**ABSTRACT**

**WIRELESS COMMUNICATIONS**

Wireless communication is the transfer of information over a distance without the use of electrical conductors or "wires". The distances involved may be short (a few meters as in television remote control) or long (thousands or millions of kilometers for radio communications). Wireless communication is generally considered to be a branch of telecommunications.

It encompasses various types of fixed, mobile, and portable two-way radios, cellular telephones, personal digital assistants (PDAs), and wireless networking. Other examples of wireless technology include GPS units, garage door openers and or garage doors, wireless computer mice, keyboards and headsets, satellite television and cordless telephones.

Wireless operations permits services, such as long-range communications, that are impossible or impractical to implement with the use of wires. The term is commonly used in the telecommunications industry to refer to telecommunications systems (e.g. radio transmitters and receivers, remote controls, computer networks, network terminals, etc.) which use some form of energy (e.g. radio frequency (RF), infrared light, laser light, visible light, acoustic energy, etc.) to transfer information without the use of wires. Information is transferred in this manner over both short and long distances.

In 1895, Guglielmo Marconi opened the way for modern wireless communications by transmitting the three-dot Morse code for the letters over a distance of three kilometers using electromagnetic waves. From this beginning, wireless communications has developed into a key element of modern society.

From satellite transmission, radio and television broadcasting to the now ubiquitous mobile telephone, wireless communications has revolutionized the way societies function.

Wireless communications and the economic goods and services that utilise it have some special characteristics that have motivated specialised studies. First, wireless communications relies on a scarce resource namely, radio spectrum. Second, use of spectrum for wireless communications required the development of key complementary technologies; especially those that allowed higher frequencies to be utilised more efficiently. Finally, because of its special nature, the efficient use of spectrum required the coordinated development of standards. Those standards in turn played a critical role in the diffusion of technologies that relied on spectrum use.