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## Wireless Communication Changing the Lifestyle

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### ABSTRACT

Wireless communication is currently one of the engineering fields with the quickest rate of growth. The rapid growth of wireless communication devices, services, and applications has had a significant impact on how we live, work, and communicate. The vast and ever-evolving field of wireless communication has spurred incredible excitement and scientific advancements over the past few decades. The standards for wireless communication technologies are likely to rise steadily.

### **KEY WORDS**

Wireless Communication, data, transmission, message, information, technology.

### INTRODUCTION

Information transmission over a distance without the need of wires, cables, or other electrical conductors is known as wireless communication. Any method of connecting and exchanging information between two or more devices via a wireless signal using wireless communication technologies and equipment is referred to as wireless communication.



Simply said, wireless communication is a sort of communication that enables information sharing between two or more locations without the need for a physical connection, such as an electric cable or wire. Rather, electromagnetic waves at radio or micro frequencies are used in wireless communication. The foundation of modern mobile and Internet communication is (NATIONAL PEER REVIEWED E-RESEARCH JOURNAL)

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wireless communication. From a few meters, as with Bluetooth technology, to several thousand kilometers, as with the Internet, it can be utilised to facilitate communication over a broad range of distances.

## Wireless Communication: What Is It?

Wireless communication is the kind of communication that involves moving data from one location to another without the use of a wire, cable, optical fibre, or other physical connection or medium. Wireless communication uses radio frequency electromagnetic waves to transfer information rather than physical media. Its lack of physical restrictions enables information to be sent over great distances around the world.

The block diagram of a typical wireless communication system is depicted here -



It includes the following essential elements:-

**Information Source:** The device that produces the information that has to be sent is the information source. In wireless communication, a computer, POS system, cell phone, etc. are examples of information sources.

**Source Encoder:** The source encoder is in charge of converting the data from the source into a format that can be sent across the channel.

**Channel Coder:** This part protects the original data from transmission mistakes by adding extra bits to it.

**Modulator:** The modulator converts the data into a signal that may be sent across a wireless communication channel. It mixes a higher-energy carrier signal with the information stream. **Multiplexer:** A multiplexer is a component that enhances transmission efficiency and resource utilisation by combining numerous signals into a single signal.

**Propagation Channel:** It is the wireless medium through which information signals travel to the destination. In wireless communication, air or free space is used as the propagation channel.

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**Equalizer:** This component is employed for compensating the distortions in the information signal that might be caused during transmission through the propagation channel.

**Demodulator:** The demodulator is used in wireless communication to retrieve the original information from the received modulated signal. It separates the information signal from the carrier signal.

**Channel Decoder:** This component is provided to remove the extra bits added by the channel coder during transmission.

**Source Decoder:** This component performs reverse process of the source encoder and reconstructs the original information message sent by the information source.

**Information Sink:** It represents the destination of the transmitted information and is the device that receives the message.

## Wireless Communication Applications:-

Cellular networks use wireless communication as their backbone to send text, phone, and internet data between mobile devices and networks.

Smartphone, computers, tablets, and other devices may communicate wirelessly with one another thanks to Wi-Fi, or wireless local area networks.

Bluetooth and other wireless personal area networks also use wireless communication to enable short-range connectivity between devices such as smart watches, cell phones, headphones, keyboards, and mice. Systems for workplace and home automation also use wireless connection. Long-distance communication services like GPS navigation, TV or radio broadcasting, internet access in remote locations, etc., are based on satellite-based wireless communication.

Additionally, wireless communication is utilised to maintain connectivity during emergencies or natural disasters. The healthcare industry also uses wireless communication to deliver services like remote patient monitoring and consultation, telemedicine, etc.

### CONCLUSION

Wireless communication is a key technology that enables numerous devices and applications. From smart phones to the Internet of Things, it allows devices to connect and share information without requiring physical links, transforming how we engage with our surroundings. As technology keeps progressing, we can anticioate seeing even greater creative applications for wireless communication. Whether it's supporting new types of personal interactions, driving the next wave of IoT gadgets, or aiding space exploration ,wireless communication will undoubtedly be vital in the future of technology.

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