

Datasheet for #sb625 UP

Recommendations:

Please read the starter kit user manual (at least installation chapter 5), if available, and have a look at the FAQ at <http://www.alpeslasers.ch/alfaq.pdf>

WARNING: Operating the laser with longer pulses, higher repetition rate, higher voltage or higher current than specified in this document may cause damage. It will result in loss of warranty, unless agreed upon with Alpes Lasers!

WARNING: Beware of the polarity of the laser. This laser has to be powered with negative bias on the laser contact (= bonding pad, corresponding to the label "laser" on the LLH) and the positive bias on the base contact (= submount, corresponding to the label "base" on the LLH).

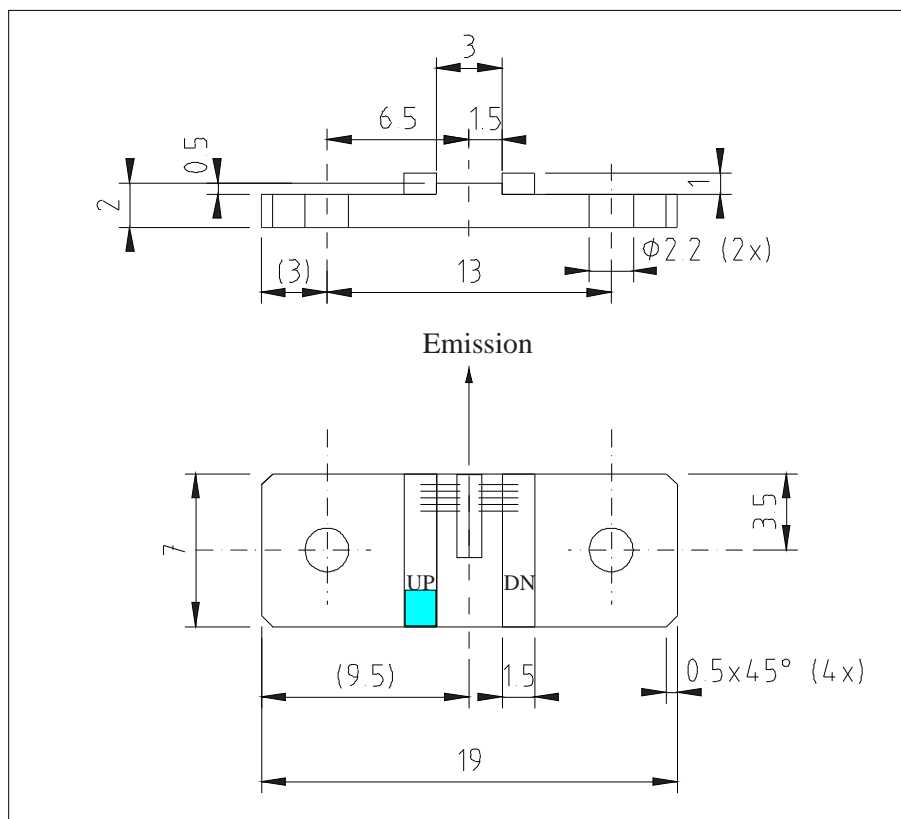


Figure 1: Support mounting for #sb625 UP (please note that the laser is connected to the UP pad drawn in blue)

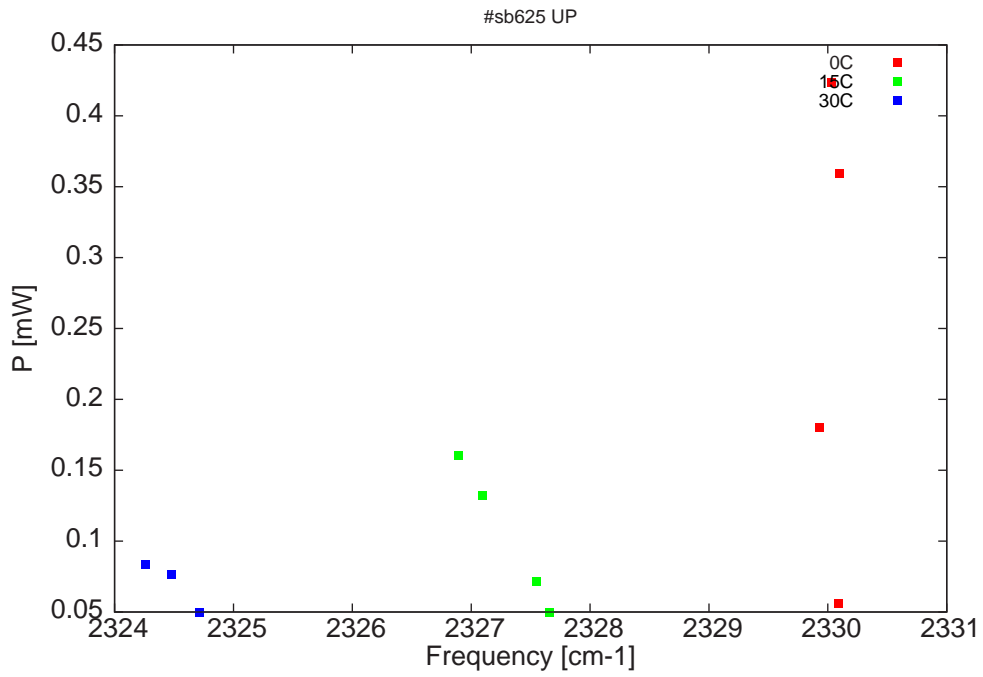


Figure 2: Output power as a function of the singlemode emission frequencies and temperatures

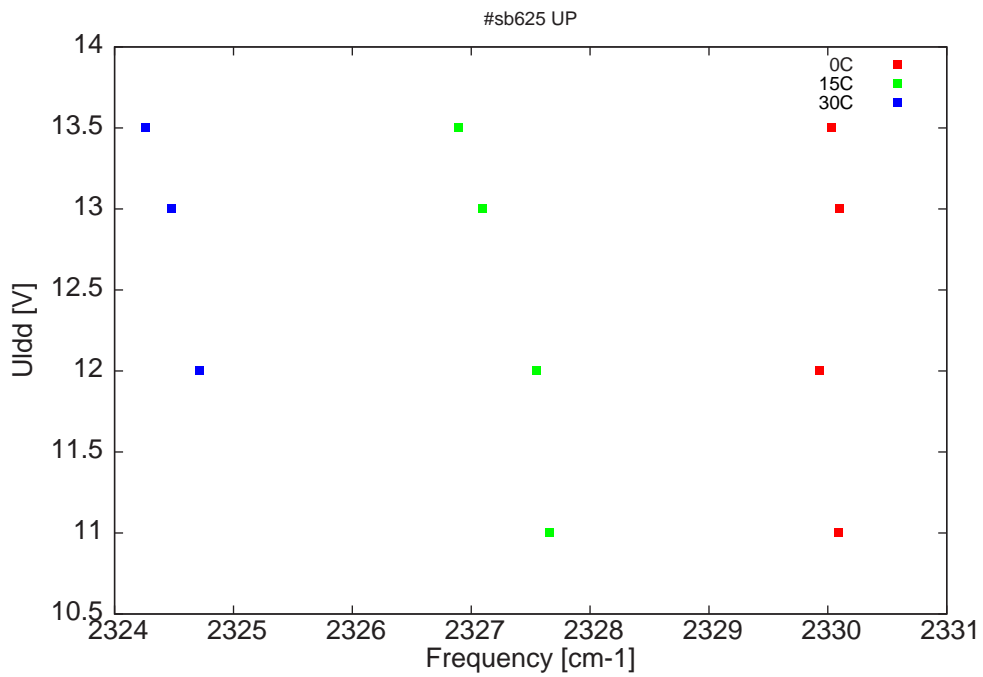


Figure 3: DC voltage fed to LDD (U_{ldd}) as a function of the singlemode emission frequencies and temperatures

| λ [nm] | ν [cm ⁻¹] | P[mW] | Temp[°C] | U_{LDD} [V] | I_{pulse} [A] |
|----------------|---------------------------|-------|----------|---------------|-----------------|
| 4291.7 | 2330.1 | 0.1 | 0 | 11 | 1.11 |
| 4292 | 2329.9 | 0.2 | 0 | 12 | 1.41 |
| 4291.7 | 2330.1 | 0.4 | 0 | 13 | 1.66 |
| 4291.8 | 2330 | 0.4 | 0 | 13.5 | 1.76 |
| 4296.2 | 2327.7 | 0.1 | 15 | 11 | 1.16 |
| 4296.4 | 2327.5 | 0.1 | 15 | 12 | 1.41 |
| 4297.2 | 2327.1 | 0.1 | 15 | 13 | 1.65 |
| 4297.6 | 2326.9 | 0.2 | 15 | 13.5 | 1.75 |
| 4301.6 | 2324.7 | 0.1 | 30 | 12 | 1.37 |
| 4302 | 2324.5 | 0.1 | 30 | 13 | 1.61 |
| 4302.4 | 2324.3 | 0.1 | 30 | 13.5 | 1.74 |

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

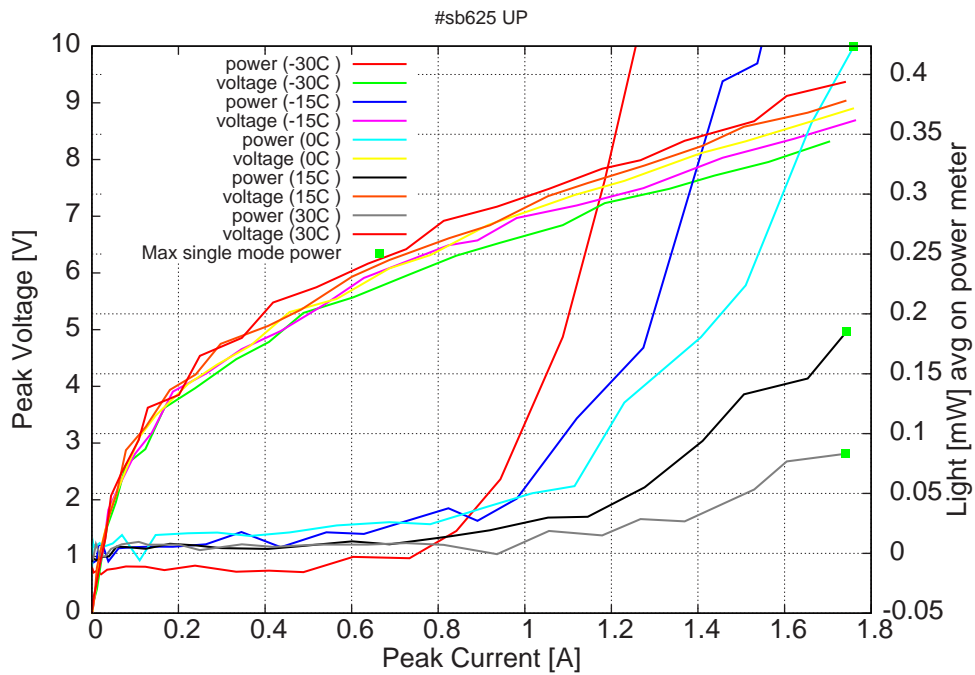


Figure 4: peak voltage and average power vs peak current at 2% duty-cycle (50ns pulses on the laser, 2.5 μ s period) (the solid squares indicate the maximum singlemode emitted power)

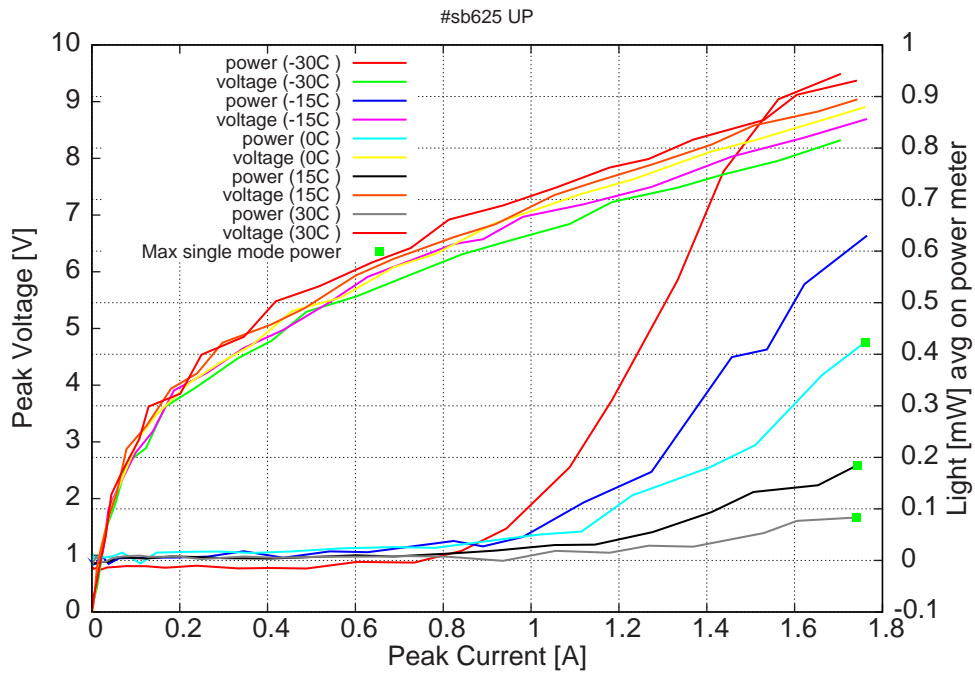


Figure 5: peak voltage and average power vs peak current at 2% duty-cycle (50ns pulses on the laser, $2.5\mu\text{s}$ period) (including the multimode region)

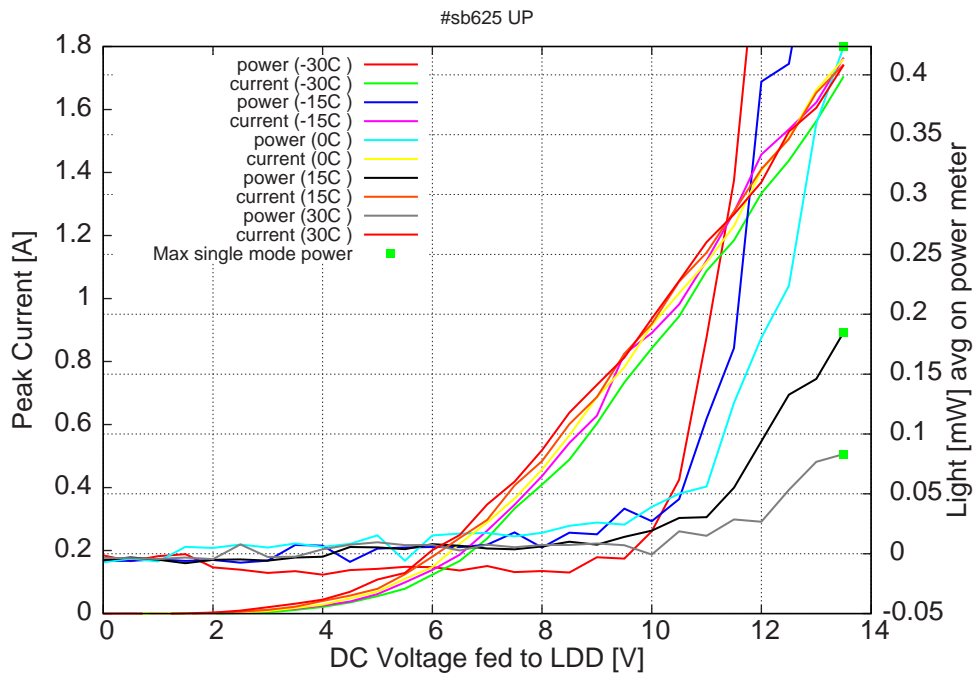


Figure 6: peak current and average power vs LDD voltage at 2% duty-cycle (50ns pulses on the laser, $2.5\mu\text{s}$ period) (the solid squares indicate the maximum singlemode emitted power)

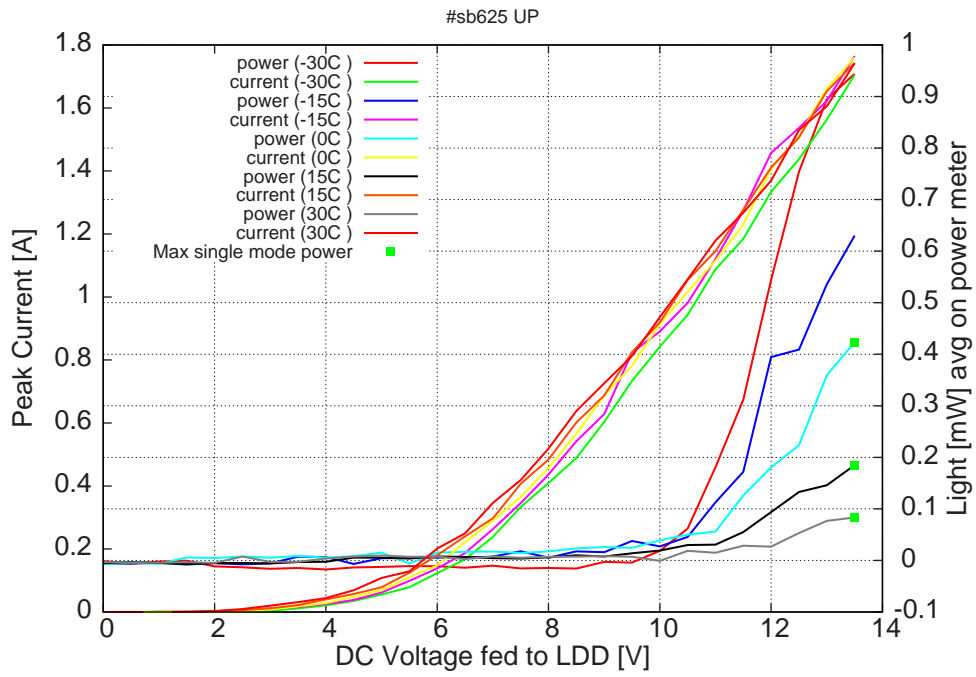
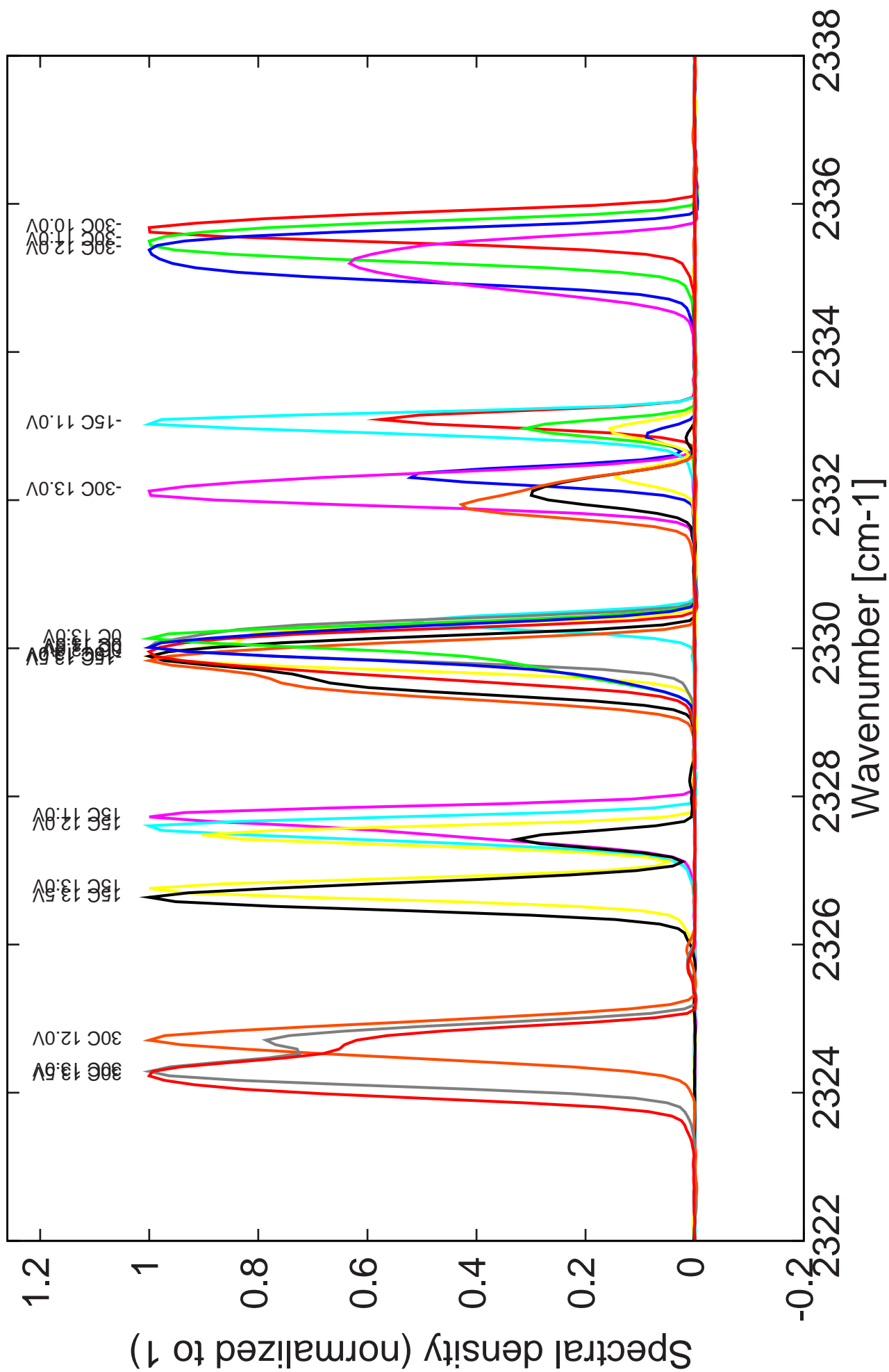


Figure 7: peak current and average power vs LDD voltage at 2% duty-cycle (50ns pulses on the laser, 2.5 μ s period) (including the multimode region)

Figure 6: spectra at different temperatures for various LDD voltages (22ns pulses, 1.1us period)



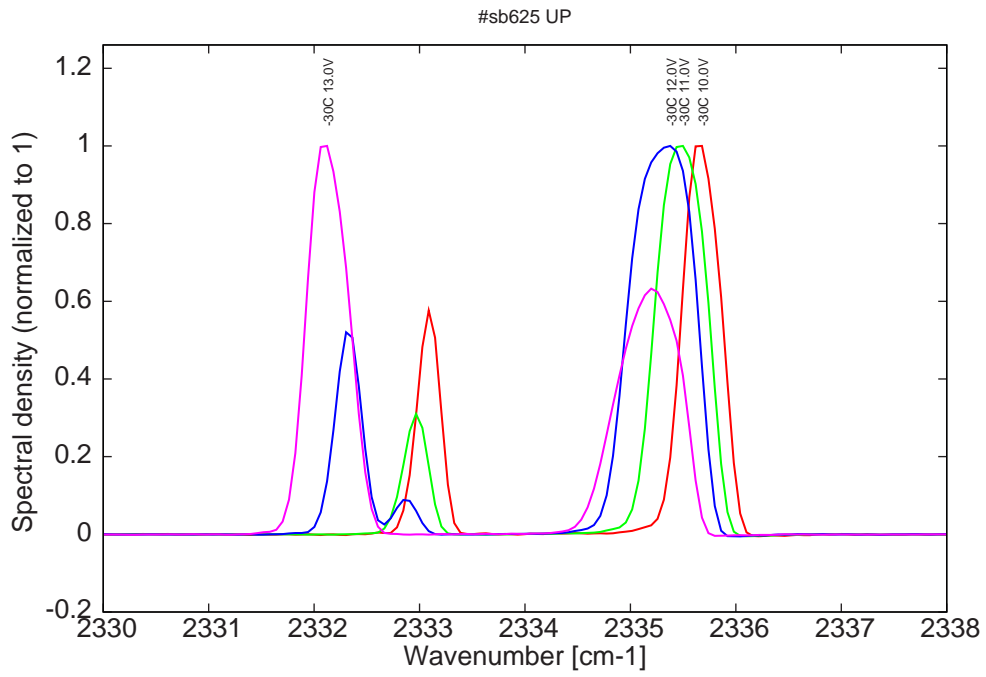


Figure 8: spectra at -30C for various LDD voltages (all bimode)

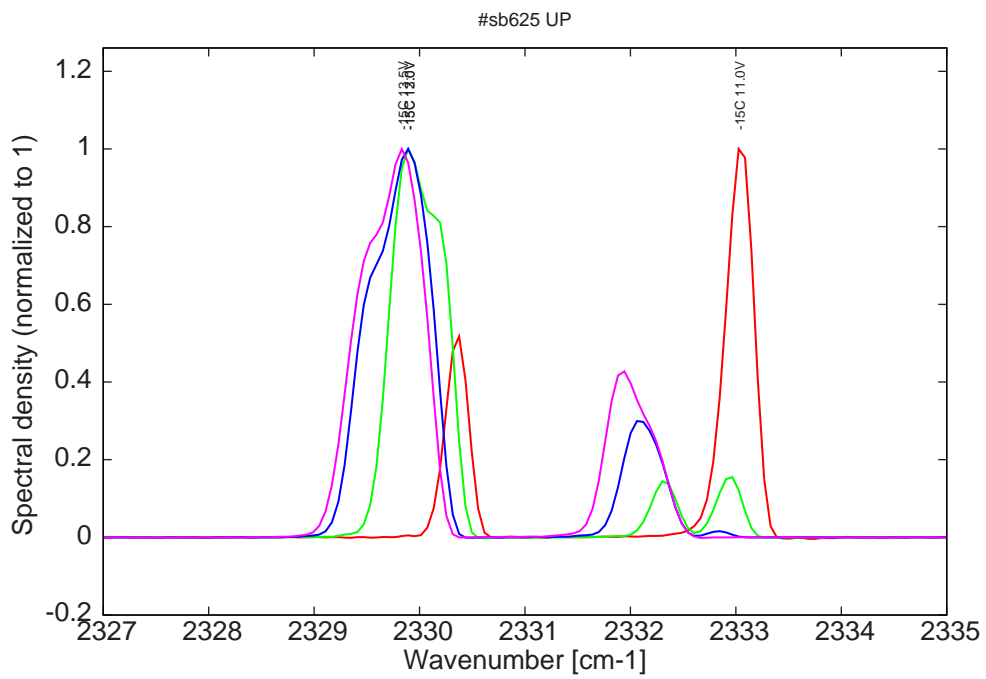
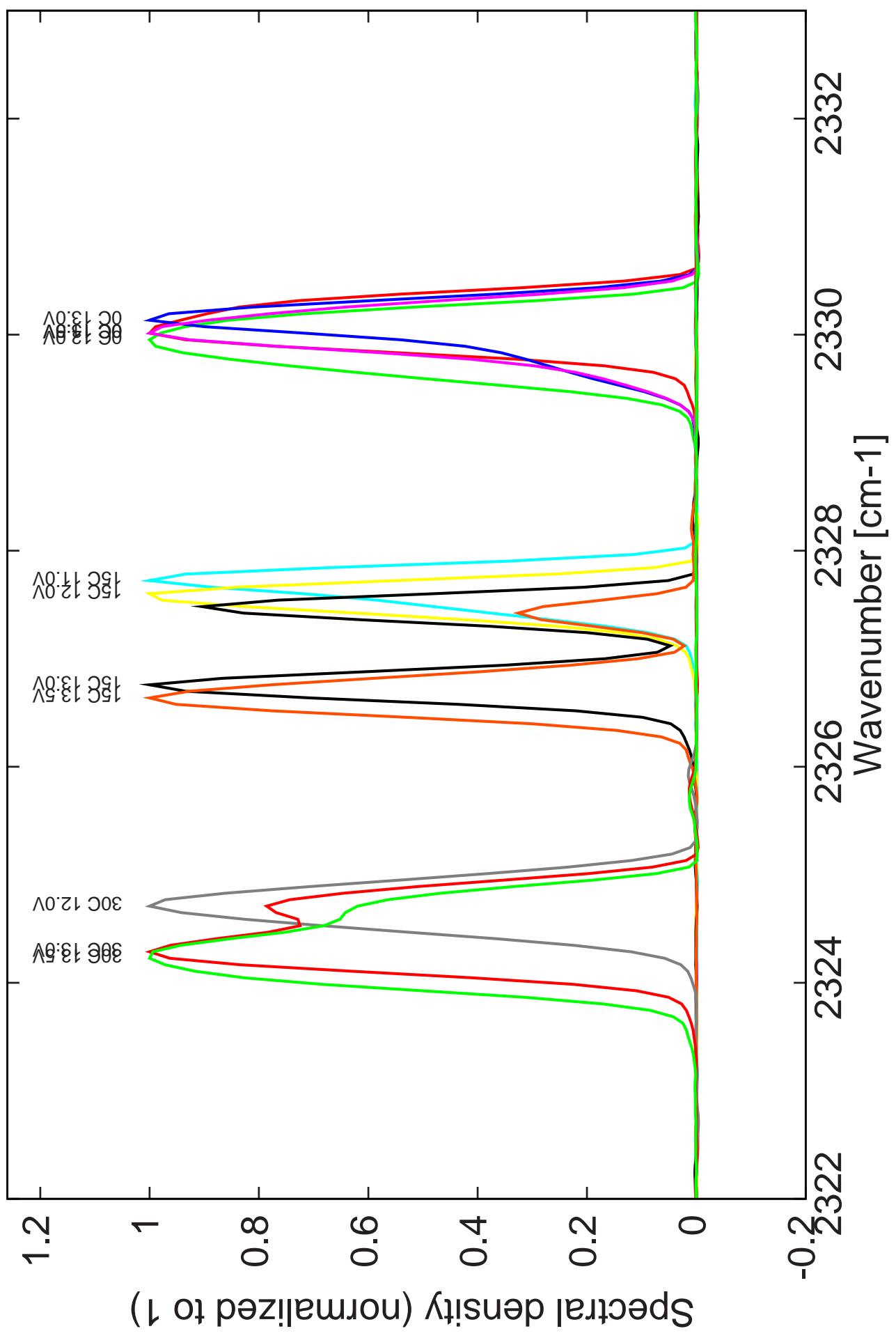


Figure 9: spectra at -15C for various LDD voltages (all bimode)

Figure 9: spectra between 0C and 30C for various LDD voltages (all monomode); bumps are due to absorption in the a



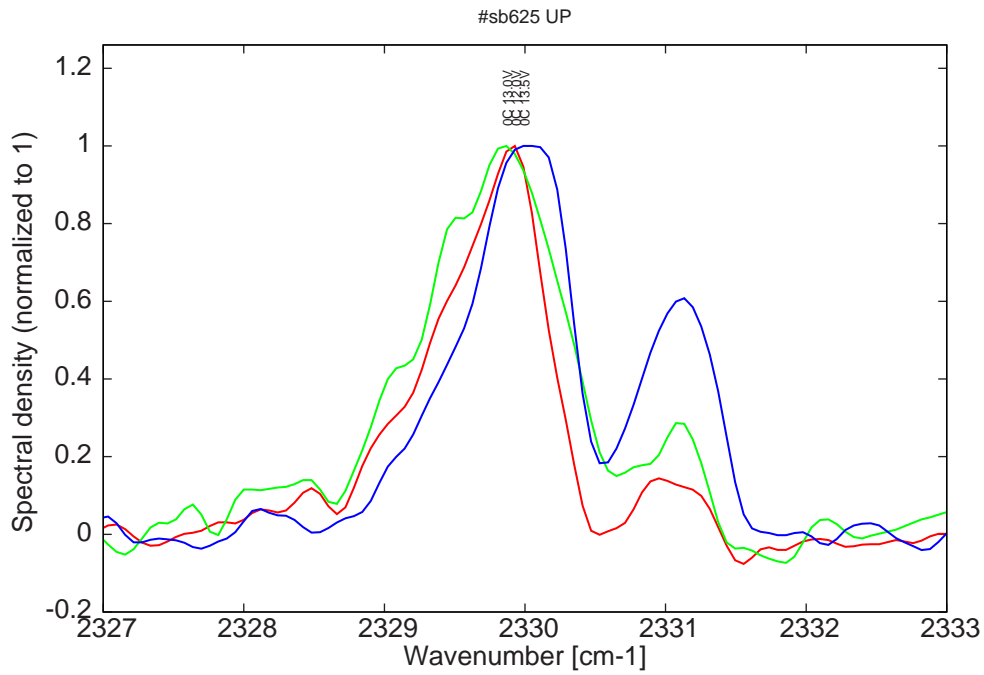


Figure 10: spectra at 0C for various LDD voltages using 50ns pulses at 5kHz (corresponding to a duty-cycle of 0.025%)

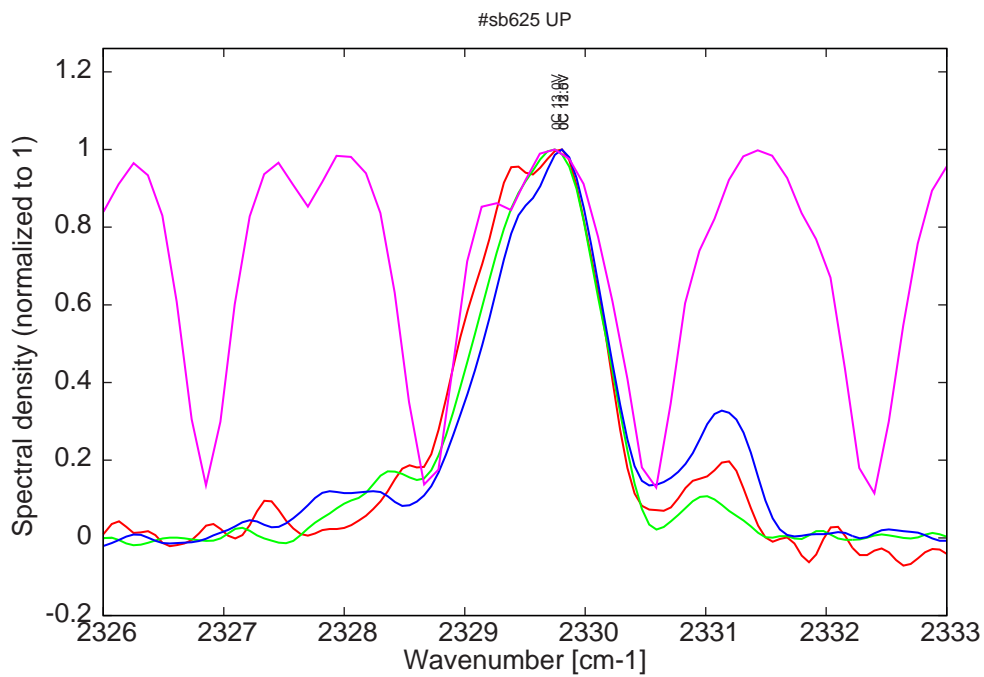


Figure 11: spectra at 0C for various LDD voltages using 100ns pulses at 5kHz (corresponding to a duty-cycle of 0.05%); the pink curve shows CO₂ absorption in the air

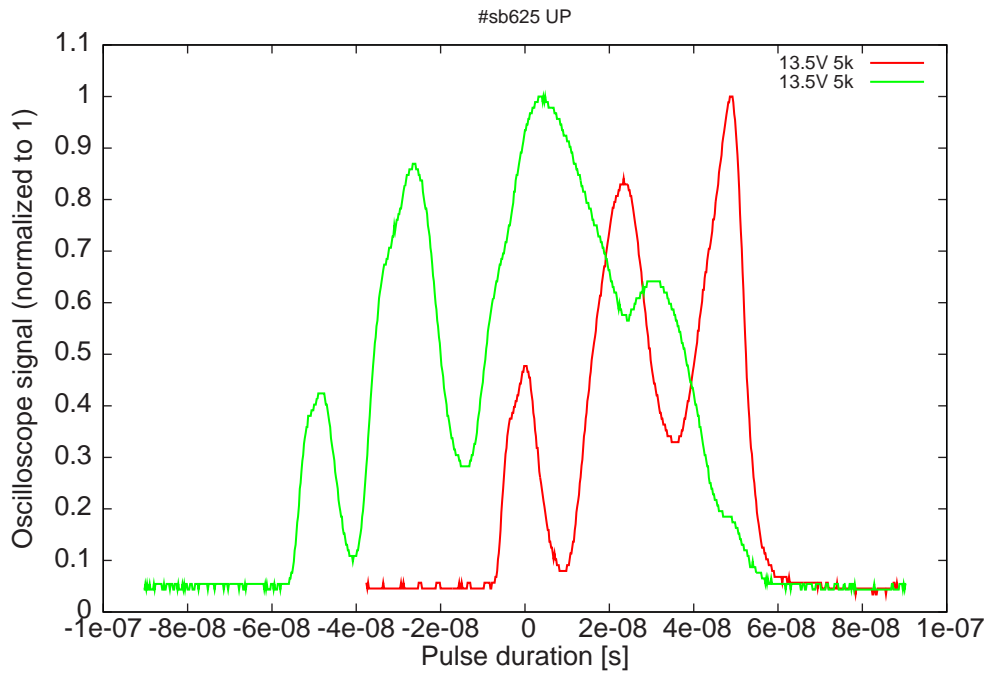


Figure 12: optical pulses at -25C and 13.0V on LDD measured with a Vigo photodetector for pulse lengths of 50ns (red) and 100ns (green); bumps are clearly due to CO2 absorption in the air