

论文

一种新型小型圆极化GPS微带天线的设计与实现

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摘要:

设计制作了一种新颖的宽带EBG(Electromagnetic Bandgap)结构小型圆极化GPS微带贴片天线单元. 采用Koch矩形分形设计圆极化GPS微带贴片天线和特定尺寸的EBG结构, 一方面有效减小了天线单元的尺寸, 另一方面有效抑制其工作时产生的表面波, 改善了其工作性能. 仿真和实测结果表明, 相对于普通矩形结构的微带贴片天线单元, 该分形天线单元尺寸减小了约27%. 同时, 采用EBG结构使工作频率上的 3dB轴比带宽增加了约30%, 增益增加约 0.2dB.

关键词: 分形天线 圆极化 EBG结构 GPS天线

Design and implementation of a novel miniaturized circularly polarized GPS microstrip antenna

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Abstract:

A novel miniaturized circularly polarized microstrip antenna with the EBG structure for GPS applications is designed and constructed. The size of the circularly polarized GPS microstrip antenna designed by the Koch rectangle fractal is reduced considerably. And the properties of bandwidth and gain are improved effectively due to the introduction of given size EGB designed by the Koch rectangle fractal. Simulation and experimental results show that, compared with the conventional rectangle structure, the proposed antenna has reduced the size by 27%, and increased the axial-ratio bandwidth by about 30% as well as the gain by 0.2dB due to the application of the EBG structure.

Keywords: fractal antenna circularly polarized EBG structure GPS antennas

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