"Sweeping" your system before applying power

Explanation:

Should any problems arise later with your antenna, it will be extremely helpful to know what the system's characteristics were when it was new. We recommend you perform the tests in this section after installation. The first step is to characterize the transmission line by itself; then add the antenna and characterize the system as a whole. We recommend the following:

Transmission line VSWR reading

Before connecting the antenna, terminate the coax transmission line in an instrument-quality 50-ohm load. Measure and record the voltage standing wave ratio (VSWR). File this information with this manual for future reference.

The VSWR of the transmission line should be within the manufacturer's specifications. If it is, proceed. If not, you should call the transmission line manufacturer before connecting the antenna. Problems must be worked out with the design engineer on a case-by-case basis.

Transmission line TDR reading

With the transmission line still terminated in 50 ohms, make a time domain reflectometer (TDR) plot. Label and file the plot with this manual.

System VSWR reading

You tested the VSWR of the transmission line alone. Now test the VSWR of the system as a whole.

a. Remove the load and connect the transmission line to the transformer input, with an O-ring to seal the connection.

b. Repeat the purge process after sealing the line, in accordance with your installation manual.

c. Measure VSWR. VSWR at this point should be below 1.2 : 1.

d. Record the reading and file it for future reference.

If VSWR is not satisfactory, check to be sure all the radiators are functioning (see below). If they are, call Shively Labs to help identify the problem.

Checking radiator function

Again using the low-power test equipment to provide a signal to the antenna and read VSWR, have the rigger detune each radiator in turn. The simplest way to detune a radiator is to short across its uprights, for instance with a screwdriver or wrench.

If you have radomes, you don't need to remove each radome to detune the radiator. Have the rigger take a three-foot-square section of chicken wire or a similar metal mesh and place it on the top of each radome in turn, or simply place his hand in the same spot on the flat surface of each radome in turn.

Each time, a deflection in VSWR should be apparent. The deflection for various bays should be similar, but not necessarily identical.

If the VSWR of the array does not change when a radiator is detuned, that bay is not functioning. Check to be sure the radiator was installed properly, including the inner conductor connector.

If you cannot find the problem, please call Shively Labs before proceeding.

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