Table of Contents

GoPro Hero4 Black

Best possible combinations of fps and resolution.
Video resolution: 3840 x 2160 pixels / 30fps (UltraHD) fixed @ 14mm (eq 35mm)
Battery life: 1h:10m (protune enabled 4K)

4K	**16:9**		
30fps-NTSC	wide	14mm / crop	60mbit
4K Super	**16:9 - 4:3 maximum resolution**		
23fps-NTSC/PAL	wide	14mm / hqresize	60mbit
2.7K	**16:9**		
50fps-PAL	wide	14mm / hqresize	60mbit
50fps-PAL	medium	21mm / hqresize	60Mbit * best
2.7K	**4:3**		
30fps-NTSC	wide	14mm / hqresize	60mbit
1440p	**4:3**		
60fps-NTSC	wide	14mm / resize	48mbit
1080p	**16:9**		
60fps-NTSC	wide	14mm / hqresize	45mbit
60fps-NTSC	medium	21mm / hqresize	45mbit
120fps	narrow	28mm / crop	60mbit

H264 Parameters - High Profile 5.1			
Color Space: YUV	Chroma subsampling: 4:2:0	Bit Depth: 8bit	Color Primaries: BT.709
Reference Frames: 1	Color Range: Full	CABAC: Yes	Bitrate 48-60Mbit/s

Encoding chip: Ambarella A9 http://www.ambarella.com
Sensor: 4072×3046 SONY 1/2.3“ 12Mpix BI-CMOS Exmor R IMX117

* HQResize: image is resized from sensor (high quality)
* Crop: image is cropped from sensor (no quality problems)
In other modes there are **“skipped lines” - huge quality loss**, that is why I don't list them.

Outdoor shooting

6500K / GoPro Colors* / -0.5EV
*In high contrast situation - Flat Colors
Set **sharpness to low** always because picture is oversharpened in default settings.

GoPro HERO HDR recording

It's possible to record full HDR in 4K on GoPro HERO, but there are a lot of color noise in picture. This can be possible when you are shoot in flat profile, with native color preset (it's very close to bt2020). Then you can encode this video in HEVC/10bit with added HDR10 metadata.

Mobile LENOVO Vibe Z2 Pro

Max Video quality: **3840 x 2160 pixels / 30fps up to 100Mbit/s with Optical Stabilization**
CyanogenMod 14.1 (Android 7.1) + Cinema FV-5
f2.2 / 4mm (25mm) 5800K in settings mean ~6500K real on display or 100,88,90

H264 Parameters - Base Line 5.1		
Color Space: YUV	Chroma subsampling: 4:2:0	Bit Depth: 8bit
Reference Frames: 1	CABAC: No	Bitrate 65-100Mbit/s

Supported functions: Auto Exposure Lock, Auto White Balance Lock, Focus Lock, ISO Lock
Mobile phone can write 4K 100Mbit/s with additional software. In default settings there are a lot of sharpness.
Set sharpness to zero.

100Mbit/s → 750MB/min
65Mbit/s → 488MB/min
40Mbit/s → 300MB/min

Encoding chip: Qualcomm Snapdragon 801 / Adreno 330
Sensor: 5328 x 3000 1/2.6” 16Mpix ISOCELL S5K2P8
Optics: Optical Stabilization

Sample 4K Video on Youtube.com

Canon EOS 600D

Video resolution: 1920 x 1080 pixels / 35fps
CMOS Deshaker: 57% / Crop 19%
No moaré/aliasing at 1080p + Crop 3x (bad named Digital Zoom in menu)
It's floating 2Mpix window on 18Mpix sensor with digital stabilization

H264 Parameters - Base Line 5.0			
Color Space: YUV	Chroma subsampling: 4:2:0	Bit Depth: 8bit	Color primaries: BT709
Reference Frames: 1	CABAC: No	Bitrate 45Mbit/s	Color range: Full

Lens

Sigma 18-50mm		
18mm	f4* / f16	DoF-2.8cm
32mm	f3.5* / f11	DoF-1cm
50mm	f4.5 / f8* / f11	DoF-0.5cm

* best 32mm/f8
https://www.imaging-resource.com/lenses/sigma/18-50mm-f2.8-4.5-dc-os-hsm/review/

Sigma 70-300mm		
70mm	f4 / f8*	DoF-6.6cm
100mm	f8* / f16	DoF-3.6cm
200mm	f8* / f11	DoF-1cm / 0.34
300mm	f8 / f11*	DoF-0.4cm / 0.13

* best 100mm/f11
https://www.imaging-resource.com/lenses/sigma/70-300mm-f4-5.6-dg-macro/review/

Samyang 35mm	
35mm	f5.6* / f11

https://www.imaging-resource.com/lenses/samyangrokinon/35mm-f1.4-aspherical-umc/review/

Canon HFS100

1920x1080x25p/30p NTSC
(progressive mode must be selected in postproduction because stream is marked as interlaced for broadcast compatibility)

Setting	**Description**
FrameRate	PF25 / 30 for NTSC
xvColor	On
AGCLimit	6dB or 0dB
Quality	MXP 24Mbit/s 1080p
Custom Effect	Sharpness Low
Crop mode	1.7x*

Manual color calibration required (cool via auto-whitebalance)

*For best picture quality you must set **1.7x crop** mode otherwise aliasing occured.
Crop is 2Mpix window on 8Mpix sensor - this enable optical and digital stabilization at once.

H264 Parameters - High Profile 4.0			
Color Space: YUV	Chroma subsampling: 4:2:0	Bit Depth: 8bit	Color Space: BT.709
Reference Frames: 2	Scan type: Interlaced*	CABAC: Yes	Bitrate 24Mbit/s

* Fake in PF mode