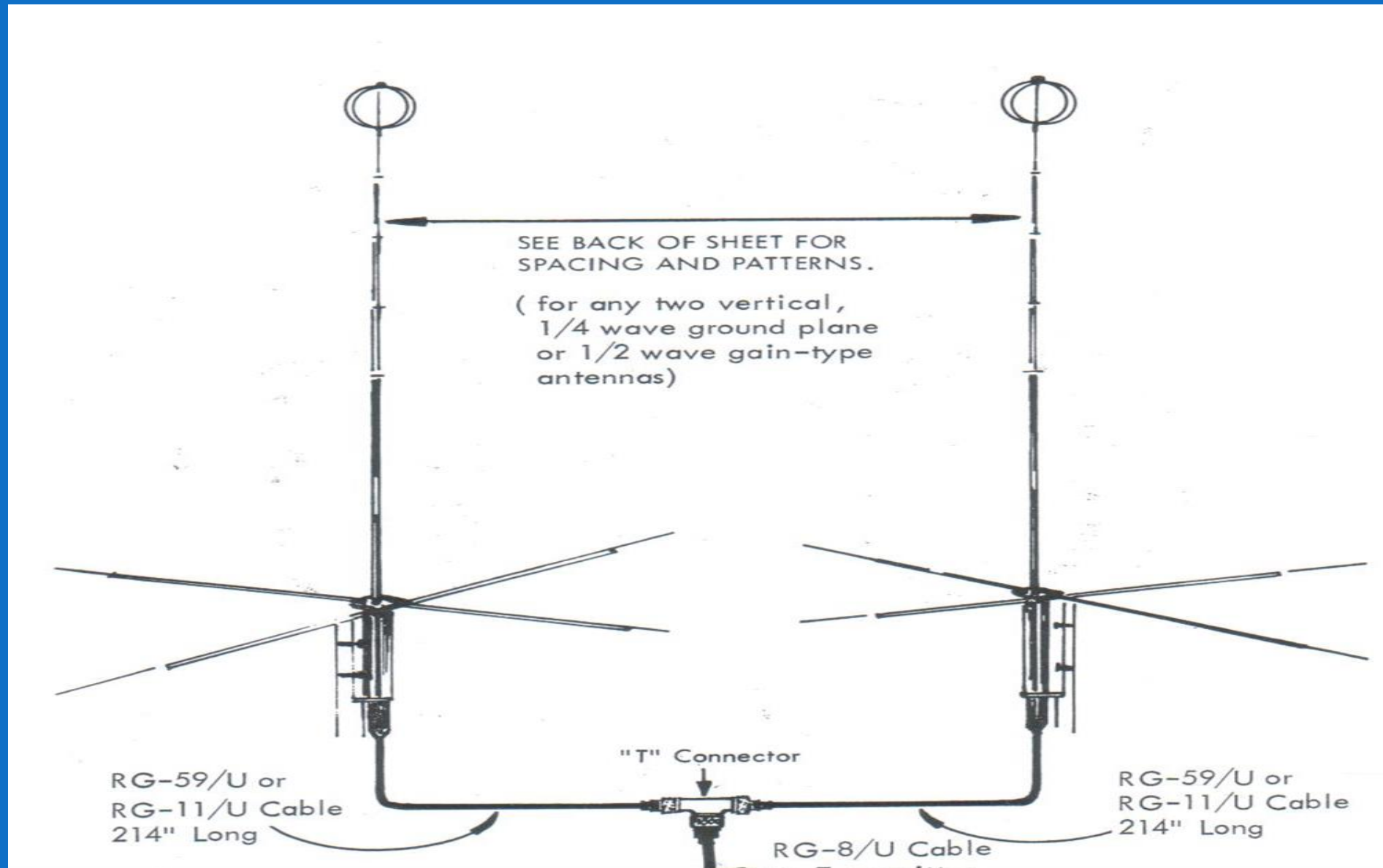


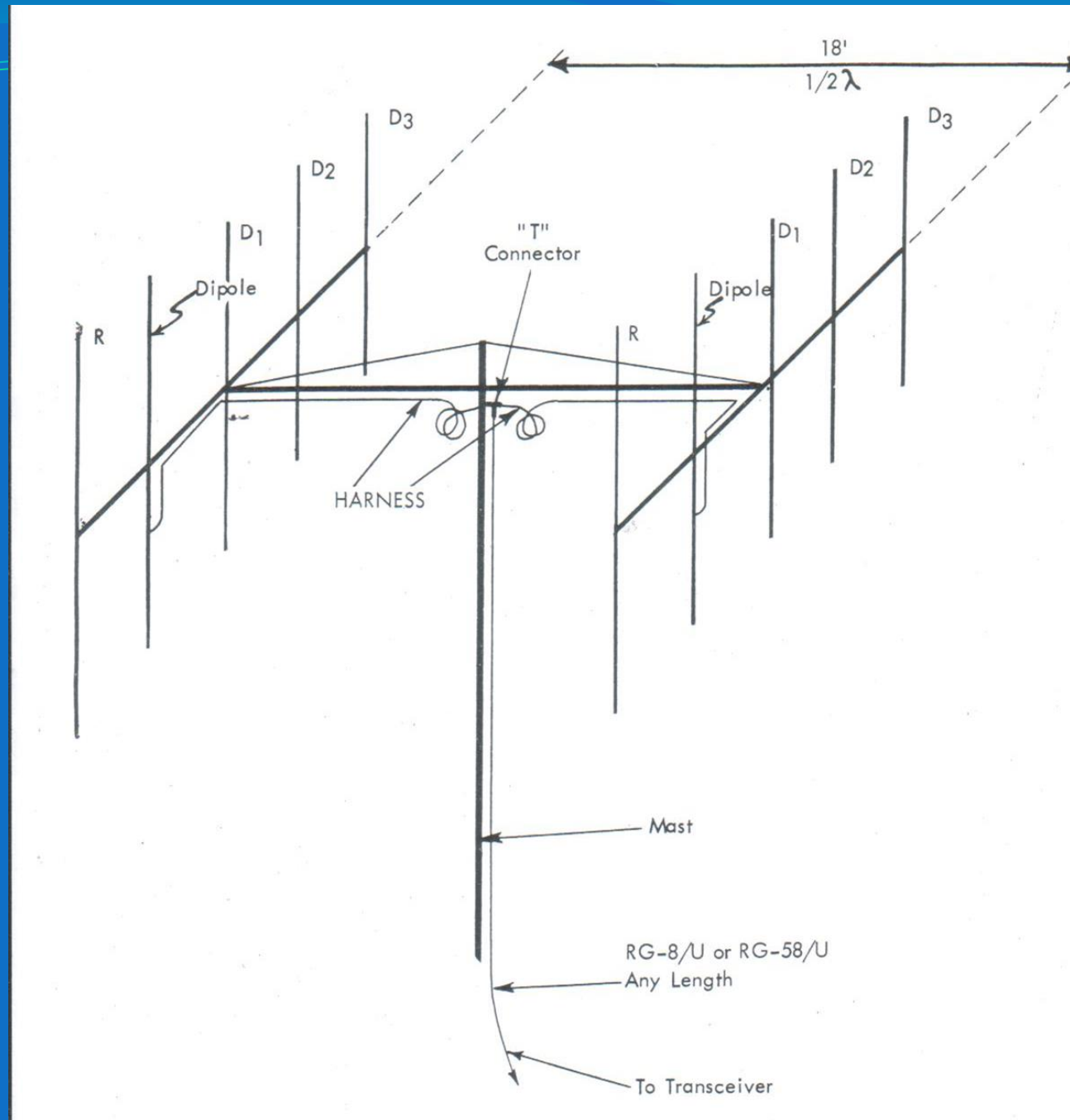
Co-Phase Antennas for Pota

V 1.0

What is an Co-Phase Antenna

- ☐ Co-Phasing
- ☐ Sometimes called stacking
- ☐ Seen frequently with truckers on CB and 10m
- ☐ Uses two identical antenna to increase gain (approx 3db)
- ☐ Gives more directionality to the signal
- ☐ Place antenna a $\frac{1}{4}$ to $\frac{1}{2}$ wavelength apart to create 50 ohm to the transmitter
- ☐ Easy to set up
- ☐ Disadvantage is you need to purchase an additional antenna
- ☐ Test and tune initially with an Antenna Analyzer







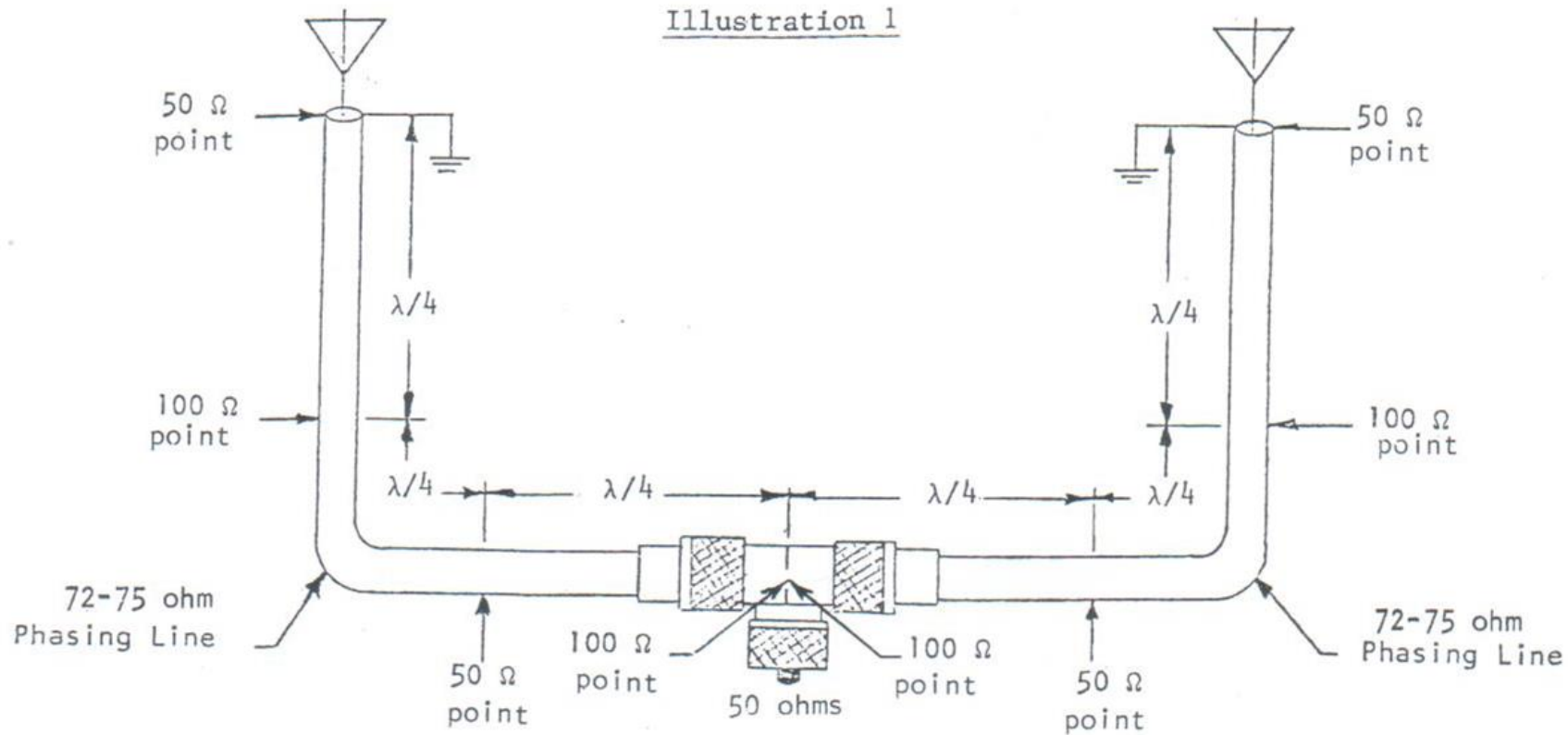
Phasing Cables

- ❑ Two ways of phasing the antennas
 - ❑ The T method
 - ❑ used 75 ohm $\frac{1}{4}$ wave to match the impedance (matches the 2 antenna to 50 ohm)
 - ❑ then 50 ohm feed line to the radio
 - ❑ Exact length coax feeds of 75 ohm like Rg59 direct to the radio.

Co-Phase Harness

page 3

Illustration 1



Types of Antenna to Co-Phase

- ☐ 1/2 wave ground plane
- ☐ Yagi beams
- ☐ Ham Sticks
- ☐ Dipole
- ☐ Just about any antenna

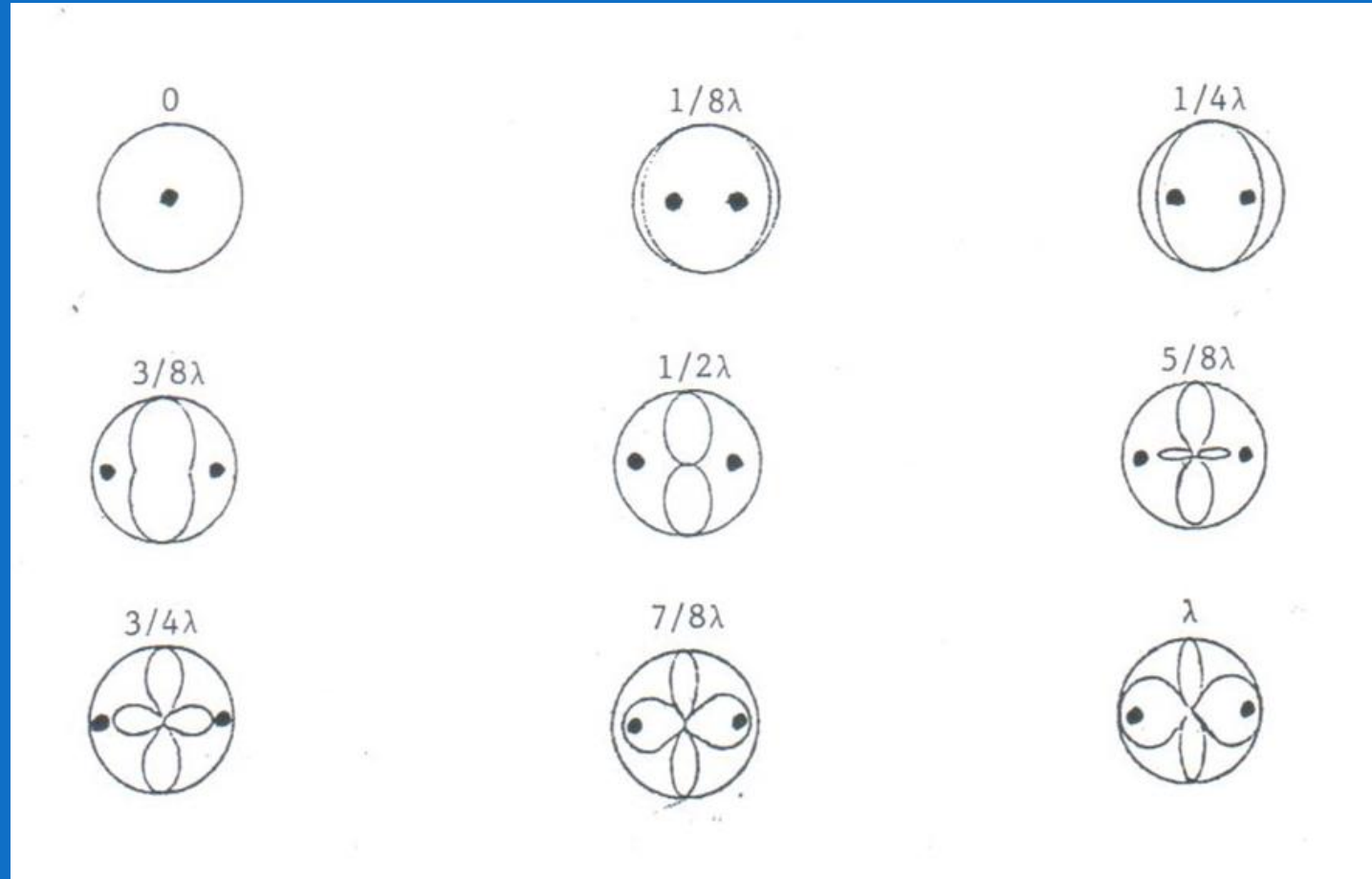


Your antenna gain will increase depending on the pattern desired. Even though both antennas are

Radiation Pattern

- ❑ The gain increase and the pattern will be dependant on the distance between the antenna.
- ❑ Both Antennas are a driven element
- ❑ But they will act as reflectors to each other as well.

Radiation Pattern Examples



T Phasing Matching

To make your own co-phased system, you will need the following items:

- ☐ Main coax - RG-8/U, RG-213, or 9913.
- ☐ Co-phasing harness coax – RG-11/U for the length needed per radiation pattern/Q sections
- ☐ One “T” connector – all ends are female
- ☐ Optional:
 - ☐ One horizontal boom - strong enough to support 2 ground plane antennas at the distance needed for the radiation pattern required
 - ☐ For POTA a String or Tape for the distance between ground spikes
- ☐ One Network analyzer – if you can borrow one
- ☐ 6 PL-259's – 2 for the antennas (if the SO-239's come with the antennas).
- ☐ 3 PL-259's and ring connectors if the antenna manufacturer provides studs for the coax connection.



Dual Coax to the Radio Matching

To make your own co-phased system, you will need the following items:

- ☐ 2 identical lengths of RG59 or RG11
- ☐ 6 PL-259's
- ☐ or 3 PL-259's and ring terminals if the antennas do not come with SO239 and come with studs
- ☐ Optional:
 - ☐ One horizontal boom - strong enough to support 2 antennas at the distance needed for the radiation pattern required
 - ☐ For POTA a String or Tape for the distance between ground spikes
- ☐ One Network analyzer – if you can borrow one



Questions

If you are interested in us doing a build let me know and we will do a workshop after the End-Fed antenna.

Some of my sources I used along with some experience in my earlier years.

Salty Walts Next Level Portable Antenna Book (ARRL)

CB Radio Memories

<https://www.cbradiomemories.com/co-phased-antennas.htm>

Sunday Workshops

End-Fed HF Kits ARRL kit build End of July

80m add on for the End-Fed End of August

Co-Phase POTA Antenna End of September

Beam Antenna for Pota Similar to Co-Phase End of October

Paint Can Dummy Load Kit End of End of November

- ☐ Anyone interesting in doing
 - ☐ Soldering Class
 - ☐ FM Radio kit
 - ☐ Coax termination again
 - ☐ Fm Radio
 - ☐ SDR
 - ☐ Anderson power pole
 - ☐ ?