

Laser-Induced Damage Threshold (LIDT) Measurement Report

ISO21254-2: S-on-1 Test Procedure

Sample: RTP 15124602003

Request from:

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Testing institute:

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Tester/date:

E. Pupka / 2015-08-03

Specimen

Name of sample:

RTP 15124602003

Type of specimen:

RTP 9x9x10mm

Storage, cleaning:

Plastic box, dust blown off with compressed air

Test specification

First harmonic of pulsed Nd:YAG InnoLas Laser: SpitLight Hybrid laser ($\lambda = 1064$ nm, linear polarization, pulse duration 10.6 ns), $\lambda/2$ plate combined with additional polarizer attenuator, online scattered light damage detection, offline inspection of damage detection using Nomarski microscopy (100x).

Laser parameters used for testing

Wavelength:	1064 nm
Angle of incidence:	0 deg.
Polarization state:	linear
Pulse repetition frequency:	100 Hz
Spatial beam profile in target plane:	TEM ₀₀
Longitudinal beam profile:	Single mode (SLM)
Beam diameter in target plane ($1/e^2$):	228.0 \pm 4.8 μ m (average from 64 pulses)
Pulse duration:	10.6 ns

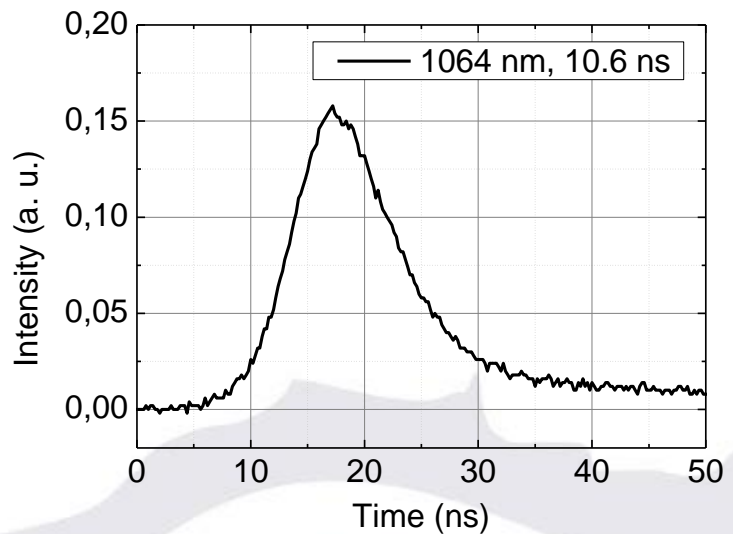
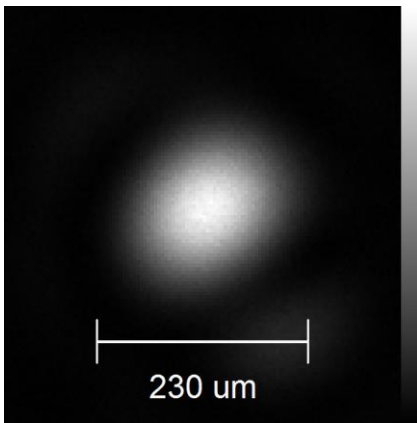


Fig. 1. Spatial beam profile in target plane (left) and oscilloscope trace (right).

Test procedure:

Number of sites per specimen:
Arrangement of test sites:
Minimum distance between sites:
Damage detection:
Storage of the specimen:
Test environment:
Cleaning:
Definition of LIDT:

S-on-1 test

91
Equally spaced
782 μm
Scattered light diode
Plastic box
Industrial environment
Compressed air
Nonlinear fit to 0% of damage probability

Test result:

Table 1. Summarized LIDT's for RTP 15124602003

Test mode	Threshold, J/cm ²
10-on-1	19.50 ≤ 23.39 ≤ 26.18
1000-on-1	11.54 ≤ 14.02 ≤ 15.71

Measured at LIDARIS 2015-08-03

www.lidaris.com

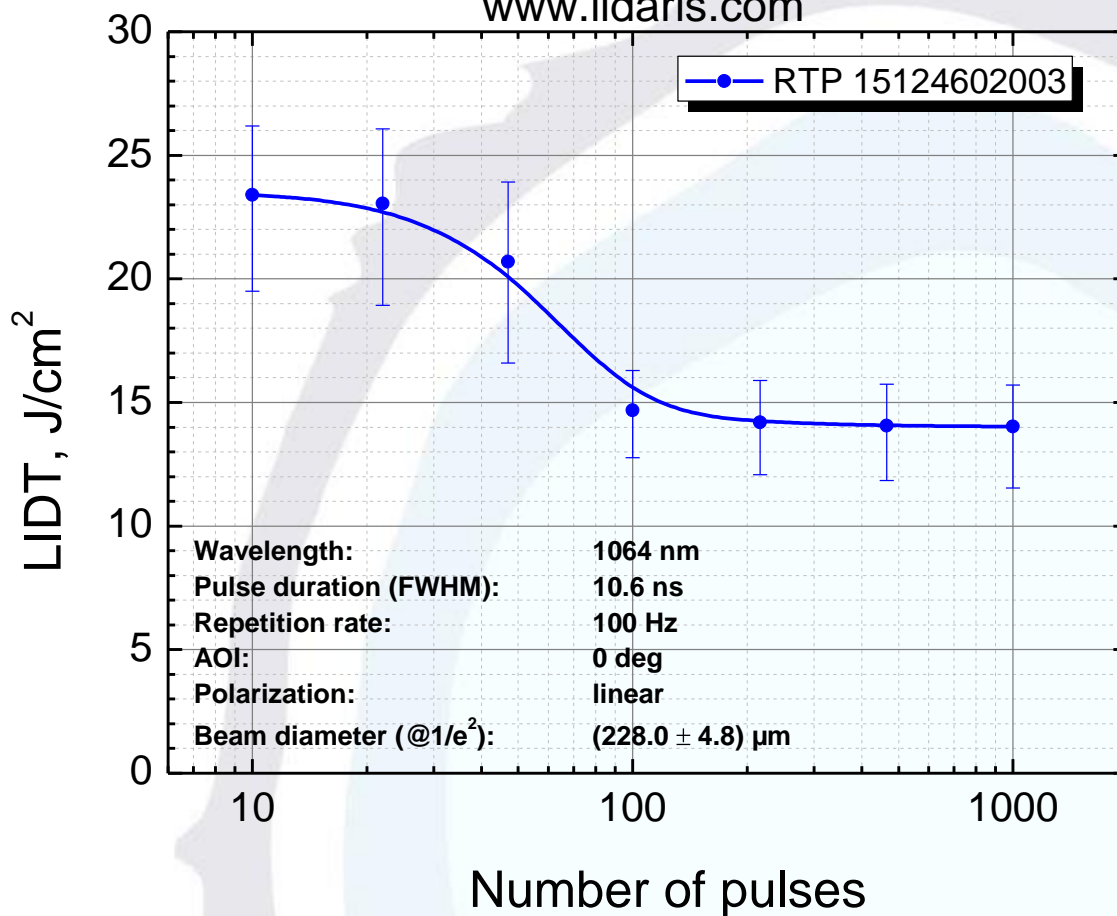
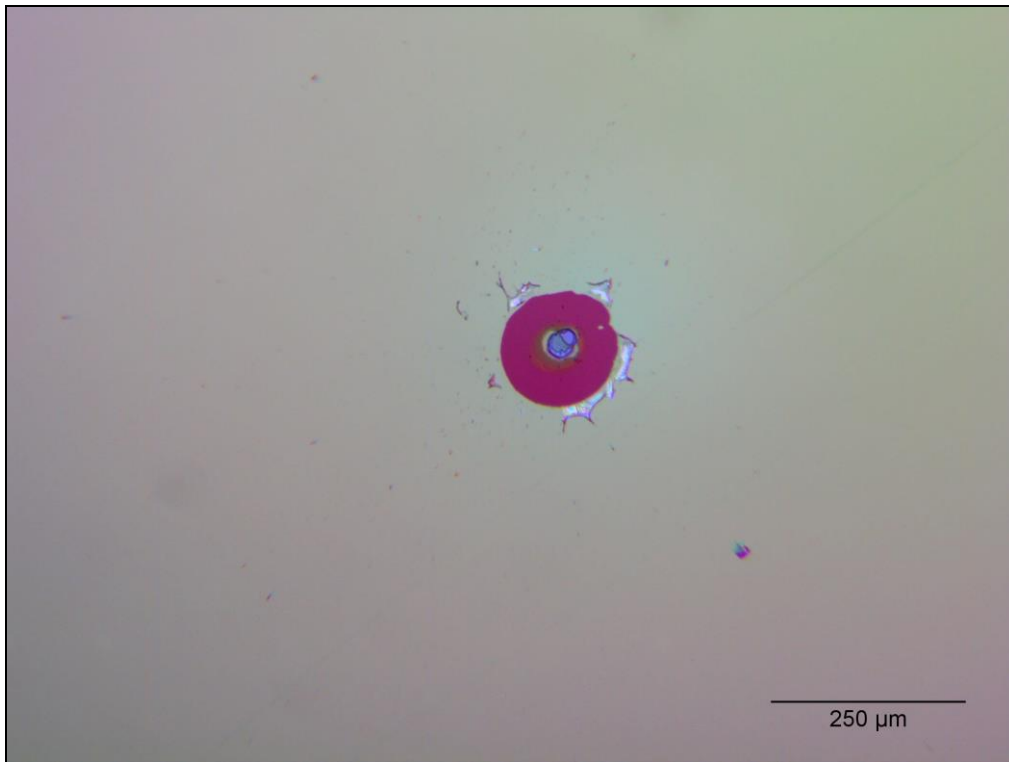
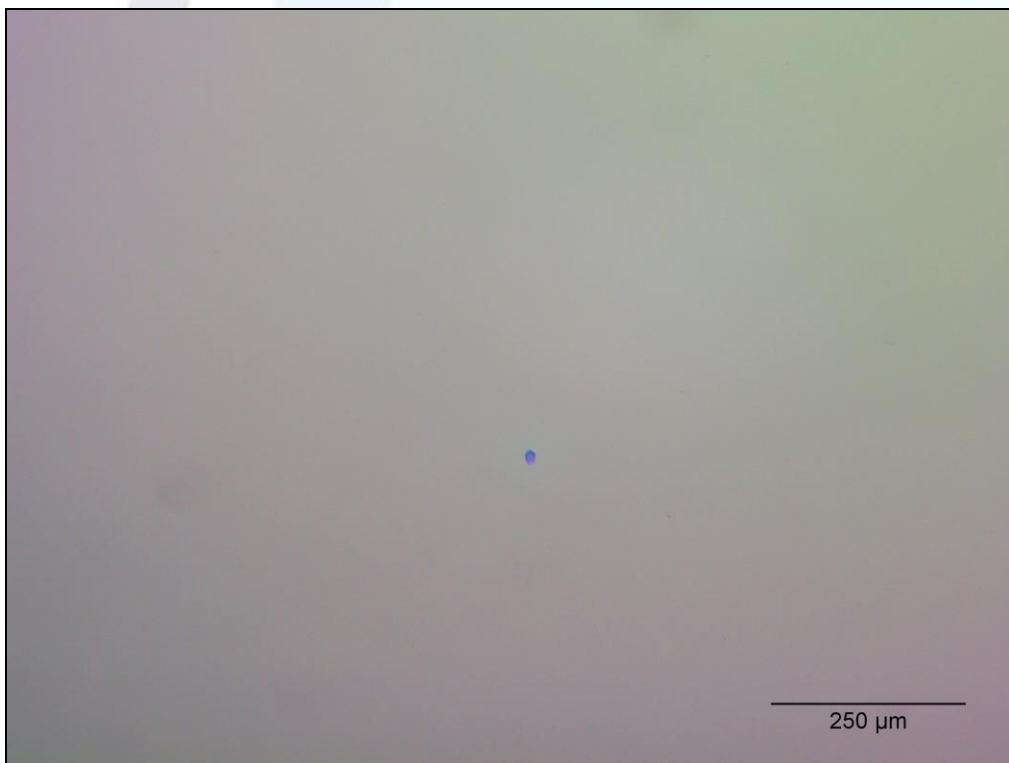


Fig. 2. Characteristic damage curve

Typical damage morphology:



**Fig. 3. Typical front surface damage morphology
(Energy density 34.98 J/cm², damage after 11 pulses)**



**Fig. 4. Typical front surface damage morphology
(Energy density 15.00 J/cm², damage after 1000 pulses)**