Agilent
Waveguide Directional Couplers,
8.2 to 60 GHz, 752 Series

Data Sheet

Features

• High coupling accuracy
• Excellent directivity
• Low SWR

Applications

• Measure reflection coefficient (SWR)
• Mix two signals
• Monitor power
• Isolate signal source or wave meter

Description

High directivity makes the Model 752 particularly well suited for measuring very small reflections and for rapidly adjusting transmission line flatness over the entire wave guide frequency range. Each coupler has an overall directivity of better than 40 dB see figure 1), very low reflections, and a smooth coupling variation vs. frequency (see Figure 2).

Performance characteristics are unaffected by humidity, temperature, or time, making these units especially useful as standards of microwave attenuation. Coupling factors are 3, 10, and 20 dB; mean coupling accuracy is ±0.4 dB (±0.7 dB for K- and R-bands), and coupling variation vs. frequency is ±0.5 DB (0.6 dB for R752D). Each coupler is supplied with coupling factor data at five frequencies across the band. Used together and connected back-to-back, the directional couplers are most useful with the 8350 or 8340 Series sweepers in broadband reflection and SWR measurements. One directional coupler samples power traveling to the load, while the other samples power reflected from the load. Used with two 424A crystal detectors, measurements of SWR versus frequency can be made easily. The detected output of the forward coupler is used to level the sweeper, and the detected output of the reverse coupler is presented on an oscilloscope calibrated in SWR.* When used with unleveled sweepers, the output of both couplers can be applied to the 8510 network analyzer or the 8756 or 8757 scalar network analyzers to display reflection coefficient directly.

Figure 1. Directivity of an X752C. All couplers are tested over their full band for directivity.

Figure 2. Typical coupling characteristic of model X752C.

* Measured vs SWR.
A Matched “Hybrid Tee” with Low SWR

Since the 3 dB coupler has the high directivity of the 10 and 20 dB couplers, it can usually be used in place of the hybrid tees. The 3 dB multi-hole coupler, unlike the hybrid tee, is a matched device, having an output SWR (either arm) of 1.15 or less over a waveguide frequency range.

Ordering Information

For more information on the Agilent U752D waveguide coupler (40 to 60 GHz, 20 dB), please go to www.agilent.com and search on “waveguide coupler”.

Waveguide Couplers and Accessories up to 60 GHz

Millimeter wave test equipment and measurement accessories include quality waveguide couplers in the Q band (33 to 50 GHz) and U band (40 to 60 GHz) frequency ranges. The Q and U752A/B/D are split block design couplers that feature exceptionally high directivity of at least 36 dB, low SWR of 1.1 or better and a smooth coupling variation of no more than ± 0.7 dB.

Figure 3. U752 (40 to 60 GHz) waveguide couplers.

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Figure 3. U752 (33 to 50 GHz) and U752 (40 to 60 GHz) waveguide couplers.