LWAL

System for testing laser warning systems

Fig. 1. LWAL test system

1 What is laser warning system?

A laser warning systems (LWS) is a warning system that detects and optionally locates directions of incoming laser emissions from potentially dangerous laser systems (laser designators, laser range finders, laser pointers). LWS are used in big numbers as a crucial part of active protection systems of military targets (aircraft, helicopters, ships, vehicles) or important civilian infrastructure. In detail, LWS is to activate various countermeasures like smoke, laser dazzlers, or weapons that enable protection of important military or civilian targets.
Requirements on laser warning systems depends mainly on type of laser range finder/designator to be detected. Old type LWS can detect only LRFs/designators built using high power- low frequency pulse lasers. Modern LWS can detect both LRFs/designators built using high power- low frequency pulse lasers (mono-pulse lasers) and LRFs/designators built using low power- high frequency pulse lasers (multi-pulse lasers).

2 What is LWAL system?

LWAL is a calibrated pulse laser illuminator that can be used in a series of applications. One of such applications is to work as a portable system for testing laser warning systems. It emits near directional light beam that irradiates single block of tested LWS located several meters from the test crew (typical range is from 3m to 10m).
LWAL can be used for testing both two main groups of laser range finders/designators: 1) mono-pulse LRFs/designators, 2) multi-pulse LRFs.

3 Test capabilities

LWAL enables measurement two main parameters of LWS: minimal detectable irradiation, accuracy of detection angular direction of incoming laser beam. Measurement data can be used to calculate conditions when simulated laser system (LRF/designator) can activate laser warning system.

4 Modes of work

From design point of view LWAL can work in two modes:
LWAL-A works emitting high power/low frequency laser pulses (mode A).
LWAL-B works emitting low power/ high frequency laser pulses (mode B).

5 Technical specifications

Table. 1. Parameters of LWAL working in mode A

Parameter	Value
Spectral band of laser source	1540nm (option: 1060nm or other)
Time width of light beam	Non regulated about 15ns
PRF	At least 1 Hz
Range of intensity regulation	At least 5 – 50 kW/m²
Type of regulation	Step (four values)
Diameter of irradiance beam	At least 250mm at reference work distance (typically 4m)
Uniformity of irradiation	±15% w center 75% diameter ±20% in total field

Table. 2. Parameters of LWAL working in mode B

Parameter	Value
Spectral band of laser source	1060nm (option: 1550nm)
Time width of light beam	regulated 5 – 100ns
PRF	0.1kHz do 10 kHz
Range of intensity regulation	0.1W/m² do 20 W/m²
Type of regulation	Continuous (any value)
Diameter of irradiance beam	At least 250mm at reference work distance (typically 4m)
Uniformity of irradiation	±15% w center 75% diameter ±20% in total field

6 Versions

LWAL can be delivered in three main versions of different design and test capabilities:

1. LWAL-A for testing LWAS irradiated by mono-pulse lasers (majority of LRF/designators),
2. LWAL-B for testing LWAS irradiated by multi-pulse LRFs,
3. LWAL-AB for testing LWAS irradiated by both mono-pulse lasers and multi-pulse LRFs.

LWAL-AB can be treated as fusion of LWAL-A and LWAL-B. Changing test capability of LWAL-AB is achieved by exchange of light source module.

CONTACT: Tel: +48 22 6668780 Fax: +48 22 3987244 Email: info@inframet.com