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Test Method for Coaxial Cable Impedance

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1. Introduction

1.1. Scope

The purpose of this procedure is to provide instructions for measuring coaxial cable impedance.

The cable impedance as a function of frequency is calculated from a vector (magnitude and phase) return loss. The average of this impedance across the desired frequency range is the cable impedance. This may be automated, but requires a vector network analyzer, and may be subject to errors due to the cable connection.

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3. Abbreviations and Definitions

3.1. Definitions

Return Loss:	The ratio of reflected signal to incident signal, expressed in dB
Network Analyzer	An instrument used to measure the swept frequency response of a cable

4. Test Samples

Cable impedance is typically tested on whole reels of coaxial cable and two (2) tests are performed, one from each end of the cable. The cable to be tested must be terminated with a precision connector and a fixed, precision 75 ohm load for normal cable lengths. The effect of reflection from the end termination is reduced by twice the cable loss, such that for long lengths of cable, the precision of the end termination is not significant. For shorter lengths of cable, the end termination return loss plus twice the cable loss must be included in error analysis.