Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Lab Deployment

Name of Faculty: Dr. Nitin Kothari | Subject Code:5EC4-23

Subject: Microwave Lab | SEM: V

Department: Electronics and Communication Engineering

Total No. of Lab Planned: 8

COURSE OUTCOMES

At the end of this course students will be able to:

CO1: Analyze the performance parameters of radio frequency circuits and identify design trade-off of radio frequency communication systems.

CO2: Able to plot V-I characteristics of microwave components

CO3:Able to work with various microwave instruments.

Lab No.	Name of Experiment
1	Introduction: Objective, scope and outcome of the course.
2	Study of various microwave components and instruments like frequency meter, attenuator, detector and VSWR meter. (a) Measurement of guide wavelength and frequency using a X-band slotted line setup. (b) Measurement of low and high VSWR using a X-band slotted line setup.
3	Introduction to Smith chart, measurement of SWR, shift in minimum standing wave with unknown load and calculation of unknown load impedance using Smith chart.

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4	Study the behavior of terminated coaxial transmission lines in time and frequency domain.
5	(a) Draw the V-I characteristics of a Gunn diode and determine the output power and frequency as a function of voltage. (b) Study the square wave modulation of microwave signal using PIN diode
6	Study the square wave modulation of microwave signal using PIN diode.Study and measure the power division and isolation characteristics of a microstrip 3dB power divider
7	Study of rat race hybrid ring (equivalent of waveguide Magic-Tee) in micro-strip.
8	(a) To study the characteristics of micro-strip 3dB branch line coupler, strip line backward wave coupler as a function of frequency and compare their bandwidth. (b) (b)Measure the microwave input, direct, coupled and isolated powers of a backward wave strip line coupler at the centre frequency using a power meter. From the measurements calculate the coupling, isolation and directivity of the coupler.

TEXT/REFERENCE BOOKS

1. Microwave Engineering,David M. Pozar,Wiley.
2. Microwave Devices and circuits, Samuel Y. Liao, Prentice Hall
3. Microwave and Radar Engineering, M. Kulkarni, Umesh Publication

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