



Andy's Ham Radio Linux (for non-hams)



Andy Stewart
KB1OIQ
September 10, 2026

Presented to:
Worcester Linux Users' Group
Worcester, MA USA

Biographical Info

Linux:

- Linux user since 1997
- Founder: Worcester Linux Users' Group (1997)
- Founder: Chelmsford Linux Meetup Group (2006 – 2020)
- Linux Instructor:
Chelmsford Community Education (2004 – 2011)

Ham Radio:

- Since 2007 (Amateur Extra license)
- Andy's Ham Radio Linux started in 2011

Career:

- MSEE WPI ('84 and '91)
- Computer Engineer – digital logic verification
- Retired 08/2024

What is AHRL?

- Ham radio software found on the internet
- Collected in one place for the user community
 - Everything is Free Software, Open Source Software, or equivalently licensed
 - Packaged for easy installation
 - Multiple Linux flavors are supported
 - Raspberry Pi OS 6.* supported on RPI 4/5
 - Menus customized for ease of use
 - Distributed on Sourceforge

Goals

- Promote Linux
- Give back to ham radio and Linux communities
- Create a software collection containing as much ham radio software as possible – nothing proprietary
- Goal: Everything just works!
- Focus on the radio hobby!
- The idea of "Andy's Ham Radio Linux" began this way in 2011

AHRL: The Past

- V25 and earlier were heavily customized versions of Xubuntu Linux
- This worked well for 13 years, but ...
 - It was not easily customizable by the user
 - No other flavors of Linux
 - Each release was handcrafted
 - tedious and time consuming x 2 (32/64 bit)
 - No documentation of how it was created
 - The downloadable ISO file was HUGE (around 5 GB)
 - There was no upgrade path between AHRL versions

AHRL: The Present

- Starting with V26 (Aug 2024):
 - First, the user installs an AHRL supported* flavor of Linux
 - Secondly, the user downloads and installs AHRL
 - Magically, everything just works (one hopes!)
 - Lastly, have fun with the new software!

* Supported = I've tested it thoroughly

AHRL V26 Changes

- Installation script:
 - Serves as documentation
 - Customizable
- Much smaller tar.gz file: 850 MB (v27)
- Multiple Linux flavors are supported:
 - Debian Live, LMDE
 - [XKU]buntu Linux
 - Linux Mint (Cinnamon)
 - Raspberry Pi OS
- Install updates on top of previous AHRL

Target Computer

- Any x86_64 computer 12 years old or less
...or...
Raspberry Pi 4/5/400/500
- Memory:
 - Minimum: 4 GB
 - Recommended: 8 GB
- Storage for AHRL
 - 15-20 GB after installation
- Functioning network

Obtaining AHRL

- Download the file from SourceForge:
 - <http://www.sf.net>
 - Search for: Andy's Ham Radio Linux
 - Current version: v27
 - Released: May 3, 2026
 - Click the big green "Download" button
 - andy_v27.tar.gz
 - Also: Files → v27 → V27_Bug_Workarounds.txt
 - Also: Files → v27 → GETTING_STARTED

Installing AHRL

- Described in GETTING_STARTED and V27_Bug_Workarounds.txt
 - Unpack andy_v27.tar.gz
 - edit/fix install_ahrl
 - install_ahrl
- Reboot the computer
- Peruse the menus and see what's there!

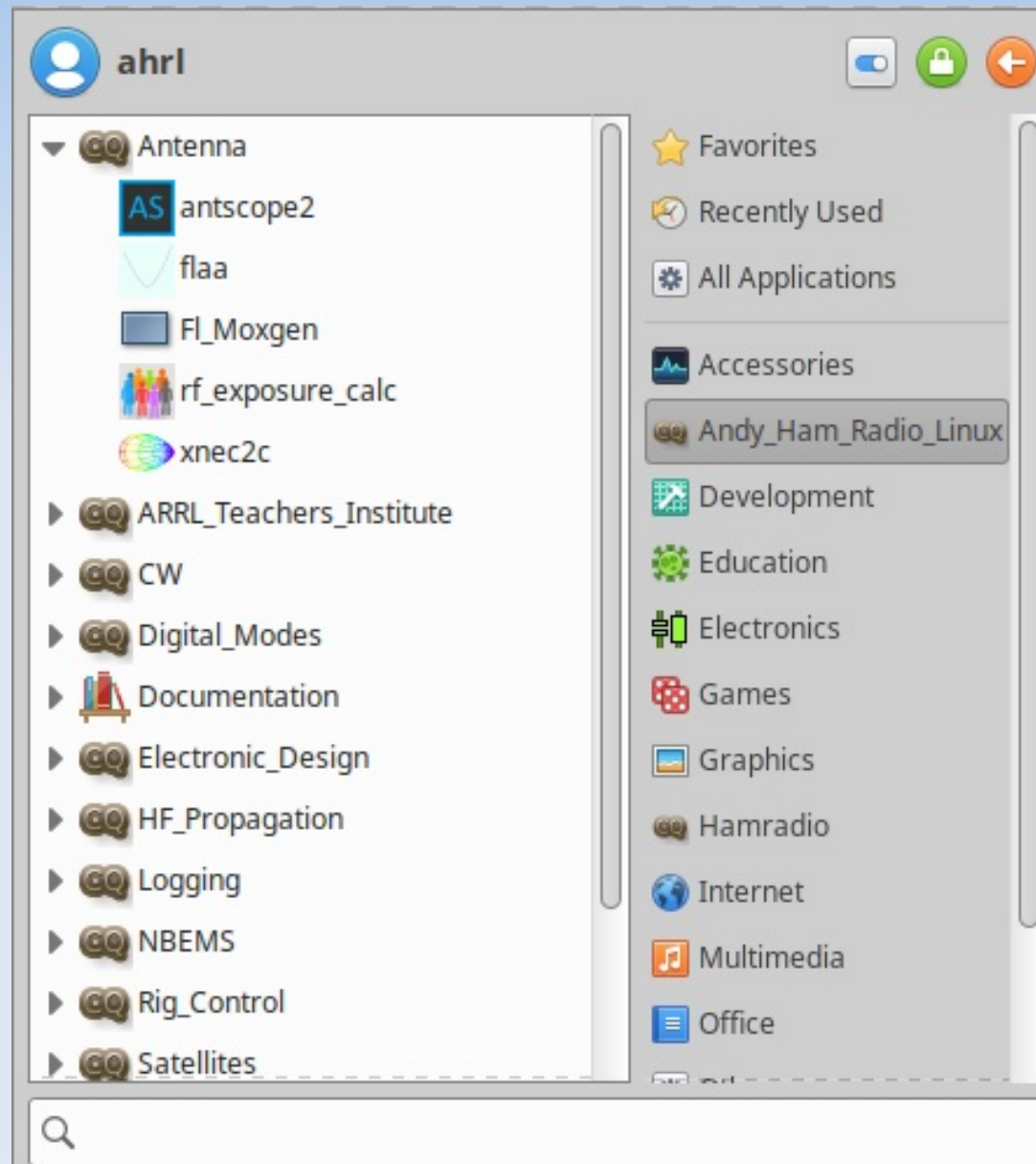
ARRL Teachers Institute

- ARRL = American Radio Relay League
 - ham radio's national headquarters
- ARRL is using AHRL !
- Many classes since June 1st, 2025
- Using Raspberry Pi 5
- This has been VERY successful!
- This is GREAT!
 - for ham radio, Linux, AHRL
 - for ARRL, the teachers and their students!

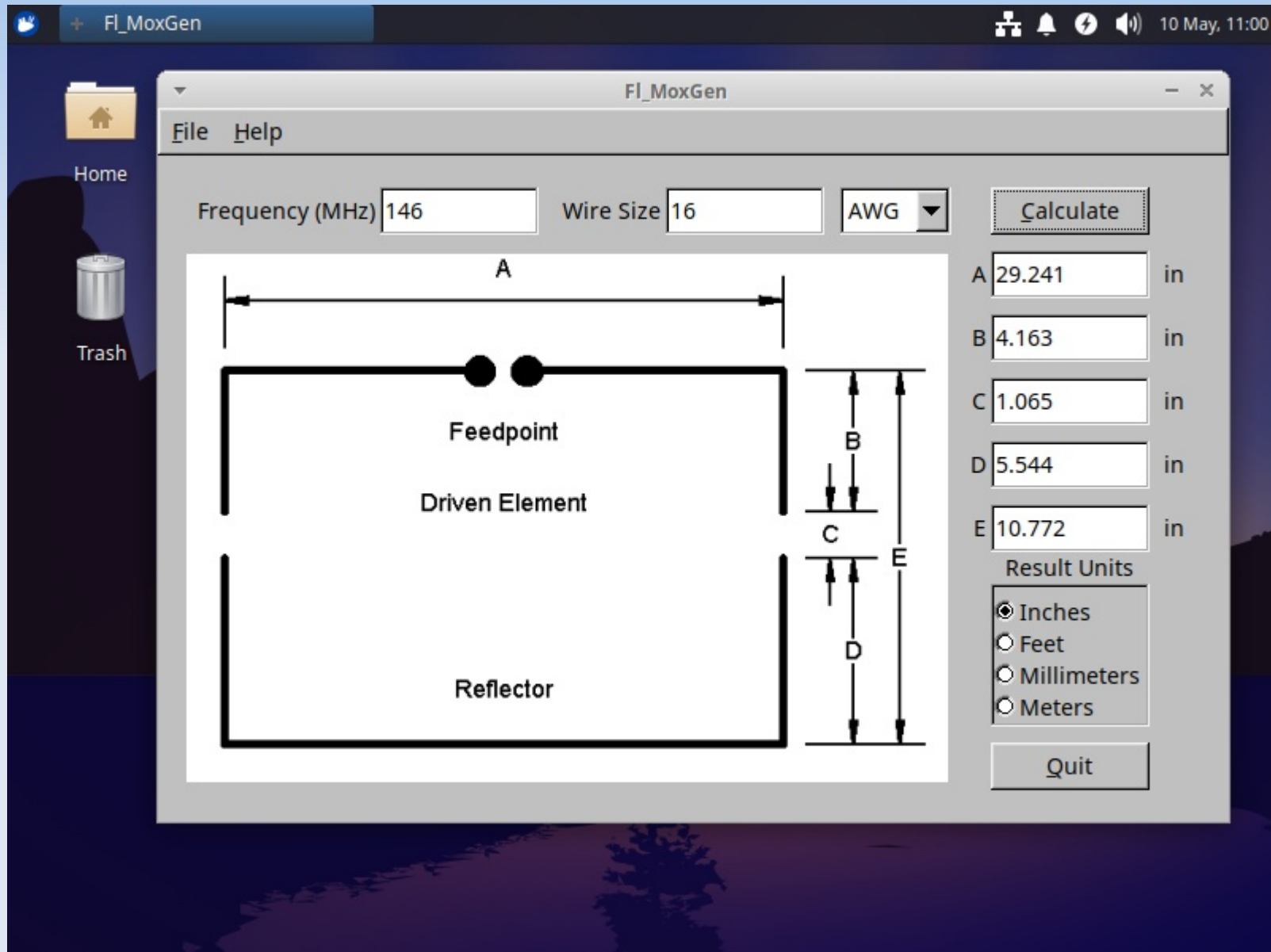
What do Hams do?

- Communicate via radio
 - voice, morse code, digital
 - via satellite
- Build and repair:
 - antennas, radios
 - radio circuits, power supplies
- Keep a log of our contacts
- Control our radios via computer
- Teach and Learn
- Social club

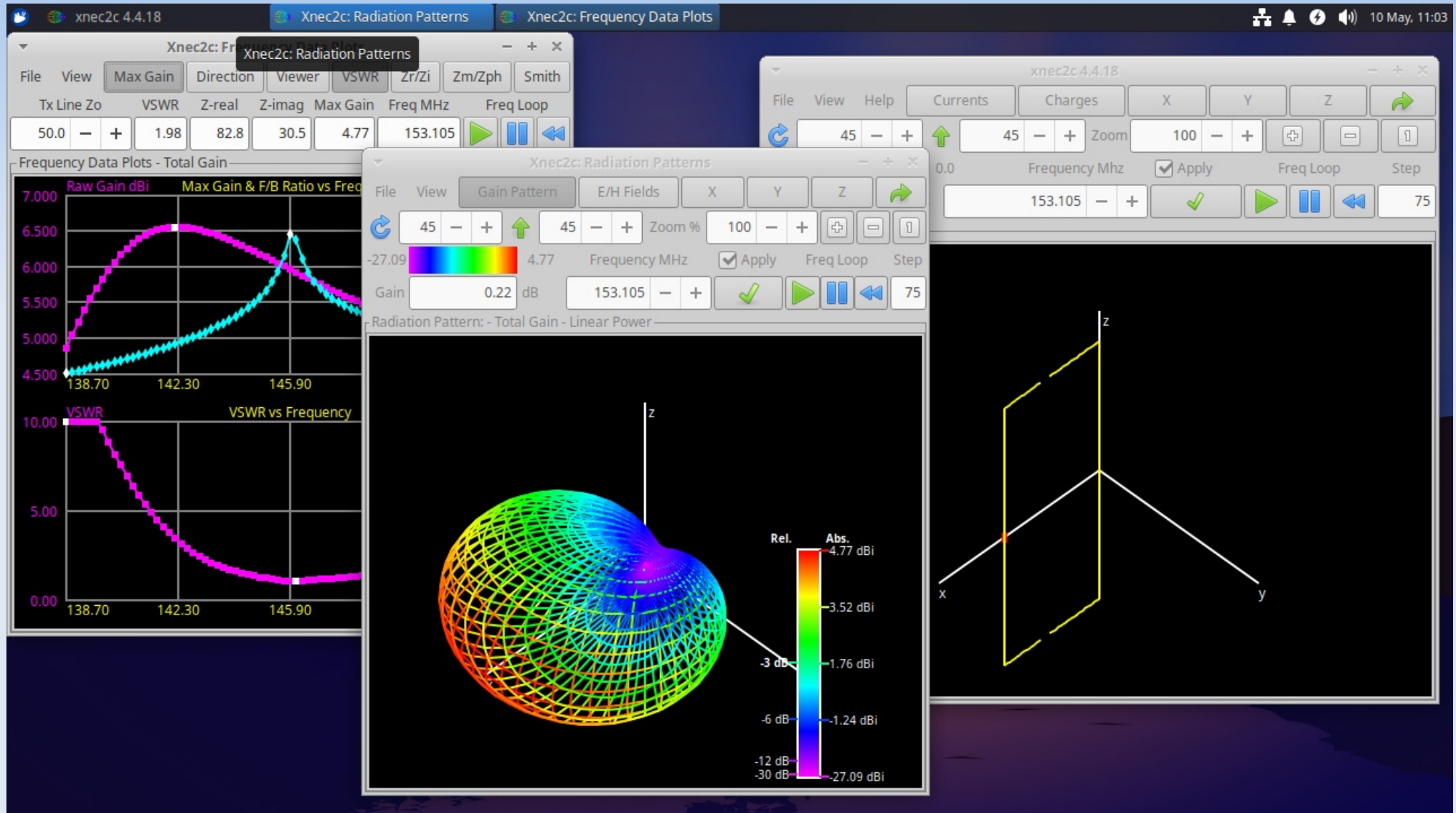
Antenna Menu



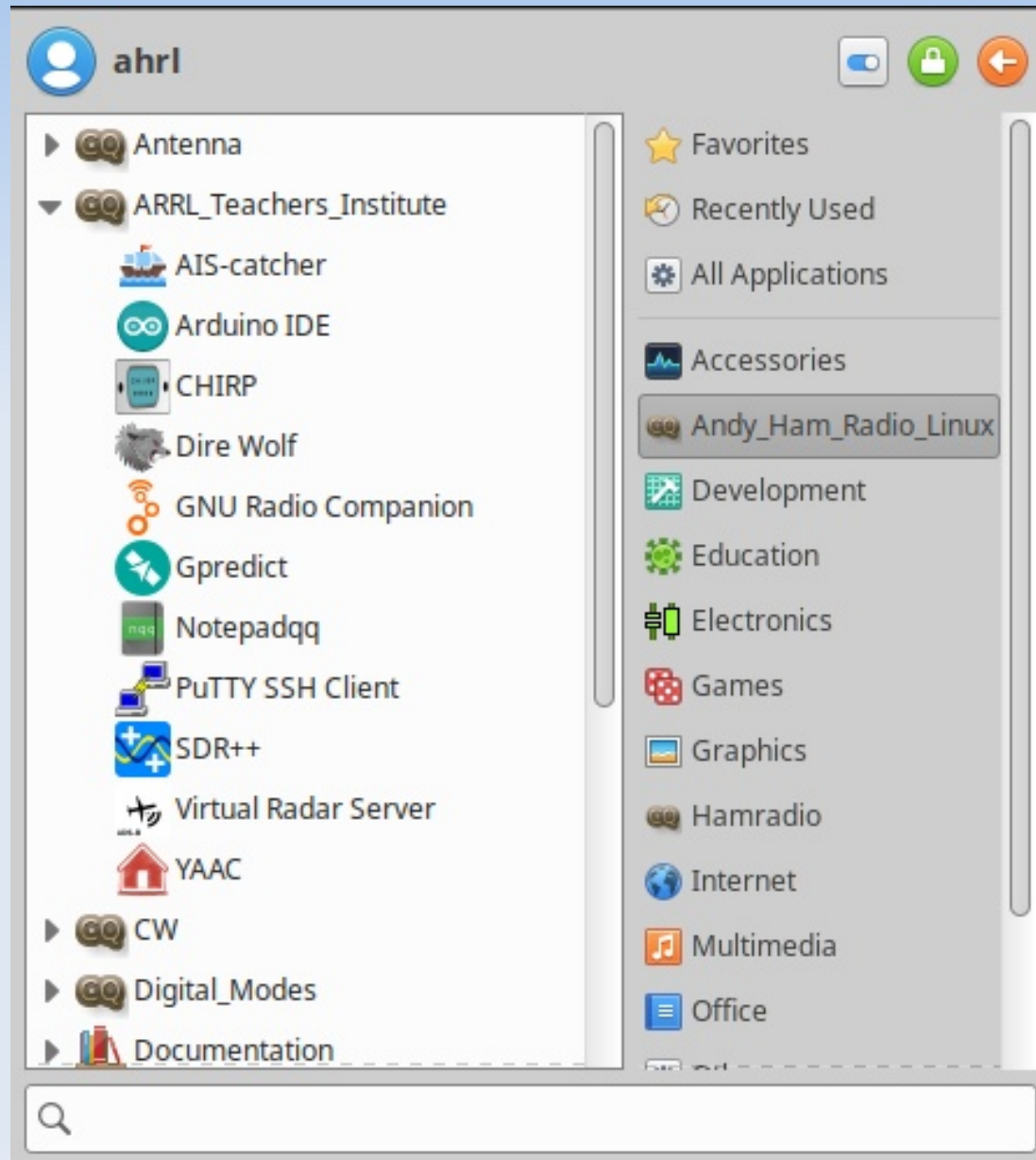
Antennas - Moxon Rectangle



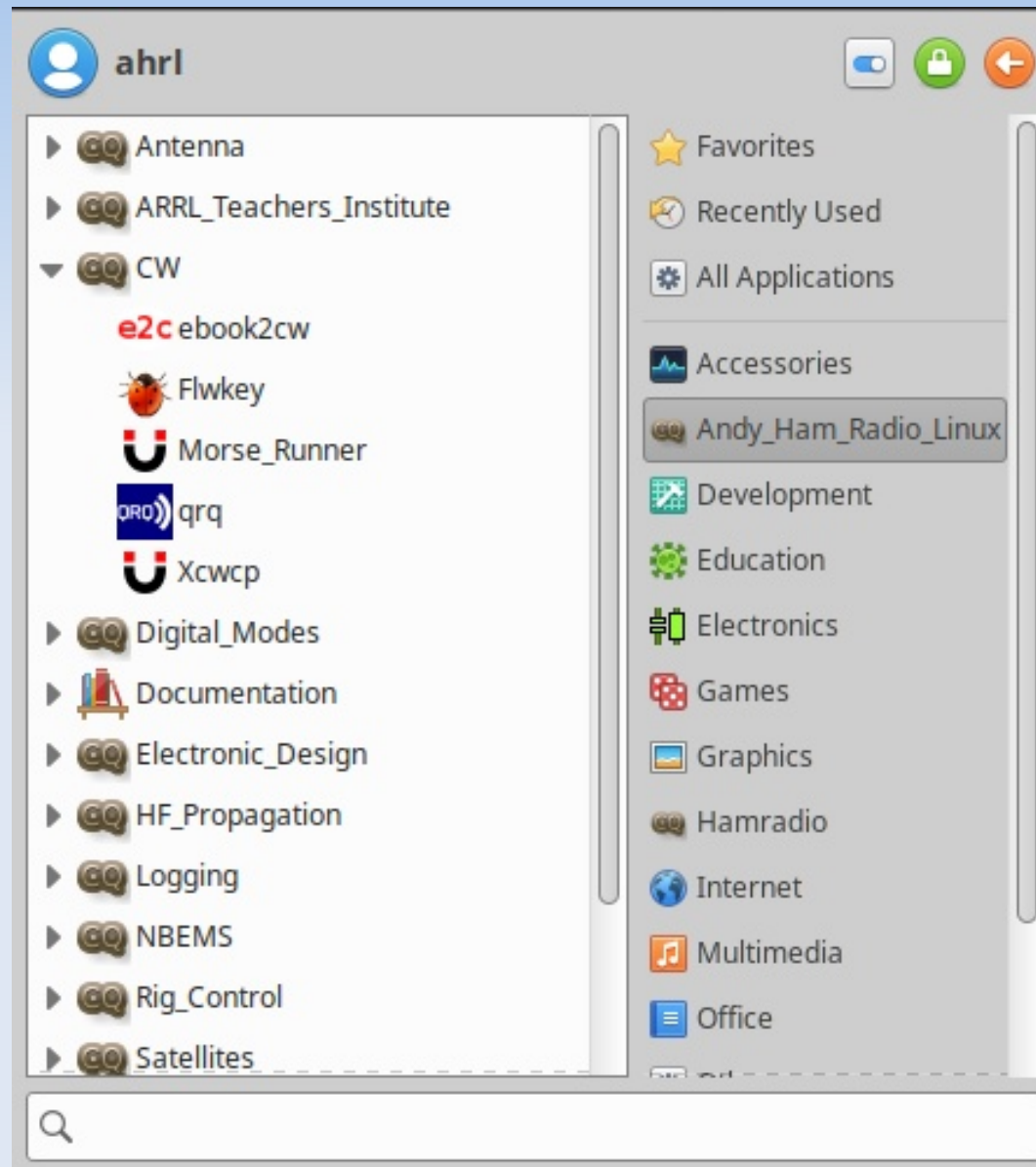
Antenna modeling - xnec2c



ARRL Teachers Institute Menu



CW Menu



CW - Morse Runner

Morse Runner - Community Edition

File Run Send Settings Help

Morse Runner 1.85.3
CW CONTEST SIMULATOR
FREWARE

Copyright ©2004-2016 Alex Shovkoplyas, VE3NEA
<http://www.dxatlas.com/MorseRunner>

Copyright ©2022-2025 Morse Runner Community Edition Contributors
<https://www.github.com/w7sst/MorseRunner>

Contest
ARRL DX
Exchange 5NN ON

Station
Call VE3NEA ☐ QSK
CW Speed 25 WPM
CW Pitch 450 Hz
RX Bandwidth 550 Hz
Mon. Level

Band Conditions
☐ QRN ☐ Flutter ☐ QRM ☐ LIDs ☐ QSB
Activity 2

Run for 30 min.

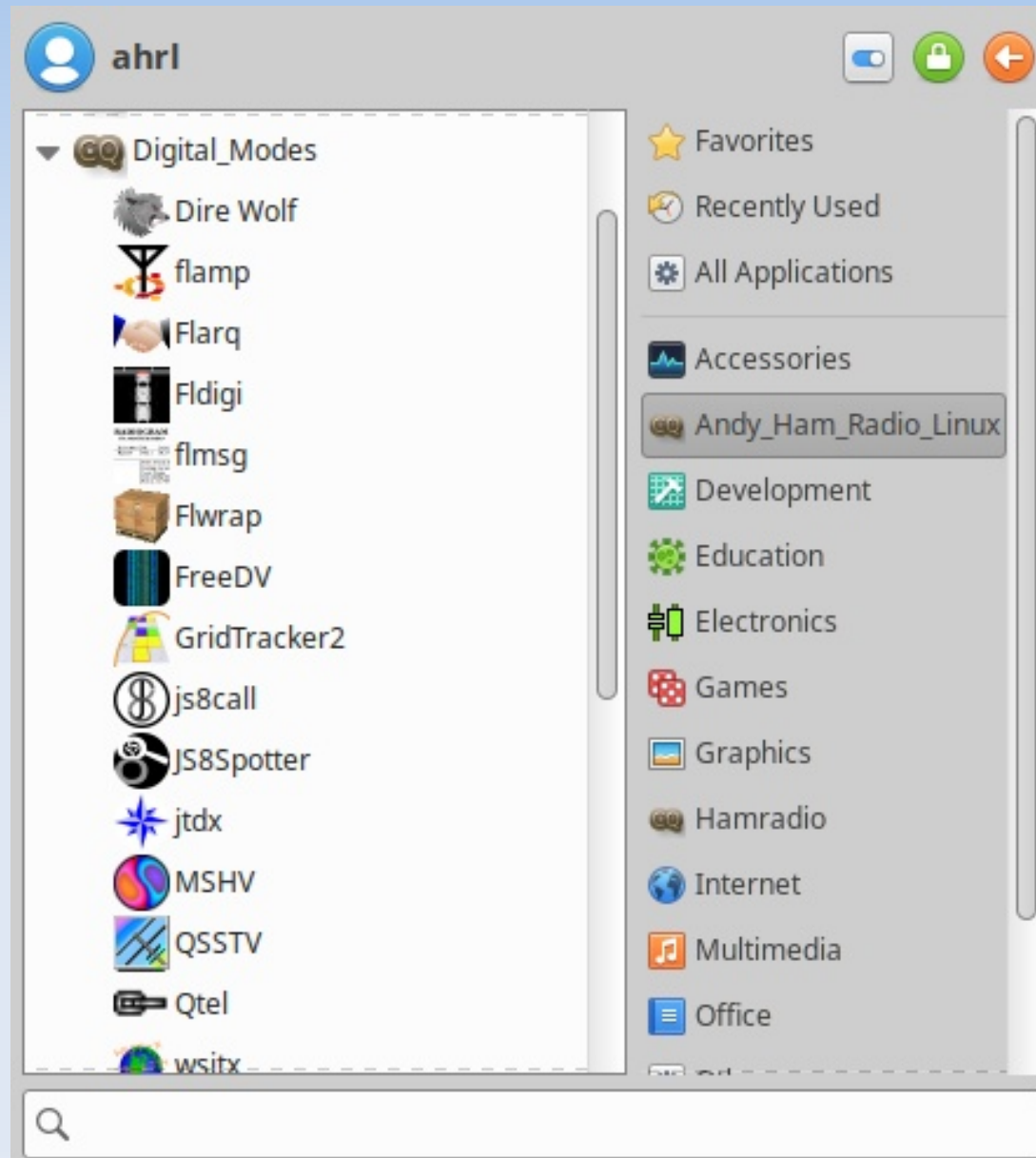
Call RST Power

F1 CQ F2 <exch> F3 TU F4 <my>
F5 <his> F6 B4 F7 ? F8 NIL

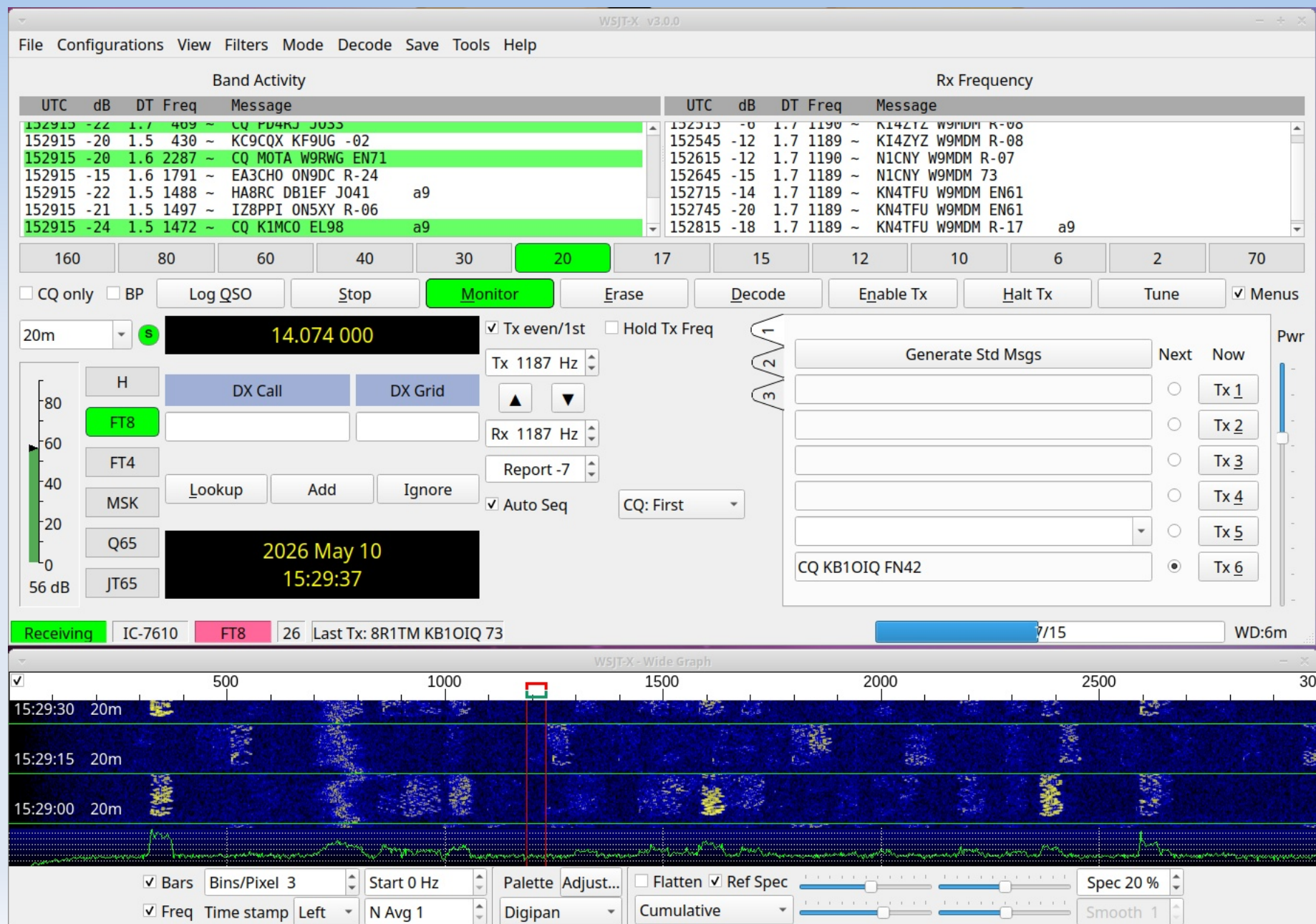
00:00:00

Pts Mult Score
Raw Verified

Digital Modes Menu



Digital Modes - wsjtx



Digital Modes - GridTracker2



Digital Modes - GridTracker2

Call Roster: 116 heard • 54 in roster • 9 wanted

RECEIVE **Halt TX** **Settings**

Logbook **Live Band & Mode**

Hunting **New+Unconfirmed**

Wanted

- ☐ Callsign
- ☒ Grid
- ☒ DXCC
- ☐ Marathon
- ☐ WPX
- ☒ POTA
- ☐ CQz
- ☐ ITUz
- ☒ State
- ☐ County
- ☐ Continent
- ☐ Watcher

Exceptions

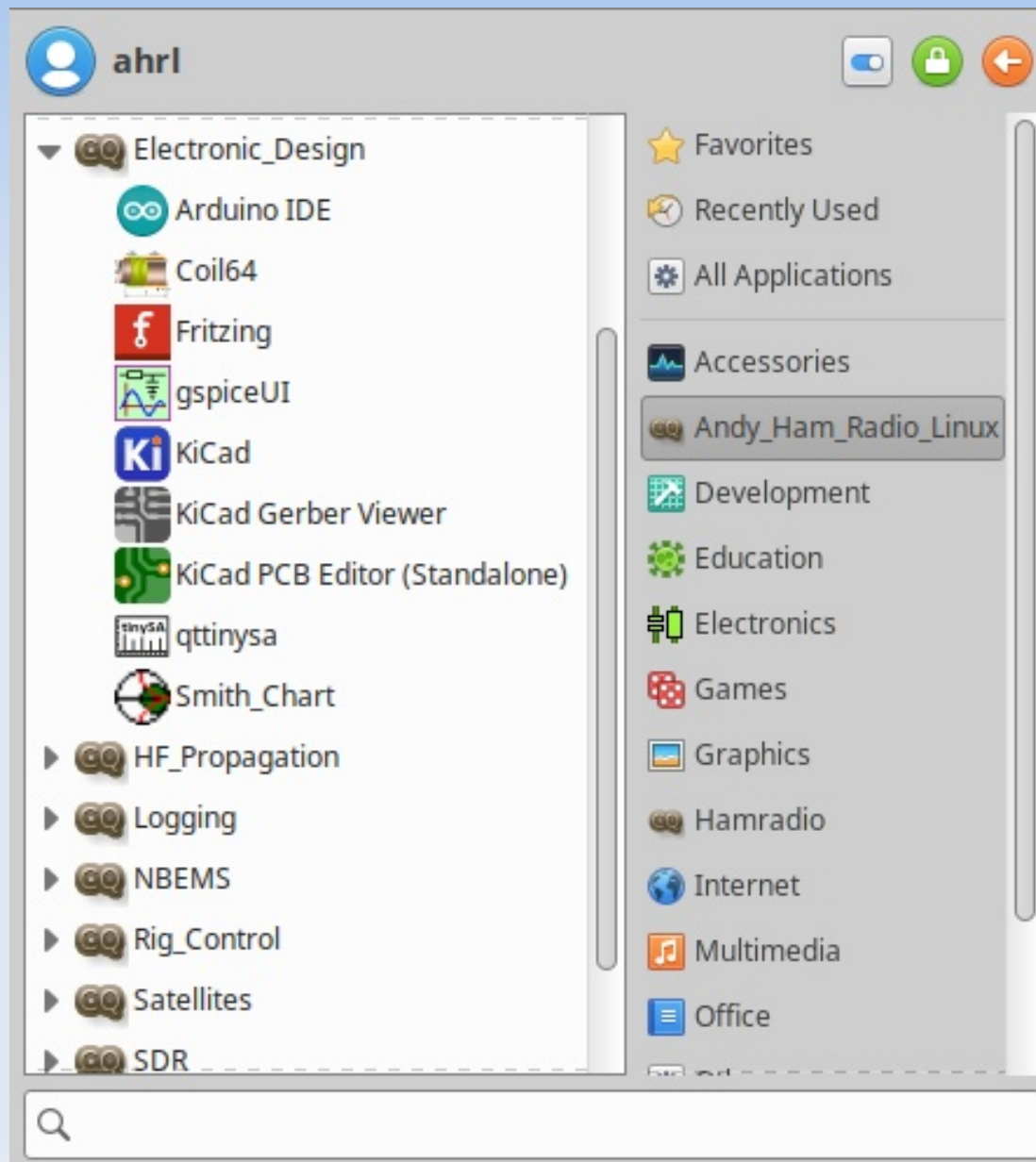
- ☒ Only Wanted
- ☐ CQ Only
- ☐ RR73 as CQ
- ☐ New Calls
- ☐ Has Grid
- ☒ Not My DXCC
- ☐ Only My DXCC
- ☐ Uses eQSL

Fewer Controls

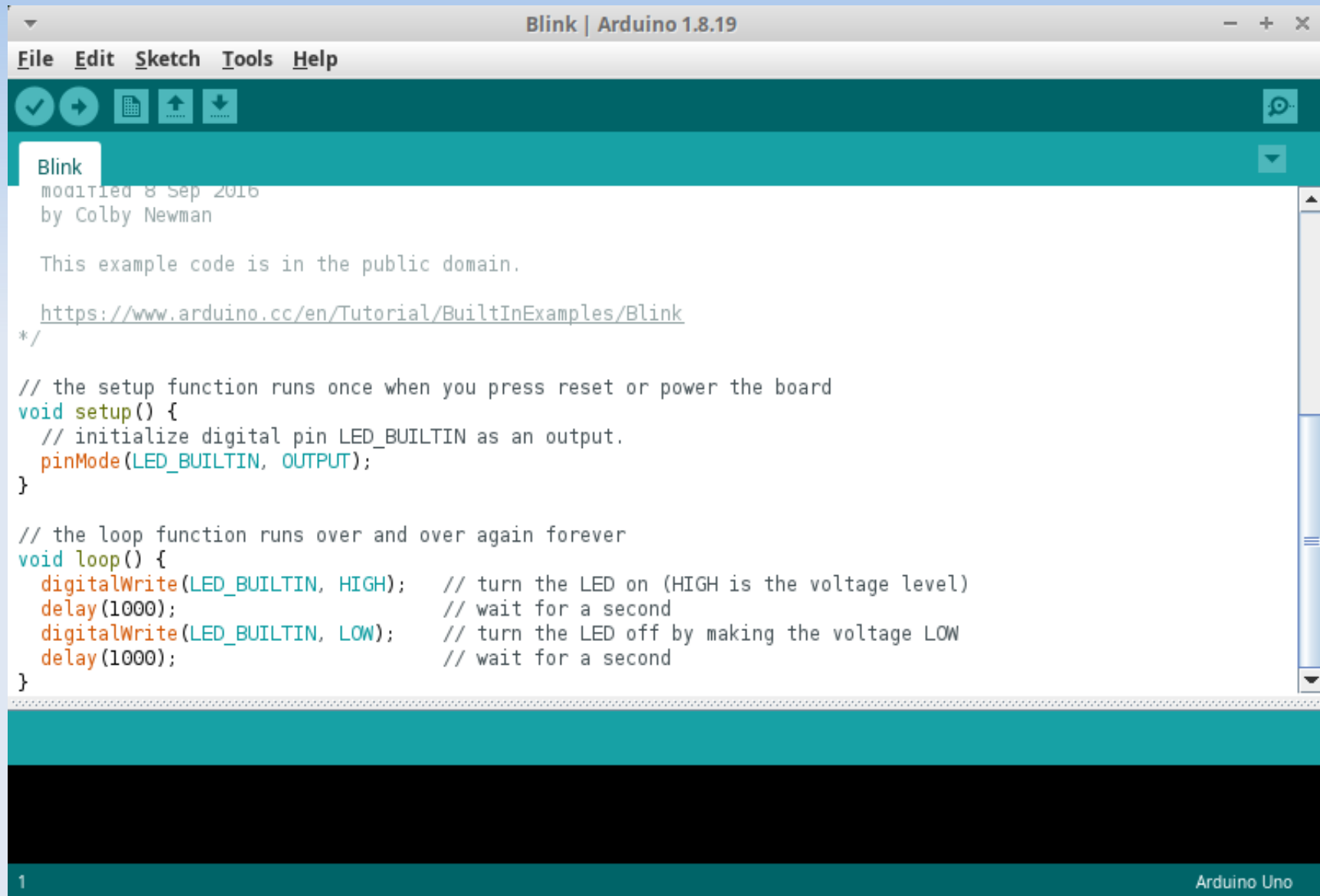
...

Callsign	Calling	Grid	POTA	DXCC	Flag	State	Cont	dB	Age ▼
CT1ILT	KZZJ	IN50		Portugal			EU	-11	15s
YO6LM	CQ	KN25		Romania			EU	-23	15s
VE6JNT	CQ	DO83		Canada		AB	NA	-17	15s
F4LHI	SV9TLU	JN28		France			EU	-17	15s
LZ1ZF	CQ	KN22		Bulgaria			EU	-21	30s
YO9IAB	CQ	KN25		Romania			EU	-21	45s
SP3DV	T31TTT	JO83		Poland			EU	-6	1m 30s
SV9TLU	CQ	KN25		Crete			EU	-22	2m
VE6WQ	CQ DX	DO83		Canada		AB	NA	-10	2m

Electronic Design Menu



Electronic Design - arduino



The screenshot shows the Arduino IDE interface with the 'Blink' example code loaded. The window title is 'Blink | Arduino 1.8.19'. The menu bar includes 'File', 'Edit', 'Sketch', 'Tools', and 'Help'. The toolbar contains icons for checking, running, uploading, and downloading. The code editor displays the following text:

```
Blink
modified 8 Sep 2016
by Colby Newman

This example code is in the public domain.

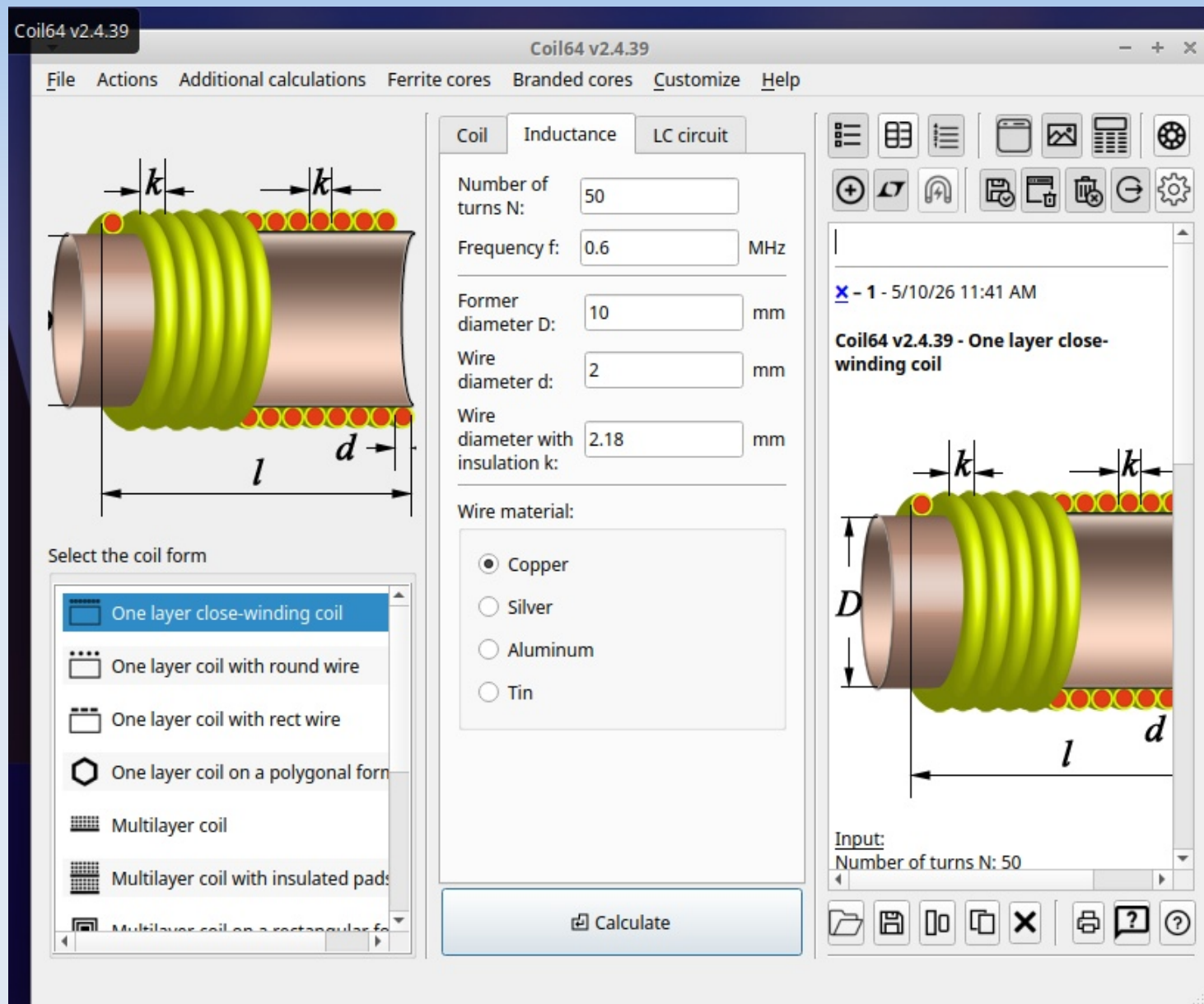
https://www.arduino.cc/en/Tutorial/BuiltInExamples/Blink
*/

// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

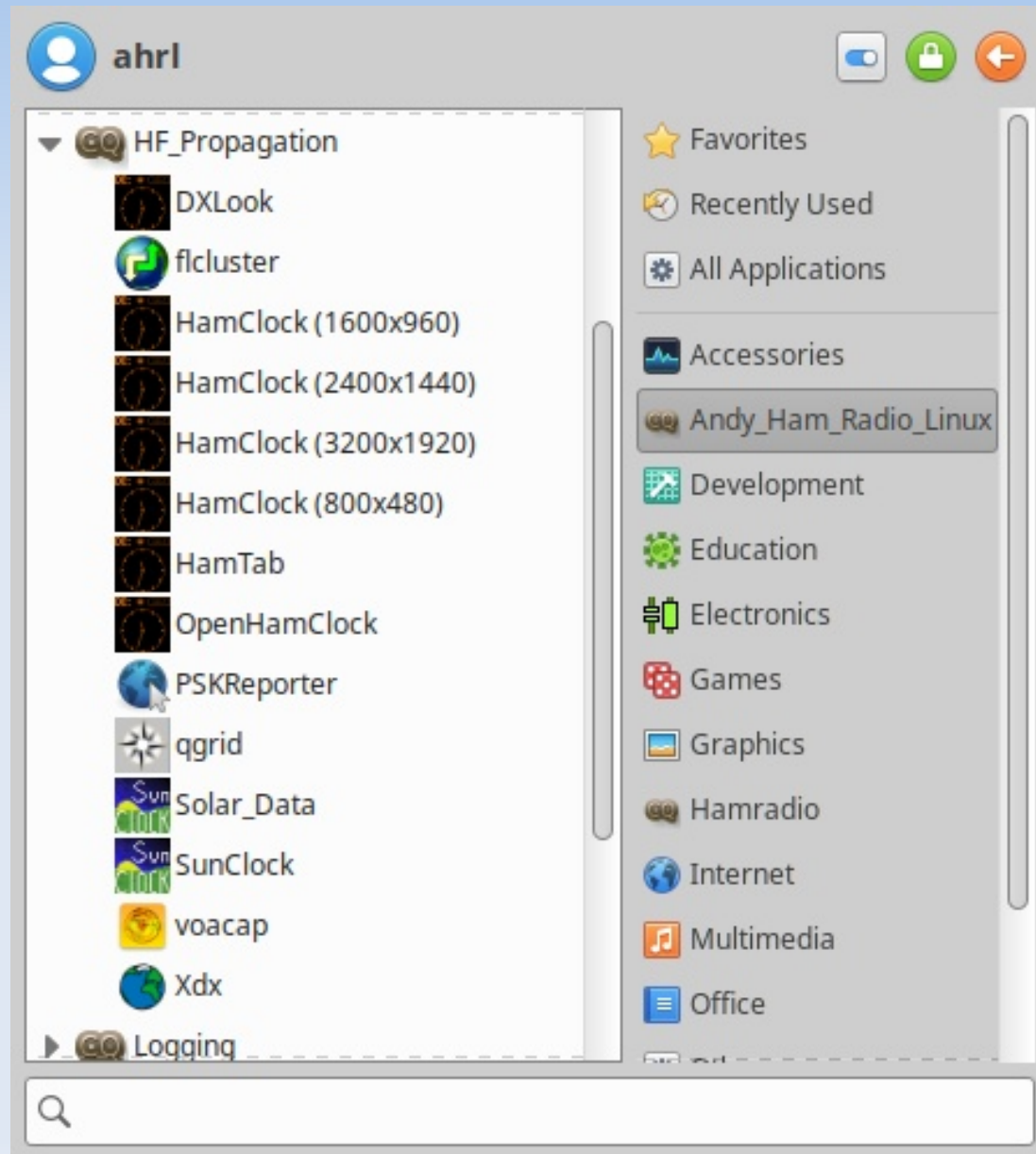
// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH);   // turn the LED on (HIGH is the voltage level)
  delay(1000);                       // wait for a second
  digitalWrite(LED_BUILTIN, LOW);    // turn the LED off by making the voltage LOW
  delay(1000);                       // wait for a second
}
```

The status bar at the bottom shows '1' on the left and 'Arduino Uno' on the right.

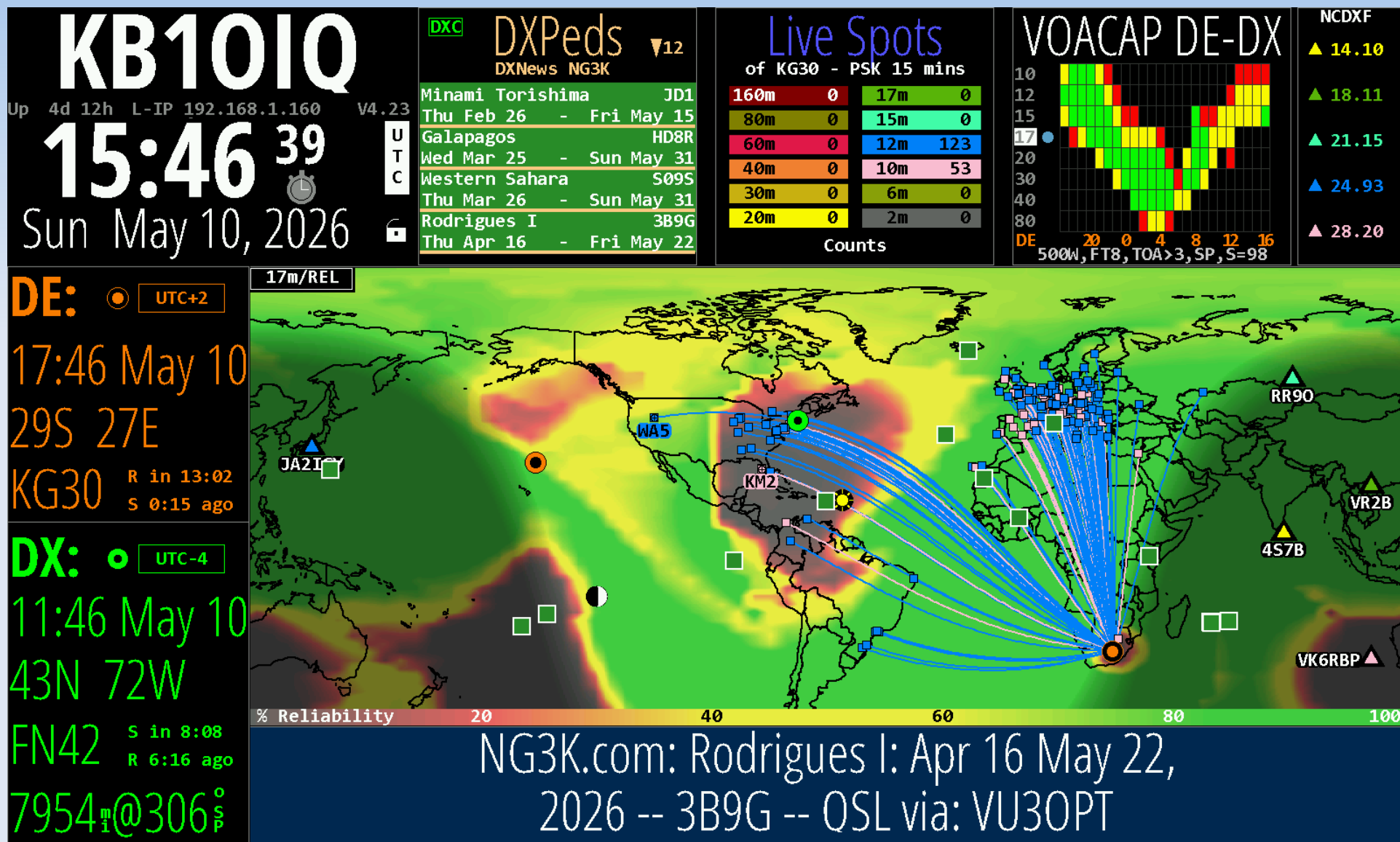
Electronic Design - coil64



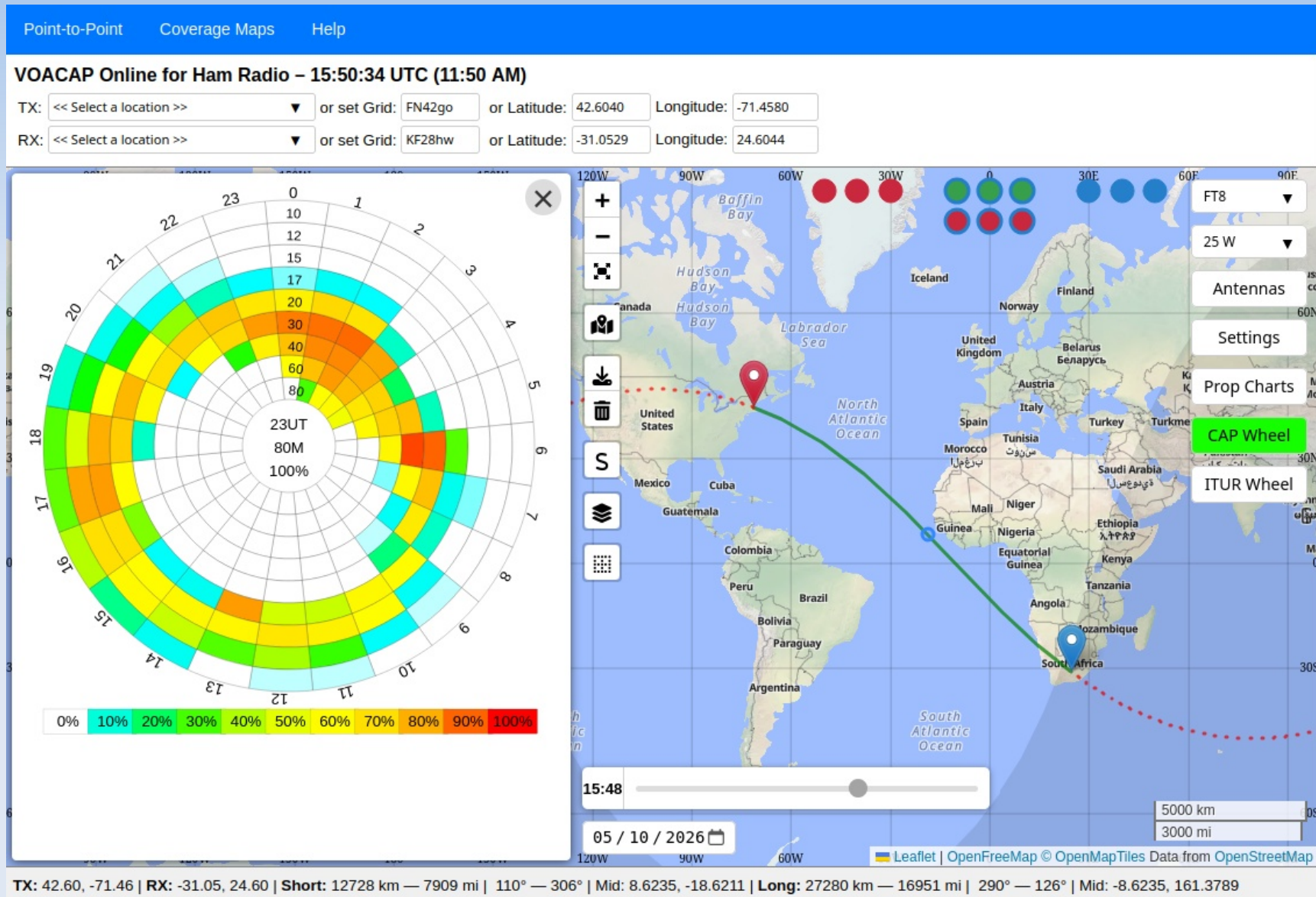
HF Propagation Menu



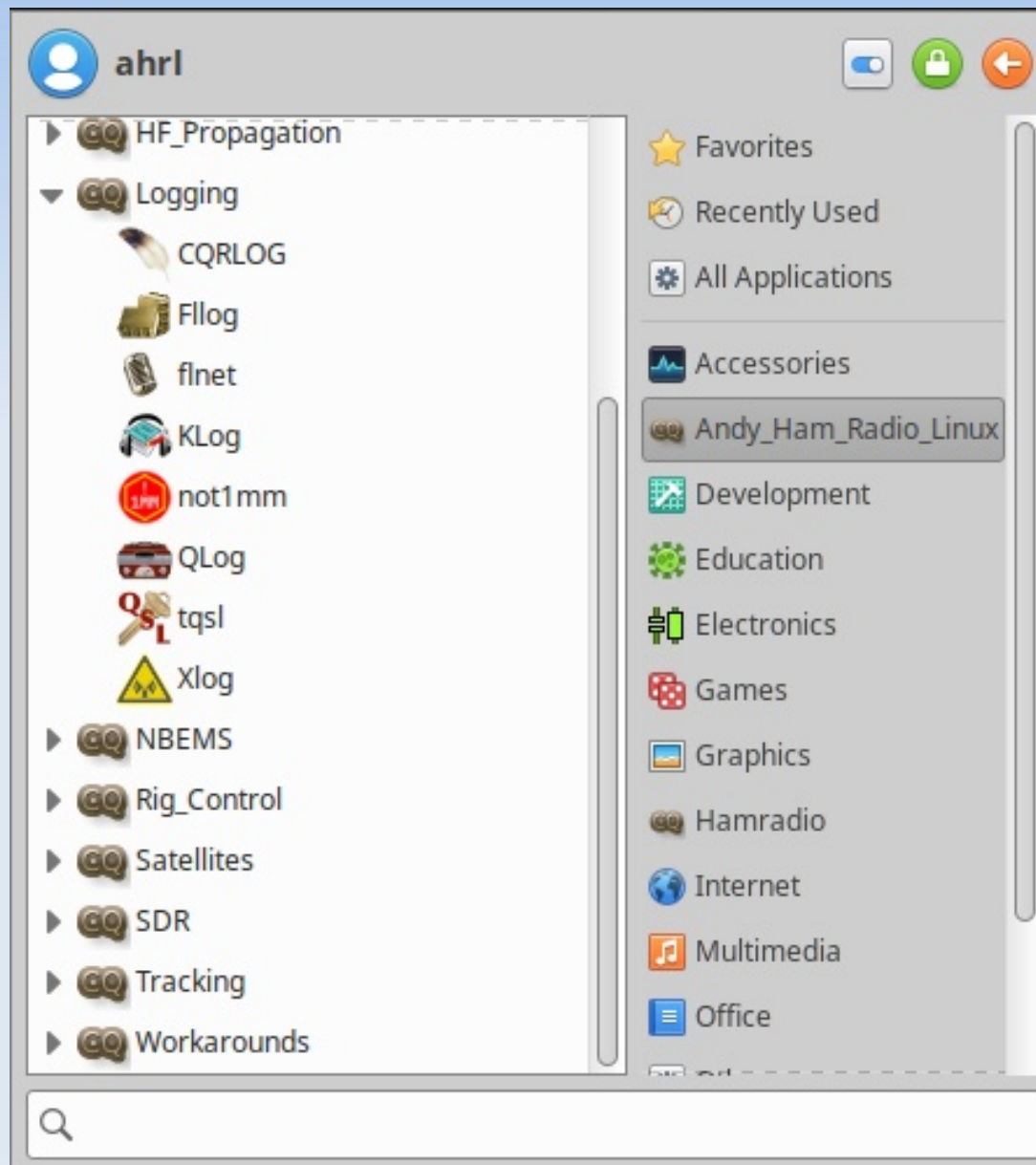
HF Propagation - HamClock



HF Propagation VOACAP



Logging Menu



Logging - CQRLOG

New QSO ... (CQRLOG for Linux), database: Log 001

File View Window Statistics Online log Help

qsodate	time_on	time_off	callsign	freq	mode	rst_s

QSO nr. 1 QTH profile: **New country!!**

Call Frequency Mode ☒ AUTO RST sent RST rcvd

Name QTH GRID PWR QSL_S QSL_R

ITU WAZ **IOTA** State County Award

DXCC ref. Comment to QSO QSL VIA

☐ Offline

Date Start time End time

Comment to callsign

DXCC statistic

	1.8	3.5	7	10.1	14	18	21	24	28	50	144	430
SSB												
CW												
DIGI												

DXCC info

USA, Massachusetts

WAZ: 05 Cont: NA
ITU: 08 DXCC: W
LAT: 42.2373N LONG: 71.5314W
DIST.: AZIM:
10:17:51 23:14:24
2019-09-05 22:08:41 **GE**
Local:

Callbook (HamQTH.com)

Save QSO [enter] Quit program

My grid (to change press CTRL+L) Ref. call (to change press CTRL+R) KB1OIQ Ver. 2.3.0 (001)

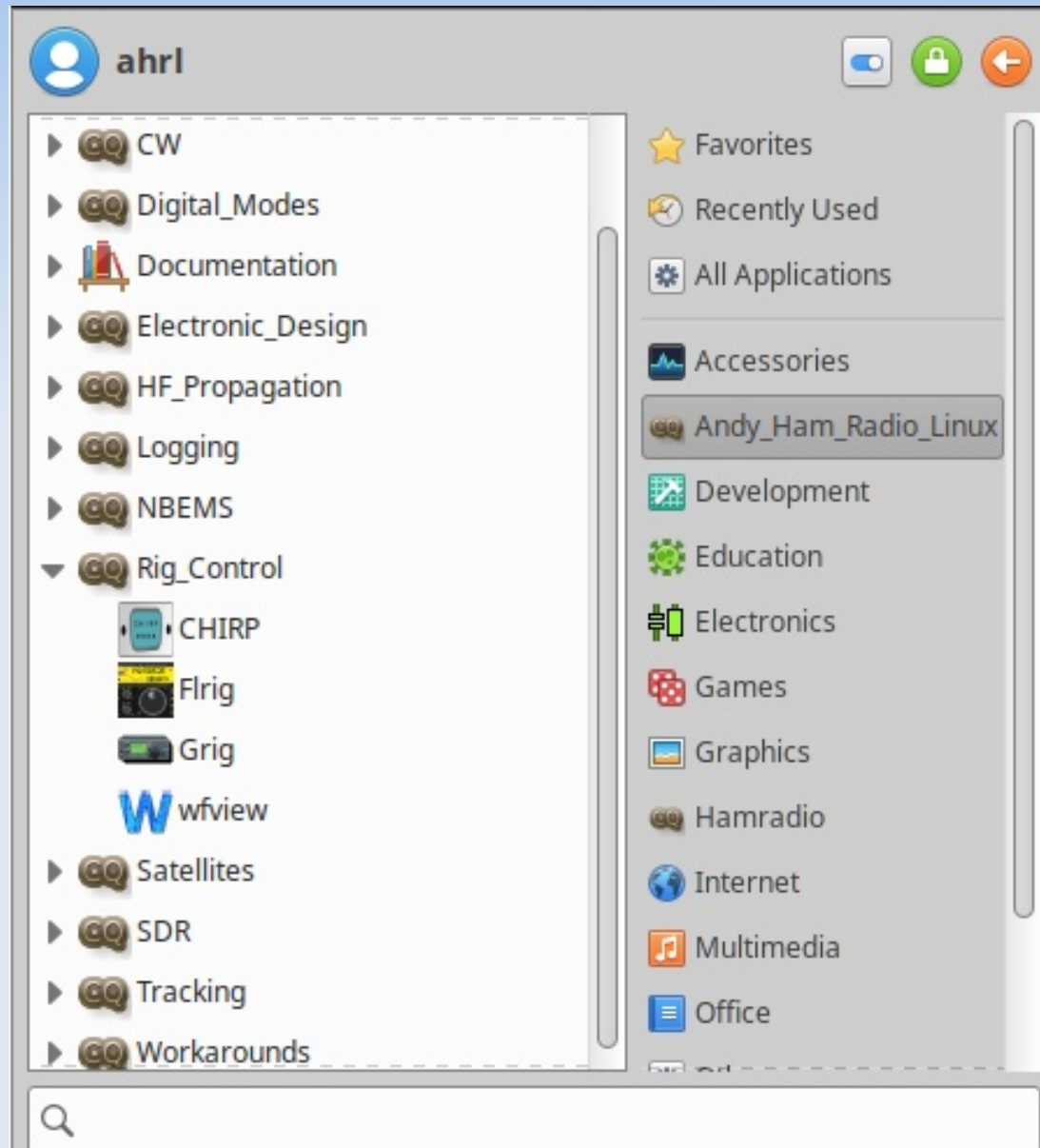
Logging - Xlog

Log Edit Options Tools Page Settings Help												
 Write  Update  Delete			HF									
NR	DATE	UTC	CALL	BAND	MODE	RST	MYRST	QSLOL	QSLIN	LOCATOR		
691	16 Aug 2010	0023	AB1HD	50	SSB	59	59			FN42ho		
690	16 Aug 2010	0023	WA1KBE	50	SSB	59	59			FN42ho		
689	08 Aug 2010	2035	VE3CWU	7	CW	579	229			FN03		
688	08 Aug 2010	2000	N2JNZ	7	CW	459	559			FN24		
687	08 Aug 2010	1910	KL7GLL	7	CW	459	449			FM18		
686	31 Jul 2010	2145	I5ZSS	18	SSB	59	58			JN53ku		
685	12 Jul 2010	0016	WA1KBE	50	SSB	59	59			FN42ho		
684	11 Jul 2010	2151	WM4X	7	CW	579	579			FM18		
683	11 Jul 2010	2140	W8JRA	7	CW	559	559			EN80		
682	11 Jul 2010	1627	N8KZH	7	CW	359	559			EN90		
681	11 Jul 2010	1305	WI2X	7	CW	599	419			FN30		
680	11 Jul 2010	1240	VA2NB	7	CW	359	579			FN25		

QSO 691	
Date	16 Aug 2010
UTC	0023
Call	AB1HD ?
MHz	50 ▼
Mode	SSB ▼
TX(RST)	59
RX(RST)	59
☐ QSL out	☐ QSL in
Locator	FN42ho
Remarks	
Rich, Chelmsford, MA 01824 USA	

Ready.			 22 Aug 2010 1330 UTC
--------	---	---	--

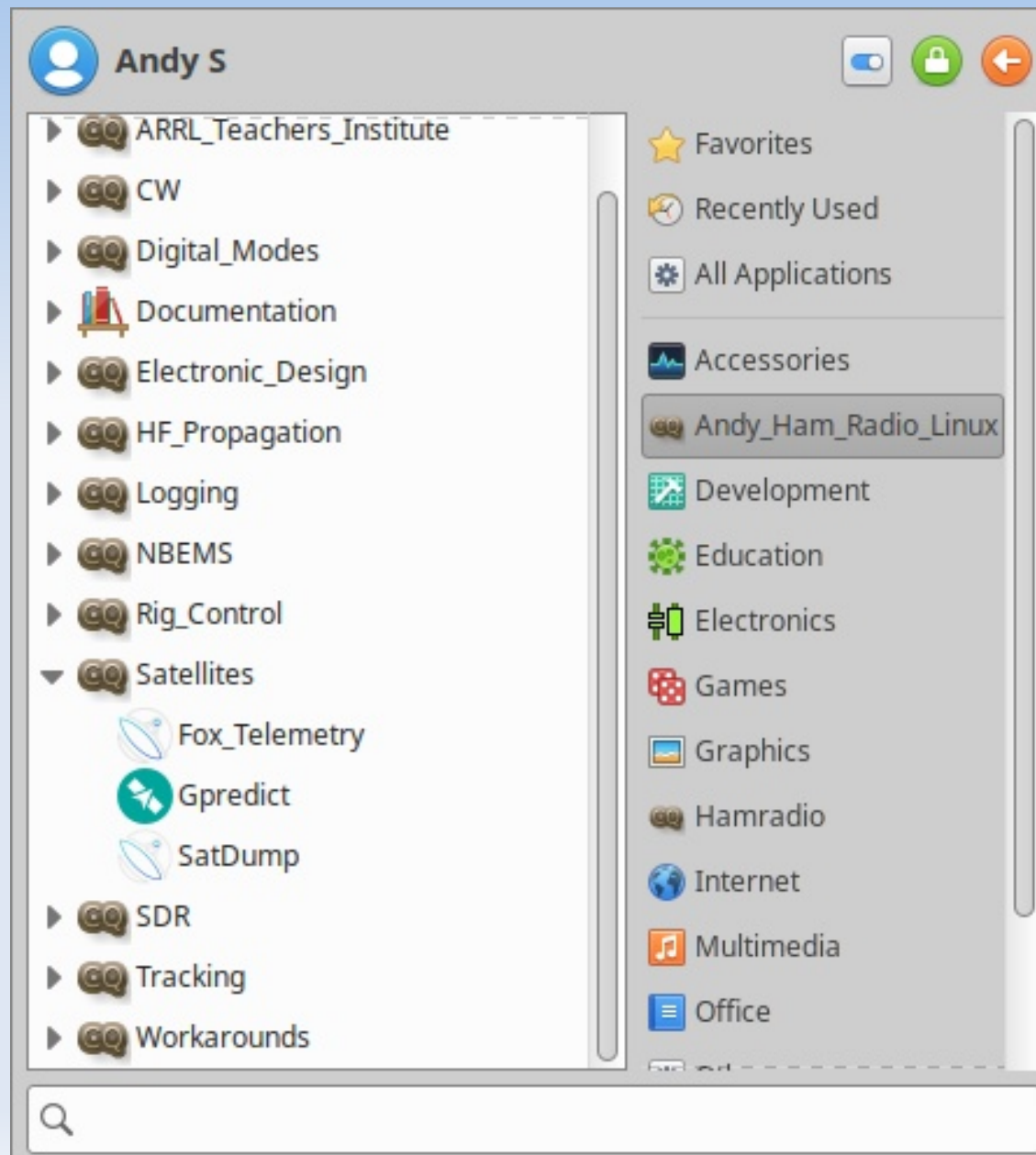
Rig Control Menu



Rig Control - wfview



Satellites Menu



Satellites - FoxTelem

AMSAT Telemetry Analysis T...

Applications Menu

Trash

Home

AMSAT Telemetry Analysis Tool

File Decoder Spacecraft Help

Input Fox-1E

Health WOD VU Rad (1E) VU Rad WOD Measurements

Satellite Mode: Latest Realtime: Epoch: Uptime: Max: Epoch: Uptime: Telemetry Payloads Decoded: Min: Epoch: Uptime:

Radio			
	RT	MIN	MAX
TX Temperature (C)	0000	0000	0000
PA Current (mA)	0000	0000	0000
RSSI (dBm)	0000	0000	0000
Fwd Power (mW)	0000	0000	0000
Ref Power (mW)	0000	0000	0000
VGA Control (V)	0000	0000	0000
TX Antenna	0000		
RX Antenna	0000		

Computer Hardware			
	RT	MIN	MAX
Temperature (C)	0000	0000	0000
Battery I2C	0000		
PSU1 I2C	0000		
PSU2 I2C	0000		
RF I2C	0000		
Ground Resets	0000		
IHU Hard Error Data	0000		

Computer Software			
	RT	MIN	MAX
Spacecraft Spin (rpm)	0000	0000	0000
Diagnostic Info	0000		
WOD Stored (000s)	0000		
Safe Mode	0000		
Auto Safe Mode	0000		
Auto Safe Allowed	0000		
Science Mode	0000		
Soft Error	0000		

Battery			
	RT	MIN	MAX
Cell A (V)	0000	0000	0000
Cell A + B (V)	0000	0000	0000
Cell A + B + C (V)	0000	0000	0000
Temperature A (C)	0000	0000	0000
Temperature B (C)	0000	0000	0000
Temperature C (C)	0000	0000	0000
Current (mA)	0000	0000	0000
Board Temp (C)	0000	0000	0000

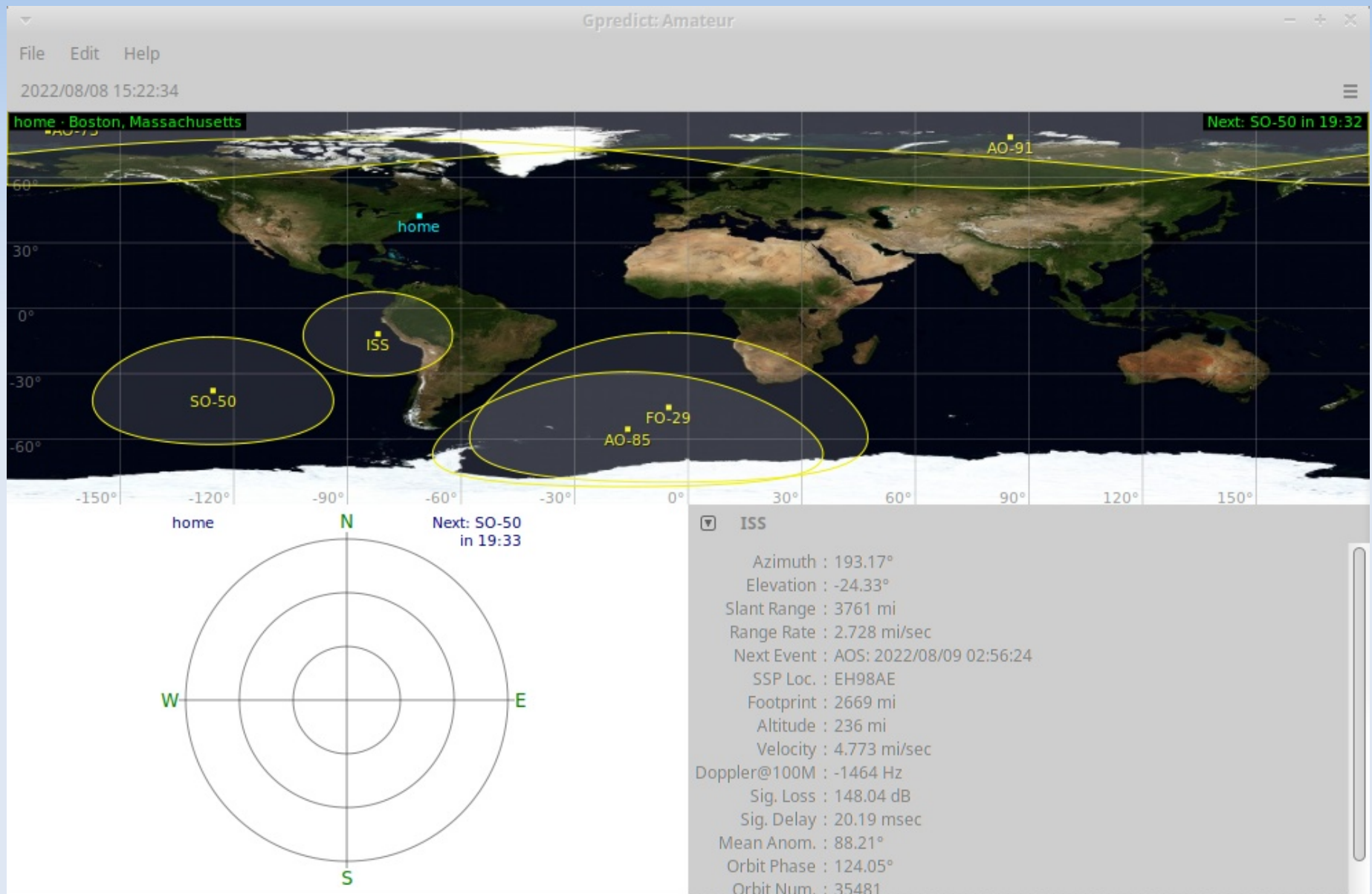
MPPT			
	RT	MIN	MAX

Experiments			
	RT	MIN	MAX
EXP4 Temp (C)	0000	0000	0000
Vanderbilt Radiation	0000		

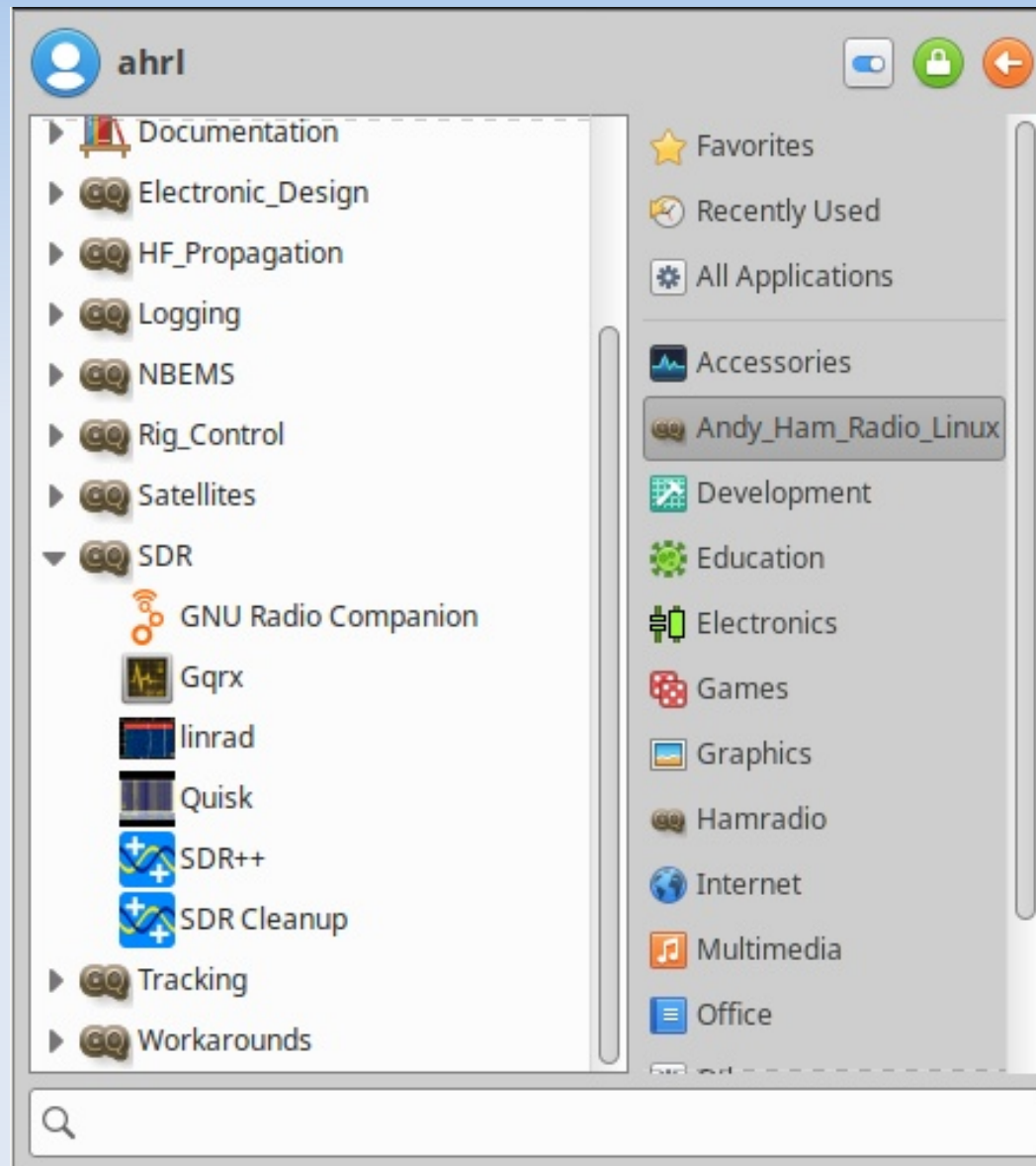
☒ Current ☐ RT ☐ MAX ☐ MIN ☐ Display Raw Values ☒ Display UTC Time Last 180 samples Captured:

Version 1.12z3 - 27 Oct 2022 Logs: /home/andy/ SDR Errors: 0 / 0 Audio missed: 0.0% / 0 Frames: 0 Payloads: 0 Queue: 0 / 0

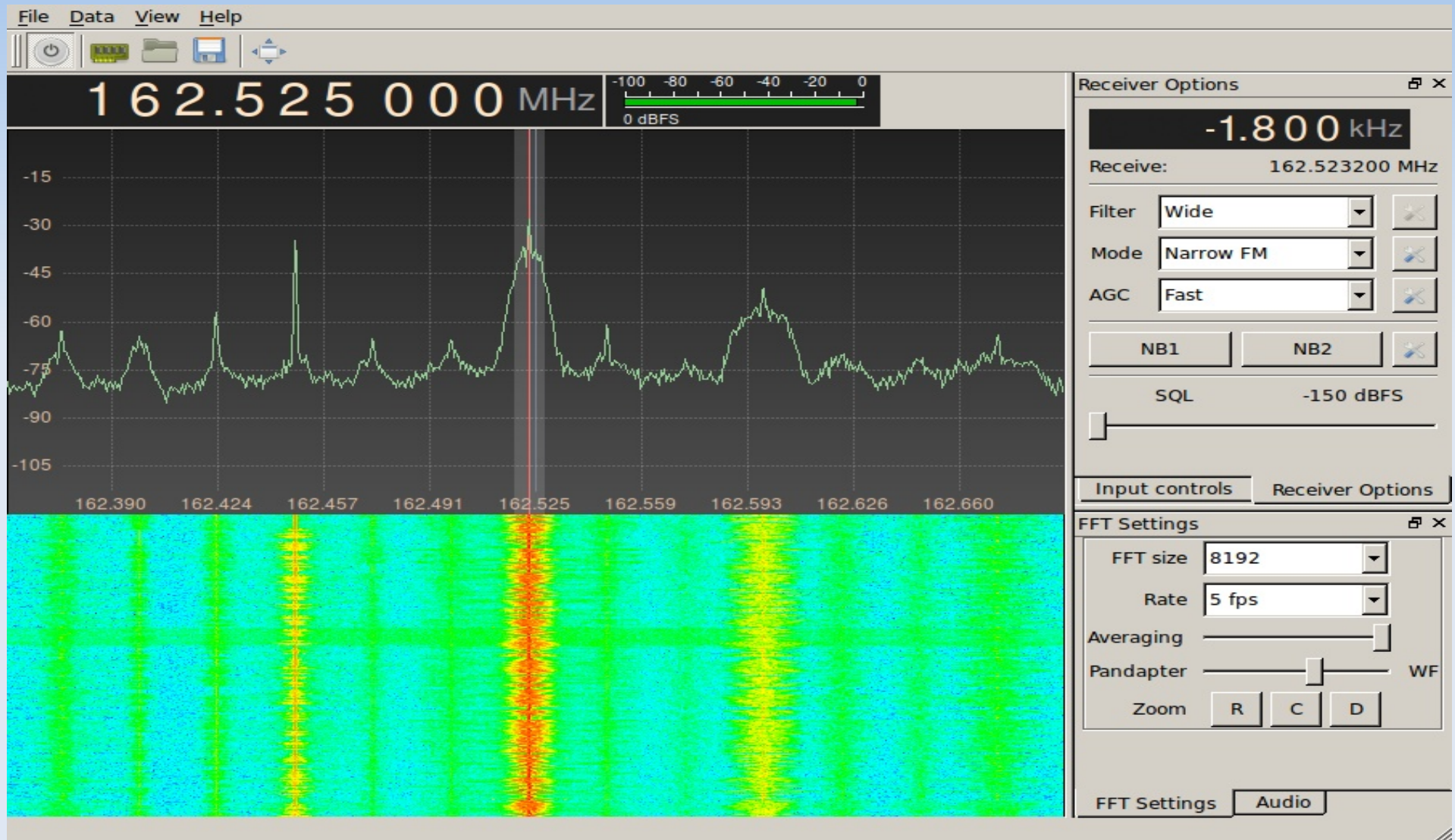
Satellites - gpredict



SDR Menu



SDR - gqrx



Status of AHRL

- First release May 2011
- 37 versions later in 2026
 - More Linux flavors are supported
 - Raspberry Pi 4/5/400/500 are now supported
 - Many thanks to the community!
 - actively reporting bugs
 - suggesting new programs
 - interest seems to be high based on downloads
 - Many thanks to ARRL for using AHRL!
 - KB1OIQ remains enthusiastic!

v27 Downloads

Downloads

3,591

2026-04-20 to 2026-09-08

Countries

Top: US, at 50%

Operating Systems

Top: Linux, at 52%

Download Statistics

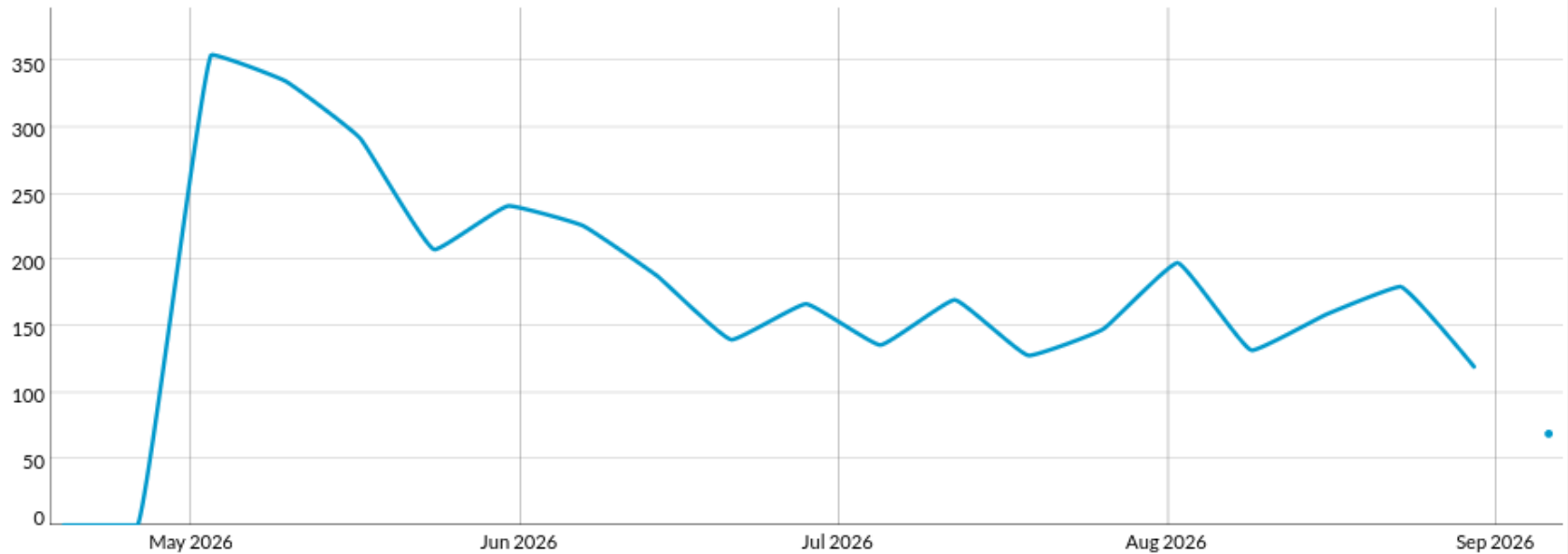
[All Files](#) / [v27](#) / [andy_v27.tar.gz](#) ([Change File](#))

Date Range: 2026-04-20 to 2026-09-08

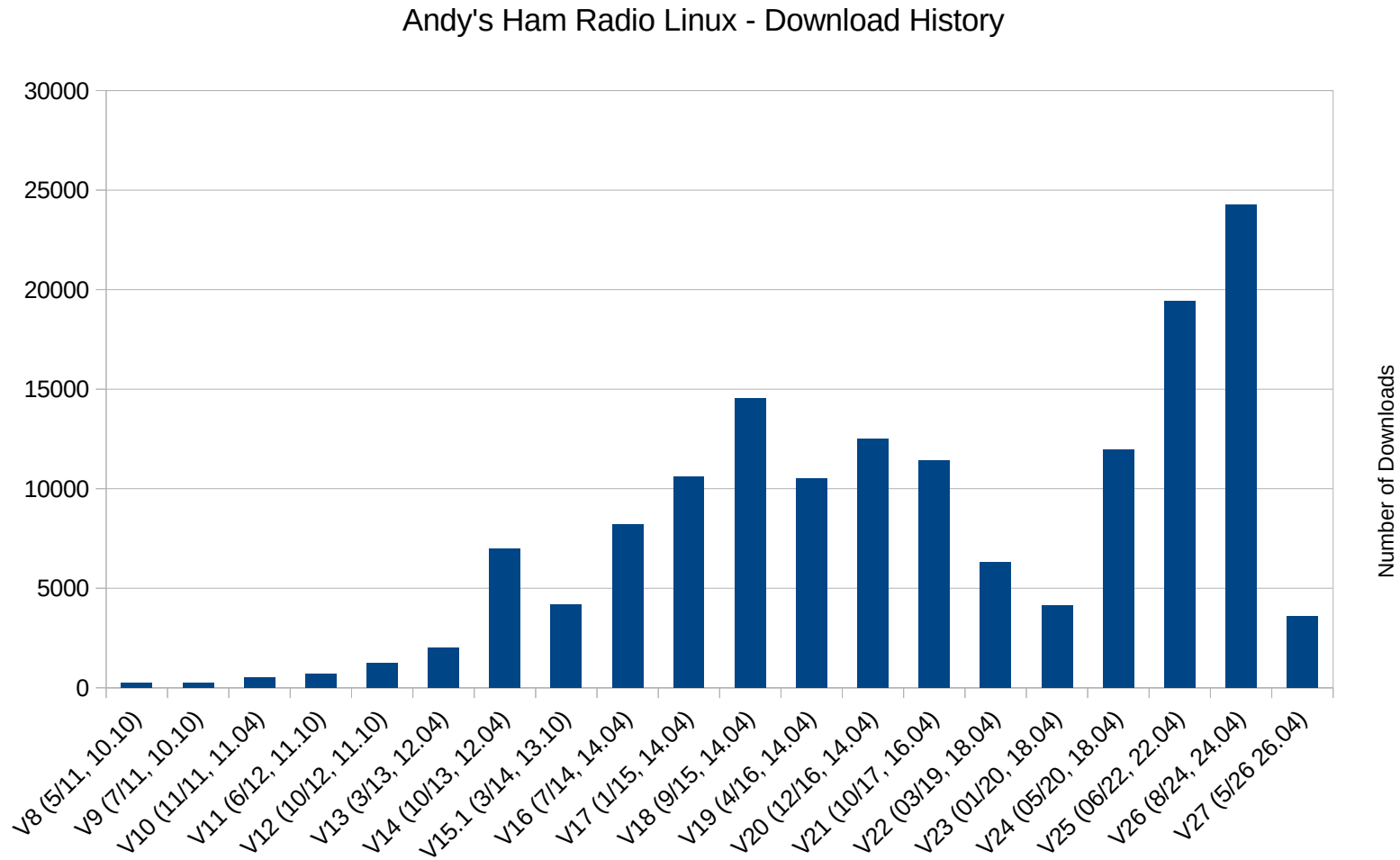
Daily

Weekly

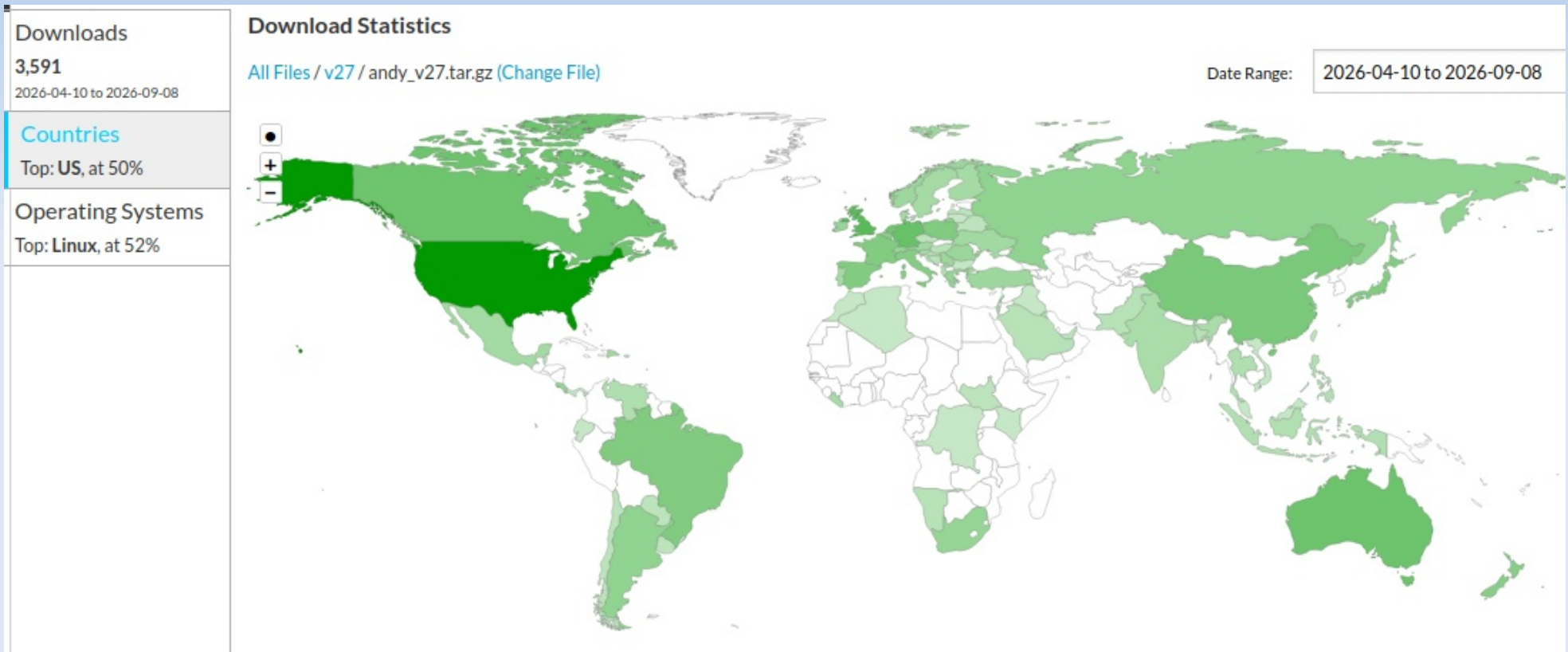
Monthly



Downloads by Version



Downloads by Geography



Awarded 03/2022

- 100,000 downloads later.....
- <https://nediv.arri.org/2022/03/02>
- 23-Feb-2026: estimated 147,000 downloads



Related Online Videos

- RATPAC talk (1/2025)
 - Radio Amateur Training Planning and Activities Committee
 - Search on YouTube for RATPAC KB1OIQ
2,500 views as of 02/2026 – Thank you!
- Dayton Hamvention 2025
 - Search on YouTube "DARA Hamvention Linux"
5,700 views as of 05/2026 – Thank you!
- The Old Tech Guy (KB9RLW)
Search for "Andy's Ham Radio Linux" 2025
18,000 views (05/2026) – THANK YOU!!!

Sourceforge

- <http://www.sourceforge.net>
- Search for KB10IQ ... OR ...
- Search for Andy's Ham Radio Linux
- The green "Download" button will give you the most recent version.
- In "Files", grab the GETTING_STARTED document for the most recent version
- Also grab V27_Bug_Workarounds.txt

Last Slide!

- Slides available:
 - Email: kb1oiq@arri.net
- Thanks for coming to this talk!
- Have a lot of fun, and 73 de Andy KB1OIQ ..
- ... and that's the way it is ...