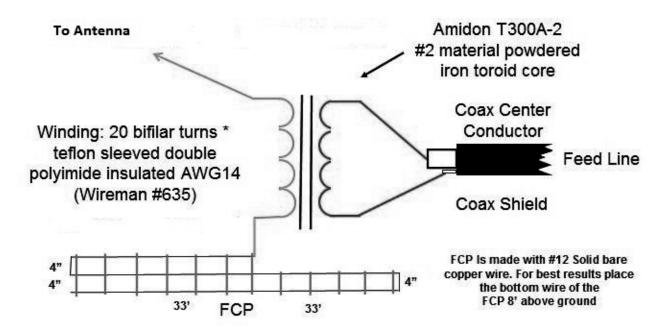
The Folded Counterpoise (FCP) - A Q&D Test of the Concept on 80 meters of an antenna with a small footprint.

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BACKGROUND: Lower frequency antennas have the difficulty that they have to be annoyingly big. The concept of FCP was largely developed for use on 160 meters where high enough dipoles are problematic and a full size vertical is even more difficult (quarter wave being 40 meters). Often this issue is dealt with by using the inverted L configuration - a shorter vertical section plus a horizontal portion connected off the top of the vertical.

However any such antennas need two parts, the second of which is generally some wire(s) that are near the ground. Multiple radials are fine if you have a lot of wire and a lot of clear ground. A second possibility is a modest number of elevated radials what are again the order of a quarter wavelength. Still clear ground, but to a lesser extent, is needed. The charm of multiple radials and sufficiently elevated radial is the reduction of "return" currents that are driven into the lossy ground reducing the emitted power.

Here enters the notion of the FCP as an alternate for the near-ground wire(s). The FCP: A 160 Meter Counterpoise for a Postage-Stamp Lot, Guy Olinger, K2AV, May/June 2012 National Contest Journal (also see https://k2av.com/) with this diagram for the 160 meter case. Note that the FCP wires and the transformer are **NOT** to the same scale.



* Bifilar turns: Instead of the two windings kept separate, one wire on one side of the toroid and one wire on the other side, the two wires are kept in a pair like a length of zip cord. The PAIR of wires is wound around the toroid twenty times. For this application 15 feet of wire and teflon sleeve, cut in half, provides the required PAIR length of 7.5 feet.

NCJ1205-Olinger03

The 160 m FCP consists of a \sim 167 foot wire in a back and forth configuration positioned at least 8' above the ground. Its flat dimensions are then 66' by 8" as pictured. The claimed beauty of this is that

portions of the FCP wire have currents that are roughly equal and opposite to other nearby portions leading to significantly reduced fields at the ground. As a result the currents in the ground, and their losses, tend to be correspondingly reduced. Details beyond that sometimes seem to be a bit lacking.

W8JI (a well known guru, https://www.w8ji.com/fcp_folded_counterpoise_system.htm) points out that the 1:1 "isolation transformer" (his quotes) largely serves to provide additional inductance so the whole antenna can be resonant in the band, although K2AV indicates that the transformer acts as a common mode current limiter (or choke) as well and adds that the transformer is a requirement.

THE TESTED ANTENNA: I have a 60' fiberglass telescoping Spider Pole. On 80 m this is close to a quarter wavelength so it is good as a vertical when you just attach a wire along the length. This pole is firmly attached to a 6' fence post at 2 locations and guyed at \sim 45' - it is pretty solid.

A transformer specifically designed for the 80 m version of FCP was purchased from Balun Designs \sim \$100.



Materials for the FCP support were 1"x2"x8' boards from a previous elevated radial project and wire is from the junk box. For 80 m the wires are half the length as those for 160 but the spacing remains 4".

Three of the 1X2s of various "designs" at a spacing of 16.5' support the (temporary) FCP at about 8'. 3x supports. Note the support on the left has a rock to prevent the torque from the wires above from rotation of the support.









The fence involved is split rail BUT sadly with "hog wire" attached so it not ideal.

The first test showed the resonance was rather at too high a frequency, but in band. Both the vertical attenna and FCP lead wires were then lengthened and the excess wrapped into coils of a clever design around questionable cores.





At this point the antenna was resonant (but with best SWR well above 2:1) at \sim 3.55 MHz with a real resistance of \sim 30 ohms (if memory serves and the MFJ is to be believed). Happily the ATU handled it so no further silly adjustments.

It was then put to a test starting with the ARRL CW DX contest 2/19/22 followed by modest operations on FT8 until 3/5/22 .

CONCLUSION: It is a respectable but not killer antenna based on substantial <u>subjective</u> experience on 80 meters (181 countries confirmed). Of course, as pointed out above, the antenna was hardly a clean set up either. YMMV but at least WAC 80 was accomplished using ~ 400 watts.

CONTACTS:

V51WH	FT8
EA7ALL	FT8
AE1AA	FT8
JN2QYN	FT8
JA1JRK	FT8
JA7GYP	FT8
WA3PTF	FT8
EA1YO	FT8
ZL3JT	FT8
PE5T	FT8
KK7O	FT8
KA0BOJ	FT8
KC4ZWA	FT8
W4CG	FT8
KM6GUO	FT8
K7XQ	FT8
KG7PD	FT8
N6HC	FT8
K9CPA	FT8
CU3AK	FT8
WH6EY	FT8

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