

航天电子技术

微波毫米波辐射计宽带亮温定标系统研究

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摘要:

构建了国内首套微波毫米波辐射计宽带亮温定标系统, 该系统由宽带标准黑体定标源、Dicke式标准辐射计、空间法黑体定标源发射率测量转台、高精度控温和测温装置组成。使国内具备了10 GHz~220 GHz频段辐射计校准、黑体定标源输出亮温值校准、微波亮温定标过程不确定度分析能力的实验研究平台。最后基于建立的微波辐射计定标系统亮温传递模型, 给出了更为细致的随定标环境温度变化的微波亮温系统测量不确定度分析结果。

关键词: 微波遥感 微波亮温 黑体定标源 Dicke式辐射计

Research on microwave and millimeter wave radiometer wideband brightness temperature calibration system

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Abstract:

The microwave and millimeter wave radiometer wideband brightness temperature calibration system is established originally in China, which is composed of the wideband blackbody calibration targets, the Dicke type radiometer, the rotary table for space method of blackbody emissivity measurement, the high precision temperature control and measurement equipment. The research and calibration experimental platform is constructed to realize the calibration of microwave and millimeterwave radiometer, the calibration of blackbody calibration target' s output microwave brightness and the uncertainty analysis of microwave brightness calibration procedure in the 10 GHz to 220 GHz band. Finally, on the basis of the brightness transmission model of the microwave radiometer' s calibration system, the system level uncertainty is analyzed more accurately with the variation of the environment temperature.

Keywords: microwave remote sensing microwave brightness blackbody calibration target Dicke type radiometer

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2011.04.08

基金项目:

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