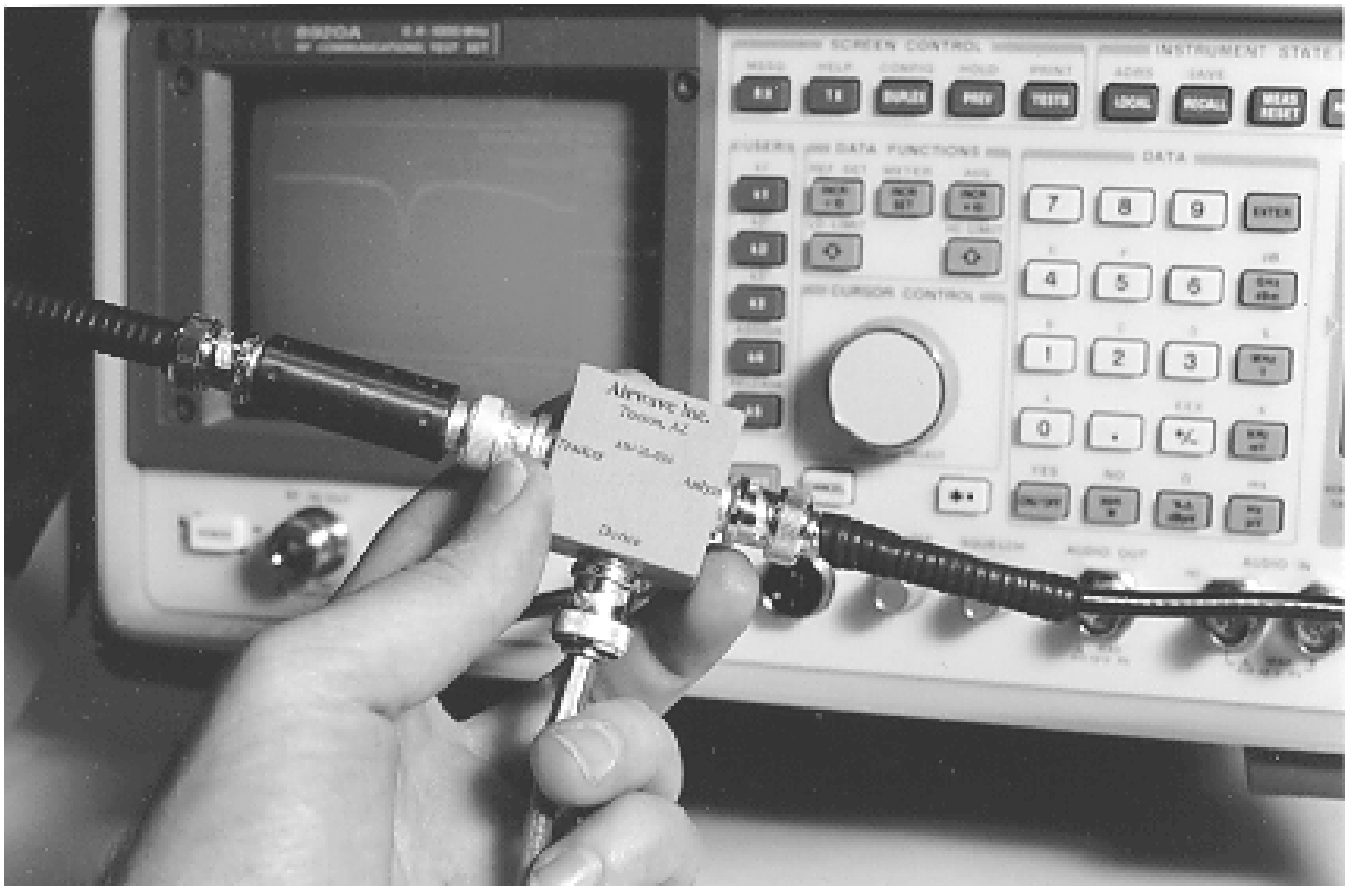


# Return Loss & Cable Fault Test Set

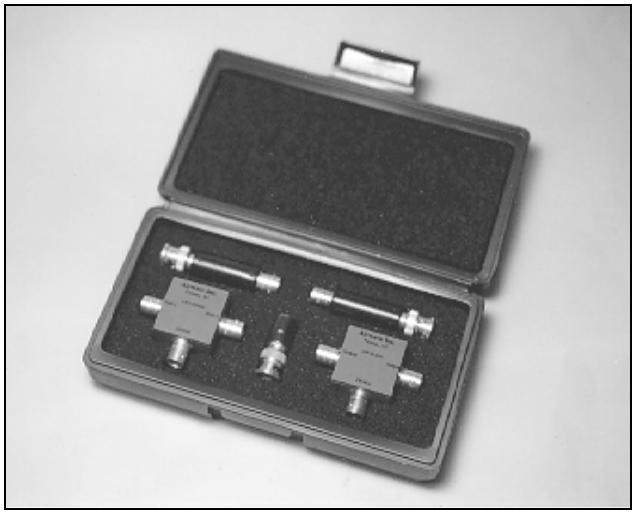
## Use With Your Service Monitor To:

- **Perform Swept SWR Measurements**
- **Simplify Tuning of Duplexers, Cavities, Isolators, Combiners, and Filters**
- **Tune Preamps and Receiver Front Ends**
- **Measure Performance of Mobile, Base, Portable, or Glass Mount Antennas**
- **Measure Site Noise Effects on Receivers**
- **Perform Cable Fault Location, Find Cable Velocity of Propagation, Accurately cut cables to 1/4 λ, 1/2 λ, Etc.**

### Description

The Airwave Model AW8920A Return Loss & Cable Fault Test Kit includes *everything* needed to perform scalar network analyzer functions and detailed cable fault measurements on **any** service monitor equipped with a spectrum analyzer and tracking generator. The test set was developed using an HP8920A running the software option "System Support Tests," and provides a detailed, graphic display of results.

Included with the kit is a resistive power divider, a directional RF bridge, two precision 6 dB attenuators, a precision 50Ω termination, and a protective carry case. Two 24" high quality test leads, and usage instructions with SWR and R/L conversion tables are also included. Kits are



available with BNC, SMA or N type connectors. Measurements can be made from 0.1 MHz to 1000 Mhz. Typical directivity is better than 40 dB from 0.1 to 1000 Mhz, and better than 45 dB at 150, 460, and 800 Mhz. (SWR measurement range from 1.01:1 to 100:1) Maximum continuous input power above 1 MHz is 2 W for the Directional Coupler (6 W intermittant), 0.75 W for the Resistive Power Divider, 1 W for attenuators, and .25 W for terminations.

## Resistive Power Divider

The precision resistive power divider (RPD) is used to perform cable fault, velocity of propagation, (Vr) and wavelength tests through Frequency Domain Reflectometry (FDR). The RPD combines an incident signal from the tracking generator, with a reflected signal from the cable under test. The resulting display on the spectrum analyzer can be used to find the distance to a break in a cable or the Vr of a known length of cable. This information can also be used to cut a cable to an exact wavelength. When used with an HP8920A running the software option "System Support Tests," the signal is analyzed under software control. An inverse Fourier transform is performed to convert from frequency domain to distance domain, and the results are displayed on the screen with distance information and relative mismatch. A sample of the output is shown in figure 1. This example is of an seven foot section of RG58U cable, with a break in the center conductor at three feet.

## Directional RF Bridge

The Directional Bridge measures *Return Loss* (R/L), which is the difference in dB between the RF power applied to, and the power reflected from a device, and is simply a different way of expressing SWR. When the bridge is driven by a tracking generator, and the output is measured by a spectrum analyzer, a plot of the return loss of the device under test is displayed on the analyzer screen as a function of frequency (the lower the trace, the better the match). This enables the technician to tune a device based on an impedance match, maximizing the efficiency of power transfer. This method is illustrated by the R/L display of a portable radio "front end" tuned by conventional methods (figure 2), compared to the same radio after retuning by R/L method (figure 3).

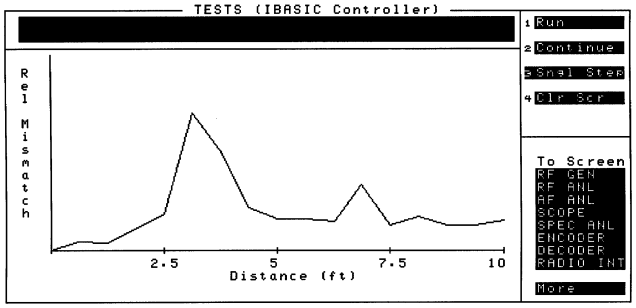



Figure 1. Sample Cable Fault Display

The R/L method took less time and yielded a SWR of 1.19:1 over the 5 MHz receiver operating band.

## Ordering Information — Price

| | |
|---|---|
| **AW8920A** R/L & Cable Fault Test Kit. (Includes AW-20-4, AWR-2050, CAT-6 X 2, BTRM-50, Test Leads, Carry Case, Instructions) BNC Connectors | $630 |
| **OPT 001** N Connectors | +$60 |
| **OPT 002** SMA Connectors | +$70 |
| **OPT 010** 36" Test Leads | +$10 |
| **OPT 011** 48" Test Leads | +$20 |
| **OPT 100** Delete BNC Power Divider | -$150 |
| **OPT 101** Delete BNC Directional Bridge | -$200 |
| **OPT 102** Delete BNC Test Leads | -$30 |
| **OPT 103** Delete BNC Attenuators | -$45 |
| **OPT 104** Delete BNC Termination | -$10 |
| **AW-20-4** Directional RF Bridge, BNC | $320 |
| **AW-20-4 N** Same, N connectors | $345 |
| **AWR-2050** Resistive Power Divider, BNC | $260 |
| **AW-CAT-6** Precision 6 dB Attenuator, BNC | $33 |
| **AW-NAT-6** Precision 6 dB Attenuator, N | $47 |
| **AW-BTRM-50** 50Ω Termination, BNC | $29 |
| **AW-NTRM-50** 50Ω Termination, N | $35 |
| **AW-1142-24** Test Lead, BNC-BNC 24" | $29 |
| **AW-1242-24** Test Lead, BNC-N, 24" | $32 |

Other cable lengths, types and attenuator values are available. Inquire.

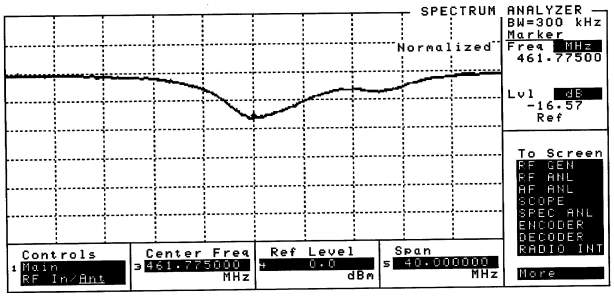



Figure 2. R/L of Portable Tuned conventionally

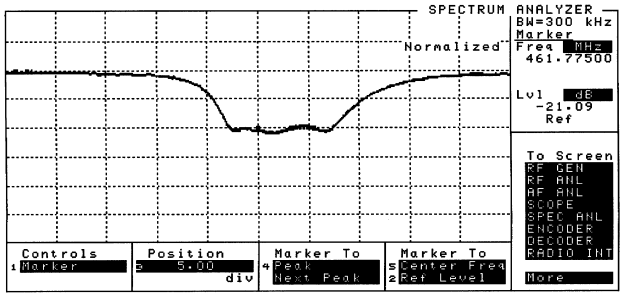



Figure 3. R/L of Portable Tuned by R/L method