

3. Balanced Modulator

Aim:

1. To construct and properly adjust a balanced modulator and study its operation.
2. To observe that the output is a double sideband with a suppressed carrier signal.
3. To adjust it for optimum carrier suppression.
4. To verify that the output audio level directly affects the double side-band output amplitude.
5. To observe that the output is maximum with zero audio input.
6. To measure carrier only output and the peak side- band output and to calculate the carrier suppression.

Equipment Required:

Analog communication kit, CRO connecting wires.

Component Required:

1. IC'S: 1496- (1no)
2. Resistors: 100Ω -(1no), 820Ω -(1no), $1k\Omega$ -(1no), $1.2k\Omega$ -(1no), $2.7k\Omega$ -(1no), $10k\Omega$ -(3nos), $47k\Omega$ -(1no), $50k\Omega$ -POT
3. Capacitors: $1\mu F$ -(1no), $22\mu F$ -(1no), $100\mu F$ -(2nos)

Theory:

One circuit that lends itself extremely well to balanced modulator application is the differential amplifier. A simplified diagram of a differential amplifier is shown in figure 1.



FIG 1: A Differential amplifier used as a balanced modulator

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B. P. Lathi



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Solutions Manual for Modern Digital and Analog Communication Systems Fourth Edit B. P. Lathi, 2009-03-08

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Communication Systems Bhagwandas Pannalal Lathi, 1989-01 With exceptionally clear writing Lathi takes students step by step through a history of communications systems from elementary signal analysis to advanced concepts in communications theory The first four chapters of the text present basic principles subsequent chapters offer ample material for flexibility in course content and level All Topics are covered in detail including a thorough treatment of frequency modulation and phase modulation Numerous worked examples in each chapter and over 300 end of chapter problems and numerous illustrations and figures support the content *Solutions Manual for Modern Digital and Analog Communication Systems* B. P.

Lathi, 2000 This third edition has been revised to include expanded coverage of digital communications New topics include spread spectrum systems cellular communication systems global positioning systems GPS and a chapter on emerging digital technologies such as SONET ISDN and video compression **Principles of Digital and Analog Communications** J. D. Gibson, 1993 *Solutions Manual* Leon W. Couch, **Digital and Analog Communication Systems**, 1993

Introduction to Analog and Digital Communication M A Bhagyaveni, R Kalidoss, K S Vishvakshnan, 2024-10-21 This book primarily focuses on the design of analog and digital communication systems and has been structured to cater to the second year engineering undergraduate students of Computer Science Information Technology Electrical Engineering and Electronics and Communication departments For better understanding the basics of analog communication systems are outlined before the digital communication systems section The content of this book is also suitable for the students with little knowledge in communication systems The book is divided into five modules for efficient presentation and it provides numerous examples and illustrations for the detailed understanding of the subject in a thorough manner **Digital and Analog Communication Systems** Leon W. Couch, 2001 Exceptionally up to date this book provides a broad introduction to basic analog and digital principles and their application to the design and analysis of real world communication systems It provides readers with a working knowledge of how to use both classical mathematical and personal computer methods to analyze design and simulate modern communication systems MATLAB is integrated throughout Study aid examples and homework problems are included many of which require solution via a personal computer MATLAB illustrative examples and plots are included Balanced coverage of both analog and digital communication systems with an emphasis on the design of digital communication systems Case studies of modern communication systems are provided Over 500 problems provided For electrical engineers **Modern Digital And Analog Communication** Lathi, 2009-10-22 Professor Lathi introduces modern digital and analog communication systems without using probabilistic concepts with the intention that students will be ready to master probabilistic concepts as they progress through the book

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In an electronic digital era where connections and knowledge reign supreme, the enchanting power of language has are more apparent than ever. Its capability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Csun Analog Communication Lab Syllabus With Manual**," published by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we will delve to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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