

Types of antennas

Helical antenna

Helical antennas are composed of a wire that is conducting in nature and it is wound like a screw thread which assumes the shape of a helix, hence it is named so. The centre conductor is generally in contact with the helix and the outer conductor is joined to the ground plane.

Yagi Uda antenna

The main component that is integral in the Yagi Uda antenna is known as the driven element and placed parallel to it are the passive elements called as director and it is also known as beam antenna or super directive antenna.

Lens antenna

In this type of antenna, lenses are used as a medium for transmitting as well as receiving waves and they are employed for changing the spherical waves into planar waves which are alternately used as transmitter and receiver. Various dielectrics are used

as decelerating mediums and E- plane metal plates are used as accelerating mediums in this type of antennas.

Horn antennas

Horn antennas are based on the principle of using flared waves as guides for forming a wavefront that is bigger than the waveguide itself in a variety of shapes including E- plane, sectoral and pyramidal. Horn antennas are mainly used for calibration and large scale astronomical studies.

Sleeve antennas

In sleeve antennas, the radiation is in a plane that is at a right angle to its axis which is tied to a coaxial cable and it acts by unbalancing the transformation known as a balun.

Omnidirectional antennas

This type of antenna consists of a dipole which can be either a slotted cylinder or turnstile that is placed horizontally and bidirectionally in the vertical plane and a circular loop antenna is a source of getting an omnidirectional pattern of radiation.

Adaptive antennas

The type of antennas having the most complex arrangement is the adaptive antenna which is a network of interconnected antennas where each antenna is linked to a different trans receiver and a signal processor which controls the amount of signal that is received by each element based on the requirement.

Plasma antennas

In these types of antennas, by the application of radiofrequency along a column of low-pressure gas in a thin-walled glass tube, a plasma surface wave is obtained which is produced by a laser beam.

Ultra-wideband antennas

These types of antennas use the principle of phase dispersion of pulse and it is mainly used for the digital applications and degrading of signals. The transmission of pulses in ultra-wideband antennas occurs in large bandwidth and it happens at different instants of time.

GPR antennas

The radars containing these types of antennas are used for the detection of anomalies that are present below the ground such as buried objects which may be metallic or non-metallic. The power that is needed by these antennas is more as drilling the ground is a difficult medium and often mismatch occurs at the air to the ground interface.

Types of antenna connectors

Antennas with SMA connector

These types of connectors are small in size and are semi-precision threaded types and which are used to terminate the antennas of any designated frequency mainly used in wireless systems.

Antennas with RP-SMA connectors

These are similar to SMA connectors with the major differentiation factor being the reversal of the inner interface of the connector and hence it is known as reverse polarity (RP).

Antennas with N-type connector

This type of connector is put into use in antennas which requires transmission of radio frequencies in a wide range of external conditions and it has proven to be effective durable both in terms of performance as well as design.

Antennas with MMCX connector

The use of small snap-on connectors is the major specification of antennas with Micro-Miniature Coaxial (MMCX) connectors and they generally made of brass and its pins are surrounded by PTFE dielectric and its application is mainly in the areas of wireless communication.

Antennas with TNC connector

These types of connectors protect the antennas from shock as well as vibrations and they are also known for waterproofing. The insulators in these connectors are made from PTFE.

Antennas with RF- TNC connectors

The reverse polarity TNC connectors are mainly used in wireless products and cellular networking, radar as well as testing and measurements.

Antennas with U.FL connectors

A small radio frequency connector which is used for internal antennas is mainly applied where connectivity is required in congested spaces.

Antennas with FME connectors

These types of connectors are used in antennas where mobility is needed and it stands for For Mobile Equipment.

Types of antenna arrays

Broadside antenna array

It consists of parallel placement of identical elements at an angle of ninety degrees to the axis of the antenna forming a bidirectional radiation pattern often used in combination with a reflector antenna which reflects the transmitted wave in the backward direction.

Broadside antenna is the most widely used type of antenna array. Overseas broadcasting systems use broadside antenna arrays.

End -fire antenna array

Similar in the placement of elements to that of the broadside antenna array, the end-fire array is characterised by the elements are fed out of the phase and this type of arrangement provides the most possible amount of radiation to be generated thereby causing a unidirectional pattern of radiation along the direction of the axis of the array.

Collinear antenna array

The collinear antenna array consists of placement of elements in a single line ranging from one end to the other creating stacks one behind the other in either a vertical or horizontal orientation and it is mainly involved in the formation of omnidirectional radiation patterns.

Parasitic antenna array

This type of array involves feeding random elements of the array parasitically and leads to high directive gain and thus array type is essentially used in dealing with the problems associated with the feedline. The array elements which is directly fed is known as the driven element whereas the rest of them are known as parasitic elements which are excited by

electromagnetic coupling. Parasitic arrays are mainly found in Yagi Uda antennas.