

OPAL

MAINTENANCE TEST BENCH FOR MILITARY EQUIPMENT



> A VERSATILE AND PORTABLE TEST BENCH

OPAL is a **multispectral portable bench** dedicated to the **test** and the **maintenance** of **military EO devices**. It has been designed to be robust and very easy to use, be it in a lab or on the field. OPAL is based on a compact collimator for **field application** and includes infrared and visible reference sources such as a blackbody and an integrating sphere source, as well as specific targets and filters.

The **modular and versatile** configuration of OPAL, associated with dedicated exhaustive test software **Infratest** and ruggedized PC, make it compatible with the main light EO devices on the market. It enables the testing of :

- Thermal & SWIR imagers (1 - 2.5 μm / 3 - 5 μm / 8 - 14 μm)
- Night vision and day goggles
- Missile seekers
- Multispectral portable devices
- Weapon sights and clip-on equipped with Thermal Imager, Intensifier Tubes modules

> AVAILABLE TESTS

- Test for IR Devices
- Test for Night Vision Devices (NVD) / Visible Devices
- Test for Multispectral Devices (IR / Visible/ NVD)

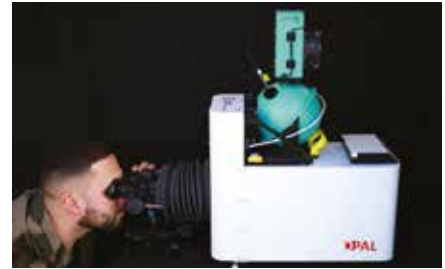
	OPAL-IR	OPAL-NV	OPAL-CRYSTAL
Noise Tests (Temporal/ Fixed Pattern/ 3D)*	● ¹		● ¹
SITF	● ¹		● ¹
NETD	● ¹		● ¹
NUC	● ¹		● ¹
Detection and correction of Bad Pixels	● ¹		● ¹
Resolution with 4 bar target	●		●
MRTD and DRI	● ¹		● ¹
Spatial resolution (USAF target)		●	●
MRC (USAF Targets with contrast)		● ²	● ²
Spot defect detection (automatic)		● ²	● ²
Noise Tests (Temporal / Fixed Pattern / 3D)		● ²	● ²
Gain		● ²	● ²
Collimation test (parallelism of bi-tubes NVG)		● ²	● ²
MTF (IR / NV / Visible)	● ¹	● ²	● ¹²
Boresighting (IR / NV / Visible)			●

1. Through analysis of video output channel of the UUT by **Infratest Camera Pack**.

2. With **Infratest Night Vision pack** including the eye camera collecting high resolution images through the eyepiece.



OPAL-NV testing night vision rifle scope



OPAL CRYSTAL configurations
With IR camera & NV goggles

> TECHNICAL SPECIFICATIONS

Aperture	100 mm
Focal length	635 mm
Field of view	2.2°
Spectral range	0.4 to 14µm
Spatial resolution of the collimator	50 cy/mrad (diffraction limited)
Operating temperature range	+15°C to +35°C
Packaging for transportation	Compliant with AECTP 400 NATO publication (recorded in STANAG 4370)
Weight with packaging	(OPAL-CRYSTAL): 100kg in 4 cases (each case is easily carried by two people)
Power consumption	800 W
Power supply	100-240 VAC, 50/60 Hz
Computer Interfaces	Ethernet, RS-232, IEEE-488
Compatible video communication links for Thermal Imagers	Analog: CCIR, RS170, PAL, NTSC Digital: Gigabit Ethernet, CameraLink, 3G SDI, HD SDI, SD SDI, DVI, HDMI, USB 3 Vision
Irradiance simulation	From 0.2 mlux (Night Level 5 - Overcast starlight) to 4 lux (Day Light) Lower irradiance available on demand
Targets and filters	Target & filter manually interchangeable (one position for each) Storage for 6 targets or filters



Target manually interchangeable

> SOURCES

Blackbody: DCN1000H2
Included with OPAL-IR and OPAL-CRYSTAL

Blackbody Temperature range (at 20°C ambient temp.)	Absolute: -15°C to +150°C Differential: -35°C to +130°C
Stability	0.5 mK
Thermal uniformity	0.01°C at ambient +/- 5°C and 0.1°C at 50°C
Temperature measurement accuracy	Absolute mode: +/- 0.03°C Differential mode: +/- 0.01°C
Targets	One 4 bar target

Integrating Sphere: ISV210-F
Included with OPAL-NV and OPAL-CRYSTAL

Maximum luminance	7000 cd/m²
Luminance stability	< 0.1% or < 1 cd/m² whichever is greater
Luminance uniformity	> 98%
Color Temperature	2856K +/- 100K (other on demand)
Targets	One hole for alignment tests USAF 1951
Filter	One ND filter