N2D

Tester of night vision periscopes

Fig.1. Photo of N2D test station

Basic information

Night vision periscope is a binocular night observation device designed to enable observation in wide field of view (from about 30º to 40º) for crews of mechanical vehicles.

Testing night vision periscopes using standard systems for testing NVDs is difficult due to non typical periscope design. This design creates necessity to use large aperture collimators in order to project test images to both channels of tested night vision periscope.

N2D test station enables to carry out focus checking and measurement of two most important parameters of night vision periscopes: resolution and collimation error. The latter parameter can be measured in both horizontal and vertical planes.

How it works

N2D station works as an image projector that project into direction of tested periscope images of two targets: a)resolution target, b)cross target. Image of the first target is directly evaluated by the observer and resolution is determined. Image of the second target is evaluated using an optical bridge that combines images from two channels into a single image. The observer evaluates relative displacement of two crosses and quickly determines collimation errors of tested periscope.

The station simulates targets at distance in optical infinity. Simulated distance can be changed to 50 m or to 25 m (option).

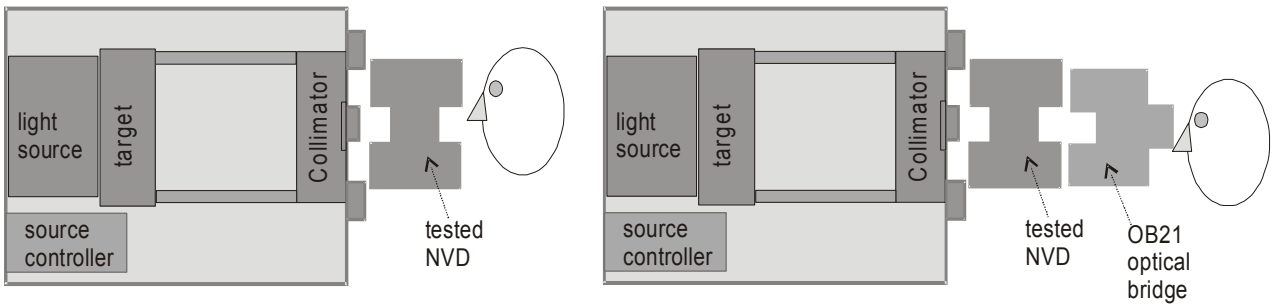

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Fig.2. Resolution measurement

Fig 3. Measurement of collimation errors

Test capabilities:

Following tests or measurement of night vision periscopes

1. focus checking
2. measurement of resolution
3. measurement of collimation error (horizontal and vertical)

Technical specifications

Blocks:	Base module BINO, set of targets, optical bridge OB21, power supply DC12V.
Collimator type	Refractive
Projection type	Two channels
Aperture of a single channel	30 mm
Collimator focal length	600 mm
Collimator aperture	120mm
Collimator resolution	At least 40 lp/mrad
Simulated distance	Optical infinity (option 50m or 25 m)
Light source	Monochromatic, 650 nm
Dynamic of regulation of light source	At least 10000 (approximate range from 1 mlx to 10lx
Temporal stability	Better than 1%
Targets	1)Resolution target, 2)Cross target
Resolution target	Negative contrast USAF1951, spatial range at least 0.5 lp/mrad to 2 lp/mrad
Cross target	Multi point cross target, point distance – 10 angular minutes
Internal collimation error of OB21 optical bridge	Below 10 angular minutes
Power supply	230 VAC 50/60 Hz (or DC12)
Work temperature	5°C to 40°C
Storage temperature	-5°C to 50°C
Mass	12 kg
Dimension	300×440×300 mm

*specifications are subject to change without prior notice

Version 2.1

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