
Huawei P8

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Data de publicació: 19-12-2015

Huawei P8 smartphone features 'world's first' four-color RGBW sensor, 'industry-leading' OIS system
FOUR HUAWEI RGBW SENSOR SMARTPHONE

by Gannon Burgett

posted Wednesday, April 15, 2015 at 4:08 PM EST

Today, Chinese smartphone manufacturer Huawei announced the Huawei P8, its latest flagship phone. In presenting the new smartphone Huawei laid out the groundwork of the camera within it, claiming it features 'the world's first 13-megapixel four-color RGBW sensor.'

This new sensor is said to increase brightness in images by 32% in high-contrast situations and decrease color noise by 78% in low-light. But what this means is you will see brighter whites and deeper blacks in the resulting images.

To make better use of the data from sensor, a new 'DSLR-level' dedicated image processor is included in the phone. It's said to reduce noise, particularly in low-light, and optimize results in high-contrast scenes.

In addition to the improved sensor and processor, the P8 features an optical image stabilization system that is said to compensate for vibrations twice as much as the iPhone 6 Plus's, with 1.2-degrees of compensation over the iPhone 6 Plus's 0.6-degrees.

Huawei smartphones aren't exactly huge sellers outside of the Chinese market, but the technology is impressive in a smartphone and will likely be replicated by other manufacturers. It's also worth noting Huawei isn't the first to develop an RGBW sensor. Sony has had one in development since 2012. According to Ars Technica, it appears as though this is the Sony sensor previously mentioned, not a Huawei sensor.

(via Image Sensors World)

Claudio Costerni • 8 months ago

Gannon,
a decrease by 78% of the COLOR NOISE, not the brightness!

Gannon Burgett Mod Claudio Costerni • 8 months ago

Thanks for catching that discrepancy, Claudio. It's been corrected.

Johan • 8 months ago

This is actually a Kodak patent of many years ago, except that the layout is a little different.<http://www.dpreview.com/articl...>

Blue Gum • 8 months ago

"It's also worth noting Huawei isn't the first to develop an RGBW sensor. Sony has had one in development since 2012."

The camera they are using is from Sony.

Huawei P8 Smartphone Features "World's First Four-Color RGBW Sensor"

Huawei P8 flagship smartphone announced today features "a new philosophy for camera design leveraging a combination of hardware, software and proprietary algorithms to help users capture beautiful photographs, even in the worst lighting conditions."

P8 camera sensor is claimed "The world's first four-color RGBW sensor enhances brightness by 32 percent in high contrast lighting situations, reduces it by 78 percent in low light environments. DSLR-level independent image processor enabling noise reduction when shooting and intelligent detection of a high-contrast lighting environment." It's not clear what exactly makes Huawei camera "world's first RGBW," as other smartphones on the market already use sensors with white pixels in the array.

The camera also features "Industry-leading Optical Image Stabilizer technology up to 1.2°, enabling high-quality photos and videos, and managing camera shake so images are consistently sharp." For a very good image stabilizer one needs to have about 2-2.5deg range, but 1.2deg is not bad too.

About a half of Huawei P8 presentation is devoted to the camera (Youtube presentation is here):

Thanks to TS for the pointer!

Posted by Vladimir Koifman at 22:49

19 comments:

Anonymous April 15, 2015 at 11:03 PM

They are claiming the world's first 13MP RGBW. With that 13MP qualifier, they are correct.

Reply

Replies

Vladimir Koifman April 15, 2015 at 11:08 PM

Their PR official PR, linked and quoted in the post, does not mention 13MP. They only state "the world's first four-color RGBW sensor." The 32% and 78% explanation part is too messed in the PR, but appear correctly in the slides.

Anonymous April 16, 2015 at 5:16 PM

Of course, it is not the first 13MP RGBW sensor. And Samsung in 2013, and Sony later do it. But as i think they refused of it. As I think, really RGBW sensor have not benefits.

Yes, this sensor can get more light. But you CAN NOT receive from this extra light the color information.

I really think of it :) And it is impossible in my opinion)

Anonymous April 16, 2015 at 5:37 PM

May be the PR means it is using the FIRST 13MP RGBW sensor Samsung used in 2013? :-)

Anonymous April 16, 2015 at 6:50 PM

I think this RGBW sensor would be useful especially in low light combined with super resolution processing algorithms, such as Almalence's BetterCamera SUPER mode. (Incidentally Omnivision has a collaboration agreement with Almalence)

Yet we don't know which sensor this is, it would be interesting if it was a large pixel sensor such as OV13860 1.3um pixels, but I doubt it, pixel size isn't mentionned so probably it is the habitual 1.1um

Reply

Anonymous April 15, 2015 at 11:30 PM

whose sensor is this?

Reply

Replies

Anonymous April 16, 2015 at 7:24 PM

It is SONY IMX278.
<http://news.91.com/android/1504/21818568.html>

Reply

Anonymous April 16, 2015 at 8:44 AM

"For a very good image stabilizer one needs to have about 2-2.5deg range" Why?

In such small camera modules does not apply the principle of the DSLR. Even slight hand movement can destroy and optical image stabilization and digital. This movement is about 0.5 centimeters

Reply

Replies

Anonymous April 16, 2015 at 4:07 PM

I agree that 150 gram handheld devices are more sensitive to high frequency shaking then a 500 gram handheld device, especially those with three natural points of support (two hands and a chin/eye). Shake reduction in phones should be better in terms of degrees then shake reduction in dslrs.

Anonymous April 16, 2015 at 5:21 PM

It's not just the three points of support. 2 degrees in the DSLR is equivalent to the motion of the camera such as a centimeter, for example. 2 degrees in the smartphone (according to the size of the matrix and optics) is equivalent to the motion of less than 1 millimeter:)

Reply

GoAno April 16, 2015 at 9:41 AM

The images of the horse are generated from one image,

Reply

Replies

Anonymous April 16, 2015 at 6:16 PM

Photoshop probably...unless they tied down the horse or waited for the exact event to happens twice, the probablity of the latter being one in a trillion trillion trillion.....

Vladimir Koifman April 16, 2015 at 6:37 PM

This is a poster. The text underneath says it's shot under 5 lux. Certainly not a sunny day.

Reply

Anonymous April 16, 2015 at 6:27 PM

Didn't Kodak publish on RGBW patterns back in 2009 and even earlier? 2007?

Reply

Replies

Eric R Fossum April 16, 2015 at 8:16 PM

RGBW goes back (at least) to US 2,755,334 by Banning, filed in 1951, and referenced by Bayer as prior art.

Reply

Anonymous April 17, 2015 at 2:07 AM

How would the white pixel impact dynamic range in a bright scene? There is mention of high contrast but only low light images are shown? Would white pixel saturate faster than green and cause lower dynamic range overall compared to RGB sensor?

Reply

Anonymous April 17, 2015 at 12:28 PM

The white pixel will saturate faster but pick up more light in the shadows, improving shadows. RGB will keep highlights almost as good as usual because they don't saturate that fast.

Actually i would prefer an array where some of the pixels are white and some are dimmed by darker filters. Maby a 8 filter pattern rather than 4 filter (RGGB or RGBW) pattern. That will improve highlights at the cost of noise. Maby another pattern having more sparely spread darker pixels. Sensors operating close to or beyond the diffraction limit and optical limit may improve dynamic range this way without sacrificing much in terms of resolution and noise.

Size

Height

144.9mm

Width

72.1mm

Depth

6.4mm

Weight

144g

Color

Mystic Champagne/Titanium Grey

Display

5.2" FHD Screen, 1080p (1920 x 1080), 424ppi
16M colors

CPU

Hisilicon Kirin 930, 8-core 64bit, 2.0GHz

Operation System

Android™ 5.0

Memory

RAM : 3 GB;
ROM : 16 GB

Network

GRA_L09:
TDD LTE?B40
FDD LTE?B1/B2/B3/B4/B5/B7/B8/B12/B17/B18/B19/B20/B25/B26/B28
UMTS: 800(B6,Japan)/800(B19,Japan)/850/900/1700/1900/2100MHz
GSM 850/900/1800/1900MHz
Support NFC

GRA_UL00:
TDD LTE: B38/B39/B40/B41 (2555MHz~2655MHz)
FDD LTE:B1/B3/B4/B7

UMTS: 850/900/1700/1900/2100MHz(B8/B5/B4/B2/B1)
GSM : Main card: 850/900/1800/1900MHz
Second card:850/900/1800/1900MHz

GPS

GPS/A-GPS/Glonass/BDS(BeiDou Navigation Satellite System)

Connectivity

Wi-Fi 2.4GHz b/g/n with Wi-Fi Direct support
BT 4.1+LE
MicroUSB (High Speed USB)

Sensors

G-Sensor, Gyroscope sensor, Ambient Light Sensor, Proximity sensor, Compass, Accelerometer

Camera

13 Mega pixel main Camera, OIS, RGBW sensor, DSLR-level Image Signal Processor, 1080p video recording/1080p video playback; F2.0; Dual color temperature flash
8 Mega pixel front Camera

Audio

Audio: MP3?MIDI?AMR-NB?AMR-WB?AAC?AAC+?eAAC+?PCM?WMA
Video: H.263?H.264?MPEG-4?MOV?ASF?RM?RMVB
Picture: PNG?GIF?JPEG?BMP?WEBP?WBMP
3.5mm Audio Jack

Video

Video Codec: MPEG-4, H.264, H.263, VP8, RV7-10, Xvid, WMV9
Video File Format: *.3gp, *.mp4, *.m4a, *.rm, *.rmvb, *.wmv
Image Codec: PNG, GIF (Static only), JPEG, BMP
Image File Format: *.png, *.gif (Static only), *.jpeg, *.bmp

Emotion UI

EMUI 3.1

Battery

2680mAh(Typical Value)

In the box

Handset×1
Headset×1

Charger×1
USB cable×1
Quick Start Guide×1
Safety Information×1