

Six Meter Inverted Delta Skeleton Slot Antenna

W6NBC.COM/ARTICLES



An Efficient 2 Meter Antenna Disguised as a TV Satellite Dish

This vertically polarized horizontal slot antenna, cut into the reflector of a TV dish, might be the ultimate stealth antenna.

John Portune, W6NBC

I've long wondered if it would be practical to hide an efficient 2 meter base-station antenna in a TV satellite dish. My homeowners covenants, conditions, and restrictions (CC&R) would force me to take it down. But what if I could hide the metal in the TV dish? Could a 2 meter antenna be disguised as a TV dish? Finally, it struck me: don't fight the metal, take advantage of it, by cutting a half-wavelength-long slot antenna into the TV dish reflector.

A slot antenna is a narrow rectangular opening in a large conductive surface, such as a TV satellite dish. Slot antennas are familiar in the world of radio. They're common in TV broadcast antennas, the skin of an aircraft, and in mobile, marine, and cell phone applications. This TV dish slot is the complement to a dipole. It is also a great way to learn about slot antennas.



Figure 1 — Note the low visibility of the slot in my modified satellite TV dish.

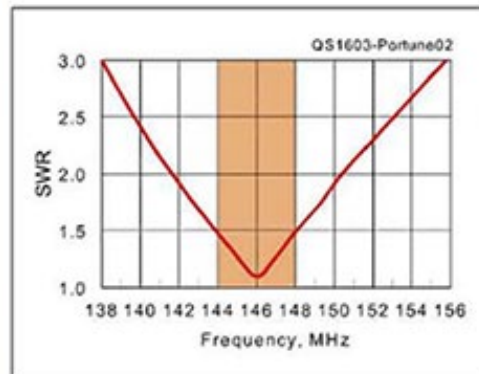
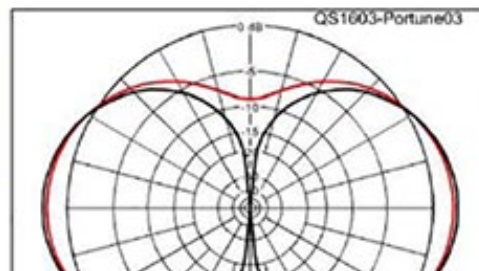


Figure 2 — Bandwidth of a single-saw-blade-cut TV dish slot antenna.

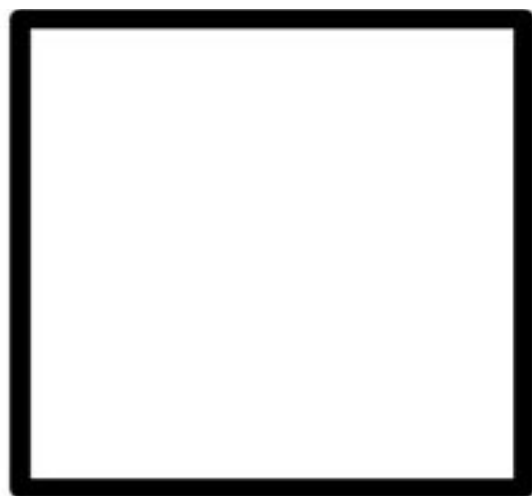


Slot Antennas For Ham Radio

John Portune W6NBC

Discovery

**How can a
Hole be
An Antenna?**



ONE WAVELENGTH WIRE (QUAD) LOOP



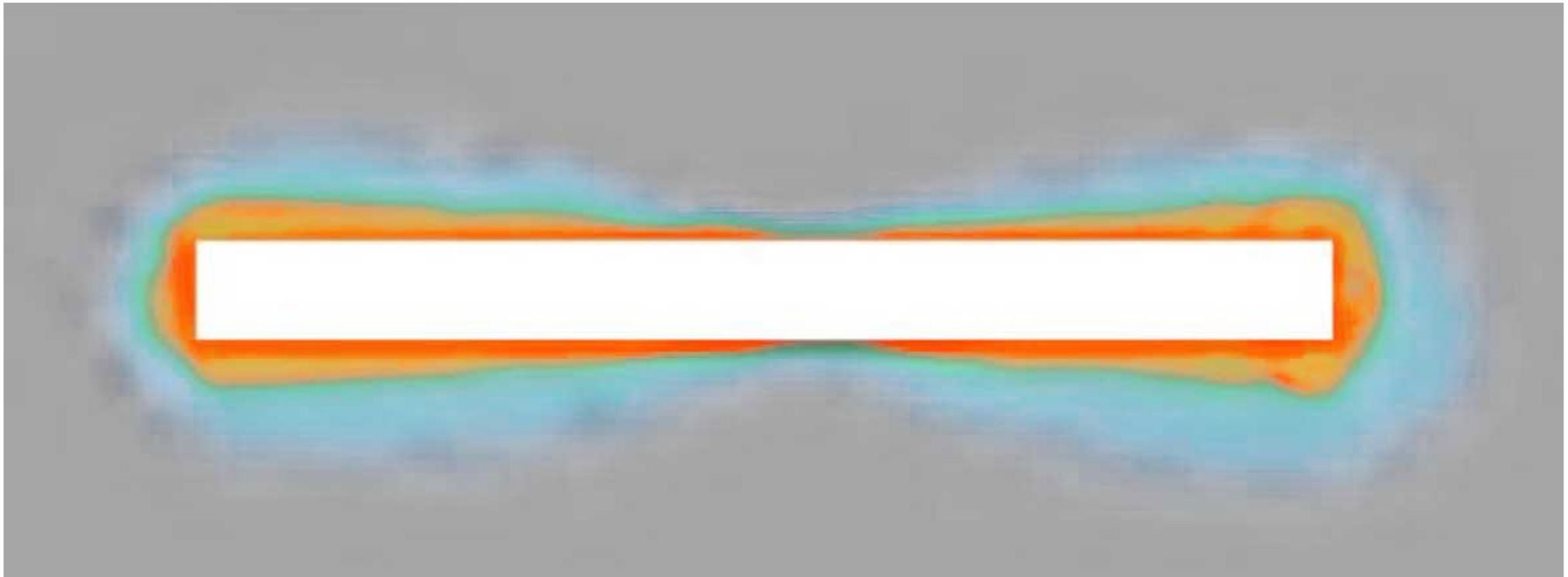
FOLDED DIPOLE



Feed Point

HALF WAVELENGTH SLOT ANTENNA

Current Around a Slot Antenna



HENTENNA

Skeleton Slot



2m Slot-Cube

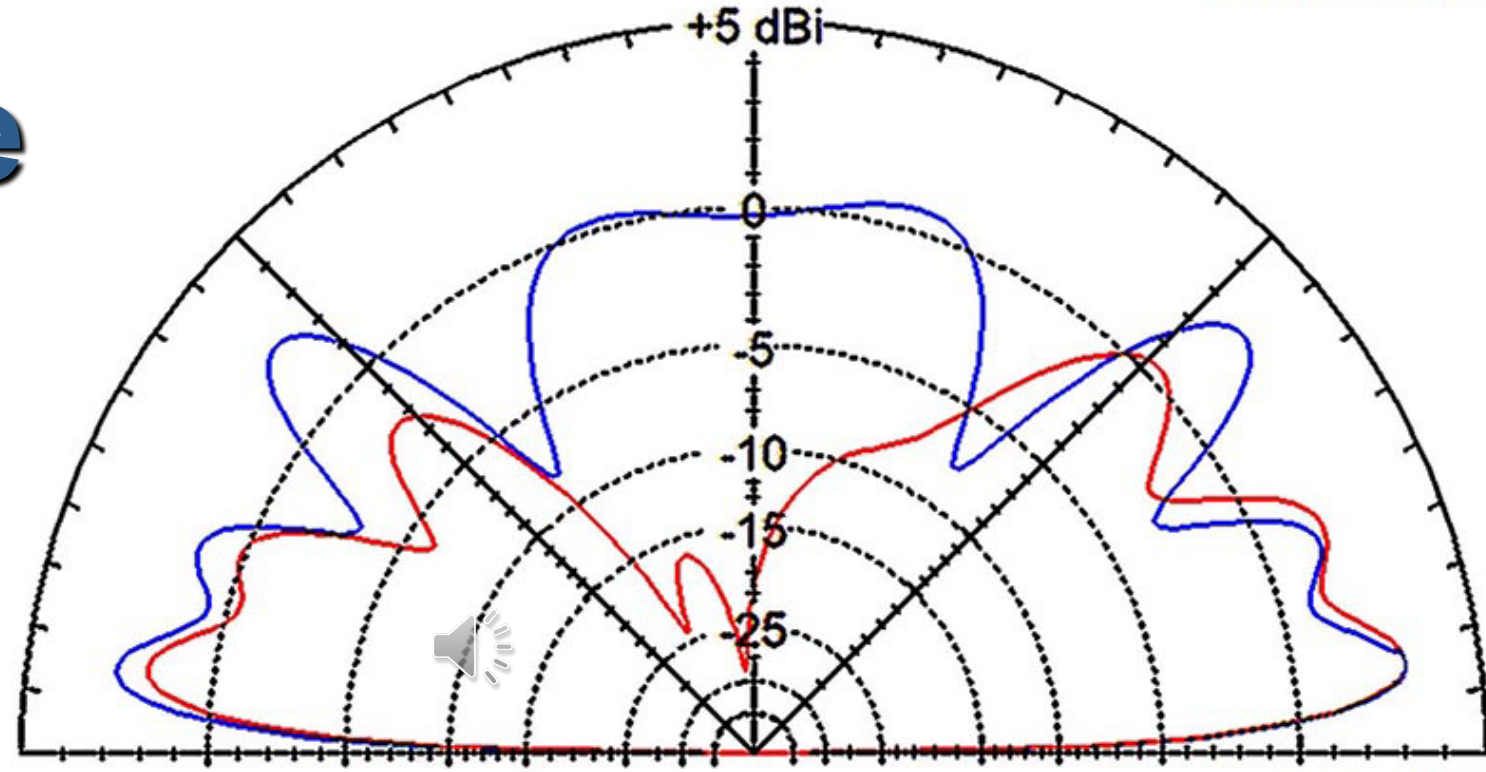
QST
Jan.
2019

Folded Skeleton Slot

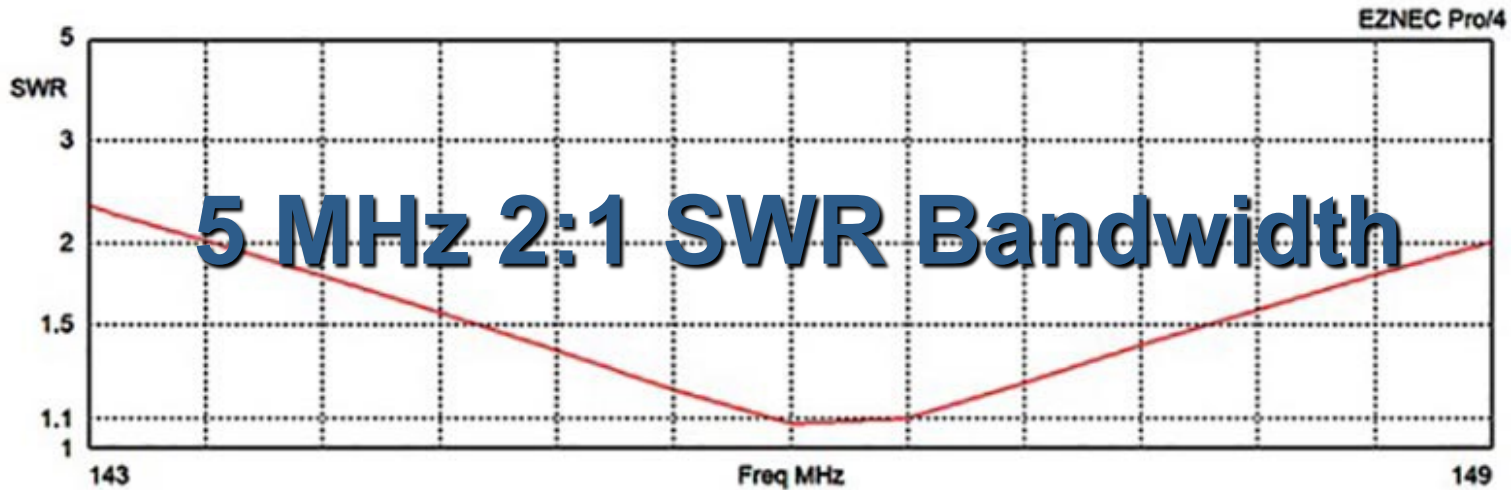


11 in.
Cube

Slot-Cube J-Pole



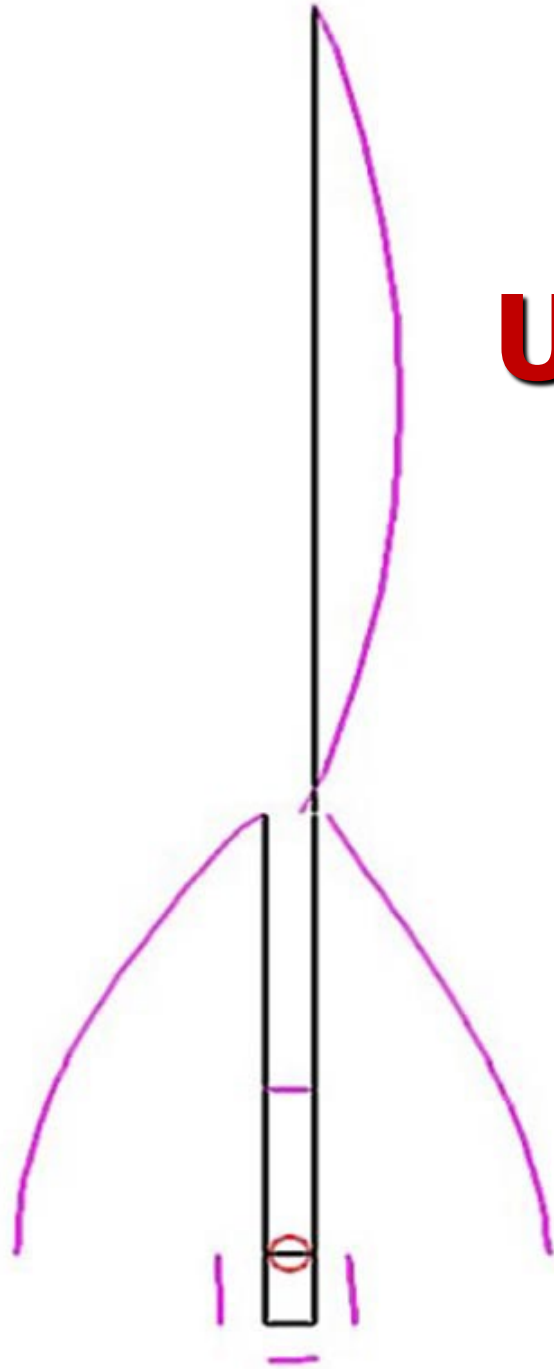
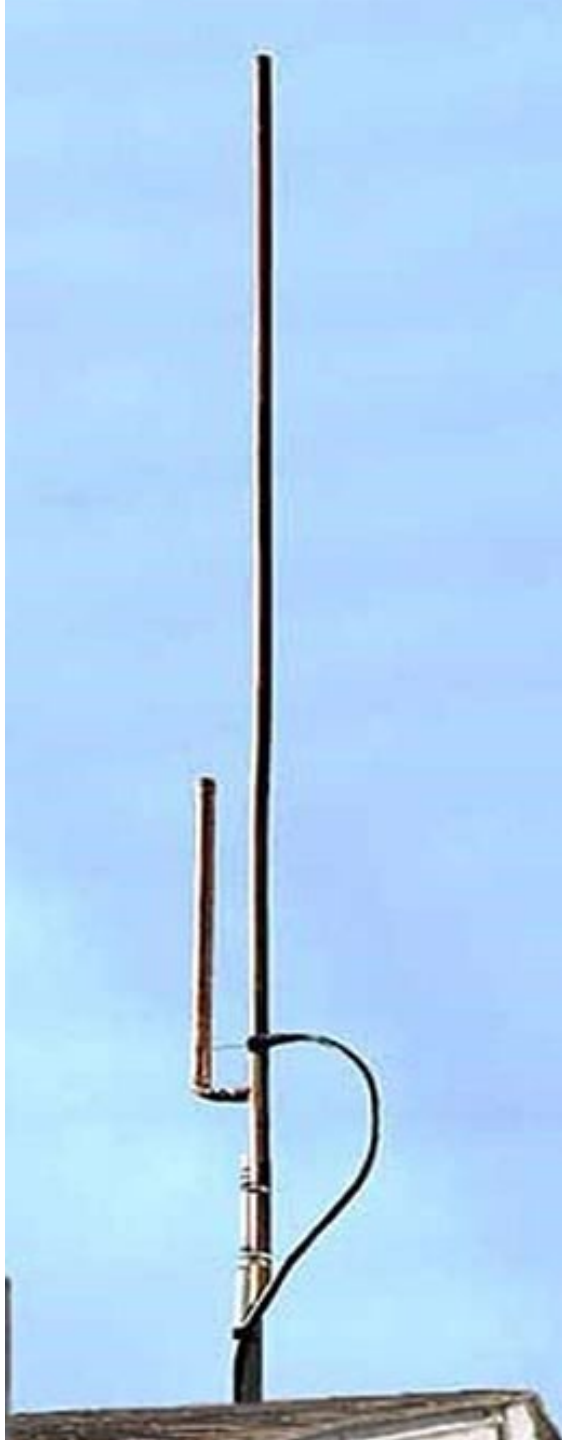
146.2 MHz



5 MHz 2:1 SWR Bandwidth

Discovery

**Not all Parts of
an Antenna
Radiate**

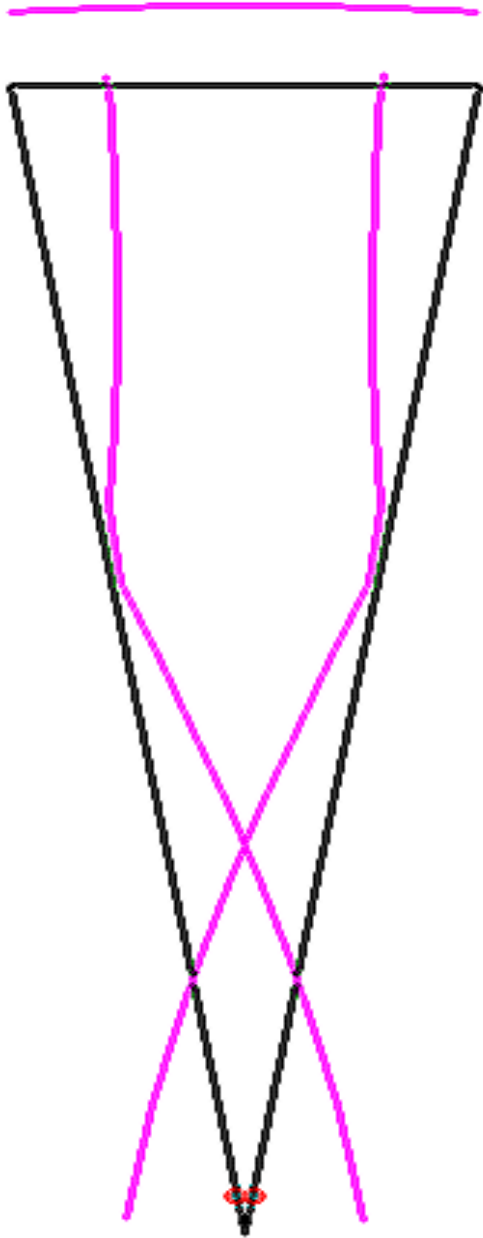


**Un-opposed
Current**

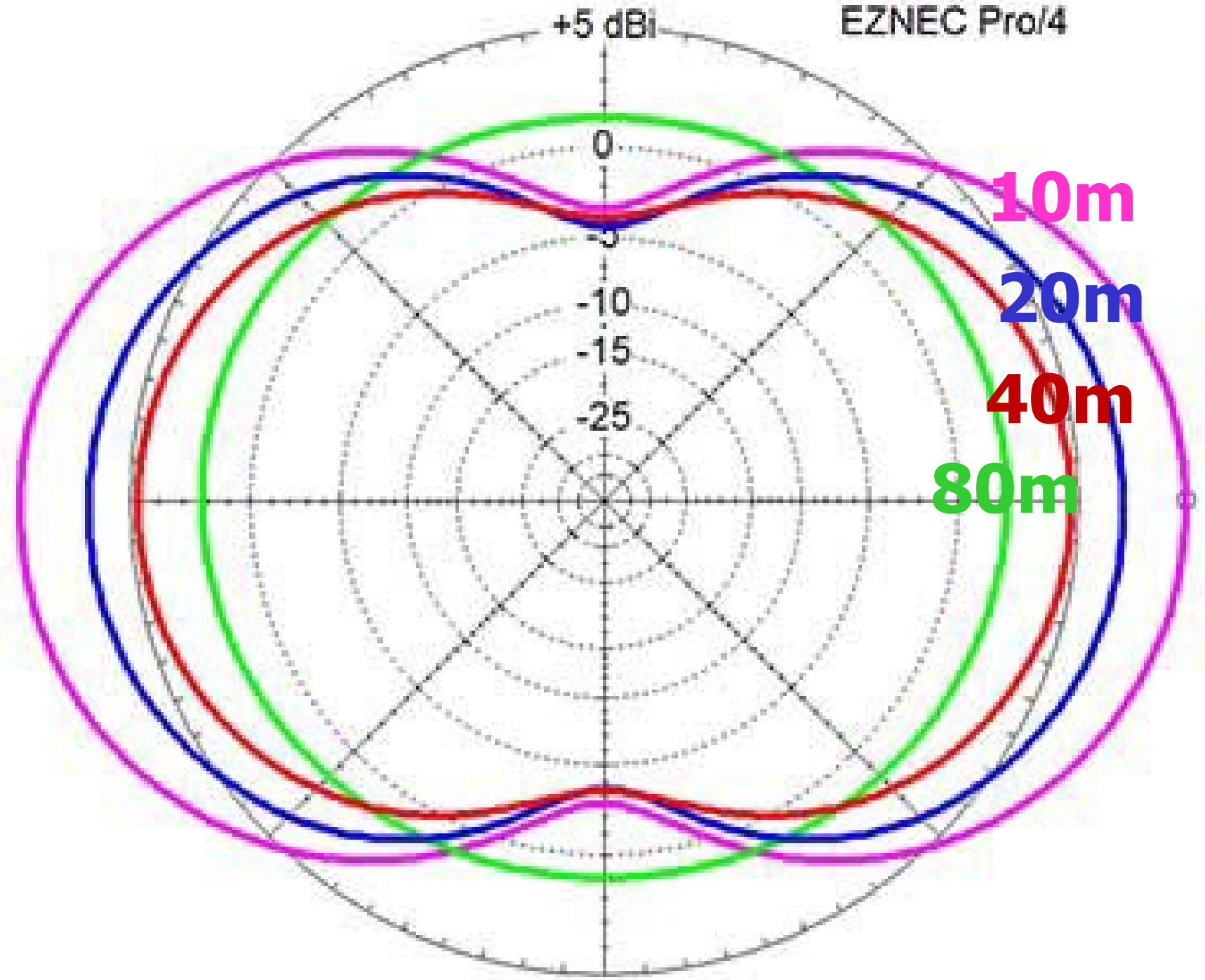
**Equal
Opposing
Currents**

Double Inverted Delta Slot Vertical

- 1. Horizontally-polarized**
- 2. Low radiation angle**
- 3. Elevated Radiation**
- 4. Azimuth Gain**



**Bottom
Currents
Produce no
Radiation**



10m

20m

40m

80m

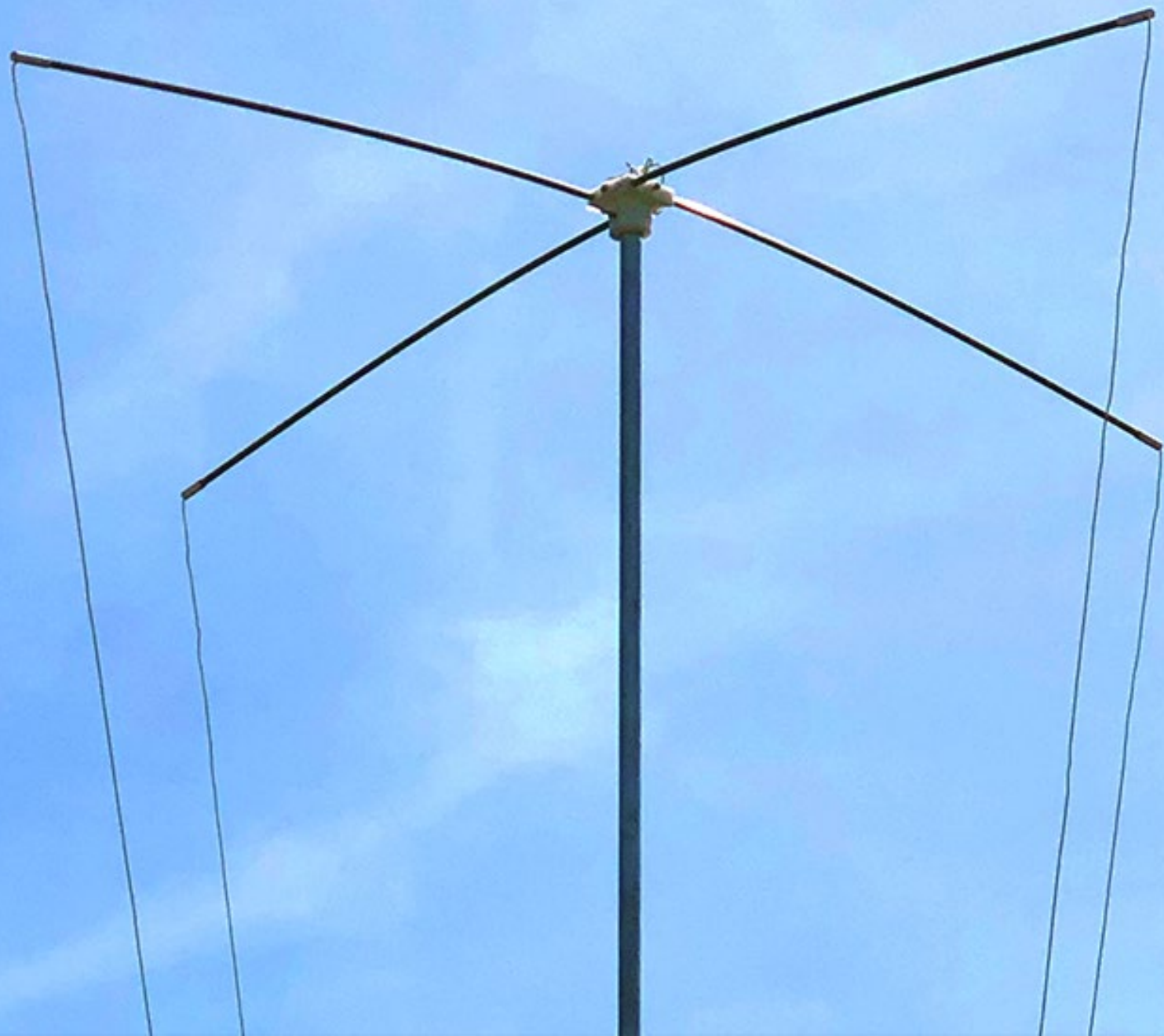
My Back Yard

No Guys

4 ft. Pipe in Soil
(No Concrete)

Base
Auto-Tuner





The Inverted Hen-Delta 6-Meter Antenna

An updated version of Koji Sugihara's, JJ1UMS, 1982 6-meter "Hentenna," the Hen-Delta improves performance and is easy to build and tune.

QST SEP 2022

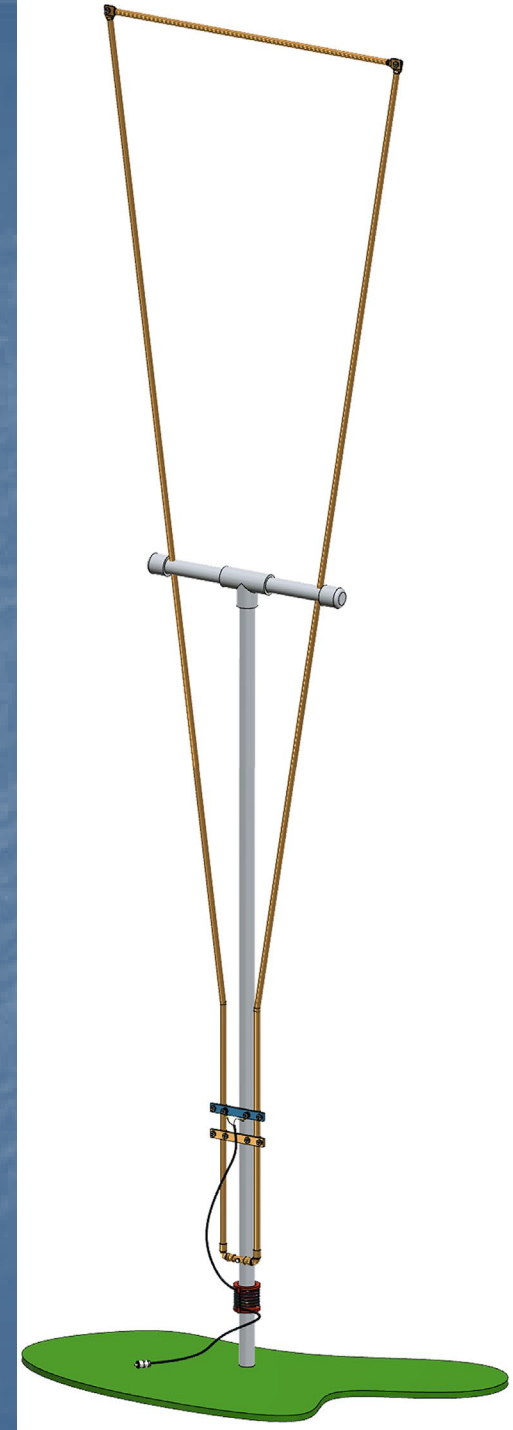
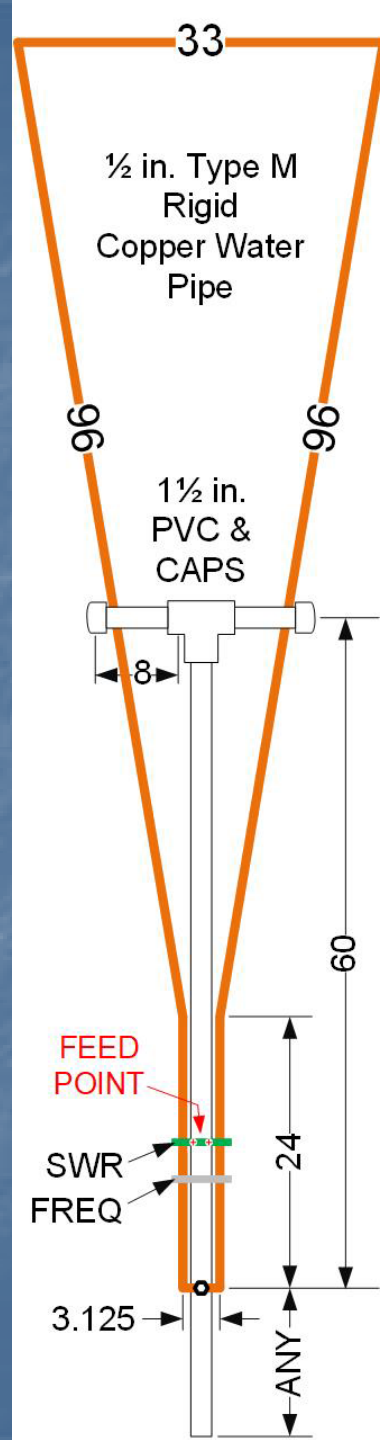
John Portune, W6NBC, and Jim Bailey, W6OEK

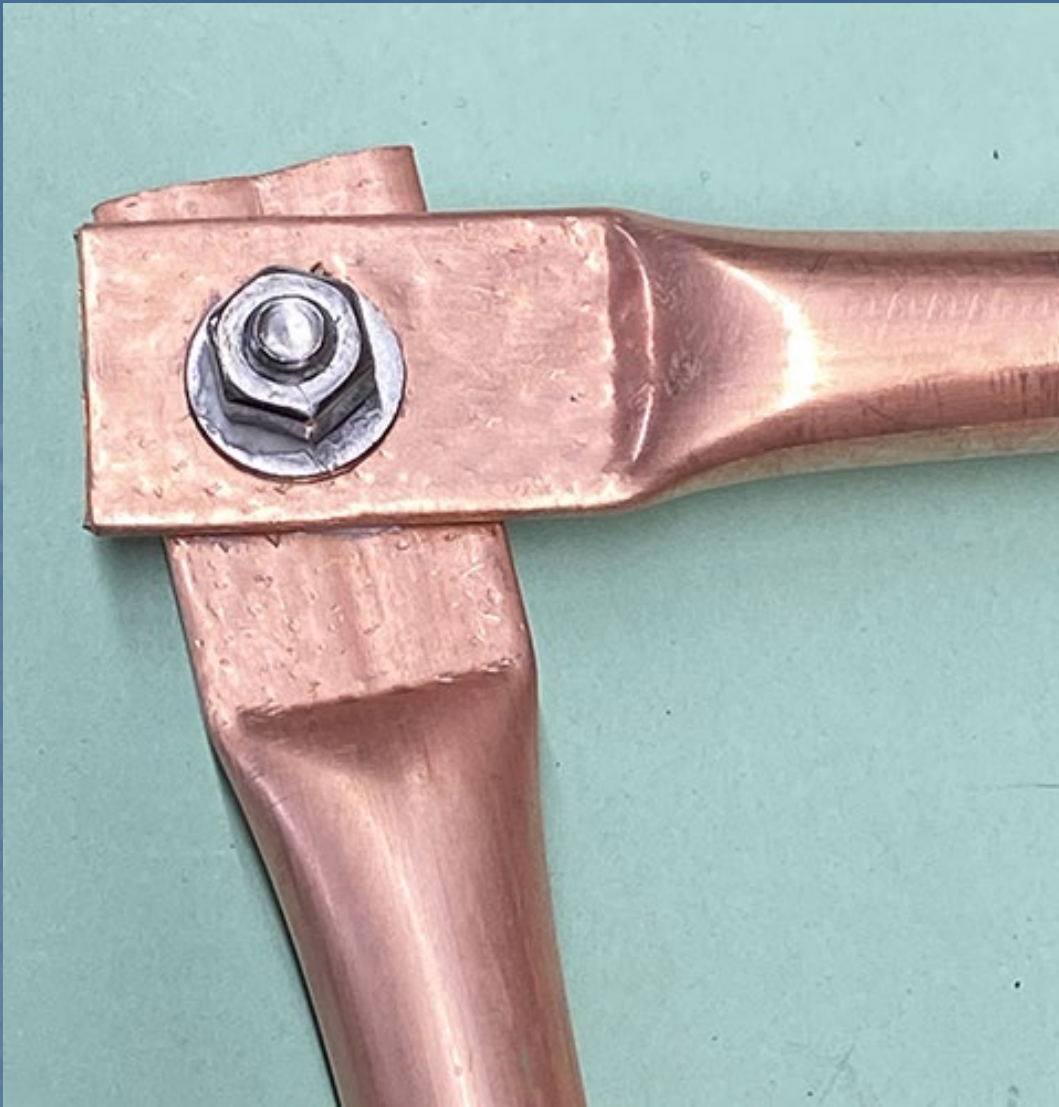
The Hen-Delta is based on a 1982 "Hentenna" design with a rectangular shape that was not optimum. We updated the design with our Hen-Delta antenna.

Antenna Design

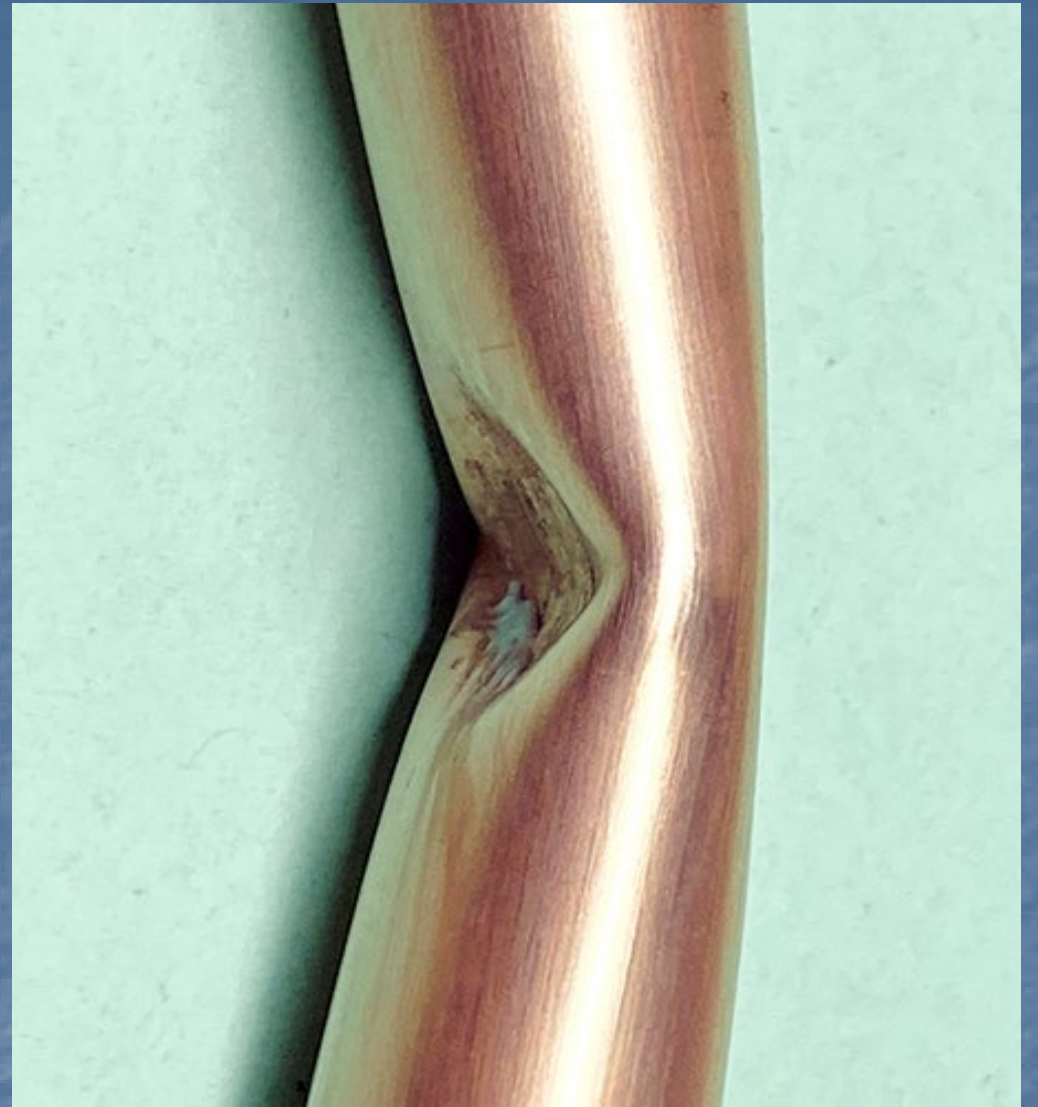
The top of the Hen-Delta is wider than the bottom, which





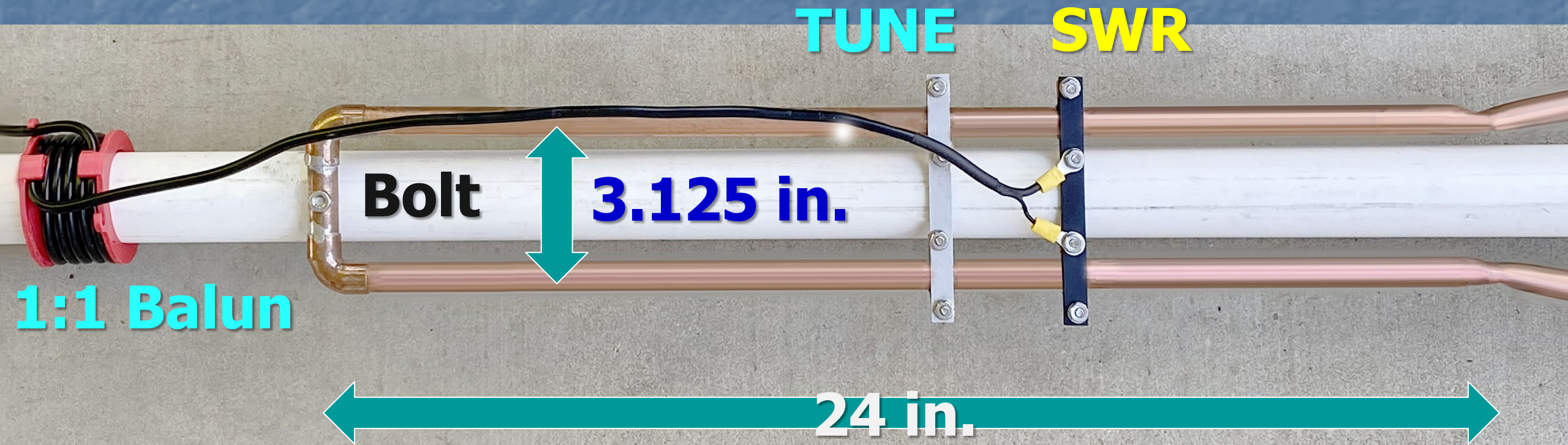


Top Corners



Bends at Stub

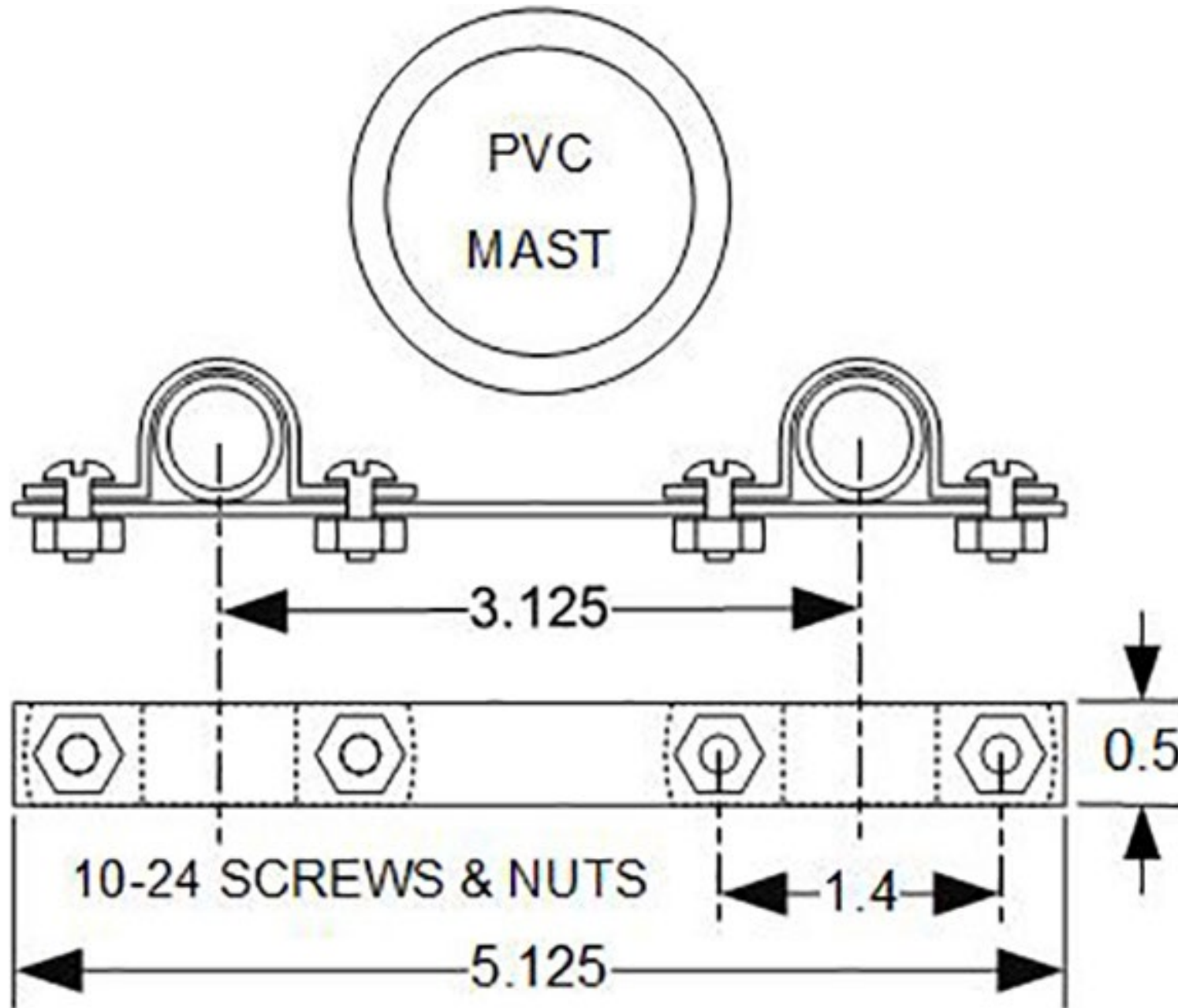
Feed, Tuning, Matching Section



Adjustment Bars

Feed / SWR
Insulated

Tune
Metal

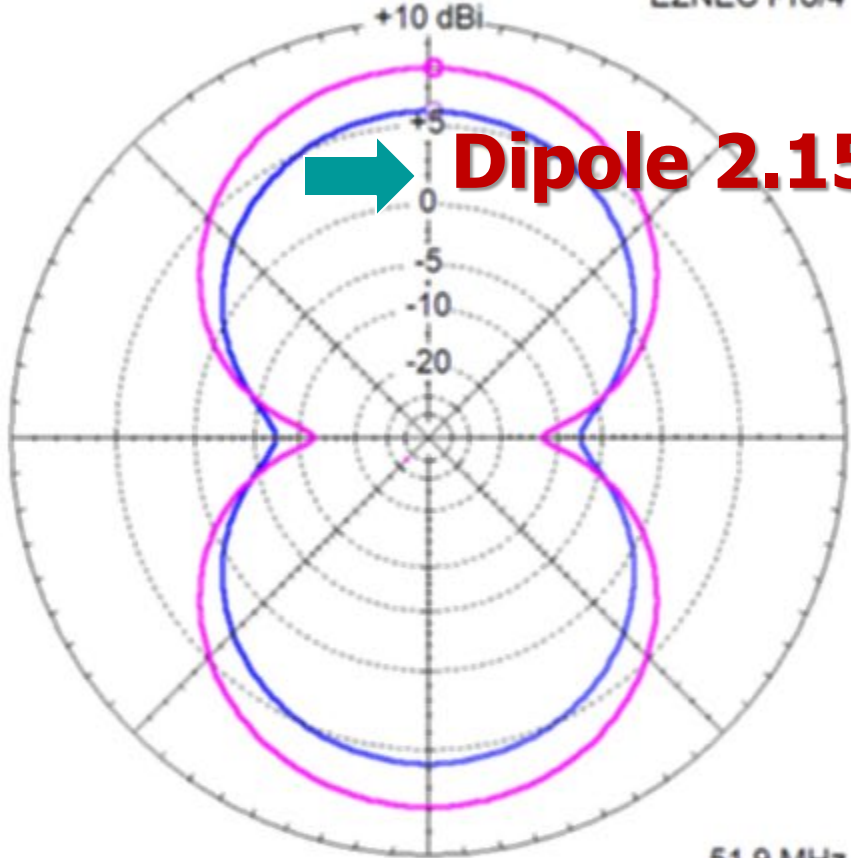




Base height: **1 ft.** / **10 ft.**

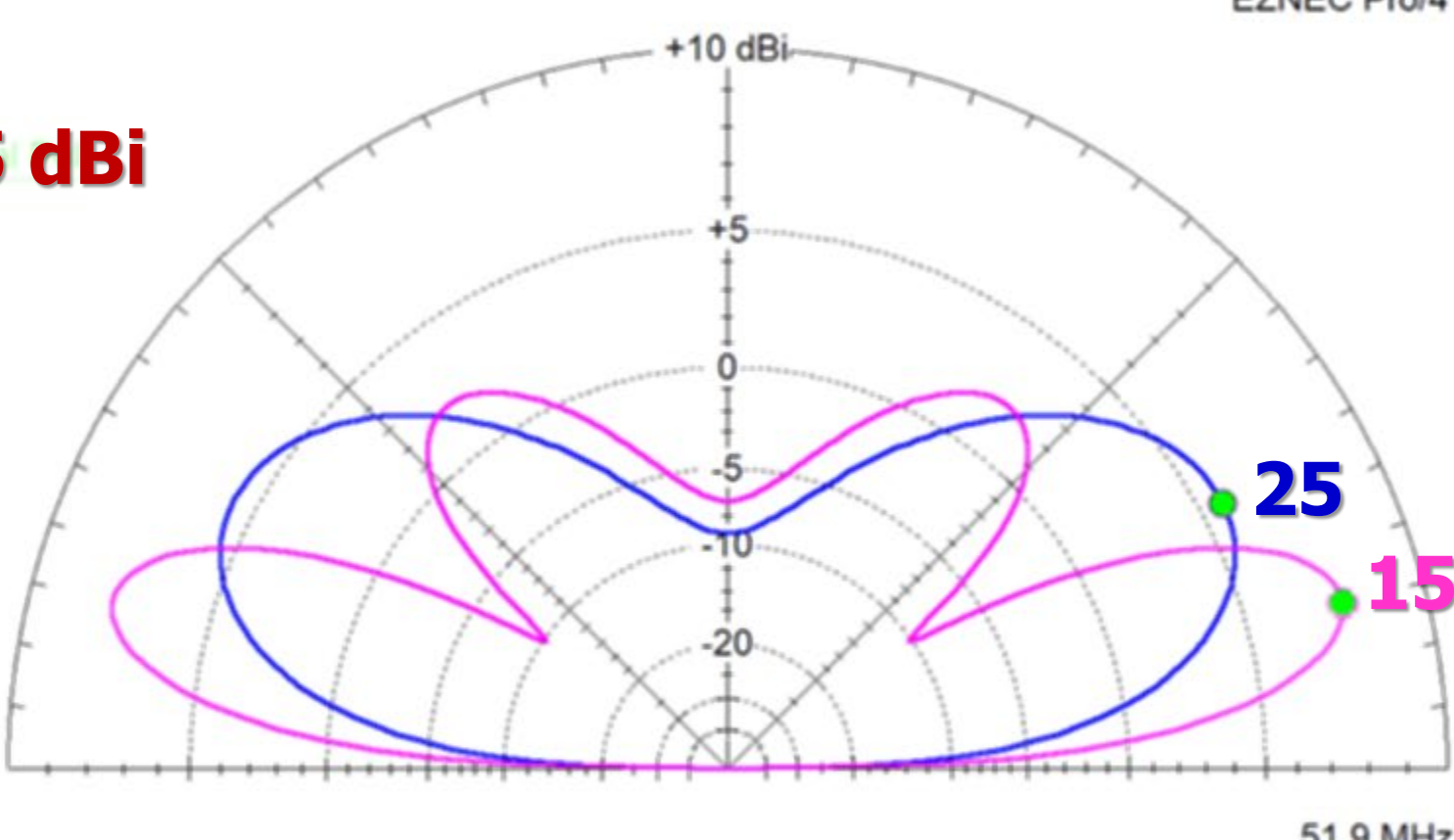
EZNEC Pro/4

EZNEC Pro/4



51.9 MHz

Azimuth



51.9 MHz

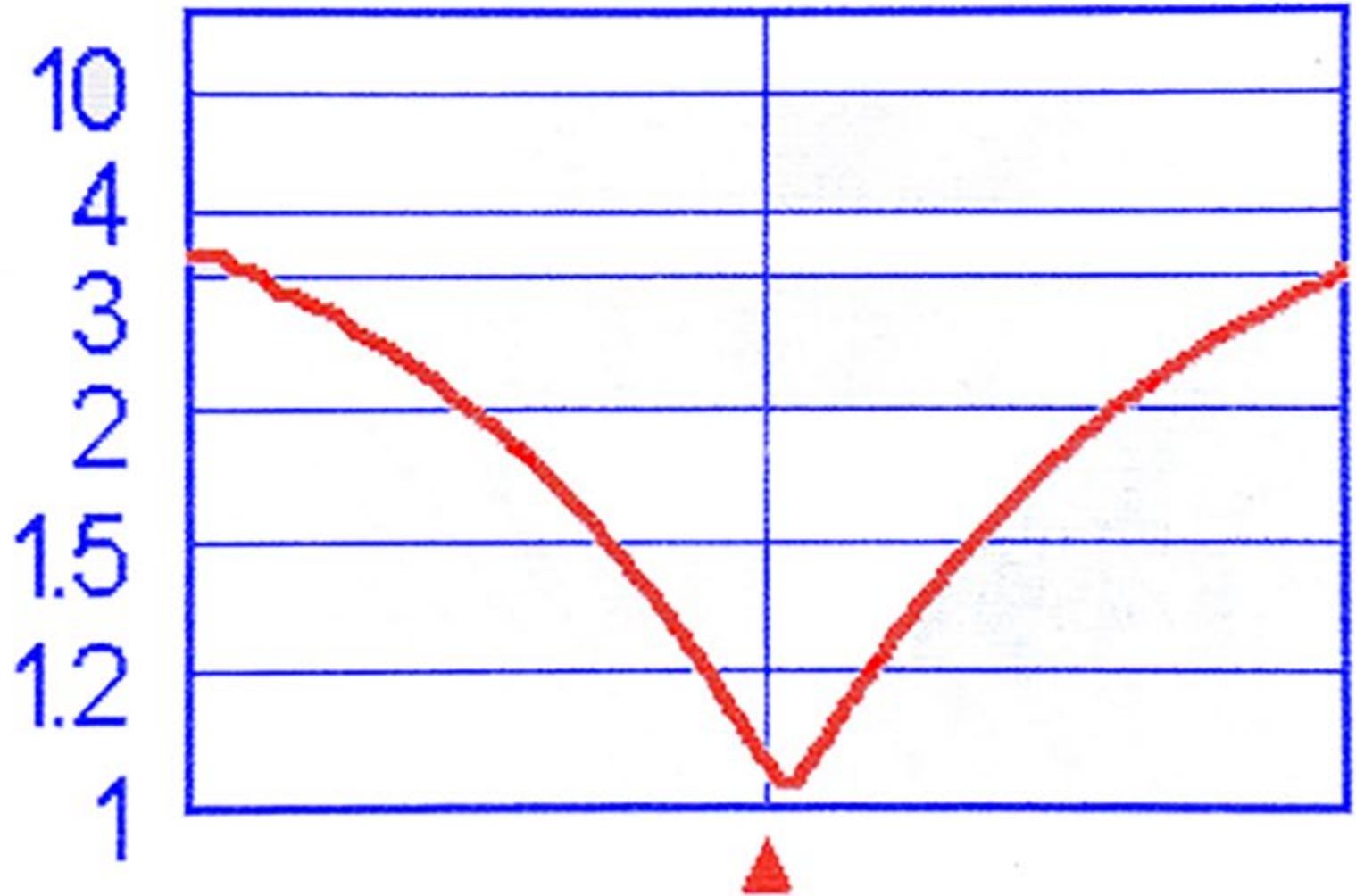
Elevation

Bandwidth

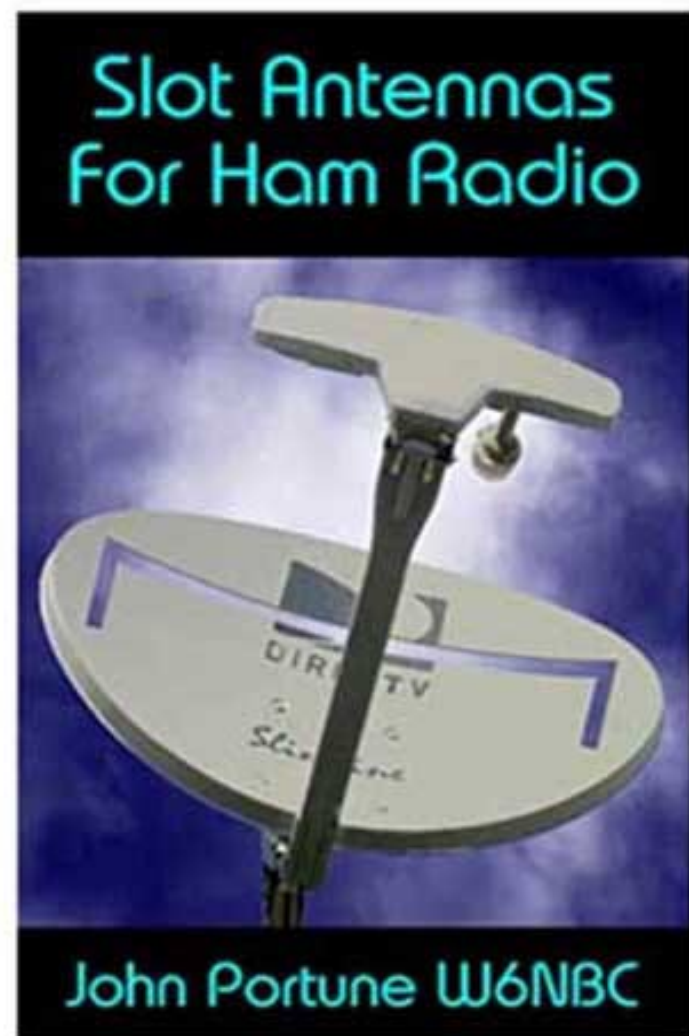
3:1-1.9 MHz

2:1-1 MHz

SWR 52 000 ± 500 kHz



Quan.	Item
2	10 ft. Type M, hard copper water pipe, ½ in.
1	33 in. Type M, hard copper water pipe, ½ in.
2	Elbow, 90 degree, close, copper, ½ in.
4	½ in. copper pipe straps, 2-hole,
1	10 ft. 1½ in. PVC SCH 40 or 80 pipe
2	1½ in. PVC SCH 40 or 80 pipe caps
1	1½ in. PVC SCH 40 or 80 slip tee
	Material for adjustment bars (see text)
2	1/4-20 x ½ in. stainless bolts, nuts and washers
1	1/4-20 x 3 in. stainless bolt, nut and washer
4	10-24 x ½ in. stainless bolts, nuts and washers
10 ft.	Mini-8 or RG-58 coax pigtail with connector
2	Ring terminals, #10 lug
	(optional) 3D printed balun bobbin. Printer file at w6nbcmail@gmail.com



Slot Antennas for Ham Radio: The Forgotten Antenna Kindle Edition

by [John Portune W6NBC](#) (Author) | Format: Kindle Edition

★★★★☆ 16 ratings

Slot antennas have been overlooked by ham radio operators since they were introduced in 1938. An aura of mystery surrounds them. Here's how they work and practical homebrew slot antenna projects from HF to UHF.

\$4.95 to buy





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DØGGY

"That's all Folks!"

