

Wireless Mobile Communication

Lecture 1

- Evolution of mobile radio Communication

Topics to be Covered

- Wired Communication
- Wireless Communication
- Cellular Topology
- PCS System
- Paging System

Introduction

- Wireless
 - Communications system in which electromagnetic waves carry a signal through atmospheric space rather than along a wire
 - Most systems use radio frequency (RF, which ranges from 3 kHz to 300 GHz) or infrared (IR, which ranges from 3 THz to 430 THz) waves
 - IR products do not require any form of licensing by the FCC

Timeline of Major Developments

- Mobile Telephone System (MTS)
 - Introduced in 1946
 - Simplex (one-way transmission) and manual operation
- Improved Mobile Telephone System (IMTS)
 - Introduced in 1969 using a 450 MHz band
- Advanced Mobile Phone Service (AMPS)
 - Introduced in 1983
 - First system to employ a “cellular” concept

Cellular Topology

- Cellular network:
 - Series of overlapping hexagonal cells in a honeycomb pattern
- Cellular network components
 - Base Station: Transmitter, Receiver, Controller, Antenna
 - Cell: Base station's span of coverage
 - Mobile Switching Center: Contains all of the control and switching elements to connect the caller to the receiver, even as the receiver moves from one cell to another

Personal Communications Systems (PCS)

- PCS is also called Personal Communications Networks (PCN)
- Goal of PCS is to provide integrated voice, data and video communications
- Three categories of PCS:
 - Broadband: cellular and cordless handsets
 - Narrowband: enhanced paging functions
 - Unlicensed: allows short distance operation

Cellular Mobile Communications-I

An Introduction

❖ **Paging System:** For Transmission of Brief Numeric/Alpha-numeric/Voice Messages [Pages] to Subscriber

- ❖ To Notify/Alert the User
- ❖ Simplex Service
- ❖ Modern Paging Systems Can Send News Head-Lines, Stock Info, or Fax
- ❖ Application Dependent System Range [2 Km to World-wide]

