

СУПУТНИКОВІ ЛІНІЇ ЗВ'ЯЗКУ

Топольська А.І.

Науковий керівник – викл. Рудницька Т.Г.

In satellite communication signal transferring between the sender and receiver is done by the satellite. In this process the signal which is basically a beam of modulated microwaves sent towards the satellite. Then the satellite amplifies the signal and sends it back to the receiver's antenna on the earth's surface.

Two types of satellites which are commonly used in satellite communication are active and passive satellites. Passive satellites are just plastic spheres with metal coating which reflect the coming microwave signals.

In active satellites also called transponders an antenna system, transmitter, power supply and a receiver are used. The signal modulated on the earth is transmitted to the transponder where it is amplified and stored in satellite's memory. Then signal is transmitted back to earth when earth properly faces the satellite.

Microwave communication is possible only if the position of satellite becomes stationary with respect to the position of earth. Requirements for such satellites are:

1. Its revolutionary direction must be same as that of the earth, i.e. from west to east.
2. The time period of satellite's revolution must be same to the time period of the rotation of earth along its polar axis, which is equal to 24 hours.

The name given to the orbit of the geo-stationary satellites is synchronous orbit. Its height is of nearly 36000 km from the surface of earth. Due to the curvature of earth we must have three geo-stationary satellites on these orbits inclined at an angle of 120° to each other in order to cover the whole earth surface.

Satellite communication can be used for gaining radio, television or Internet. Satellite radio is an analogue or digital radio signal that is relayed through one or more satellites and thus can be received in a much wider geographical area than terrestrial FM radio stations.

Satellite television is television programming delivered by the means of communications satellite and received by an outdoor antenna, usually a parabolic reflector generally referred to as a satellite dish. A satellite receiver can be either in the form of an external set-top box or a satellite tuner module built into a TV set. Satellite TV tuners are also available as a card or a USB peripheral to be attached to a personal computer.

Satellite Internet access is Internet access provided through satellites. Latest satellites can achieve speeds up to 18 Mbps. Satellite Internet generally relies on three primary components: a satellite in geostationary orbit, a number of ground stations known as gateways that relay the Internet signal to and from the satellite via microwaves, and a VSAT (Very-small-aperture terminal) dish antenna with transceiver, located at the user end. Other components of a satellite Internet system include a modem that translates the signal from and back to a computer, and a centralized Network operations center (NOC) for monitoring the entire system.