Different Types of Wireless Communication with Applications

- COMMUNICATION

32 COMMENTS

The term wireless communication was introduced in the 19th century and wireless communication technology has developed over the subsequent years. It is one of the most important mediums of transmission of information from one device to other devices. In this technology, the information can be transmitted through the air without requiring any cable or wires or other electronic conductors, by using electromagnetic waves like IR, RF, satellite, etc. In the present days, the wireless communication technology refers to a variety of wireless communication devices and technologies ranging from smart phones to computers, tabs, laptops, Bluetooth Technology, printers. This article gives an overview of wireless communication and types of wireless communications.

Types of Wireless Communciation

Introduction To Wireless Communication

In the present days, wireless communication system has become an essential part of various types of wireless communication devices, that permits user to communicate even from remote operated areas. There are many devices used for wireless communication like mobiles. Cordless telephones, Zigbee wirelss technology, GPS, Wi-Fi, satellite television and wireless computer parts. Current wireless phones include 3 and 4G networks, Bluetooth and Wi-Fi technologies.

Types of Wireless Communication

The different types of wireless communication mainly include, IR wireless communication, satellite communication, broadcast radio, Microwave radio, Bluetooth, Zigbee etc.

Satellite Communication

Satellite communication is one type of self contained wireless communication technology, it is widely spread all over the world to allow users to stay connected almost anywhere on the earth. When the signal (a beam of modulated microwave) is sent near the satellite then, satellite amplifies the signal and sent it back to the antenna receiver which is located on the surface of the earth. Satellite communication contains two main components like the space segment and the ground segment.The ground segment consists of fixed or mobile transmission, reception and ancillary equipment and the space segment, which mainly is the satellite itself.


Satellite Communciaiton

Infrared Communication

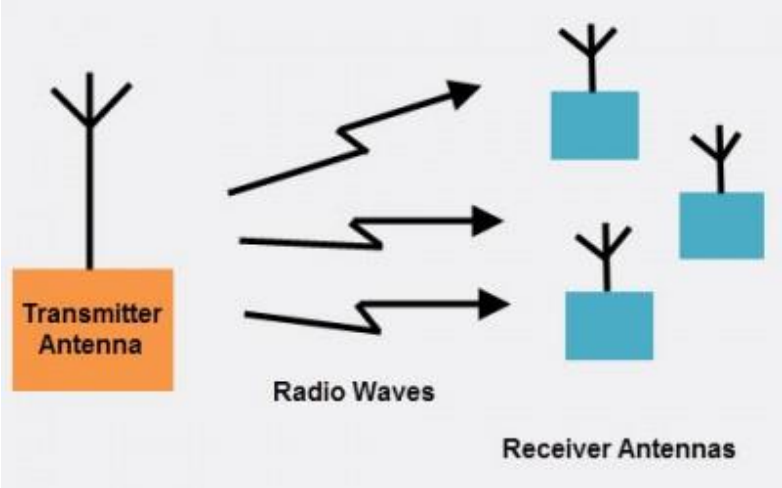
Infrared wireless communication communicates information in a device or systems through IR radiation . IR is electromagnetic energy at a wavelength that is longer than that of red light. It is used for security control, TV remote control and short range communications. In the electromagnetic spectrum, IR radiation lies between microwaves and visible light. So, they can be used as a source of communication

Infrared Communication

For a successful infrared communication, a photo LED transmitter and a photo diode receptor are required. The LED transmitter transmits the IR signal in the form of non visible light, that is captured and saved by the photoreceptor. So the information between the source and the target is transferred in this way. The source and destination can be mobile phones, TVs, security systems, laptops etc supports wireless communication.

Broadcast Radio

The first wireless communication technology is the open radio communication to seek out widespread use, and it still serves a purpose nowadays. Handy multichannel radios permit a user to speak over short distances, whereas citizen's band and maritime radios offer communication services for sailors. Ham radio enthusiasts share data and function emergency communication aids throughout disasters with their powerful broadcasting gear, and can even communicate digital information over the radio frequency spectrum.



Broadcast Radio

Mostly an audio broadcasting service, radio broadcasts sound through the air as radio waves. Radio uses a transmitter which is used to transmit the data in the form of radio waves to a receiving antenna(Different Types of Antennas). To broadcast common programming, stations are associated with the radio N/W's. The broadcast happens either in simulcast or syndication or both. Radio broadcasting may be done via cable FM, the net and satellites. A broadcast sends information over long distances at up to two megabits/Sec (AM/FM Radio).

Radio waves are electromagnetic signals, that are transmitted by an antenna.These waves have completely different frequency segments, and you will be ready to obtain an audio signal by changing into a frequency segment.


Radio

For example, you can take a radio station. When the RJ says you are listening to 92.7 BIG FM, what he really means is that signals are being broadcasted at a frequency of 92.7megahertz, that successively means the transmitter at the station is periodic at a frequency of 92.700,000 Cycles/second.

When you would like to listen to 92.7 BIG FM, all you have to do is tune the radio to just accept that specific frequency and you will receive perfect audio reception.

Microwave Communication

Microwave wireless communication is an effective type of communication, mainly this transmission uses radio waves, and the wavelengths of radio waves are measured in centimeters. In this communication, the data or information can be transfers using two methods. One is satellite method and another one is terrestrial method.

Microwave Communication

Wherein satellite method, the data can be transmitted though a satellite, that orbit 22,300 miles above the earth. Stations on the earth send and receive data signals from the satellite with a frequency ranging from 11GHz-14GHz and with a transmission speed of 1Mbps to 10Mbps. In terrestrial method, in which two microwave towers with a clear line of sight between them are used, ensuring no obstacles to disrupt the line of sight. So it is used often for the purpose of privacy. The frequency range of the terrestrial system is typically 4GHz-6GHz and with a transmission speed is usually 1Mbps to 10Mbps.

The main disadvantage of microwave signals is, they can be affected by bad weather, especially rain.

Wi-Fi

Wi-Fi is a low power wireless communication, that is used by various electronic devices like smart phones, laptops, etc.In this setup, a router works as a communication hub wirelessly. These networks allow users to connect only within close proximity to a router. WiFi is very common in networking applications which affords portability wirelessly. These networks need to be protected with passwords for the purpose of security, otherwise it will access by others

Wi-Fi Communication

Mobile Communication Systems

The advancement of mobile networks is enumerated by generations. Many users communicate across a single frequency band through mobile phones. Cellular and cordless phones are two examples of devices which make use of wireless signals. Typically, cell phones have a larger range of networks to provide a coverage.But, Cordless phones have a limited range. Similar to GPS devices, some phones make use of signals from satellites to communicate.

Mobile Communication Systems

Bluetooth Technology

The main function of the Bluetooth technology is that permits you to connect a various electronic devices wirelessly to a system for the transferring of data.Cell phones are connected to hands free earphones, mouse, wireless keyboard. By using Bluetooth device the information from one device to another device. This technology has various functions and it is used commonly in the wireless communication market.

Bluetooth Technology

Advantages of Wireless Communication

- Any data or information can be transmitted faster and with a high speed
- Maintenance and installation is less cost for these networks.
- The internet can be accessed from anywhere wirelessly

- It is very helpful for workers, doctors working in remote areas as they can be in touch with medical centers.

Disadvantages of Wireless Communication

- An unauthorized person can easily capture the wireless signals which spread through the air.
- It is very important to secure the wireless network so that the information cannot be misused by unauthorized users

Applications of Wireless Communication

Applications of wireless communication involve security systems, television remote control, Wi-Fi, Cell phones, wireless power transfer, computer interface devices and various wireless communication based projects.

Wireless Communication Based Projects

Wireless communication based projects mainly include different technologies like Bluetooth, GPS, GSM, RFID and Zigbee projects which are listed below.

Wireless Communication Based Projects

- Android Based Smart Phone Used for Induction Motor Control

- Smart Phone Controlled Traffic Signal Override with Density Sensing System
- Arduino based Home Automation
- Phone Controlled Load Management System
- Robotic Vehicle Movement By Cell Phone
- Dialed Telephone Number LED Based Display System
- DTMF based Load Control System
- Dedicated Message Communication Wirelessly between Two Computers
- Wireless Message Communication between Two Computers
- Android based Remotely Programmable Sequential Load Operation
- Remotely Controlled Android based Electronic Notice Board
- Remote Operated Domestic Appliances Control by Android Application
- Remote Password Operated Security Control by Android Applications
- Home Automation by Android Application based Remote Control

Therefore, this is all about Types of wireless communication, these networks are one of the important technologies in the telecommunications market. WiFi, WiMax, Bluetooth, Femtocell, 3G and 4G are some of the most important standards of Wireless technology The information which is given in this article will be helpful to the viewers.Furthermore, any queries, suggestions or electronics projects, you can comment us by commenting in the comment section below.

Here is a question for you “What are the Advanced Technologies in Wireless Communication?”

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