Portable QRP Radio

and related activities

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Thanks for inspiration to Kurt and Dan
for their presentations in November 2023 club meeting

My activity has been more aspirational
than experiential so far.

What is QRP ?

usually 5 Watts maximum

HF CW – 5W often enough
HF SSB – 20W is sweet spot for portable use –
battery size and weight vs performance

VHF-UHF handheld

Why QRP?

- Portable
- Light-weight - carry into the field
- Challenge
- Use only as much power as is needed

Equipment

Transceiver (or separate transmitter & receiver)

Antenna

Power supply

Accessories

- CW key
- Microphone
- Antenna Tuner
- SWR meter
- Common-mode choke
- Cables and connectors
- etc

Support equipment

- Clothing
- Chair, table, etc
- Logbook and pencil
- Water and food
- First aid kit

Transceivers (HF)

- Pixie (various sources?)
- QRP Labs QMX , QCX, QDX, QMX+
- Venus SW-3B, SW-6B
- BG4FX FX-4CR
- KM4CFT CFT-1
- (tr)uSDX
- uSDX – various models
- HF Signals zBitx and uBitx
- Xeigu G90, X6100, X6200, X5105, G106
- Elecraft KH1, KX1, KX2, KX3
- LNR Precision Mountain Toppers
- ???

Antennas (HF)

Wire Dipole –

- Feed directly with coax or with balun
- resonant on 1 or more bands

Wire End-fed Half Wave (EFHW) –

- Requires matching transformer 49:1 or 64:1
- Resonant on harmonic bands

Vertical

- ground plane – radial wires, screen mesh
- Mounting – spikes, tripod

Considerations and Frustrations

- Power Cable Connectors
- Battery – Voltage, AH, Size, Weight, Connector
- CW Key wiring
- Microphone wiring and type

Building Stuff

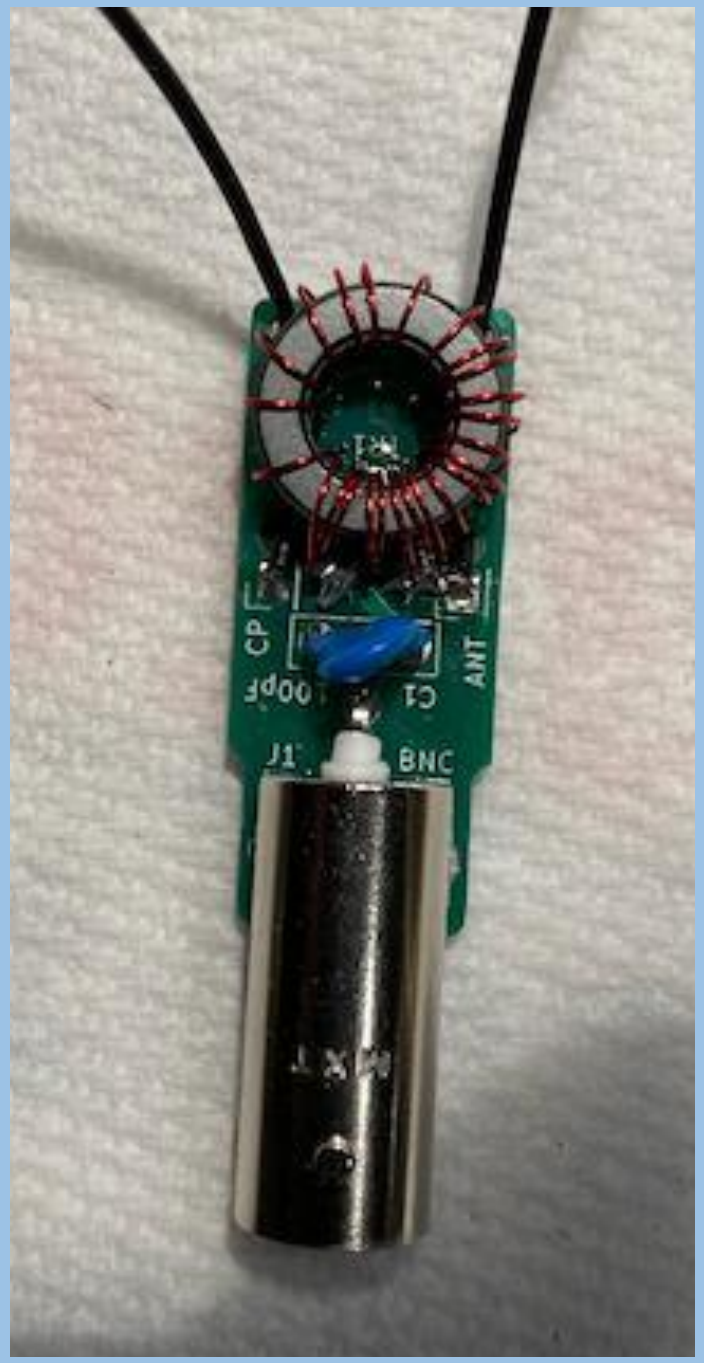
- Radios (not yet for me, but getting close)
- Antennas
- Accessories

End Fed Half Wave (EFHW) Antenna building and tuning

- Measure 5 times, cut once
- Doubling back vs cutting –
- Proximity to ground affects tuning

EFHW matching transformer

KM4CFT



K6ARK QRP EFHW Transformer and Winder

HamRadioDude end insulator and
K6ARK S-Biner

(at 5 watts, nylon cord
is probably good enough!)

Knots

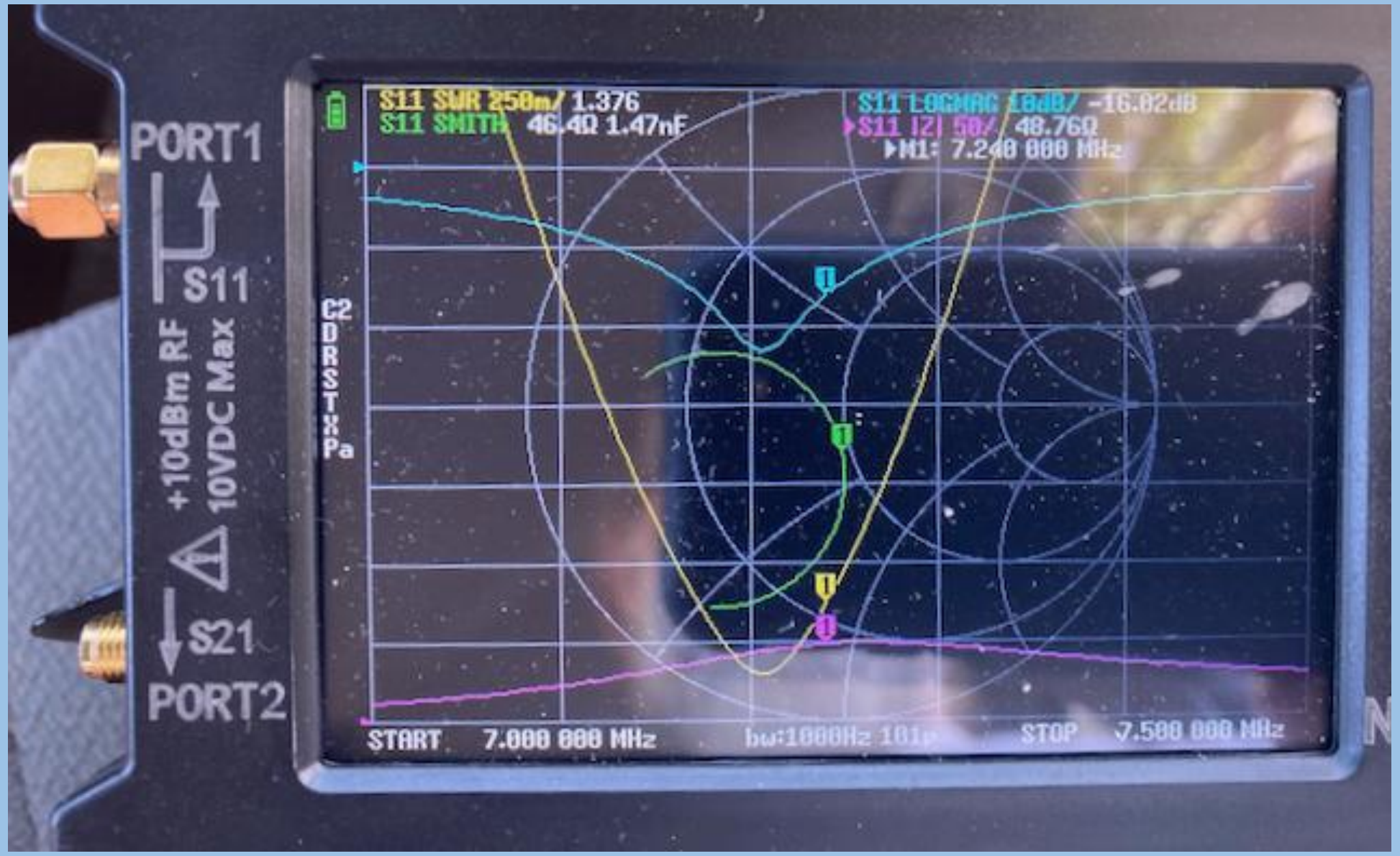
K6ARK transformer and
25 foot coax to transceiver

5.6 Meter fishing pole (Crappie pole?)

Inverted-V EFHW on 40 Meter band

Inverted-V set up at Camino Real Park in Ventura

Nano-VNA – 7.0 to 7.5 MHz sweep – min SWR at 7.21 MHz



Nano-VNA – 12.5 to 15.0 MHz sweep – Min SWR at 14.12 MHz

NanoVNA Saver 0.5.5 (Sweep: full antenna 2024-01-27 14:52:23 @ 101 points)

Start 6MHz | Cente 10.5MHz
Stop 15MHz | Span 9MHz
1 90.00kHz/step
Sweep settings ...
Sweep Stop

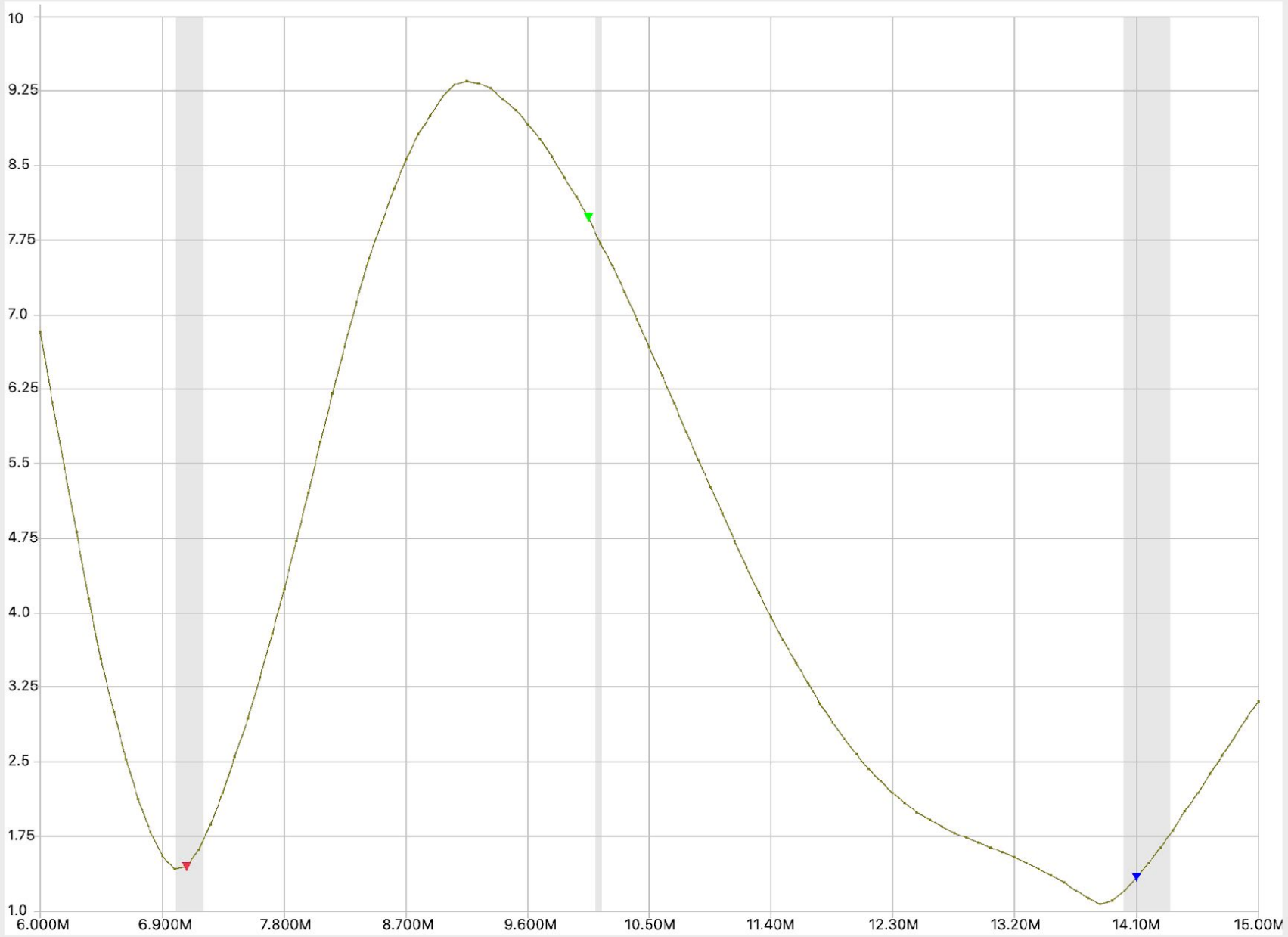
Markers
Marker 1 7.08MHz
Marker 2 10.05MHz
Marker 3 14.1MHz
Enable Delta Marke reference
Show data Locked

TDR
Estimated cable length: 12.95m
Time Domain Reflectometry ...

Reference sweep
Set current as reference
Reset reference

Serial port control
Port dem4001 (H4) Rescar
Disconnect Manage

Files Calibration ...
Display setup ... About ...

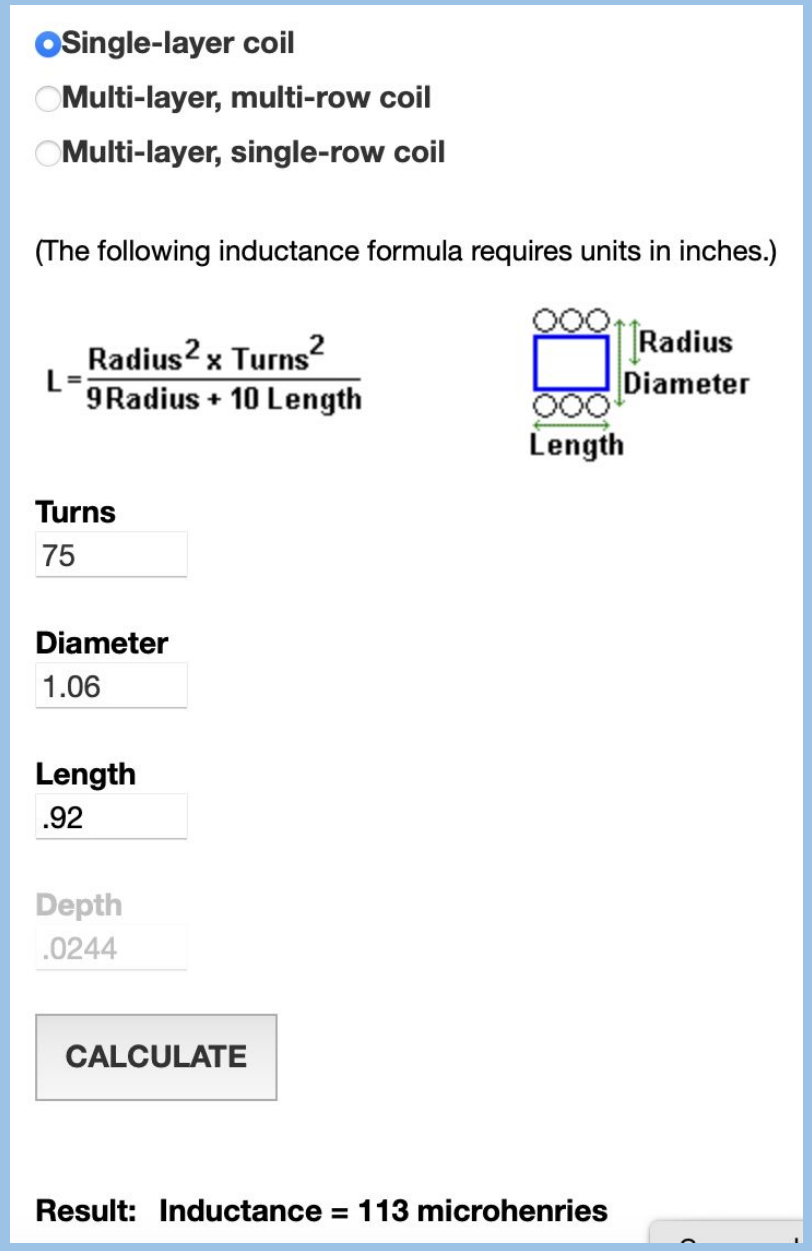


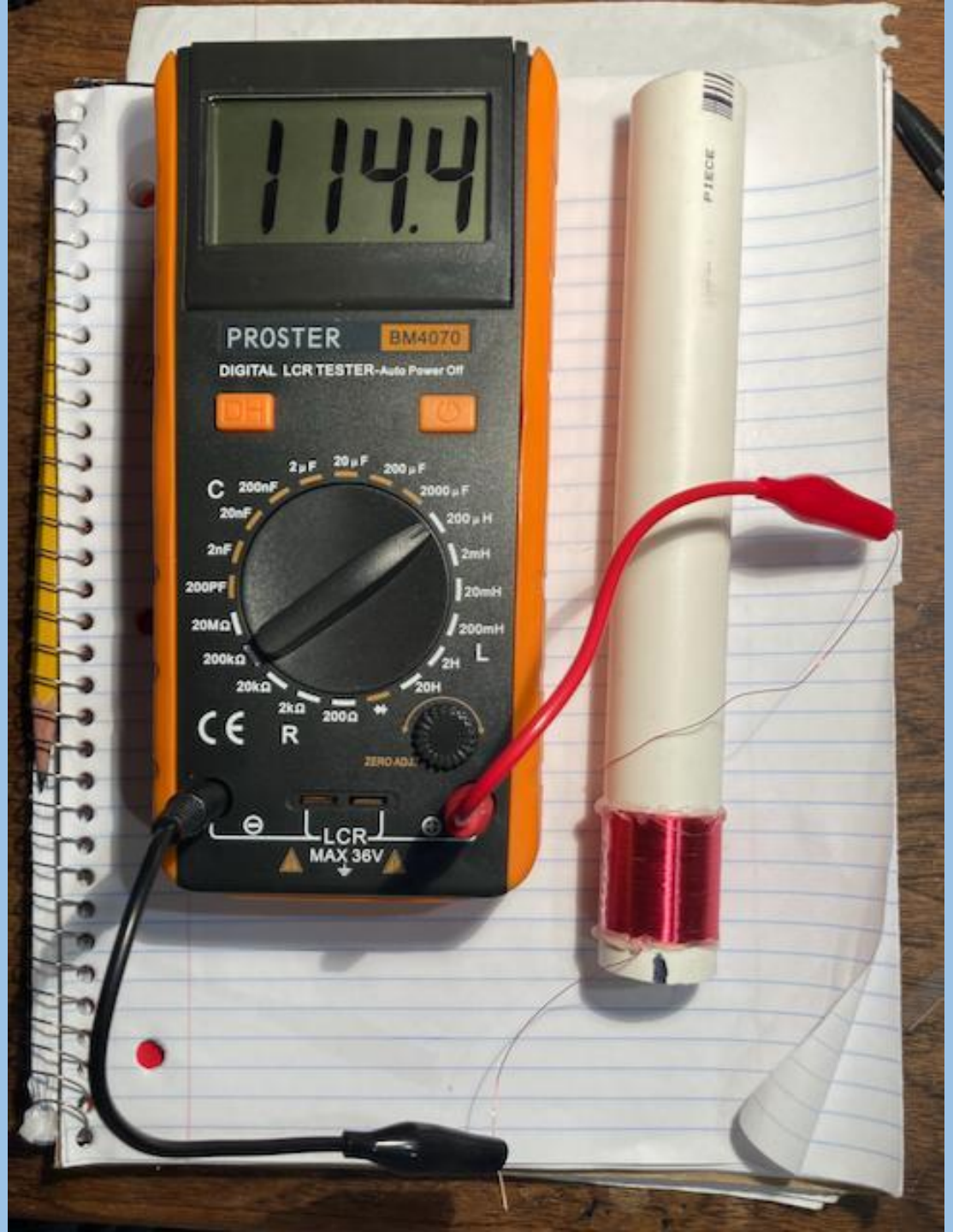
KO6HQG assisting with antenna tuning

Coil inductance calculator

Example:
110 micro-Henry coil
to add 80 M to a 40 M EFHW or dipole

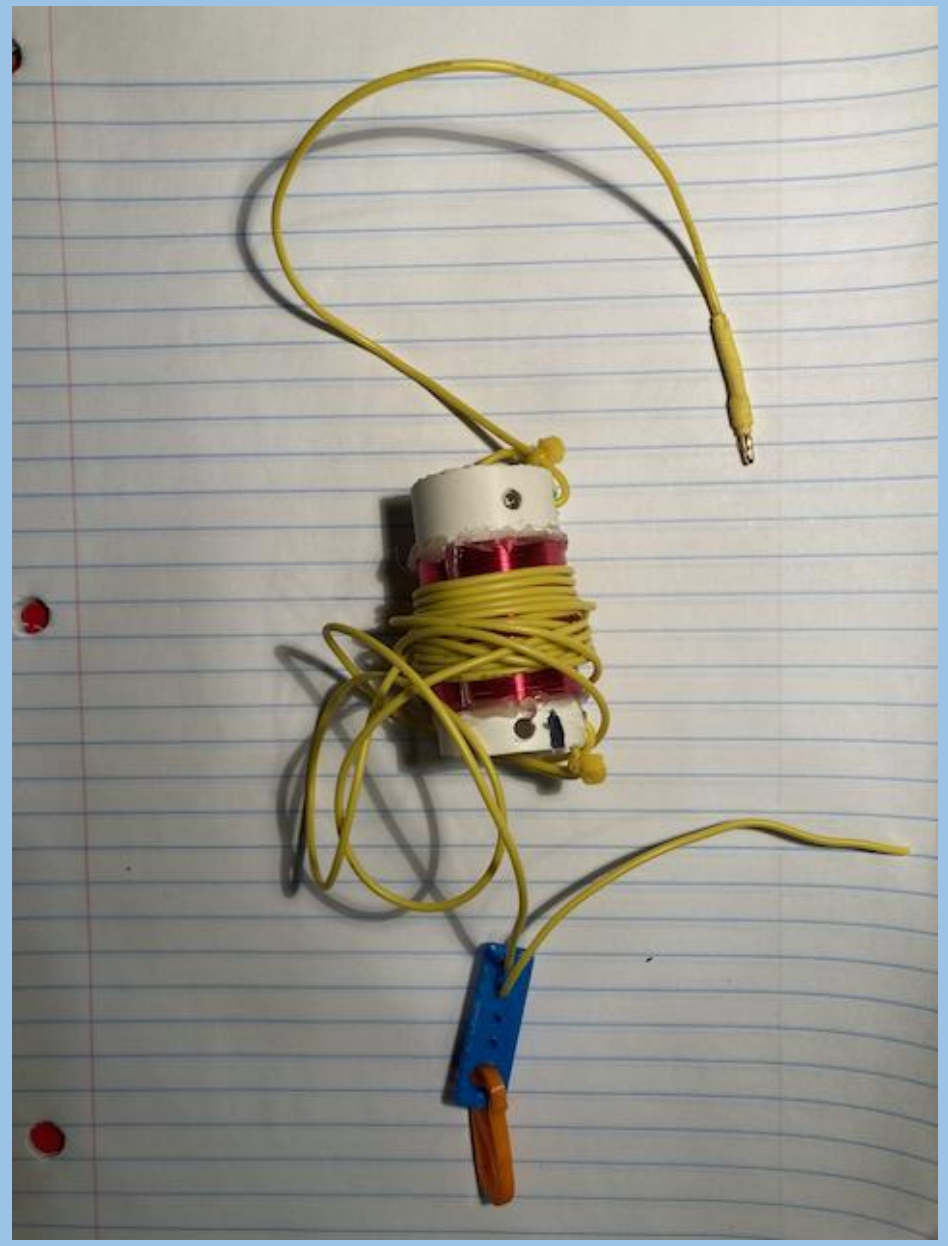
https://www.66pacific.com/calculators/coil-inductance-calculator.aspx





Coil for 80 Meter extension
on 40 Meter EFHW

#28 AWG enameled wire
on 3/4 inch PVC



110 micro-Henry coil
+ 2 meter extension

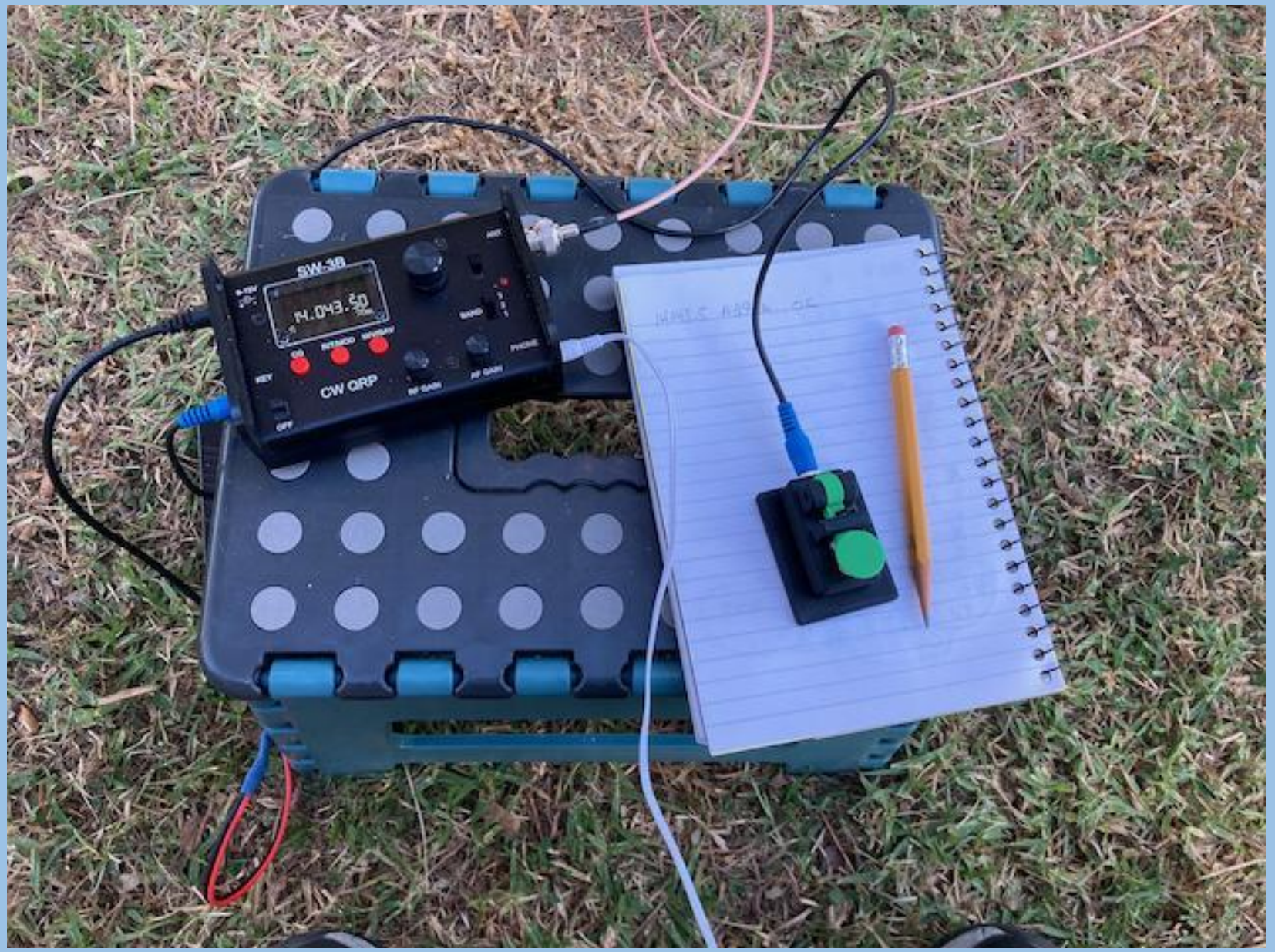
To add 80 meters
to a 40 meter EFHW

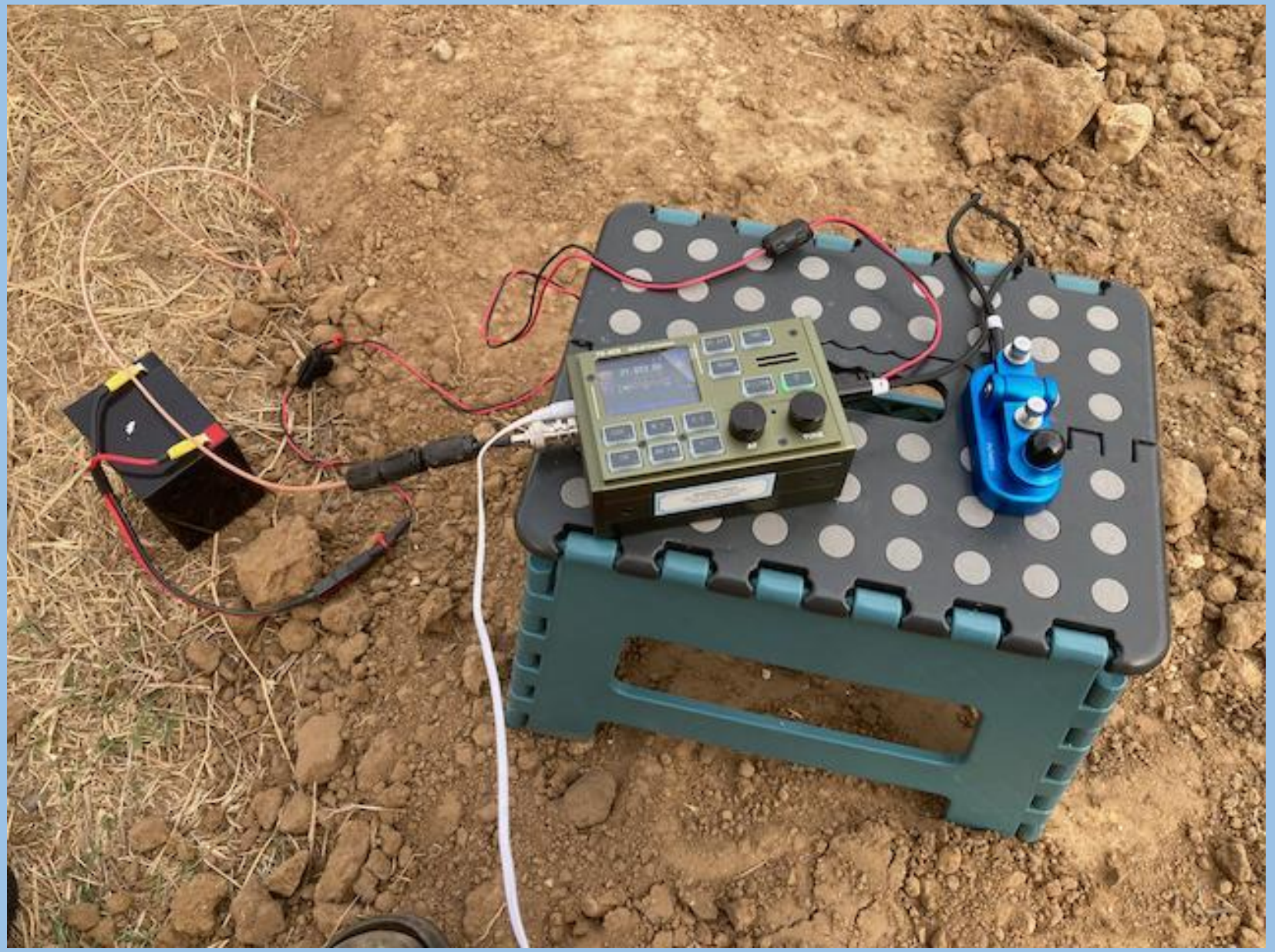
Deployments in field

At Camarillo PD –

Attended Monday Morse Code group prior to ACS bimonthly meeting

Sulphur Mountain Road


SW-3B
14.043.50
CW QRP



Field next to Poinsettia Elementary School

Other peoples’ experiences

Mike’s setup for SOTA Digital

(tr)uSDX & iPhone

POTA/SOTA References

POTA:

https://parksontheair.com/

https://pota.app/#/ - look for activators, spot yourself

SOTA:

https://sotawatch.sota.org.uk/en/

SOTAwatch3

10 May 2025 **19:10 UTC** 12:10 local

SOTA Links | Login

SPOTS | ALERTS | Reflector Posts

latest 50 spots

19:08	KF0RRE	28.355	SSB	W0C/SJ-021	1	[SOTA Activator] on my 817	KF0RRE
19:05	SQ9MDF	7.085	SSB	OM/ZA-030	6	[SOTA Activator] only test ignor	SQ9MDF
19:05	K9PM/P	7.061	CW	W7A/CS-026	10	[RBNHole] at W6YX 22 WPM 19 dB SNR	RBNHOLE
19:03	N7CW	5.332	CW	W7A/CS-009	10		N7CW
19:02	KK6MJG	14.0665	CW	W6/SC-368	1	Slow CW plz	KK6MJG
18:58	WA7BEN	14.064	CW	W7U/CA-007	6	Big spaces pls	WA7BEN
18:57	KG7EJT	14.339	SSB	W7W/CW-061	6	[SOTA Activator] On the summit now!	KG7EJT
18:56	KM4BLG	14.065	CW	W4C/CM-079	6		KM4BLG
18:55	PY1II	433.520	FM	PY1/RS-116	6		PY1SO
18:55	KK6MJG	14.285	SSB	W6/SC-368	1	Starting here then 14.062-cw	KK6MJG
18:54	N7CW	10.113	CW	W7A/CS-009	10	[RBNHole] at NT6Q 24 WPM 21 dB SNR	RBNHOLE
18:53	W5ESE	10.116	CW	W5N/SC-006	8	[RBNHole] at WA7LNW 20 WPM 15 dB SNR	RBNHOLE
18:52	KB7HH	7.062	CW	W7A/CS-009	10	[RBNHole] at WA7LNW 19 WPM 28 dB SNR	RBNHOLE
18:51	K9PM/P	7.061	CW	W7A/CS-026	10	[RBNHole] at WA7LNW 21 WPM 30 dB SNR	RBNHOLE
18:51	K8FB	14.062	CW	W7A/CS-009	10	[RBNHole] at VE6JY 18 WPM 20 dB SNR	RBNHOLE
18:51	N6MTB	7.277	SSB	W6/SC-368	1	Goat Day! [sotl.as]	N6MTB
18:50	KX0R	18.093	CW	W0C/FR-086		[RBNHole] at TI7W 20 WPM 8 dB SNR	RBNHOLE
18:47	WA7MPC	146.520	FM	W7O/CS-001	10	Great job Mark!	AG7GP

Screenshot

Parks on the Air

Search for Callsigns & Parks

SPOTS | ACTIVATIONS | DOCS | SIGN UP | SIGN IN

Active Spots

Data will refresh in 43 seconds.

At a park now? **Login to add your spot!**

Band: All 122 | **Mode:** CW 29 | **Program:** All 122 | **QRT:** Hide 106 | **Hunted:** Show 122 | **Sort:** Frequency

AA0IW @ US-7405

- US-7405 Melvern River State Fishing Lake
- US-KS
- 7053.0 kHz (CW)
- N8JY
- New Park, Thanks
- Last heard 12 mins ago at 18:57 UTC

RE-SPOT | 3

K9PM/P @ US-4430

- US-4430 Kaibab National Forest
- US-AZ
- 7061.0 kHz (CW)
- WA7LNW-#
- RBN 28 dB 22 WPM via WA7LNW-#
- Last heard 4 mins ago at 19:05 UTC

RE-SPOT | 3

K8XCO @ US-4239

- US-4239 North Country Trail National Scenic Trail
- US-MI, + 7
- 10104 kHz (CW)
- K8XCO
- No spot information
- Last heard 22 mins ago at 18:47 UTC

RE-SPOT | 3

W5ESE @ US-4516

- US-4516 Lincoln National Forest
- US-NM

WG0Y @ US-5820

- US-5820 Big Mesa BLM Recreation Management Area
- US-UT

Screenshot

W6DHQ @ US-4454

- US-4454 Cleveland National Forest
- US-CA

3-D Printing

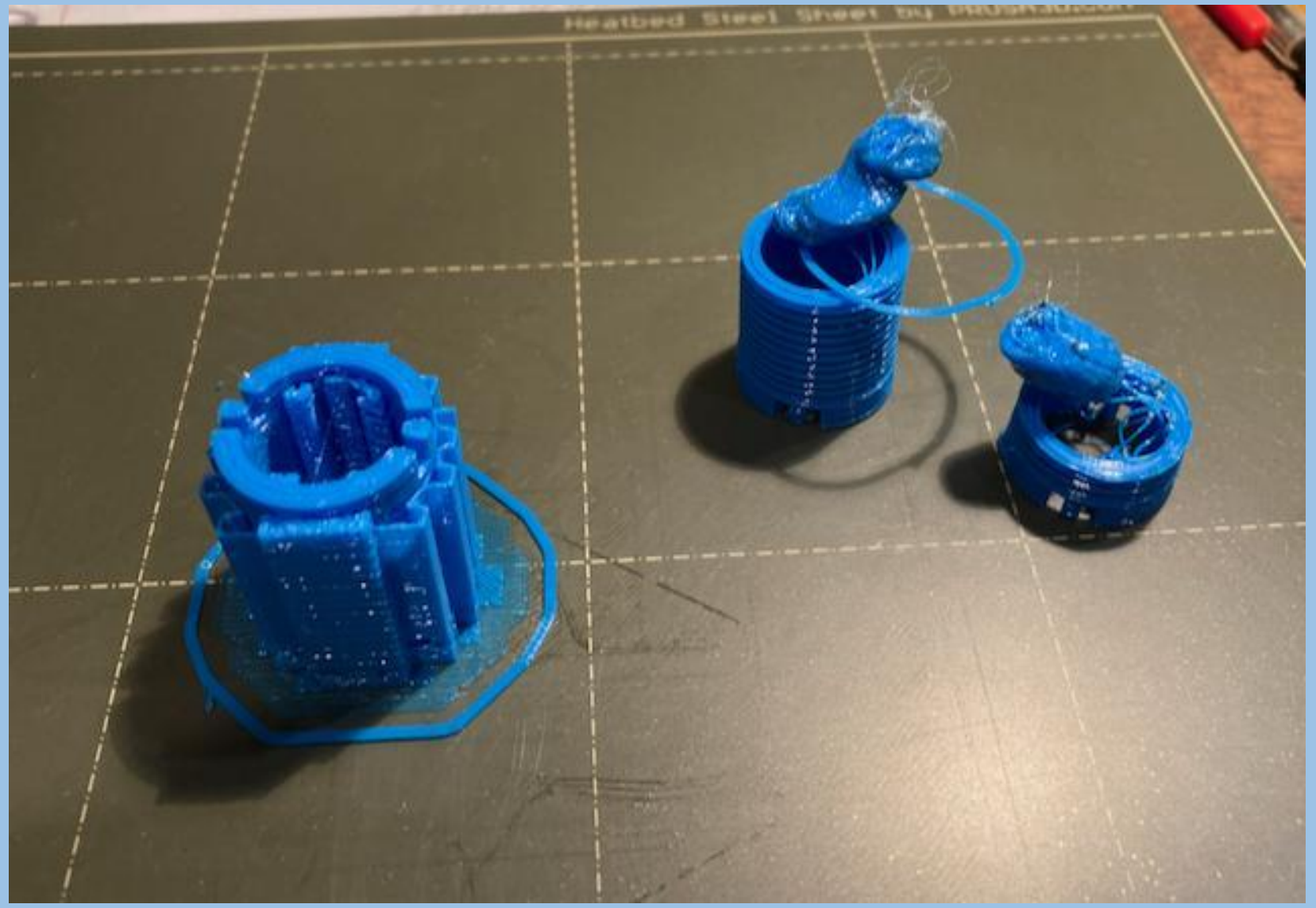
3D printing and printed parts –

- winder,
- radio covers,
- keys,
- microphone,
- antenna insulators,
- mast guy rings
- box for CPO
- …

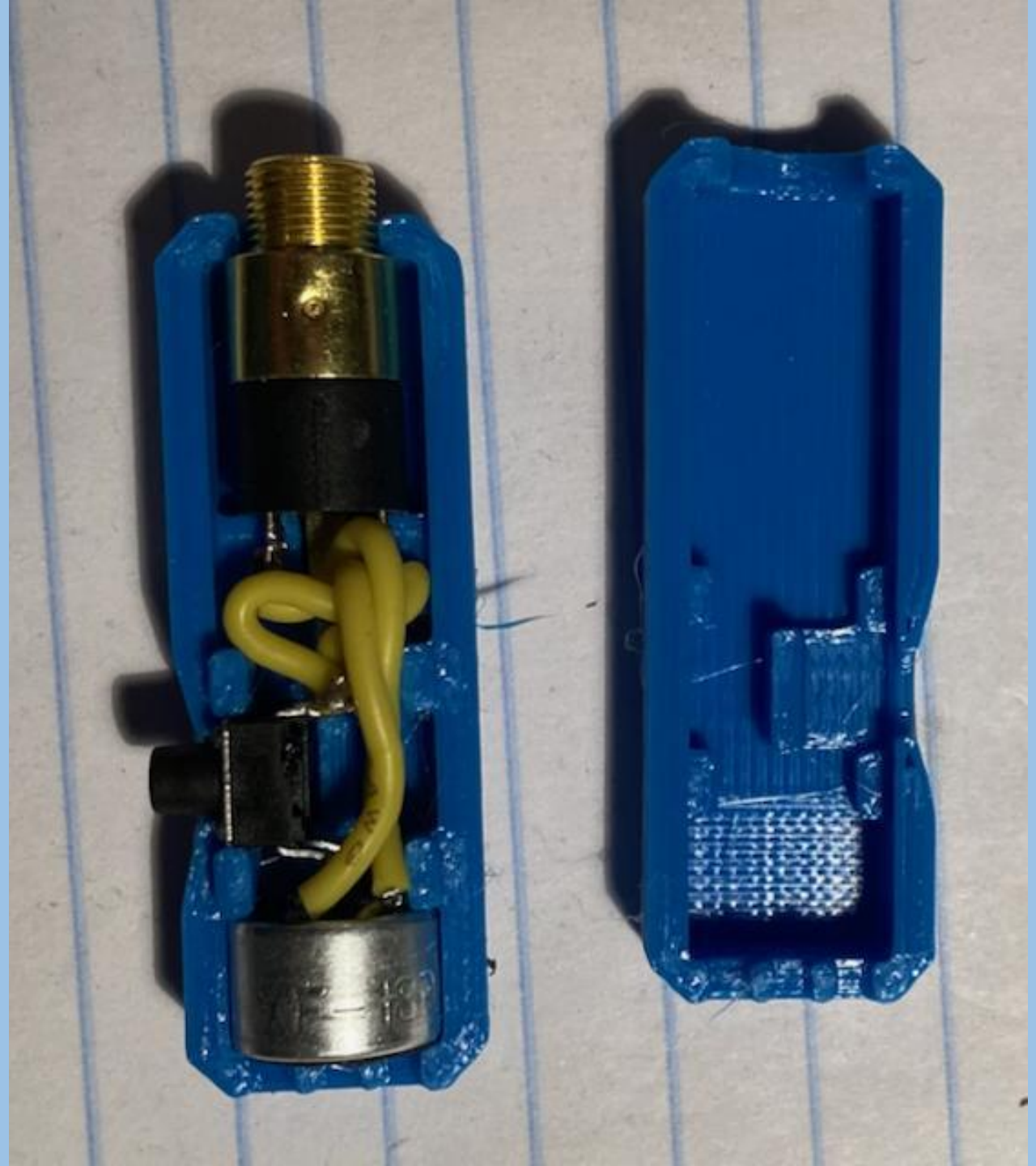
Lessons learned –

- cleaning bed,
- cleaning print nozzle
- supports and skirts,
- type of filament,
- filament drying,

Coil Form



K6ARK microphone



3-D Printing resources

- Printables - https://www.printables.com
- Thingiverse - https://www.thingiverse.com

SOTA/POTA Youtube and www resources:

- KI6NAZ – Josh – Ham Radio Crash Course (HRCC)
- K8MRD – Ham Radio Tube - Mike
- K9VBR Antennas – Michael
- KM9G TemporarilyOffline – Steve
- K6ARK – Adam
- KM4CMT – Jonathan
- K4SWL - Thomas – qrper.net and
- N6ARA – Ara -
- TheSmokinApe -

POTA/SOTA/QRP local community members include:

- AJ6CL – Martin (SOTA Goat) (upcoming CVARC mtg presentation)
- KN6CX – Charlie
- ??

Vendors and Manufacturers:

- QRP Labs - http://shop.qrp-labs.com
- DL2MAN - https://dl2man.de
- Venus - https://www.venus-itech.com
- BG2FX (Yu) - https://bg2fx.com
- Pacific Antenna - https://www.qrpkits.com/index.html
- K6ARK (Adam) - https://k6ark.com
- N6ARA (Ara) - https://n6ara.com
- Hamgadgets - https://hamgadgets.com
- Nightfire Electronic Kits - https://vakits.com
- Four State QRP Group - https://www.4sqrp.com/kitIndex.php

Questions?