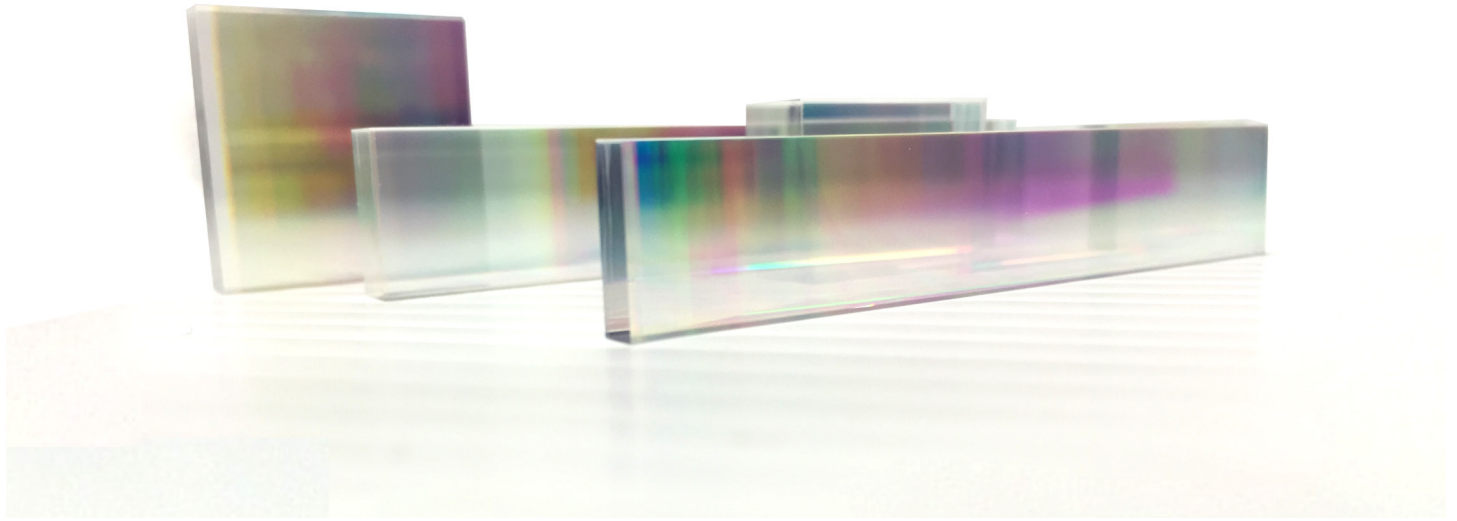


# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

## T-711-1650 Series

T-711-1650 series lithographically patterned transmission diffraction grating is designed to be used in demanding industrial applications (spectroscopy, pulse compression, astronomy). It is characterized by high efficiency, low polarization sensitivity, broad passband and high power handling. Gratings produced by Coherent undergo extensive quality assurance, have proven reliability track record and competitively priced.



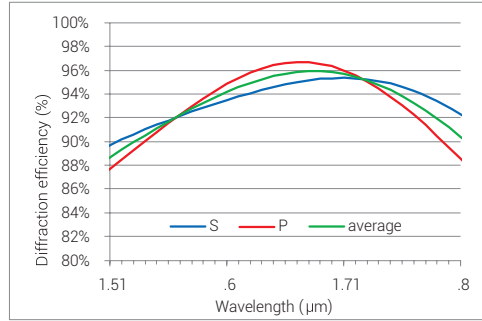
## PRODUCT KEY

T - 711-1650 - 31.8x20 -94

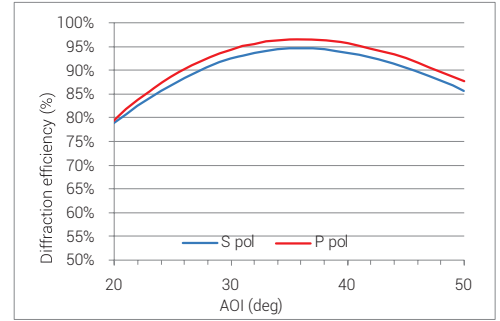
Transmission | Grooves/mm | Central Wavelength, nm | Width x Height, mm  
Groove || to Height | Min peak efficiency, %

# HIGH-EFFICIENCY TRANSMISSION DIFFRACTION GRATING

The polarization independent transmission grating has 711.24 lines/mm and designed to operate from 1500 to 1800 nm at 35.5° angle of incidence (AOI). Extended wavelength range performance and angular sensitivity information is provided below.

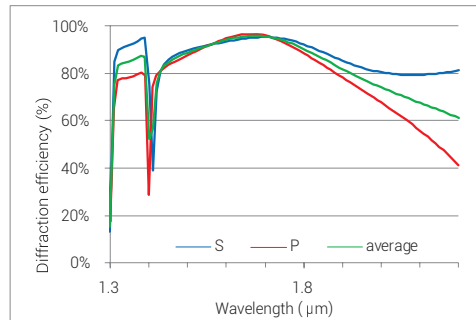


Typical absolute diffraction efficiency at AOI 35.5° \*

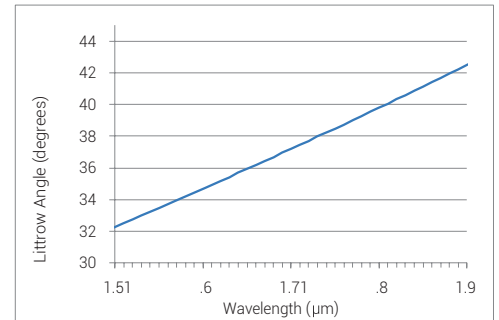


Diffraction efficiency at 1650 nm as a function of AOI \*

Extended operational range: The grating may operate over broader wavelength range provided that suitable anti-reflective coating and angle of incidence is used. The plot below shows simulated performance\* over extended range assuming fixed input angle (designed Littrow angle of 35.5°), not accounting for AR coating losses. Optimal input angle for each wavelength is shown on the right.



Typical absolute diffraction efficiency at AOI 35.5° \*



Optimal input angle for each wavelength (Littrow condition)

\* simulated performance shown (for guidance only)

## Specifications

Description		
Line Density	711.24	Lines/mm
Line Density Uniformity	0.001	Lines/mm
Angle of Incidence (AOI) <sup>1</sup>	35.5 ± 1	°
Wavelength Range	1500 - 1800	nm
Optimal polarization <sup>2</sup>	Any	
Diffraction Efficiency <sup>3</sup>	≥ 94	%
Polarization-dependent loss	≤ 0.2	dB
Dimension tolerances	±0.2 for grating size and width	
Substrate Thickness	0.95 ± 0.050 mm	
Material	Fused silica, dielectric layers, no polymers	
Scratch/Dig <sup>4</sup>	60/40 standard, 40/20 and 20/10 custom	

Notes:

<sup>1</sup> Optical grating performance will remain similar over larger variation in angle of incidence. See plot.

<sup>2</sup> S-polarization: electric field vector is parallel to the grating lines; P polarization is orthogonal to S.

<sup>3</sup> Worst case as estimated at 1650 nm averaged over S and P polarization; measurements are taken at 1500, 1530, 1560, 1590 and 1620 nm.

<sup>4</sup> As per MIL-PRF-1380B in the clear aperture; no requirements outside of the clear aperture.