

夜视技术

CCD在微光夜视瞄准镜检测系统中的应用

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摘要 多环境试验条件下的微光枪瞄检测技术一直是军备生产所关注的问题。由于在振动、射击、冲击、跌落和高低温环境等载荷作用下, 微光枪瞄机械、光学和电性能结构及参数会发生改变, 致使微光枪瞄不能正常工作和使用, 所以设计了多环境试验条件下的微光枪瞄检测与测试系统。对测试系统的光路进行了规划, 即对被检查对象(微光枪瞄)的安装要求是微光枪瞄的物镜应置于平行光管出射光口的

“较近处”。给出了由CCD组成检测系统的工作原理, 分析了系统成像的详细过程。通过对平行光管和CCD变焦镜焦距计算, 并结合实际工程应用, 使该检测系统的测量精度(≤ 0.05 密位)和测量范围(≥ 40 密位)均满足了项目使用要求。

关键词 [系统成像](#) [CCD](#) [微光瞄准镜](#) [光学设计](#)

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Application of CCD in detection system for low-light-level night-vision sight

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Abstract The low-light-level (LLL) weapon sight measurement under different environment conditions are always interested by military equipment manufacturers. Due to the impact of shock, vibration, shooting, high temperature or low temperature environment as well as other environmental factors, the mechanics, optics and electric performance of the LLL sights will be changed, and the LLL sights can't function properly. A test and measurement device was designed to test weapon LLL sights operating in different test conditions. The working principle of the detection system established with CCD is given, and the detailed imaging process of the system is analyzed. Based on the calculation of the focal length for the collimator and CCD zoom lens as well as the practical application, the system is deigned with measurment accuracy better than 0.05 mil and the measuring range greater than 40 mil.

Key words [system imaging](#) [CCD](#) [LLL sight](#) [optical design](#)

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