

The Jove Array

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August, 2012

Here are some details of the Jove array at AJ4CO Observatory.

Overall length of each dipole element, including the center insulator, is 22'8".

Masts are 3'6" military tent poles stacked three high for antenna height of 10', cost is ~\$1.00 each on Ebay

Wire is #14 Copperweld, item # 502 (\$10.00 for a 100' spool) from The Wireman

<http://www.thewireman.com/antennap.html>

Center and end insulators are items #809 (\$13.65/ea) and 810 (\$3.35/pair) from The Wireman

<http://www.thewireman.com/prodpix.html>

Wire is attached to the Budwig center insulator with two split bolts from Lowe's (\$4.50/ea)

http://www.lowes.com/pd_46948-12704-770651L_0__?productId=3128795

The lanyards are made from 3/16" black polyester rope from Quality Nylon Rope (\$50.00 for 500')

<http://www.qualitynylonrope.com/c/Polyester-Rope.html>

Feed line is Belden 8259 (RG-58 type) from Tessco, (\$142.22 for a 500' unreeled box)

<http://www.tessco.com/products/displayProductInfo.do?sku=92078>

Ferrites for common mode choke are Fair-Rite P/N 2631480002 from Mouser (\$0.45/ea)

<http://www.mouser.com/ProductDetail/Fair-Rite/2631480002/?qs=%2fha2pyFadujcnA2SEmsqn9pAVh%2f6x%2fQV7Sm%252bnYUoLMo%3d>

PL-259 crimp connectors are RF Industries P/N RFU-505-ST from Tessco (\$2.23/ea)

<http://www.tessco.com/products/displayProductInfo.do?sku=23207>

N-male crimp connectors are RF Industries P/N RFN-1001-3C from Tessco (\$3.79/ea)

<http://www.tessco.com/products/displayProductInfo.do?sku=36421>

Stripper used is TerraWave TWS-195 from Tessco (\$12.52/ea)

<http://www.tessco.com/products/displayProductInfo.do?sku=490947>

Crimper used is Sargent Tools H.D.Crimp from Tessco (\$90.51/ea)

<http://www.tessco.com/products/displayProductInfo.do?sku=92609>

Cable cutter is Greenlee 9" cutter from Lowe's (\$23.97/ea)

<http://www.lowes.com/ProductDisplay?partNumber=47435-72068-727>

Power combiner is Mini-Circuits ZFSC-2-4-N+ (\$60.95/ea)

<http://www.minicircuits.com/homepage/homepage.html>

Lightning arrester is PolyPhaser IS-50NX-CO from Tessco (\$51.65/ea)

<http://www.tessco.com/products/displayProductInfo.do?sku=20573>

The Jove array block diagram and theoretical beam profiles may be found in the Radio Jove Antenna manual:

http://radiojove.gsfc.nasa.gov/telescope/equipment_manuals.htm



One of the two elements after pre-assembly. Small lengths of rope tied to end insulators make assembly in the field easy.



Detail of the center insulator. Split bolts need no soldering, for easy disassembly/reassembly later.



One piece of RG-58 (Belden 8259) cut to one wavelength long. The feed point end has a PL-259 crimp connector after six ferrite beads that form a common mode choke to act as a balun. The toroids fit snugly on the RG-58. The far end has an N-male crimp connector for the power combiner.



Feed point after element installation.



PolyPhaser surge arrestor and MiniCircuits power combiner. The surge arrestor is electrically bonded to the steel frame of the building where the feed line enters, which is in turn tied to a ground rod about 10' away. The power combiner is not grounded in my installation.



This wee four-dollar post level makes adjusting the guy lines a snap.



Looking north. Elements are supported by military surplus green fiberglass tent poles, three poles per mast, placing the elements 10' above the ground. Guy lines are 3/16" black polyester rope. With these materials, the array is quite stealthy and visually unobtrusive. All fixed ropes are tied with bowline knots; the adjustable guy lines are tied with trucker's hitches.



Looking south: new array on left, old array on right.