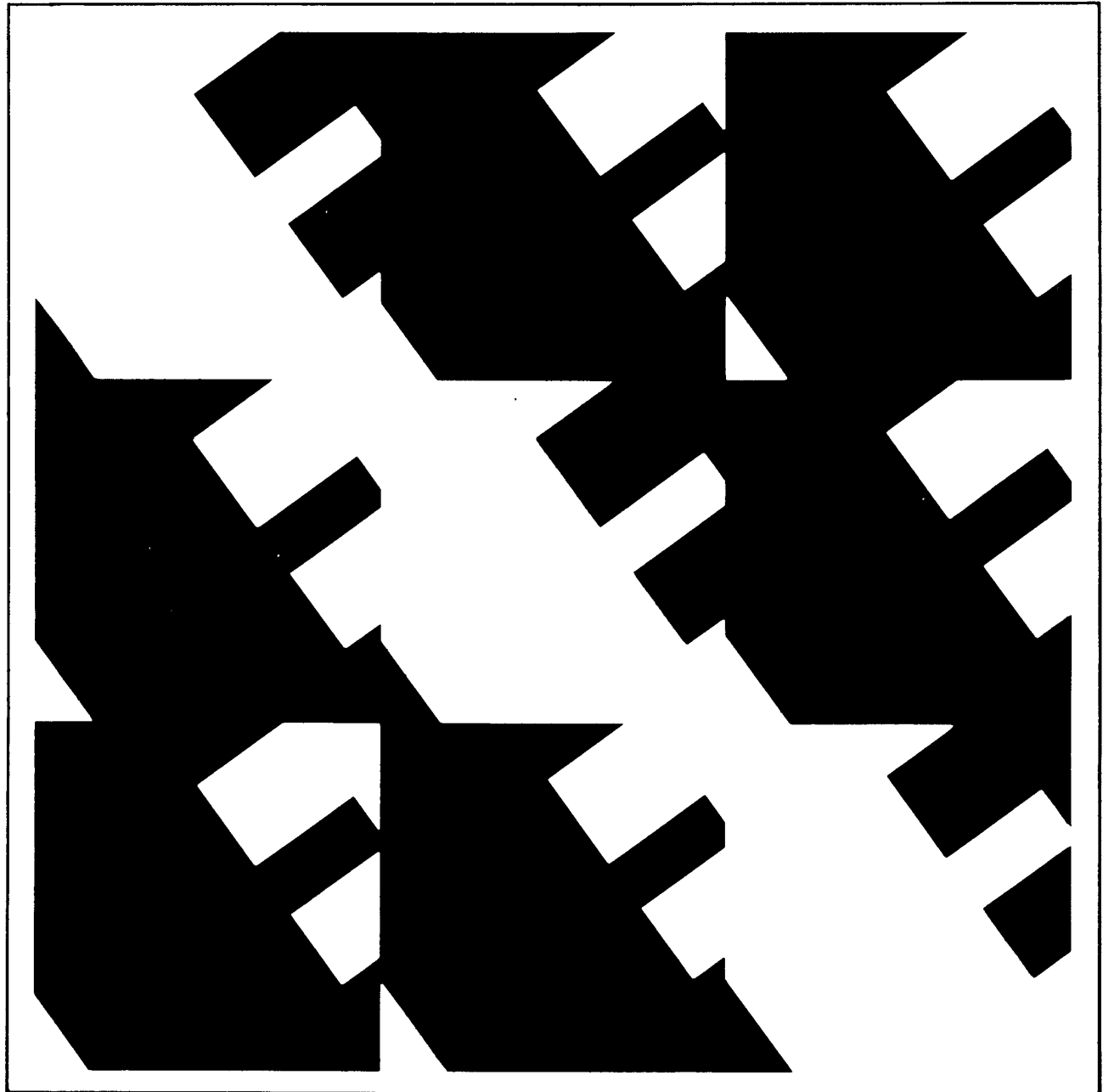


IEEE Standard for Spectrum Analyzers



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IEEE Standard for Spectrum Analyzers

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Foreword

(This Foreword is not a part of IEEE Std 748-1979, IEEE Standard for Spectrum Analyzers.)

Spectrum analyzer instrumentation is generally used to display the power distribution of an incoming signal as a function of frequency. Spectrum analyzers are useful in analyzing the characteristics of electrical waveforms in general, since by repetitively sweeping through the frequency range of interest they display all components of the signal. The display format may be a cathode ray tube or chart recorder.

This standard was developed to provide a reference for specification comparison allowing a user to evaluate different instruments from a common base. The uniformity of information supplied by the manufacturer will facilitate this evaluation.

This standard was prepared by the subcommittee on Spectrum Analyzers of the IEEE Instrumentation and Measurements Society, Technical Committee on High Frequency Instruments and Measurements. The members of the subcommittee are:

John McKiernan, *Chairman*

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The subcommittee wishes to acknowledge the contributions made by the following former members who for various reasons were not able to continue as active participants: Theodore Anderson, Rod Carlson, Alan Ross, Ralph Sandstrom, and Fred Tabor.

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IEEE Standard for Spectrum Analyzers

1. Scope

1.1 Introduction. This standard applies to frequency scanning spectrum analyzers. Instruments covered by this standard include:

(1) *Swept front end.* Superheterodyning in which the first local oscillator is swept.

(2) *Swept IF.* Superheterodyning in which other than the first local oscillator is swept.

(3) *Video detector-tunable filter.* Analysis is accomplished by scanning the input filter across the signal in proportion to the CRT horizontal deflection with the detector output providing the vertical deflection.

Real-time analyzers, those instruments that perform a continuous analysis of the incoming signal with the time sequence of events preserved between input and output, are not covered by this standard.

The standard is not restrictive, therefore, many of the terms may apply to real-time spectrum analyzers.

1.2 Purpose. The purpose of this standard is to document the minimum specifications required by users or purchasers, or both, of spectrum analyzers. It will also provide a common means for comparison between instruments. In addition, uniformity of information from different manufacturers will be realized.

To achieve these goals, standard terms have been developed and defined. Standard test methods have also been devised. Potential purchasers of spectrum analyzers will have available standard terms and test methods which will facilitate specification comparison of various manufacturer's instruments. Identical labeling of controls will aid in the preparation of operational and maintenance procedures when the spectrum analyzer is used as a stand-alone tool or when incorporated into a system for operational and maintenance monitoring functions.

2. Information to be Supplied by Manufacturers

2.1 General Information. Manufacturers should supply, as a minimum, the following general information.

(1) Model number, type, that is, rack mount, bench, portable, or a combination configuration.

(2) Dimensions and weight.

(3) Power requirements or sources or both.

(4) *Environmental.* Safe operating and non-operating temperature range; altitude limitations, with impact on other characteristics; humidity limits, operating and storage; vibration tolerance; and compliance with electromagnetic interference specifications.

(5) Any special or peculiar characteristics.

(6) Compliance with any military specifications.

(7) Available options and accessories, including their performance characteristics and their impact on the equipment performance.

(8) Exceptions to the above parameters where applicable.

2.2 Performance Specifications. Manufacturers should list, as a minimum, the following performance specifications:

(1) Frequency range

(2) Frequency span

(3) Residual FM

(4) Resolution bandwidth

(5) Input impedance

(6) Dynamic range

(7) Spurious response

(8) Sensitivity

(9) Shape factor

(10) Noise sidebands

(11) Display modes, for example linear, log, square law