



Techno India NJR Institute of Technology

Academic Administration of Techno NJR Institute

Lab Deployment

Name of Faculty: Mr. Yogendra Singh Solanki

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.

For Techno India NJR Institute of Technology

पंकज पौरवा
Dr. Pankaj Kumar Porwal
(Principal)

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) 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

For Techno India NJR Institute of Technology
 पंकज पोखवाल
 Dr. Pankaj Kumar Porwal
 (Principal)

For Techno India NJR Institute of Technology
पंकज पोरवाल
Dr. Pankaj Kumar Porwal
(Principal)