Kodak claims world first with new CMOS chip

1.4 micron, 5 megapixel sensor on its way

by Katie Scott published on 5 February 2008

Kodak has unveiled what it is claiming to be the world's first 1.4 Micron, 5 megapixel, high ISO CMOS sensor.

The new sensor sees Kodak combining its Color Filter Pattern technology with a new CMOS pixel to create the KODAK KAC-05020 Image Sensor.

The sensor is expected to be built into "mass -consumer camera applications" including mobile phones.

Its biggest boast is that this sensor can deliver image quality "that can equal or surpass what is available from current devices using larger, 1.75 micron pixel CMOS designs", says Kodak.

Chris McNiffe, general manager of Kodak's Image Sensor Solutions business explained in a statement: "Camera phones and other small-pixel consumer imaging devices often suffer from poor performance, especially under low light conditions".

"To manufacture sensors that utilise these very small pixels - only two to three times the wavelength of visible light - we needed to challenge everything we knew about pixel and sensor design."

"By completely rethinking the design of the CMOS pixel and leveraging our work with high sensitivity colour filter patterns and algorithms, Kodak was able to develop this remarkable new sensor that will enable a level of imaging performance previously unavailable from CMOS devices."

Central to the new design is the Kodak TRUESENSE CMOS Pixel. In a standard CMOS

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pixel, signal is measured by detecting electrons that are generated when light interacts with the surface of the sensor. As more light strikes the sensor, more electrons are generated, resulting in a higher signal at each pixel.

In the TRUESENSE CMOS Pixel, the underlying "polarity" of the silicon is reversed, so that it is the absence of electrons is used to detect a signal.

Light sensitivity is enhanced by incorporating a TRUESENSE Color Filter Pattern, which adds panchromatic, or "clear", pixels to the red, green and blue pixels already on the sensor.

"Since these pixels are sensitive to all wavelengths of visible light, they collect a significantly higher proportion of the light striking the sensor", explains Kodak.

"This delivers a 2x to 4x increase in sensitivity to light (from one to two photographic stops) compared to current sensor designs, improving performance in low light and reducing motion blur in action shots", the manufacturer continues.

The KAC-05020 enables imagery up to ISO 3200 and support for full 720p video at 30fps.

The sensor is also supported by the Texas Instruments' OMAPTM and OMAP-DM solutions, enabling Kodak Image Processing and Enhancement Features including digital image stabilisation, rapid auto-focus, red-eye reduction, and facial recognition.

Samples of the KAC-05020 are scheduled to be available in Q2.

The KAC-05020 is going to be on show at 3GSM in Barcelona next week and we will be there to have a peek.