

Antenna wave propagation question with answers

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How is an antenna used for wave propagation? It is usually used with a radio transmitter or radio receiver. In transmission, a radio transmitter supplies an oscillating radio frequency electric current to the antenna's terminals, and the antenna radiates the energy from the current as electromagnetic waves (radio waves).

What are the modes of wave propagation in antenna? The effective area of an idealized isotropic antenna is 1, by definition. Wireless transmissions propagate in three modes: ground-wave, sky-wave, and line-of-sight. Ground wave propagation follows the contour of the earth, while sky wave propagation uses reflection by both earth and ionosphere.

What is the answer to the sky wave propagation? Sky waves are electromagnetic waves transmitting antennae emit and then receive after being reflected by the ionosphere. This method of propagation is known as sky wave propagation. The ionosphere's entire internal reflection of the electromagnetic waves causes the skywaves to propagate.

For which bands is space wave propagation suitable over 30 MHz? What frequency band does a space wave propagate in? Explanation: Frequencies in the 30 to 300 MHz range are reflected by space wave propagation. As a result, it propagates on the VHF frequency. 8.

What is the best antenna for ground wave propagation? Accordingly, an antenna that produces vertically polarized radiation (e.g., a vertical monopole) is superior to an antenna that produces horizontally polarized radiation (e.g., a

horizontal dipole) if one wishes to optimize ground wave propagation. Figure 1. Radiation emitted from an antenna on the Earth's surface.

What types of waves do antennas transmit? An antenna is a specialized transducer that converts electric current into electromagnetic (EM) waves or vice versa. Antennas are used to transmit and receive nonionizing EM fields, which include radio waves, microwaves, infrared radiation (IR) and visible light.

What is the formula for wave propagation? Waves travel through a medium at a specific speed. The wave propagation speed quantifies how fast the wave travels and is given by $v = f \lambda$, where v is the wave speed in meters per second (m/s), f is the frequency in hertz (Hz or 1/s), and λ is the wavelength in meters (m).

What is skip distance in an antenna? A skip distance is the distance a radio wave travels, usually including a hop in the ionosphere. A skip distance is a distance on the Earth's surface between the two points where radio waves from a transmitter, refracted downwards by different layers of the ionosphere, fall.

What type of wave is received by an antenna? An antenna is a device that transmits and/or receives electromagnetic energy. This energy can exist in the form of light waves, radio waves, cell phone signals, radar signals . . . even energy from other EM generating devices such as a microwave oven.

What is critical frequency in antenna wave propagation? Radio frequency waves propagate between transmitter and receiver using antennas. The radio frequency at or below, the wave gets reflected from ionosphere and above this frequency waves penetrate through ionospheric layer. This frequency is known as critical frequency.

How do you know which way a wave is propagating? directions of propagation. To find the direction of propagation of an E&M wave, point the fingers of the right hand in the direction of the electric field, curl them toward the direction of the magnetic field, and your thumb will point in the direction of propagation.

Which type of wave propagation employs the use of large antennas? Ground wave: Used for a low-frequency range transmission, mostly less than 1 MHz. This type of propagation employs the use of large antennas order of which is equivalent to the wavelength of the waves and uses the ground or Troposphere for its

propagation.

Which signal frequency is more effective for sky wave propagation?

Frequencies above 10 MHz (wavelengths shorter than 30 meters) typically propagate most efficiently during the day. Frequencies lower than 3 kHz have a wavelength longer than the distance between the Earth and the ionosphere. The maximum usable frequency for skywave propagation is strongly influenced by sunspot number.

Which mode of propagation is adopted in HF antennas? 30) Which mode of propagation is adopted in HF antennas? ANSWER: Ionospheric 31) For which band/s is the space wave propagation suitable over 30 MHz?

Which range is suitable for sky wave propagation? Complete answer: In sky wave propagation, the radio waves used lie between the ultra high frequencies and low frequencies. The range lies between 5 MHz to 25 MHz.

How can the antenna propagate the electromagnetic wave? Antennas radiate (or launch) EM waves. The waves propagate (travel) through space. A way to look at it as follows: As current moves, as is always the case, a magnetic field is created around the conductor and as that charge moves toward one end, an electric field builds up due to more charge being toward one end.

How does an antenna radiate waves? Antenna radiating radio waves: The transmitter applies an alternating current (red arrows) to the rods, which charges them alternately positive and negative, emitting loops of electric field. The arrows of the loops get reversed each time the current changes polarity.

How does an antenna detect electromagnetic waves? Usually an antenna detects either the oscillating electric fields or the oscillating magnetic fields. Remember that the energy in the wave is split equally between these two components of the wave. Antennas are generally either conducting rods or conducting loops.

What is the purpose of the antenna in the transmit process? An antenna is a device that is made out of a conductive, metallic material and has the purpose of transmitting and/or receiving electromagnetic waves, usually radio wave signals. The

purpose of transmitting and receiving radio waves is to communicate or broadcast information at the speed of light.

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