Dalal Gourani and Somansh Kumar

Glow like dat

The auto brightness setting not only optimizes display brightness and color rendering, but reduces battery usage.

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Ambient Light Sensors (ALS) are a technology that detects the light of the environment and adjusts the brightness of a phone in accordance to what the human eye would see. The point of ALS is to let the phone's system know how much light is hitting the screen at any time. This technology has the ability to sense the intensity of the light surrounding the iPhone and processes this information to help adapt the phone light accordingly. By doing this, it helps reduce eye strain, and can also decrease battery consumption, therefore giving the user a longer battery life.

The type of Ambient Light Sensor and dimming instrument that the iPhone uses

Apple use photodiode ALS in their iPhones, as well as ALS that include a temperature sensor. There are various types of ambient light sensors which are used in phones, one of which is called the photodiode. ALS sense and adjust the light which reflects on the phone screen. ALS contain photodiodes which have different sensitivity according to the spectrum of light. Combined with a mathematical formula, it reads the light being received on the screen, then the output changes the intensity of light on the screen. ALS with an ambience-sensitive photodiode controlling the display luminosity, is ideal for mobile phones. The photodiode in the light sensor responds to the ambient light intensity being detected by generating proportional output voltage. This device is a semiconductor that converts light into an electrical current. In dim environments, the brightness can be lowered to save battery power and in brighter environments, the backgrounds and fonts are enhanced for easy readability.

How light is measured

Before ambient light sensors are sold to Apple, companies test the sensors prior to being sold and installed. The light sensors are tested by using data from a variety of ALS technologies. This is done by placing numerous sensors at different distances and measuring how well they react to the light at these different distances. This provides a precise approximation of the

many different lighting conditions which a phone screen might encounter. Most light sources generally emit visible and infrared (IR) lighting. The difference in the light sources can have similar visible brightness but different IR emissions. This variety in the emission characteristics and spectral sensitivity are recorded and taken into consideration when measuring brightness.

Most iPhones have a tinted or black glass on top of the sensor, thus causing many challenges for the Ambient Light Sensor. The black glass changes the light reading and its reaction to varying light sources, which all have a different light emission range. Although the black glass affects the light reading, ALS technology has the ability to ignore this issue and continue to provide correct and adequate lighting on the phone screen through the brightness setting.

How it works

ALS works by blocking and filtering infrared and ultraviolet wavelengths. The built-in photodiode in ALS have wavelength characteristics close to the human spectral sensitivity, which enables response that is close to the human eye. The photodiode and temperature sensor in the ALS replicates the optical response of the human eye, accurately measuring visible light in various environmental settings. Advanced algorithms correct any range of variations between the light sources which therefore, ensures a precise approximation of lux *(see figure 1)* response.

ALS as we know, read and detect light to provide users with a comfortable retina display when operating their iPhones. It reduces eye strain and decreases battery usage. Without light sensors and the ability to decrease or increase screen brightness, the user would experience difficulty viewing the phone screen in varying lighting conditions.

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What is lux?

Lux is the amount of visible light present, and the measurement of illuminance intensity on a surface.

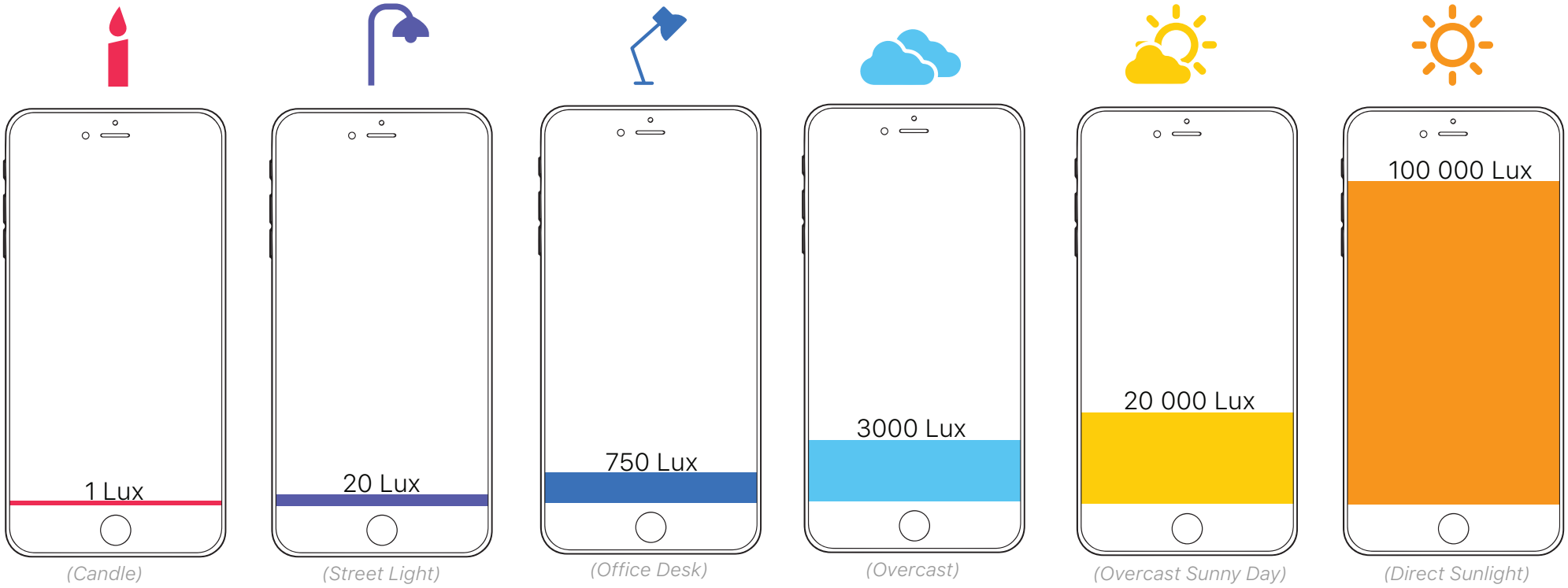

Figure 1