Microwave Laboratory

Venue: First Floor
Department of Electrical Engineering
University of Engineering and Technology Lahore
Lab Motive

This Lab was established in 1978 with the motive to equip students of Electrical Engineering with the tools of microwave design and measurements. The experiments are designed to ensure that the students are capable of designing transmission line circuits, microwave active and passive components, antennas. Throughout the lab experiments students use advanced measurement equipment including spectrum analyzer, vector network analyzer, digital oscilloscope, VSWR indicator, noise figure analyzer and vector signal analyzer.

Lab Instructors
Zeeshan Ahmad
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Lab Staff:
Muhammad Nawaz
Umar Khitab
Lab Equipment

- Agilent 8720ES Network Analyzer
- Agilent 54832B Oscilloscope
- Agilent 83623 Synthesized Sweep/CW Generator
- Agilent 83732B Synthesized Signal Generators
- Agilent E7405A EMC Analyzer
- Agilent E4438C Vector Signal Generator
- Agilent E8408A Vector signal Analyzer
- Agilent 8720ES Network Analyzer
- Agilent N8975A Noise Figure Analyzer
- Agilent 1671G RF Logic Analyzer
- Agilent E7405A EMC Analyzer
- Agilent 54832B Oscilloscope
- Optical testing equipment (MTS 5001)
- Feedback Microwave trainer MWT 530 (2 sets)
- Antenna Test Bench 6452A Marconi
- Microwave Mixer (HMC 220)
- Satellite trainer
- Dipole Antenna
- Parabolic antenna
- Loop antenna
- Log periodic Antenna
- Horn Antenna
- Dipole fed horn Antenna
- Slotted Array
- Patch Antenna
- Wave Guide Linear Slot Array
Microwave

- Introduction to a microwave waveguide bench and measurement of:
  - a) source frequency
  - b) guide wavelength

- Measurement of voltage standing wave ratio (vswr)

- Measurement of impedance and impedance matching

- Study of spectrum and network analyzer

- Measurement of effective dielectric constant using a ring resonator

- Introduction to the microwave vco source and detector and action of a 3-port circulator

- Measurement of effective dielectric constant using a ring resonator

- Investigate the insertion losses of optical fiber using optical testing equipment (MTS 5001)

- Measurement of mixer parameters using spectrum analyzer
Transmission Line and Antenna Propagation

- Design and Analysis of Microstrip lines
- Electromagnetic Windows, Dielectric Resonance, and Fresnel Coefficients
- Design and Analysis of a λ/4 Microstrip Line Matching Network
- Measurement of the Gain of a Waveguide Horn
- Measurement of the Radiation Pattern of a Waveguide Horn
- Measurement of the Gain of a Horn-fed Paraboloid
- Measurement of the Gain of a Waveguide Linear Slot Array
- Measurement of the Radiation Pattern of a Linear slot Array
- Measurement of the Radiation Pattern of a Horn-fed
Active Research Areas include

- Metamaterials
- Planar Microwave circuits
- Fractal Antennas
- Ultra-wide band Antennas
- Smart Antennas
- Microwave Active Circuit Design
- EMC/EMI

Future Plans

- Anechoic Chamber (Under Construction)
- Development of advanced PCB Fabrication Lab

Selected Publications


Researchers

- Dr. Mohammad Saleem
- Dr. Noor M. Sheikh
- Dr. Muhammad Imran
- Dr. Salim Tariq
- Dr. Haroon Babri
- Zohaib Mahmood
- Syed Ali Mohsin
- Qammer H Abbasi
- Zeeshan Ahmad

Department of Electrical Engineering, UET, Lahore
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Made By:

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