A Circularly Polarized Frequency Beam Scanning Antenna Fed by Microstrip Spoof SPP Transmission Line

ABSTRACT

In this letter, a planar frequency beam scanning antenna (FBSA) with circularly polarized (CP) radiation property is proposed. The beam scans along the narrow side and in lateral plane of the antenna. The antenna consists of two layers: eight periodic symmetrical patches are presented on the top layer as radiation elements to generate CP beam; while microstrip spoof surface plasmon polariton (SPP) transmission line is used as the feeding line, which improves the beam scanning range obviously. The antenna has been fabricated and measured to verify the theory analysis. Measured results indicate that the main beam scans from -5° to +37° in lateral plane within the operating frequency band from 12 to 16.5 GHz, of which excellent CP characteristic is also realized. The peak gain of the antenna is about 9.5dBi over the whole band.

EXISTING SYSTEM

- In existing system, CP antenna using combined magnetic dipoles to obtain an endfire beam is proposed.
- However, periodical sub-wavelength structures are proposed to mimic SPP at the microwave and terahertz bandsrecently, which are called spoof SPPs.
- In, a frequency beam scanning antenna with a wide scanning angle of 55°and average gain of 9.8dBi was realized by introducing microstrip spoof SPP transmission line. It is the first planar LWA fed by SPP, breaking the limit of traditional LWA structure.

PROPOSED SYSTEM

- An 8-element planar CP lateral directional beam scanning antenna with beam scans along the narrow side is proposed.
- To design a CP LWA with beam scans along the narrow side of the substrate.
- The planar structure and enhanced scanning range made it available in planar integrated communication system such as unmanned aerial vehicle and low profile handheld RFID reader.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS:

- Processor - intel core i3
- RAM - 2GB
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS:

- Ansoft HFSS(High Frequency Structure Stimulator)

REFERENCE

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