



5G, Millimeter Wave Antennas: Beamforming, Propagation and Test

Training Programme
by
Faculty of Engineering
Multimedia University

4 - 5 December 2020
Faculty of Engineering, Multimedia University

Overview

This two-day course offers participants with coverage of wireless system antenna elements, phased antenna array, link budget, propagation, integration and test topics related to millimeter wave and 5G applications. The course offers a basic understanding of antenna fundamentals, antenna property and considerations, antenna types and millimeter wave propagation. The course provides information on how antenna and propagation affect the communication systems. Topics also include how to test and measure millimeter wave antenna performance and information on phased antenna arrays and beam steering concepts.

Objective

- Understand the concepts associated with antenna operation, classification and performance.
- Identify and understand antenna types.
- Implement antenna phased arrays using basic principles.
- Evaluate the antenna performance and the millimeter wave propagation.

Target Audience

The course is well suited for those who require an understanding of antenna fundamentals and millimeter wave concepts.

Prerequisite

An electronics engineering background or equivalent practical knowledge is recommended but not required.

Training Methodology

Classroom, hands-on lab work and exercises.

Course Duration

2 days.

Content/Outline

RF Concepts

- Overview of a wireless communication system

Antenna Concepts

- Antenna properties - impedance, VSWR, bandwidth, directivity, gain, radiation patterns, polarization, etc.

Antenna Elements

- The Dipole • The Loop • Microstrip Antennas

Type of Antennas

- Antenna aperture • The horn antenna • The reflector antenna

Phased Arrays

- Array theory • Feed network design considerations • Beam steering concepts

Millimeter Wave Propagation

- Friis Equation • The communication link • Path loss • Receiver Sensitivity and antenna noise figure • Link budget calculations • Atmospheric Loss • Rain Attenuation

Special Considerations for 5G mm-Wave versus 4G/5G LTE

- Propagation • Antenna differences • Base station difference • Implementation differences in handheld devices • System operation

Antenna Testing

- Antenna Ranges • Far-field Testing • Near-Field Testing • Test and measurement of antenna performance

Course Instructors

Ir. Dr. Tiang Jun Jiat

Ir. Dr. Tiang Jun Jiat is currently a Senior Lecturer in the Faculty of Engineering at the Multimedia University. He has been conducting undergraduate and postgraduate lectures, tutorials and laboratory experiments in electronic and electromagnetic subjects. His research interests lie in the areas of microwave engineering, the application of electronic devices in telecommunications and antenna propagation. Furthermore, he has provided short courses and training for the topics of microwave, antenna, electromagnetic interference (EMI) and radio frequency identification (RFID).

Administrative Details

Programme Logistics

Duration: 2 days

Date: 4-5 December 2020

Venue: Faculty of Engineering, Multimedia University
Registration Deadline: 20 November 2020

Your Investment

Condition		Price per Pax
Regular Fee (After 30 Oct)	Students / MMU Alumni	RM700
	Public	RM1,200
	Public (Group >5 pax)	RM1,000
Early Bird Fee (Before 30 Oct)	Students / MMU Alumni	RM500
	Public	RM1,000
	Public (Group >5 pax)	N/A

Method of Payment

Please make payment via bank transfer only. Account details is as below:

Account name: Unitele Multimedia Sdn Bhd

Account number: 86-0090180-2

Bank: CIMB Islamic Bank Berhad

Payment must be made by the registration deadline.

Refund and Cancellation

Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

Disclaimer

Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

Enquiries

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Registration Form

To register, please visit this link: <https://forms.gle/9Hk8kvTpYnwgvnk38>