

航天电子技术

低雷达截面的新型超宽带单极子天线

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摘要:

针对超宽带天线的隐身问题,设计了一种新型的超宽带低雷达截面的单极子天线。测试结果显示天线-10 dB带宽范围为2.2~10.4 GHz,天线在2.5 GHz和8 GHz的方向图对称性良好。相比于参考天线,该新型天线的雷达截面(radar cross section, RCS)在带内的大多数频点实现了有效减缩。在最大增益损失不超过1 dB的情况下,实现了两个不同入射方向RCS的最大减缩量分别为6.4 dBsm和17.9 dBsm。该天线可应用于超宽带隐身平台上。

关键词: 雷达截面 超宽带 单极子天线

Novel ultra-wideband monopole antenna with low RCS

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Abstract:

To solve the problem of ultra-wideband (UWB) antennas in stealth, a novel UWB monopole antenna with low RCS is designed. The measured results show that the range of the -10 dB impedance bandwidth is from 2.2 to 10.4 GHz, and the symmetry of radiation patterns in 2.5 and 8 GHz is well. In comparison with the reference antenna, the RCS of the novel antenna has achieved effective reduction in most of the frequencies. With its largest gain loss about 1 dB in the whole operating frequencies, the largest values in RCS reduction with two different incident waves are 6.4 dBsm and 17.9 dBsm, respectively. This novel antenna can be applied in the UWB stealthy platform.

Keywords: radar cross section (RCS) ultra-wideband (UWB)-monopole antenna

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