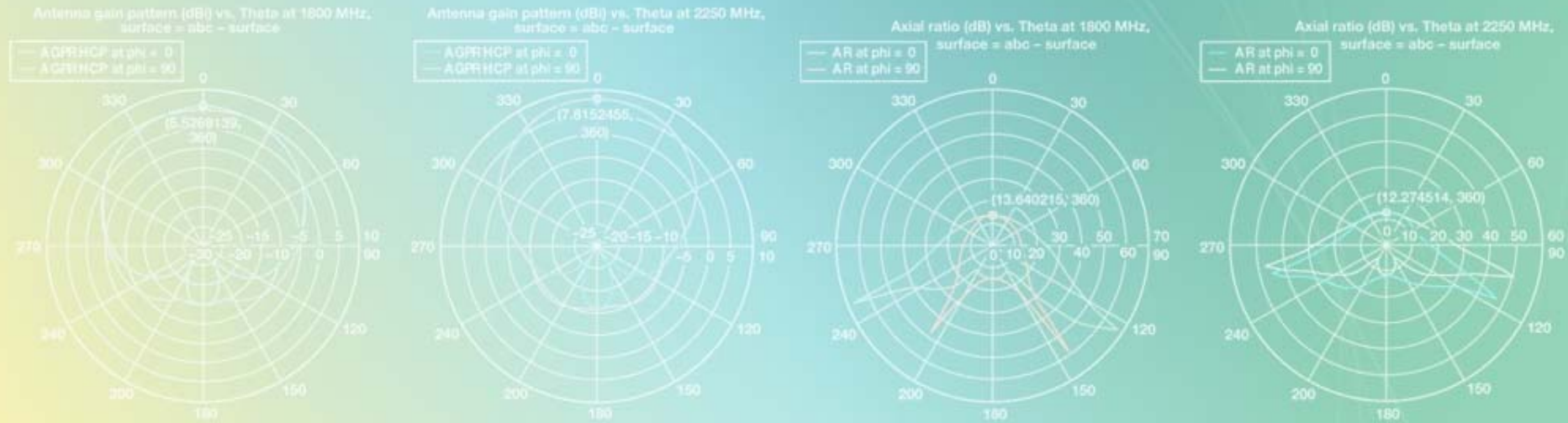


教育部加速行動寬頻服務及產業發展計畫 —電磁教育跨校聯盟計畫—



天線原理與基本參數

台大電機系暨電信所 陳士元

Outline

- Introduction
- Antenna basics
- Thin linear antennas

Outline

■ Introduction

- What is antenna?
- Types of antennas
- Radiation mechanism
- Current distribution

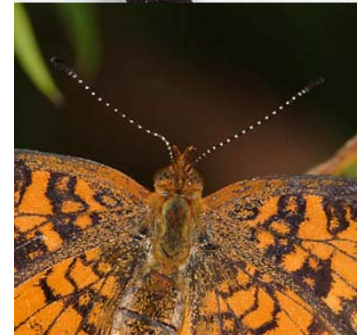
■ Antenna basics

■ Thin linear antennas

What is antenna?

■ Zoological antenna (antennae)

- A long thin sensitive hairlike organ, usually growing in pairs, on the heads of some insects and animals, and used to feel with.



<https://zh.wikipedia.org/wiki/%E8%A7%B8%E8%A7%92>

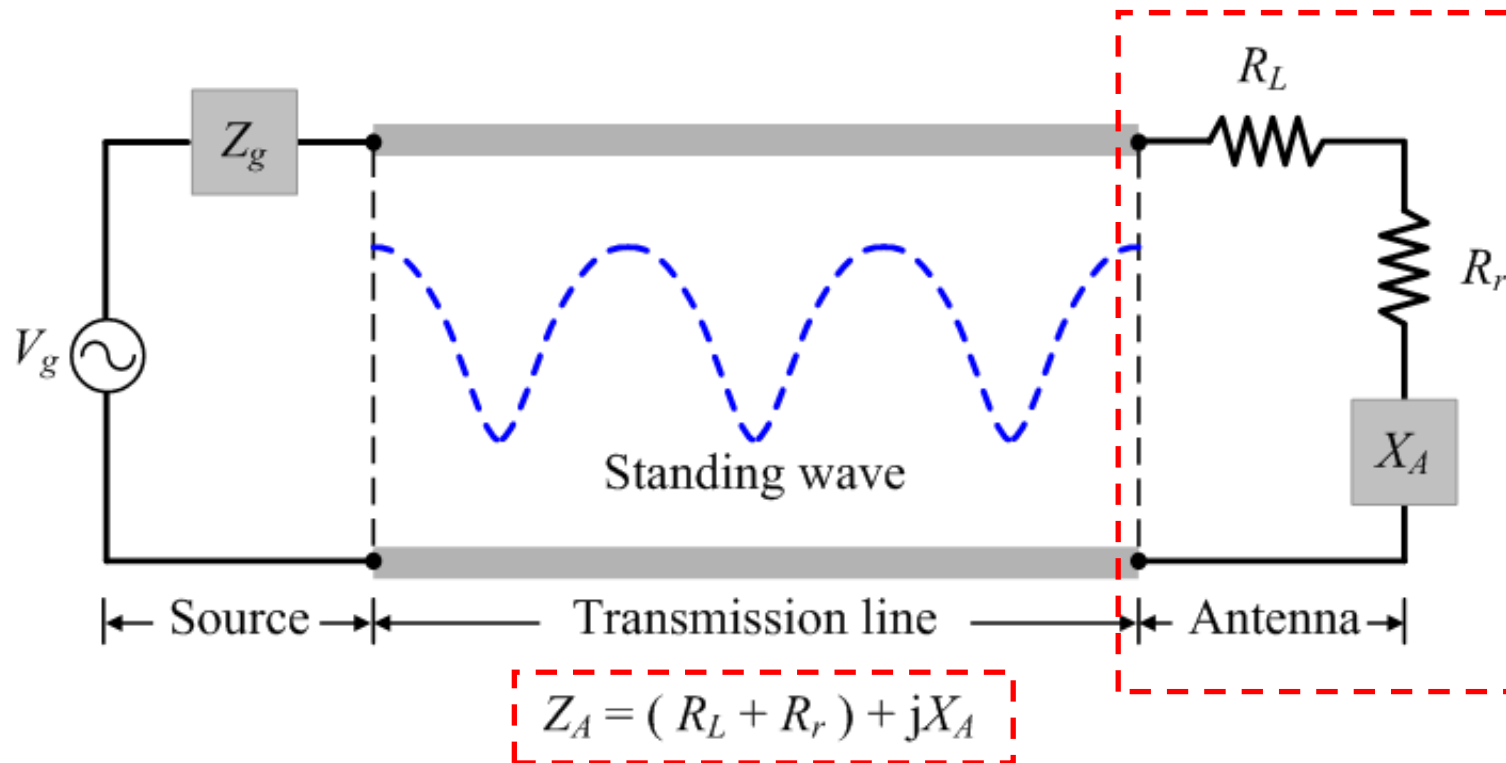
What is antenna?

■ Radio antenna (antennas) → aerials

- Our electronic eyes and ears on the world.
- Our links with space.
- A usually metallic device (as a rod or wire) for radiating or receiving radio waves.
- A means for radiating or receiving radio waves.
- Transitional structure between free-space & a guiding device.

What is antenna?

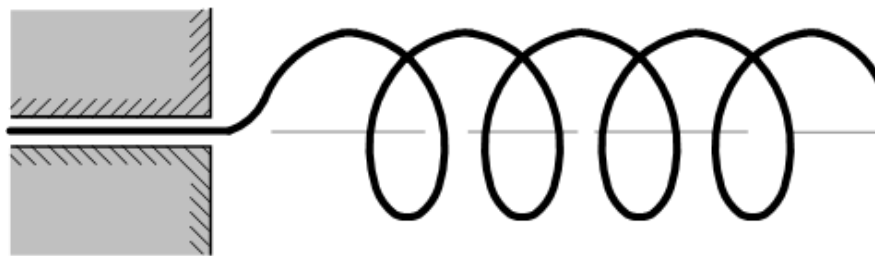
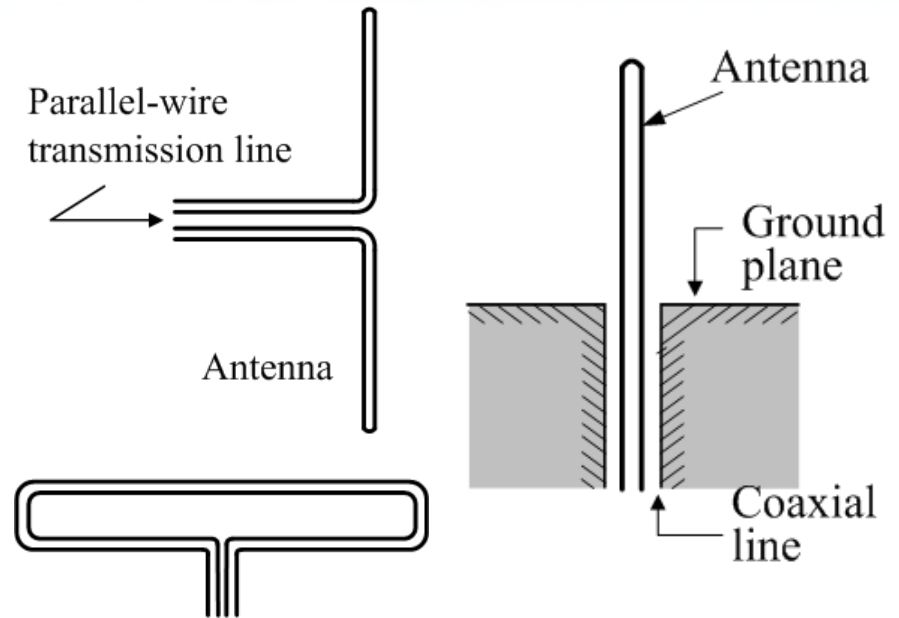
- Thevenin equivalent of the antenna in transmitting mode



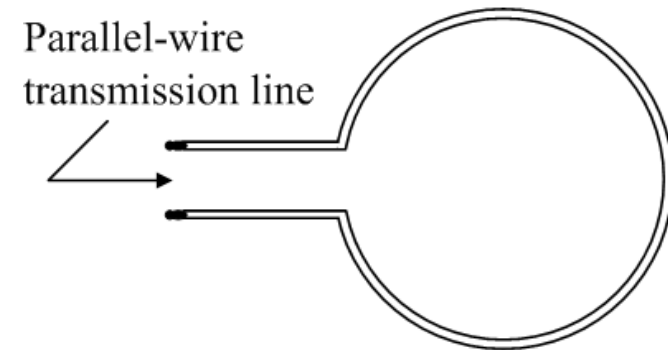
Types of antennas

■ Wire antennas

- Dipole antenna
- Folded dipole antenna
- Loop antenna
- Helical antenna



Helical antenna

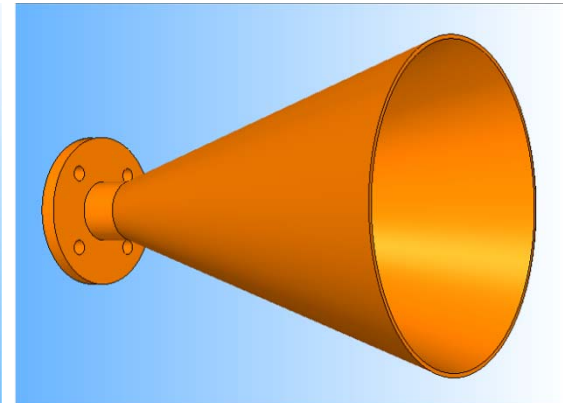
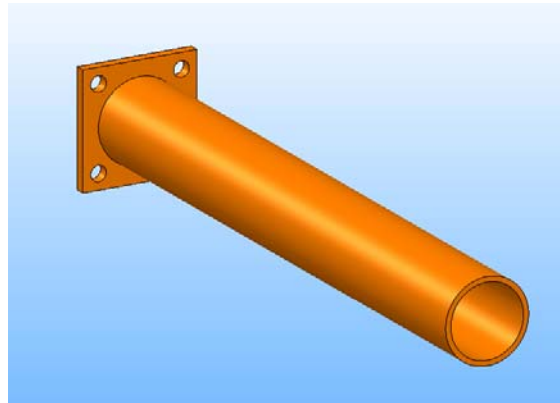
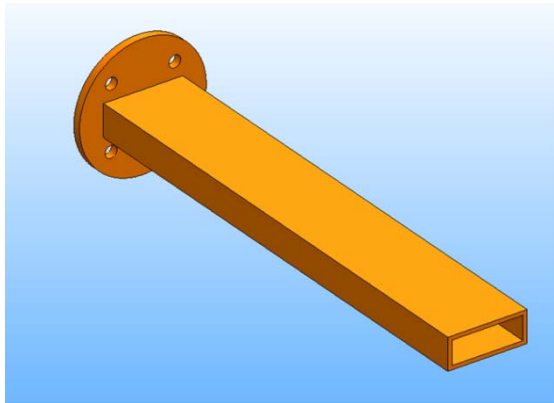
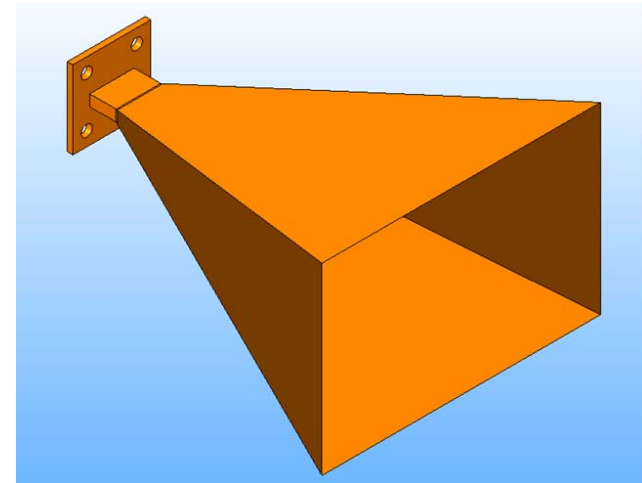


Full-loop antenna

Types of antennas

■ Aperture antennas

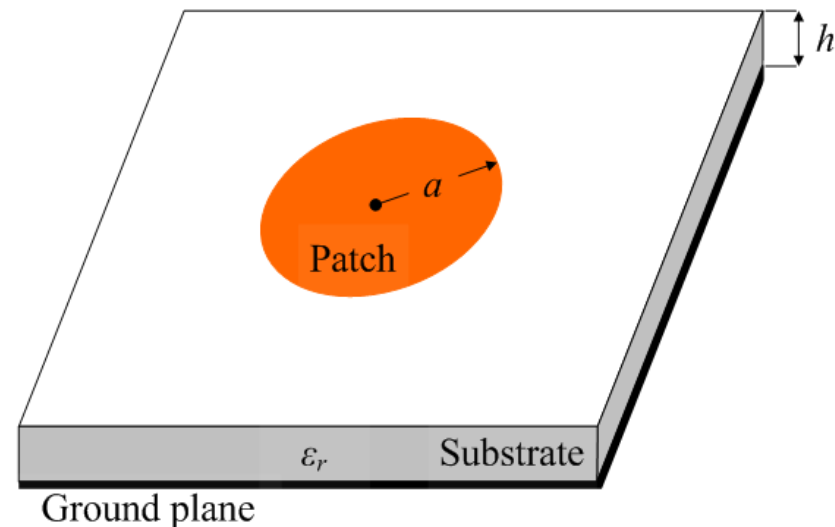
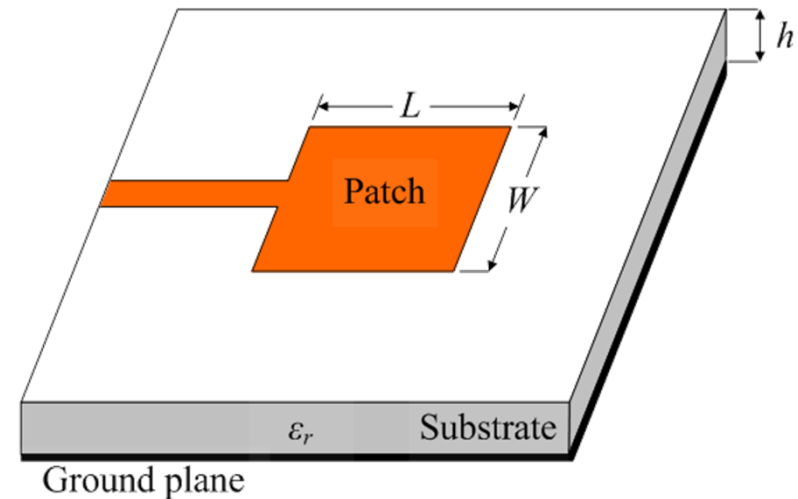
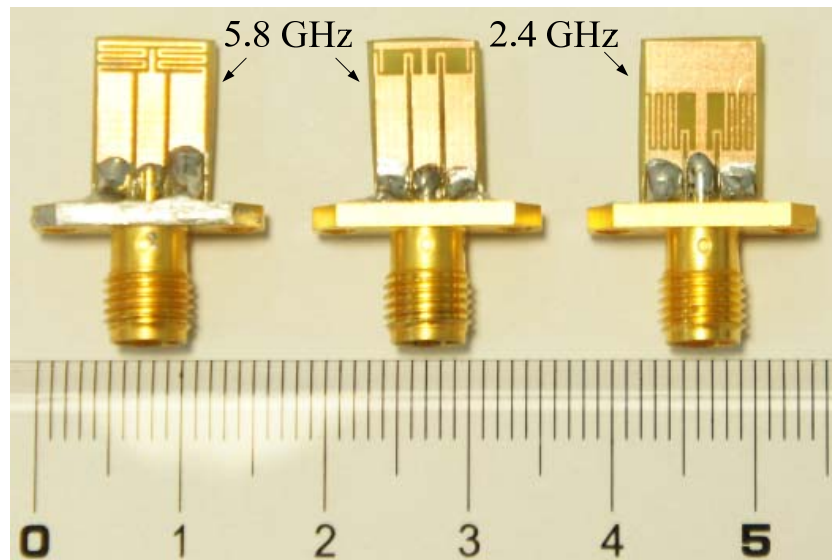
- Pyramidal horn
- Conical horn
- Waveguide probe



Types of antennas

■ Microstrip antennas

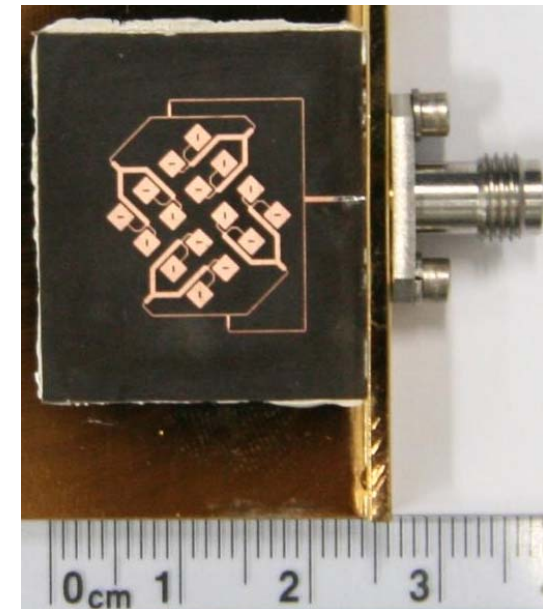
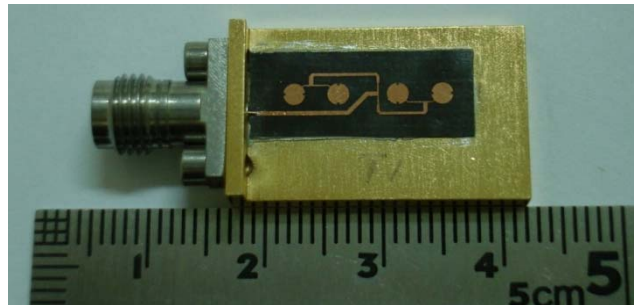
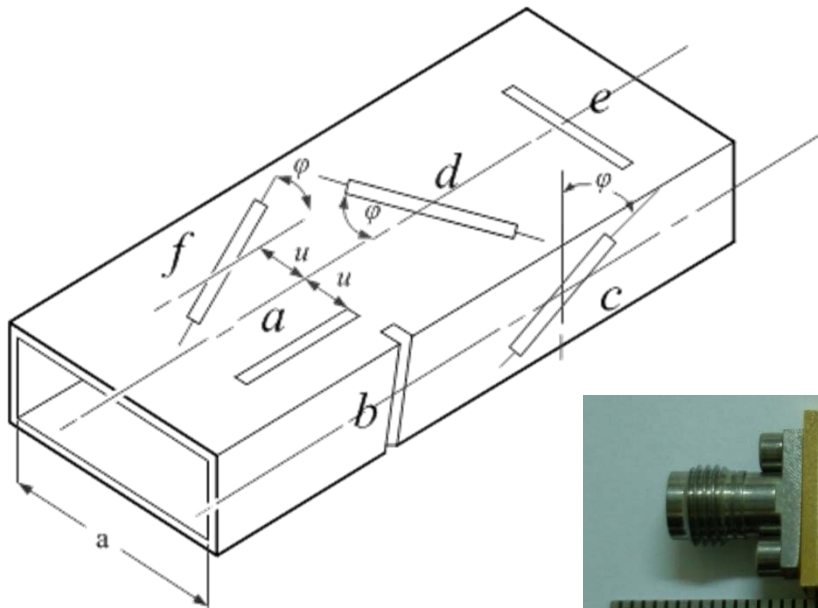
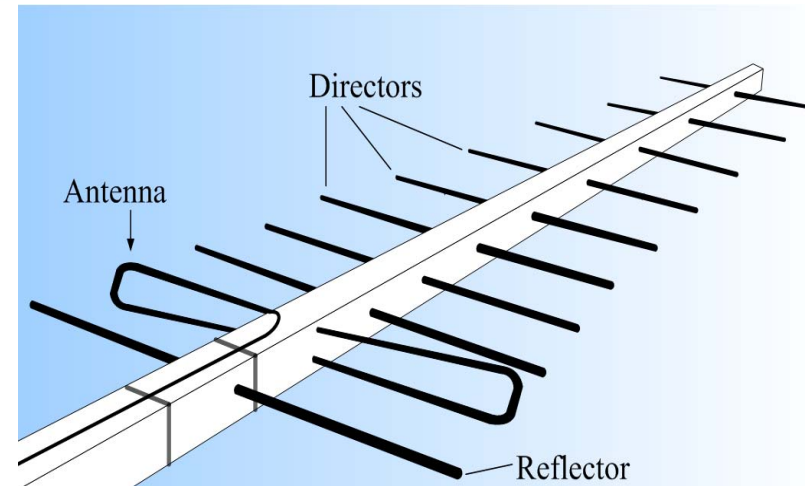
- Patch antennas
- Printed antennas



Types of antennas

■ Array antennas

- Yagi-Uda array
- Patch array
- Slot array



Types of antennas

■ Reflector antennas

- Parabolic reflector
- Corner reflector

■ Lens antennas

