In-Field Coax Connector Test using the *Path Align-R™*

Up till now you may have thought about the *Path Align-R* as only a tool to align microwave antennas…and you were right, it does that quite well…and it is most certainly cost effective!

But consider the following, very common, scenario in terms of *adding cost effectiveness and value…*

A crew is at the site, the antennas are attached to the tower and maybe the antennas are already aligned. The next job is to start running the coax up the tower; average lengths are 80' to 320'. Before this can be done, the connectors must be attached to the coax on the ground after the coax has been cut to length. Take it from me, as one who has done this in the past, attaching connectors to 1 5/8" or 2 ¼" coax is not easy to do, at least not correctly. In most cases, it takes from 15 to 45 minutes per connector, depending on the experience on the installer.
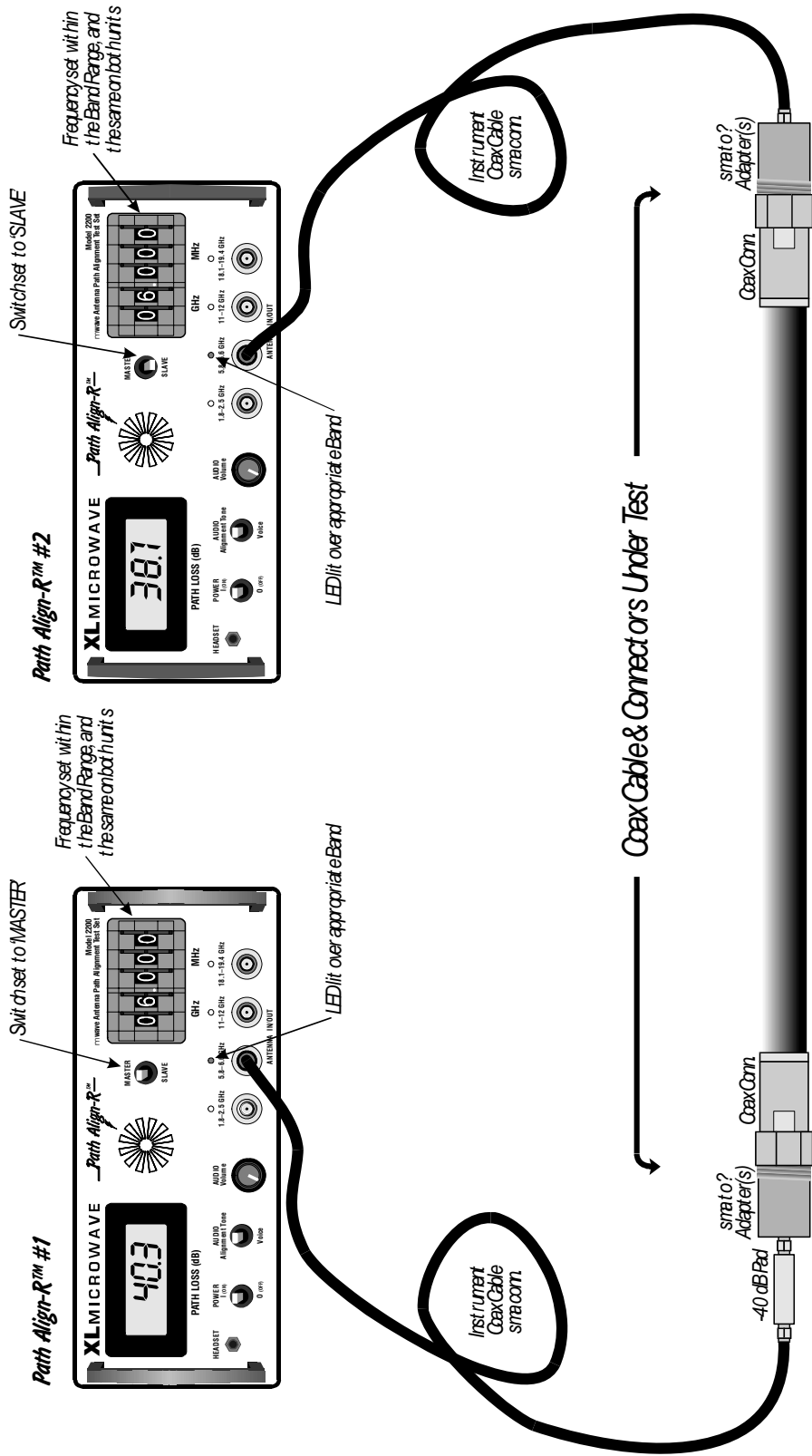
In lieu of expensive cable sweeping equipment, it would be much easier to attach the *Path Align-R* to each end of the connectorized coax and measure the "Cable Loss" at the specific frequency the cable will see during operation. Also, if more than one coax is going to be attached to the tower, you can compare the "Cable Loss" of each coax before they are installed.

Since most cable is tested before shipment, "Cable Loss" attributable to the cable itself is a rare problem, given the quality control of the major suppliers. However, this potential problem can be checked on site using the *Path Align-R*…but of much more importance is checking to insure the *connectors* have been attached correctly. By connecting a *Path Align-R* to each end of the 'cable under test' and reading the "Cable Loss" (instead of the "Path Loss") directly on the *Path Align-R's* meter, the installation crew has a 100% certainty that the connectors have been installed correctly and the coax will work as specified.

A reflectometer such as the Site Master™ from Anritsu or the Site Analyzer™ from Bird will also do the job, BUT, the frequency limits and cost of these units is another issue. The application solution we are suggesting is meant to quickly check the cable and connectors prior to hauling the coax up the tower. The purpose of this application is NOT to analyze or sweep the cable.

Ask any site integrator how much time and expense is involved in finding and repairing/replacing even one bad coax or connector and they will tell you the costs involved include: 1- trouble shooting the entire coax, 2- replacing the coax or connectors when the coax is attached to the tower or 3- bringing the coax down (replacing the hangers and ground straps) and, 4- replacing or re-installing after repair. Any of the above problems reduce the profit margin quoted into the site integration.

The following is a diagram to illustrate the test set-up showing the *Path Align-R's*, coax adapters and cable under test.

Path Align-R™ #2

XL MICROWAVE — Path Align-R™

Model 2200 mmWave Antenna Path Alignment Test Set

Frequency set within the Band Range, and the same on both units

Switch set to SLAVE

MASTER / SLAVE

MHz — GHz

18.1–19.4 GHz · 11–12 GHz · 5.8–6 GHz · 1.8–2.5 GHz

ANTENNA IN/OUT

LED lit over appropriate Band

AUDIO Volume

PATH LOSS (dB) — 38.1

POWER · Alignment Tone · Voice · HEADSET

Path Align-R™ #1

XL MICROWAVE — Path Align-R™

Model 2200 mmWave Antenna Path Alignment Test Set

Frequency set within the Band Range, and the same on both units

Switch set to MASTER

MASTER / SLAVE

MHz — GHz

18.1–19.4 GHz · 11–12 GHz · 5.8–6 GHz · 1.8–2.5 GHz

ANTENNA IN/OUT

LED lit over appropriate Band

AUDIO Volume

PATH LOSS (dB) — 40.3

POWER · Alignment Tone · Voice · HEADSET

Instrument Coax Cable smacom

smat o? Adapter(s)

CoaxConn

-40 dB Pad

Coax Cable & Connectors Under Test

Path Align-R™ Field Verification of Coax Cable/Connectors Test Setup