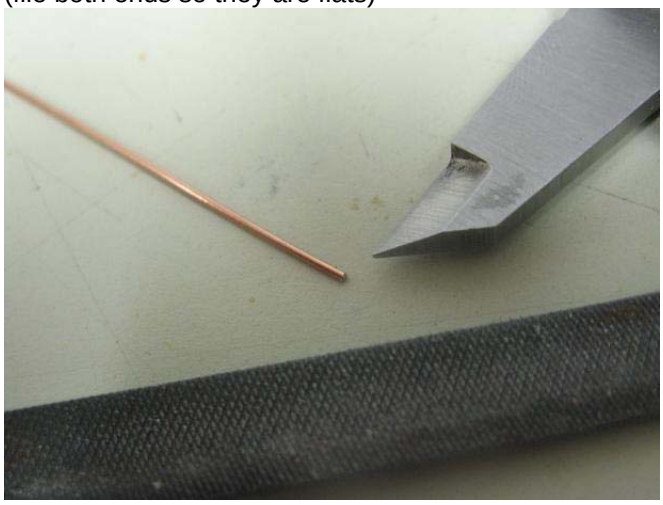
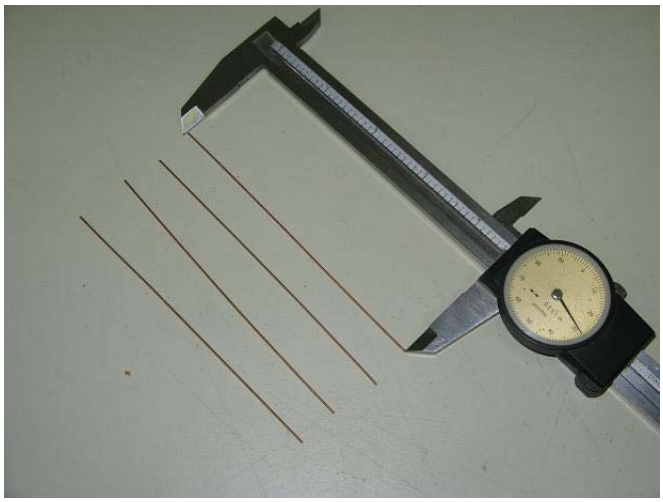
The Virevent is both complex and simple to make. Center frequency shift with change in wires diameter, so dimensions cannot be a simple Freq./x.xx equation. There's a mathematical equation that can take wire diameter into account, but the goal of this tutorial is to be simple. Let's use 0.8mm copper clad welding wire, it's stiff available and easy to solder. The Dimensions given are for that wire, bigger wire will shift the frequency up, smaller will shift the frequency down. If you stay with that wire, then it's no more difficult than a skew-planar-wheel or clover leaf. If you build the Turbine, there's a different set of dimensions at end of this document and make eight arms 45deg. apart instead of four 90deg. apart.

To begin with you'll need:
-0.8mm copper clad welding wire.
-Rg316 coax pig tail
-Caliper
-Cutter
-Plier
-File
-Xacto knife
-A 6"x6" or bigger plank of wood with a 3/8" hole in the middle.
-Mounting putty
-Soldering iron
-Flux paste

Dimensions are found at the bottom of this document.

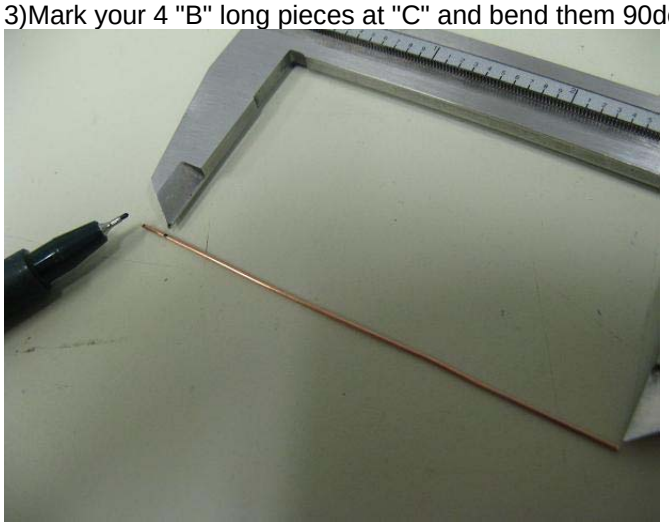
1)Measure 4 pieces of "A" length (cut them a bit longer), file them down to just the right length. (file both ends so they are flats)

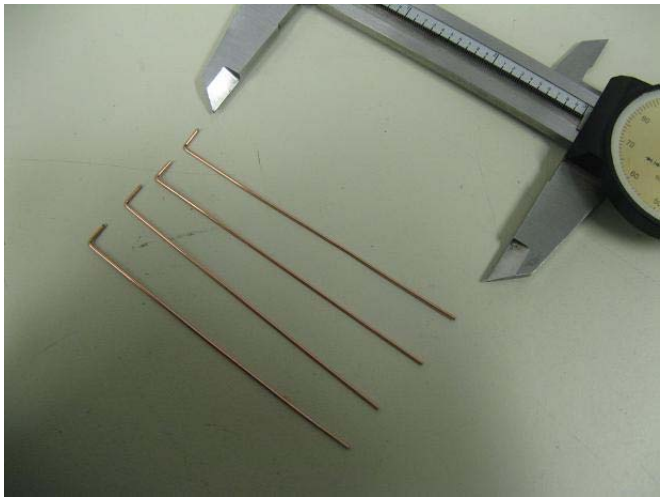




2)Measure and cut 4 pieces of "B" length, precision is not important at this point.

3)Mark your 4 "B" long pieces at "C" and bend them 90deg. on the mark.

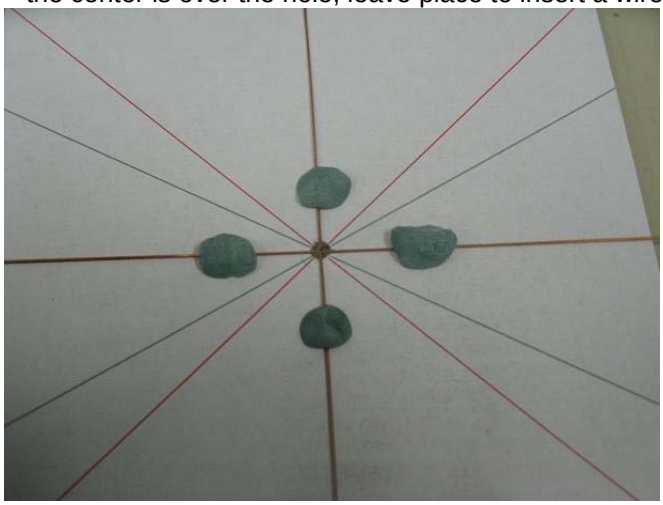


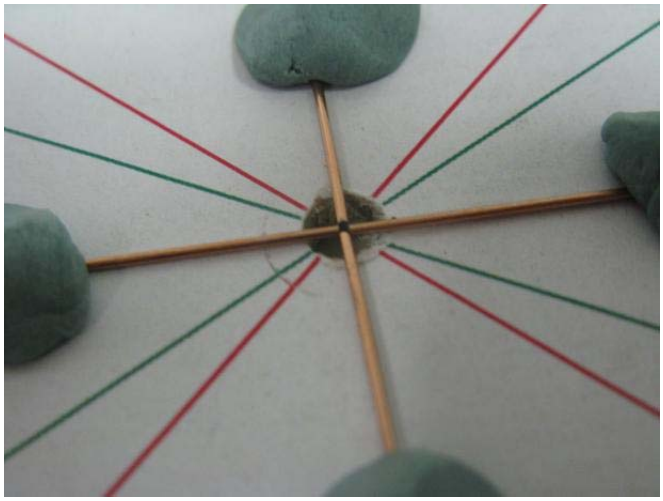


4)File them down to exact "C" including the elbow.

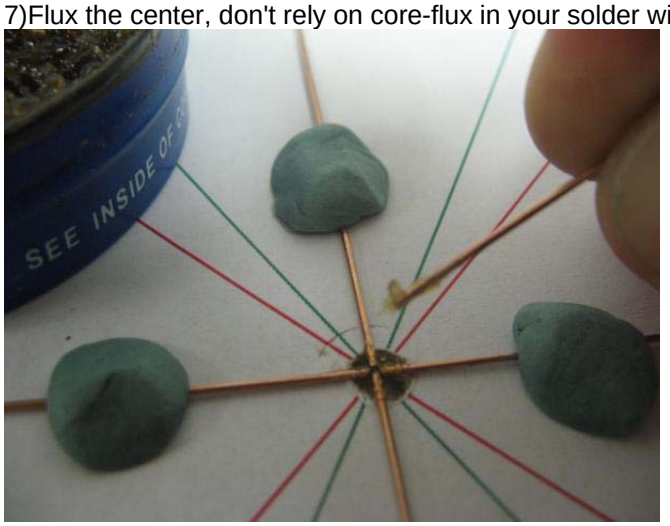
5)Measure one pieces of "D" length (cut it a bit longer), file it down to just the right length.

6)Use the mounting putty and fix the "A" wires in a "+" pattern on the wood plank. Off course the center is over the hole, leave place to insert a wire in the center.

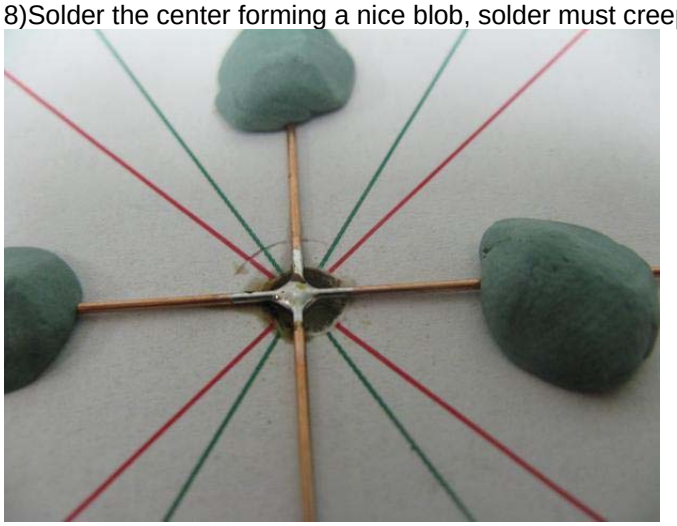




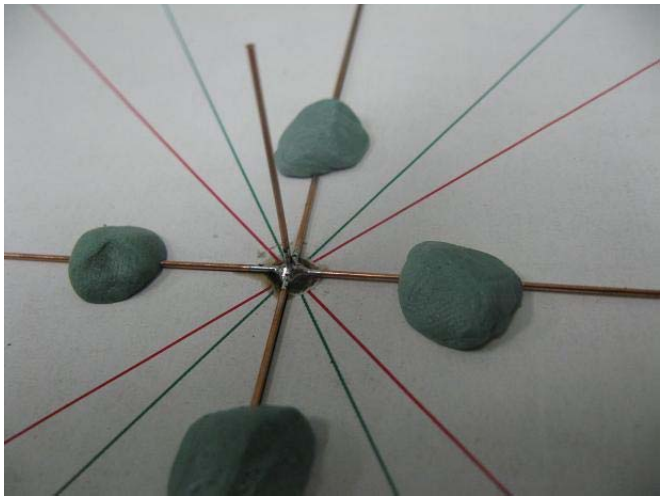
7)Flux the center, don't rely on core-flux in your solder wire, **USE FLUX.**



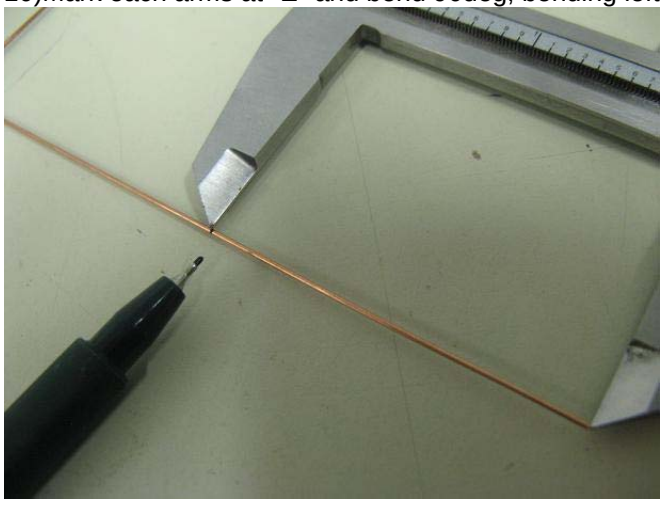
8)Solder the center forming a nice blob, solder must creep on the wires.

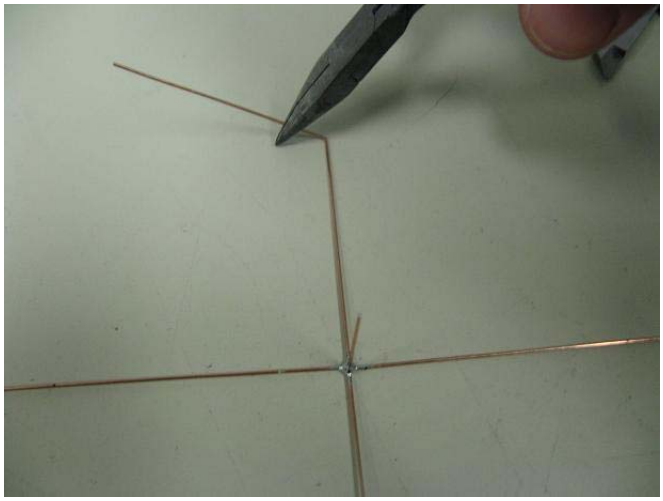


9)Flux the tip of "D", heat your "blob" and install it in the center. Try not do make it stick the other side of the "blob". It must stand vertical.

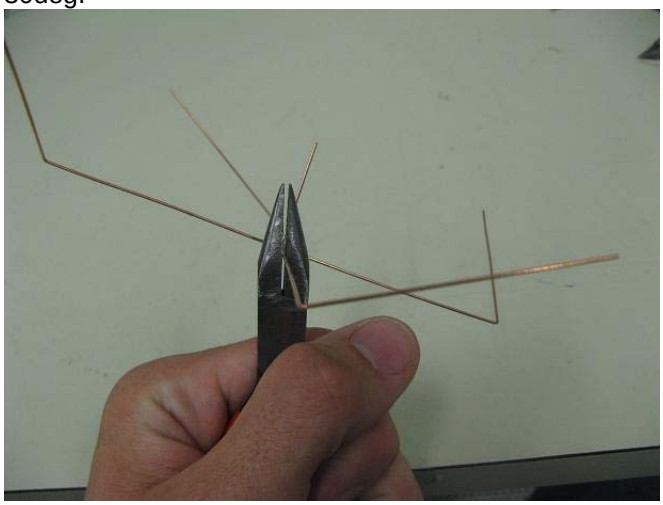


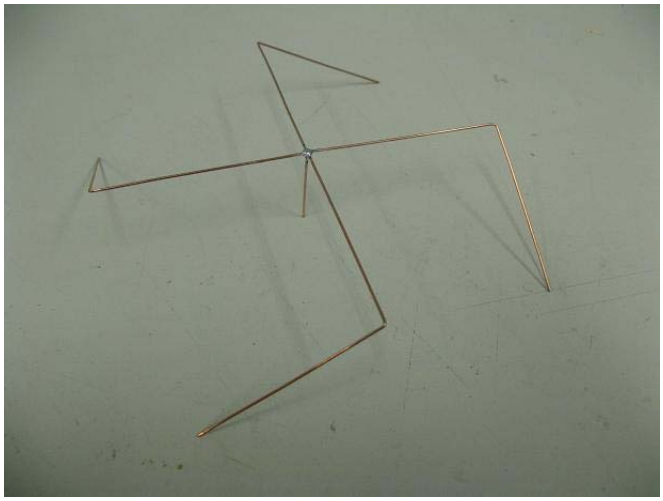
10)Mark each arms at "E" and bend 90deg, bending left make RHCP, right make LHCP.





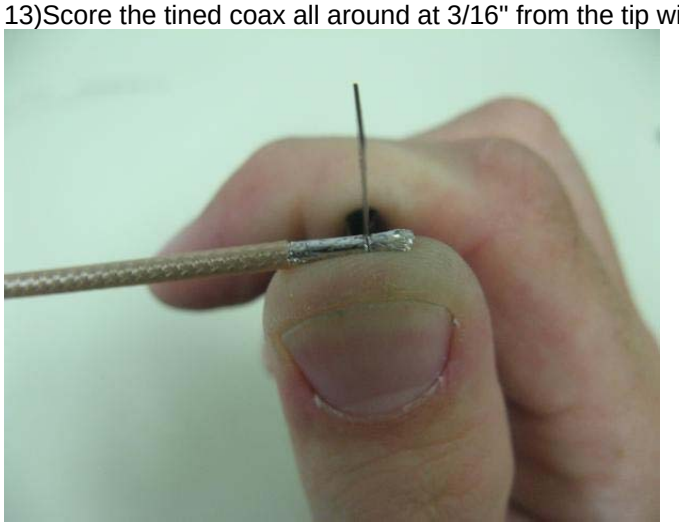
11)Hold the arms with plier and adjust angle to 30deg. (Turbine is 45deg.) by twisting the ends. To get 30deg, the whole thing should lay evenly on its five legs. This way, pitch angle is exactly 30deg.



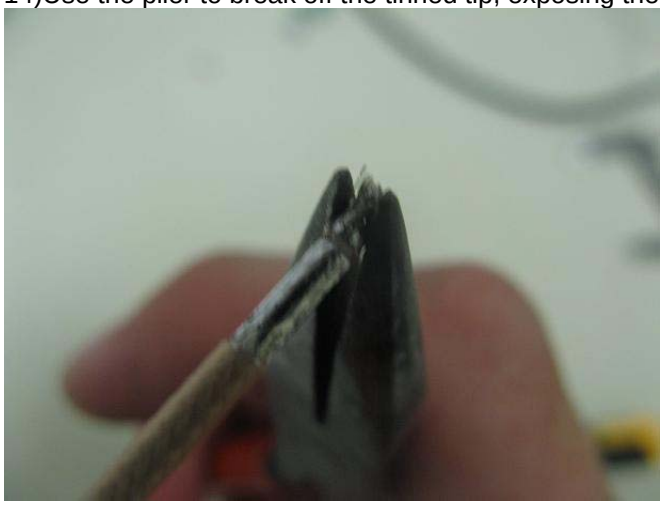


12)Admire your creation and put it aside, strip 1/2" of your coax cable and tin it.

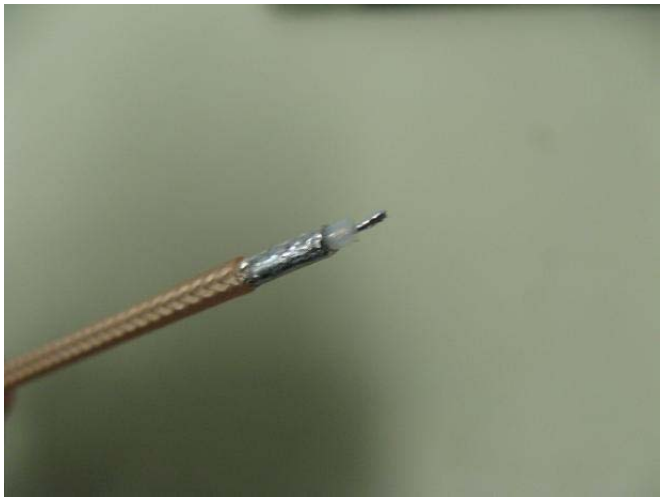
13)Score the tined coax all around at 3/16" from the tip with the Xacto blade



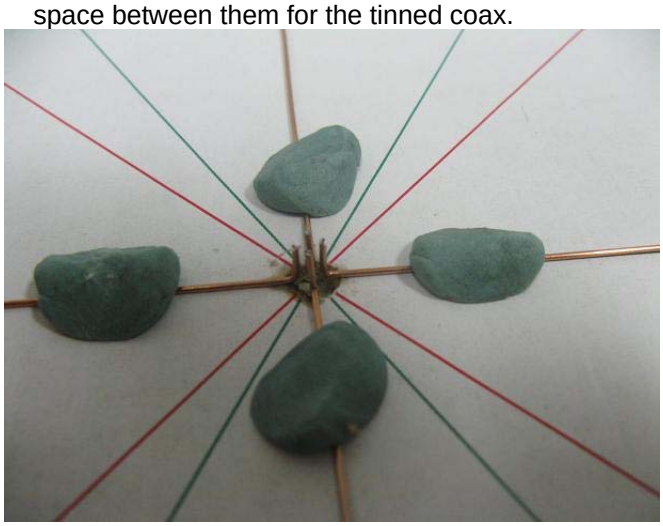
14)Use the plier to break off the tinned tip, exposing the center.



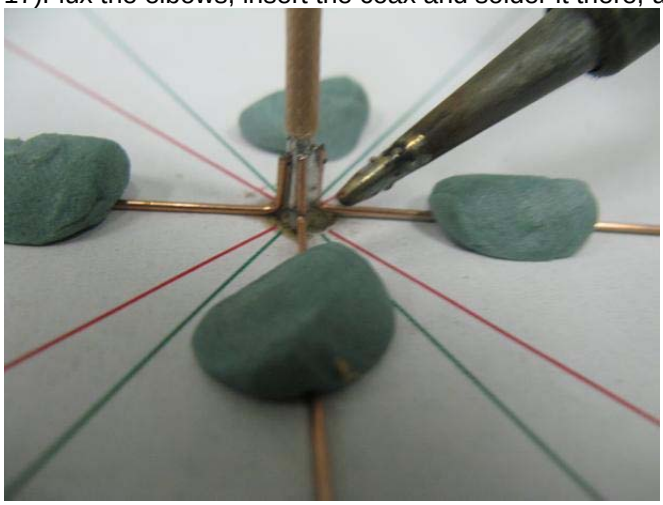
15)Strip around 1/8" of coax center and tin the exposed conductor.



16)Fix the "C" parts in a "+" patern on the wood plank with the elbow upward. Leave enough space between them for the tinned coax.



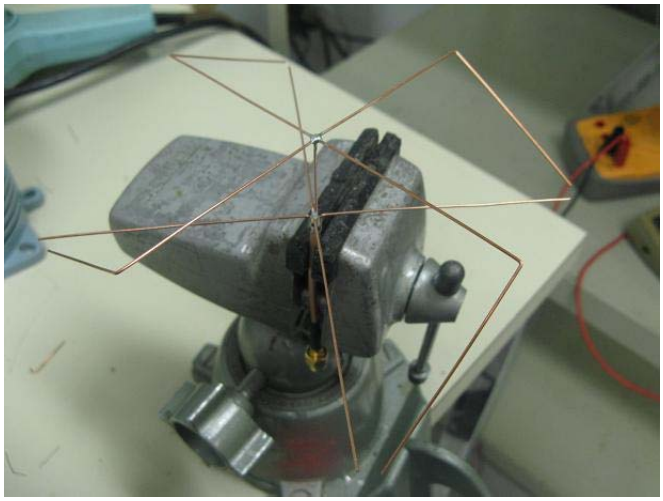
17)Flux the elbows, insert the coax and solder it there, use a liberal amount of solder.

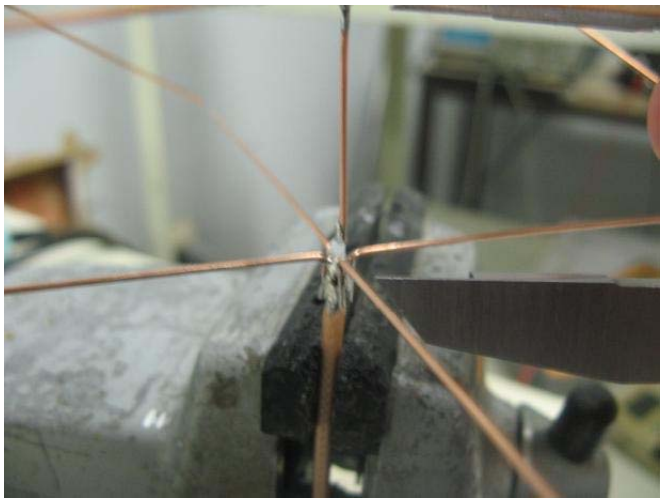


18)Take the coax assembly and mount it in a vice, be carefull with the coax.

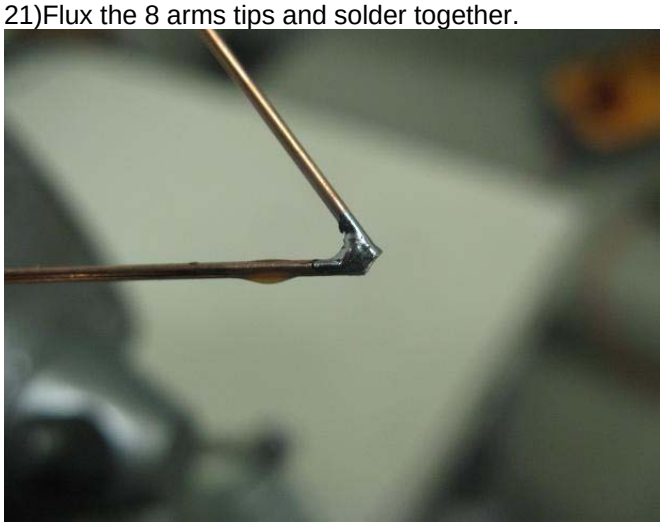
19)Take your "creation" and cut the "D" part by around 1/16"

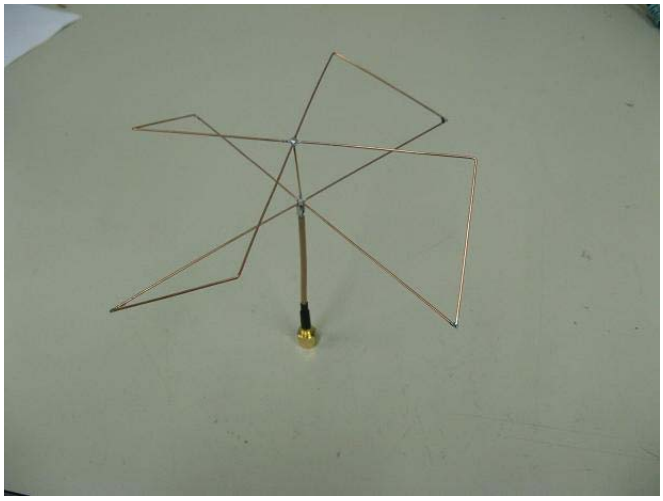
20)Solder "D" on the center conductor, bottom and top arms must have "D" distance between them.





21)Flux the 8 arms tips and solder together.





If you build this antenna with a 0.001" caliper, respecting all steps, you'll be within a 1% window of your target frequency. No need for a network analyzer. The nice thing about this antenna is that the higher the frequency, the larger the bandwidth, so tolerances don't grow thinner with 2.4 and 5.8ghz.

Tuning your antenna: Yes, this antenna can be tuned! Although it should not be needed you can adjust the center frequency by adjusting the length of the center part. Heat the joint where the center wires touch the coax's center and slip up or down to lower/ raise resonant frequency. With IbCrazy's RSSI or tx current method you can try to augment your range by insignificant amount by bringing SWR to 1:1.

Dimension of Virevent for different frequencies in inches:

	1280mhz
A	4,529
B	3,220
C	3,020
D	1,077
E	2,140

	2440mhz
A	2,442
B	1,829
C	1,629
D	0,580
E	1,164

	5800mhz**
A	1,055
B	0,911
C	0,711
D	0,237
E	0,474

	1180mhz
A	4,890
B	3,463
C	3,263
D	1,158
E	2,316

	1080mhz
A	5,341
B	3,767
C	3,567
D	1,265
E	2,530

	910mhz
A	6,318
B	4,416
C	4,216
D	1,497
E	2,994

*This one use 0.6mm wire.

Dimensions of Turbine for different frequencies in inches:

	1280mhz
A	4,291
B	3,269
C	3,069
D	0,978
E	1,382

	2440mhz
A	2,315
B	1,856
C	1,656
D	0,527
E	0,746

	5800mhz**
A	1,003
B	0,918
C	0,718
D	0,229
E	0,323

	1180mhz
A	4,655
B	3,529
C	3,329
D	1,060
E	1,500

	1080mhz
A	5,067
B	3,824
C	3,624
D	1,159
E	1,634

	910mhz
A	5,969
B	4,469
C	4,269
D	1,360
E	1,923

*This one use 0.5mm wire.