

## **MOBILE PHOTOGRAPHY**

A smartphone camera is like a plastic "eye", but in fact it is a complex multicomponent system of a matrix and a lens along with complicated mechanics for stabilization and auto focus, laser rangefinders, RGB-sensors and different kinds of photoflashes.

The overall quality of smartphone photos (color, zoom, dynamic range, etc.) depends on the installed matrix and lens system.

Though CCD is considered to be the best matrix technology, CMOS has the largest market share, with CMOS-matrix having lower power consumption allowing to place amplifiers inside the pixel, being cheaper to manufacture and providing high speed real time image production. CMOS image sensors are diversly implemented by different manufacturers and are constantly complemented by all sorts of technologies, such as Samsung BSI and ISOCELL.

Sony's Exmor RS Matrix is remarkable by multi-tiered structure. In such sensors the existing elements are located more rationally. Additional white sub-pixel (WRGB scheme) increases the image brightness in low light conditions, the other features (data transfer in the CPU, features analogous to HDR etc) help manufacturers to create high-quality camera in your phone.

In smartphones as well as in cameras the lens is not just a single glass but the optical system of multiple lenses that allows to achieve the maximum image quality with minimum distortion.

In general, the final image quality is highly dependent on the quality of the lens system. For example, if the matrix is set in front of a bad lens, it results in poor resolution no matter how many mega pixels it has. The image will be huge but definition quality of photographs will not increase.

Different lens focus may vary significantly across the frame field, and often there is a problem of chromatic aberration (CA). Of course, the important parameters in the optics are the focal length and aperture. Currently, smartphones always use wide angle lenses as small matrix has a large crop factor (smartphone matrix size ratio to the ordinary photo frame size of 35 mm).

Another important lens parameter is the f-number (F). This value is the inverse number of the lens relative aperture, that is, the pupil to the lens focal length ratio. That is, the smaller the aperture value, the larger the hole. Lens transmits more light, the matrix will have to produce less signal amplification. So, the other characteristics being equal, there will be more opportunities to make high quality images at night (in poor visibility) with less noise. Be aware that most smartphone cameras diaphragm settings are  $f/2$  and  $f/2.2$ . Some cameras possess the best indicator –  $f/1.8$  and  $f/1.7$ .

Thus, the number of megapixels is only one parameter of a complex device camera system. Matrix type and optics quality are also extremely important. In addition, much depends on the specific implementation of the smartphone camera by a certain manufacturer. Supporting manual settings, for example, will somehow improve the quality, for example at night, you can shoot with a tripod lowering the ISO to 100 (or 50 in some smartphones) with great exposure. This will allow to obtain night shots with less noise, having the average quality matrix. In addition, shooting in RAW format – storing images as digital negatives, which can be processed and improved on a computer after shooting – often (not always) turns out to be useful.

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## **THE CONCEPT AND IMPORTANCE OF COMPUTER SECURITY**

Computer security is a type of security that people apply to computing devices such as computers, smartphones, tablets and other computer technologies. This field includes all the ways and types of processes, which digital devices and information are protected from unauthorized use or change. This field includes physical security to stop theft of property and on a data level to stop from stealing or viewing some sensitive information. It is sometimes called “cyber security”. Computer security can also be defined as the process of applying security preventive measures to ensure confidentiality, availability and integrity of data. It also assures protection and security of assets or property, which the data or the information is saved on them. The aim of computer security is to protect information both in movement through computer networks and at rest on the devices.

Computer security involves the process of protecting computerized devices against intruders from using your device for personal gains. For example, stealing your sensitive information and sell it to people who can use it against you). Computer security is a branch of Information Security and it includes several security measures such as software like firewalls and antivirus programs.

Computers are now used practically in all industries. Currently, most computerized devices come with a built in firewall software, but this is not enough to make them 100 percent secure and dependable to protect the data. There many different ways of hacking into computers such as through a network system, download software from unsafe websites, clicking into unknown links, electromagnetic radiation waves, etc. However, computers can be very well protected through well built software and hardware. There are many actions that