

SO0001



# LASER-INDUCED DAMAGE THRESHOLD (LIDT) MEASUREMENT REPORT

## DAMAGE CERTIFICATION (ISO 21254-3) TEST PROCEDURE

Sample: Sample

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### Request from

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Address	Company
	Address Line 1
	Address Line 2
	Country
Contact person	Name Surname
Inquiry ID	Inquiry ID: 0001
Purchase order	-

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### Testing institute

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Address	UAB Lidaris
	Saulėtekio al. 10
	10223 Vilnius
	Lithuania
Tester	Name Surname
Test date	01/01/2021
Sale order	SO0001
Test ID	-

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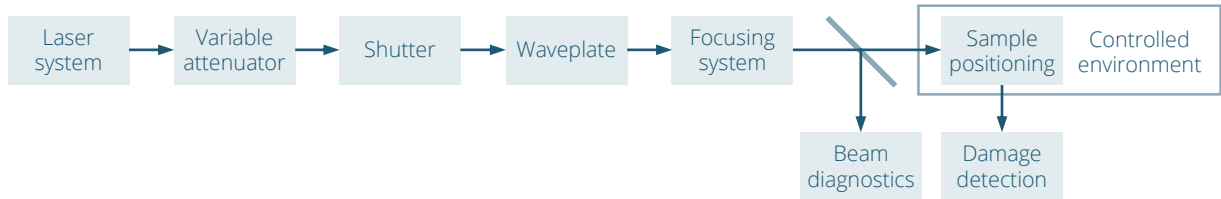
### Specimen

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Name	Sample
Type	AR Coating (AR @ 1064nm)
Dimensions	7.0 x 7.0 x 7.0 mm
Packaging	Membrane box

# TEST EQUIPMENT

## Test setup



## Laser and its parameters

Type	Q-switched, seeded Nd:YAG
Manufacturer	InnoLas Laser II
Model	SpitLight Hybrid
Central wavelength	1064.0 nm
Angle of incidence	0.0 deg
Polarization state	Linear
Pulse repetition frequency	100 Hz
Spatial beam profile in target plane	TEM00
Beam diameter in target plane (1/e <sup>2</sup> )	(994.0 ± 5.5) μm
Longitudinal pulse profile	Single longitudinal mode
Pulse duration (FWHM)	(9.9 ± 0.3) ns
Pulse to pulse energy stability (SD)	1.0 %

## Energy/power meter

Manufacturer	Ophir
Model	PE50-DIF-C
Calibration due date	2021-06-01

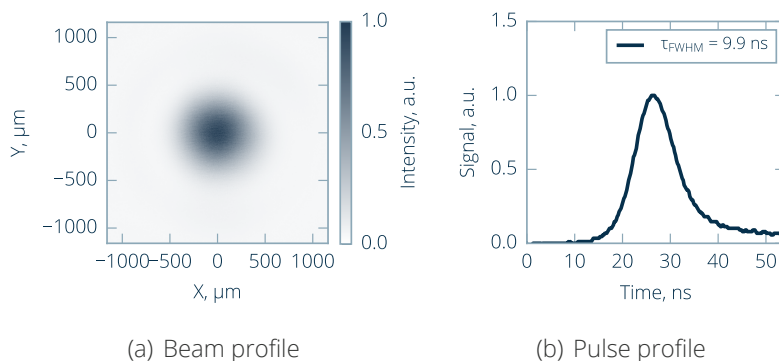


Figure 1. Laser parameters used for measurements.

# TEST SPECIFICATION

## Definitions and test description

Laser-induced damage (LID) is defined as any permanent laser radiation induced change in the characteristics of the surface/bulk of the specimen which can be observed by an inspection technique and at a sensitivity related to the intended operation of the product concerned. Laser-induced damage threshold (LIDT) is defined as the highest quantity of laser radiation incident upon the optical component for which the extrapolated probability of damage is zero.<sup>1</sup>

Fluence handling capability of the sample is investigated by performing a standardized test procedure.<sup>2</sup>

## Test sites

Assurance value	10 J/cm <sup>2</sup>
Number of sites	10
Arrangement of sites	Rectangular
Minimum distance between sites	1300 μm
Maximum pulses per site	1000

## Analysis information

Online detection	Scattered light diode
Offline detection	Nomarski microscope
Software version	d8e8d53 - b70360c

## Test environment

Environment	Air
Cleanroom class (ISO 14644-1)	ISO7
Pressure	1 bar
Temperature	21.3 - 21.5 C
Humidity	14.7 - 14.8 %

## Sample preparation

Storage before test	Normal laboratory conditions
Dust blow-off	Compressed air
Cleaning	None

<sup>1</sup>ISO 21254-1:2011: Lasers and laser-related equipment - Test methods for laser-induced damage threshold - Part 1: Definitions and general principles, International Organization for Standardization, Geneva, Switzerland (2011)

<sup>2</sup>ISO 21254-3:2011: Lasers and laser-related equipment - Test methods for laser-induced damage threshold - Part 3: Assurance of laser power (energy) handling capabilities, International Organization for Standardization, Geneva, Switzerland (2011)

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# LIDT TEST RESULTS

## FLUENCE HANDLING CAPABILITY

Table 1: Fluence handling capability of sample Sample.

Fluence	Pulses	Result
$(10.00 \pm 0.33) \text{ J/cm}^2$	1000	Passed