Assurance of energy handling capability in accordance with ISO 21254-3

Measurement Report

Sample: R16075-3

www.lidaris.com

LIDARIS
LIDT Service

LIDARIS
LIDT Service

Request from:

Central Laser Facility
STFC Rutherford Appleton Laboratory
Chilton, Didcot, OX11 0QX,
United Kingdom

Contact person: Mariastefania De Vido

Testing institute:

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

Tester/date: L. Vigricaitė / 2017-05-09

Specimen

Name of sample: R16075-3

Type of specimen: Glass

Storage, cleaning: Plastic box, wrapped in paper for optics

Test specification

Fundamental harmonic of pulsed Nd:YAG InnoLas Laser: SpitLight Hybrid laser (λ = 1064 nm, linear polarization, pulse duration 10.4 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.
Polarisation state:	linear
Pulse repetition frequency:	100 Hz
Spatial beam profile in target plane:	TEM_{00}
Longitudinal beam profile:	Single longitudinal mode (SLM)
Beam diameter in target plane ($1/e^2$):	(976.1 ± 34.7) μm (average from 500 pulses)
Pulse duration (FWHM):	(10.4 ± 0.4) ns (average from 1000 pulses)

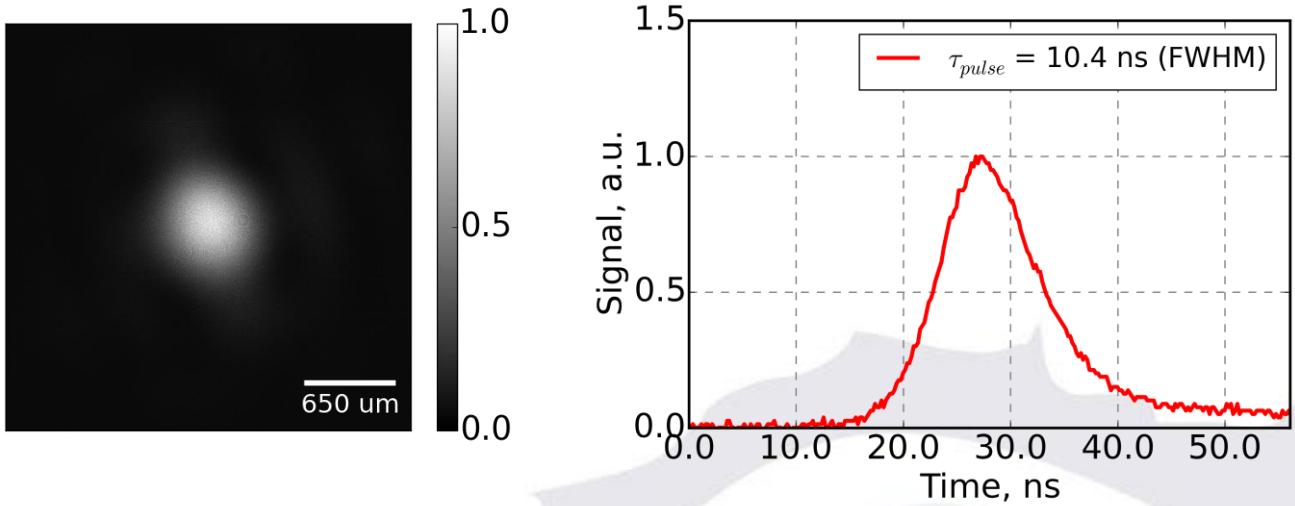

Fig. 1. Spatial beam profile in target plane (left) and temporal pulse profile (right).

Test procedure:	**Assurance of energy handling capability**
Assurance levels:	3.5, 5, 7.5, 10 J/cm^2
Number of sites per assurance level:	449
Number of shots per site:	1000
Tested area:	1 cm^2
Arrangement of test sites:	Hexagon, equally spaced, 50% overlap (Fig 2.)
Damage detection:	Post-test inspection, Nomarski microscopy
Storage of the specimen:	Manufacturer's packaging, normal laboratory conditions
Test environment:	Industrial environment
Cleaning:	Dust blown off with clean air

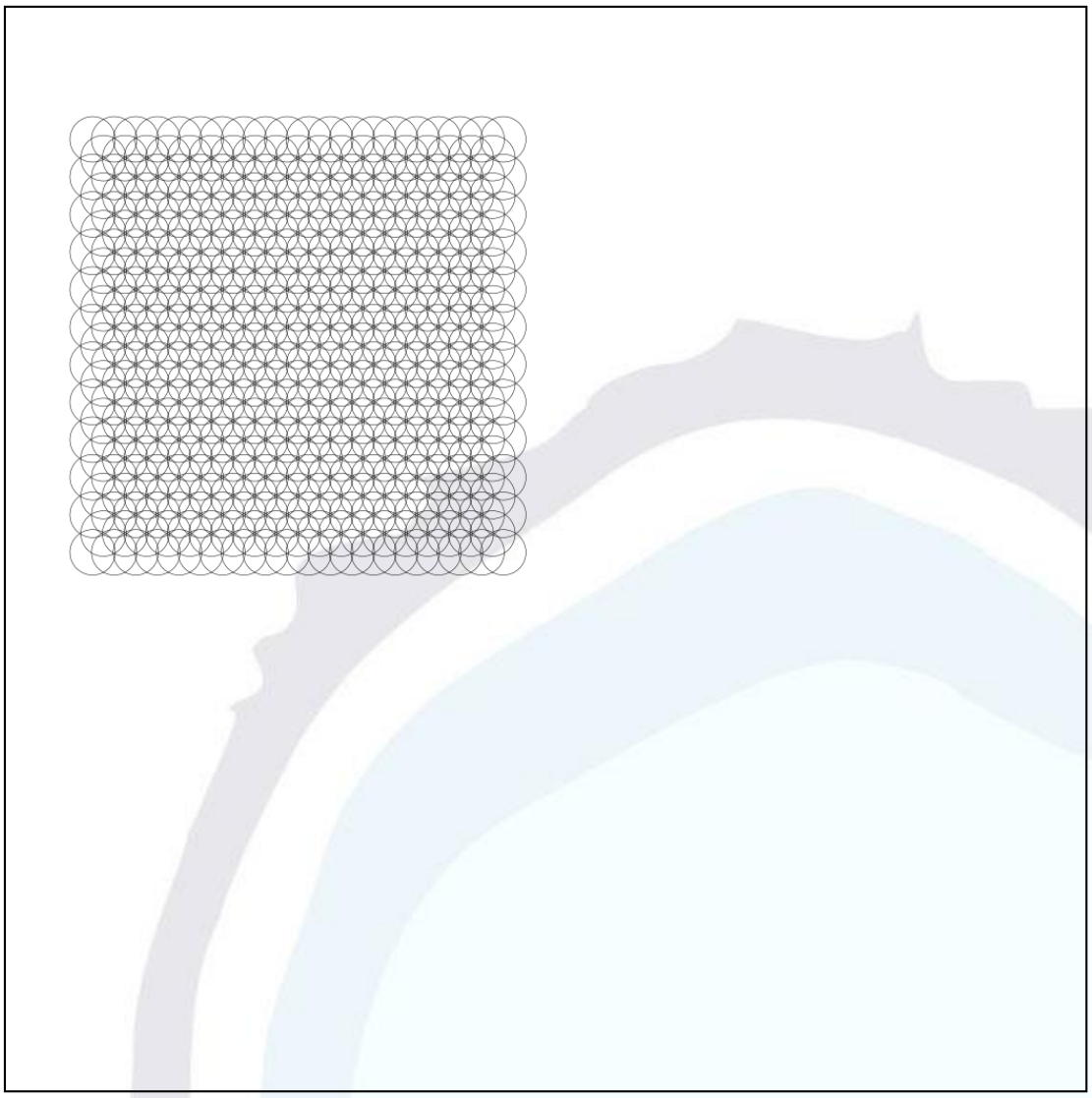

Fig. 2. Arrangement of test sites

Test result:

Table 1. Test results for sample R16075-3.

Assurance level	Result
3.5 ± 0.5 J/cm^2	Passed
5.0 ± 0.7 J/cm^2	Passed
7.5 ± 1.1 J/cm^2	Passed
10.0 ± 1.3 J/cm^2	Passed