

RSA-MIL-SPEC-22

BLUE GREEN LIGHTING FOR MILITARY LAND VEHICLES, SPECIFICATION FOR

SCOPE

1. Introduction

Red interior lighting systems have been used in the past in various military land, sea and air systems to illuminate work areas and instruments because of the advantages it held regarding dark adaptation and peripheral sensitivity of the human eye. Research showed, however, that red lighting causes “red-light blindness” as well as eye fatigue after prolonged exposures. The advent of sophisticated night vision equipment brought a problem of detectability. The third-generation image intensifiers used in modern night vision equipment detect red light very clearly. In addition, the vehicle or craft’s own night vision equipment, such as the driver’s night goggles, can be rendered useless by the presence of red light in the cabin. The reason for the shift from red light to blue-green light is that third-generation night vision equipment sees a spectrum of light extending from yellow-orange through visible red and infra-red. The intensifier tubes of these night vision systems cut off at a wavelength of 600 nm. The solution is to use a light source that provides light extending from the blue part of the spectrum and cuts off at a wavelength less than 600 nm. Such a light would be invisible to third-generation enemy night vision equipment, and for the same reason will not interfere with own night vision equipment. Blue-green lighting systems allows drivers and pilots to operate in night conditions while the interior lighting is switched on to, for example, read maps. Ergonomics research shows that visual acuity and contrast sensitivity are not affected by the difference in red or blue-green light at the same photopic intensity. Blue-green lighting causes less eye fatigue than red lighting, and the difference in dark adaptation is small at low intensity light levels.

2. Purpose

The purpose is to establish a source of specification information for the performance, physical and test requirements of blue-green interior lighting systems, and is generic for all new military land vehicle developments and other applications.

3. Application

This specification shall be applicable to the design and procurement of all new interior lighting systems for all military land vehicles and other applications for use by the South African National Defence Force.