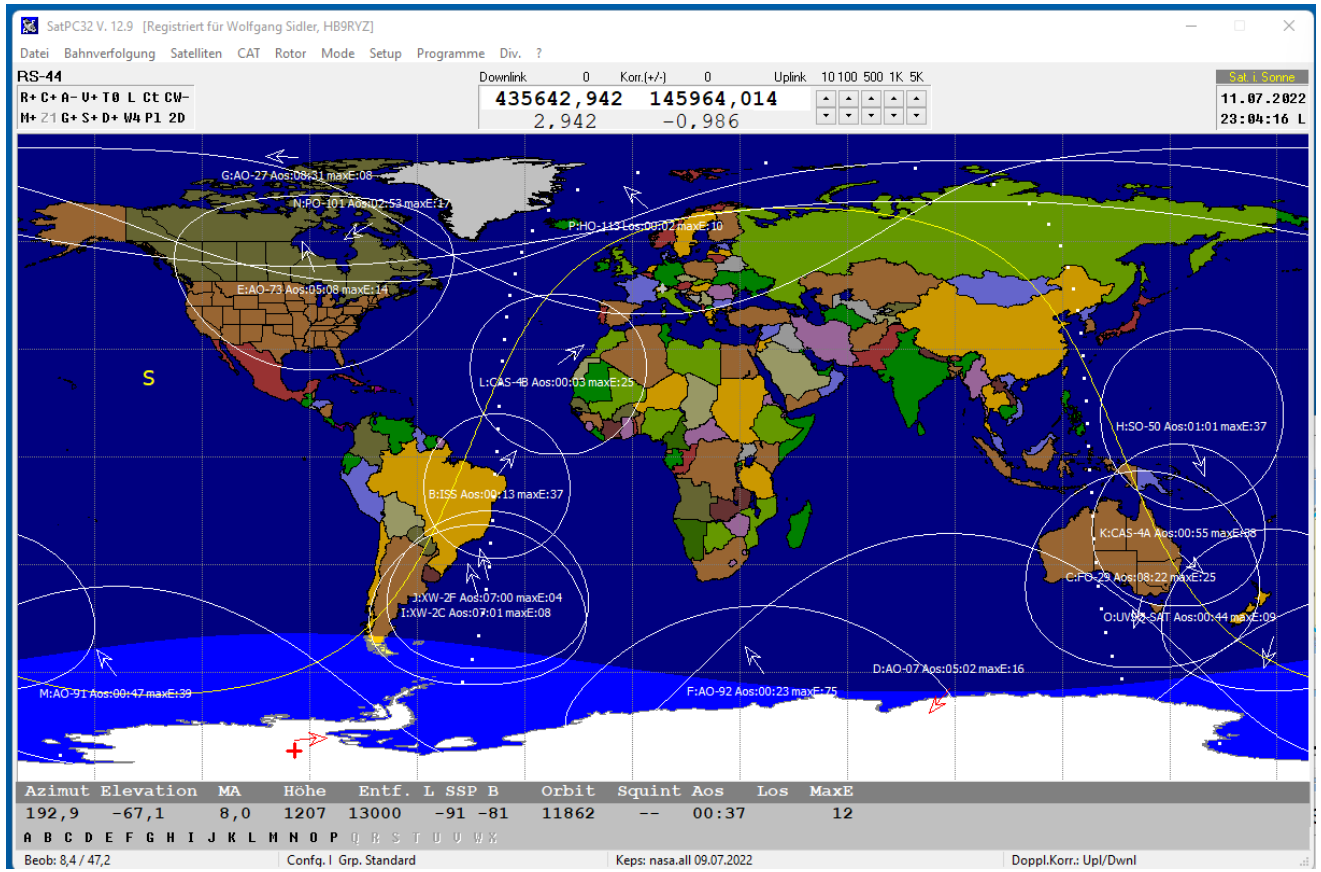
The Rotators are controllled via the Virtual Serial Port COM 19 (ARSVCOM).



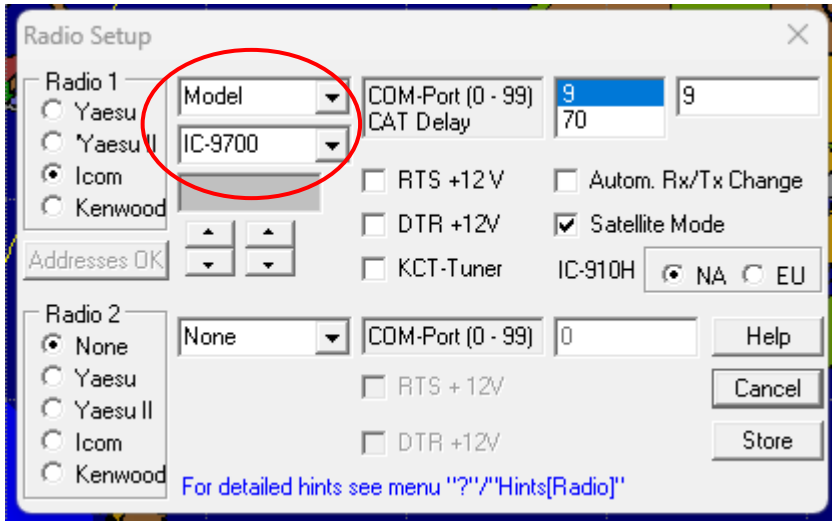
HB9RYZ www.hb9ryz.ch 13. October 2022

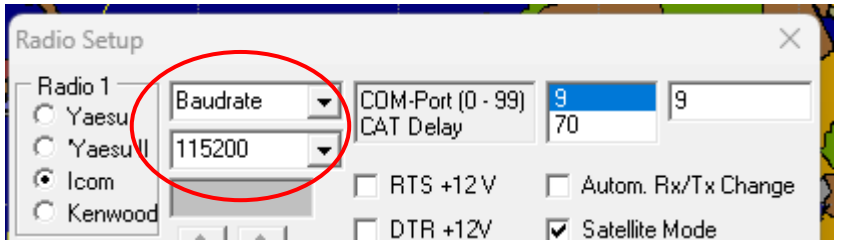
SATPC32 Setup with ICOM IC-9700

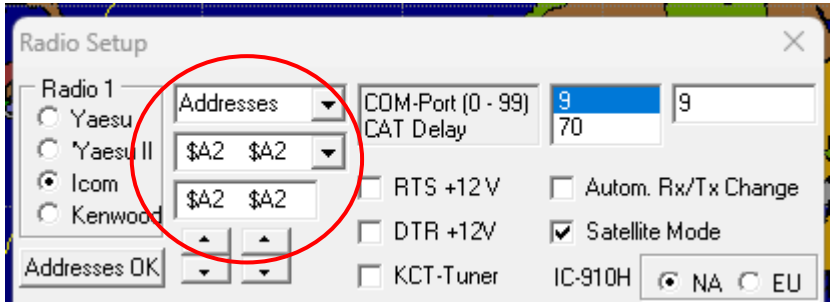
SATPC32 v12.10



Setup – Radio Setup

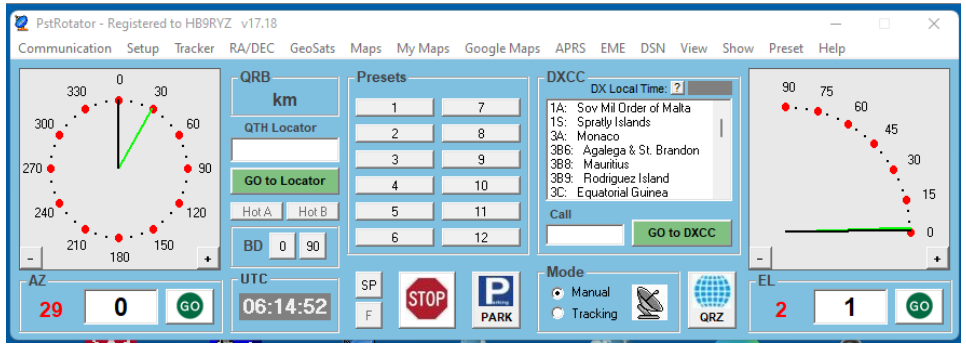




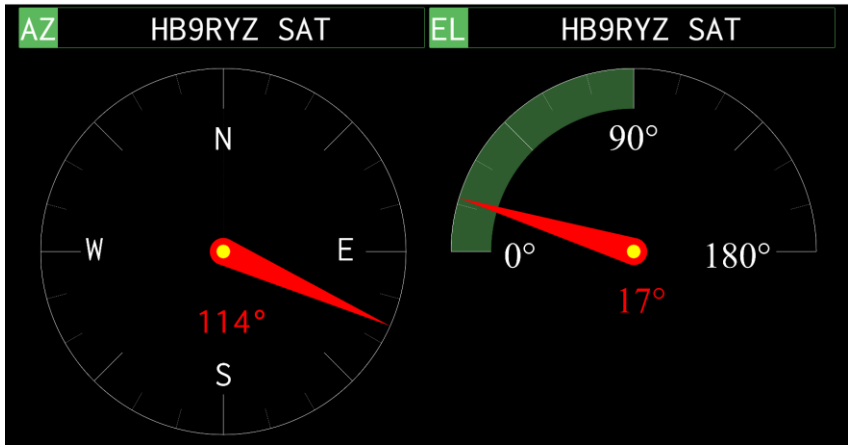


PSTRotator Setup

PSTRotator



RemoteRotator Web-GUI from DH1TW running on a Raspberry Pi



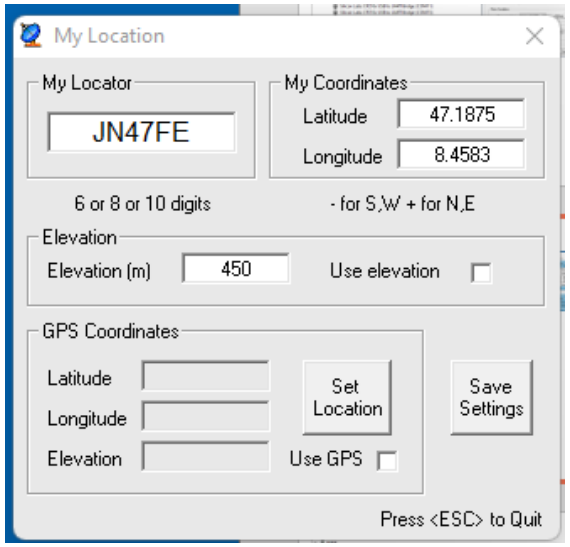
http://192.168.1.180:7071/

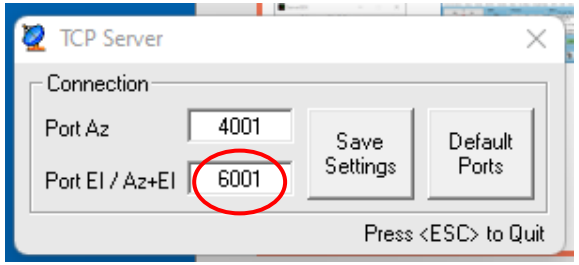
Communications
TCP Client = ON
EL / AZ+EL COM Port = NONE

Setup
Start as TCP Client

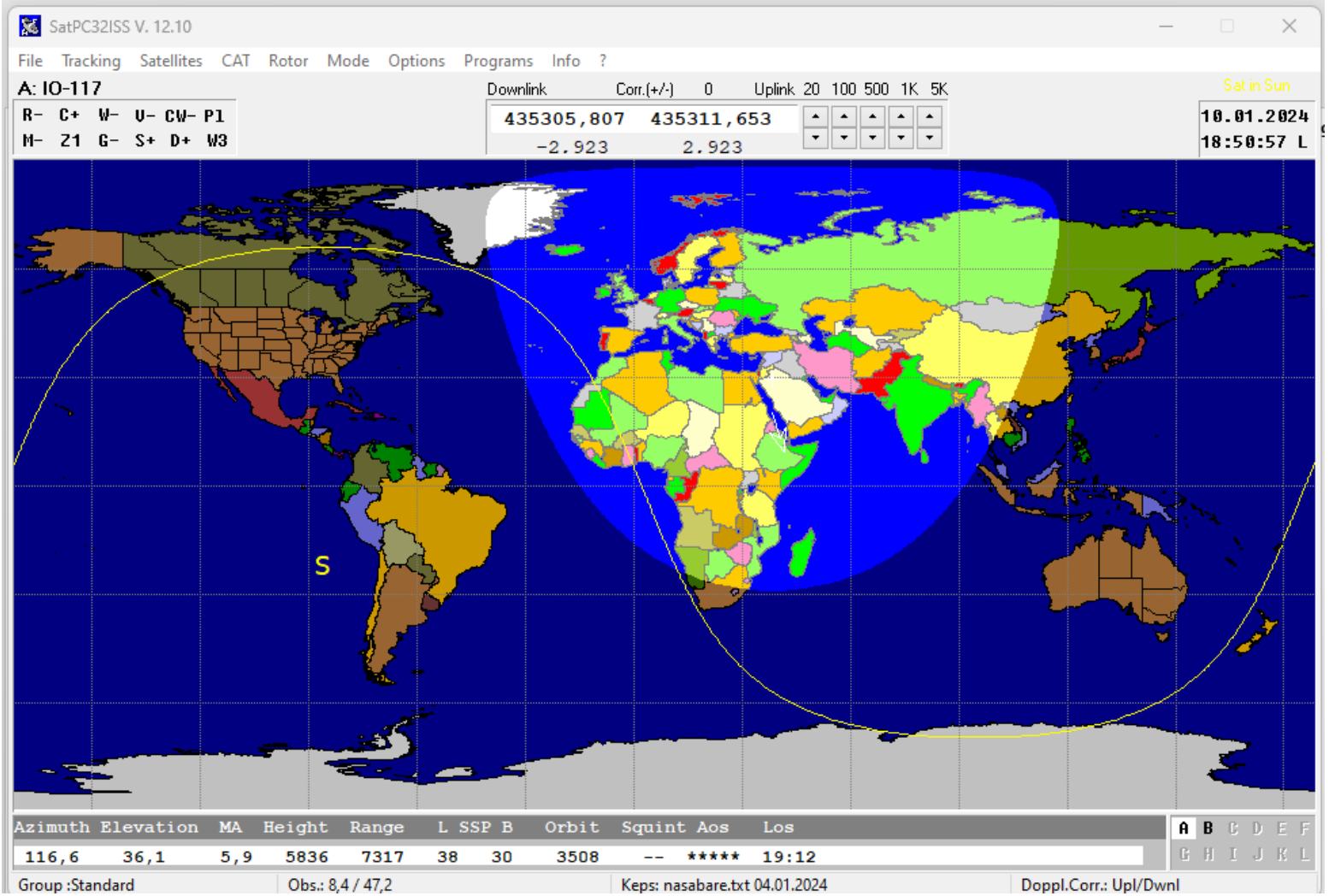
Tracker
SAT = SatPC32 / SatPC32ISS

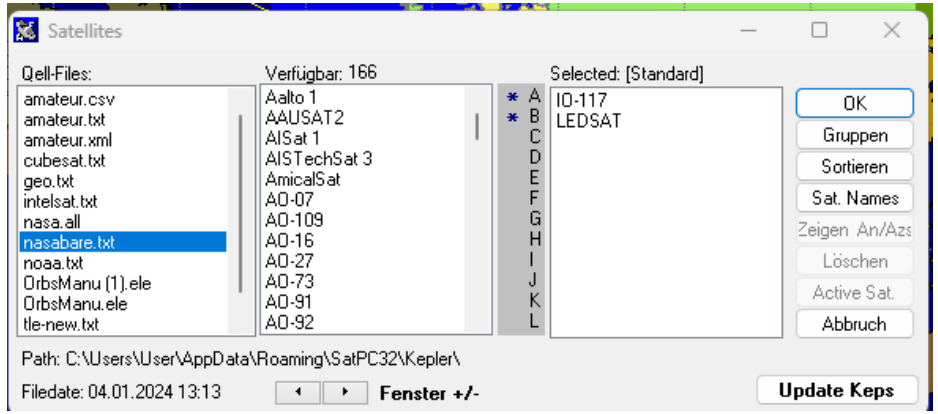
My Location

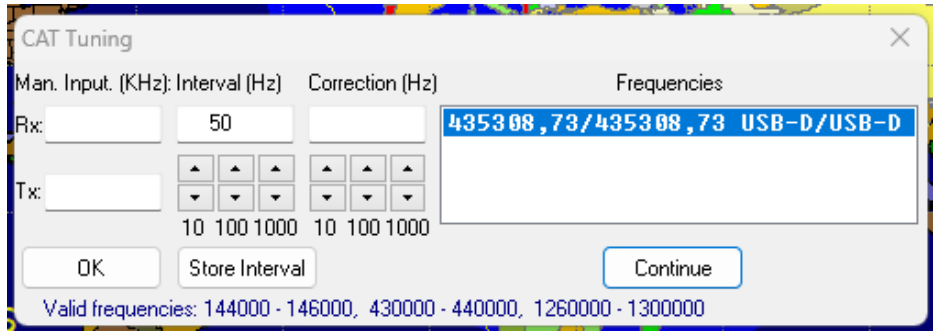




GreenCube (IO-117) MEO Satellite Setup mit SatPC32ISS

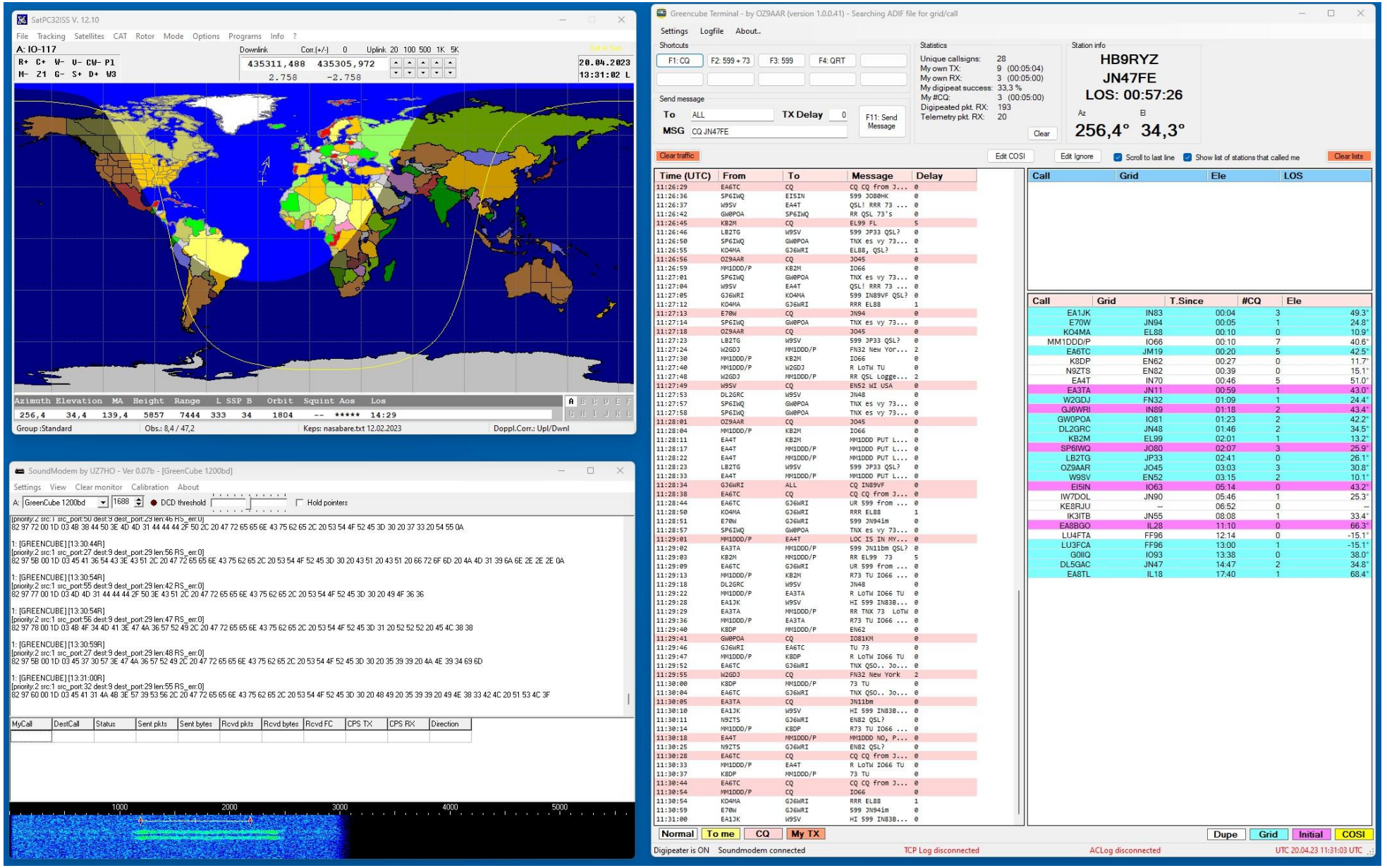






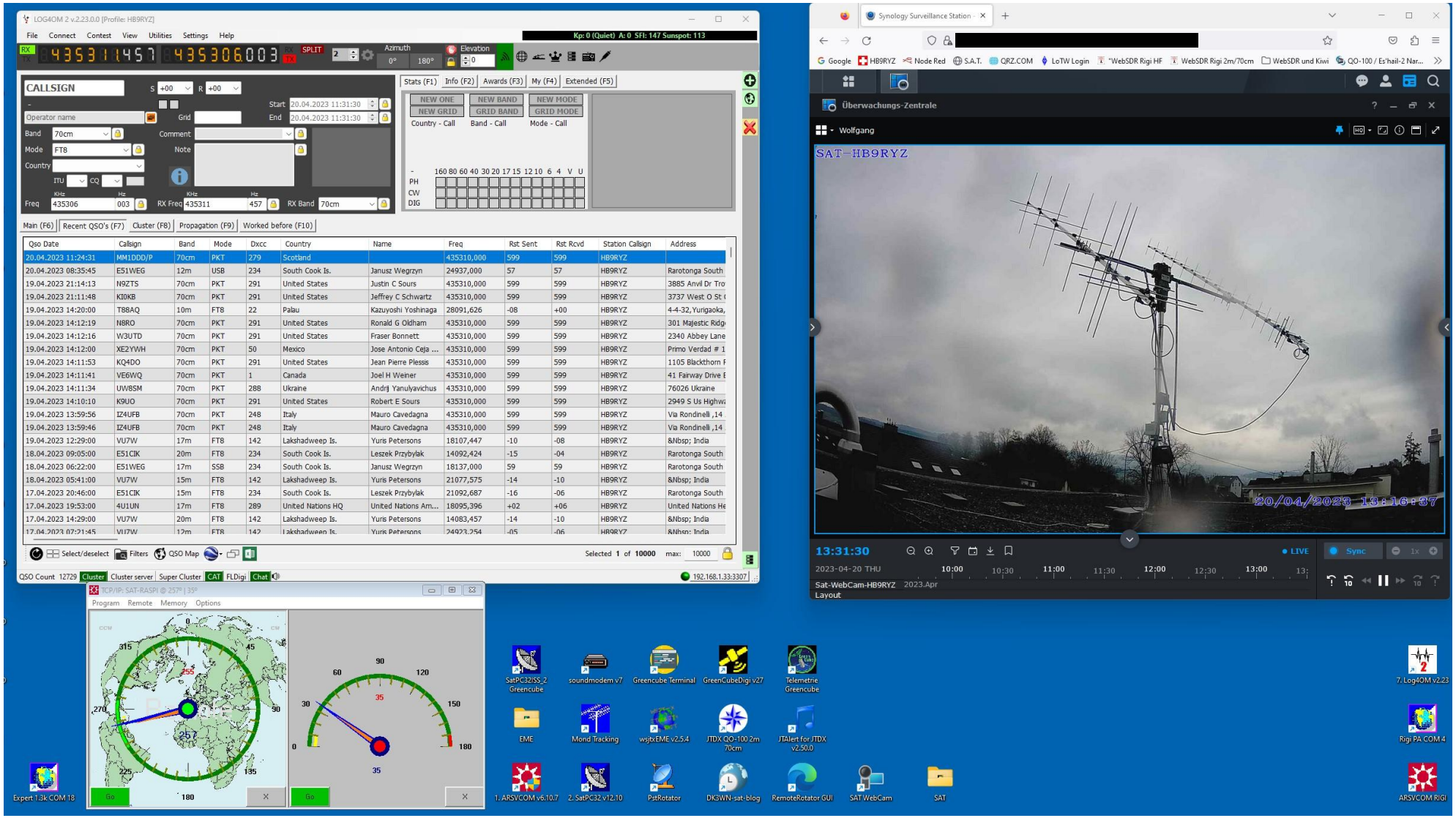
GreenCube (IO-117) MEO Satellite Setup mit SatPC32ISS

GreenCube Application from OZ9AAK: https://moonbounce.dk/hamradio/greencube-terminal-program.html

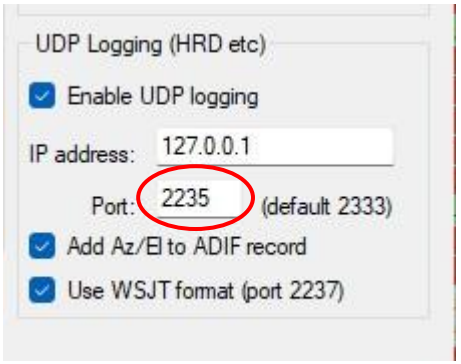


GreenCube (IO-117) MEO Satellite Setup mit Log4OM

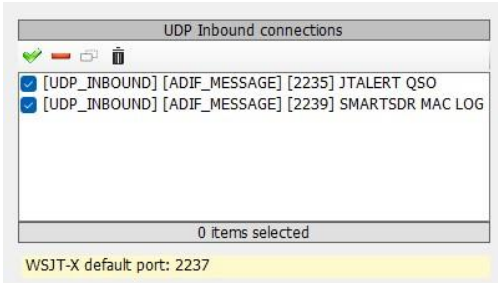
GreenCube Application from OZ9AAK sends the LOG direct to my Log4OM Log-Program



Settings in GreenCube Application from OZ9AAK

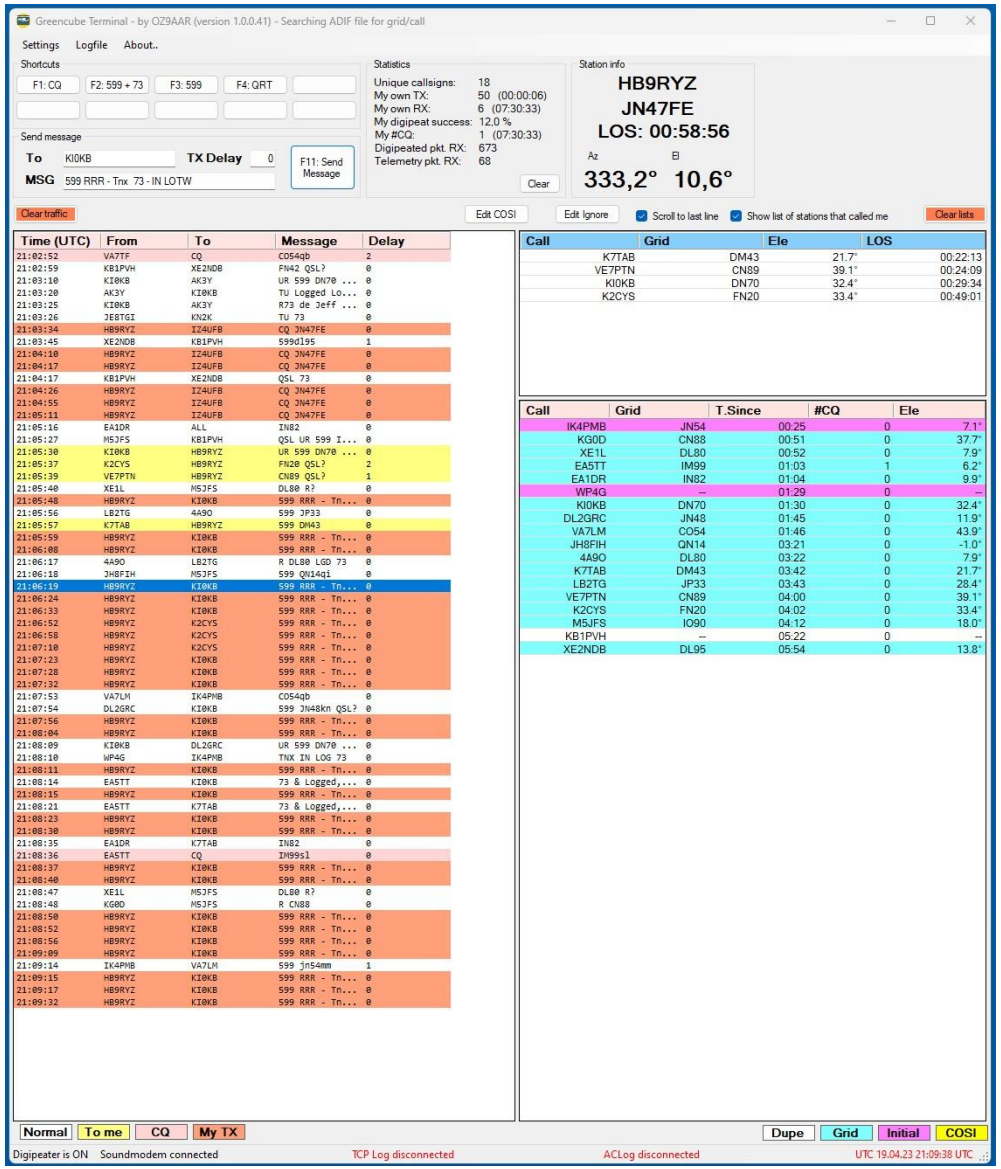


Settings in Log4OM

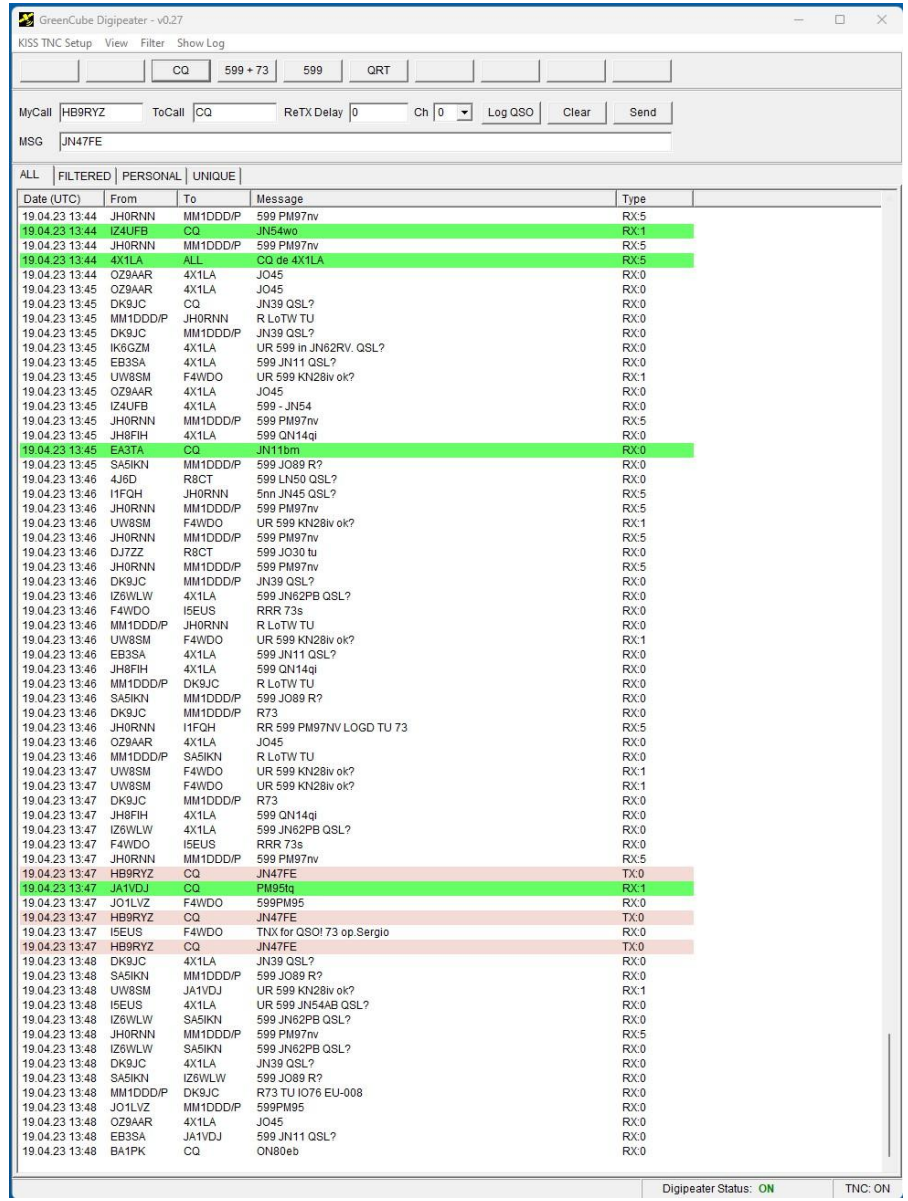


GreenCube (IO-117) MEO Satellite Setup

GreenCube Application from OZ9AAK:
https://moonbounce.dk/hamradio/greencube-terminal-program.html



GreenCube Digipeater v0.27 (the original Software)
https://www.s5lab.space/index.php/digipeater



ICOM IC-9700 Settings for Satellite Communication incl. GreenCube (IO-117) Digipeater

The following **IC-9700** settings are very important:
AGC = OFF
Mode = USB-D

Connectors > External Speaker Separate **"Mix"**
Connectors > ACC AF/IF Output > AF/SQL Output Select **"MAIN"**
Connectors > ACC AF/IF Output > Output Select **"AF"**
Connectors > ACC AF/IF Output > AF Output Level **"50%"**
Connectors > ACC AF/IF Output > AF SQL **"OFF (Open)"**
Connectors > ACC AF/IF Output > IF Output Level **"50%"**

Connectors > USB AF/IF Output > Output Select **"AF"**
Connectors > USB AF/IF Output > AF Output Level **"50%"**
Connectors > USB AF/IF Output > AF Output Level **"50%"**
Connectors > USB AF/IF Output > AF SQL **"OFF (Open)"**
Connectors > USB AF/IF Output > IF Output Level **"50%"**

Connectors > USB SEND/Keying > USB SEND: **"USB (B) DTR"**

Connectors > CI-V > CI-V Baud Rate **"19200"**
Connectors > CI-V > CI-V Transceiver **"OFF"**
Connectors > CI-V > CI-V USB Port **"Link to [REMOTE]"**
Connectors > CI-V > CI-V DATA Baud Rate **"19200"**
Connectors > CI-V > CI-V DATA Echo Back **"on"**

PTT Port Function **"PTT Input + SEND Output"**

Switch AGC to OFF
To switch it off, hold down the AGC button in the Function menu.

Then select on of your AGC options and with the tuning wheel you can now turn it down until it shows OFF.

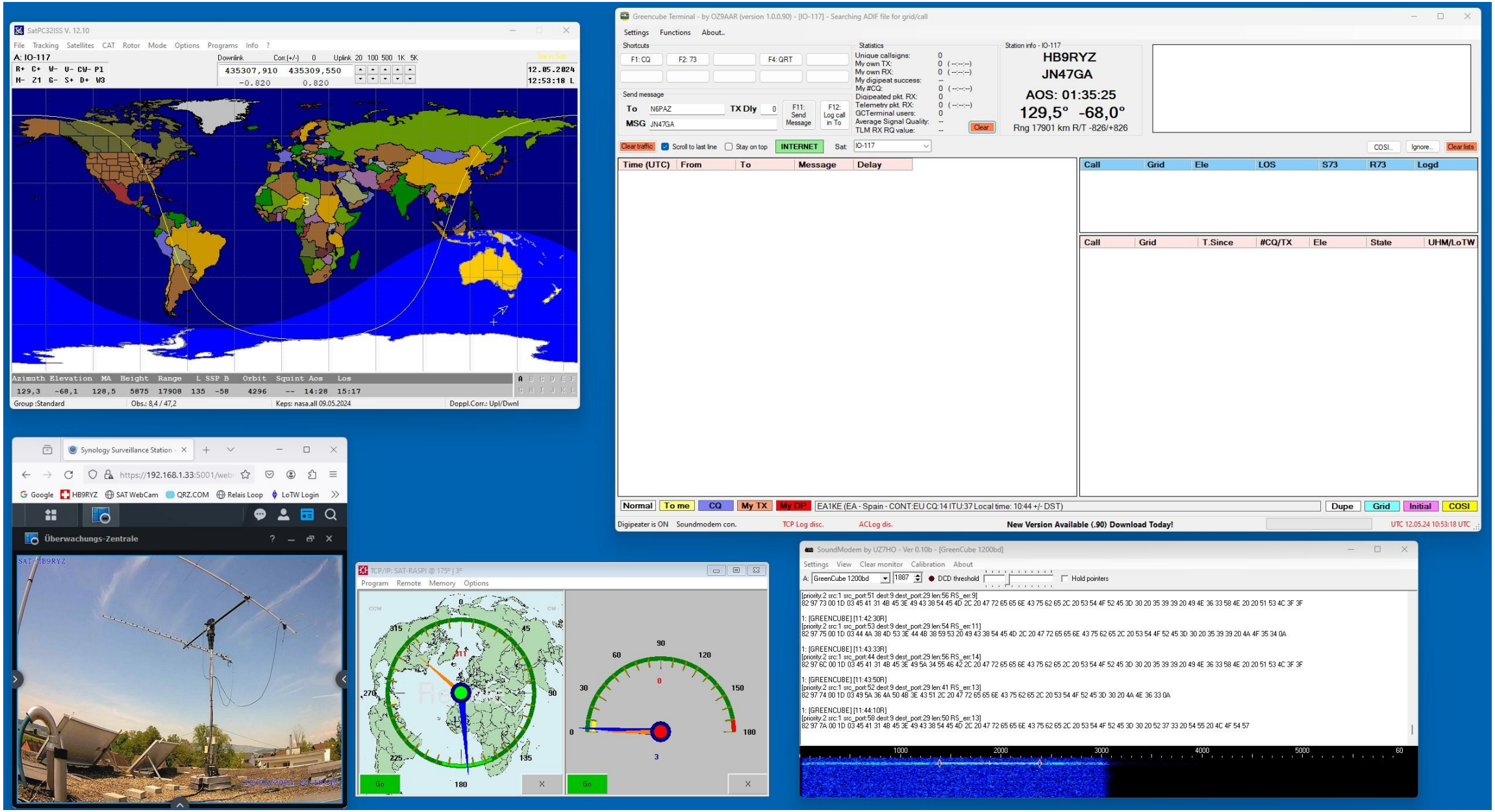
IO-117 Settings

Greencube MEO Satellite

Soundmodem: https://uz7.ho.ua/packetradio.htm

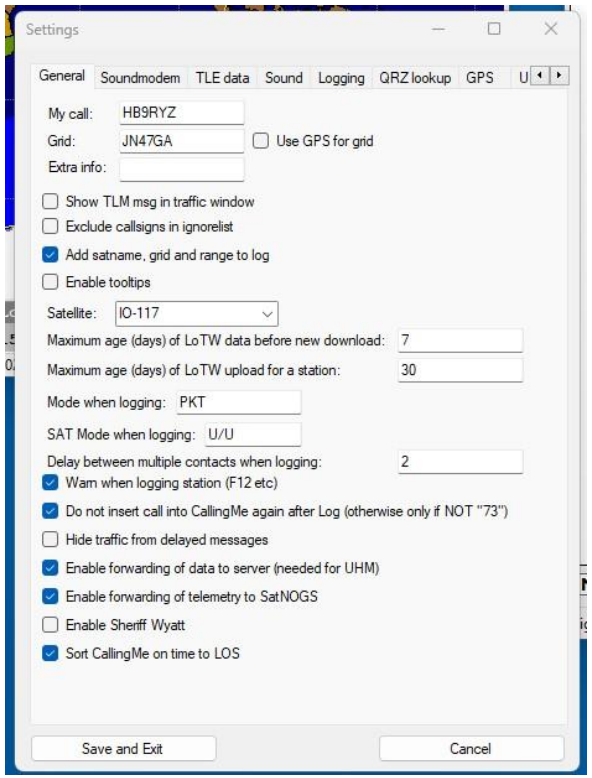
Terminal OZ9AAR: https://moonbounce.dk/hamradio/greencube-terminal-program.html

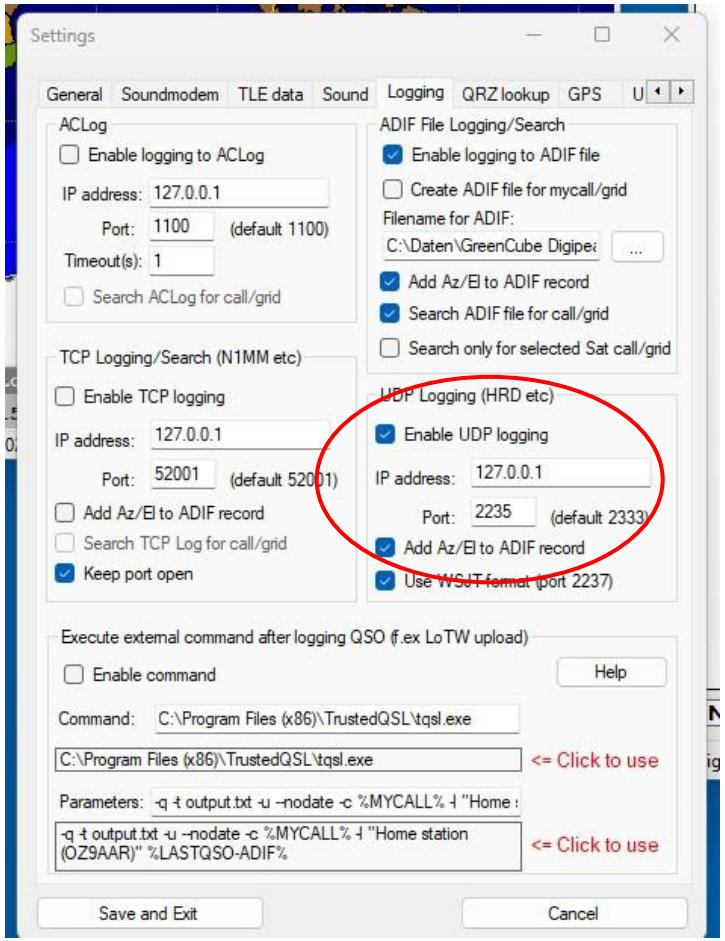
GreenCube (IO-117) MEO Satellite Setup

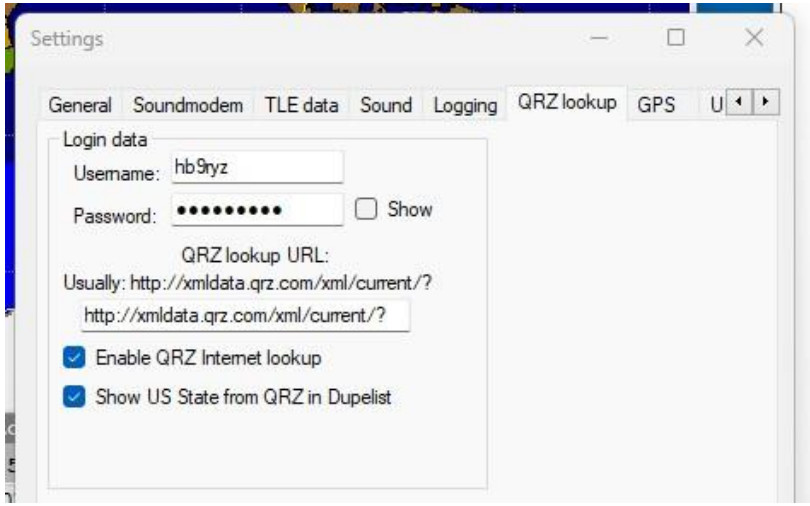


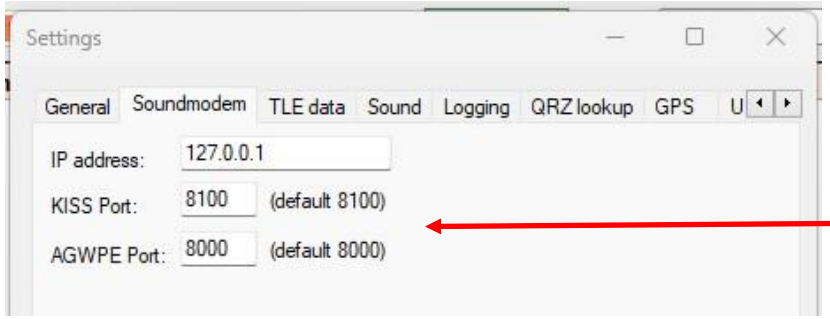
GreenCube (IO-117) MEO Satellite Setup

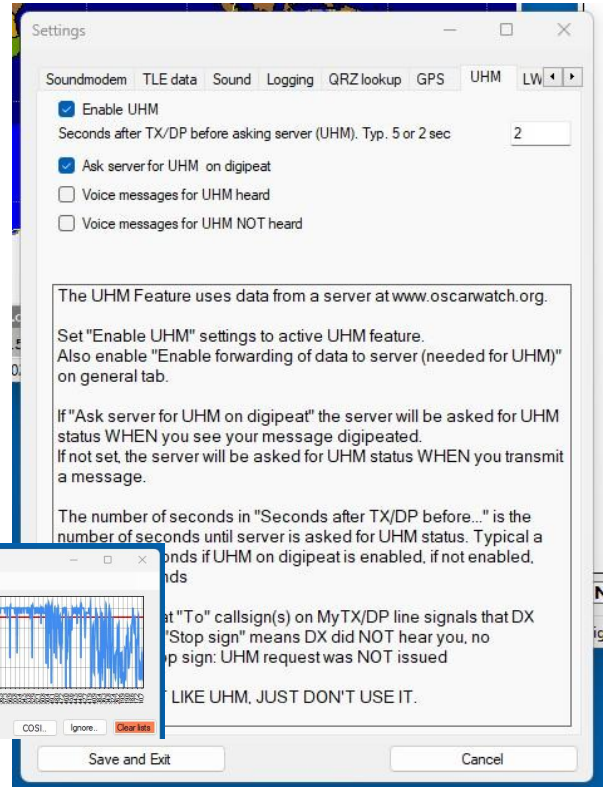
GreenCube Application from OZ9AAK:
https://moonbounce.dk/hamradio/greencube-terminal-program.html





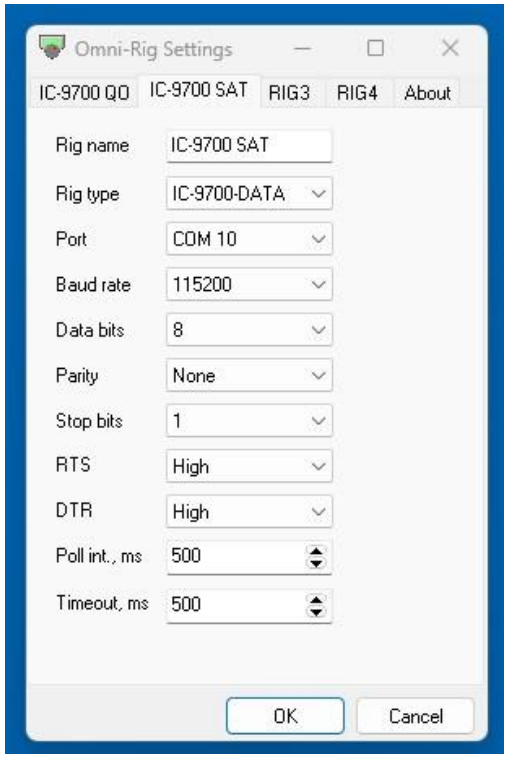




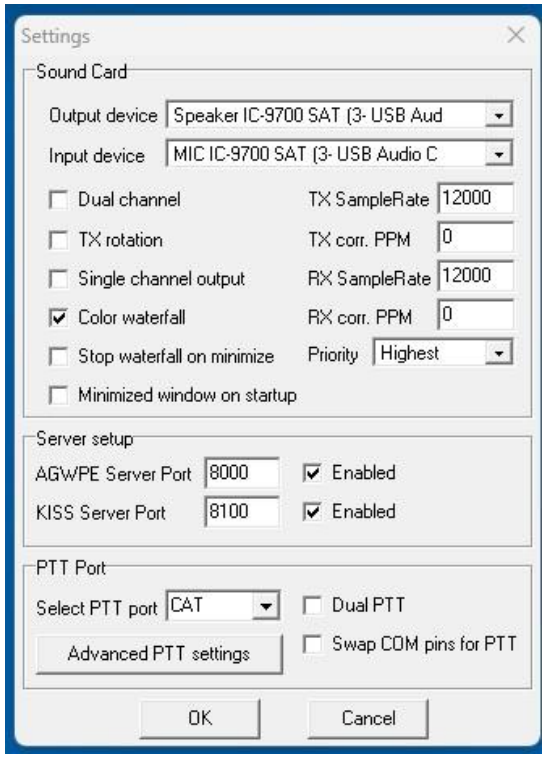


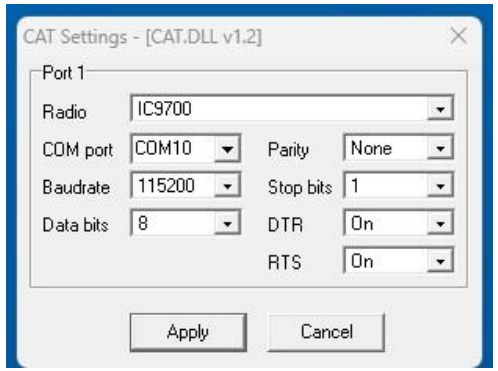
GreenCube (IO-117) MEO Satellite Setup

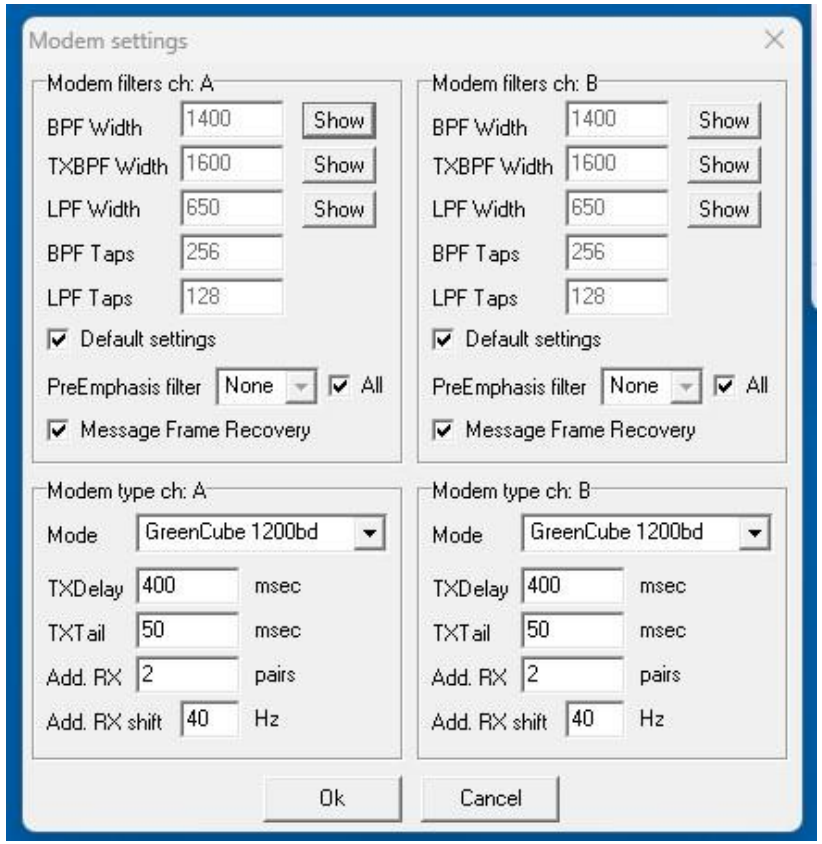
Omnirig



Soundmodem







Log4OM