



## ECA Position on Lasers and Dangerous Lights Attacks

### Executive Summary

Over the past few years there has been a considerable increase in the number of reported laser attacks upon civil aircrafts. This situation is very preoccupying as it might have serious security and safety implications for their occupants. Such acts can also seriously harm the pilots' health. Therefore ECA urges the European Institutions to recognise laser attacks as an act of unlawful interference because of the threat that such attacks pose to air safety/security and to pilots' health.

### Lasers and dangerous lights attacks on aircrafts: a treat to flight safety

Currently over 100,000,000 laser pointers are thought to exist world-wide. Lasers come in a multitude of colours; red, green, blue, yellow, violet, and infra-red (invisible). All – especially the green, blue, and infra-red – can exceed 500 milliwatts (mW) of power and are capable of causing permanent damage to the eye. Medical and radiation experts generally consider 5mW as the maximum safe exposure that the human eye can withstand<sup>1</sup>.

Symptoms of laser exposure include flash blindness (i.e. "flashbulb effect"), glare (such as driving on a sunny day), loss of dark adaptation (similar to being in a dark room and turning the lights on then off), glare discomfort and afterimages (the "blue dots" one might see after a camera flash).

Laser pointers are classified in four classes according to their output power<sup>1</sup>:

- Class 1: lasers have an output power that is below the level at which eye injury can occur.
- Class 1M: A Class 1M laser is safe for all conditions of use except when passed through magnifying optics such as microscopes and telescopes.
- Class 2: lasers emit visible light and are limited to a maximum output power of 1 milliwatt (mW). A person receiving an eye exposure from a Class 2 laser will be protected from injury by their natural blink reflex, an involuntary response which causes the person to blink and turn their head, thereby avoiding eye exposure.
- Class 2M: A Class 2M laser is safe because of the blink reflex if not viewed through optical instruments.
- Class 3R: A Class 3R laser is considered safe if handled carefully, with restricted beam viewing. Visible continuous lasers in Class 3R are limited to 5 mW.

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<sup>1</sup> Princeton University –Laser Control measures - <http://web.princeton.edu/sites/ehs/laserguide/sec3.htm>

- Class 3B: A Class 3B laser is hazardous if the eye is exposed directly, but diffuse reflections such as from paper or other matte surfaces are not harmful. Continuous lasers in the wavelength range from 315 nm to far infrared are limited to 0.5 W.
- Class 4 Class 4 lasers include all lasers with beam power greater than class 3B. By definition, a class-4 laser can burn the skin, in addition to potentially devastating and permanent eye damage as a result of direct or diffuse beam viewing.

Since 2004 Class 4 lasers of over 500 milliwatts are on the market and can be readily purchased on the Internet. A considerable number of Class 4 lasers are hand-held and operate on batteries and are no larger than a small flashlight. These lasers have the potential to do serious eye damage up to many thousands of feet. Although some are sold with safety features, these can be easily defeated or deactivated. Such a laser can actually burn a hole in paper at close range without the use of a focusing lens. Class 4 lasers can cut flesh, and the most powerful ones are capable of cutting metal.

### **Legislation regarding laser attacks in Europe**

To date there have been only a handful of successful legal actions on individuals using lasers against aircraft. Many – in fact, the vast majority – of these attacks can be considered to be of the “nuisance” variety and are often perpetrated by individuals who do not necessarily have a hostile intent. However, the potential danger of these attacks on aircraft cannot be dismissed or underestimated.

Such attacks typically take place at a critical phase of flight; during take-off or more predominantly - during descent and approach to land where a pilot’s ability to look out and see clearly is essential. Any such attack therefore can result in severe damage to a pilot’s vision and potentially - a catastrophic loss of life both in the air and on the ground.

In the UK from January 2010 it became a specific offence under the States Air Navigation Order (ANO). Article 135A: Dangerous Lights now states that; “*A person shall not direct or shine any light in the UK at any aircraft in flight so as to dazzle or distract the pilot of the aircraft*”. This article has made it much easier for Courts to achieve legal action.

Within a matter of weeks of the regulation coming into force in the UK there were a number of legal proceedings with offenders receiving custodial sentences with a new national campaign highlighting the penalties that will be faced. This has resulted in a very significant reduction in events and the appreciation of potential perpetrators of the very serious risks involved

The UK approach of enabling high level legislation to specifically identify the targeting of aircraft with the effect of endangering it and or its occupants with a laser device sends a clear message to potential offenders and is a deterrent.

There is no common approach in Europe regarding the measure to be taken to prevent laser and dangerous lights attacks and to sanction their authors. Some countries have similar legislation to the UK one, some other may give penalties to actions that endanger an aircraft but elsewhere nothing is established to prevent such unlawful acts.

### **ECA Position**

**ECA calls for both the EU and Member States to recognise laser attacks as acts of unlawful interference and provide a basis for possible legal actions for those found guilty of targeting aircrafts and endangering therefore the safety of an aircraft and/or its occupants.**

**Therefore ECA calls upon the Commission to table a legislative proposal as soon as possible.**