Abstract

This paper gives a basic review and a summary of old and recent advancements on Leaky Wave Antenna theory and design. Leaky waves have been among the most active areas of research in microwave engineering over the second half of the 20th century. A leaky wave is treated mathematically as a complex plane wave and the resulting radiation pattern is derived in terms of the complex propagation constant. In particular, the compatibility with the printed circuit board technology, their low profile, easiness of fabrication and integration with the other planar components are the strongest features of Leaky Wave Antennas. A LWA uses a guiding structure that supports wave propagation along the length of the structure, with the wave radiating or “leaking” continuously along the structure. Such antennas is classified into two categories, namely one-dimensional and two-dimensional variants. They radiate primarily at the end fire direction and broadside direction to get the maximum scan angle of the radiation beam and these antennas may be uniform, quasi-uniform, periodic. These antennas have many applications at the millimetre wavelengths, frequency scanning. In this paper, a summary of some recent advances for these types of structures is given. Recent advances include
structures that can scan end fire, structures that can scan broad side, and structures that are conformal to surfaces.

References

2. Prof. Stefano Maci, Dr. Andrea Neto, in Analysis and design of efficient planar leaky wave antennas.


Index Terms

Computer Science

Signal Processing

Keywords

Travelling wave antenna; leaky wave antenna; leaky wave; rectangular waveguide; end fire; broad side; frequency scanning