

Razvoj nosljivega spektrometra za spremljanje vsakodneвне izpostavljenosti svetlobi

LED Luks d.o.o

Kevin Peršolja



Cilj

Dragi spektrometri

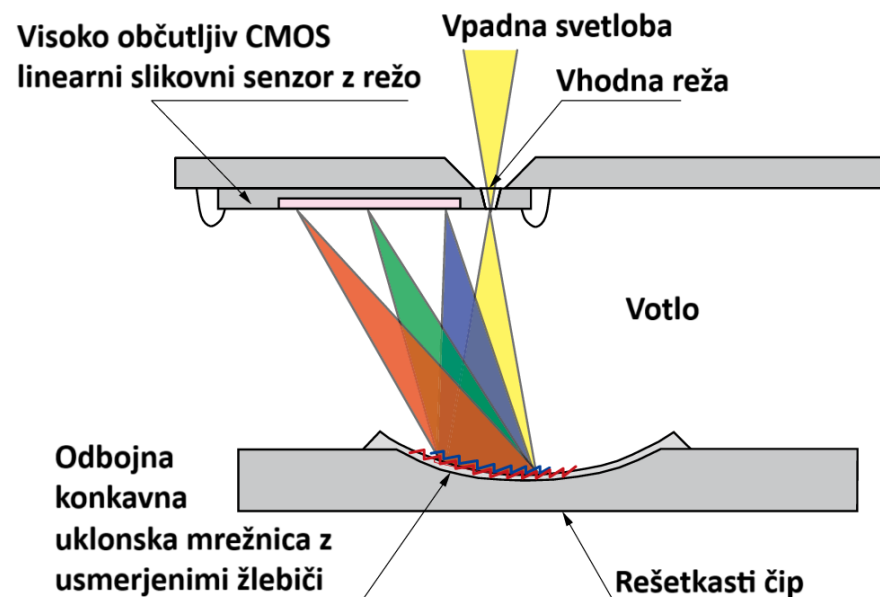
Razvoj nosljivega prototipa

Vpliv svetlobe na zdravje

Cenovno dostopna naprava

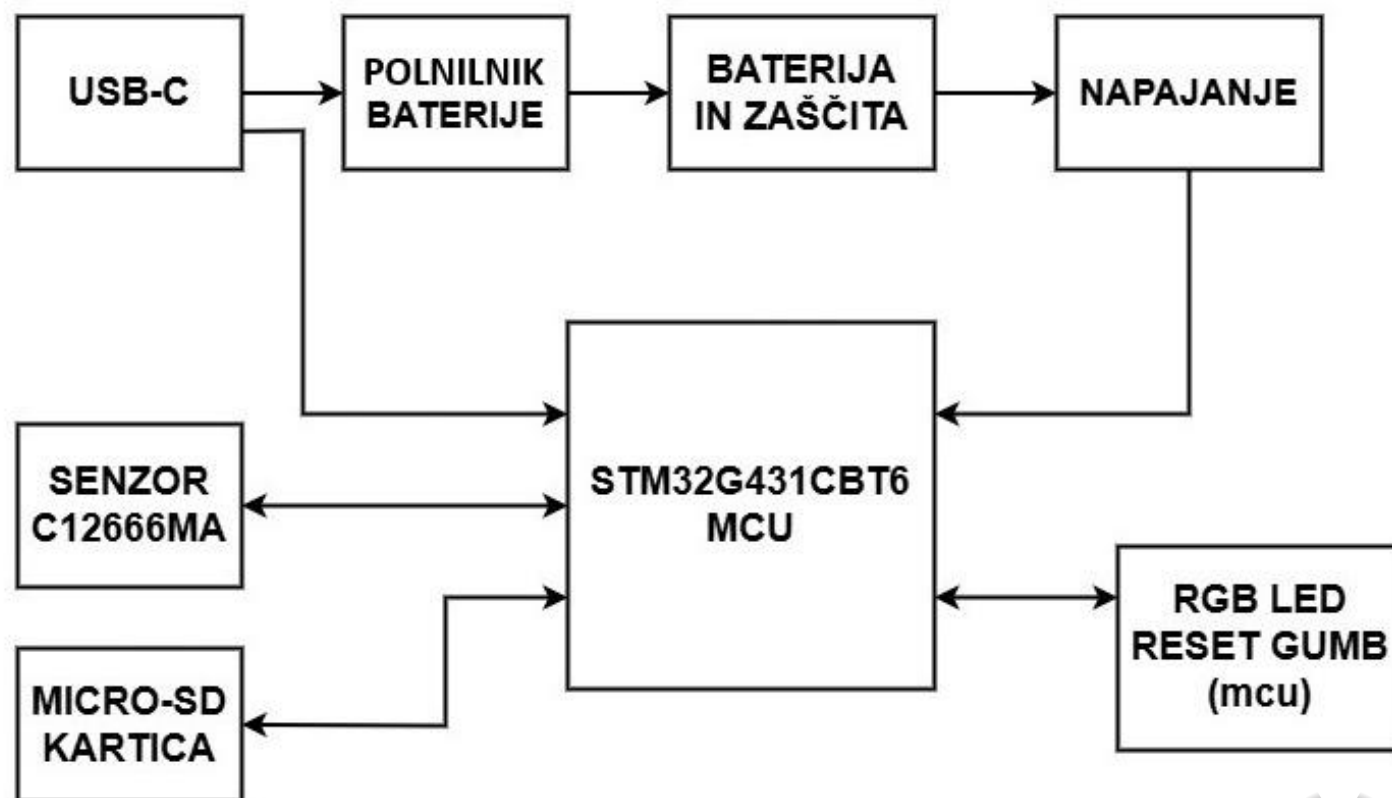
Hamamatsu C12666MA

Miniaturni spectrometer
Uklonska mrežnica
CMOS detektorsko polje



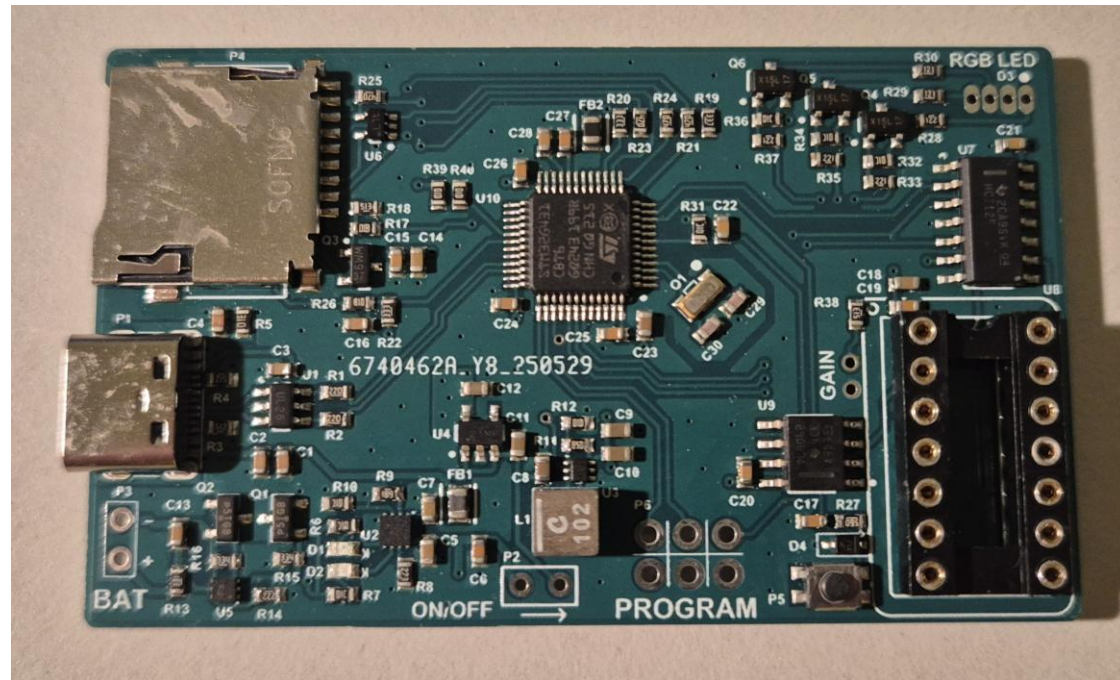
Zasnova naprave

Območje merjenja: 380 – 780 nm



Prototip

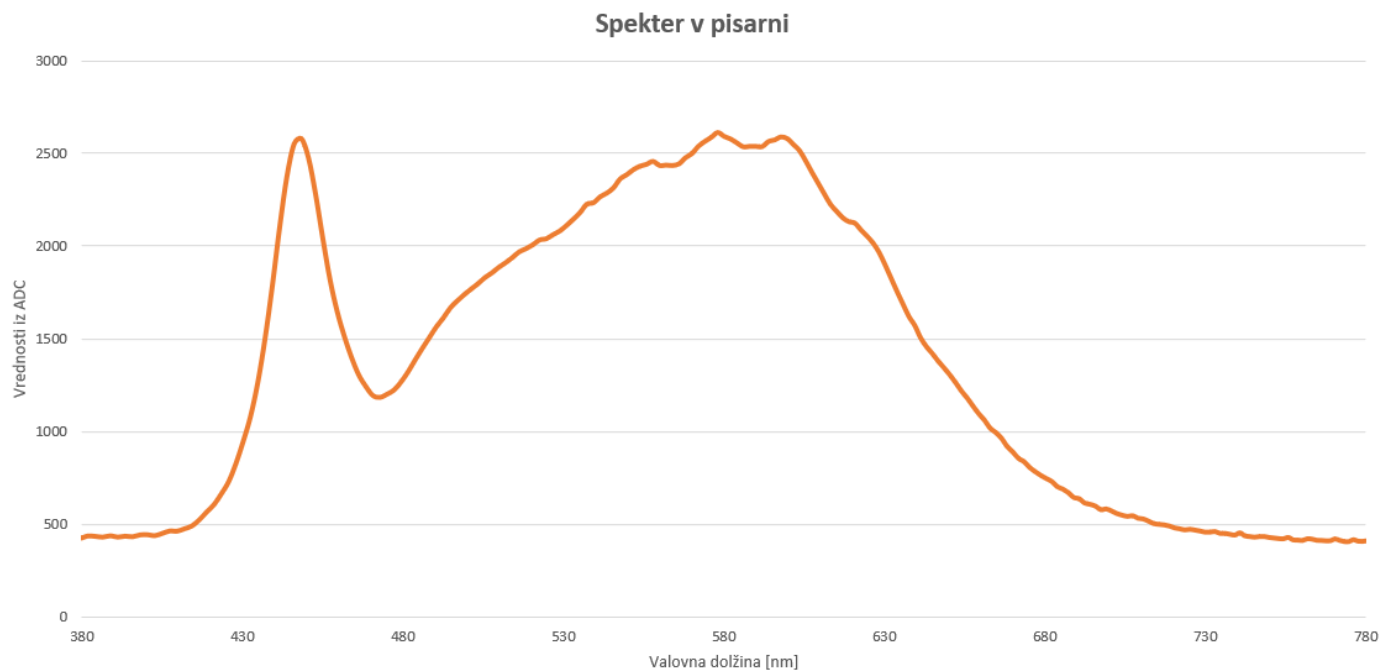
Majhna velikost



Prvi rezultati

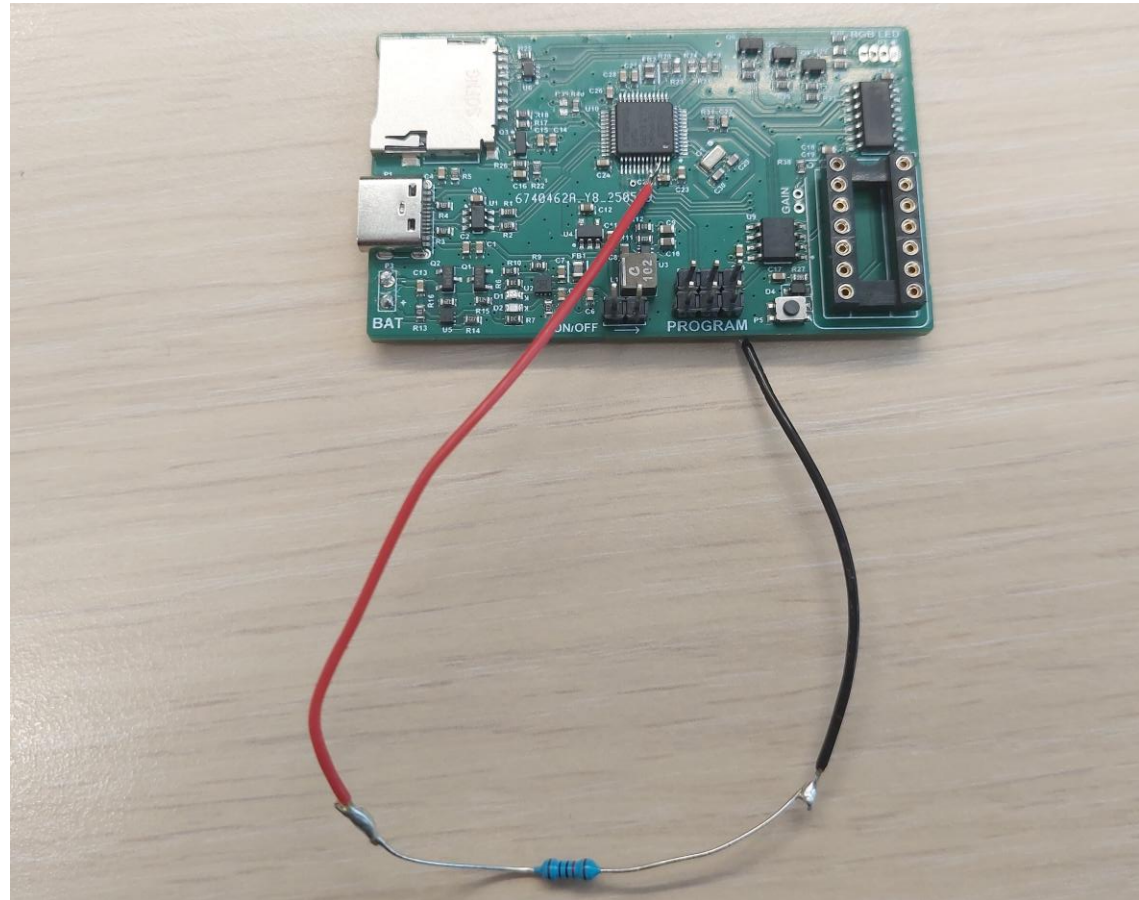
Različni viri svetlobe

Spekter zaznan



Odpravljanje napak

Optimizacija

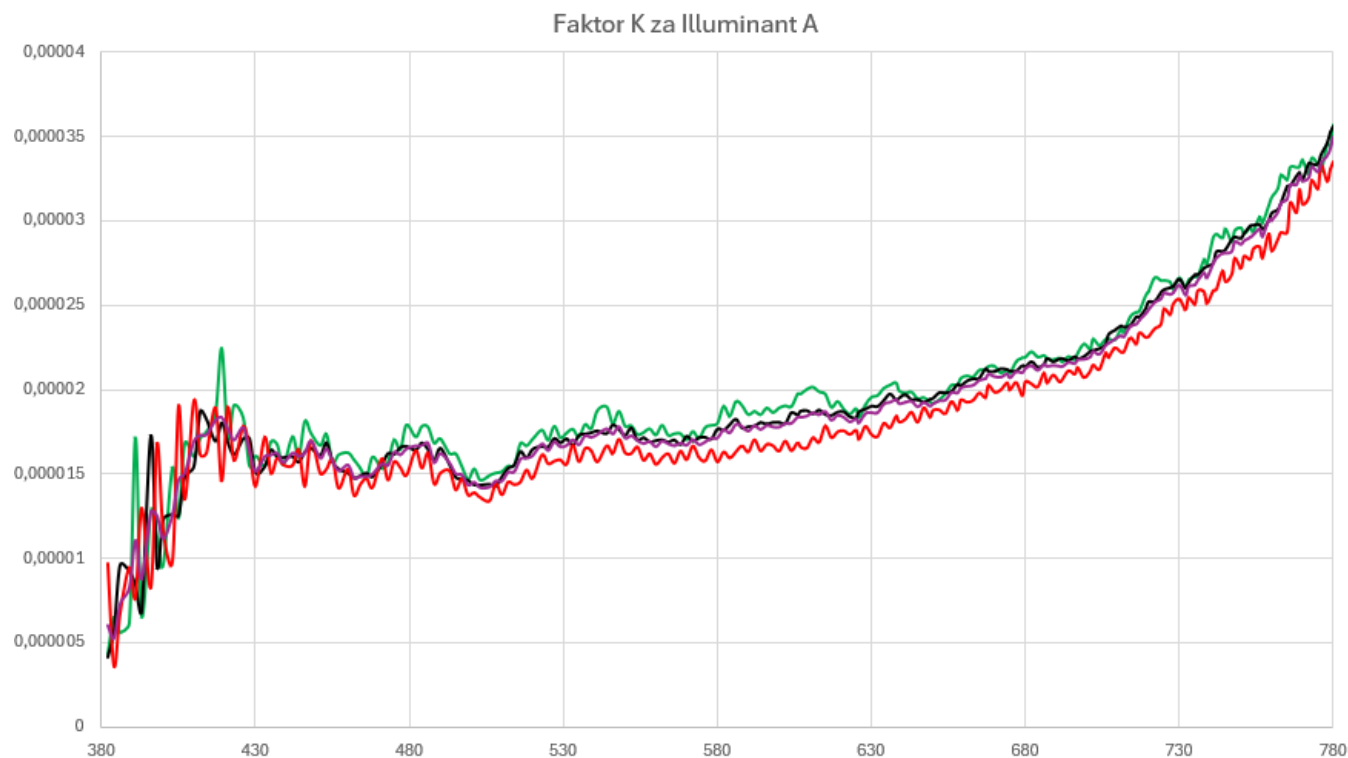


Kalibracija naprave

Standardni vir Illuminant A (2856 K)

Različni integracijski časi

Faktor $K(\lambda)$

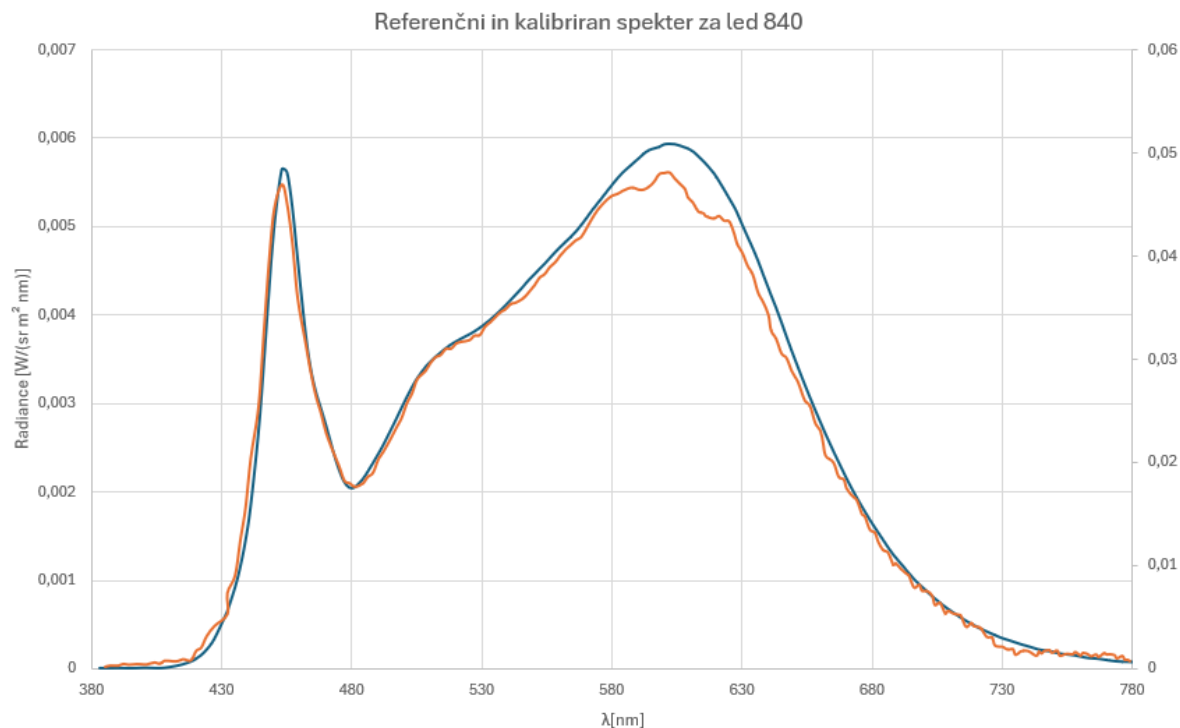


Preverjanje na LED virih

LED 840 in LED 930

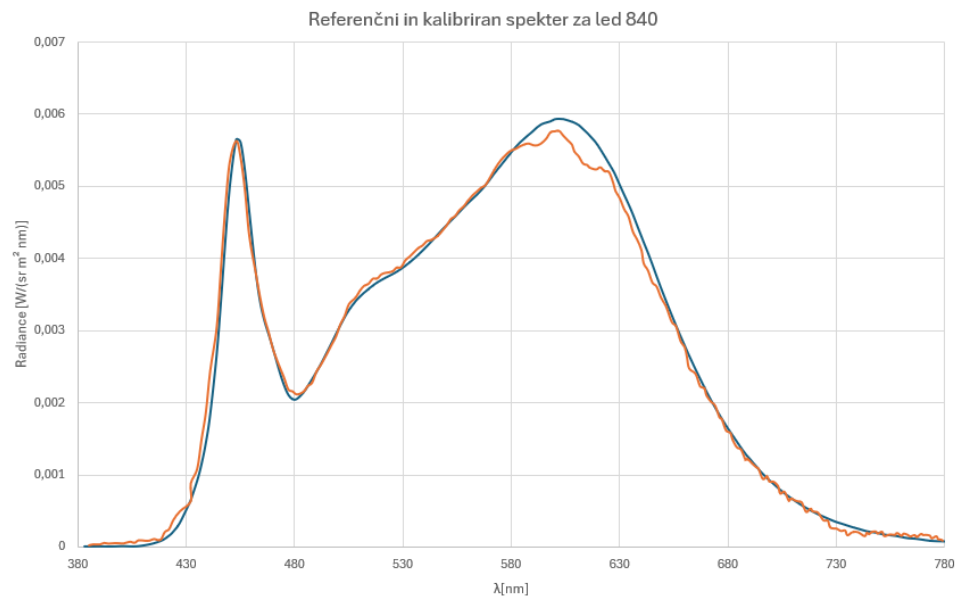
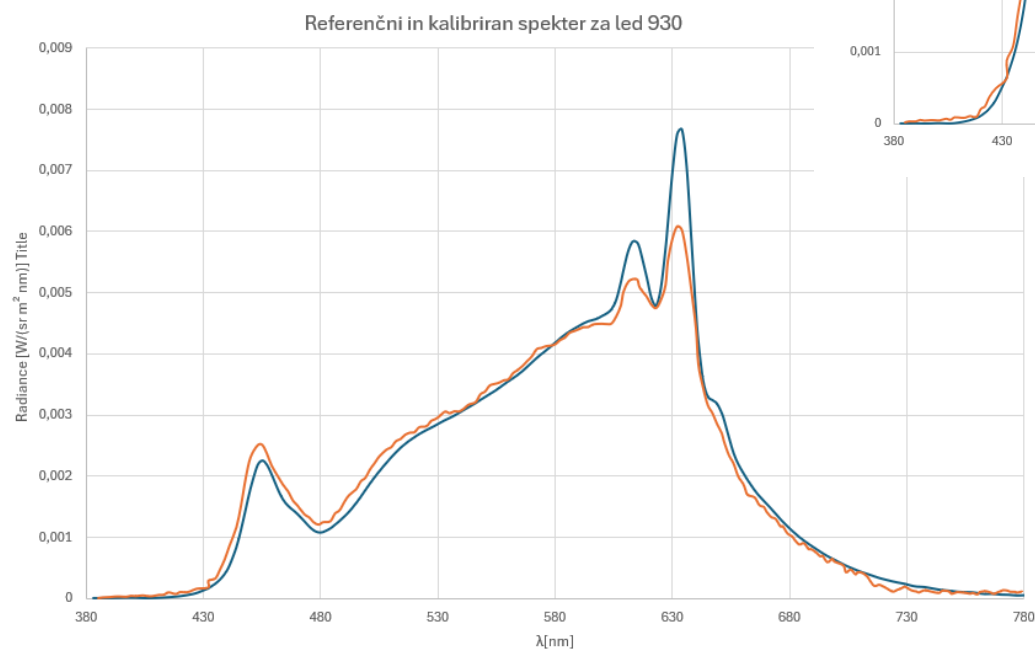
Faktor iz referenčnega vira

Pravilna oblika

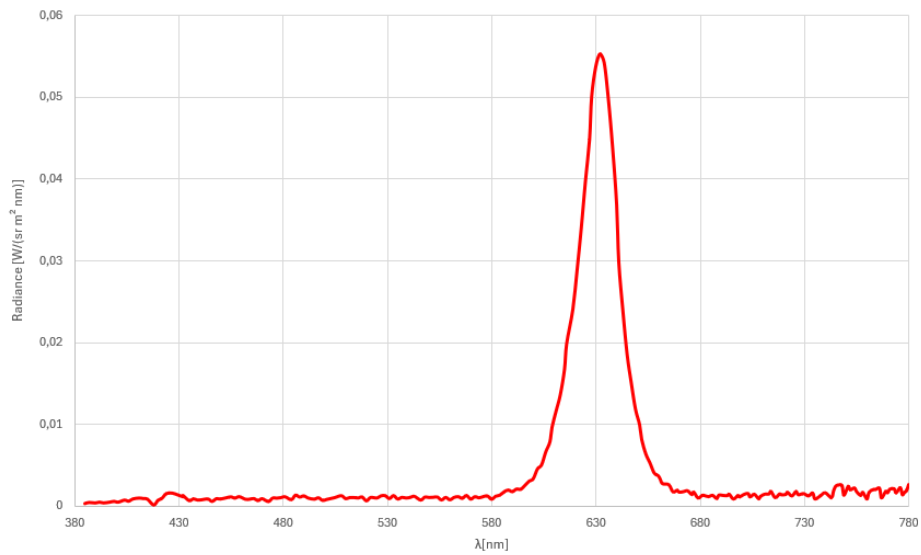


Korekcija amplitude

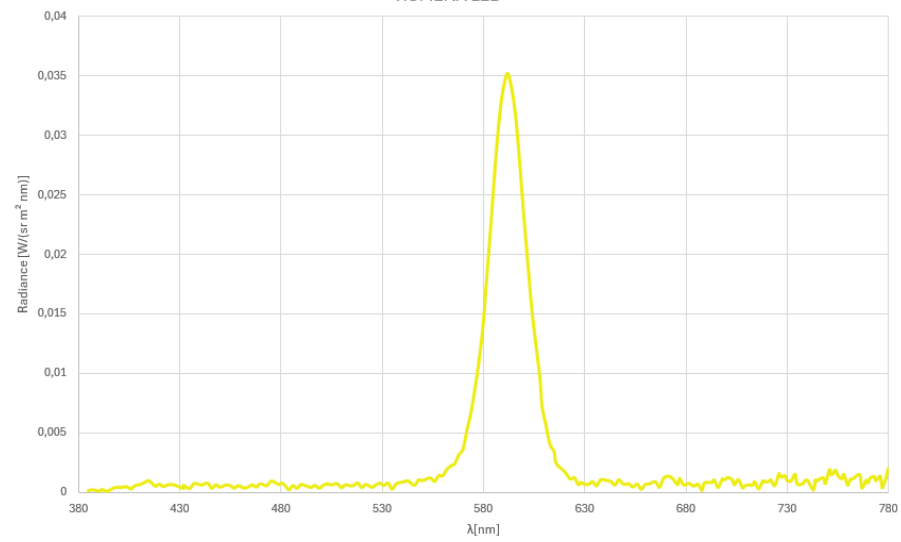
Skalirni faktor $\alpha \approx 0.12$



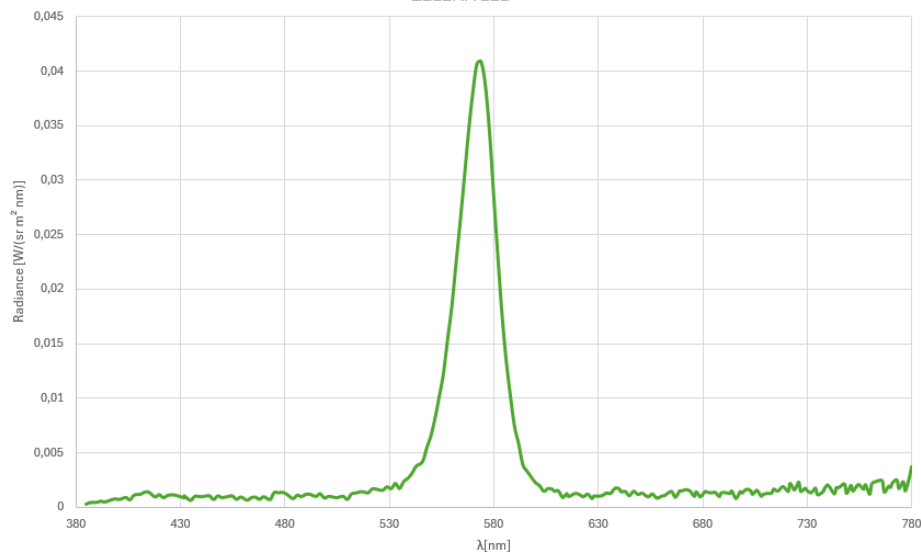
RDEČA LED



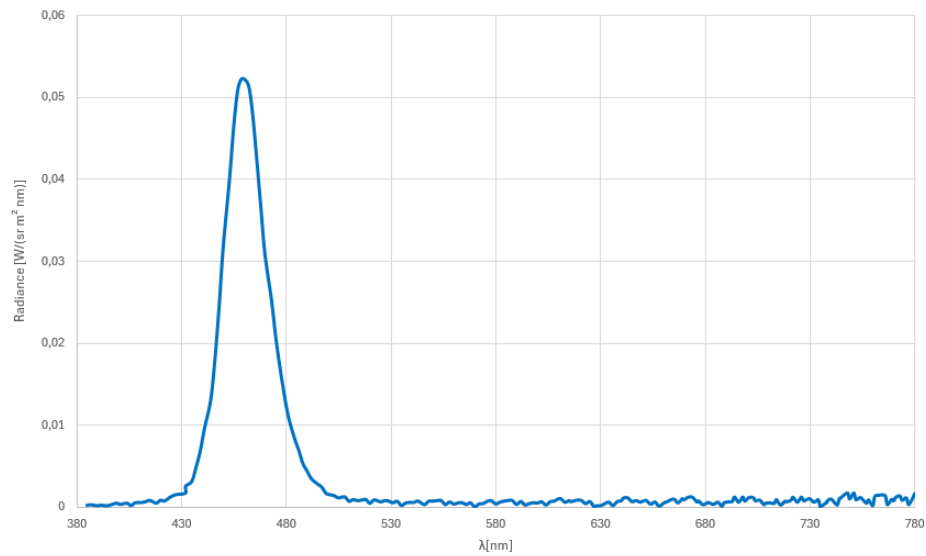
RUMENA LED



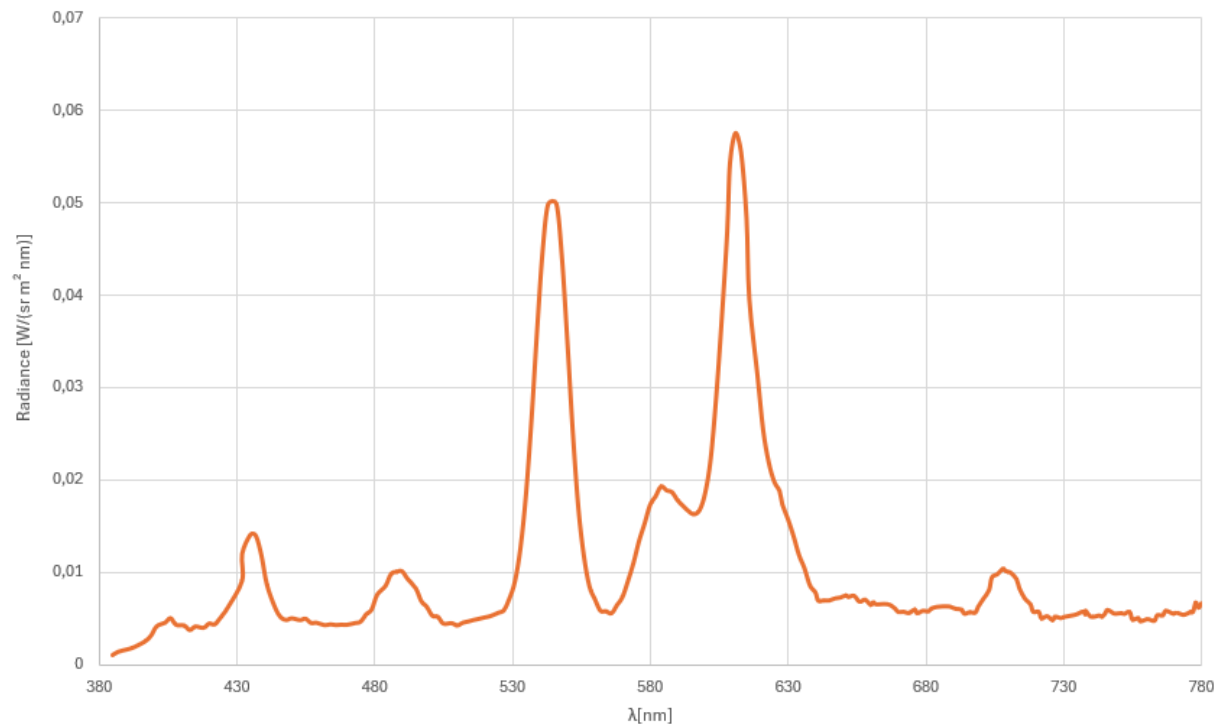
ZELENA LED



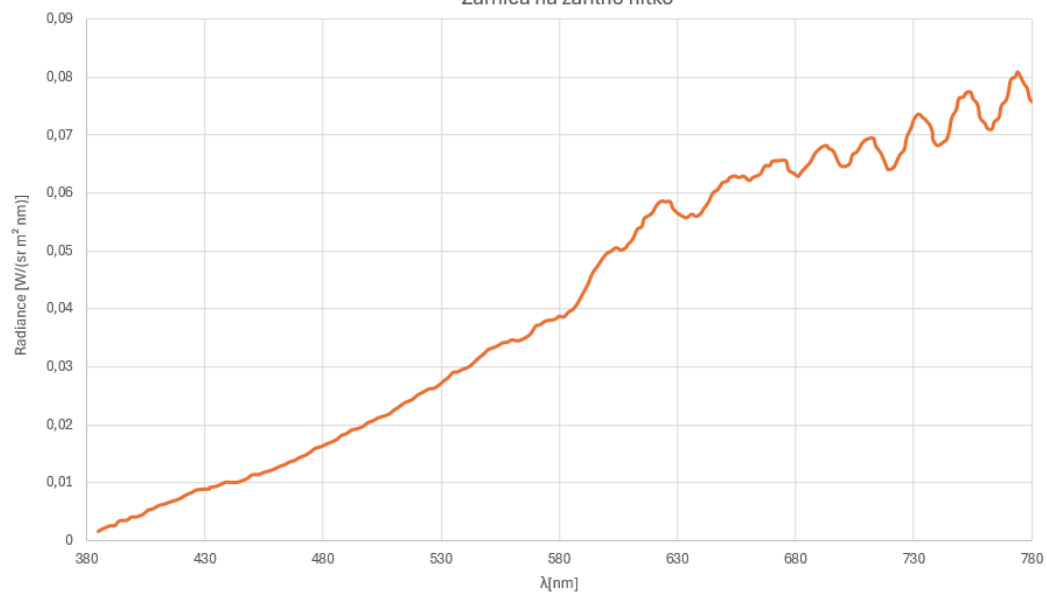
MODRA LED



Fluorescentna svetilka



Žarnica na žarilno nitko



Zaključek

Razvit nosljiv prototip spektrometra



HVALA ZA POZORNOST