7.42um Low Power benchtop DFB-QCL Mid-Infrared Quantum Cascade Laser 10mW (TDLAS Integrated Control Module)

Product Description

QCL7420 - 7.42um low-power benchtop DFB-QCL mid-infrared quantum cascade laser is a low-power QCL DFB laser developed by Idealphotonics in the first half of 2018. The tunable range exceeds 100nm, and the output power is greater than 10mw to meet the industrial needs of customers testing gas sensors. Our laser collimated output has stable output power and high temperature and wavelength stability, which is several orders of

magnitude higher than the stability of traditional high-power quantum cascade lasers. It provides an excellent test light source for our mid-infrared test customers.

Product features

Mid infrared band; Quick tuning; Single mode characteristics; Accurate temperature control; low power consumption

Part Number

MP-QCL-7420-DFB-10-T

Application area

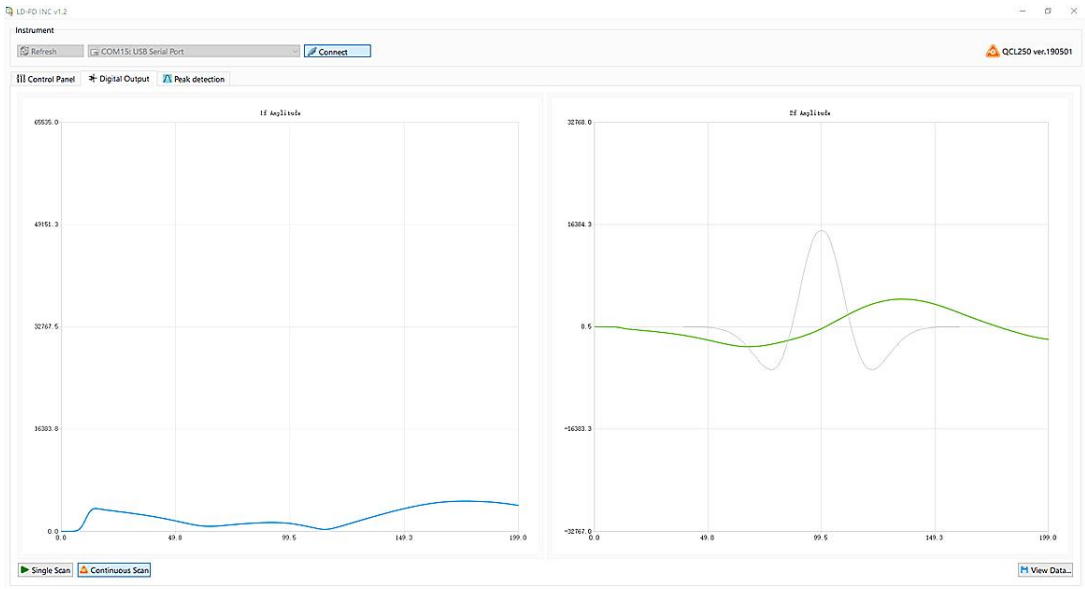
Gas detection | Medical respiratory analysis | Industrial processes | National defense security | Astronomical observation

Core parameters

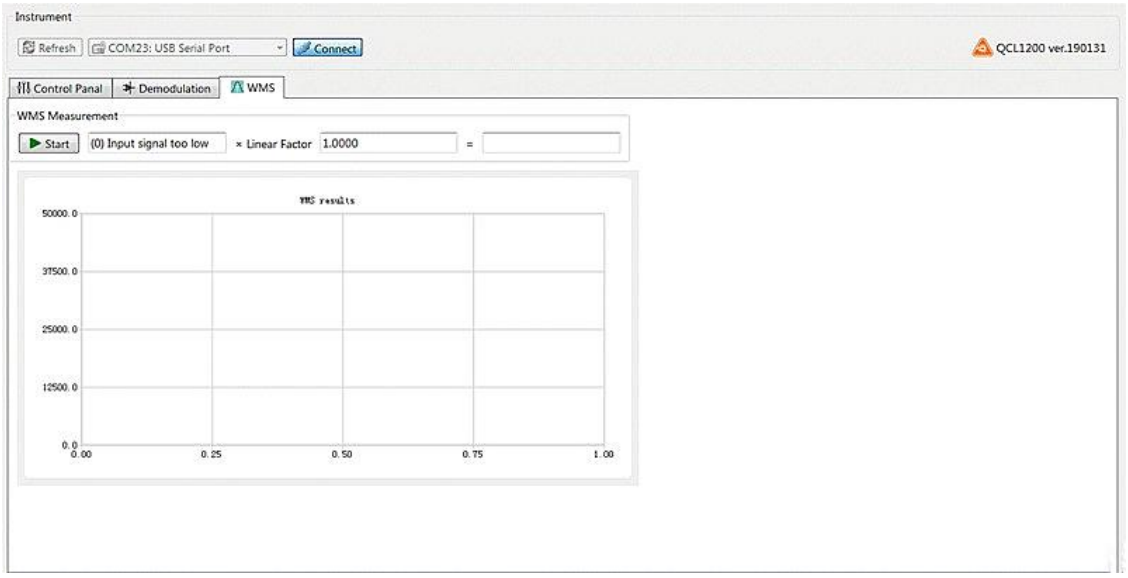
Wavelength	Output Power	Spectral Width
7.42um	10mW	1MHz

- **General Parameters**

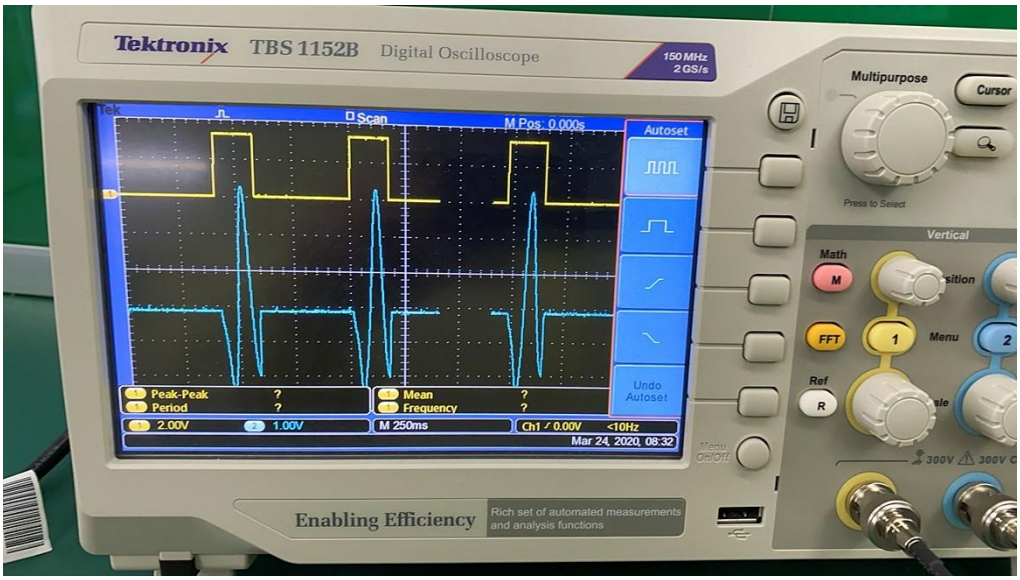
2F signal acquisition interface



Algorithm calibration interface



Modulation signal linearity test (oscilloscope voltage signal effect diagram)



Main Parameters

Parameters	Unit	Specifications		
		Min.	Typ.	Max.
Laser collimated output power	mW		10	
Peak operating wavelength	um		7.42	
Spectral width (FWHM)	MHz		1	
Output side mode suppression ratio (SMSR)	dB	20		
Output isolation	dB		30	
Wavelength temperature coefficient	nm/°C		0.6	
Wavelength current coefficient	nm/mA		0.2	
Output power stability (8 hours)	%		±1	±4
Output power adjustable range	%	0		100
TEC operating range	°C	0		50
Operating voltage	VAC	100	220	240

Parameters	Unit	Specifications		
		Min.	Typ.	Max.
Operating temperature	℃	0		55
Storage temperature	℃	-20		65
Dimensions	mm	290(L)×108(W)×68(H)mm		

Technical indicators:

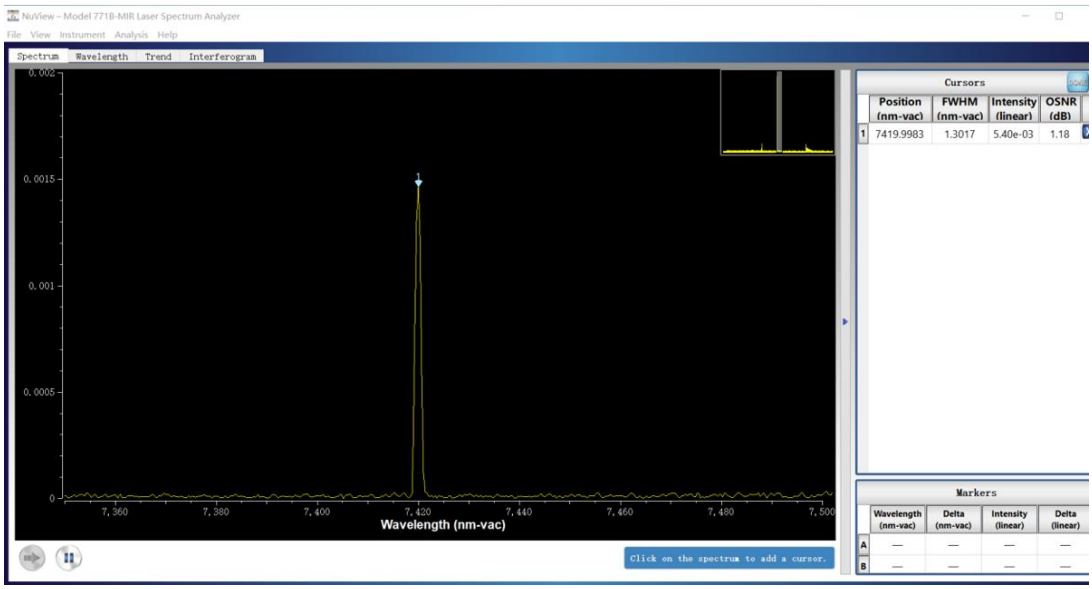
1. Output power is optional;

2. Peak operating wavelength can be specified;

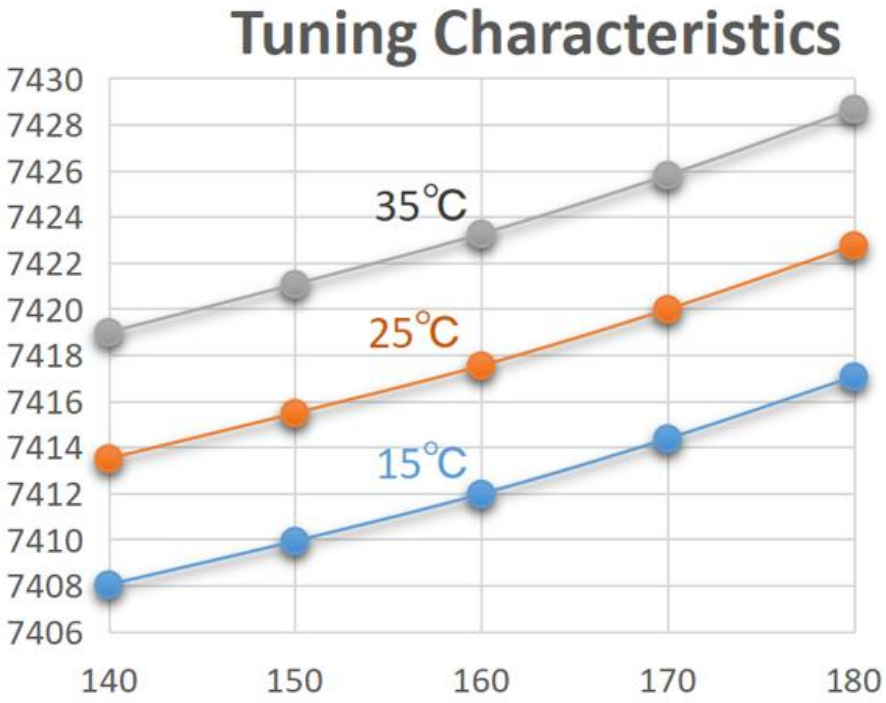
3. Output power stability test condition is 25 degrees, after 30 minutes of preheating;

4. Max. power consumption refers to the overall power consumption under extreme working conditions.

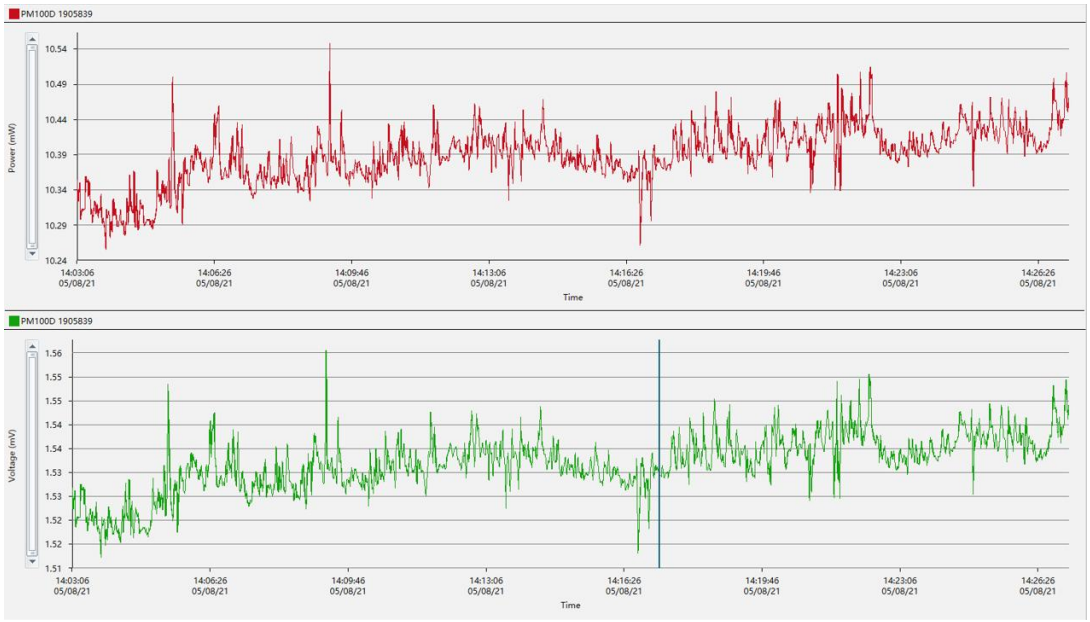
Spectral diagram



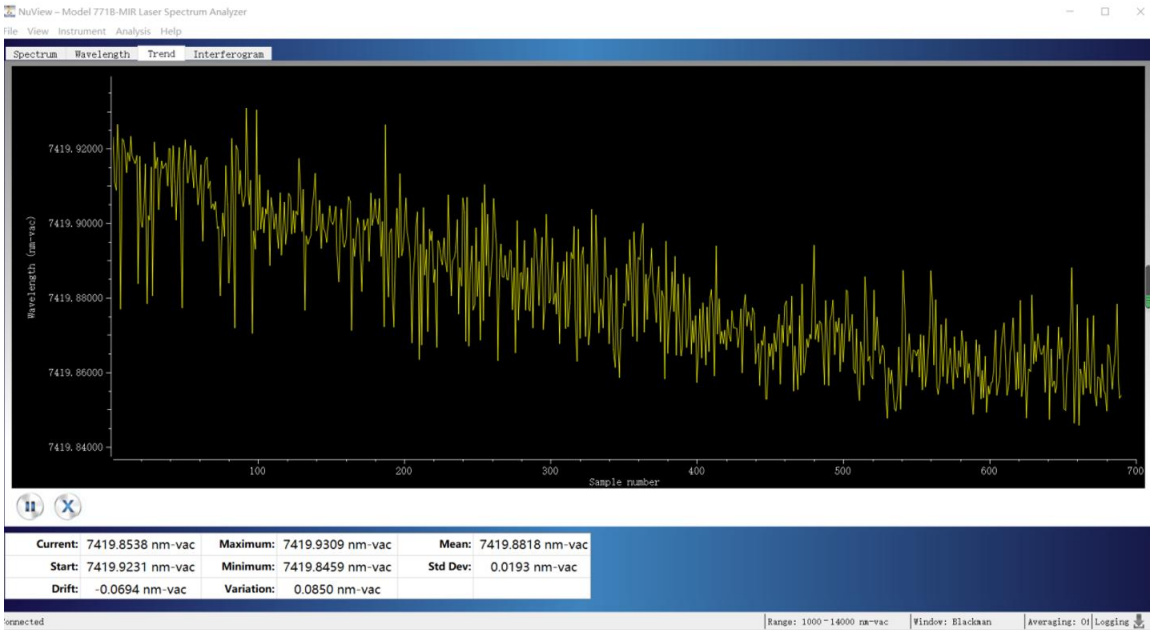
Wavelength temperature tuning curve



Power stability

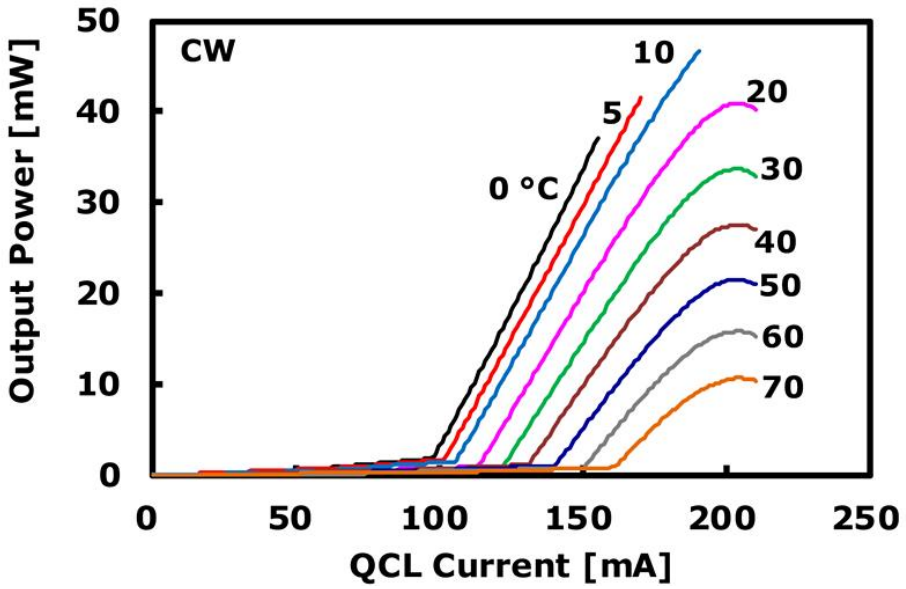


Wavelength stability

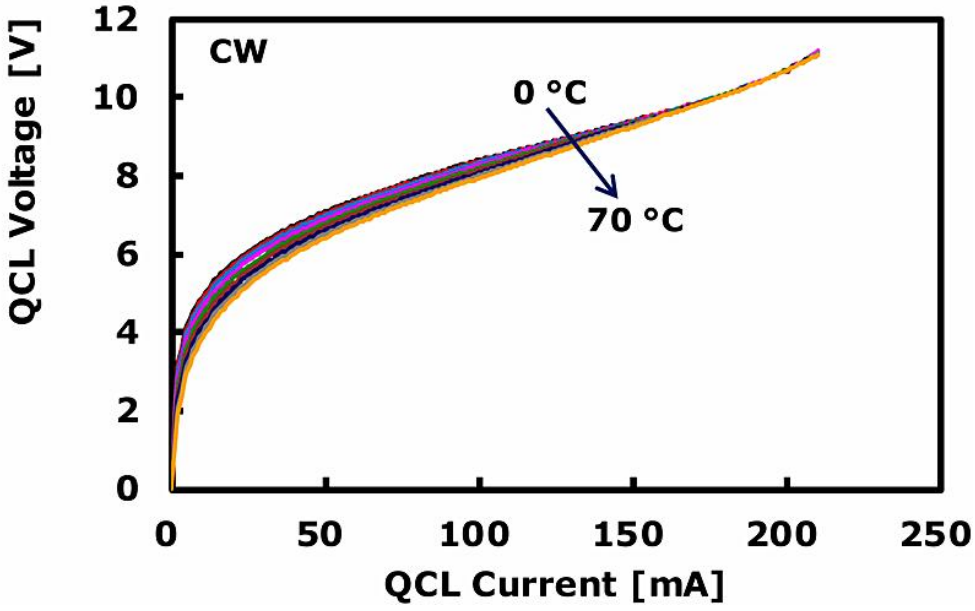


QCL laser characteristic curve (taking 7.4um typical wavelength as an example)

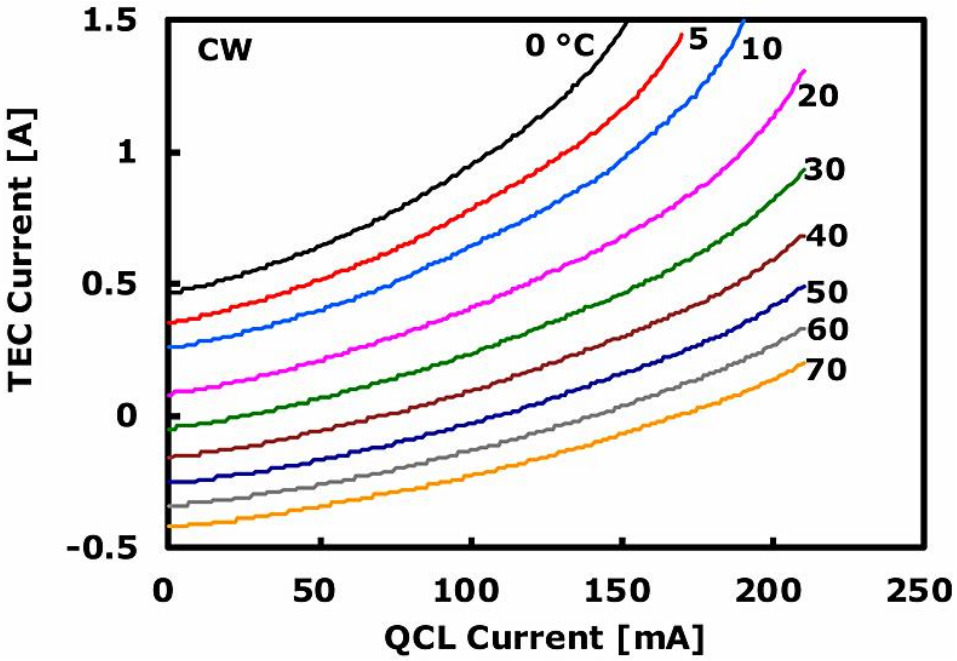
Output power characteristic curve



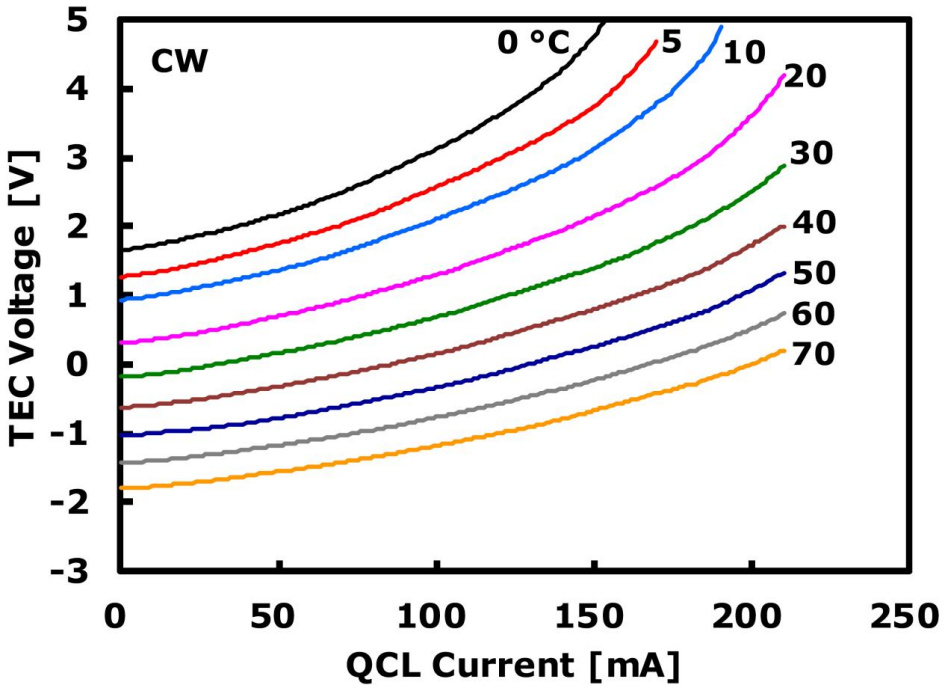
Voltage characteristic curve



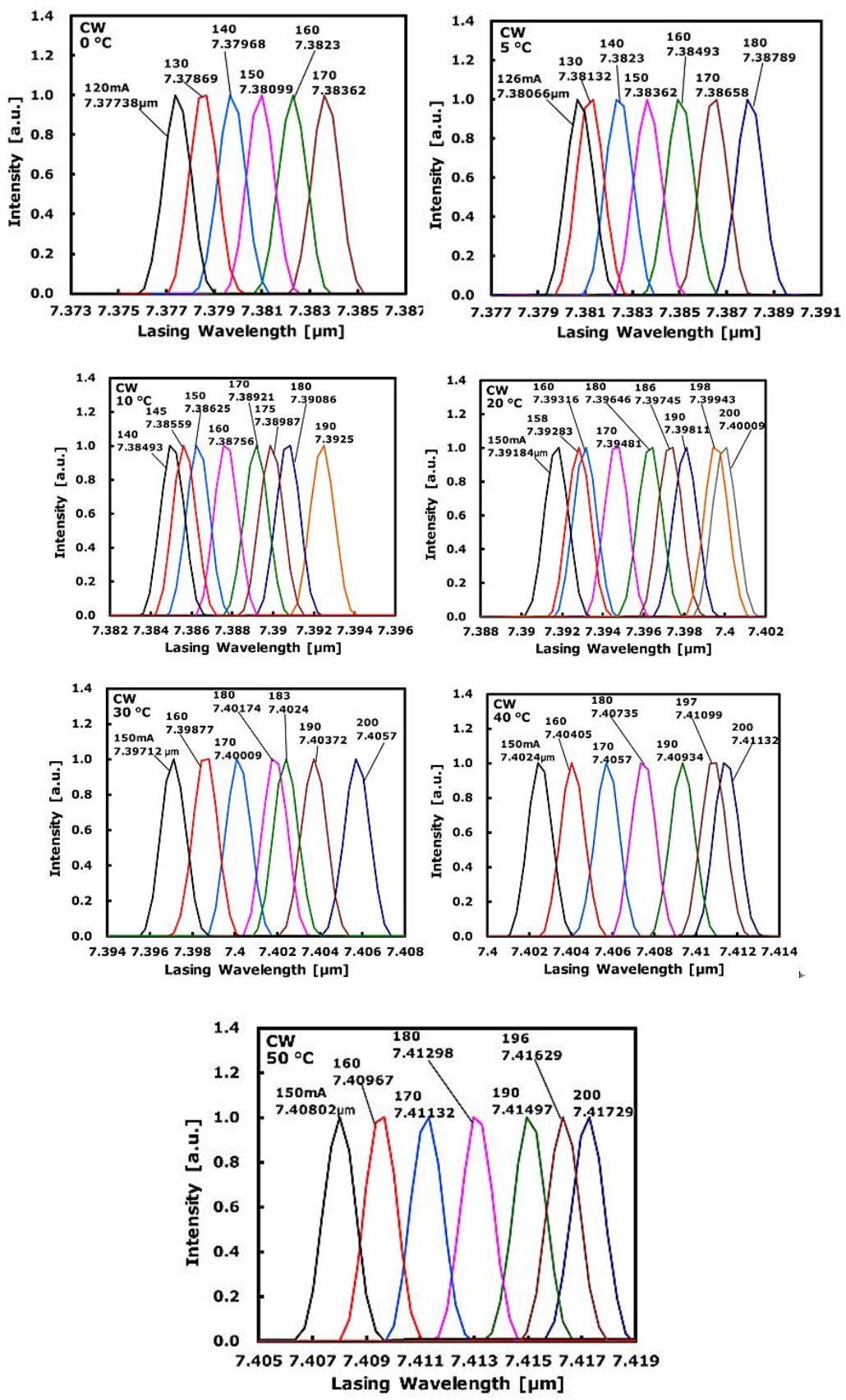
TEC current characteristic curve



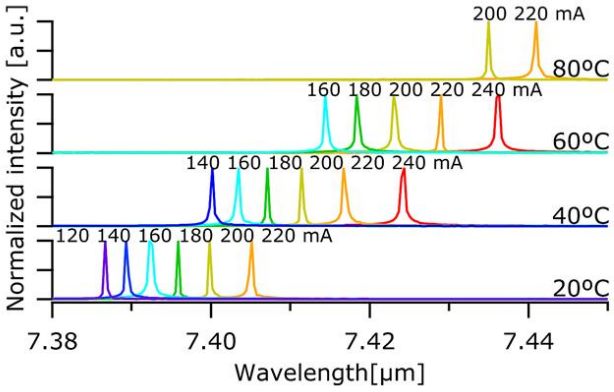
TEC Voltage characteristic curve

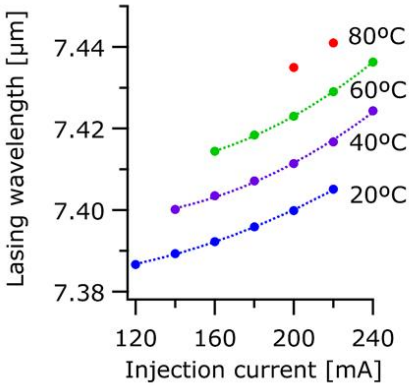


Laser spectrum (continuous)

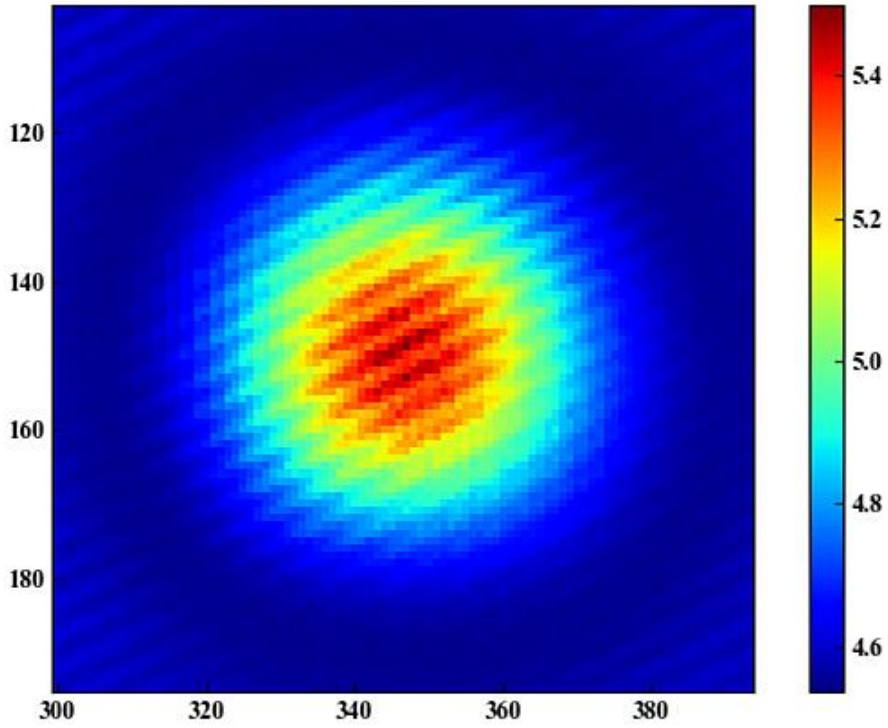


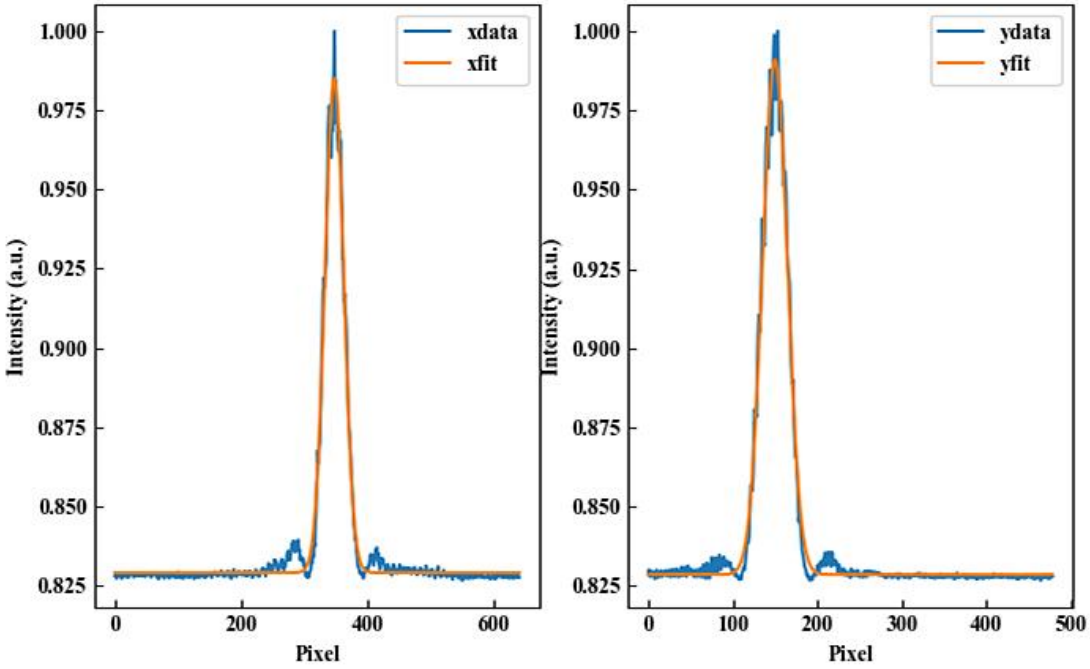
Wavelength Temperature Current Tuning Curve





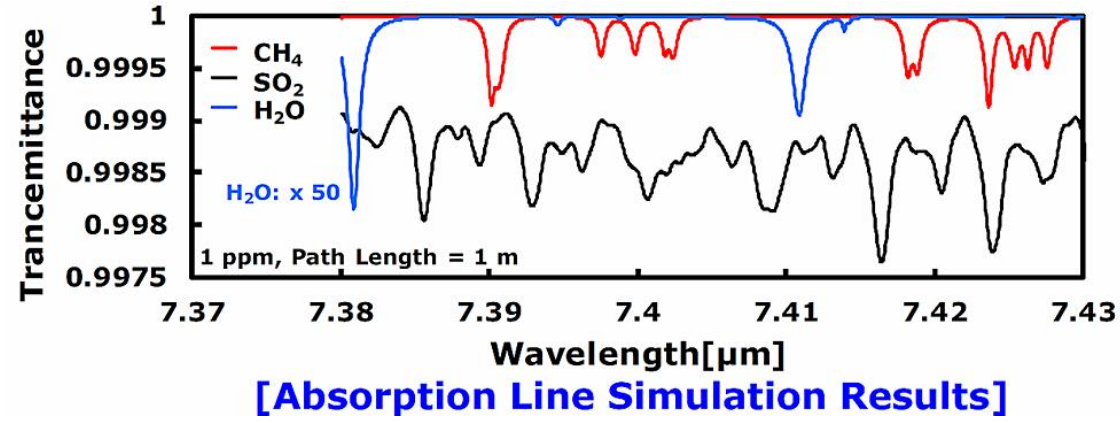
Quantum cascade laser output spot





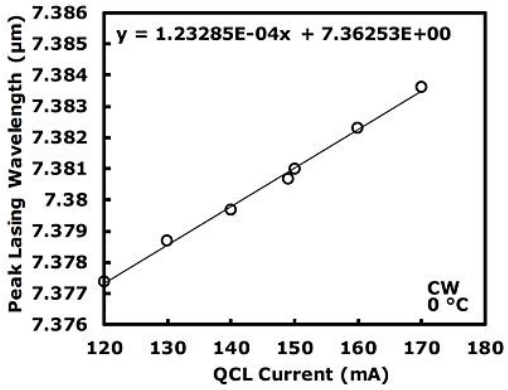
Test camera pixel size = 5 μm, Gaussian fitting spot diameter is 320 μm

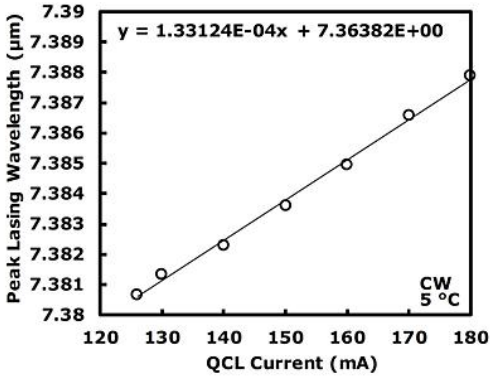
Simulation results of absorption spectrum near 7.4um

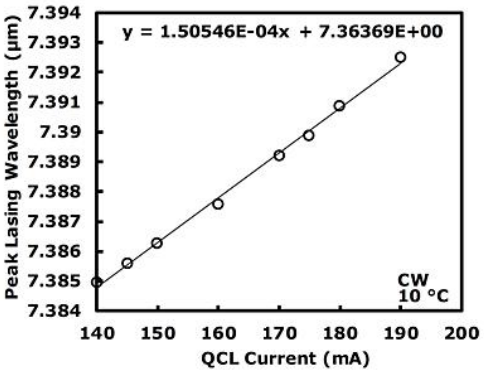


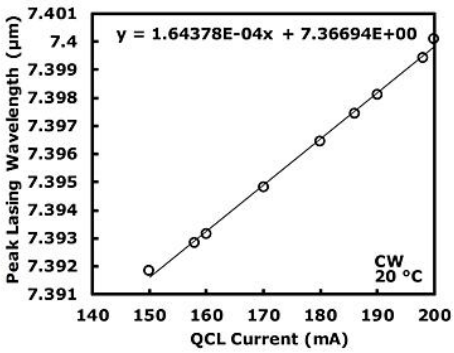
[Absorption Line Simulation Results]

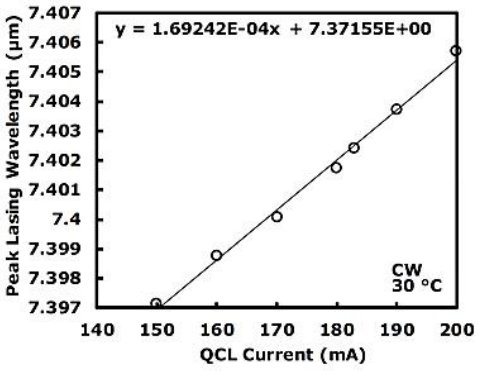
Peak wavelength vs. current curve

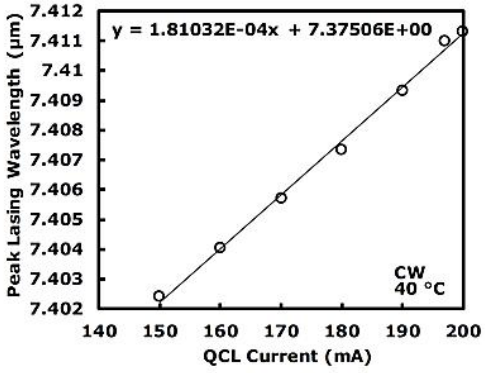


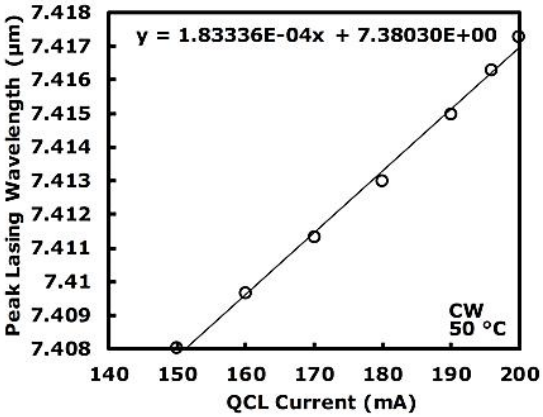












Control software