

# Transmission lines

## Read and learn new words

a transmission line – передающая линия

must be taken into account – необходимо учитывать

distributing signals – распространение сигналов

trunklines routing calls – магистральные линии маршрутизации звонков

coaxial cable – коаксиальный кабель

to confine - ограничивать

be bent – быть согнутым

be strapped – быть связанным

transverse electric and magnetic mode – поперечный электрический и магнитный режим

circumference - окружность

a cage line – клеточная линия

terrestrial - наземный

axis – ось

## Read and translate the text.

In communications and electronic engineering, a transmission line is a specialized cable or other structure designed to conduct alternating current of radio frequency, that is, currents with a frequency high enough that their wave nature must be taken into account. Transmission lines are used for purposes such as connecting radio transmitters and receivers with their antennas, distributing cable television signals, trunklines routing calls between telephone switching centres, computer network connections.

Coaxial lines confine virtually all of the electromagnetic wave to the area inside the cable. Coaxial lines can therefore be bent and twisted (subject to limits) without negative effects, and they can be strapped to conductive supports without inducing unwanted currents in them. In radio-frequency applications up to a few gigahertz, the wave propagates in the transverse electric and magnetic mode (TEM) only, which means that the electric and magnetic fields are both perpendicular to the direction of propagation (the electric field is radial, and the magnetic field is circumferential).

The most common use for coaxial cables is for television and other signals with bandwidth of multiple megahertz. In the middle 20th century they carried long distance telephone connections.

A type of transmission line called a cage line, used for high power, low frequency applications. Twisted pairs are commonly used for terrestrial telephone communications. In such cables, many pairs are grouped together in a single cable, from two to several thousand.

# Answer the questions.

1. What is a transmission line?
2. What are transmission lines used for?
3. What type of transmission lines are used for terrestrial telephone communication?

#### **Exercise 4. Верно или неверно?**

1. Terrestrial antennas are used for purposes such as connecting radio transmitters and receivers with their antennas.
2. Optical fiber can therefore be bent and twisted (subject to limits) without negative effects, and they can be strapped to conductive supports without inducing unwanted currents in them.
3. The most common use for coaxial cables is for television and other signals with bandwidth of multiple megahertz.
4. A type of transmission line called a virtual line, used for high power, low frequency applications.

#### **Exercise 5. Прочитайте и переведите предложения в Present Perfect. Поставьте эти предложения в отрицательную форму, задайте 4 типа вопросов к каждому предложению.**

1. Our engineers have already designed other structures to conduct alternating current of radio frequency.
2. We have used twisted pairs for terrestrial telephone communications.

Thank you for your attention.