

Car LiDAR systems can permanently damage smartphone cameras.

The LiDAR system in vehicles like the Volvo EX90 can damage smartphone camera sensors if pointed directly at. Users need to exercise extreme caution.

More and more car manufacturers are equipping their products with LiDAR systems to scan the surrounding environment in 3D with very high accuracy. This technology works by emitting extremely fast infrared (IR) pulses. Although IR rays are invisible to the naked eye, you will 'notice' their existence as soon as you point your smartphone camera directly at the car's LiDAR system — because almost immediately, the preview screen will show serious noise, indicating that the camera sensor may be permanently damaged.

Smartphone CMOS sensors are particularly sensitive to high-intensity infrared radiation.

A short video posted by @Rainmaker1973 on social media shows a Volvo EX90 with a LiDAR array mounted on its roof. With this setup, the car almost has a complete ADAS (Advanced Driver-Assistance System) system, supporting features such as automatic emergency braking, collision avoidance, adaptive cruise control, and accurately identifying pedestrians, cyclists, road obstacles, and other hazards.

But as the video illustrates, this system is also powerful enough to "burn" the phone's camera. The preview screen of the recording device begins to show pinkish-purple specks of noise, resembling stars, accompanied by streaks extending towards the LiDAR cluster. LiDAR systems in vehicles typically use 1,550nm infrared lasers, and if the smartphone camera is exposed long enough, this can lead to permanent dead pixels on the sensor.



Besides generating heat, CMOS sensors in phones are also extremely sensitive to high-powered IR radiation. This hardware is not designed to absorb a focused beam, which is created to reflect from objects at distances of up to hundreds of meters. Therefore, when exposed directly to this light, the sensor is highly susceptible to irreparable damage.

If you're worried about whether the LiDAR on the Volvo EX90 could harm your eyes, the good news is there's no need to be overly concerned. These systems are certified as Class 1 lasers, meaning they are safe under normal usage conditions. The 1,550nm wavelength is blocked before it can affect the human retina.

However, as mentioned above, cameras aren't so 'lucky'. Therefore, unless you have a 'backup' phone that isn't crucial for testing, it's best never to point your smartphone camera directly at your car's LiDAR system, to avoid the risk of unnecessarily losing the camera.

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