



SNS COLLEGE OF ENGINEERING
(Autonomous)
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



19EC504 – TRANSMISSION LINES AND ANTENNAS

III YEAR/ V SEMESTER

UNIT 4 – SPECIAL ANTENNAS

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HORN ANTENNA



- A Horn Antenna or microwave Horn is an antenna that consists of a flaring metal waveguide shaped like a Horn to direct radio waves in a beam.
- Horns are widely used as antennas at UHF and microwave frequencies, above 300 MHz. A Horn Antenna is used to transmit radio waves from a waveguide (a metal pipe used to carry radio waves) out into space, or collect radio waves into waveguide for reception.
- Extension of waveguide in form of horn is called Horn Antenna.



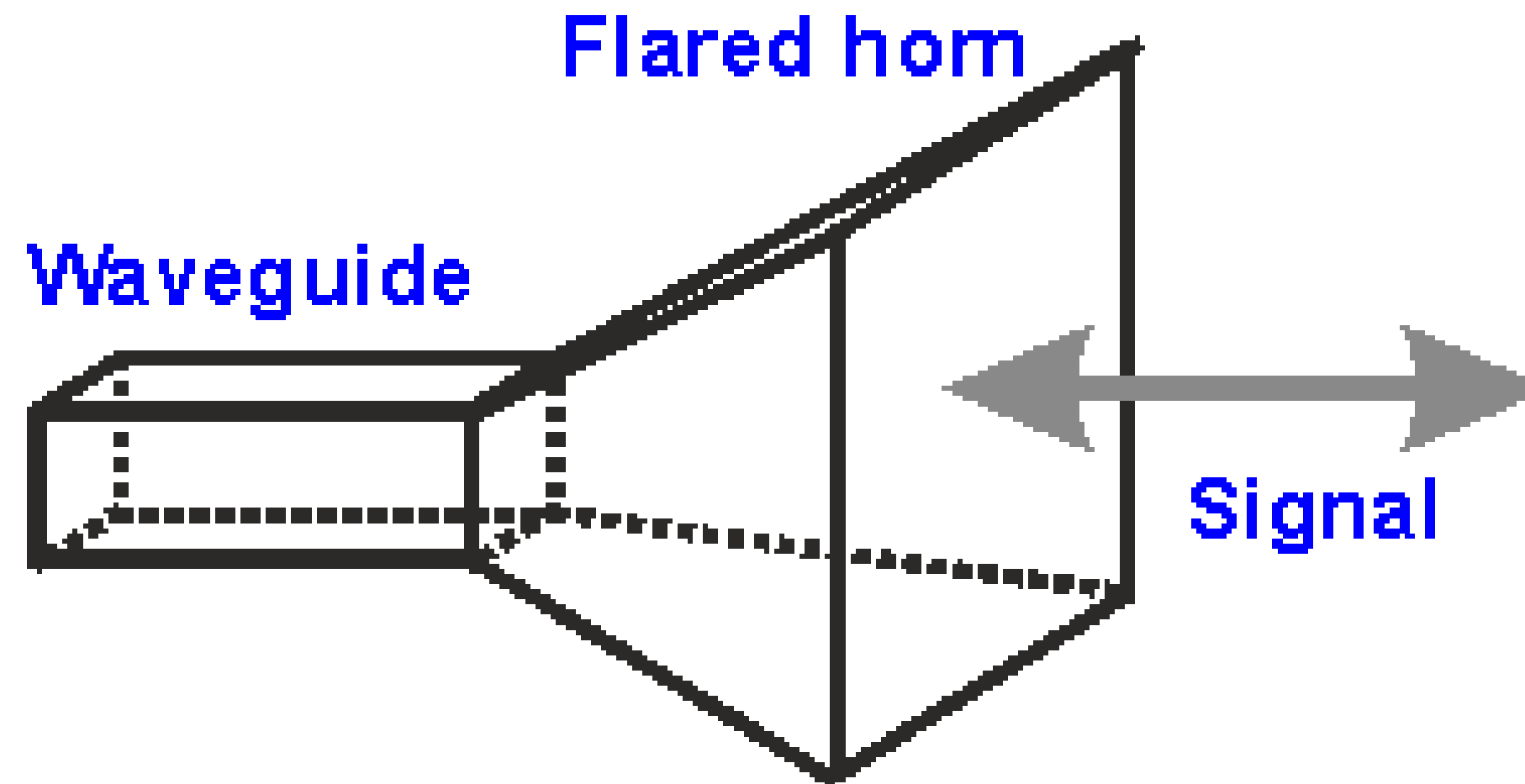
WORKING OF HORN ANTENNA



- A horn antenna serves the same function for electromagnetic waves that an acoustical horn does for sound waves in a musical instrument such as a trumpet.
- It provides a gradual transition structure to match the impedance of a tube to the impedance of free space, enabling the waves from the tube to radiate efficiently into space.



HORN ANTENNA REPRESENTATION





ADVANTAGES



Since these don't have any resonant elements, they can operate over wide range of frequencies, a wide bandwidth.

- The useable B.W of horn antennas is typically of the order 10:1, and can be up to 20:(ex: allowing it to operate from 1 GHz to 20 GHz)Gain of horn antennas ranges up to 25 Db
- Moderate directivity, low SWR,broad bandwidth, and simple construction and adjustment.



APPLICATIONS



- Used as feeders(feed horns) for larger structures such as parabolic antennas, as directive antennas for such devices as radar guns, automatic door & microwave radiometers.
- Used in calibration.
- Used for making electromagnetic interference measurements



THANK YOU