NIL Technology
DOE fan-out

94% efficiency DOE fan-out demonstrated for NIR

Technical specifications to support press release dated November 11, 2021, from NIL Technology

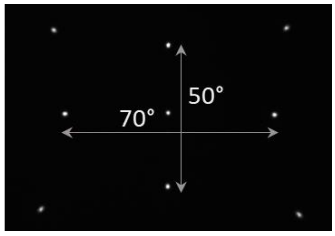
The press release is found **here**
Read more about DOEs **here**

NILT has designed, built, and characterized multiple diffractive optical element (DOE) fan-outs with over 94% absolute field of illumination (FOI) efficiency and high spot uniformity for NIR.

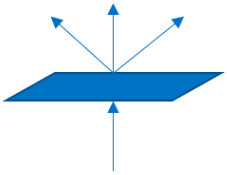
The demonstrated high efficiency makes the DOE fan-out ideal for sensing and machine vision applications across multiple, innovative markets: Consumer electronics, industrial, medical and automotive.

The DOE fan-outs can be tailored to customer specifications and manufactured today by nano wafer-level optics replication.

NILTs DOE fan-outs are made using polymer-on-glass technology. Custom anti-reflective coatings and eye-safety features are implemented according to specifications.



Projected on flat screen (measured)



Specifications of the high efficiency DOE fan-out demonstrator

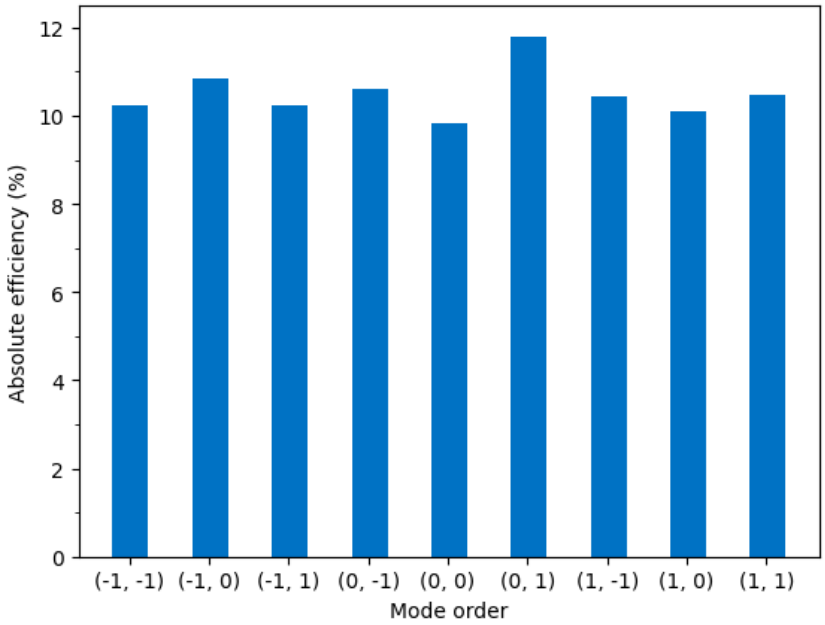
Parameter	Units	Specifications
Dot spacing	[°]	35x25
Number of dots		3x3
Target wavelength	[nm]	940
Absolute FOV efficiency @940nm	[%]	94.6
Non-uniformity error	[%]	9.1
Material		Polymer on glass with ARC coated backside
Active area	[mm^2]	2.5 x 2.5
Optimization condition		Optimized for unpolarized light at normal incidence

DOE fan-out can be designed and manufactured according to customer specifications.

NIL Technology
www.nilt.com
contact@nilt.com
Phone: +45 31 11 17 97

NIL Technology
DOE fan-out

Grating mode efficiencies

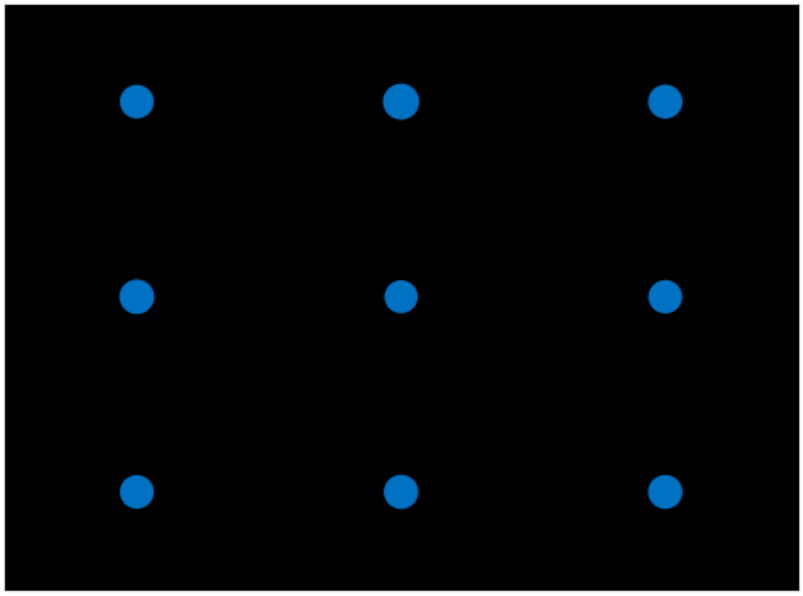


Absolute mode efficiencies for all grating modes for unpolarized light measured at 940 nm for normal incidence.

The mode efficiencies correspond to a non-uniformity error of 9.1% (max-min)/(max+min).

The mode efficiencies are very close to the theoretical physical limit, where 100% efficiency corresponds to an average mode efficiency of 11.1%.

Visualization of dot pattern uniformity



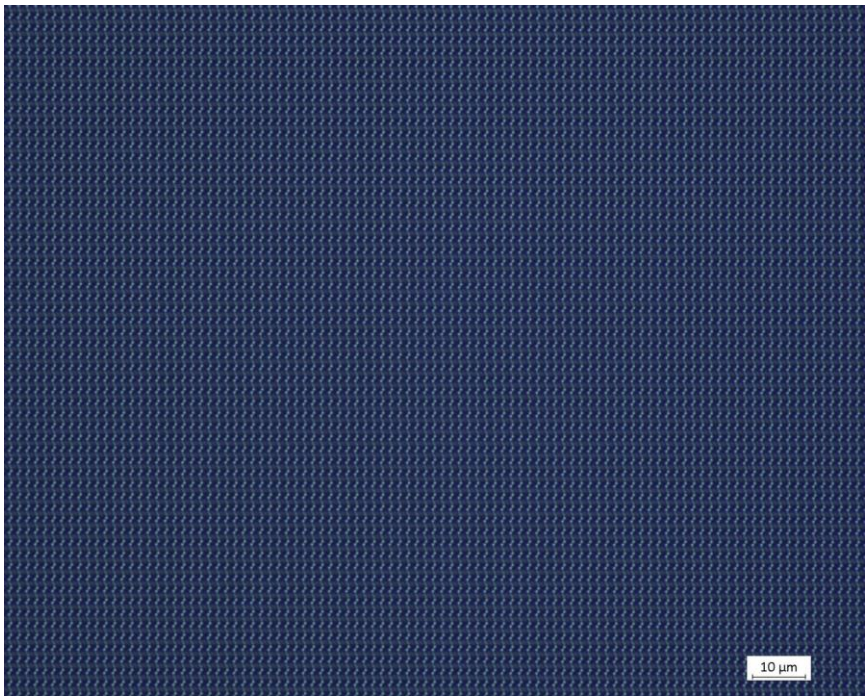
Visualization of the measured mode efficiencies for unpolarized light at 940 nm for normal incidence. The area of the circles represent efficiency.

NIL Technology
www.nilt.com
contact@nilt.com
Phone: +45 31 11 17 97

NIL Technology
DOE fan-out

Optical microscope image of DOE fan-out

Representative bright field optical microscope image, 50X magnification, of 94% efficiency DOE fan-out. NILTs proprietary technology allow for highly controlled, precise and uniform DOE fan-out structures at the nano-scale



Inquiries

For inquiries, contact Brian Orr, VP Sales, at contact@nilt.com

ABOUT NILT

NIL Technology (NILT), founded in 2006, is an optical solutions company designing, developing, and manufacturing optical elements and components using high-precision nanoscale features. The company is backed by several industry-independent investors: Jolt Capital, NGP Capital, Swisscanto, Vaekstfonden, and the European Innovation Council (EIC). NILT creates competitive advantages with flat optics in optical applications for 3D sensing, consumer electronics, machine vision, autonomous vehicles, telecommunication, and AR/VR/MR displays; all solutions made by diffractive optical elements (DOE) and metalenses/meta optical elements (MOE). NILT is based in Denmark and has offices in Switzerland, Sweden, and the USA.

www.nilt.com | Sign up for newsletter | Follow us on LinkedIn