

Anechoic Chamber - Atenlab/OTA 500

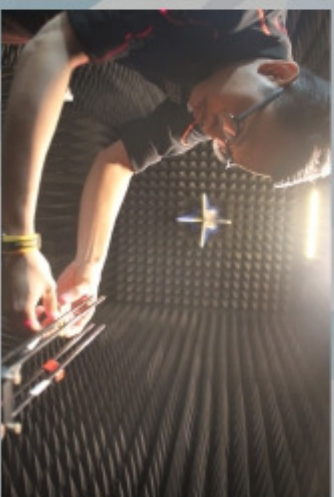
Our microwave and millimetre-wave anechoic chamber system is used for the measurement of radiation characteristics of feeds and millimetre-wave antennas up to 20 GHz. This range of frequency is ideal in covering wide range of communication services such as mobile, satellite, broadcasting and fixed services. The entire length of the chamber can be used for far-field antenna pattern measurements. The anechoic chamber provides an RF proof environment where both the antenna and measurement devices are isolated from outside interference and stray field. It is very important in performing measurements of antenna radiation patterns. Antenna radiation pattern can be illustrated in 2D and 3D plots. Specifically, the specifications of our chamber are as follows:

Dimension: 5(0) x 2.5(w) x 2.5(h) meter

Frequency range: 700MHz - 20GHz

Measurement range: 3.5 meters

Suitable for office installation



PCB Prototyping Machine—LPKF ProtoMat S103

The LPKF ProtoMat S103 is a Prototyping Machine for manufacturing printed circuit boards (PCB). It is a circuit board plotter for producing PCB prototypes and small batches is configured specifically useful for those working with RF and microwave designs. It is capable of processing advanced PCB applications with ease due to system features such as optical fiducial recognition and milling resolution of 0.002 mils. The ProtoMat S103 works straight from CAD data to process boards. Standard features unique to the system include a vacuum table for reworking damaged PCBs and securing delicate or flexible materials, as well as a non-contact depth limiter, or air-foot, which ensures nothing comes in contact with the board but the tool.



Microwave and mm-Wave Instrumentation

Currently, the Antenna Measurement Laboratory is equipped with state-of-the-art Vector Network Analyzers from Keysight, showing unprecedented low levels of background noise. Specifically, the following instrumentation models are also available:

Handheld Spectrum Analyzer Broadband Horn Antenna - Keysight N49916A

Vector Network Analyzer 40GHz - Keysight 5234A

Microwave Signal Generator 40GHz - Keysight NS 5173B

RF power meter – Agilent RF power sensor 50 MHz to 24 GHz

Portable EMF Measurement system with handheld spectrum Analyzer - Rohde and Schwarz R&S TS-EMF

Mechanical Calibration Kit, up to 40 GHz



Dielectric Measurement—Vector Network Analyzer 20 GHz Keysight N5232A

Dielectric measurement facilities at ARC Lab are equipped with state-of-the-art space charge measuring equipment, high temperature coaxial cable for multiple temperature measurement, precise calibration kit 85070E with uncertainty of 5%, dielectric constant and loss tangent graph display with the capabilities of extracting raw data in TXT format with non-destructive testing. The sample measured will not be affected and the measurement uses Cole-Cole calculation method. It provides high accuracy data transfer and graphical data display. This measurement system is first of its kind in the Faculty of Electrical Engineering. Research on space charges in dielectrics, loss tangent and characterization of dielectric materials are being promoted in this laboratory. It has produced several research papers since its establishment.

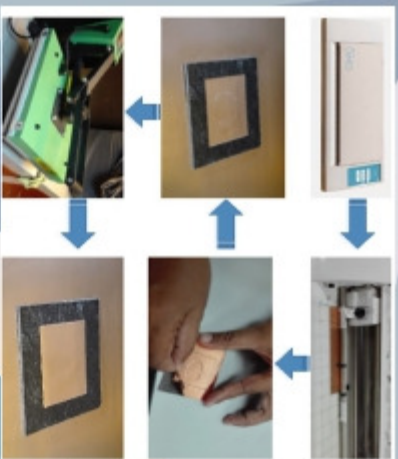


Fabrication Station

Our fabrication station has a wide range of tools available for use. This includes machines for antenna assembly such as a screen printer, punching machine for via fabrication, and several ovens for reflow process, general hand tools, developer and etching machine. There is a milling machine and a lamination press which can be used to fabricate large scale planar circuits as well as patch antennas and similar devices. The following instrumentation models are available:

SMD Reflow Station Hakko FR-802B

SMD Reflow (Accessories) Hakko FR-802B



Simulation Workstation

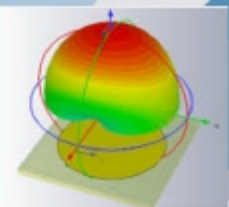
We have a PC workstation that is capable to run large finite element and ray tracing simulations. The PC consists of quad core intel CPU, 128GB RAM, 690GB hard drive and ready with hot swappable slave extension to support high capacity hard drive and SSD until TB. The PC has been used to simulate and optimize complex array antennas and large size of parabolic antennas.

Software Packages:

Computer Simulation Technology (CST)

MATLAB

Process PCB Design Software



Contact Information

The Antenna Research Laboratory is located in the Engineering Building at the UTM Shah Alam campus in Selangor.

For any enquiries, please contact:

Assoc. Prof. Dr. Mohd. Tarmizi Ali

Head

Antenna Research Centre

Fakulti Kejuruteraan Elektrik

Universiti Teknologi MARA

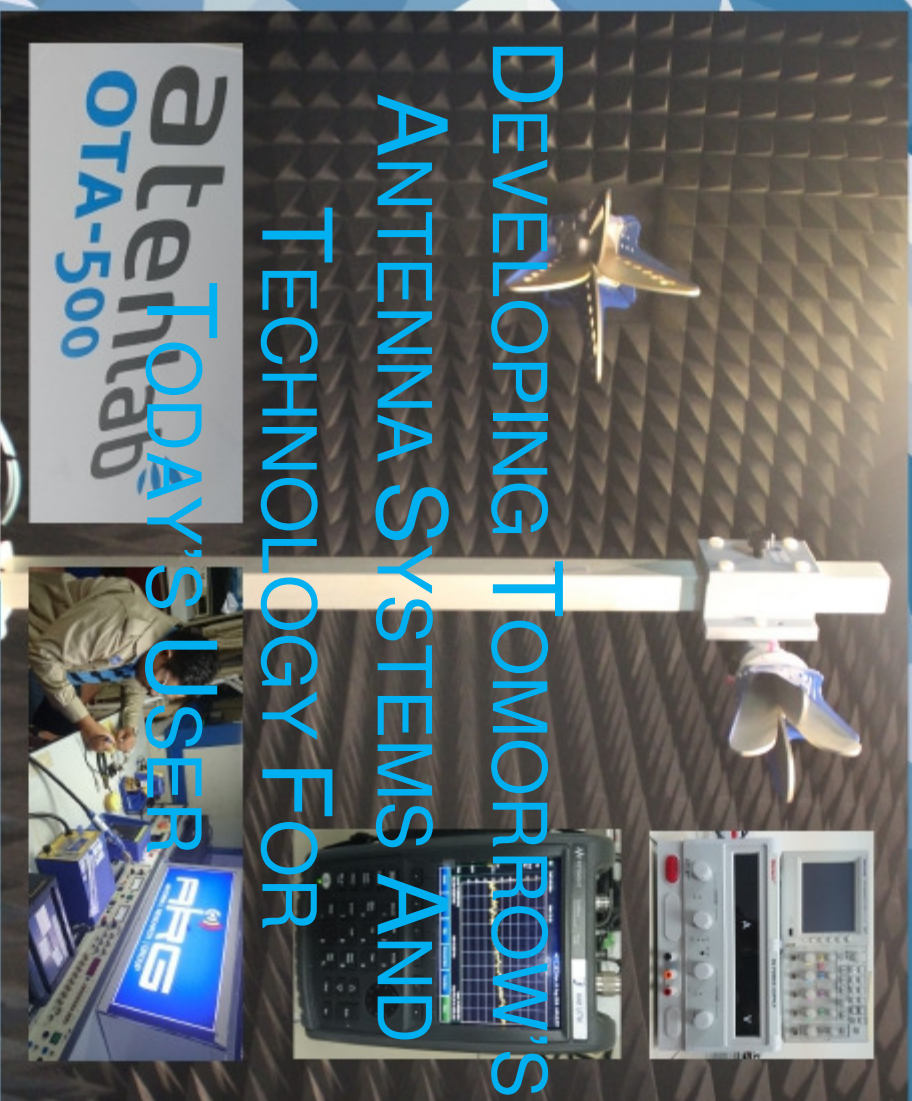
40450 Shah Alam

Selangor

Email: mizi732002@salam.utm.edu.my

Tel: +03-55448239

Fax: +03-55445077



DEVELOPING TOMORROW'S ANTENNA SYSTEMS AND TECHNOLOGY FOR

Antenna Research Centre

The Antennas Research Centre (ARC) has a strong team of academics and researchers working on various areas related to antenna engineering for enhanced performance, antenna and electromagnetics (EM). The group has established excellent collaborations and links with many academic and industrial partners working locally and globally. The ARC is established in 2011 under the Faculty of Electrical Engineering in UTM. Its establishment as a platform for PhD and Master postgraduates to share ideas and work in a team during their researchers and studies. ARC is focusing more in the field of communication antenna design, radio astronomy antennas, satellite antennas, and electromagnetic radiation analysis. Responsibility to set up ARC lab with the total cost more than RM 3 millions since 2011

Facilities

The Antenna Research Centre has excellent laboratory and workshop facilities, including areas dedicated to antenna development, mechanical construction as well as wet-lab facilities, electronic assembly and microwave measurements. The fundamental philosophy behind the group's research has always been driven by highly reliable electromagnetic modeling corroborated by high quality experimental verification. Laboratories are stocked with instruments sourced from external vendors as well as equipment developed in-house by our researchers and graduates. There are a selection of machines available for any commercial or research projects.