

Planar antennas and radiating apertures



Component

École Nationale
Supérieure
d'Électrotechnique
d'Électronique
d'Informatique
d'Hydraulique
et des
Télécommunications

In brief

- **Ametys Code:** N8EE08B
- **Open to exchange students:** Yes

Presentation

Objectives

Know how to calculate the electromagnetic field radiated by radiating apertures and planar antennas.

- Know how to physically interpret the radiation of a radiating aperture and a planar antenna.
- Know how to calculate the fundamental descriptors of radiating apertures and planar antennas.
- Understand the fundamental properties of radiating apertures and planar antennas.
- Understand the excitation techniques for radiating apertures and planar antennas.
- Know how to design a radiating aperture or planar antenna based on specifications.

Description

I- Radiating apertures

I-1- Duality of Maxwell's equations for electric and magnetic current sources

I-2- Electromagnetic field radiated by harmonic electric and magnetic current distributions

I-3- Integrals of electromagnetic radiation

I-4- Equivalence principles in electromagnetism (LOVE's equivalence principle)

I-5- Application: Rectangular radiating aperture

I-6- Common radiating apertures and their properties

II- Planar antennas

II-1- Operating principle

II-2- Choice of substrate and MMIC technology

II-3- Electromagnetic model of a planar antenna

II-4- Application: Rectangular planar antenna

II-5- Excitation of planar antennas

III- Prospects in the field of radiating apertures and planar antennas

Pre-requisites

The subject 'Electromagnetic radiation and antennas' (Apogée code N8EE26A)