

photobiologyLamps Version 0.3.2

Catalogue of Lamps

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1 Introduction

We will plot the emission spectra of the different lamps for which data is provided in the package. We plot side-by-side the lamp output as spectral energy irradiance and as spectral photon irradiance. All spectra are normalized to an area of one under the whole curve.

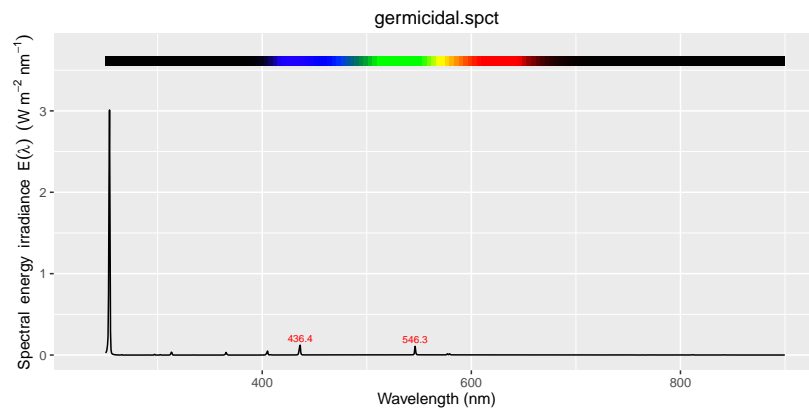
```
library(photobiology)
library(photobiologyWavebands)
library(photobiologyLamps)
library(ggplot2)
library(ggspectra)
```

```
options(photobiology.plot.annotations =
        c("boxes", "labels", "colourguide", "peaks", "title"))
```

2 UV-C lamp spectra

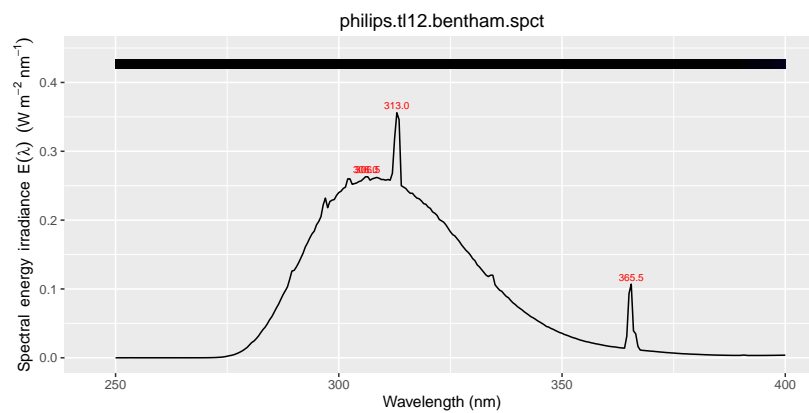
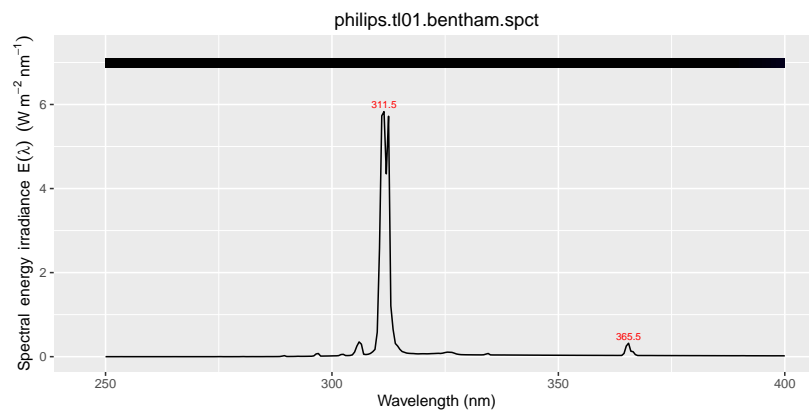
```
plot(germicidal.spct)
cat(comment(germicidal.spct))

## Spectrometer: MayaPro2000 s/n MAYP11278
## Bench with grating HC1, filter 000 and slit 010s
## Measured on 2015-06-02 10:42:35
## processed on 2015-06-02 with MayaCalc ver 3.2.3
## using HDR: TRUE, using NR: TRUE, method: original
## calibration dated (automatic): 2014-10-15
## number of scans      :      6,      1
## integration times (ms) :    943.1,    9430.6
## total times (s)       :    5.6584,    9.4306
## max counts           : 51087 out of 64000 (80%)
## signal O.K.
```

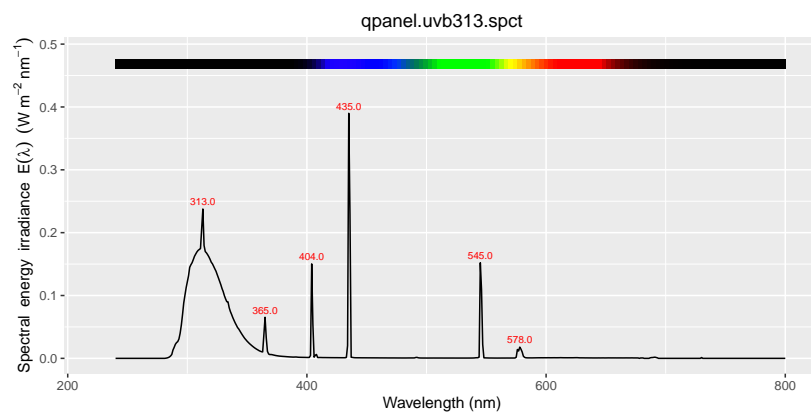
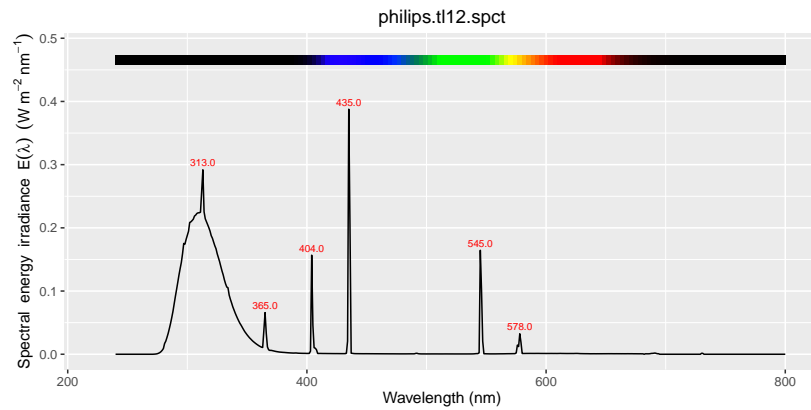


3 UV-B lamp spectra

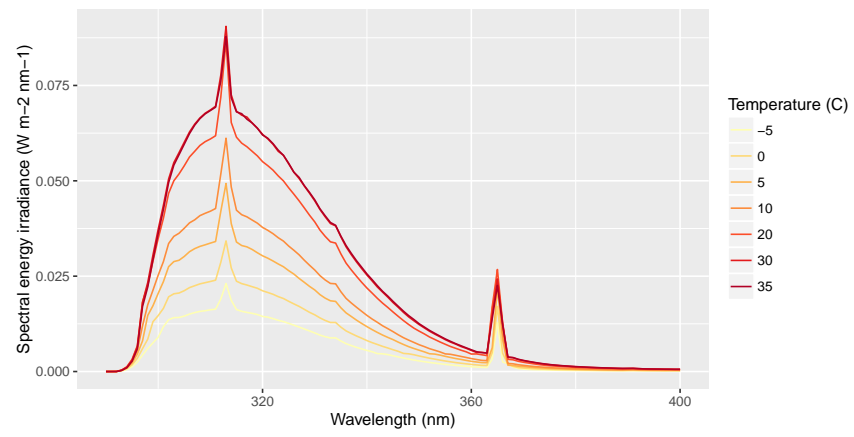
```
plot(philips.tl01.bentham.spct)
plot(philips.tl12.bentham.spct)
```



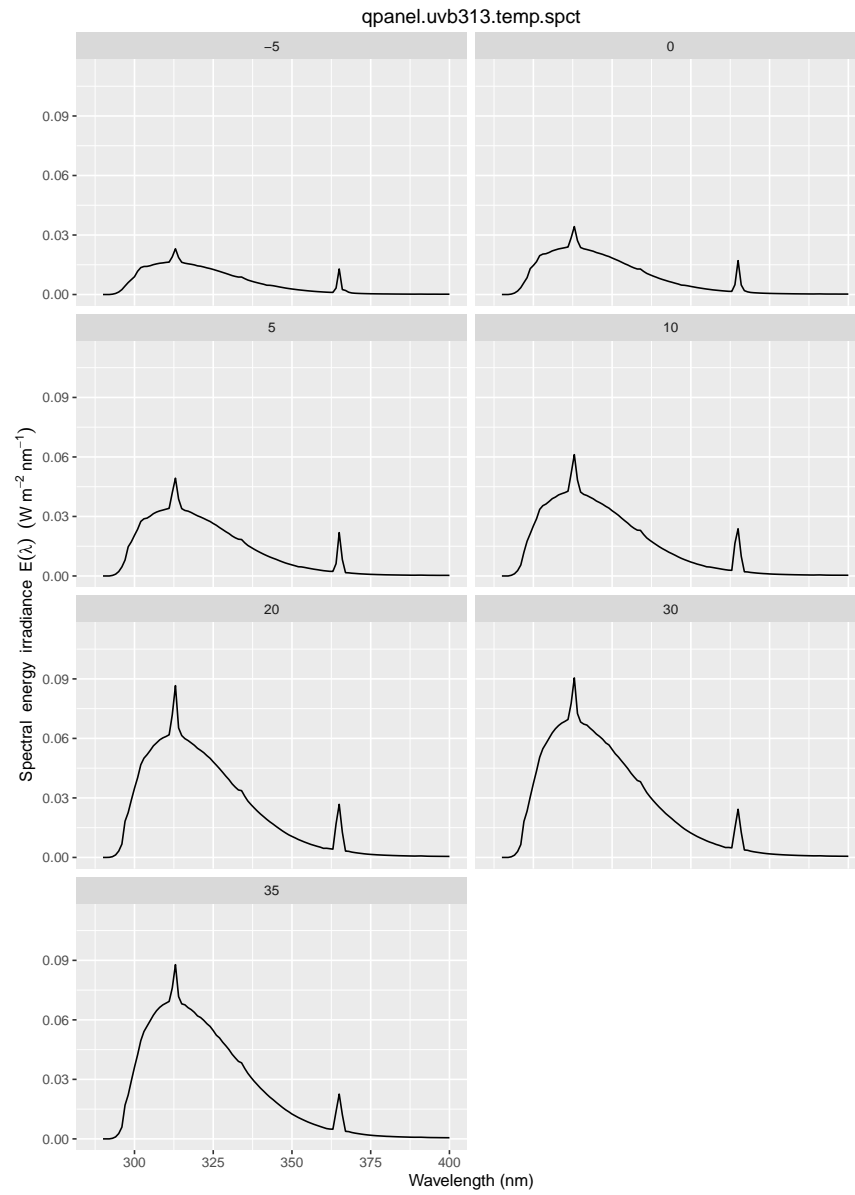
```
plot(philips.tl12.spct)
plot(qpanel.uvb313.spct)
```



```
fig_temp <- ggplot(data=qpanel.uvb313.temp.spct,
  aes(x=w.length, y=s.e.irrad, colour=factor(temperature))) +
  scale_colour_brewer(type="seq", palette="YlOrRd")
fig_temp <- fig_temp + geom_line() +
  labs(x="Wavelength (nm)", y="Spectral energy irradiance (W m⁻² nm⁻¹)",
    colour="Temperature (C)")
print(fig_temp)
```

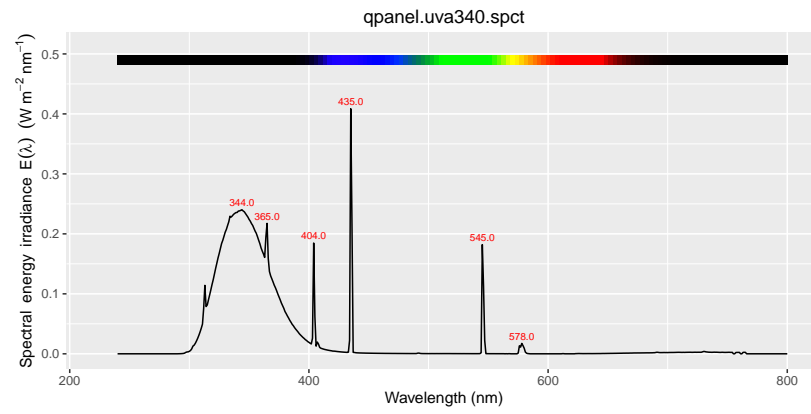


```
qpanel.uvb313.temp.spct$temperature <- factor(qpanel.uvb313.temp.spct$temperature)
plot(qpanel.uvb313.temp.spct, annotations = c("boxes", "labels", "title")) +
  facet_wrap(~temperature, ncol = 2)
```



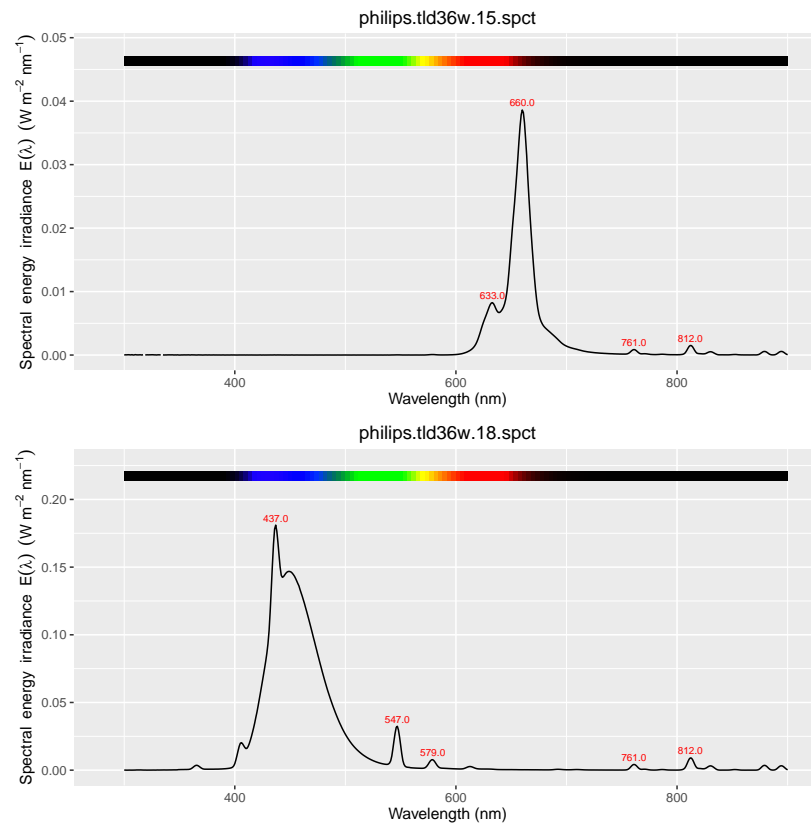
4 UV-A lamp spectra

```
plot(qpanel.uva340.spct)
```



5 Narrow spectrum VIS lamps

```
plot(philips.tld36w.15.spct)  
plot(philips.tld36w.18.spct)
```

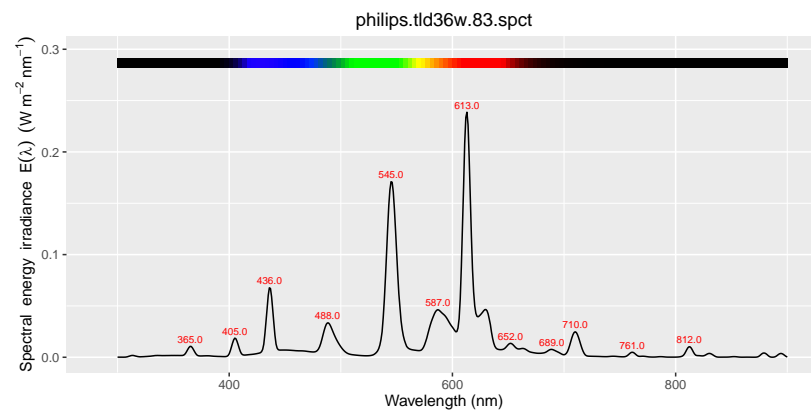
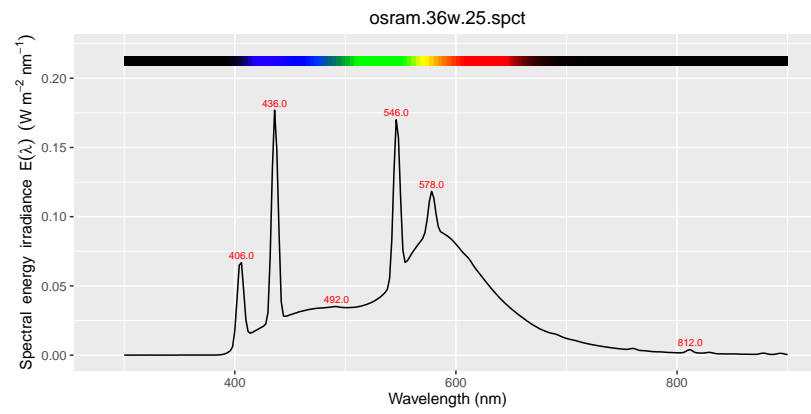
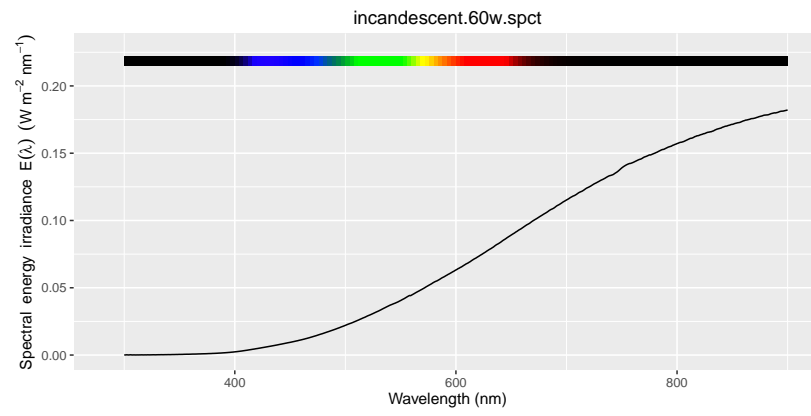


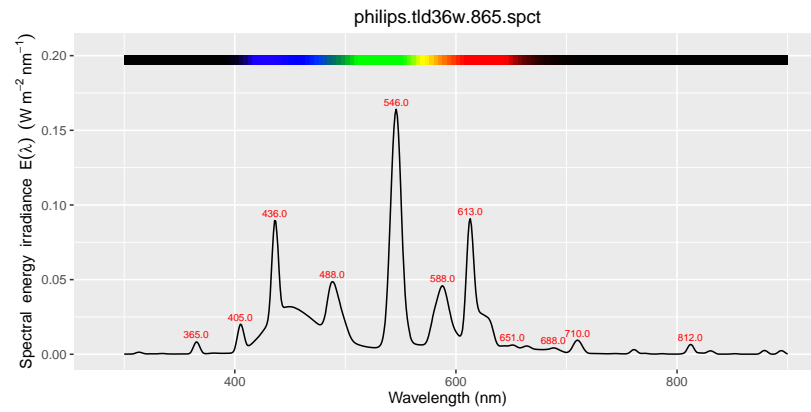
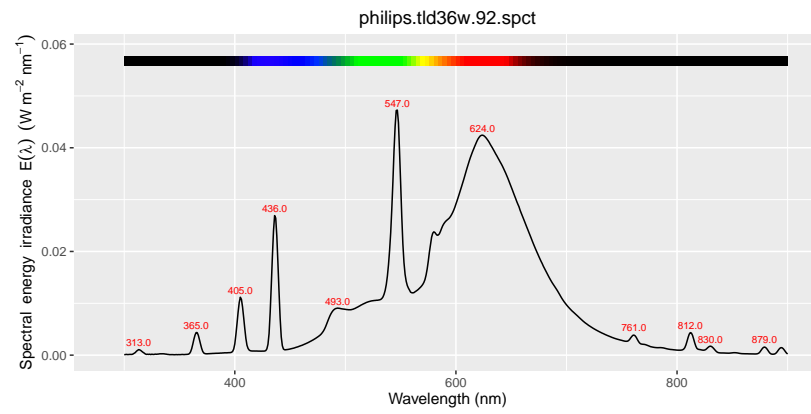
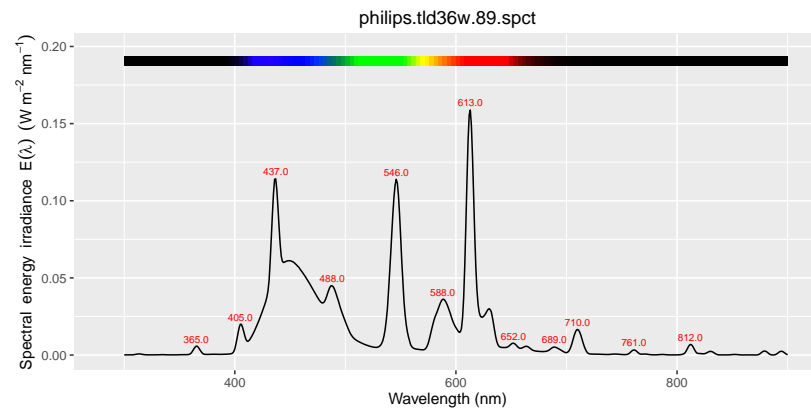
6 Broad VIS lamps

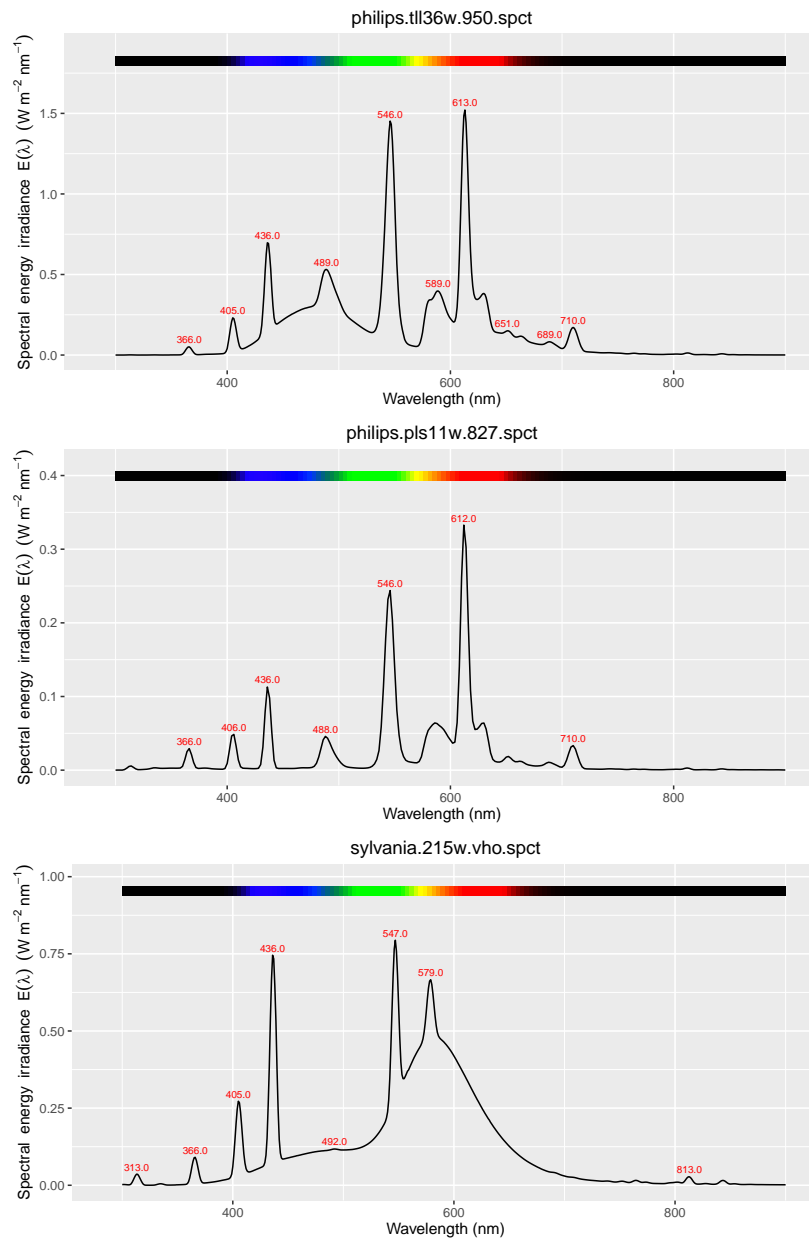
```

plot(incandescent.60w.spct)
plot(osram.36w.25.spct)
plot(philips.tld36w.83.spct)
plot(philips.tld36w.89.spct)
plot(philips.tld36w.92.spct)
plot(philips.tld36w.865.spct)
plot(philips.tld36w.950.spct)
plot(philips.pls11w.827.spct)
plot(sylvania.215w.vho.spct)

```







7 Calibration lamps

```
FEL.spct <- FEL_spectrum(300:900)
D2.spct <- D2_spectrum(200:400)
plot(FEL.spct)
```

```
plot(D2.spct)
```

