1. Record Nr. UNINA9910780929103321

Autore	Ghannouchi Fadhel M. <1958->
Titolo	The six-port technique with microwave and wireless applications / / Fadhel M. Ghannouchi, Abbas Mohammadi
Pubbl/distr/stampa	Boston : , : Artech House, , ©2009 [Piscataqay, New Jersey] : , : IEEE Xplore, , [2009]
ISBN	1-60807-034-4
Descrizione fisica	1 online resource (246 p.)
Collana	Artech House microwave library
Altri autori (Persone)	MohammadiAbbas
Disciplina	621.381/3
Soggetti	Microwave circuits - Design and construction Microwave communication systems - Design and construction Wireless communication systems - Design and construction
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	The Six-Port Technique with Microwave and Wireless Applications; Contents; Chapter 1 Introduction to the Six-Port Technique; 1.1 MICROWAVE NETWORK THEORY; 1.1.1 Power and Reflection; 1.1.2 Scattering Parameters; 1.2 MICROWAVE CIRCUITS DESIGN TECHNOLOGIES; 1.2.1 Microwave Transmission Lines; 1.2.2 Microwave Passive Circuits; 1.2.3 Fabrication Technologies; 1.2.3.1 Microwave Solid State Devices; 1.2.3.2 MIC Technology; 1.2.3.3 MHMIC Technology; 1.2.3.4 MMIC Technology; 1.3 SIX-PORT CIRCUITS; 1.3.1 Microwave Network Measurements; 1.3.2 Wireless Applications; 1.3.3 Microwave Applications ReferencesChapter 2 Six-Port Fundamentals; 2.1 ANALYSIS OF SIX-PORT REFLECTOMETERS; 2.2 LINEAR MODEL; 2.3 QUADRATIC MODEL; 2.4 SIX- TO FOUR-PORT REDUCTION; 2.5 ERROR BOX PROCEDURE CALCULATION; 2.6 POWER FLOW MEASUREMENTS; 2.7 SIX-PORT REFLECTOMETER WITH A REFERENCE PORT; 2.8 MEASUREMENT ACCURACY ESTIMATION; References; Chapter 3 The Design of Six-Port Junctions; 3.1 DESIGN CONSIDERATION FOR SIX-PORT JUNCTIONS; 3.2 WAVEGUIDE SIX-PORT JUNCTIONS; 3.3 FREQUENCY COMPENSATED OPTIMAL SIX-PORT JUNCTIONS; 3.4 FREQUENCY COMPENSATED QUASI-OPTIMAL SIX-PORT JUNCTIONS 3.5 A SIX-PORT JUNCTION BASED ON A SYMMETRICAL FIVE-PORT RING

JUNCTION3.6 HIGH POWER SIX-PORT JUNCTION IN HYBRID WAVEGUIDE/STRIPLINE TECHNOLOGY; 3.7 WORST-CASE ERROR ESTIMATION; References; Chapter 4 Calibration Techniques; 4.1 CALIBRATION METHOD USING SEVEN STANDARDS; 4.2 LINEAR CALIBRATION USING FIVE STANDARDS; 4.3 NONLINEAR CALIBRATION USING FOUR STANDARDS; 4.4 NONLINEAR CALIBRATION USING THREE STANDARDS; 4.5 SELF-CALIBRATION BASED ON ACTIVE LOAD SYNTHESIS; 4.6 DYNAMIC RANGE EXTENSION; 4.7 DIODE LINEARIZATION TECHNIQUE; 4.8 POWER CALIBRATION TECHNIQUE; References
Chapter 5 Six-Port Network Analyzers5.1 GENERAL FORMULATION; 5.2 CASE OF A RECIPROCAL TWO-PORT DUT; 5.3 CASE OF AN ARBITRARY TWO-PORT DUT; 5.4 SIX-PORT BASED DE-EMBEDDING TECHNIQUE: THEORY; 5.5 TWO-PORT DE-EMBEDDING TECHNIQUE; 5.6 CALCULATION OF THE ERROR-BOX PARAMETERS; 5.7 DETERMINATION OF S PARAMETERS OF AN ARBITRARY DUT; 5.8 TRI-SIX-PORT NETWORK ANALYZER; 5.9 N-SIX-PORT NETWORK ANALYZER; 5.10 A SINGLE SIX-PORT N-PORT VECTOR NETWORK ANALYZER; 5.11 N-PORT CALIBRATION ALGORITHM; References; Chapter 6 Source-Pull and Load-Pull Measurements Using the Six-Port Technique
6.1 PRINCIPLES OF SOURCE-PULL/LOAD-PULL MEASUREMENTS6.2 IMPEDANCE AND POWER FLOW MEASUREMENTS WITH ANARBITRARY TEST PORT IMPEDANCE; 6.3 OPERATION OF A SIX-PORT IN REVERSE CONFIGURATION; 6.3.1 Six-Port Reflectometer Calibration in Reverse Configuration; 6.3.2 Error Box Calculation for Reverse Six-Port Measurements; 6.3.3 Discussion; 6.4 SOURCE-PULL CONFIGURATION USING SIX-PORT; 6.4.1 Passive Source-Pull Configuration; 6.4.2 Active Source-Pull Configuration; 6.5 LOAD-PULL CONFIGURATION USING SIX-PORT; 6.5.1 Passive Load-Pull Configuration; 6.5.2 Active Branch Load-Pull Configuration
6.5.3 Active Loop Load-Pull Configuration

Sommario/riassunto

One of the main issues in microwave and wireless system design is to ensure high performance with low cost techniques. The six-port technique helps allow for this in critical network design areas. This practical resource offers you a thorough overview the six-port technique, from basic principles of RF measurement based techniques and multiport design, to coverage of key applications, such as vector network analyzers, software defined radio, and radar. The first book dedicated to six-port applications and principles, this volume serves as a current, one-stop guide offering you cost-effective solutions for your challenging projects in the field.