Exponential Antipodal Vivaldi Antenna With Exponential Dielectric Lens

ABSTRACT

- Wireless technologies expansion pose various requirements such as stable radiation characteristics in a wide frequency range.
- An exponential antipodal Vivaldi antenna (EAVA) with a dielectric lens replaced part of the substrate in antenna aperture; with dimensions of 76×130 mm2.
- The shape of the lens also follows exponential structure in its inner (where lens meets the antenna substrate) and outer edge. Using a dielectric with higher constant in the proposed antenna provides 1dB improvement in antenna gain and 24% of 3dB beam width reduction

EXISTING SYSTEM

- Ultra-wide band antennas are one such innovations which is seen as a promising technology for multiband systems.
- High-speed wireless communication, high-resolution imaging systems and RF jammer are examples of this systems. In many of these applications, there is a demand for stable radiation characteristics in the entire frequency band.
- Double Ridge Guide Horn (DRGH) is one type of the antennas that covers the mentioned characteristics.
- With the advent of microstrip structures and everyday growing demands for lightweight and small structures, a similar structure to DRGHs, known as planner Vivaldi antenna.

PROPOSED SYSTEM

- An exponential antipodal Vivaldi antenna with exponential dielectric lens (EAVA-EDL), for UWB and near-field imaging applications has been introduced.
- Proposed structure presents significant improvement in radiation characteristics of antenna. Employing a dielectric lens in exponential form poses 1dB increment in the antenna gain along with more stable radiation pattern
- The proposed antenna shows significant gain improvements in comparison with the literature with substrate of FR4.
- Presented structure proves stable radiation characteristics within whole frequency range; which makes it a good candidature for high resolution imaging applications

SOFTWARE REQUIREMENT

- Ansoft HFSS(High Frequency Structure Stimulator)
- CST

REFERENCES

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