

Wifi Lab

File Edit View Insert Format Tools Extensions Help

Last edit was 3 minutes ago

Undo Redo Copy Paste Font Size Font Family Bold Italic Underline Text Color Link Image Table Bulleted List Numbered List Decrease Indent Increase Indent Link Remove

Editing

1

2

3

4

5

6

7

8

9

10

←

SUMMARY +

OUTLINE

Electromagnetic Spectrum

Radio Waves

Antennas

Radiation Patterns

Directivity, Gain, Impedance

Types

Isotropic Antenna

Monopole Antenna

Dipole Antenna

Yagi-Uda Antenna

Array Antennas

Radio Wave Propagation

Information

One significant property that all antennas have is that their transmission and reception radiation patterns are always the same. This fact is known as reciprocity. **Reciprocity** can be extended to all other properties of antennas as well, meaning there is no need to design and manufacture separate transmission and reception antennas. However, this does not necessarily mean that the same antenna should always be used for transmission and reception.

Depending on the application, a transmission antenna with a certain pattern may be desired whereas a reception pattern with a different pattern may be optimal. For example, in a many-to-one network where multiple transmitters in different locations communicate to a single receiver, the transmission antennas can have their power output focused in a single direction whereas the reception antenna has to accept radiation from all directions equally.

In the radiation pattern above, the power intensity varies from 1-5 units (unspecified). However, radiation patterns are often shown with normalized power intensity, where all values are divided by the maximum power intensity. This has the effect of scaling, or normalizing, the graph from 0 to 1, where angles with the maximum power intensity have a value of 1. Normalized radiation patterns make it easier to estimate/calculate and compare the patterns and directivities of multiple antennas without having to take relative intensity into account.

4

31

Share

31

+

+