

Transmission Media

- **Transmission media** is a communication channel that carries the information from the sender to the receiver.
- It is of 2 type:
 - **Wired media**
 - Twisted Pair Cable
 - Co-axial Cable
 - Fiber-Optical Cable
 - **Wireless Media**
 - Radio waves
 - Microwaves
 - Infrared
 - Satellite

Twisted Pair Cable

- used for creating small computer network. It contains four twisted pair covered in an outer shield. These pair are color coded. An RJ-45 is used to connect this cable to a computer. It is available in various forms such as CAT1, CAT2, CAT3, CAT4, CAT5, CAT6.
- Also known as Ethernet Cable
- It is of 2 types:
 - UTP (Unshielded Twisted Pair)
 - STP(Shielded Twisted Pair)



Coaxial Cable

- **Coaxial cable** is a type of copper **cable** specially built with a metal shield and other components engineered to block signal interference. It is primarily used by **cable** TV companies to connect their satellite antenna facilities to customer homes and businesses.



Fiber Optical Cable

- are long, thin strands of glass about thickness of human hair. It is used to transmit data through light signals over long distances. It is capable of transmitting messages modulated onto light waves.



Comparison – Wired media

	Twisted Pair Cable	Coaxial Cable	Optical fiber cable
Data Transfer Rate	10Mbps-10Gbps	100Mbps	>100Gbps
Data Transfer Range	100 m	185-500m	-
Interference susceptibility	More	Less than Ethernet cable	NIL
Cost	Least cost	More than Ethernet	Very Expensive

Wireless computer Network

Electromagnetic waves are used for wireless communication over computer network. Based on their frequencies, electromagnetic waves are categorized into various categories.

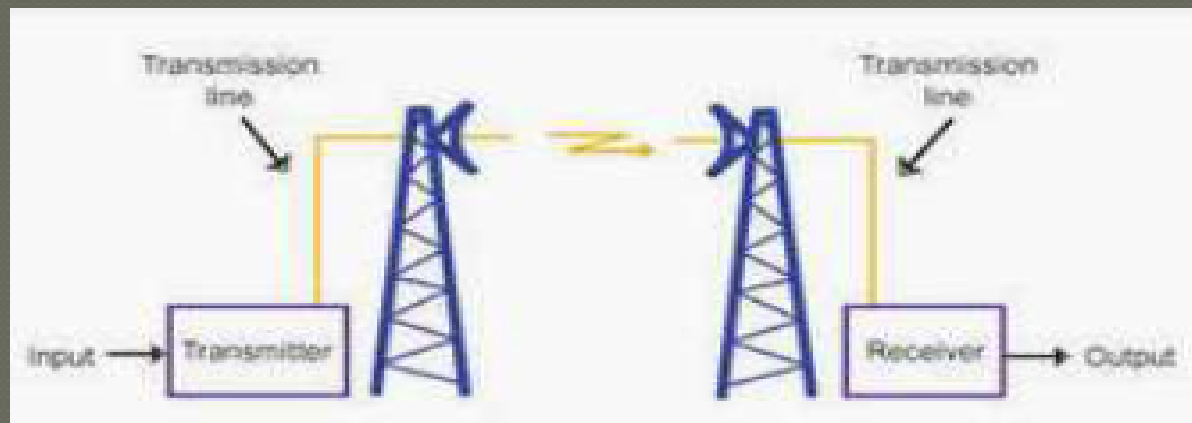
These categories are in increasing order of their frequencies –

Radio Waves < Microwaves < Infra radiation < visible light < ultraviolet radiation < x-rays < gamma rays

Out of these only ***radio waves, microwaves and infrared rays*** are used for wireless communication

Microwave

- Are high frequency waves that can be used to transmit data wirelessly over long distance
- Travels in straight lines and cannot penetrate any solid object, therefore for long distance microwave communication high towers are built and microwave antennas are put on their top.
- It consists of transmitter, receiver and atmosphere
- Used to transmit signals such as mobile phone calls



Radiowave

- Radio waves are used to transmit television and radio programs. Wi-Fi / Bluetooth has become a common word today also used radio wave to transmit data among connected device.
- It is Omni-directional and can penetrate solid objects.



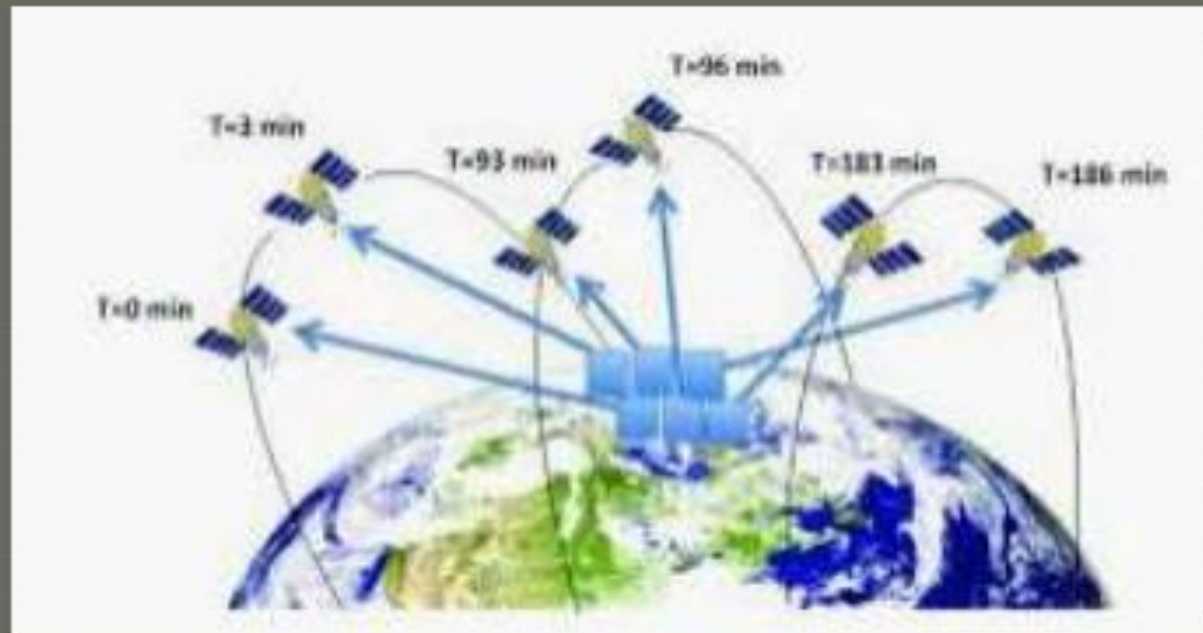
Infrared waves

- Used for short range communication approx. 5-10m
- **Used in cordless mouse, remote controlled devices**
- They do not pass through solid object
- **One advantage of this is that infrared system in one room of building will not interfere with a similar system in adjacent room.**
- It is a line of sight transmission, so information passed to one device is not leaked to another device.



Satellite (Satellite Microwave)

- ✓ Used for very long distance wireless communication.
- ✓ **Transmission from earth to a satellite is uplink (frequency range 1.6GHz to 30.0 GHz) and transmission from satellite to earth is known as downlink(frequency range 1.5GHz to 20.0GHz)**
- ✓ It covers large area of earth
- ✓ **Expensive**
- ✓ Require legal permissions.



THANKS