

Characterization of balanced transmission line by microwave techniques

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This paper presents a method of experimentally characterizing a balanced transmission line using microwave techniques. An unbalanced measurement instrument and the transmission line under test must be connected by a balun, and the effect of the balun must be removed from the measured data. Deembedding techniques are discussed briefly, and several baluns are evaluated. Two methods of performing the measurement are presented. The first uses a one-port measurement where known loads are measured from the end of various lengths of transmission line. The second uses two-port measurements with different transmission-line lengths, and is more effective for measurement of line loss. Experimental results are presented for 2 mm toughened plastic sheath (TPS) "twin and earth" power cable for the range of 0.3-300 MHz.

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