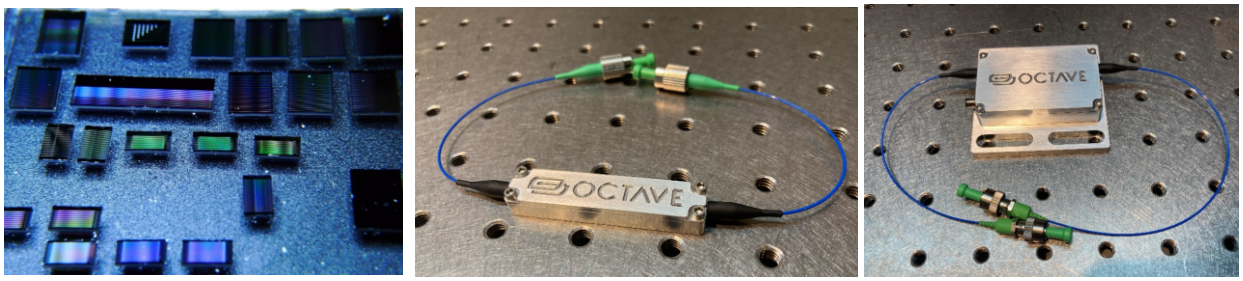
Supercontinuum-Generation Devices

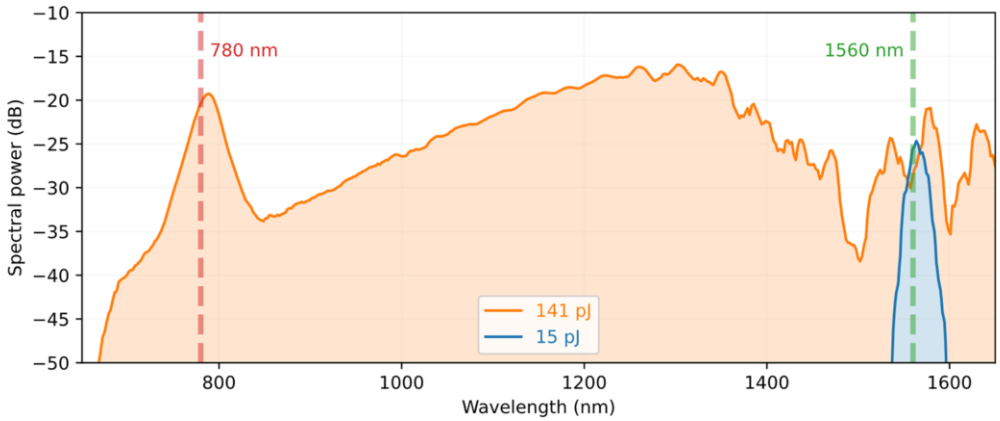
Summary: Octave Photonics provides packaged nonlinear nanophotonic waveguides for supercontinuum generation with pulsed lasers. These devices allow low-pulse-energy, broad-bandwidth supercontinuum generation with the simplicity of standard fiber connectors.



(left) Nanophotonic chips for supercontinuum generation. **(middle)** Octave Photonics packaged supercontinuum generation devices with fiber input and fiber output. **(right)** Supercontinuum generation device with thermo-electric cooler and baseplate.

Specification	SC-1560-780	SC-Custom
Input pulse wavelength	~1560 nm	~1000 to 2000 nm
Input pulse energy	>150 pJ	>150 pJ
Output spectral range	~750 to 2000 nm	Customizable
Dispersive wave peak	780 nm	Customizable, 600 to 2500 nm
Input	PM1550 fiber	PM Fiber
Input connector	FC/APC	FC/APC, FC/PC, or similar
Output	PM780 fiber	Fiber or free space
Output Connector	FC/APC	Fiber or lens
Dimensions* (excluding fibers)	57x13x9 mm	Customizable
Thermoelectric cooler (TEC)	Optional	Optional
Maximum average power (with TEC)	4 Watts	4 Watts
Operating temp. (with TEC)	-10 to 60 C	-10 to 60 C

*Dimensions depend on configuration. Contact Octave Photonics for customized enclosure dimensions.



Output from an Octave Photonics supercontinuum generation unit generating 780-nm light using a 1560-nm input. At low pulse energies (15 pJ), the spectrum is relatively narrow. For pulse energies above 140 pJ, broadband light is generated with a peak at 780-nm, which can be used for f_{ceo} detection of a laser frequency comb. (Note that the output of the supercontinuum device was packaged with 780 nm fiber, thus light at wavelengths longer than ~1300 nm is partially attenuated.)

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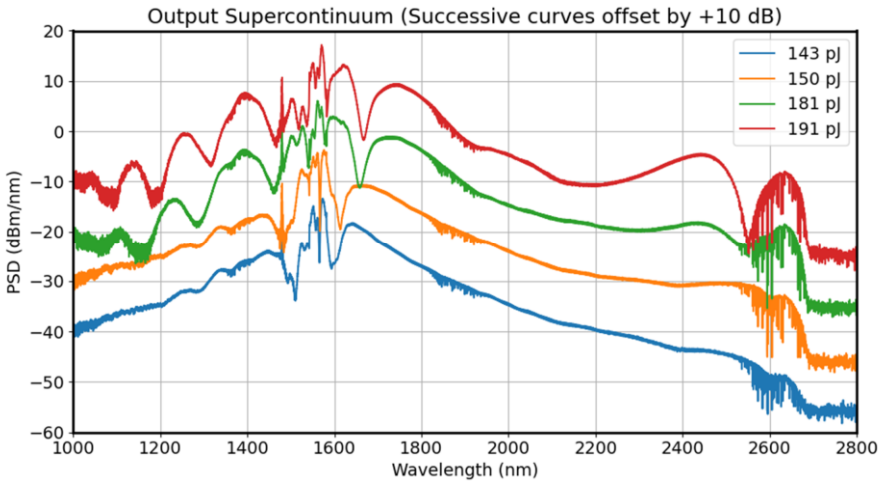
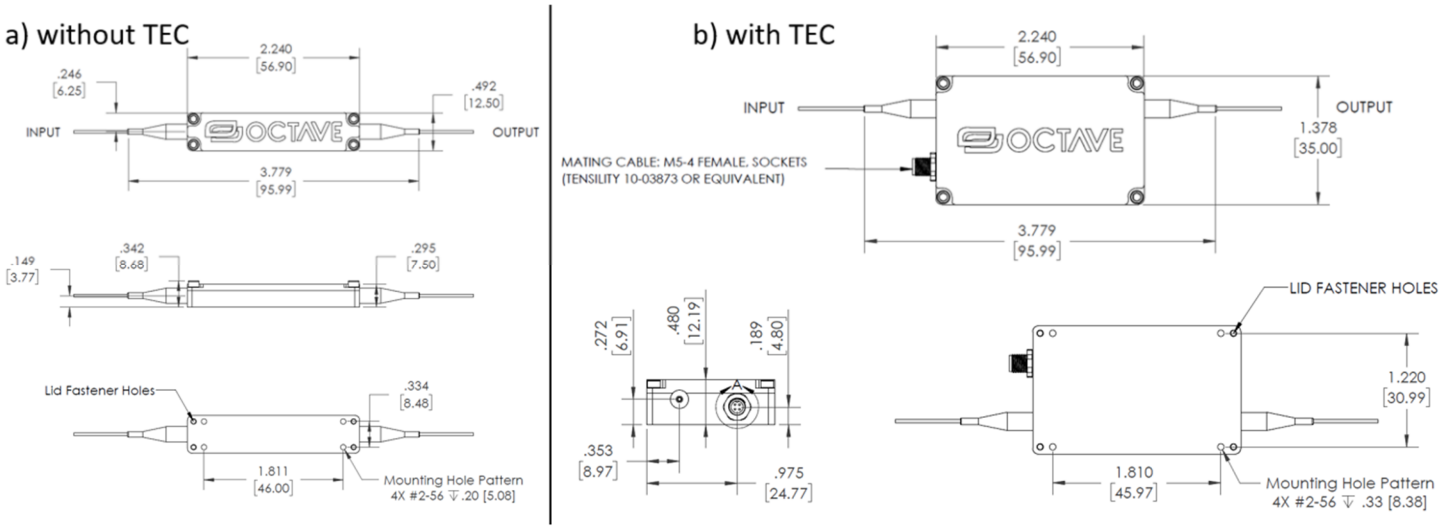
Customization: Nanophotonic waveguides provide tight confinement of the guided light, enabling supercontinuum generation with ~100 pJ pulse energies. Additionally, the output spectrum can be adjusted simply by changing the dimensions of the waveguide. Thus, Octave Photonics can offer customized spectral output from our standard packaging approach.

Example spectrum (broadband generation in the mid-infrared):



Output from an Octave Photonics supercontinuum generation unit, providing broadband light in the mid-infrared region.

Dimensional drawing:



Dimensions are in inches [mm in brackets]. Baseplates for connecting to standard optical tables are available.

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