

LASER-INDUCED DAMAGE THRESHOLD (LIDT) MEASUREMENT REPORT

R-ON-1 (CONDITIONING) TEST PROCEDURE

SAMPLE: M0075631 LOT0058846 SU012564

Request from

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Purchase order	PU0015930-AVA

Testing institute

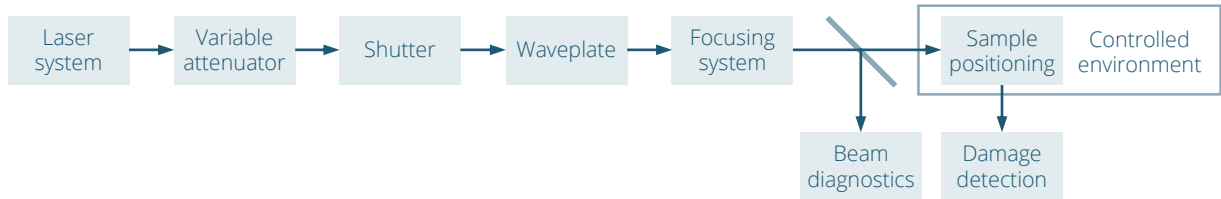
Address	UAB Lidaris Saulėtekio al. 10 10223 Vilnius Lithuania
Tester	Egidijus Pupka
Test date	2020-01-14
Sale order	SO1612
Test ID	K5MZMK

Specimen

Name	M0075631 LOT0058846 SU012564
Type	AR Coating (AR<0.25% @1895-1925+2060-2120, AOI=0-2°)
Packaging	Membrane box

TEST EQUIPMENT

Test setup



Laser and its parameters

Type	Q-switched, seeded Nd:YAG
Manufacturer	InnoLas Laser II
Model	SpitLight Hybrid with OPO
Central wavelength	2090.0 nm
Angle of incidence	0.0 deg
Polarization state	Linear
Pulse repetition frequency	100 Hz
Spatial beam profile in target plane	Near Gaussian
Beam diameter in target plane (1/e ²)	(181.9 ± 5.9) μm
Longitudinal pulse profile	Single longitudinal mode
Pulse duration (FWHM)	(4.3 ± 0.3) ns
Pulse to pulse energy stability (SD)	4.6 %

Energy/power meter

Manufacturer	Ophir
Model	PE50-DIF-C
Calibration due date	2020-07-01

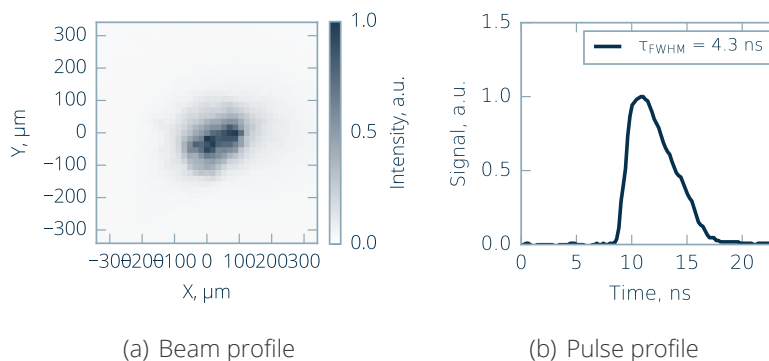


Figure 1. Laser parameters used for measurements.

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. ¹

R-on-1 test uses multiple pulses when irradiating single site of the sample. Starting from very low values fluence is constantly increased step by step until damage is reached.

Test sites

Number of sites	10
Arrangement of sites	Rectangular
Minimum distance between sites	800 µm
Start fluence	0.50
Fluence step	0.50
Pulses per fluence level	1000

Damage detection

Online	Scattered light diode
Offline	Nomarski microscope

Test environment

Environment	Air
Cleanroom class (ISO 14644-1)	ISO7
Pressure	1 bar
Temperature	23 C
Humidity	27 %

Sample preparation

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

¹ISO 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)

LIDT TEST RESULTS

R-ON-1 LIDT

Table 1: Evaluated R-on-1 LIDT for sample M0075631 LOT0058846 SU012564.

Test mode	Threshold
R(1000)-on-1	$>19.98^{+0.62}_{-0.62}$ J/cm ²

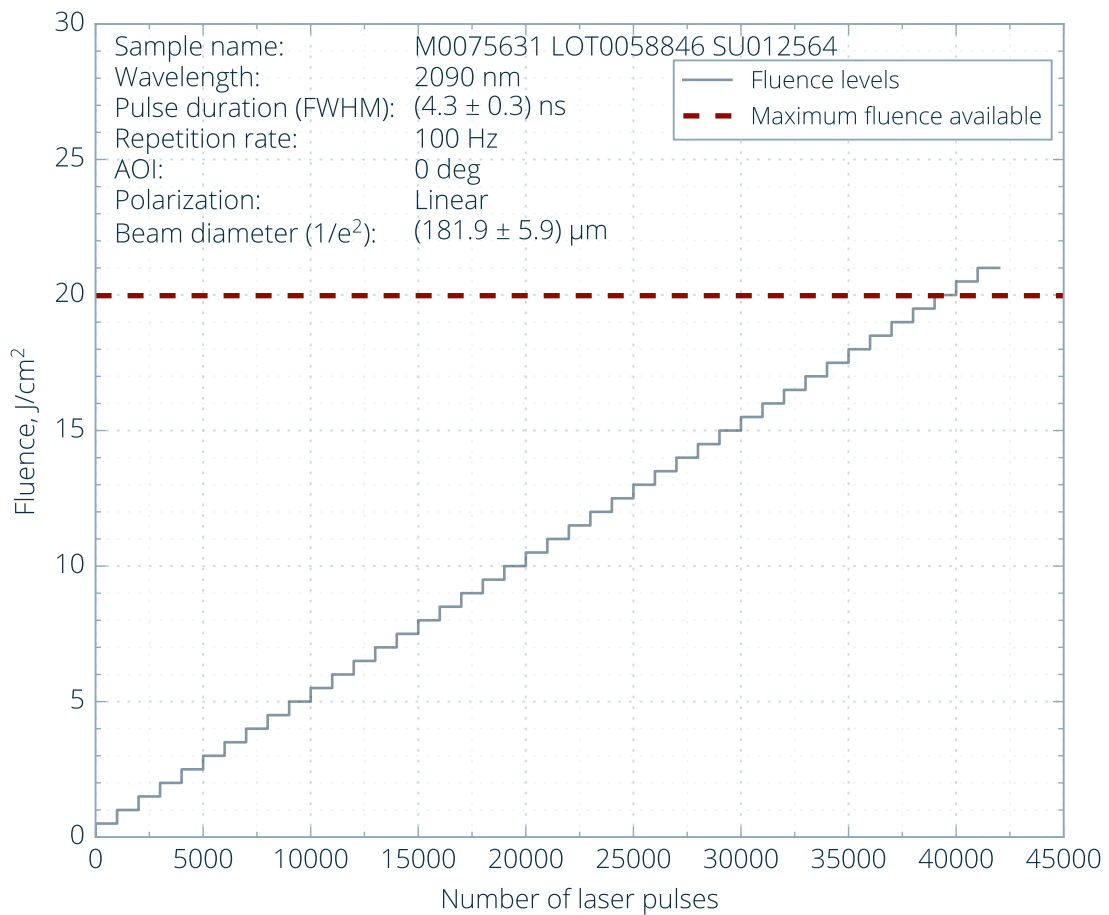


Figure 2. R-on-1 test results.