

论文

终端天线性能一致性检测系统研究

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摘要:

将微扰谐振理论进行推广,得到了天线的特性参数与将其放入谐振腔后谐振腔的谐振频率二者之间是线性相关的结论。并用实验方法对该理论进行了验证,选取天线的谐振频率作为特性参数进行实际测量,然后将测量结果与将天线放入谐振腔后所测的谐振腔的谐振频率进行相关性分析,结果表明二者是线性相关的,其相关系数大于0.93。根据这一推广的微扰谐振理论,建立了一套天线性能一致性检测系统,该系统可以对大批量天线进行快速地逐个测量,单次测量时间小于10s。该系统可对小型天线性能的一致性进行检测,还可对其他小体积样品的特性进行测量。

关键词: 微扰理论 谐振腔 天线测量 性能一致性

Research on the measurement system for terminal antenna quality conformability

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Abstract:

The resonance perturbation theory is extended in this paper, and the result could be deduced that the antenna performance in the free space and the resonance frequency of the cavity and antenna system (the antenna is placed in the cavity) are correlative. A new experimentation is designed to verify the correlation between the antenna resonance frequency of antenna and the cavity-antenna system. Experimental results show the correlation coefficient is above 0.93, which proves that the deduced theory is correct. Based on such a theory, a measurement system for terminal antenna quality conformability is developed. The terminal antenna which is produced by the industrialization process could be measured quickly and accurately with this system, and the duration of measurement is less than 10s. So the measurement efficiency could be improved greatly. Besides the small antenna conformability, this system could be used to measure the specification of other small samples such as cable connector.

Keywords: perturbation theory resonance cavity antenna measurement quality conformability

收稿日期 2008-06-16 修回日期 网络版发布日期 2009-07-01

DOI:

基金项目:

国家自然科学基金资助(30870577)

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