



Short communication

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Abstract: A dual band substrate integrated waveguide H plane sectoral horn antenna with reconfigurable radiation characteristics has been proposed in this paper. Designed antenna acts as a perfect broadside radiator at 16.1 GHz and perfect endfire radiator at 14.4 GHz frequency. Broadside radiation has been achieved by etching rectangular slots in the flared section of horn exhibiting a gain of 8.87 dBi. To achieve perfect endfire radiation, dielectric loading is done at the edge of horn and at this frequency antenna shows a gain of 11.3 dBi. The horn and the loaded dielectric are integrated by using the same single substrate resulting in easy fabrication and low cost. The proposed design has been fabricated and measured results are in good agreement with the simulated results.

Index terms: Substrate integrated waveguide antenna, leaky wave antenna, pattern reconfigurable antenna, horn antenna, Ku band antenna.

I-Introduction:

Substrate integrated waveguide (SIW) technology maintains most benefits of conventional waveguide and this is the reason why SIW has been a favourable prospect for high frequency components and circuits. The main advantages of SIW technology is its compact size, light weight, low profile, and easy fabrication. The SIW technology has been widely used to design leaky-wave antennas [1-6]. The SIW based leaky wave antennas have an easy structure that produces a narrow beam [7-8]. Leaky wave antennas scan its radiation pattern with change in frequency. In [2], a leaky wave antenna based on SIW technology with H shaped slots has been investigated. By using these slots the beam scans for all broadside angles with a maximum simulated gain of 16 dBi at some frequencies. Juhua Liu et. al. in [7] presented a SIW leaky wave antenna with transverse slots which scans from near endfire to complete broadside direction with frequency. The antenna is a slow wave structure near endfire. In [8], non uniform slots have been used on SIW to achieve leaky wave structure. Again the scanning angle with frequency is in the broadside direction. Souad Doucha in [9] used axial slots to design a leaky wave antenna at millimeter wave applications with scanning angles in broadside directions.

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