

Laser-Induced Damage Threshold (LIDT) Measurement Report

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

Sample: 2-CPW-ZO-L/2-0266

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 / 2015-01-15

Specimen

Name of sample: 2-CPW-ZO-L/2-0266
Type of specimen: Crystal, AR Coating
Storage, cleaning: Plastic box, dust blow off by compressed air

Test specification

Fourth harmonic of pulsed Nd:YAG InnoLas Laser: SpitLight Hybrid laser ($\lambda = 266$ nm, linear polarization, pulse duration 5 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: 266 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 ($1/e^2$): 127.6 μm (average from 64 pulses)
Pulse duration: 5 ns

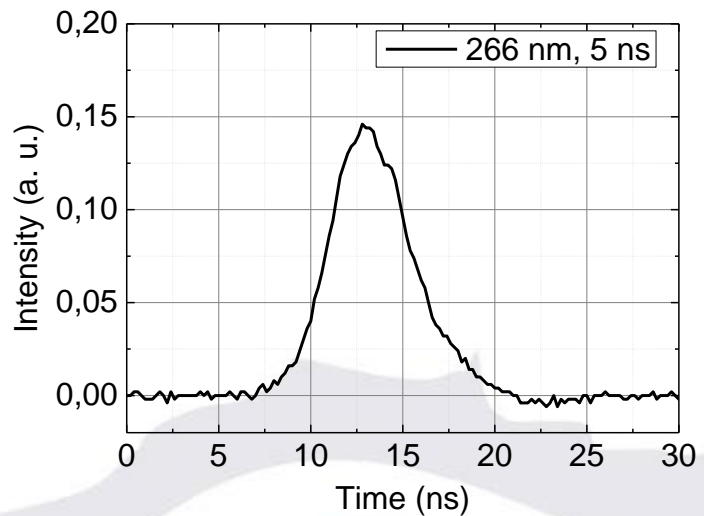
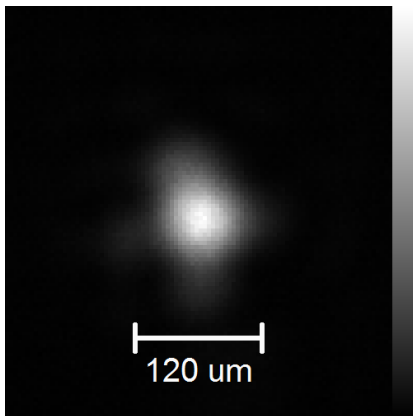


Fig. 1 Spatial beam profile in target plane (left) and oscilloscope trace (right)

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

424
Equally spaced
600 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 2-CPW-ZO-L/2-0266

Test mode	Threshold, J/cm ²
1-on-1	$3.57 \leq 4.49 \leq 5.55$
1000-on-1	$2.01 \leq 2.65 \leq 3.22$

Measured at LIDARIS 2015-01-15

www.lidarisis.com

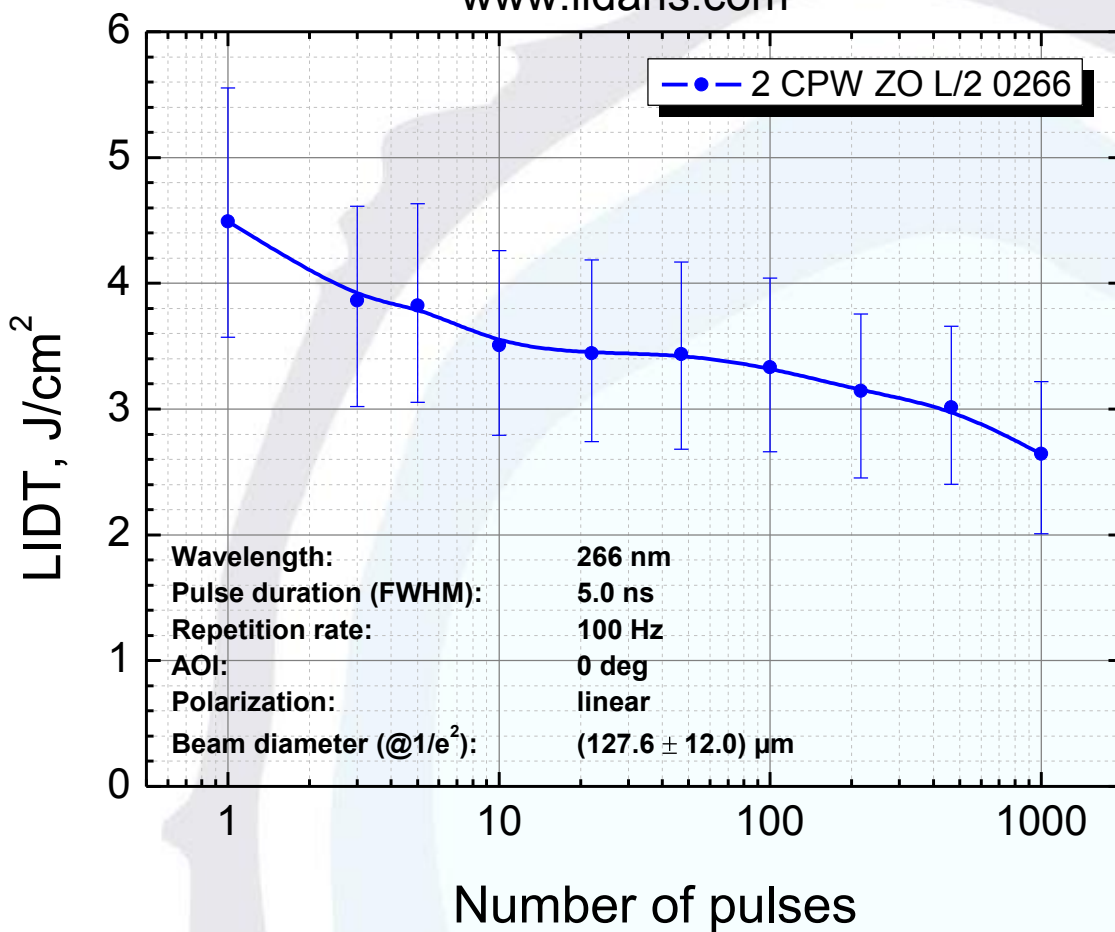


Fig. 2 Characteristic damage curve.

Typical damage morphology:



Fig. 3 Typical front surface damage morphology
(Energy density 5.34 J/cm², damage after 1 pulse)



Fig. 4 Typical front surface damage morphology
(Energy density 2.71 J/cm², damage after 342 pulses)