

Datasheet for HHL-229

Recommendations:

Please read the User Manual and have a look at the FAQ at <http://www.alpeslasers.ch/?a=142>

WARNING: Operating the laser with higher current or voltage than specified in this document may cause damage and will result in loss of warranty, unless Alpes Lasers has permitted to do so!

WARNING: Beware on the polarity of the laser. This laser has to be powered with negative pole on the pin 7 and positive pole on the pin 4. To use with a power-supply ILX Lightwave LDX-3232 or equivalent.

WARNING: Avoid bending module by applying too much torque on mounting screws. Keep temperature change rates below 10 degrees per minute.

MODULE PIN-OUT	Pin n°
TEC (-)	1
Nonexistent	2
Resistor	3
Positive contact of the laser	4
Temperature sensor	5
Temperature sensor	6
Negative contact of the laser	7
Not connected	8
Not connected	9
TEC (+)	10

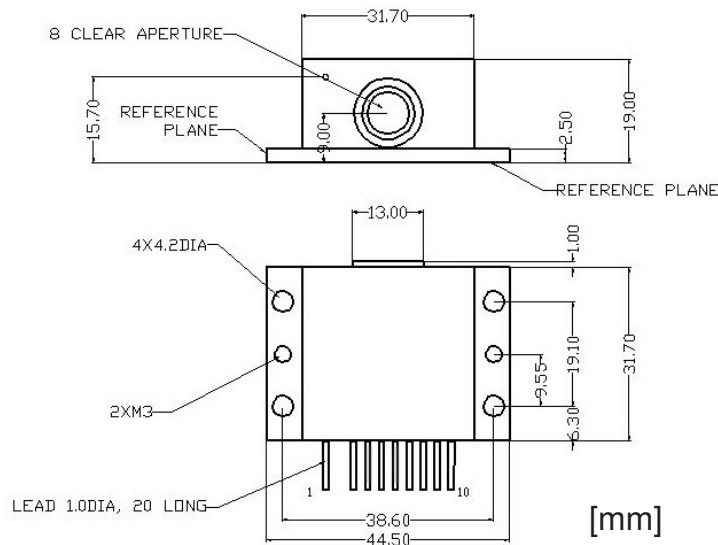


Figure 1: Support mounting for HHL-229 (specifications of the HHL-L module)

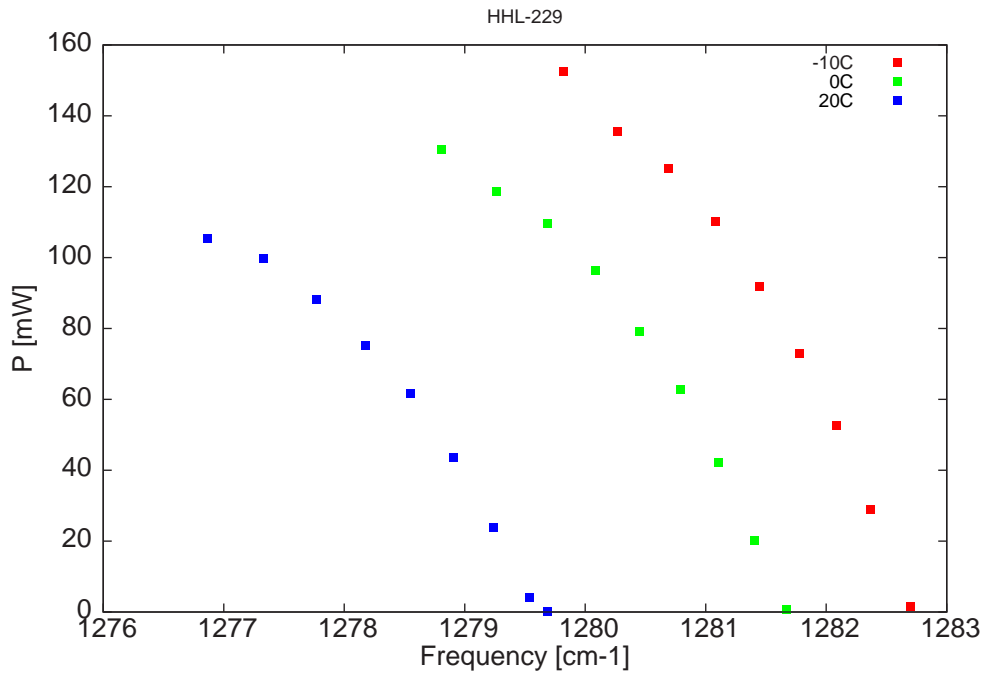


Figure 2: Output power as a function of the singlemode emission frequencies and temperatures

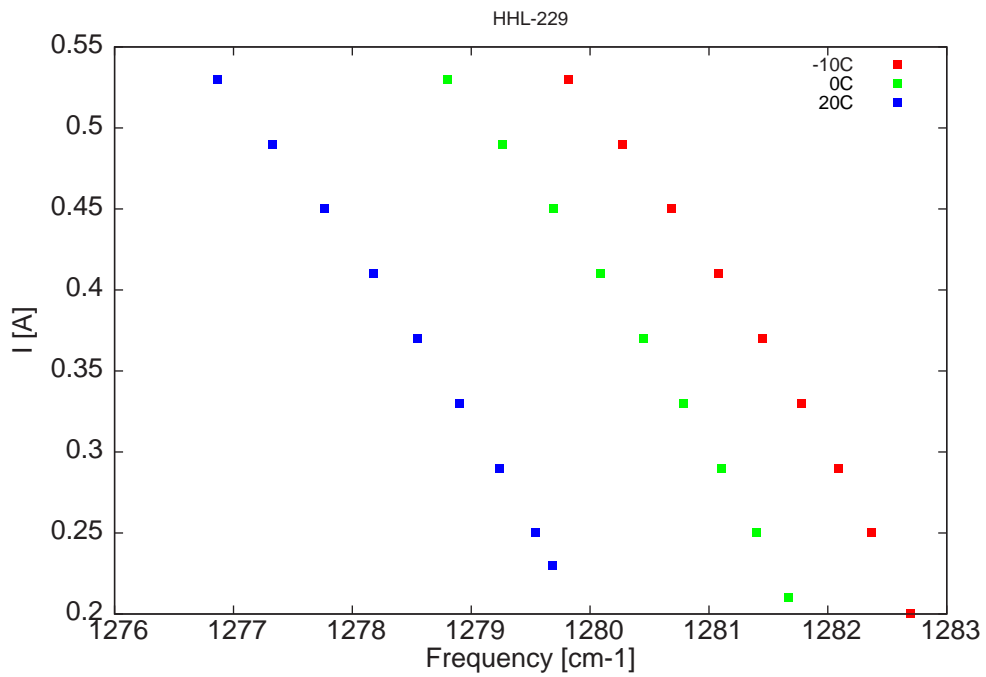


Figure 3: Applied DC current as a function of singlemode emission frequencies and temperatures

λ [nm]	ν [cm ⁻¹]	P[mW]	Temp[°C]	U_{LASER} [V]	I[A]
7796.1	1282.7	1.5	-10	8	0.2
7798.1	1282.4	29	-10	8.3	0.25
7799.8	1282.1	52.6	-10	8.6	0.29
7801.7	1281.8	73	-10	8.8	0.33
7803.7	1281.4	91.7	-10	9	0.37
7805.9	1281.1	110.3	-10	9.2	0.41
7808.3	1280.7	125.2	-10	9.4	0.45
7810.9	1280.3	135.6	-10	9.6	0.49
7813.6	1279.8	152.6	-10	9.8	0.53
7802.3	1281.7	0.8	0	7.9	0.21
7804	1281.4	20.3	0	8.2	0.25
7805.8	1281.1	42.2	0	8.4	0.29
7807.7	1280.8	62.9	0	8.6	0.33
7809.7	1280.5	79.1	0	8.8	0.37
7812	1280.1	96.3	0	9	0.41
7814.4	1279.7	109.5	0	9.2	0.45
7817	1279.3	118.7	0	9.4	0.49
7819.8	1278.8	130.3	0	9.7	0.53
7814.4	1279.7	0.1	20	7.8	0.23
7815.3	1279.5	4.2	20	7.9	0.25
7817.2	1279.2	23.8	20	8.1	0.29
7819.2	1278.9	43.6	20	8.4	0.33
7821.3	1278.6	61.7	20	8.6	0.37
7823.6	1278.2	75.3	20	8.8	0.41
7826.2	1277.8	88.1	20	9	0.45
7828.8	1277.3	99.7	20	9.2	0.49
7831.7	1276.9	105.4	20	9.4	0.53

Table 1 : singlemode optical output power as function of operating parameters

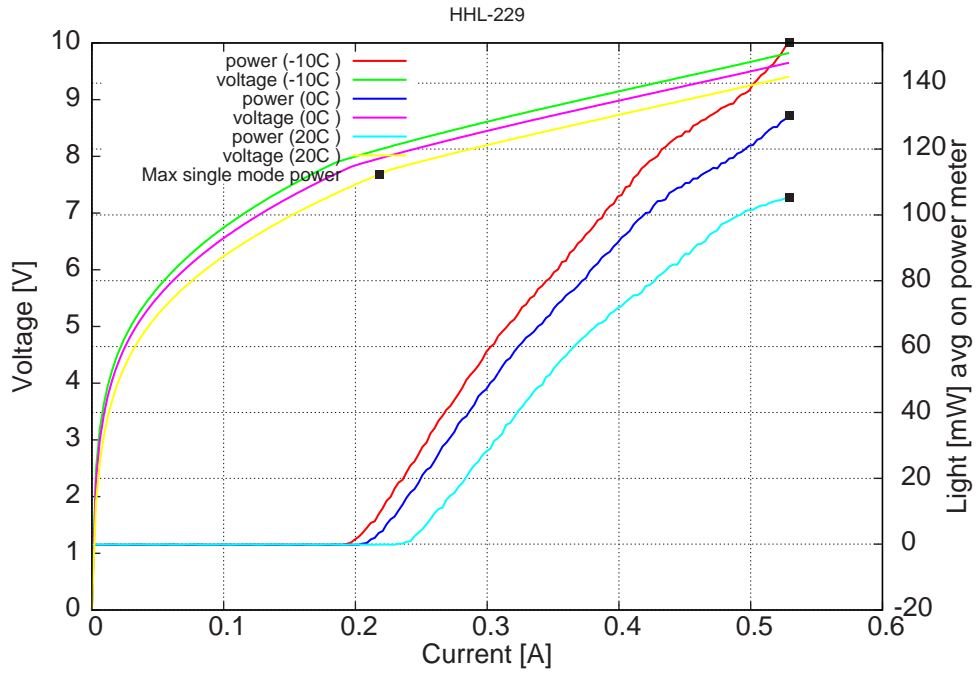
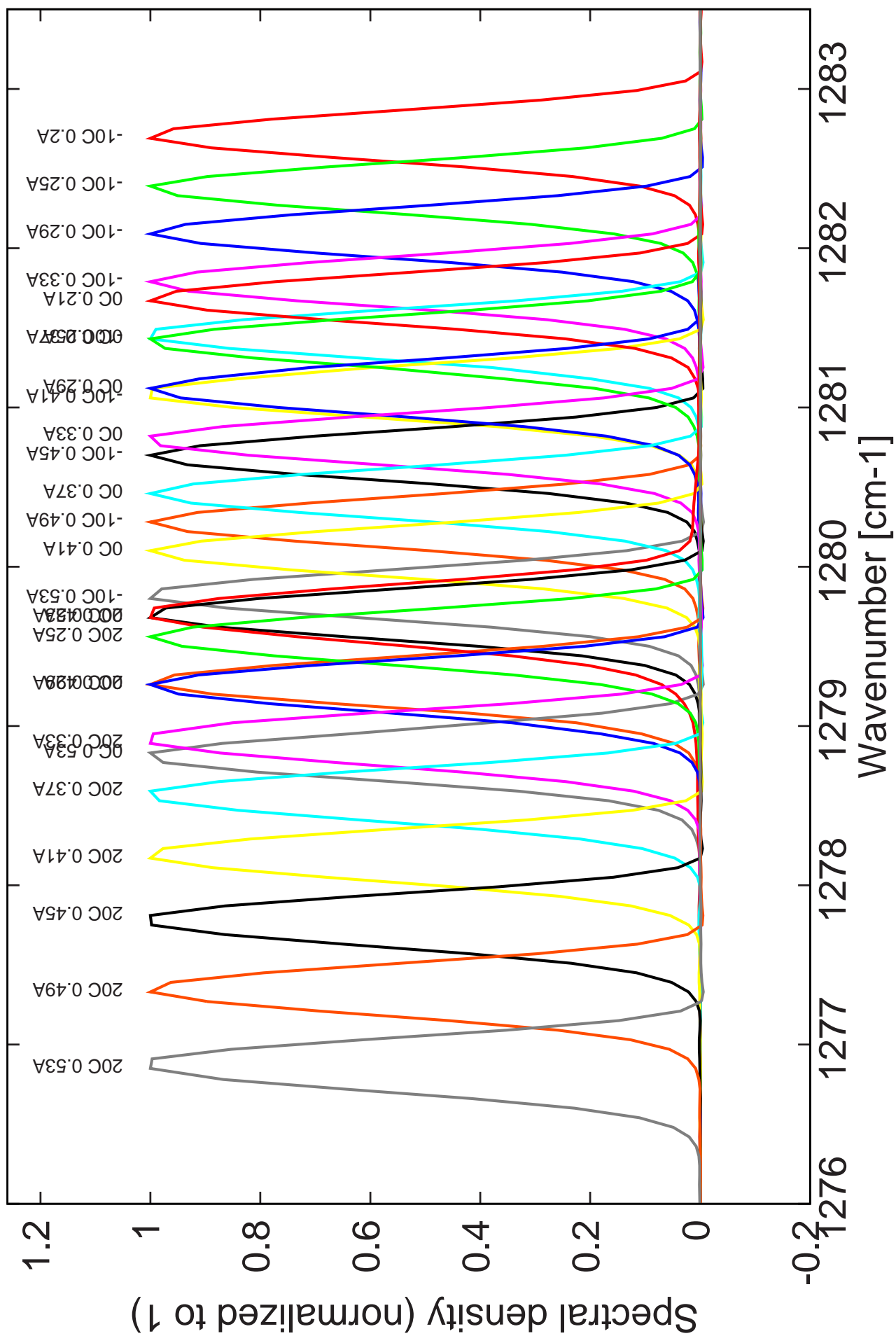


Figure 4: voltage and avg power vs current in continuous-wave operation (the solid squares indicate the maximum singlemode emitted power)

Note: at -10C: $I_{th}=190\text{mA}$ / $V_{th}= 7.9\text{V}$ (2-wires measurements). Maximum operation current: 0.53A for all temperatures.

Figure 3: spectra at different temperatures for various DC currents (monomode)



Resistor geometrical parameters

h_R [μm]	w_R [μm]	d_{AR} [μm]	n [cm^{-3}]	L [mm]	w_{AR} [μm]
2	6	3	2e16	2.25	13.5

Table 2 : Resistor geometrical parameters

Resistor tuning characterization

I_R [A]	V_R [V]	ν [cm^{-1}]	Pw [W]	I_L [mA]	T[C]
0.000000	0.114	1279.29	86.200	415	10
0.457000	2.601	1278.63	81.000	415	10
0.576000	3.301	1278.33	78.200	415	10
0.659000	3.824	1277.97	74.000	415	10
0.725000	4.267	1277.67	70.900	415	10
0.781000	4.670	1277.37	68.900	415	10
0.830000	5.046	1277.06	66.100	415	10
0.874000	5.407	1276.76	61.700	415	10
0.914100	5.756	1276.40	57.800	415	10
0.950000	6.091	1276.10	55.000	415	10
0.984000	6.428	1275.80	52.100	415	10
1.015900	6.764	1275.44	47.500	415	10
1.046000	7.101	1275.08	42.900	415	10
1.074100	7.436	1274.71	39.400	415	10
1.101000	7.782	1274.35	35.500	415	10
1.127000	8.142	1273.93	30.200	415	10
1.151000	8.505	1273.51	25.290	415	10
1.175000	8.901	1273.03	20.440	415	10
1.197000	9.300	1272.55	14.840	415	10
1.219000	9.728	1272.01	8.810	415	10
1.240000	10.163	1271.40	3.350	415	10

Table 3 : singlemode optical output power and wavelength as function of operating parameters

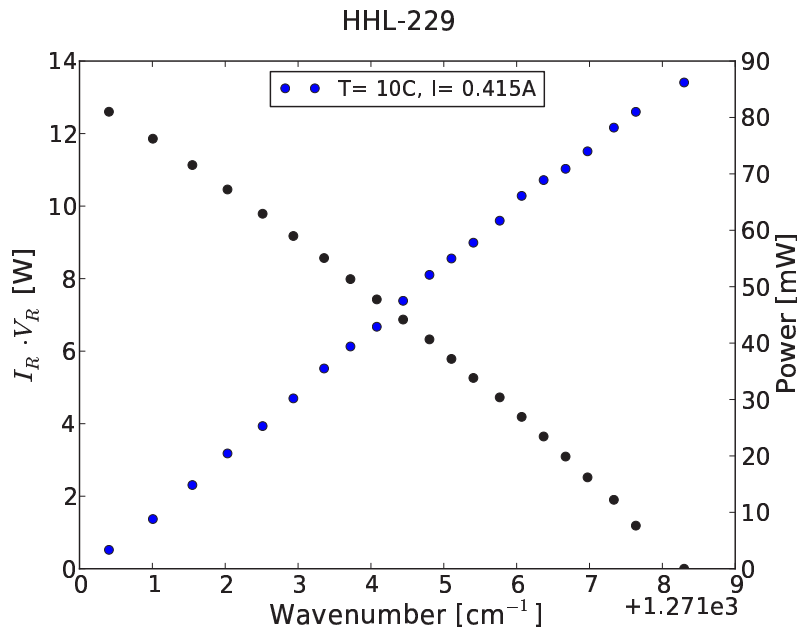
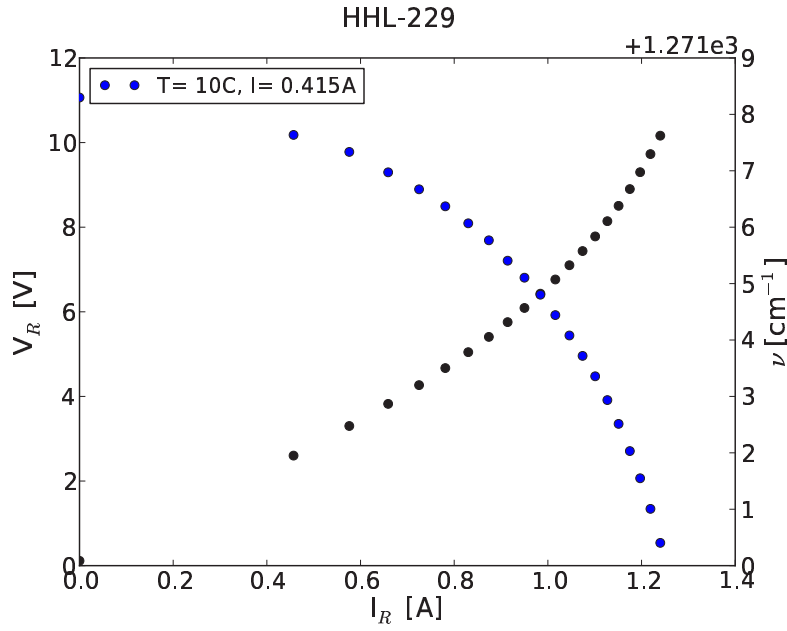


Figure 5: Submount temperature 10C and laser current $I_{Las}=415\text{mA}$. Top: Resistor voltage vs resistor current (left axis) and emission wavelength tuning vs resistor current. Bottom: Electrical dissipation in the resistor vs the emission tuning(left axis) and the optical power vs the wavelength tuning.

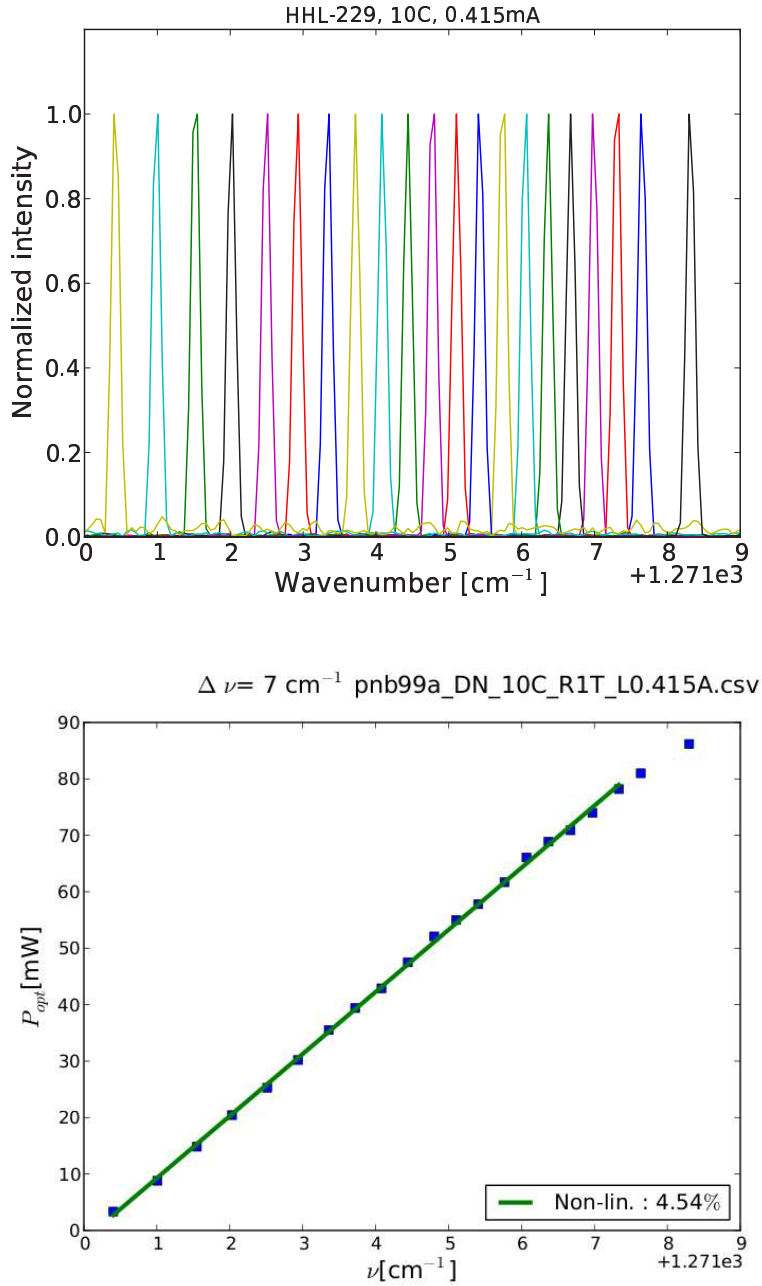


Figure 6: Top: Optical spectra as function of the resistor current. Bottom: Optical power as function of the emission wavelength at 10C. Using a linear fit a non-linearity as low as 4.54% has been observed.