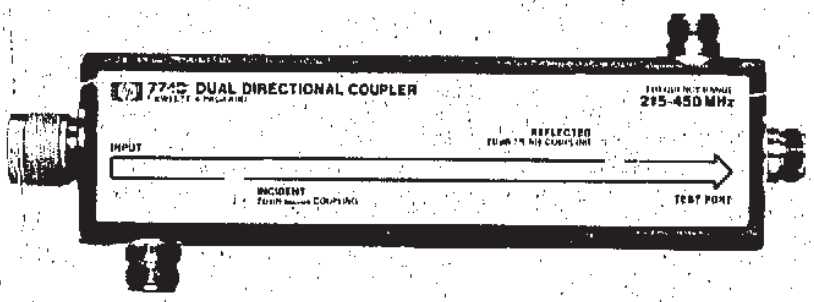
OPERATING NOTE

# HP 774D/775D
# DUAL DIRECTIONAL COUPLERS




JULY 1986

HEWLETT PACKARD

## DESCRIPTION.

The Hewlett-Packard Model 774D and 775D Dual Directional Couplers are three-port passive devices for use in 7-mm, 50-ohm systems. A coupler is essentially a device for sampling power flowing in one direction in a transmission line. Since no coupler is perfect, some power flowing in the opposite (unwanted) direction is also sampled. The rejection of power flowing in the unwanted direction is called directivity and is the most important specification of a directional coupler. These couplers have 40 dB directivity. Another specification is the forward coupling attenuation (usually called just coupling) which is the fractional amount of power transferred in the wanted direction. These couplers have a nominal 20 dB of coupling. These terms are defined in Figure 1. Figure 1 also shows a typical coupling curve. This curve is not a specification. The specifications are shown in Table 1.

Table 1. Specifications

| | HP 774D | HP 775D |
|---|---|---|
| Frequency Range: | 215–450 MHz | 450–940 MHz |
| Minimum Directivity:[1] | 40 dB | |
| Coupling Attenuation: (each secondary arm) | 20 dB (nominal) | |
| Accuracy of Coupling: (each secondary arm) | Mean coupling level within 0.5 dB of 20 dB | |
| Max. Coupling Variation: | ±1 dB | |
| Max. Primary-Line SWR:[1] (50-ohm terminations) | 1.15 | |
| Max. Auxiliary-Arm SWR: (50-ohm terminations) | 1.20 | |
| Primary-Line Power Handling Capacity: | 50 watts average, 10 kW peak | |
| Primary Line Insertion Loss: | ≤0.3 dB | ≤0.4 dB |
| Primary-Line Connectors: | Type N connectors, one male and one female[2] | |
| Auxiliary-Arm Connectors: | Type N female connectors[2] | |
| Size: (in.) | 9-1/16 x 3-1/8 x 1-3/4 | |
| (mm) | 230 x 79 x 45 | |
| Weight (net): | 3 lb (1.4 kg) | |

[1] Measured with Hewlett-Packard H02-909A (male) or H03-909A (female) termination.

[2] Compatible with connectors whose dimensions conform to MIL-C-39012 or MIL-C-71.

### Port Terminology.

The two directly-connected ports (on opposite ends of the coupler) are called the primary-line ports. The coupled ports on each side are called the auxiliary ports. Coupling is in the direction of the arrows on the nameplate. These coupled ports are called auxiliary-line ports.

### Accessories Available.

Two shorting connectors, Hewlett-Packard Model 11511A Type N female short and Model 11512A Type N male short, are available as accessories.

## INITIAL INSPECTION.

### Mechanical Check.

If damage to the shipping carton is evident, ask that the carrier's agent be present when the coupler is unpacked. Inspect the parts for mechanical damage, such as scratches or dents. Also check the cushioning material for signs of severe stress (compacting).

### Electrical Check.

The electrical performance should be verified as soon as possible after receipt. Refer to the performance test for further information.

### Claim for Damage.

If a coupler is mechanically damaged or fails to meet specifications upon receipt, notify the carrier and your nearest Hewlett-Packard Office immediately (a list of Hewlett-Packard offices is at the end of this operating note). Retain the shipping carton and the padding material for the carrier's inspection.

## REPACKAGING FOR SHIPMENT.

### Using Original-Type Packaging.

Containers and materials like those used in factory packaging can be obtained through Hewlett-Packard offices listed at the end of this operating note.

If the coupler is being returned to Hewlett-Packard for servicing, attach a tag indicating the type of service required, return address, model number, and serial number. Also, mark the container FRAGILE to assure careful handling.

In any correspondence refer to the instrument by model number and serial number.