

RESEARCH ENVIRONMENT

FACILITY

Founded in 2005, the electromagnetic (EM) group, Department of Electrical Engineering, National Central University (NCU) is consistently ranked one of the most prestigious EM institutions in Taiwan. The EM graduate institute offers a comprehensive EM engineering curriculum for fostering influential leaders and technically competent engineers in the EM regimes. Moreover, it provides a dedicated learning environment and well-equipped facilities to empower the graduate students to explore their interests and develop their EM scholarship. The research topics include microwave Engineering, RF/microwave/millimeter-wave circuits and systems, monolithic microwave integrated circuits (MMICs), antenna theory and design, radio wave propagation and remote sensing, high-speed mixed-signal integrated circuits, ferroic materials for microwave applications, and terahertz component for radiometer. The EM group will be linked up the space, remote sensing and optical science groups in NCU. The researches of radar, remote sensing, radiometer, and telescope will be carried out with National Science Council and Academia Sinica. Also, the excellent research will be achieved in the next decade.

Laboratory

- (1) EM Wave Lab I: RF/microwave/millimeter-wave antenna, passive component measurement
- (2) EM Wave Lab II: RF/microwave/millimeter-wave active component measurement
- (3) EM Wave Lab III: waveguide component measurement
- (4) Numeric EM Lab
- (5) Ferroic materials Fabrication Lab
- (6) Printed Circuit Board Fabrication Lab
- (7) Microwave & RF Integrated Circuits Lab

Name	Company	Model	Main Spec.	Location
Maury Load-Pull System	Maury		0.8 ~ 18 GHz	E1
Focus Load-Pull System	Focus		10 ~ 60 GHz	E1
Vector network analyzer	Agilent	N5256A	110 ~ 170 GHz	E1
Vector network analyzer	Agilent	N5250A	10 MHz ~ 110 GHz	E1
Vector network analyzer	Agilent	E8361A	10 MHz ~ 67 GHz	E1
Vector network analyzer	HP	8510C	10 MHz ~ 50 GHz	E1
Vector network analyzer	Agilent	E5071C	4-port 0.3 MHz~20 GHz	E1
Vector network analyzer	Agilent	E8362A	4-port 0.3 MHz~20 GHz	E1

Name	Company	Model	Main Spec.	Location
Vector network analyzer	RS		10 MHz ~ 40 GHz	E1
Vector network analyzer	HP	8702C	0.3 MHz ~ 6 GHz	E1
Vector signal analyzer	Agilent	89641	DC ~ 6 GHz	E1
Vector signal analyzer	HP	89441A	DC ~ 2.6 GHz	E1
Spectrum Analyzer	RS		10 Hz ~ 40 GHz	E1
Spectrum Analyzer	Agilent	E4448A	10 Hz ~ 50 GHz	E1
Spectrum Analyzer	Agilent	E4446A	10 Hz ~ 40 GHz	E1
Spectrum Analyzer	Agilent	E4407B	10 Hz ~ 50 GHz	E1
Spectrum Analyzer	HP	3588A	0.1 Hz ~ 150 MHz	E1
Preselected harmonic mixer	Agilent	11974V	50 ~ 75 GHz	E1
Waveguide harmonic mixer	Agilent	11970	V-, W, and D-band	E1
Signal source analyzer	Agilent	4352B	10 MHz ~ 3 GHz	E1
Signal source analyzer	Agilent	E5052B	DC ~ 26.5 GHz	E1
Vector signal generator	Agilent	E4438C	0.25 MHz ~ 6 GHz	E1
Vector signal generator	Agilent	E8267D	0.25 MHz ~ 31.8 GHz	E1
Signal generator	Agilent	E8257D	0.25 MHz ~ 67 GHz	E1
Signal generator	Agilent	E8257C	0.25 MHz ~ 40 GHz	E1
Signal generator	Agilent	E8257D	0.25 MHz ~ 20 GHz	E1
W-band source module	Agilent	E8257D510	75 ~ 110 GHz	E1
D-band source module	Agilent	E8257D56	110 ~ 170 GHz	E1
Noise figure analyzer	Agilent	N8975A	10 MHz ~ 40 GHz	E1
Power meter	Agilent	4418B	10 MHz ~ 110 GHz	E1
Power meter	Agilent	4419B	10 MHz ~ 110 GHz	E1
Power meter	Agilent	4B	10 MHz ~ 110 GHz	E1
DC parameter analyzer	HP	4142B	1 μ V~1 kV, 1 μ A~10 A	E1
Oscilloscope	Agilent	54855A	Bandwidth: 6 GHz	E1
Oscilloscope	HP		Bandwidth: 500 MHz	E1
Pulse pattern generator	Advantest	D3186	20 Mbps ~ 12.5 Gbps	E1
Pulse pattern generator	Agilent	81134A	15 MHz ~ 3.35 GHz	E1
Wire bonder	West-Bond	7700D	Ball-wedge	E1
Anechoic chamber			0.5 ~ 40 GHz	E1
Pulsed laser deposition system	Coherent	102F	Fab. ferroelectric film	E1



SOFTWARE

- (1) HFSS
- (2) Sonnet
- (3) IE3D
- (4) CST
- (5) Agilent ADS
- (6) Ansoft Designer
- (7) MWO
- (8) Cadence
- (9) Mentor Graphics
- (10) Altera
- (11) Xilinx
- (12) Synopsys
- (13) Workstation: SUN, IBM, and PC-based Linux platforms