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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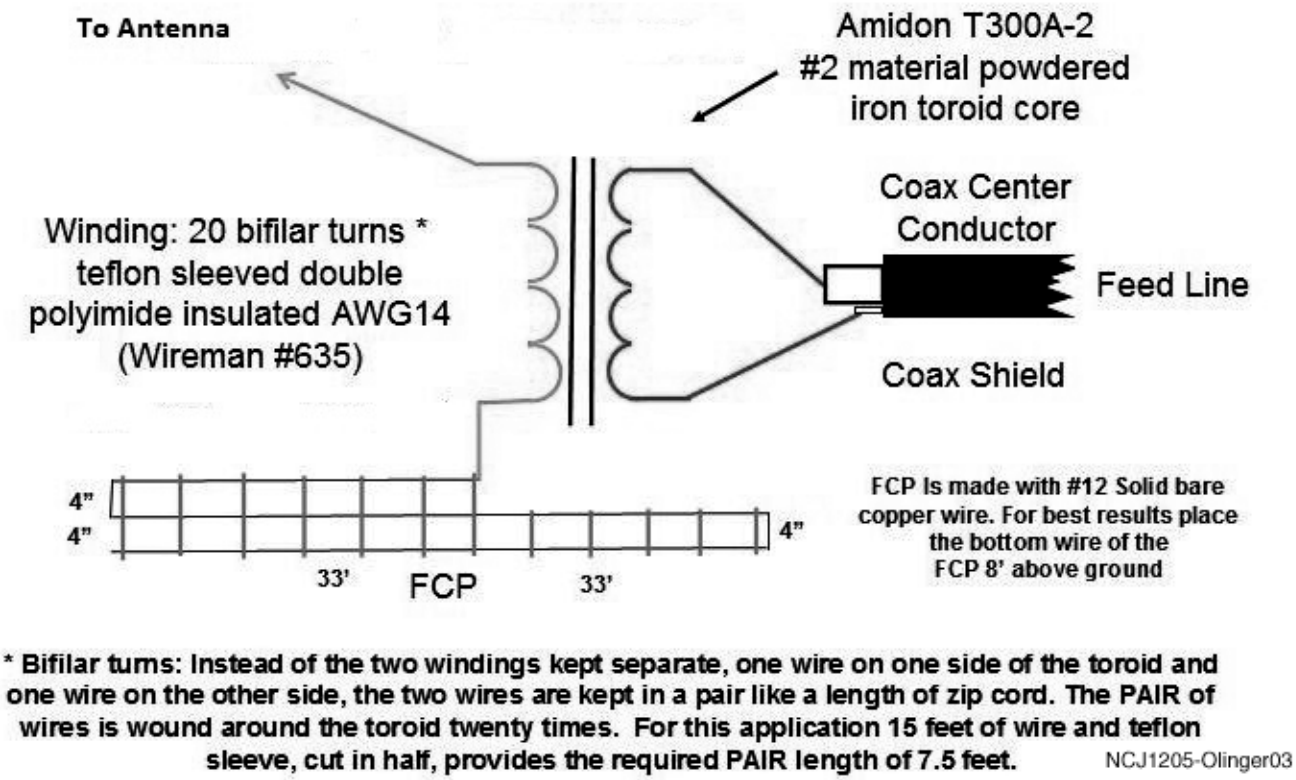
BACKGROUND: Lower frequency antennas have the difficulty that they have to be annoyingly big. The concept of FCP was largely developed for use on 160 meters where high enough dipoles are problematic and a full size vertical is even more difficult (quarter wave being 40 meters). Often this issue is dealt 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.



The 160 m FCP consists of a ~ 167 foot wire in a back and forth configuration positioned at least 8' above the ground. Its flat dimentsions 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.

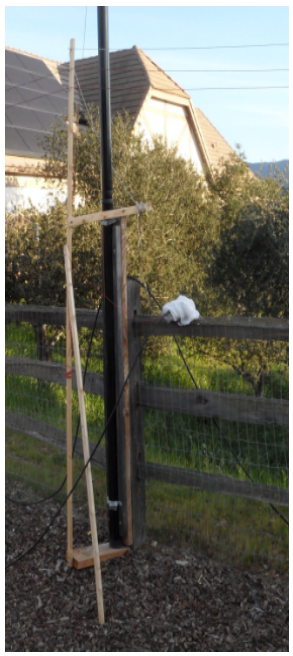
W8JI (a well known guru, https://www.w8ji.com/fcp_folded_counterpoise_system.htm) points out that the 1:1 "isolation transformer" (his quotes) largely serves to provide additional inductance so the whole antenna can be resonant in the band, although K2AV indicates that the transformer acts as a common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

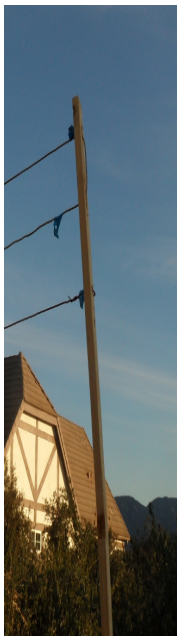
THE TESTED ANTENNA: I have a 60' fiberglass telescoping Spider Pole. On 80 m this is close to a quarter wavelength so it is good as a vertical when you just attach a wire along the length. This pole is firmly attached to a 6' fence post at 2 locations and guyed at ~ 45 ' - it is pretty solid.

A transformer specifically designed for the 80 m version of FCP was purchased from Balun Designs ~ $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 ~ 3.55 MHz with a real resistance of ~ 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 subjective 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.

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PE5T	FT8
KK7O	FT8
KA0BOJ	FT8
KC4ZWA	FT8
W4CG	FT8
KM6GUO	FT8
K7XQ	FT8
KG7PD	FT8
N6HC	FT8
K9CPA	FT8
CU3AK	FT8
WH6EY	FT8

EA8DS	FT8
SV8JE	FT8
NY3R	FT8
LZ1KU	FT8
KK4TKJ	FT8
CO8MCL	FT8
N7RTH	FT8
WH6GPU	FT8
WB4JTT	FT8
CM8DFC	FT8
KP4HF	FT8
JE7GXQ	FT8
HK4EIC	FT8
KA7EXM	FT8
N5YZA	FT8
W1YRC	FT8
KO4EUD	FT8
KS5Z	FT8
AB3XL	FT8
WB4HMA	FT8
KC8YDS	FT8
K8CW	FT8
W4NRG	FT8
F8RZ	FT8
EA1SA	FT8
N3DNA	FT8
N3AZ	FT8
WI0R	FT8
CM2RSV	FT8
PJ2T	CW
KH6LC	CW
KH6TU	CW
CR3W	CW
ZF5T	CW
XE2X	CW
ZL3X	CW
VP5M	CW
TO4A	CW
V3T	CW
P44W	CW
KP2B	CW
KP4/KO1A	CW
NP4Z	CW
KL7SB	CW
KP2M	CW
KP4AA	CW