Laser-Induced Damage Threshold (LIDT) Measurement Report

ISO 21254-2: S-on-1 Test Procedure

Sample: 2-CPW-ZO-L/2-0532

LIDARIS
LIDT Service

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

Contact person: Viktorija Plerpaitė

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

Tester/date: E. Pupka / 2015-01-16

Specimen

Name of sample: 2-CPW-ZO-L/2-0532

Type of specimen: Crystal, AR Coating

Storage, cleaning: Plastic box, dust blow off by compressed air

Test specification

Second harmonic of pulsed Nd:YAG InnoLas Laser: SpitLight Hybrid laser (λ = 532 nm, linear polarization, pulse duration 7 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

Wavelength: 532 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$_{(1/e^2)}$:   196.3 µm (average from 64 pulses)
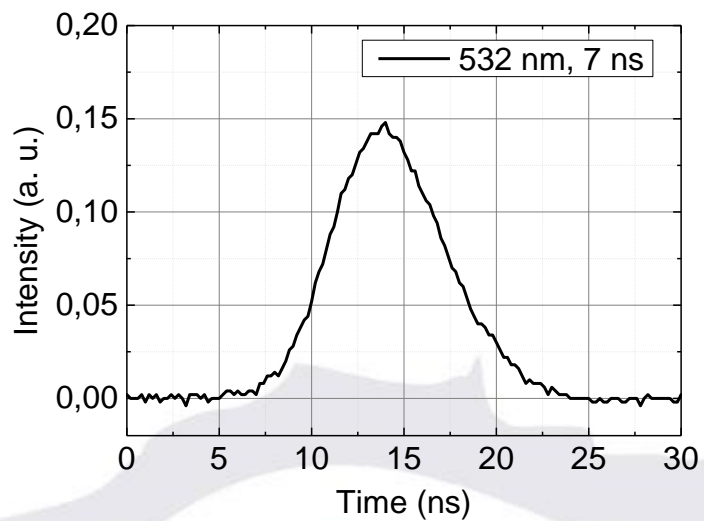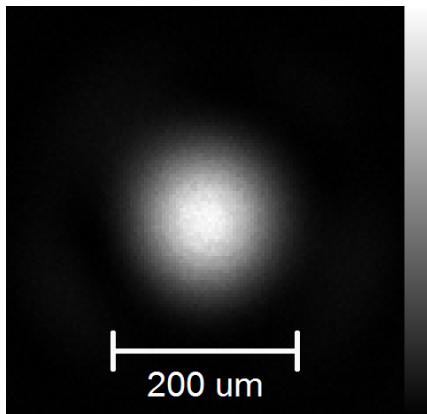Pulse duration: 7 ns

LIDARIS Ltd.
Address: Saulėtekio Al., 10 LT-10223 Vilnius, Lithuania, EU
Company code: 302813532
VAT registration: LT100007025612
Bank account (IBAN): LT30 7300 0101 3207 8596
Bank: Swedbank AB

Phone: +370 609 09233
Email: info@lidaris.com
Skype: lidt-service

www.lidaris.com

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

Test procedure: S-on-1 test

Number of sites per specimen:	414
Arrangement of test sites:	Equally spaced
Minimum distance between sites:	700 μm
Damage detection:	Scattered light diode
Storage of the specimen:	Plastic box
Test environment:	Industrial environment
Cleaning:	Compressed air
Definition of LIDT:	Nonlinear fit to 0% of damage probability

Test result:

Table 1 Summarized LIDT's for 2-CPW-ZO-L/2-0532

Test mode	Threshold, J/cm2
1-on-1	$32.00 \leq 36.59 \leq 40.79$
1000-on-1	$23.01 \leq 28.49 \leq 32.72$

Measured at LIDARIS 2015-01-16
www.lidaris.com

Sample 2 CPW ZO L/2 0532

Wavelength: 532 nm
Pulse duration (FWHM): 7.0 ns
Repetition rate: 100 Hz
AOI: 0 deg
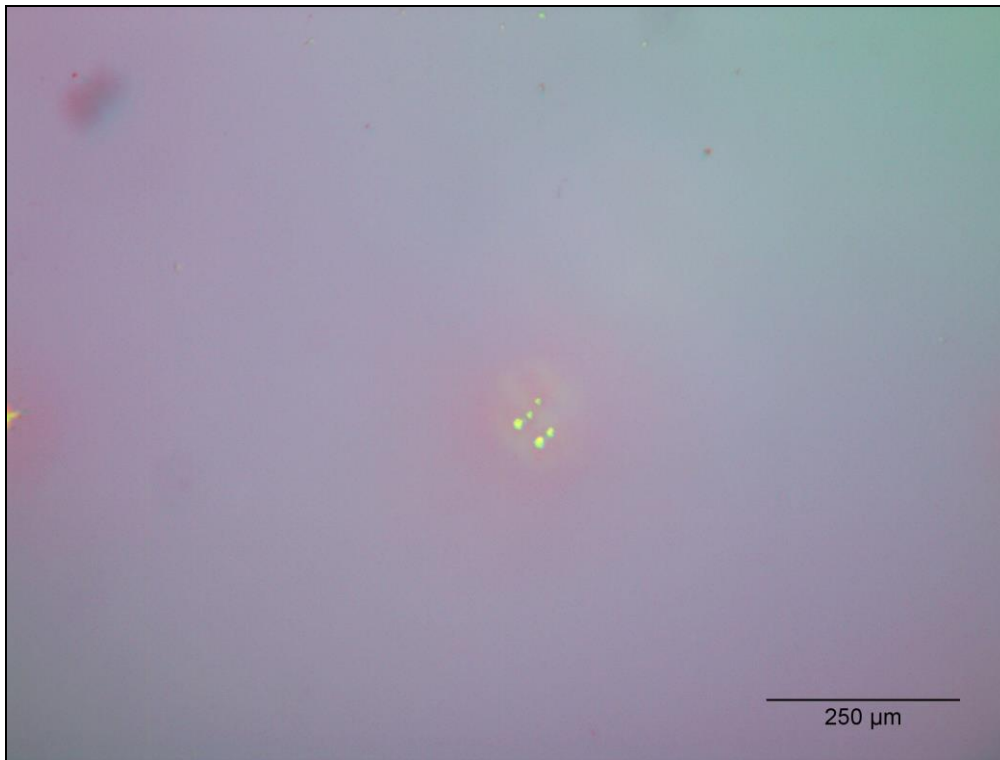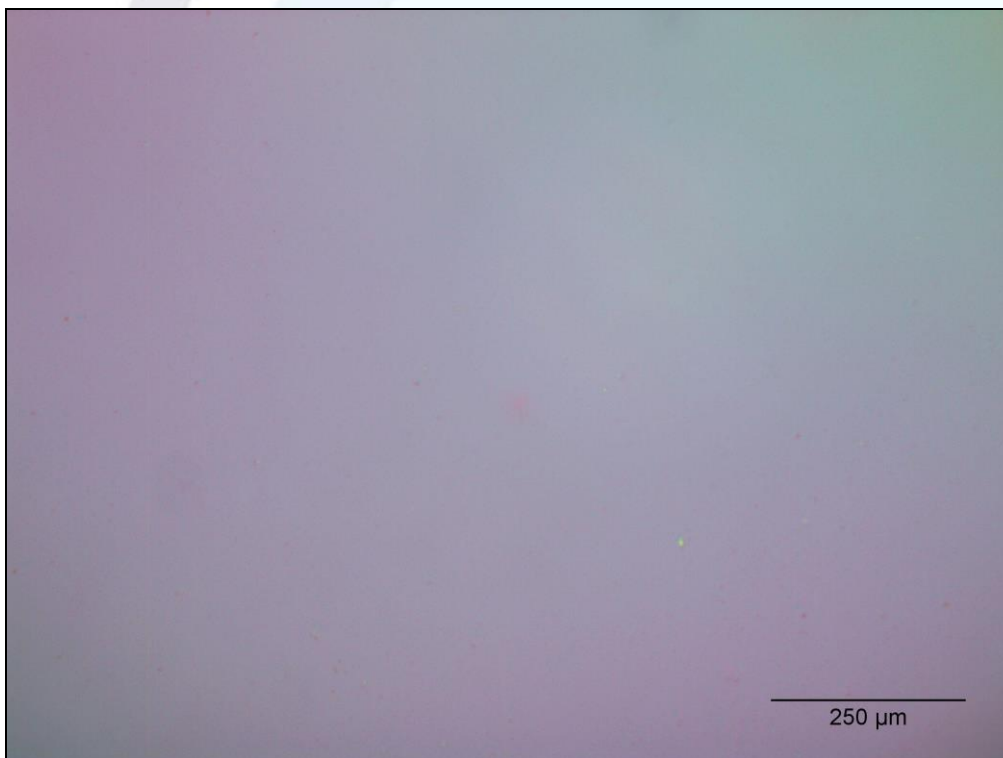Polarization: linear
Beam diameter (@1/e^2): (196.3 ± 3.2) µm
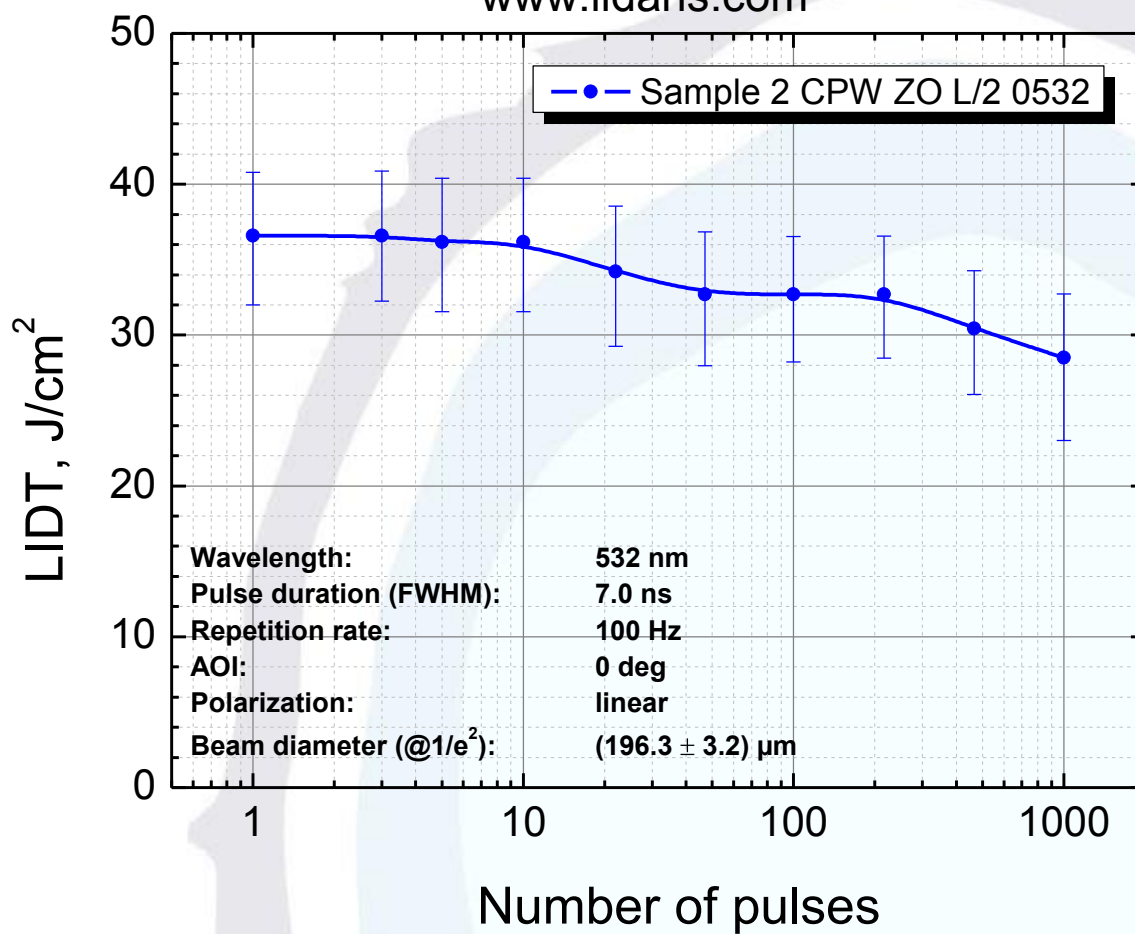
Fig. 2 Characteristic damage curve.

Typical damage morphology:

Fig. 3 Typical front surface damage morphology
(Energy density 61.94 J/cm^2, damage after 1 pulse)

Fig. 4 Typical in volume damage morphology
(Energy density 30.37 J/cm^2, damage after 1000 pulses)