Abstracts

A Technique for Extending the Dynamic Range of the Dual Six-Port Network Analyzer

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The dynamic range of the six-port type of automatic network analyzer is typically limited to measuring two-port devices with a transmission coefficient S/sub 12/ in the range of 0 to -60 dB. The following describes a subcarrier approach for extending the dynamic range of the dual six-port network analyzer. The subcarrier is generated by inserting a 10-kHz, biphase modulator ahead of one of the six-ports. With the subcarrier approach, measurements of S/sub 12/ in the range of -60 to -100 dB can be made. Test results are presented showing measurements of S/sub 12/ =-80 db with a precision of ±0.05 dB or better, and an accuracy of ±0.16 dB or better at 3 GHz. Measurement results are also presented showing the dynamic range achievable with thermistor and barretter detectors. Key Words: barretter power detectors; diode power detectors; impedance measurements; microwave network analyze; six-port network analyze; thermistor power detectors.

❑ Return to main document.