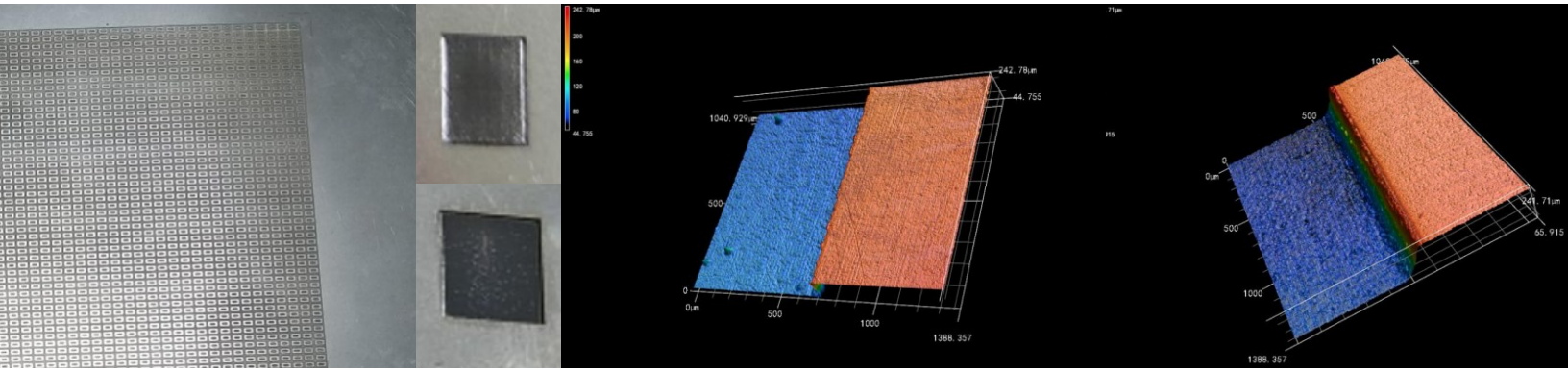
Stainless Steel Groove Processing

Utilizing Photonics Industries' RX Series Low Power Picosecond Laser



Sample Information

The material type is stainless steel. Specific sample thickness is 0.3mm.

The picosecond laser processing followed the requirements of maintaining a very low heat-affected zone (HAZ) to ensure little to no blackening and discoloration occurs.

System Information

Laser Source: RX 1064-30 Wavelength: 1064nm Power: 30W

Processing Equipment: Beam Expander 4x, F-Theta Lens Linos 100mm

Test Data

Overall, to decrease blackening on the back of the sample, processing was conducted at low energy and with the galvanometer scanning slowly.

The parameters set to produce the best results on this specific sample were Frequency set to 600kHz, Pulse Energy Control (PEC) set to 30%, Burst Mode from 5 to 35, Scanning Speed 1500mm/s. The time to process a single 5x5mm square was 420s.

Photonics Industries
International, Inc.

RX Series Low Power Picosecond Lasers

Available in the Infrared, Green, and Ultraviolet wavelengths.

Picosecond Lasers for Industry and Science by Photonics Industries...

Photonics Industries' RX Series picosecond lasers offer high performance, high precision, and robust form for the most demanding industrial as well as scientific applications. Photonics Industries is proven, with over a thousand picosecond lasers shipped worldwide, to meet and fulfill precision needs in manufacturing, accurate laser ranging, and new, emerging requirements necessitating ever smaller pulse widths.

Applications

- Metal, Ceramic, Glass, & Sapphire - Cutting, Drilling, Marking
- Flat Panel Display (FPD) Functional Foils & Display Glass - Cutting, Scribing
- Solar Cells - Scribing, Patterning
- LED - Scribing, Patterning, Dicing
- Medical Device - Cutting, Drilling, Marking
- Glass Reinforced Plastic, & Carbon Fiber - Cutting
- Ink-Jet Nozzle - Drilling
- Printing & Embossing Tools
- 3D LIDAR
- Nanotexturing

Features

- Short pulse laser:
  < 10 ps for IR, ~7 ps for Green & UV
- Wide range of wavelengths:
  1064 nm, 532 nm, 355 nm
- Superior form factor as the most compact, rugged, All-in-One picosecond laser
- Highest efficiency picosecond laser with the lowest power consumption:
  < 400 W typical
- High repetition rates:
  Up to 8 MHz
- Excellent TEM_{00} beam:
  Typical $M^2 \leq 1.2$
- Exceptional Beam Pointing Stability:
  < 20 µrad
- Exceptional and Versatile Pulse Control:
  PEC (Power or Pulse Energy Control)
  Burst Mode with programmable amplitude capability
  PSO (Position Synchronized Output) support for constant pulse energy regardless of trigger rate

Main Headquarters: 1800 Ocean Ave, Ronkonkoma, New York 11779, United States
Photonics Industries International is the pioneer of intracavity harmonic lasers and is at the forefront of developing, manufacturing and marketing a wide range of nanosecond, sub-nanosecond, picosecond and femtosecond lasers for industrial, scientific, defense, and medical industries. Check out our products and see how we can help you apply our lasers to your needs.