

Digitálna Fotografia

Miroslav Hájek

Kompozičné techniky

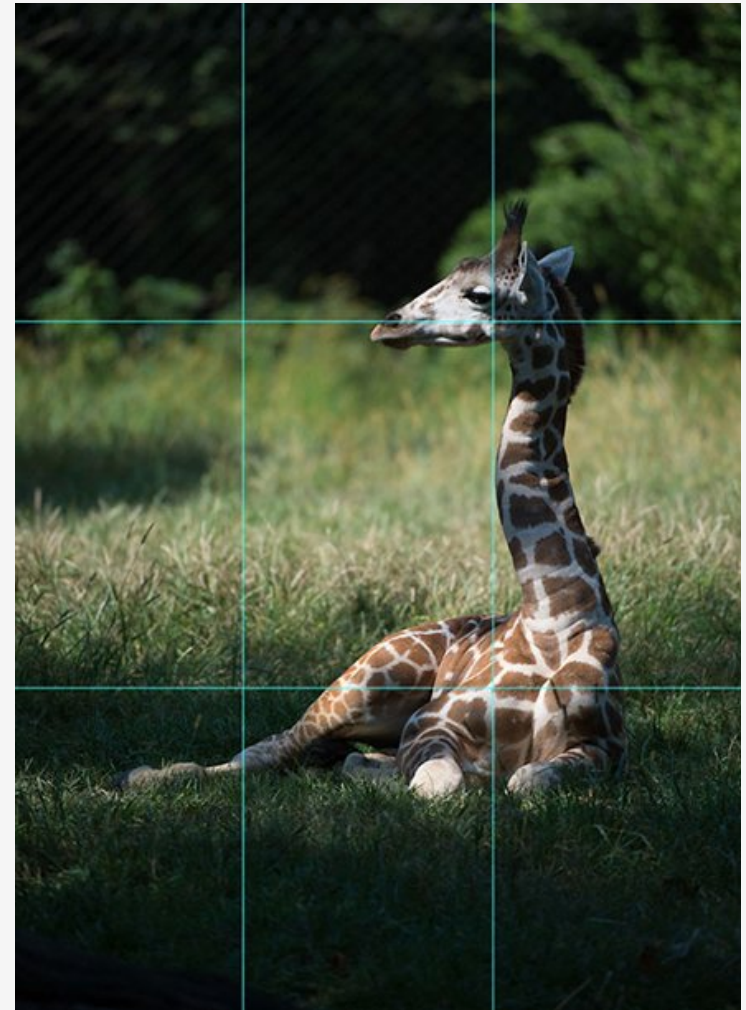
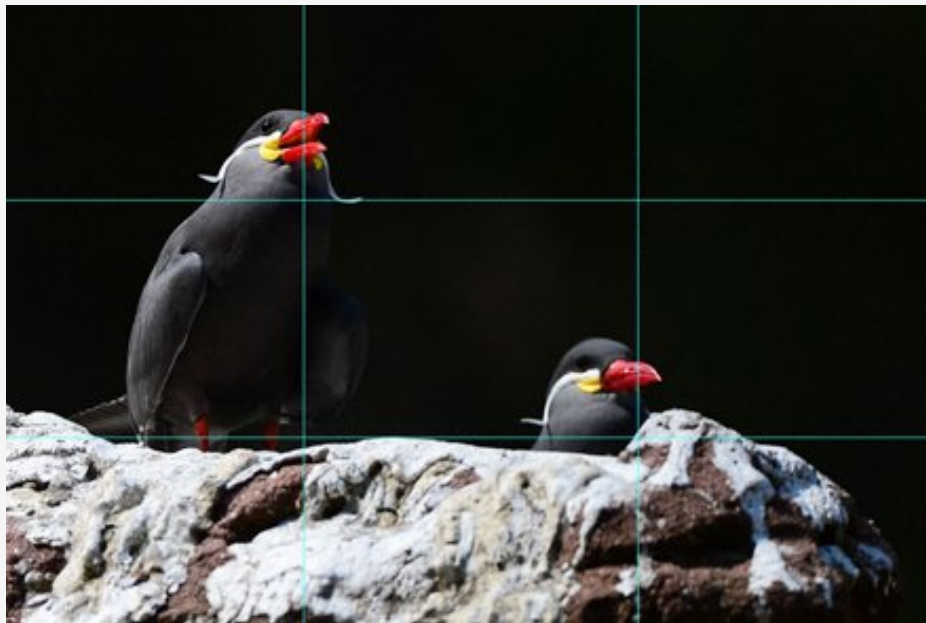
Výber hlavného motívu

- odstránenie rušivých prvkov



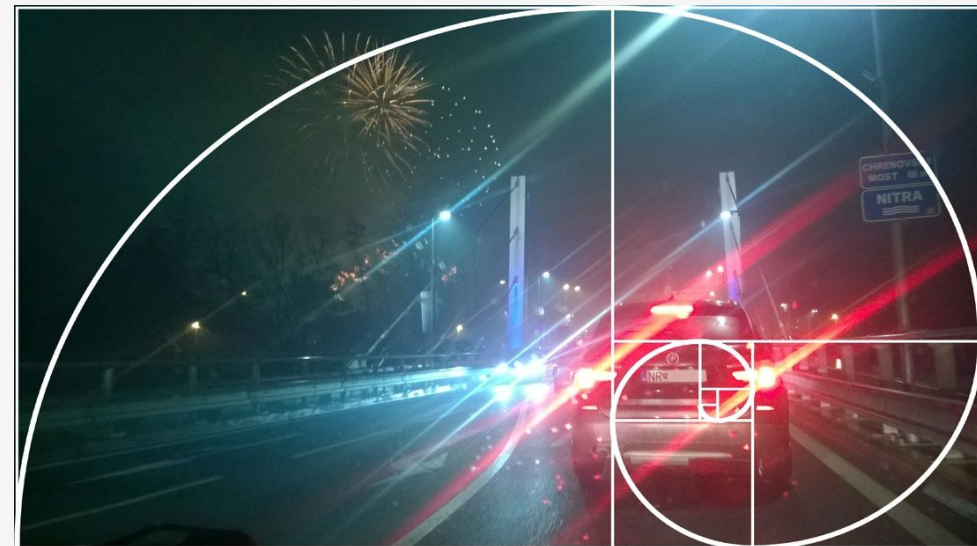
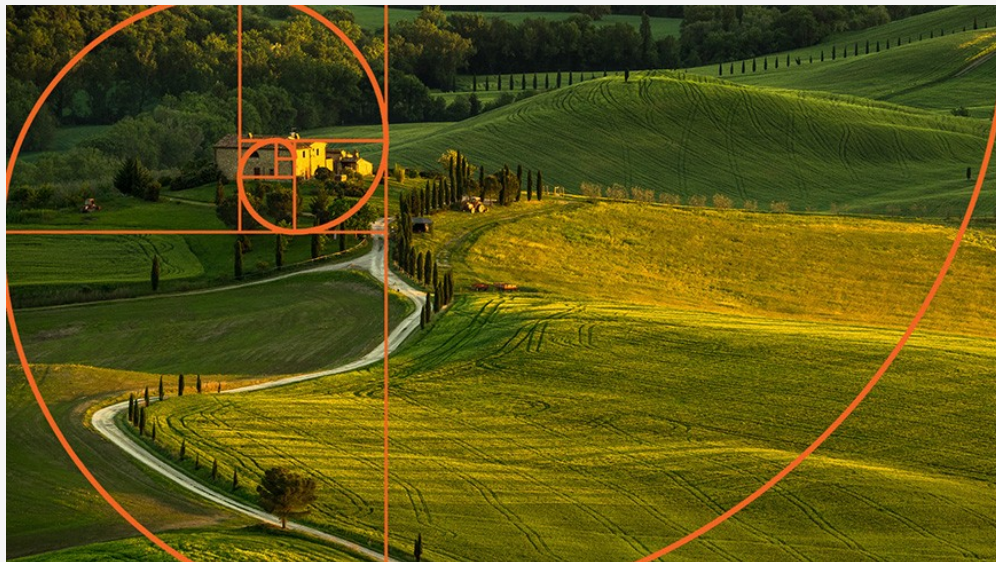
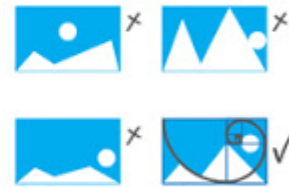
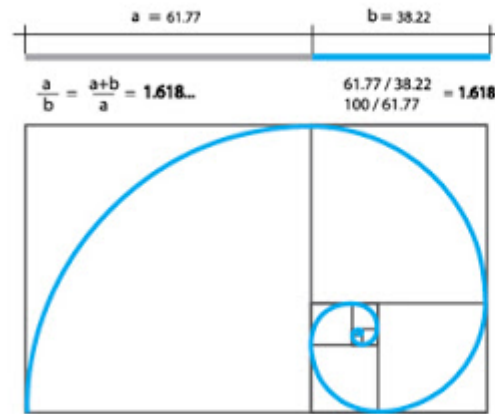
Umelecký aspekt - Kompozícia

Pravidlo tretín



Umelecký aspekt - Kompozícia

Zlatý rez



Umelecký aspekt - Kompozícia

Pohľad do snímky



Umelecký aspekt - Kompozícia

Umiestnenie horizontu



Vodiace línie, symetria, opakujúce sa vzory

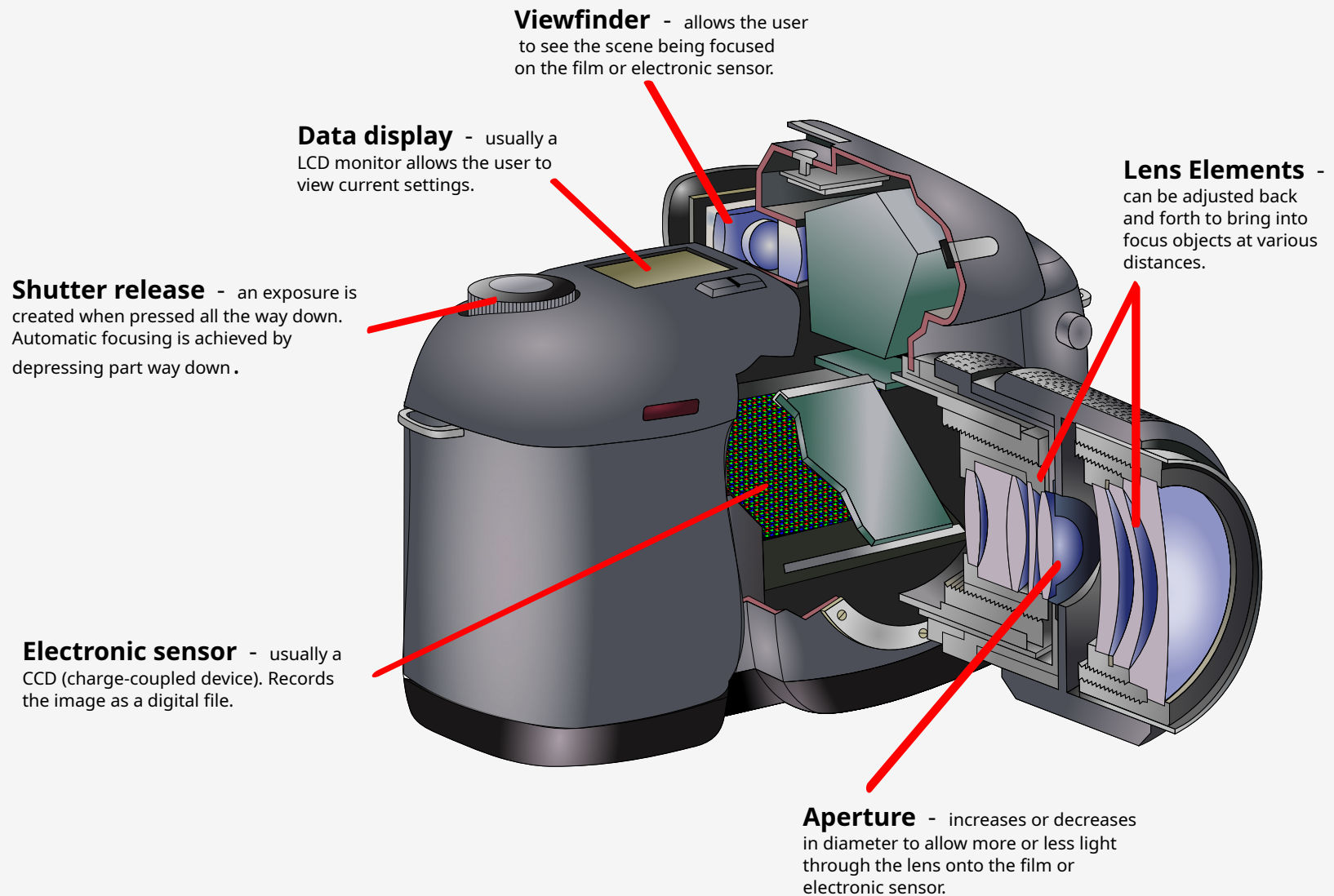


Umelecký aspekt - Kompozícia

Orámovanie predmetu

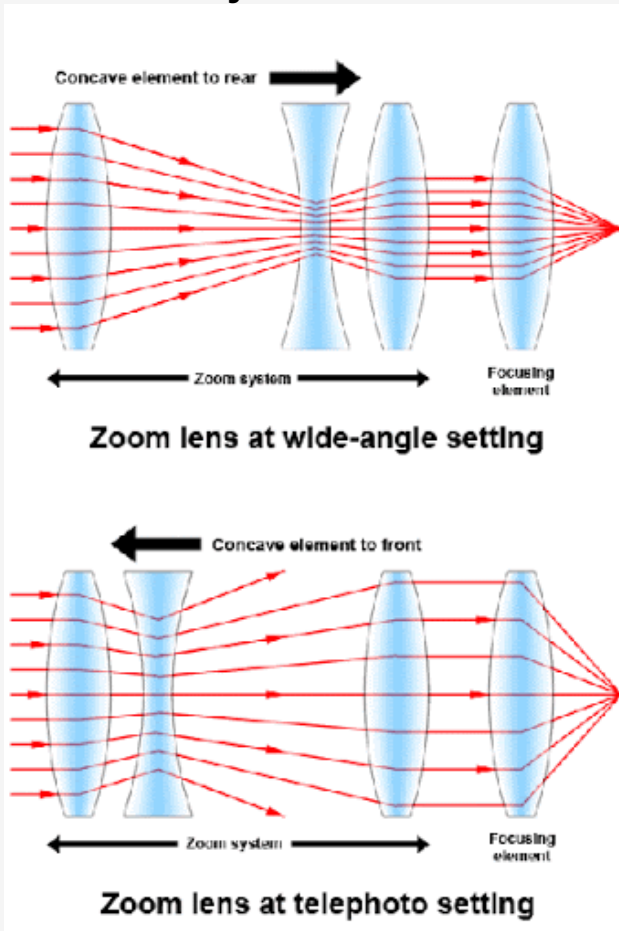


Digitálny fotoaparát

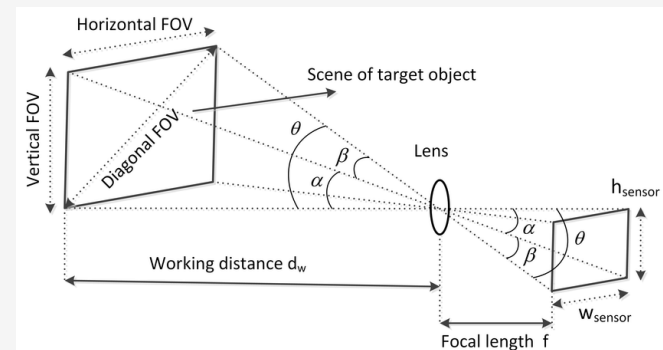
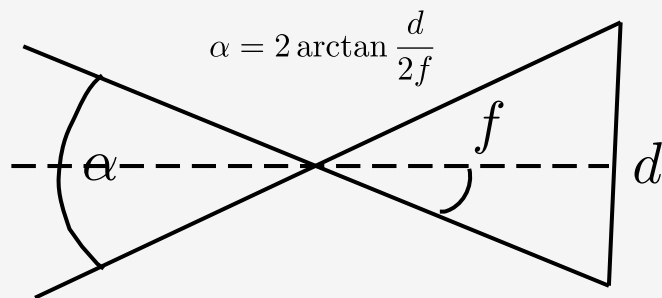
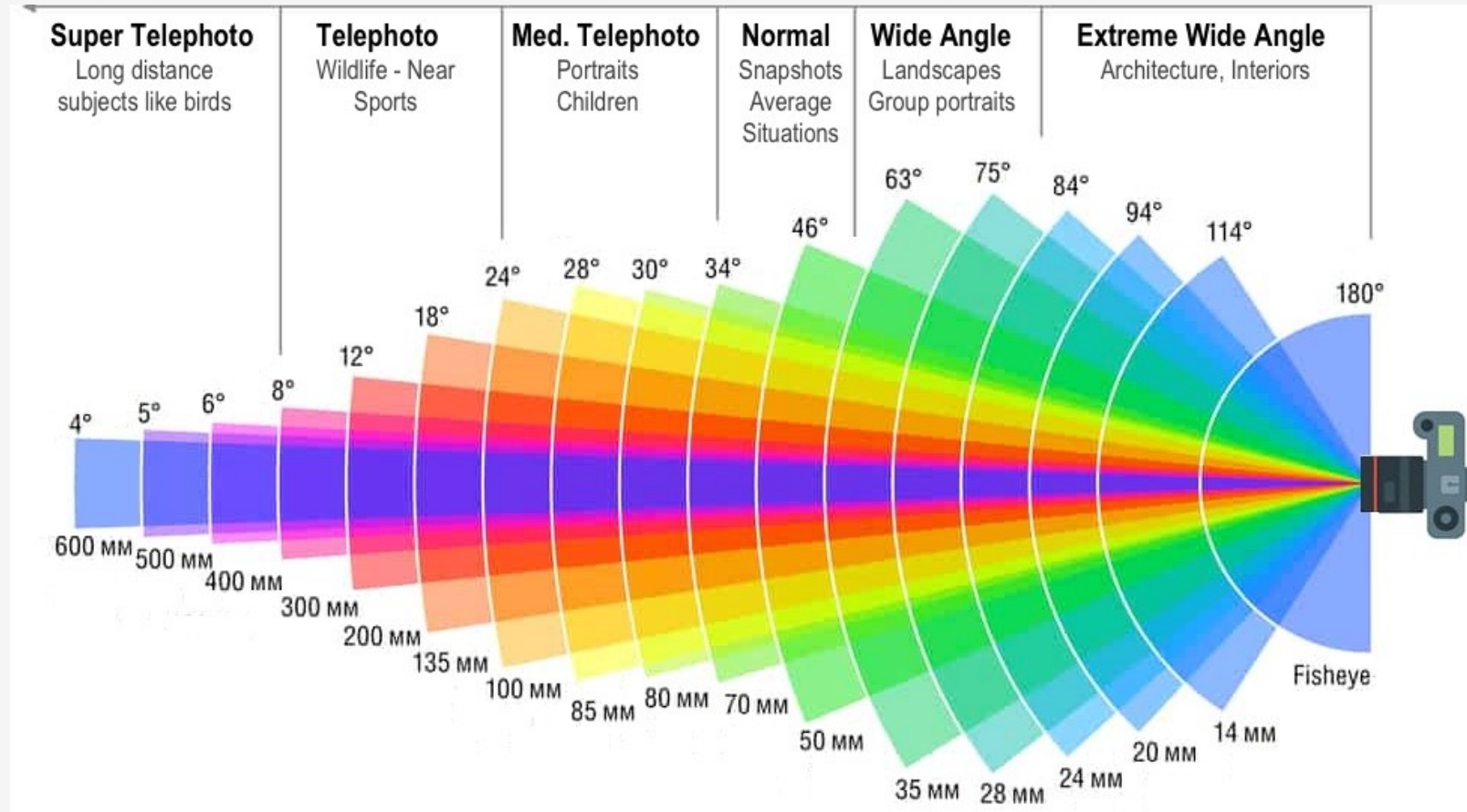


Objektív

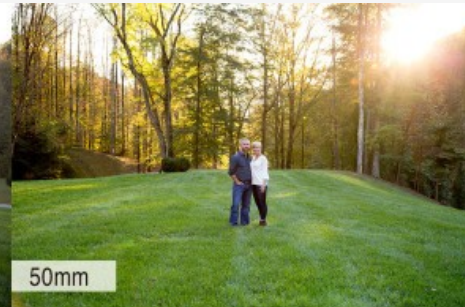
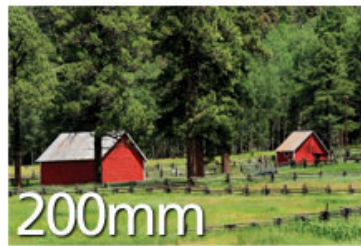
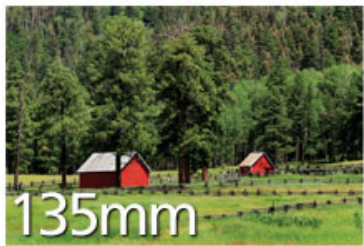
- Širokoúhly objektív (18 - 35 mm)
- Normálny objektív (50 mm)
- Teleobjektív (80 - 1600 mm)



Ohnisková vzdialenosť



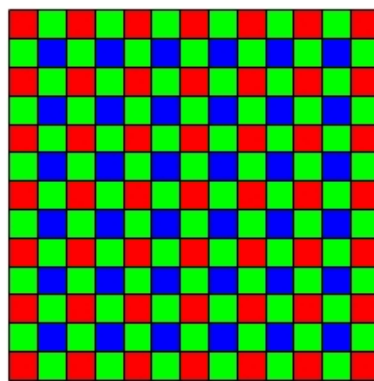
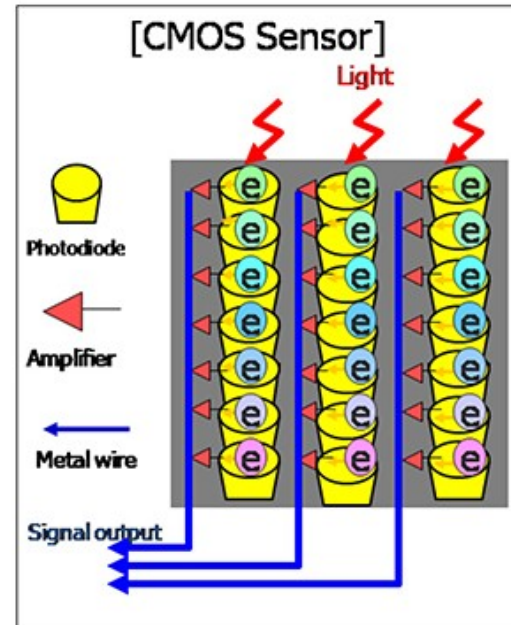
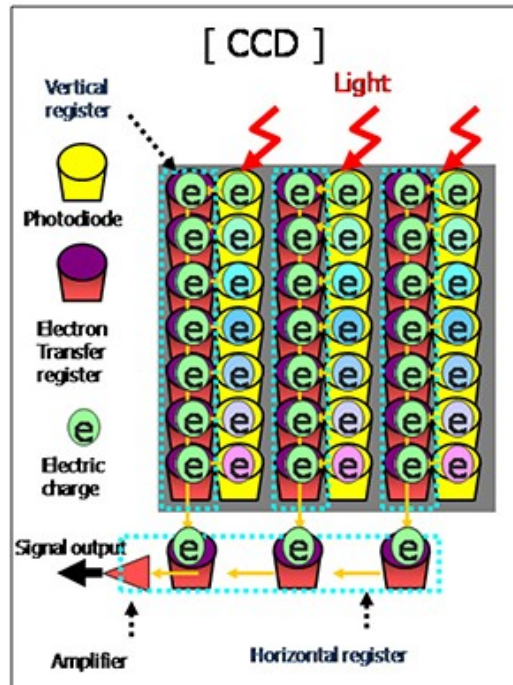
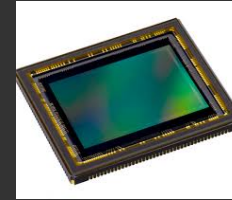
Ohnisková vzdialenosť



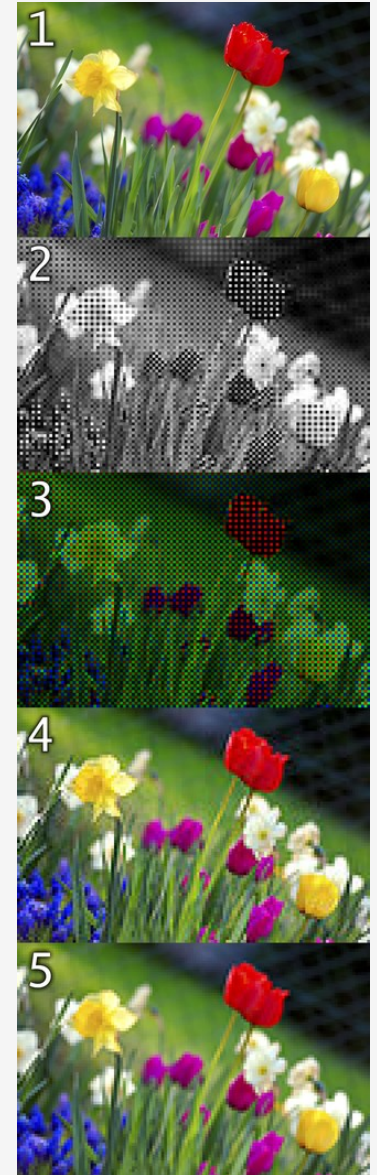
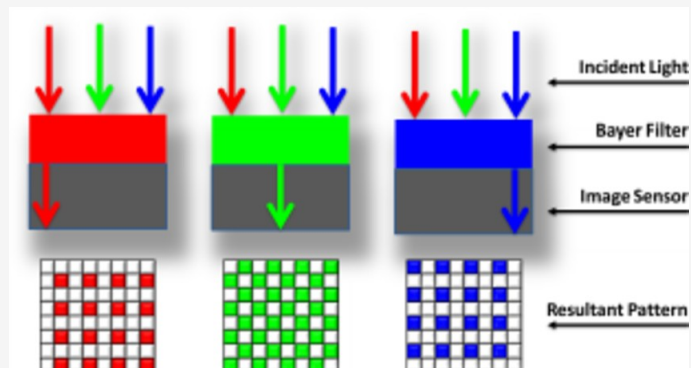
Ohnisková vzdialenosť



Snímač



Bayer filter



Expozícia

$$EV = \log_2 \frac{N^2}{t}$$

Podexponovaný

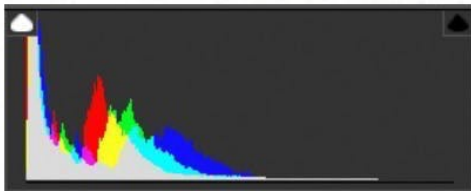


Preexponovaný

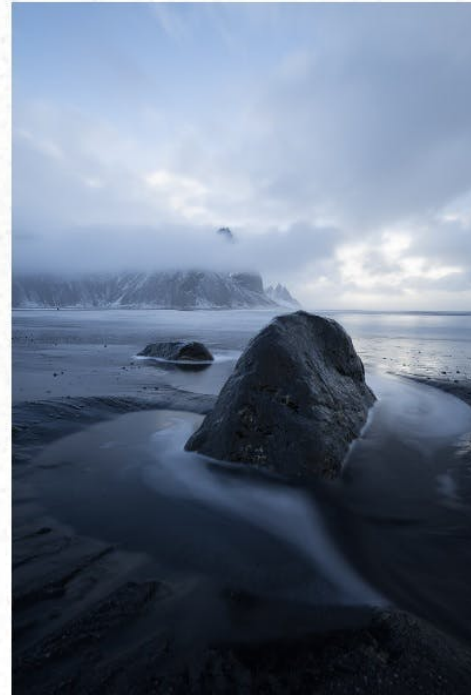
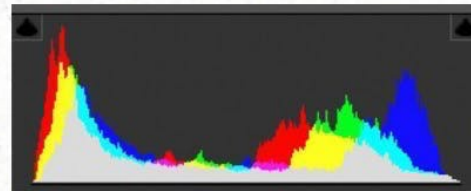


Expozícia

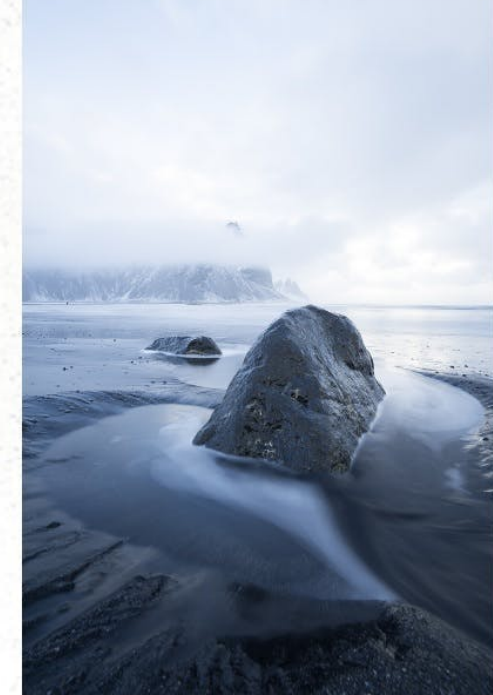
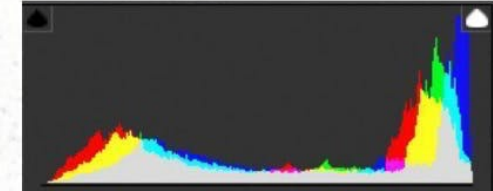
Underexposed



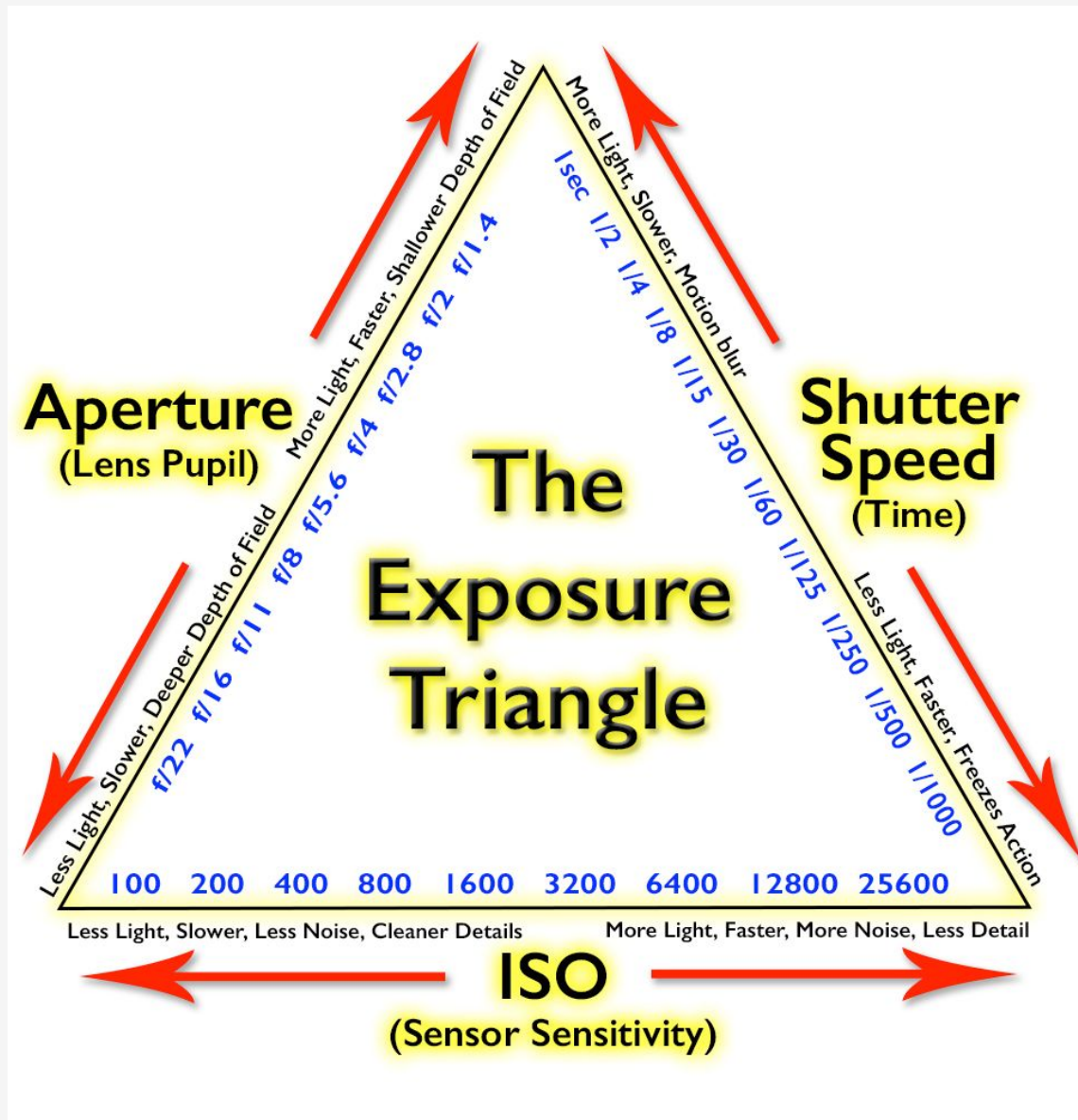
Correct exposure



Overexposed



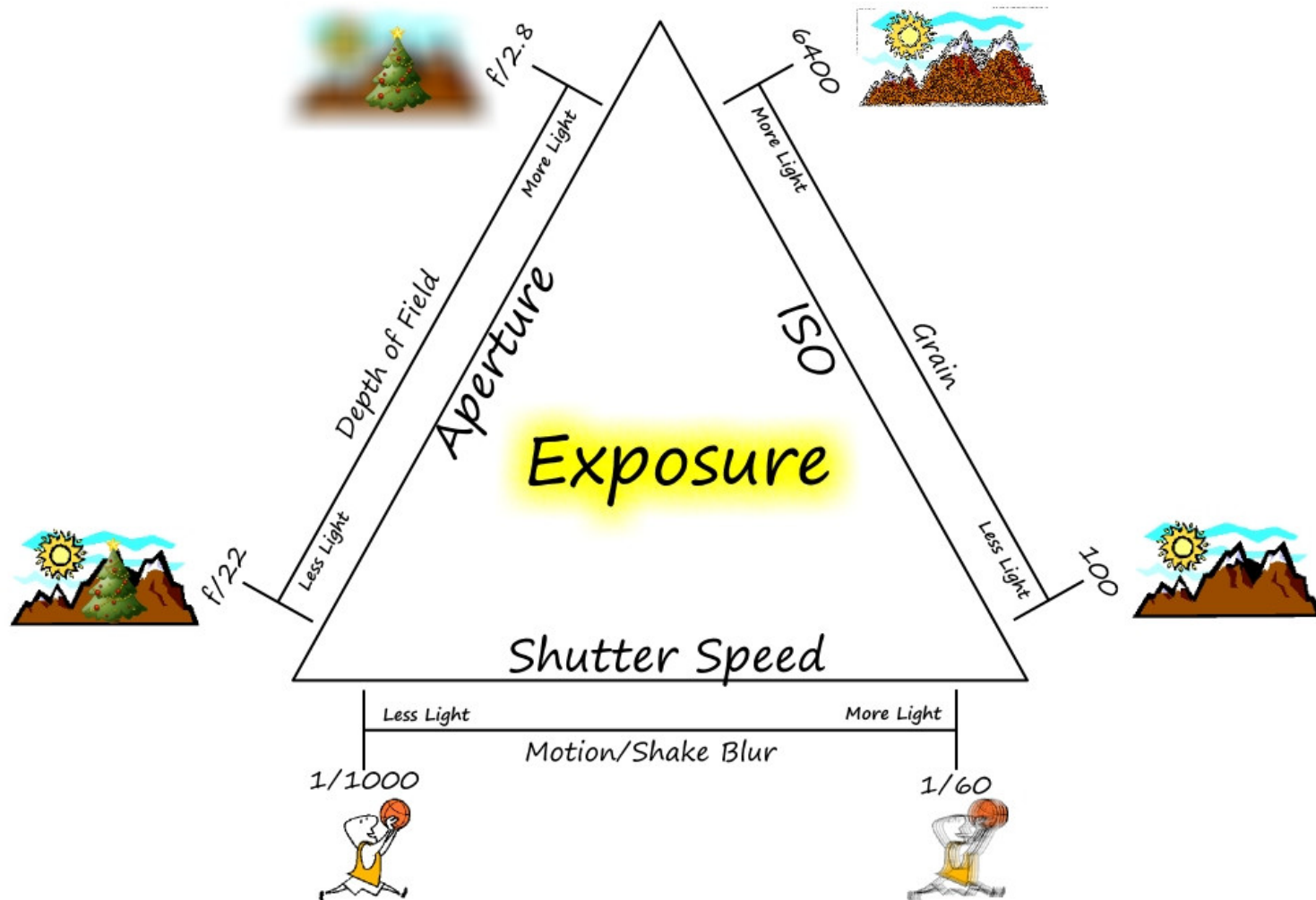
Expoziční trojúhelník



Expoziční trojúhelník

Aesthetic Exposure Triangle ©2011 Michael P. Young

Each side of the triangle represents an "ingredient" in the amount of light contributed to the overall exposure of a given scene. The longer the side of the triangle, the more light contributed. If you increase/decrease the length of one side of the triangle, you must equally decrease/increase, respectively, the length of another side, or split the change proportionately between the other two sides.



Clona



$$\kappa = \frac{f}{D}$$

Clonové číslo =
Ohnisková vzdialenosť /
Priemer vstupnej šošovky

$f/1.4$



$f/2.0$



$f/2.8$



$f/4.0$



$f/5.6$

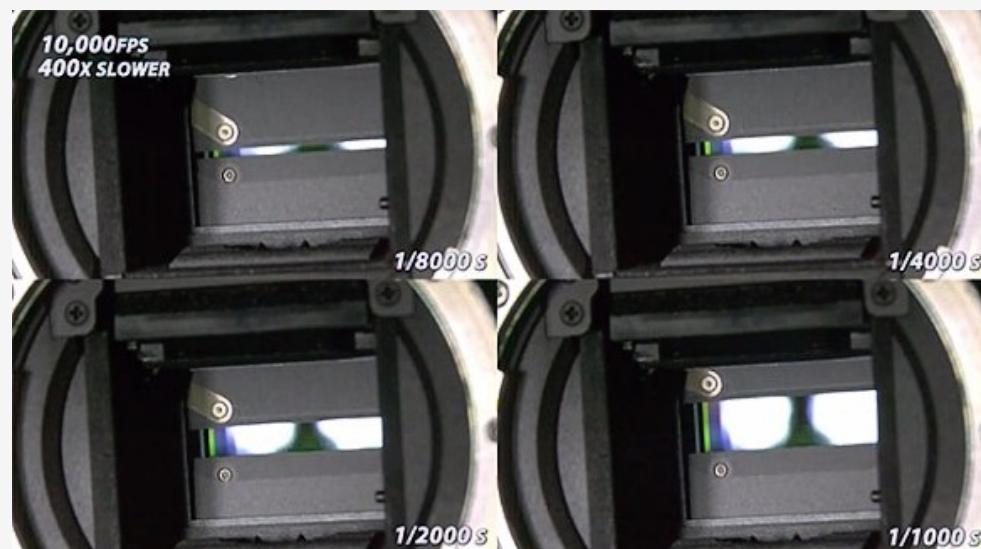
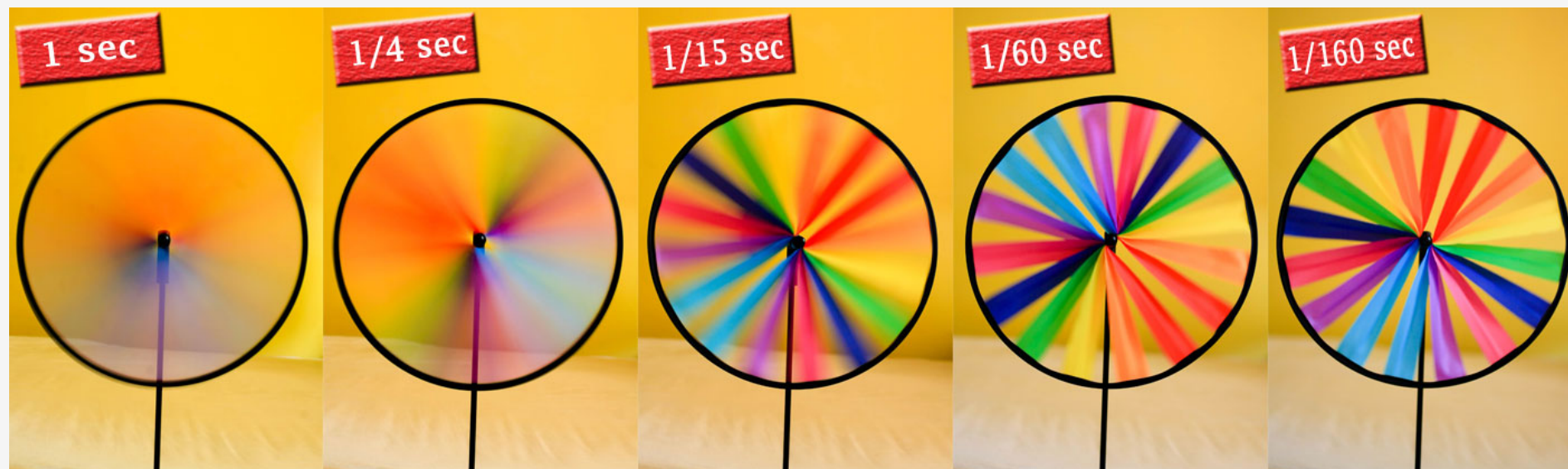


$f/8.0$



$$\kappa_{n+1} = \sqrt{2} \cdot \kappa_n$$

Záverka

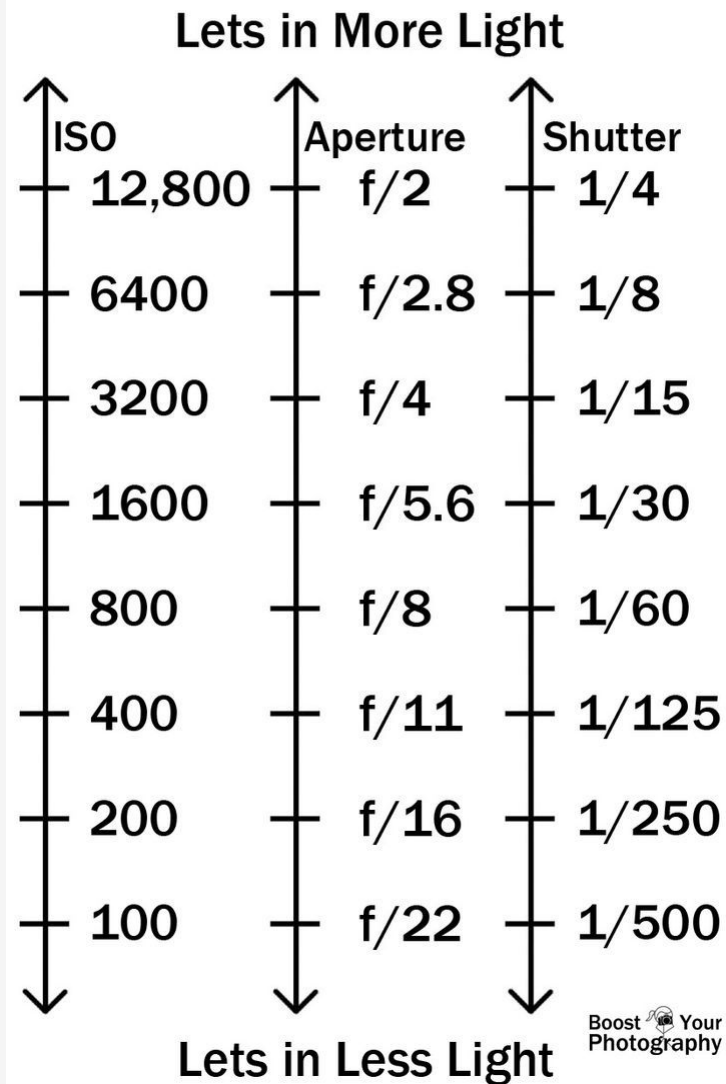


Citlivosť snímača - ISO

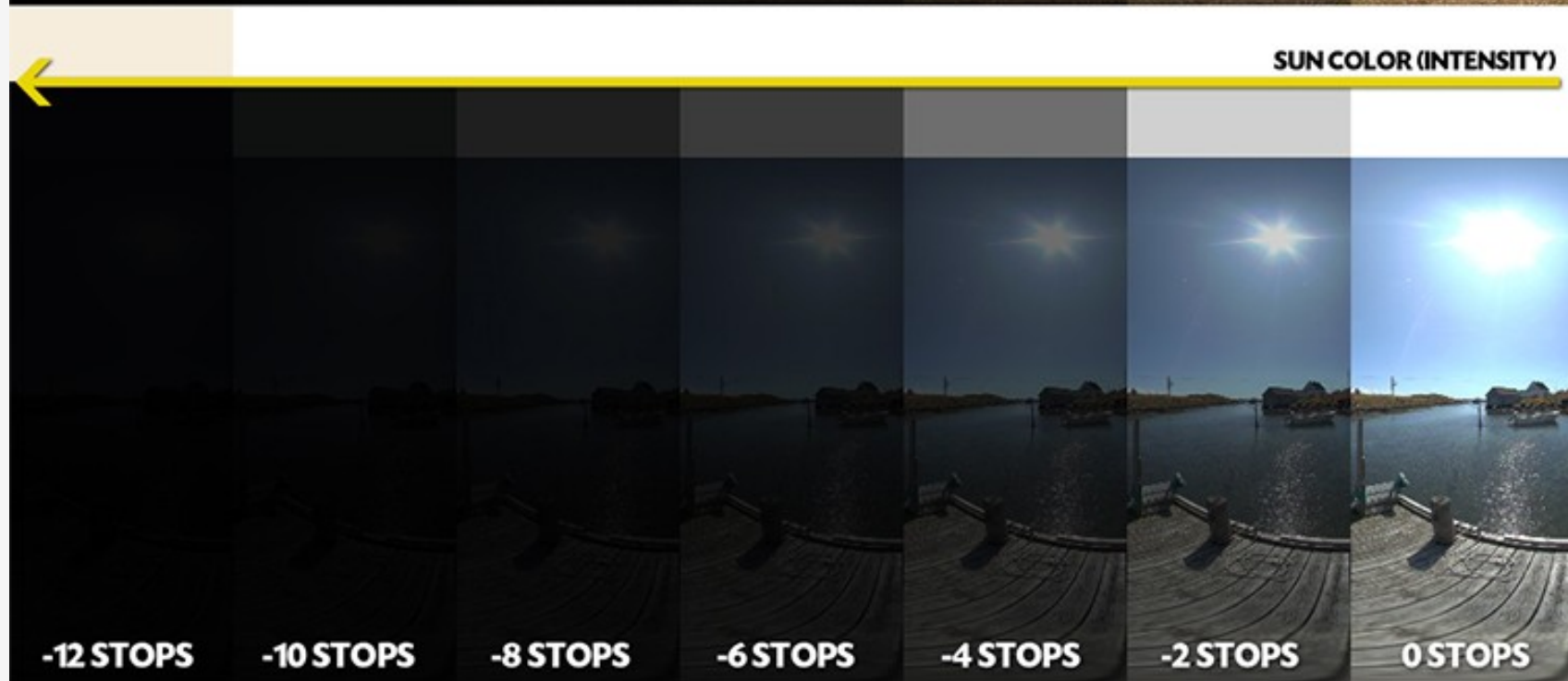


Ekvivalentná expozícia

Know Your Stops



Dynamický rozsah snímača



Vysoký kontrast a HDR fotografia

Rosánou Abbey (HDR) - Before and After

farbspiel-photo.com

© 2012
klaus hermann



-3 ev

-2 ev

-1 ev

0 ev

+1 ev

+2 ev

Source images straight out of the camera (Camera: Nikon D7000; Lens: Nikon 10-24mm@10mm; f/8; ISO200; 1/2000s - 1/50s)



Tone-mapped HDR



Final image after post-processing

Exif - metadáta obrázku

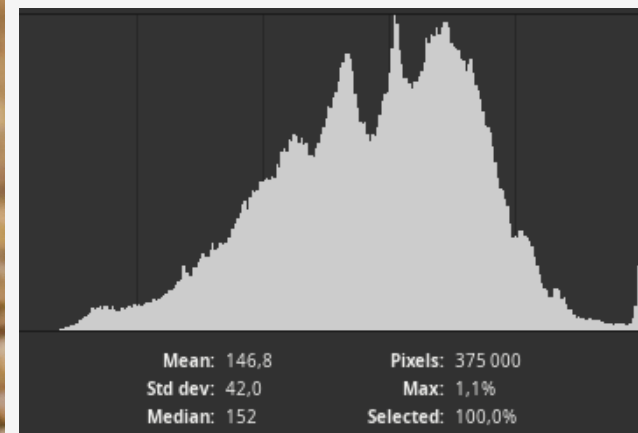
Exchangeable image file format (JPEG, TIFF)

- značka, typ, model fotoaparátu
- čas a dátum
- nastavenia fotoaparátu
- náhľad obrázka
- informácie o polohe
- opis obrázka, autorské práva, komentár



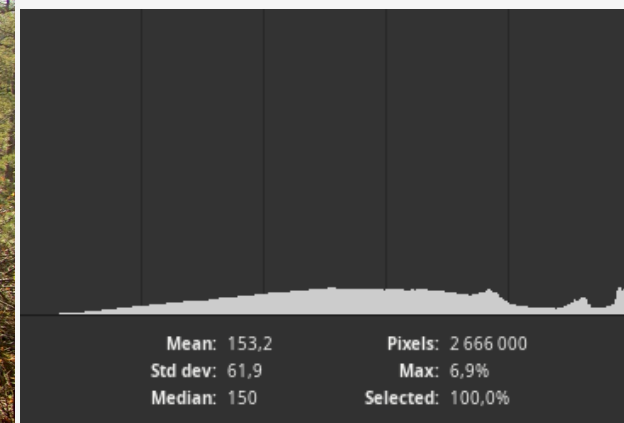
Make	: Canon
Camera Model Name	: Canon PowerShot SX40 HS
Orientation	: Horizontal (normal)
Exposure Time (Shutter speed)	: 1/30
F Number (Aperature)	: 3.2
ISO	: 400
Date/Time Original	: 2019:09:13 15:59:39
Create Date	: 2019:09:13 15:59:39
Focal Length	: 5.6 mm
Macro Mode	: Macro
Exposure Compensation	: +1/3
White Balance	: Auto
Image Width	: 4000
Image Height	: 3000
Y Cb Cr Sub Sampling	: YCbCr4:2:2
Shooting Mode	: Program AE
Image Size	: 4000x3000
Megapixels	: 12.0
Scale Factor To 35 mm Equivalent:	5.6
Thumbnail Image	: (Binary data)
Lens	: 4.3 - 150.5 mm
	(35 mm equivalent: 24.0 - 840.5 mm)
Field Of View	: 59.4 deg
Focal Length	: 5.6 mm
	(35 mm equivalent: 31.5 mm)

Samuel Gašpar

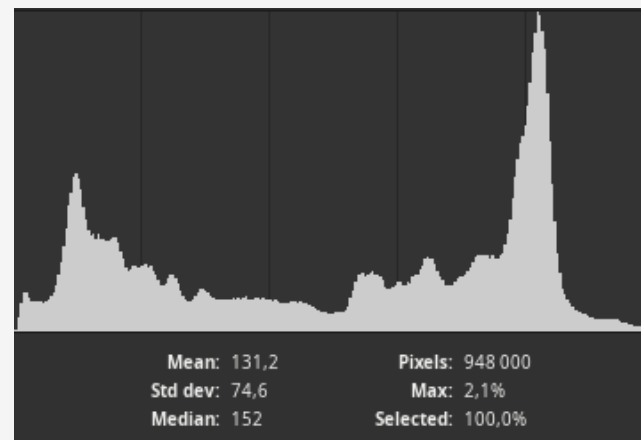


Canon EOS 7D [APS-C]; 27,2 MB; 5184 × 3456; 100mm
[160mm], 1/100s, f/2.8, ISO 2500

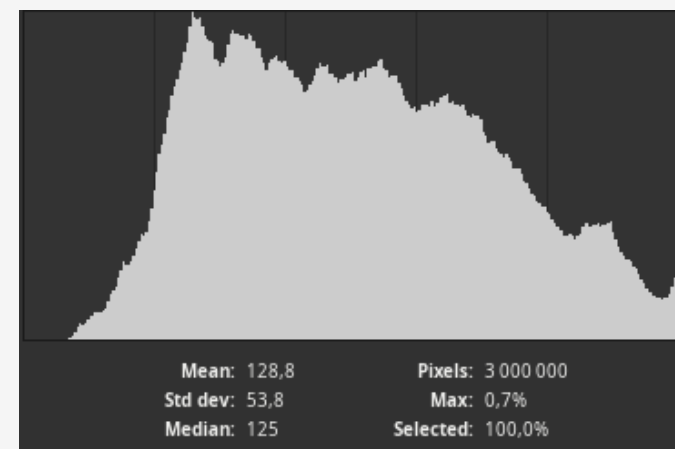
Samuel Gašpar



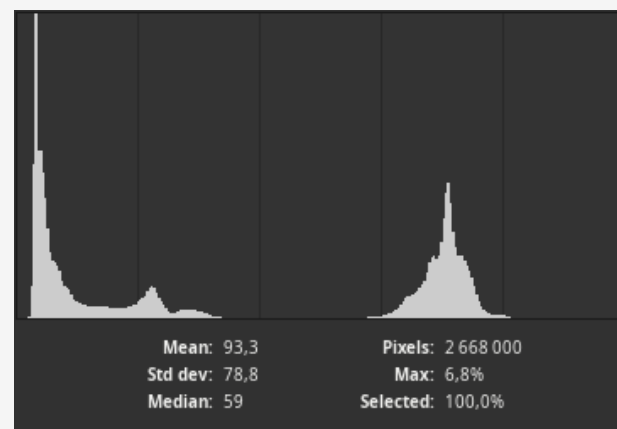
Canon EOS 7D, 28,2 MB, 5184 × 3456, 11mm,
1/500s, f/5, ISO 100



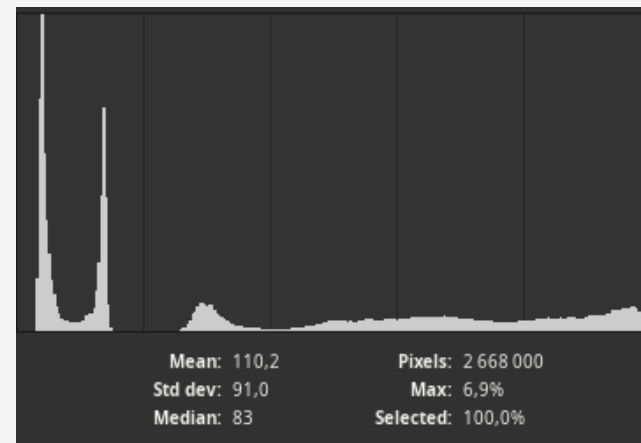
- model fotoaparátu
 - iPhone SE (2nd generation)
- formát - JPG
- rozlíšenie - 3024 x 3190;
9,6 MegaPixels
- ohnisková vzdialenosť - 3,99 mm ;
35mm ekvivalent - 28 mm
- expozičný čas - 1/32s
- clonové číslo - f/1,8
- ISO - 400



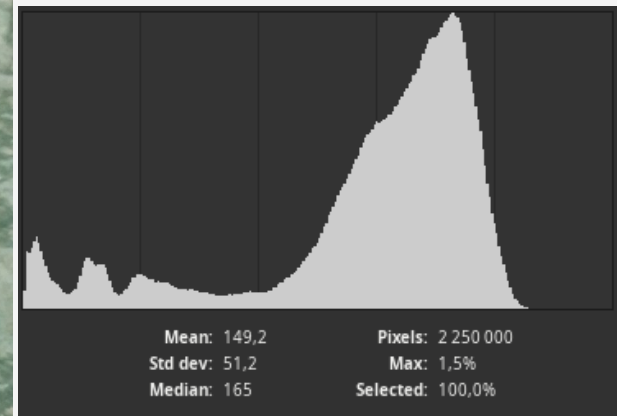
- model fotoaparátu
 - iPhone SE (2nd generation)
- formát - JPG
- rozlíšenie - 3024 x 4032 ;
12,2 MegaPixels
- ohnisková vzdialenosť - 3,99 mm
35mm ekvivalent - 28 mm
- expozičný čas - 1/322s
- clonové číslo - f/1,8
- ISO - 20



NIKON D3500, JPG,
3000x4496,
270 mm (405 mm),
1/80 s, f/6, ISO 1600



NIKON D3500, JPG,
3000x4496,
200 mm (300 mm),
1/160 s, f/5,6, ISO 400



Model: Redmi Note 6 Pro

Formát: JPEG

Rozlíšenie: 2250 x 4000; 9 MPx

Ohnisková vzdialenosť: 3,9 mm

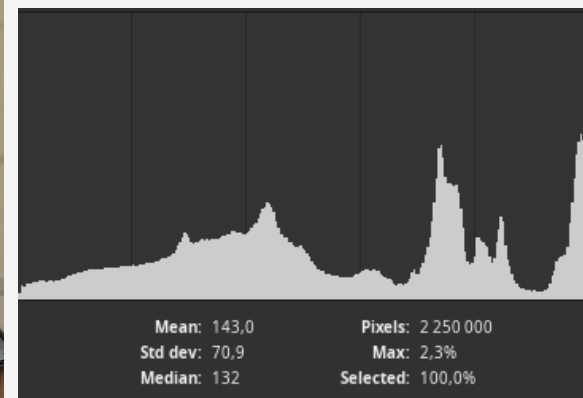
-35 mm ekvivalent: 24 mm

Rýchlosť závierky: 1/15

Clonové číslo: 1,9

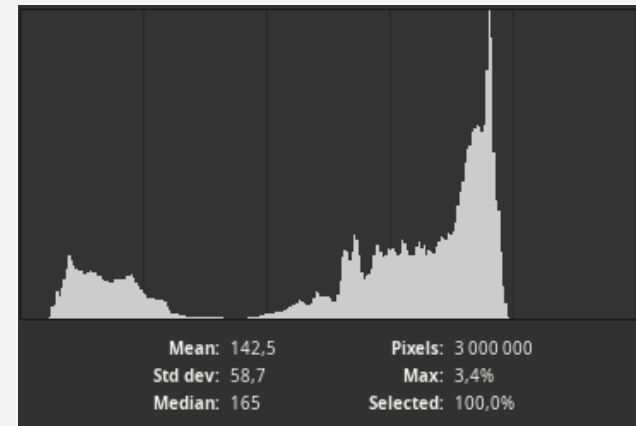
ISO: 6400

Lukáš Šrol



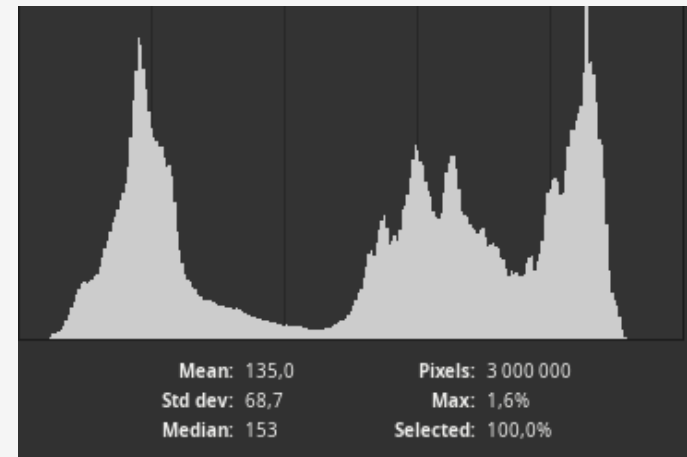
Model: Redmi Note 6 Pro
Formát: JPEG
Rozlíšenie: 2250 x 4000; 9 MPx
Ohnisková vzdialenosť: 3,9 mm
-35 mm ekvivalent: 24 mm
Rýchlosť závierky: 1/1718
Clonové číslo: 1,9
ISO: 160

Kristián Vo



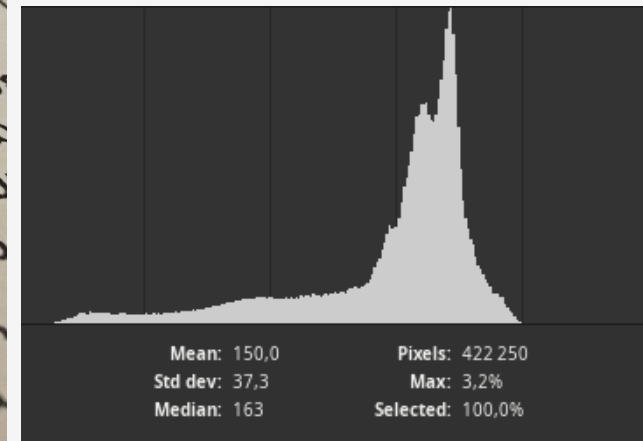
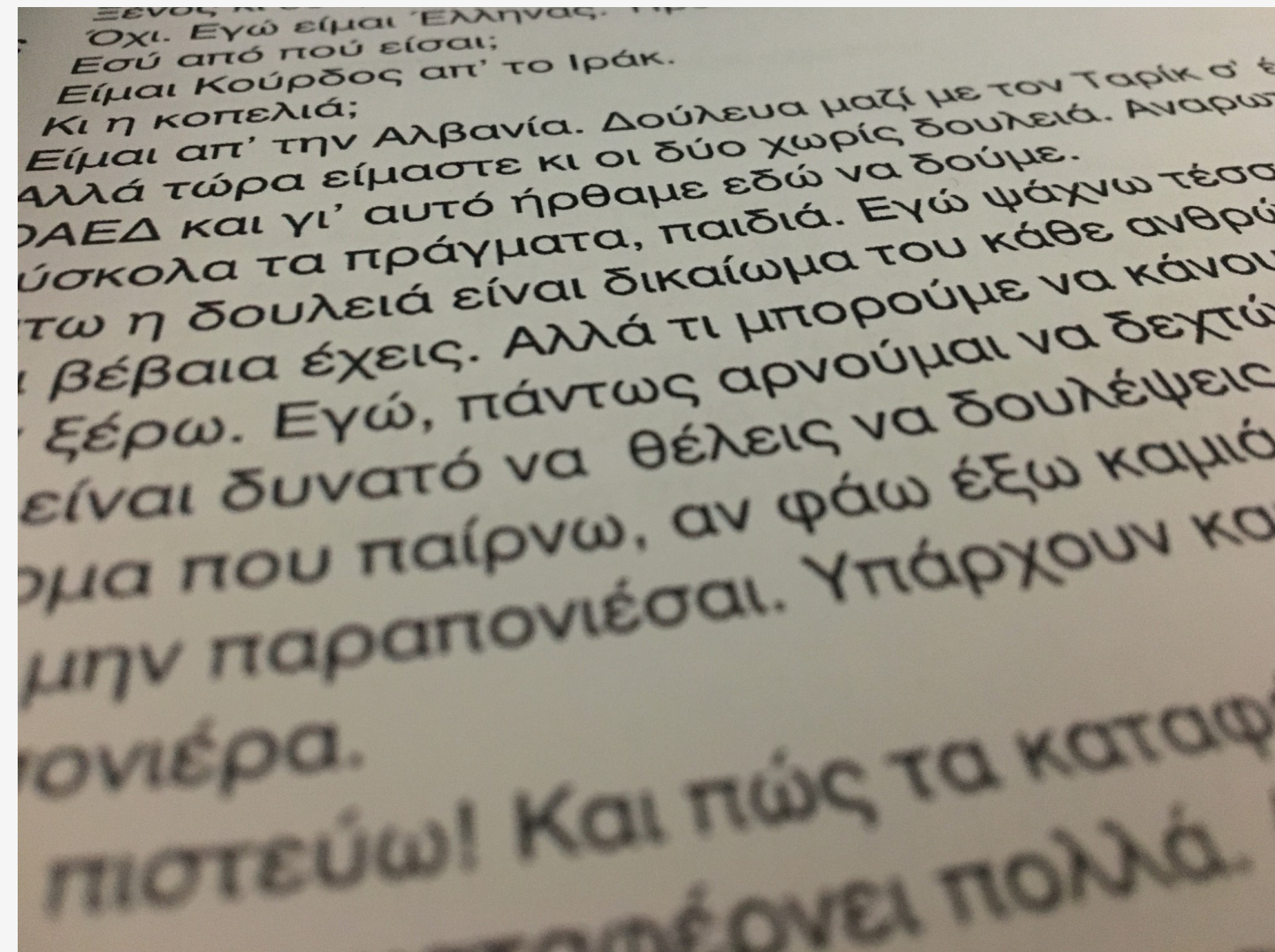
model : FIG-LX1, format: JPEG,
rozlisenie : [4160x3120], 13MP,
ohniskova vzdialenost
objektivu : 3.5mm,
- v 35 mm ekvivalente : 26mm,
rychlost zavierky : 1/999963365
expozicny cas : 1/17,
Clonove cislo : 2.2,
ISO : 400

Kristián Vo



model : FIG-LX1, format: JPEG,
rozlisenie : [4160x3120], 13MP,
ohniskova vzdialenost
objektivu : 3.5mm,
- v 35 mm ekvivalente : 26mm,
rychlost zavierky : 1/999963365,
expozicny cas : 1/1587,
Clonove cislo : 2.2,
ISO : 50

Filip Marczy



iPhone 6s

jpg

12,2 MegaPixels

4,15 mm

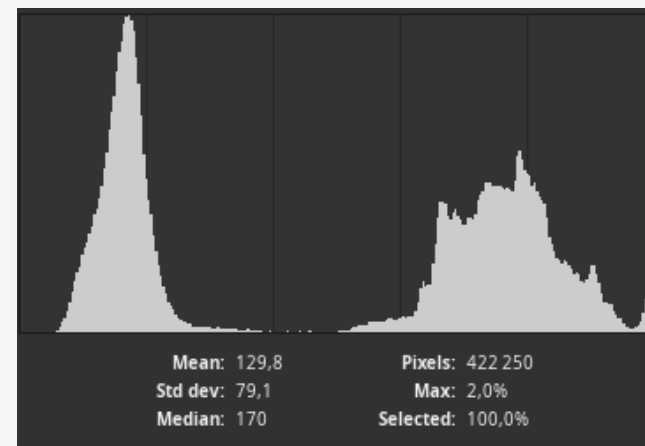
29 mm

109 / 1817 s

f/2,2

640

Filip Marczy



iPhone 6s

jpg

12,2 MegaPixels

4,15 mm

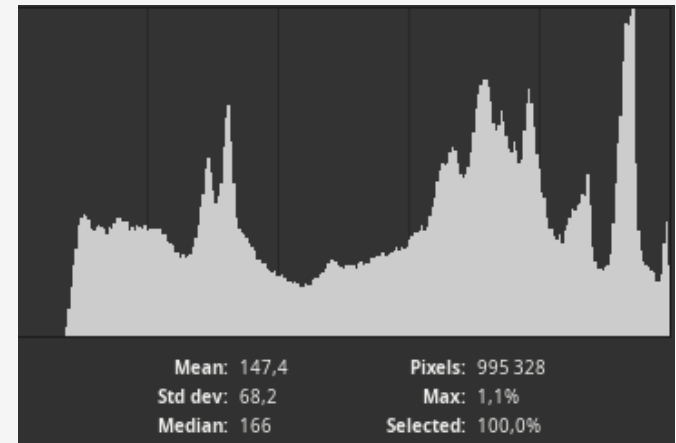
29 mm

23 / 767 s

f/2,2

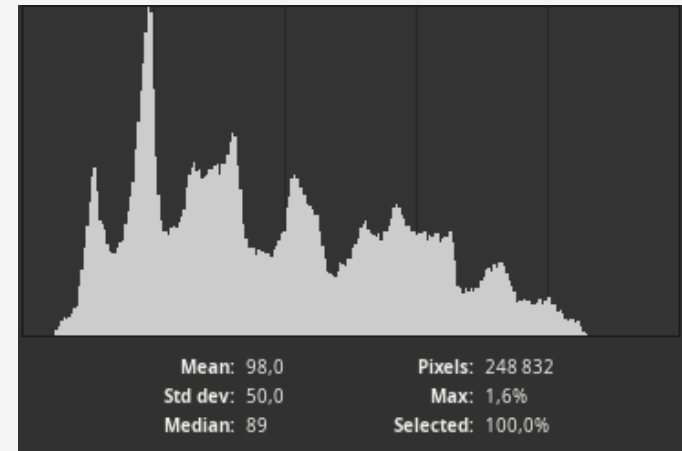
80

Denis Tomaník



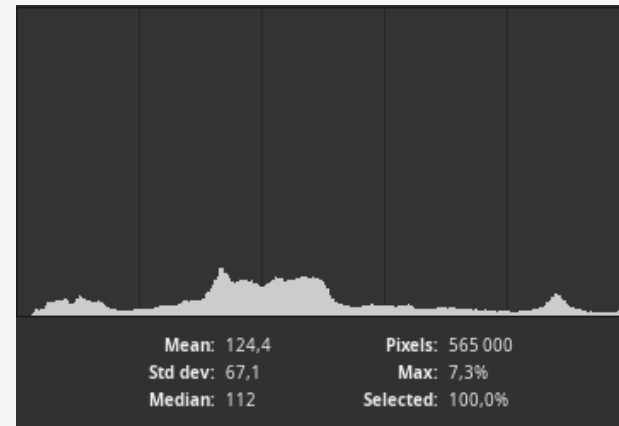
- model fotoaparátu: ANE-LX1
- formát súboru: JPG
- rozlíšenie: 3456x4608 16Mpx
- ohnisková vzdialenosť: 4mm (26 mm)
- rýchlosť závierky: 1/33s
- clonové číslo: F/2.2
- ISO: 160

Denis Tomaník



- model fotoaparátu: ANE-LX1
- formát súboru: JPG
- rozlíšenie: 3456x4608 16Mpx
- ohnisková vzdialenosť: 4mm (26 mm)
- rýchlosť závierky: 1/17s
- clonové číslo: F/2.2
- ISO: 1600

Nina Karasová



Model: WAS-LX1

Formát: .jpg

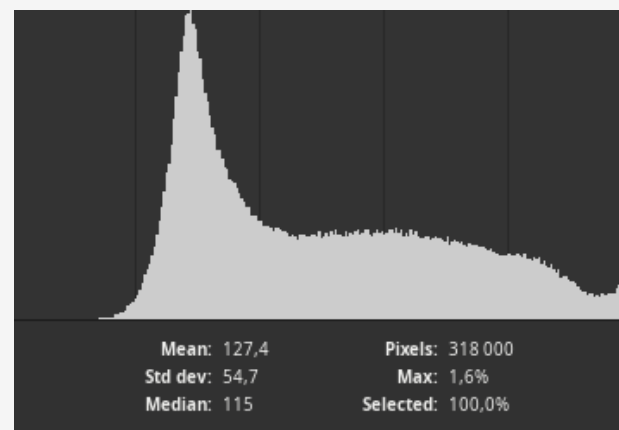
Rozlíšenie: 2240x3968 mpx

Ohnisková vzdialenosť objektívu: 26mm

Rýchlosť závierky: 1/120s

Clonové číslo: 2,20

ISO: 64



Model: WAS-LX1

Formát: .jpg

Rozlíšenie: 2240x3968 mpix

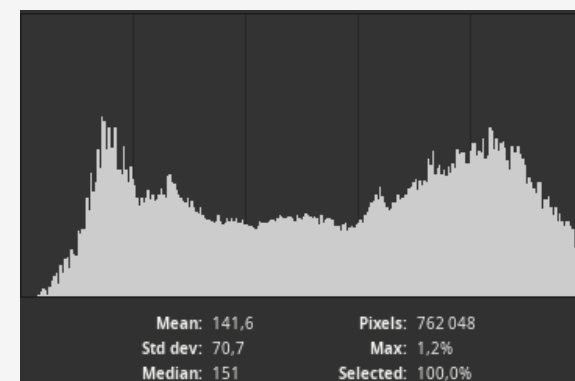
Ohnisková vzdialenosť objektívu: 26mm

Rýchlosť závierky: 1/40s

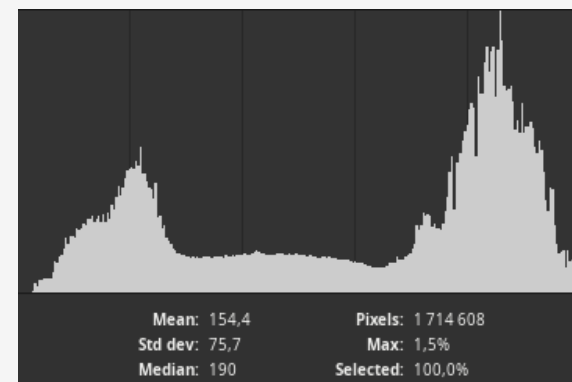
Clonové číslo: 2,20

ISO: 100

Jakub Čavojský

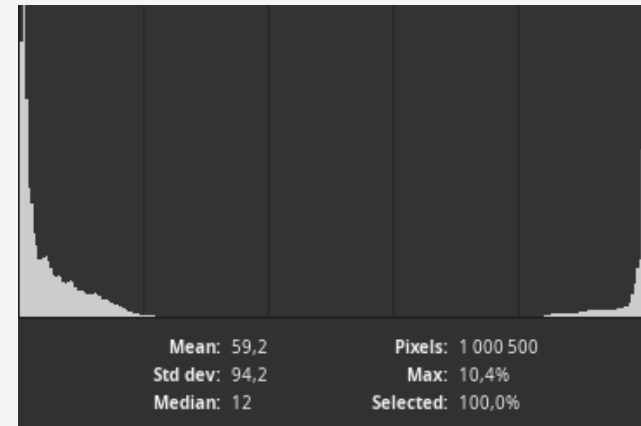


model fotoaparátu: iPhone XR
formát súboru: súbor JPG
rozlíšenie: 4032x3024 12Mpx
ohnisková vzdialenosť objektívu
(aj 35mm ekvivalent): 4mm
rýchlosť závierky : 1/122s
clonové číslo: F/1.8
ISO: 100



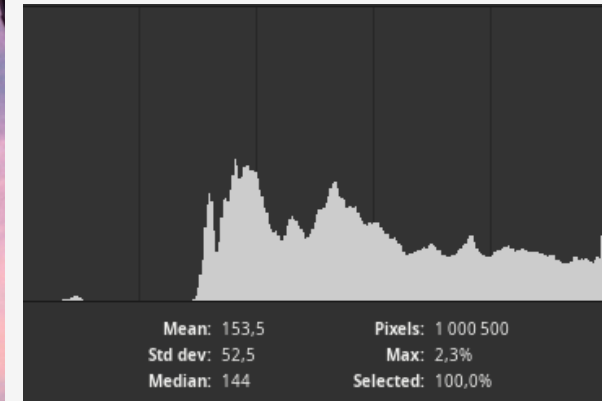
model fotoaparátu: iPhone XR
formát súboru: súbor JPG
rozlíšenie: 4032x3024 12Mpx
ohnisková vzdialenosť objektívu
(aj 35mm ekvivalent): 4mm
rýchlosť závierky : 1/2075s
clonové číslo: F/1.8
ISO: 25

Lukáš Dobrota



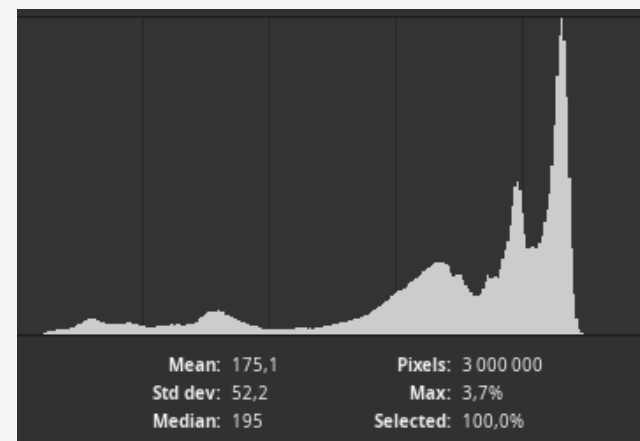
model fotoaparátu: iPhone 7
formát súboru: súbor JPG
rozlíšenie: 750x1334 1Mpx
ohnisková vzdialenosť: 4mm
rýchlosť závierky: 1/50s
clonové číslo: F/1.8
ISO: 400

Lukáš Dobrota



model fotoaparátu: iPhone 7
formát súboru: súbor JPG
rozlíšenie: 1334x750 1Mpx
ohnisková vzdialenosť: 4mm
rýchlosť závierky: 1/50s
clonové číslo: F/1.8
ISO: 40

Samuel Horváth



Model: ONEPLUS A5010

Formát: JPEG

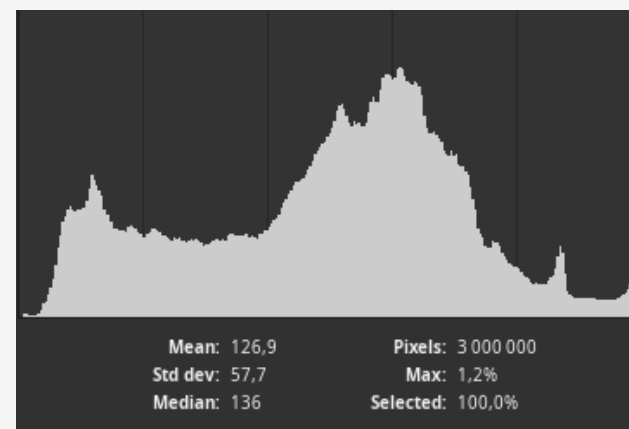
Rozlisenie: 4608x3456 , 15.9 megapixelov
ohniskova vzdialenost objektivu : 24mm

expozicny cas: 1/50

clonove cislo: -

ISO: 800

Samuel Horváth



Model: ONEPLUS A5010

Forma: JPEG

Rozlisenie: 4608x3456 , 15.9 megapixelov

ohniskova vzdialenost objektivu : 24mm

expozicny cas: 1/121

clonove cislo: -

ISO: 125