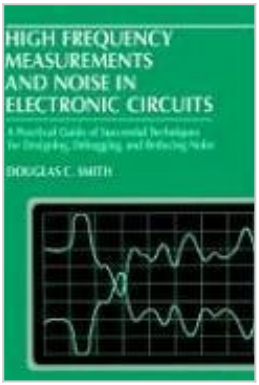

High Frequency Measurements and Noise in Electronic Circuits

By Douglas C. Smith

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This ready reference provides electrical engineers with practical information on accurate methods for measuring signals and noise in electronic circuits as well as methods for locating and reducing high frequency noise generated by circuits or external interference. Engineers often find that measuring and mitigating high frequency noise signals in electronic circuits can be problematic when utilizing common measurement methods. Demonstrating the innovative solutions he developed as a Distinguished Member of Technical Staff at AT&T/Bell Laboratories, solutions which earned him numerous U.S. and foreign patents, Douglas Smith has written the most definitive work on this subject.
Smith explains design problems related to the new high frequency electronic standards, and then systematically provides laboratory proven methods for making accurate noise measurements, while demonstrating how these results should be interpreted. The technical background needed to conduct these experiments is provided as an aid to the novice, and as a reference for the professional. Smith also discusses theoretical concepts as they relate to practical applications. Many of the techniques Smith details in this book have been previously unpublished, and have been proven to solve problems in hours rather than in the days or weeks of effort it would take conventional techniques to yield results.
Comprehensive and informative, this volume provides detailed coverage of such areas as:

- scope probe impedance, grounding, and effective bandwidth,
- differential measurement techniques,
- noise source location and identification,
- current probe characteristics, operation, and applications,
- characteristics of sources of interference to measurements and the minimization of their effects,
- minimizing coupling of external noise into the equipment under test by measurements,
- estimating the effect of a measurement on equipment operation,
- using digital scopes for single shot noise measurements,
- prediction of equipment electromagnetic interference (EMI) emission and

susceptibility of performance,
- null experiments for validating measurement data,
- the relationship between high frequency noise and final product reliability.

With governmental regulations and MIL standards now governing the emission of high frequency electronic noise and the susceptibility to pulsed EMI, the information presented in this guide is extremely pertinent. Electrical engineers will find *High Frequency Measurements and Noise in Electronic Circuits* an essential desktop reference for information and solutions, and engineering students will rely on it as a virtual source book for deciphering the "mysteries" unique to high frequency electronic circuits.

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