

Laser-Induced Damage Threshold (LIDT) Measurement Report

R-on-1 (Conditioning) Test Procedure

Sample: 10LDR15VV-LS

Request from: ALTECHNA Co.Ltd.
Mokslininku st. 6A
LT-08412 Vilnius

Contact person: Laurynas Šatas

Testing institute: Lidaris Ltd.
Saulėtekio al. 10,
LT-10223, Vilnius, Lithuania, EU

Tester/date: M. Ščiuka / 2015-09-07

Specimen

Name of sample: 10LDR15VV-LS
Type of specimen: Co:Spinel (6mm)
Storage, cleaning: Plastic box

Test specification

Second harmonic of pulsed Nd:YAG InnoLas Laser: SpitLight Hybrid laser ($\lambda = 532$ nm, linear polarization) was tuned with OPO system up to 1535 nm. $\lambda/2$ plate combined with additional polarizer attenuator, online scattered light damage detection, offline inspection of damage detection using Nomarski microscopy.

Laser parameters used for testing

Wavelength: 1535 nm
Angle of incidence: 0 deg.
Polarization state: linear
Pulse repetition frequency: 100 Hz
Spatial beam profile in target plane: TEM₀₀
Longitudinal beam profile: Single mode (SLM)
Beam diameter in target plane ($1/e^2$): 169.9 ± 7.1 μm (average from 64 pulses)
Pulse duration: 6.4 ± 0.5 ns

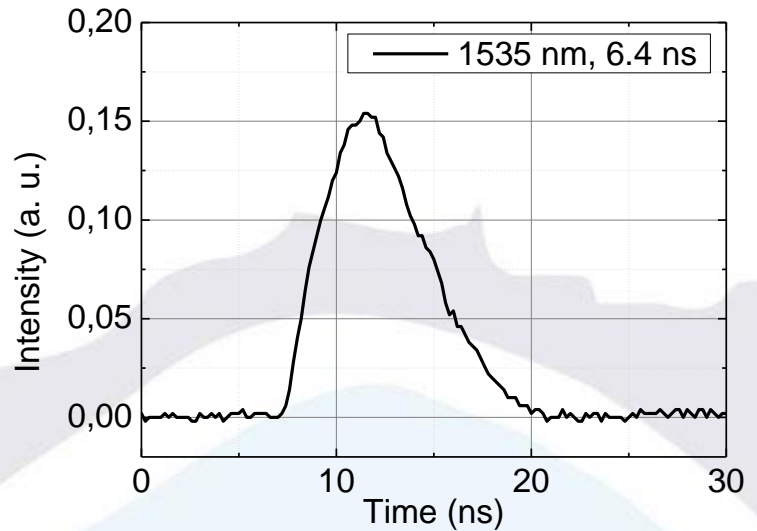
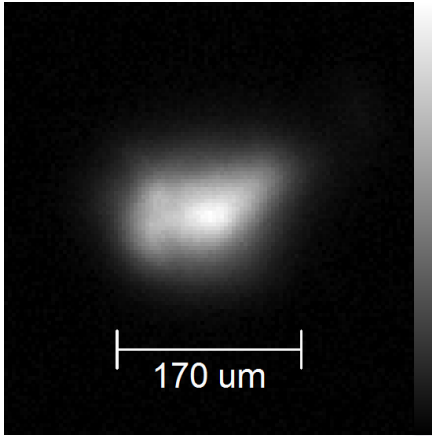


Fig. 1 Spatial beam profile in target plane (left) and oscilloscope curve (right).

Test procedure:

Start fluence:	0.5 J/cm ²
Fluence step:	0.5 J/cm ²
Pulses per fluence step:	1000
Test sites per sample:	5
Arrangement of test sites:	Equally spaced
Minimum distance between sites:	700 μm
Damage detection:	Scattered light diode
Storage of the specimen:	Original packaging, normal laboratory conditions
Test environment:	Industrial environment
Cleaning:	Compressed air
Definition of LIDT:	Fluence after which the damage was detected

R-on-1 test (Conditioning)

Test result:

Table 1. Summarized LIDT's for sample 10LDR15VV-LS.

R-on-1	Front surface threshold, J/cm ²
Lowest observed damage	12.63 ± 1.23
Median observed damage	13.58 ± 1.32
Highest observed damage	22.09 ± 2.14

Measured at LIDARIS 2015-09-07

www.lidarisis.com

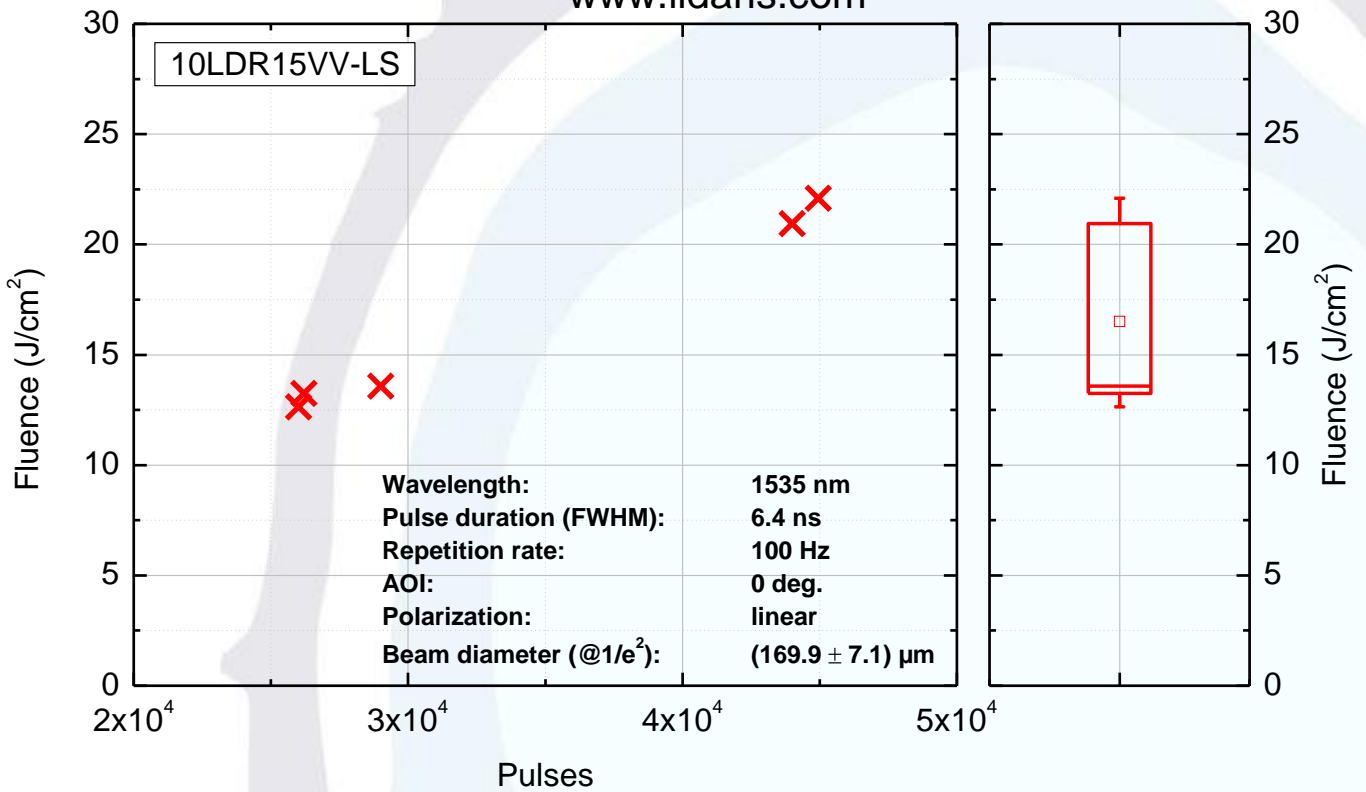
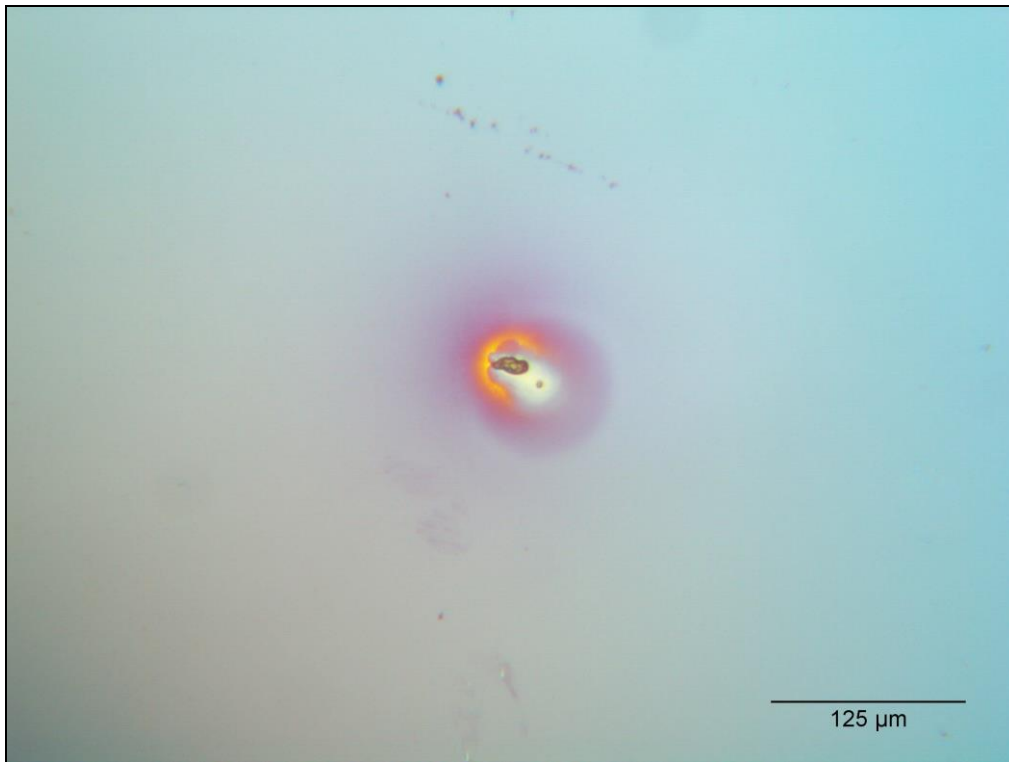
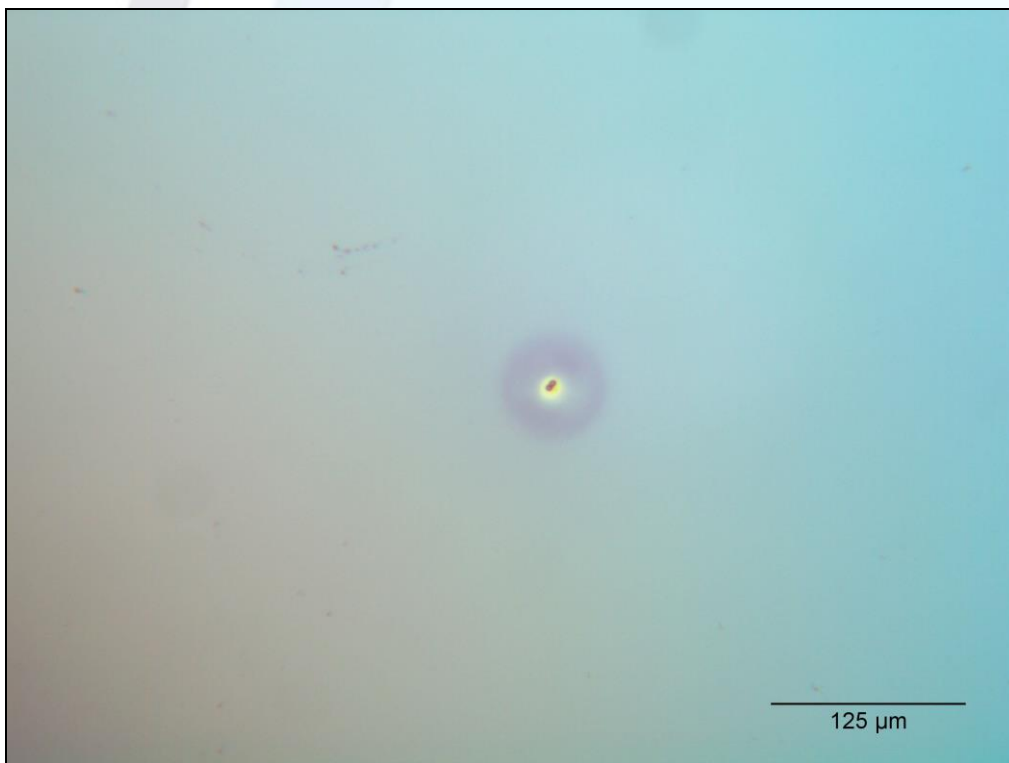


Fig. 2. R-on-1 test results

Typical damage morphology:



**Fig. 3 Typical front surface damage morphology
(Fluence 13.26 J/cm²)**



**Fig. 4 Typical front surface damage morphology
(Fluence 12.63 J/cm²)**