Chapter 3 – *Transmission Lines and Waveguides*

First, some **definitions**:

Transmission Line – *A* **two** conductor structure that **can** support a TEM wave.

Waveguide – *A* **one** conductor structure that **cannot** support a TEM wave.

Q: *What is a* ***TEM*** *wave?*

A: An electromagnetic wave wherein **both** the electric and magnetic fields are **perpendicular** to the direction of wave propagation.

HO: WAVEGUIDE

3.5 Coaxial Line

Reading Assignment: ***p. 130***

The most **prevalent** type of transmission line is the **coaxial** transmission line.

HO: COAXIAL TRANSMISSION LINES

Coaxial transmission lines are attached to devices using microwave **connectors**.

HO: COAXIAL CONNECTORS

3.7 Stripline

Reading Assignment: *pp. 137-140*

Often, microwave devices or networks are built on dielectric substrates (e.g., "**printed circuit boards**"). Connecting these devices require printed circuit board **transmission lines**.

HO: PRINTED CIRCUIT BOARD TRANSMISSION LINES

One of the most popular PCB transmission lines is **stripline**.

HO: STRIPLINE

3.8 Microstrip

Reading Assignment: *pp. 143-146*

Another popular PCB transmission line is **microstrip**.

HO: MICROSTRIP

3.11 Summary of Transmission Lines and Waveguides

Reading Assignment: *pp. 154-157*

Let's **compare** transmission line characteristics!

HO: A COMPARISON OF COMMON TRANSMISSION LINES AND WAVEGUIDES