The Federation of Astronomical Societies

Laser Pointers Guidance

A Practical Handbook for Astronomy Groups

Version 2

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Document History

Date	Author(s)	Version	Comments
April 2026	Clare Lauwerys	2	Rewrite to update and make more user friendly
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Contents

1. Legal Disclaimer

This document is for information and guidance only, to support safe, lawful, and responsible use of handheld laser pointers during astronomical activities. It is **not legal advice**.

The Federation of Astronomical Societies (FAS) is not a law firm, Health and Safety authority, regulated professional body, or statutory agency.

Each adopting organisation is solely responsible for:

- Reviewing and adapting this template to its own circumstances
- Obtaining independent professional advice where appropriate
- Ensuring compliance with relevant law and regulation such as The Laser Misuse (Vehicles) Act 2018
- Ensuring compliance with local restrictions imposed by venues or authorities.
- Implementing and maintaining effective safeguarding and safety procedures

Use of this template is entirely at the adopting organisation's own risk. To the fullest extent permitted by law, FAS disclaims all liability arising from reliance on this document Organisations should seek additional sources of information and professional advice where needed.

2. Purpose

These guidelines set out the standards for the safe, lawful, and responsible use of handheld laser pointers by astronomical societies. They apply to all society members, volunteers, Event Leads, and Designated Demonstrators at indoor meetings, star parties, outreach events, and public activities.

3. Scope and Limitations

The guidance covers **handheld laser pointers only**. It does not regulate laser collimators, laser modules, or telescope-mounted devices although some principles (e.g., aviation safety) apply to all laser devices.

Laser pointers are valuable tools for education and night-sky interpretation. Their misuse, however, poses significant risks to aviation, public safety, and the reputation of astronomy societies.

Societies must also comply with any venue-specific restrictions imposed by schools, councils, heritage sites, or landowners.

4. How to Use This Document

- **Must** = mandatory requirement
- **Should** = strong recommendation
- **May** = optional or situational guidance

5. Definitions

Event Lead – the person responsible for overseeing the event and approving laser use.

Designated Demonstrator – the only person authorised to operate a laser pointer during an event.

Spotter – a volunteer assigned to maintain continuous watch for aircraft and environmental hazards.

Notification Zone – a 10-nautical-mile radius around major airport runway centrelines (CAA CAP 736).

IR Filter – a component that blocks invisible infrared leakage from green lasers.

Laser Safety Log – the society's record of devices, checks, incidents, and approvals.

Reasonable Precautions – steps demonstrating responsible behaviour under the Laser Misuse (Vehicles) Act 2018.

6. Why This Matters

Responsible laser use protects:

- Aviation and public safety
- The reputation of astronomy societies
- The continued freedom to use laser pointers for education
- Volunteers, members, and the public from harm

Self-regulation is essential to avoid future legislative restrictions.

7. Laser Classification and Safety Principles

Laser pointers must comply with **BS EN 50689:2021** and be clearly labelled with their class, wavelength, and output power.

7.1. Classification Overview

Class	Power	Policy
1 / 1M	Safe	Permitted
2 / 2M	<1 mW	Permitted
3R	<5 mW	Restricted use only
3B	5–500 mW	Prohibited

Any device **without a class label, CE mark, or manufacturer details must be treated as Class 3B** until verified.

7.2. Infrared (IR) Leakage

Green lasers may leak invisible IR radiation. All green lasers used at events must include an IR filter.

7.3. Mislabelling and Calibration

Budget devices frequently exceed their stated power. Societies should:

- Purchase only from reputable suppliers.
- Verify output using a calibrated power meter.
- Withdraw any device that exceeds Class 3R limits.

8. Permitted and Restricted Use

Laser pointers may only be used for educational and astronomical purposes under controlled conditions.

8.1. Indoor Meetings and Lectures

- Only **Class 1 or Class 2 red lasers** may be used indoors.
- Devices must never be directed towards people or reflective surfaces.

8.2. Outdoor Star Parties and Public Events

- Laser use is restricted to **Designated Demonstrators** approved by the Event Lead.
- Only **Class 2** devices may be used routinely.
- **Class 3R** devices may be used only if verified and IR-filtered.

8.3. General Restrictions

- Members of the public must not handle laser pointers.
- Lasers must not be used for entertainment, or photography effects.
- Devices must be switched off when not actively in use.

9. Operational Requirements for Events

Laser use at any society event must follow a consistent, risk-based process.

9.1. Pre-Event Checks

The Event Lead must ensure:

- The location is suitable and not within a restricted aviation zone.
- Only approved devices are present.
- A Designated Demonstrator and a dedicated Spotter are appointed.
- Volunteers are briefed on safety expectations.

9.2. Aviation Safety

Under **CAA CAP 736**:

- Notification Zones extend 10 nautical miles (18.5 km) from major airport runway centrelines.

- Laser use must cease immediately if any aircraft, drone, or moving light is observed.

9.3. Environmental and Public Safety

- Avoid use near roads, car parks, or public footpaths.
- Exercise caution around nocturnal wildlife.
- Maintain a minimum beam elevation of 20° above the horizon.

9.4. During Use

- The demonstrator must maintain full control of the device at all times.
- The beam must never be directed at people, animals, vehicles, or reflective objects.
- Laser use must stop immediately if conditions become unsafe.

10. Society Governance and Controls

10.1. Committee Responsibilities

Committees must:

- Approve this policy annually
- Appoint a Laser Safety Officer or equivalent
- Maintain the Laser Safety Log
- Ensure volunteers are briefed
- Ensure risk assessments are completed and retained for 3 years

10.2. Laser Safety Log

A Laser Safety Log should record:

- Device details
- Verification checks and power-meter readings.
- Approved demonstrators.
- Event-specific risk assessments.
- Incidents or near-misses.

Retention

- Retain Laser Safety Log entries for 3 years from the event date
- Store securely
- Restrict access to committee members and the Laser Safety Officer

10.3. Device Approval

- Society-owned lasers must be reviewed annually
- Privately owned devices must be inspected before use
- Any device exceeding Class 3R limits must be withdrawn.

10.4. Incident Reporting

All incidents must be recorded and reviewed.

10.5. Enforcement Ladder

- Verbal warning
- Removal from event
- Written notice
- Suspension of laser privileges
- Referral to authorities (for aviation or public-safety incidents)

11. Prohibited and Discouraged Practices

11.1. Prohibited

- **Class 3B or Class 4** devices.
- Unlabelled or unverified device.
- Telescope-mounted lasers during public
- Sweeping the horizon or populated areas.
- Any use that risks distracting drivers or pilots.

11.2. Strongly Discouraged

- Telescope-mounted lasers as finders.
- Light-painting or photography effects.
- Looking into optical systems while a collimation laser is active.

12. Common Misconceptions

- “If it says <5 mW, it must be safe.”
- “Green lasers are always safe because they’re visible.”
- “If I point it quickly, it’s fine.”
- “If it’s sold online, it must be legal.”

These assumptions are incorrect and can lead to unsafe behaviour.

Appendix A: Laser Classification (BS EN 50689:2021)

See Section 7: Laser Classification and Safety Principles.

Class	Power	Safety Profile	FAS Policy
Class 1 / 1M	0.39 mW	Safe under normal use	Permitted
Class 2 / 2M	<1 mW	Safe for accidental exposure	Permitted
Class 3R	<5 mW	Potential for injury; requires caution and IR filtering	Restricted
Class 3B	5–500 mW	Dangerous to eyes and skin	Prohibited
Class 4	>500 mW	Fire hazard; causes instant damage	Prohibited

Appendix B: Member Laser Use Agreement

See Section 8: Permitted and Restricted Use.

Member Name: _____

I agree to the following conditions for using a laser pointer at Society events:

1. I will only use a Class 2 or approved Class 3R device that includes an IR filter and has been verified by the Society.
2. I have confirmed that the event location is not within a CAA 10-nautical-mile restricted zone, or that appropriate coordination has been obtained.
3. I will conduct a 360-degree sky check for aircraft before each activation.
4. I will not mount the laser on a telescope or leave it unattended.
5. I will follow all instructions from the Event Lead and understand that permission to use my device may be withdrawn at any time.
6. I accept responsibility for operating my device safely and understand that misuse may result in disciplinary action or referral to the relevant authorities.

Signature: _____
Date: _____

Appendix C: Event Lead Quick Guide

Purpose

A rapid, practical reference for Event Leads overseeing laser pointer use at star parties, outreach sessions, and public events. This guide summarises the minimum controls required to ensure safe, lawful, and responsible operation.

See Section 9: Operational Requirements for Events

1. Before the Event

- Check the location for proximity to airports, heliports, flight paths, or CAA Notification Zones (10-nautical-mile radius from major runways).
- Approve devices: only Class 2 or approved Class 3R pointers with IR filters. See Appendix E for device-inspection requirements
- Verify demonstrators: confirm who is authorised to operate a laser.
- Assign a Spotter: one person dedicated to watching for aircraft and environmental hazards.
- Review the risk assessment: ensure it is completed, relevant, and understood by volunteers.
- Brief the team: cover beam control, aviation watch, public-handling rules, and emergency stop procedures.

2. During the Event

- Control access: only the Designated Demonstrator may handle a laser pointer.
- Maintain beam discipline:
- Never point at people, animals, vehicles, or reflective surfaces.
- Keep the beam 20° above the horizon at all times.
- Switch off immediately when not actively demonstrating.
- Monitor the environment:
- Spotter maintains continuous sky watch.
- Stop use immediately if aircraft, drones, or emergency vehicles appear.
- Be alert to children attempting to touch or follow the beam.
- Manage the crowd: ensure no member of the public handles a device.
- Weather awareness: avoid use in high winds or unstable conditions where control may be compromised.

3. If Something Goes Wrong

- Stop laser use immediately.
- Record the incident in the Laser Safety Log (accidental sweeps, public complaints, aviation concerns, near-misses).
- Remove the device from use if it behaves unpredictably or fails inspection.
- Report serious incidents to the committee for review and follow-up.

4. End of Event

- Collect and secure all devices.

- Ensure the Laser Safety Log is updated and retained in accordance with Section 10.
- Debrief volunteers: note any issues, improvements, or concerns for future events.

Appendix D Volunteer Briefing Sheet: Safe Use of Laser Pointers at Society Events

Purpose

This briefing gives volunteers the essential information they need to support safe and responsible laser pointer use during star parties, outreach sessions, and public events. It summarises what volunteers must do, must avoid, and must watch for.

1. Key Principles

- Laser pointers are educational tools, not toys.
- Only approved devices (Class 2 or authorised Class 3R) may be used.
- Only the Designated Demonstrator operates a laser pointer.
- Public safety and aviation safety take priority over all demonstrations.

See Section 8: Permitted and Restricted Use

2. Your Responsibilities as a Volunteer

- Know who the **Designated Demonstrator** and **Spotter** are.
- Help maintain a safe environment around the demonstrator.
- Politely prevent members of the public—especially children—from handling any laser device.
- Stay alert to crowd movement, distractions, or unsafe behaviour.
- Support the Event Lead if laser use needs to stop suddenly.
- Volunteers must follow instructions from the Event Lead at all times

3. What Safe Use Looks Like

- The demonstrator keeps the beam **well above the horizon** (minimum 20°).
- The laser is switched off when not actively pointing.
- The Spotter maintains continuous watch for aircraft, drones, or emergency vehicles.
- The beam is never directed at people, animals, vehicles, or reflective surfaces.
- The device is handled with steady, deliberate control.

See Section 9: Operational Requirements for Events.

4. Situations That Require Immediate Action

Tell the Designated Demonstrator or Event Lead straight away if you notice:

- Any aircraft, drone, or moving light in the sky.
- Children trying to grab or follow the beam.
- Members of the public attempting to use their own laser devices.
- The beam sweeping low across the environment.
- The laser behaving unpredictably (flickering, sticking, continuous emission).

- Anyone pointing a laser casually or for entertainment.

Laser use must stop immediately until the Event Lead confirms it is safe to continue.

5. Public Interaction

- Be approachable and confident when explaining why laser safety matters.
- Use simple phrases such as: *"For safety reasons, only our demonstrator can use the laser tonight."*
- Redirect children's curiosity by offering alternative ways to engage (e.g., pointing out constellations by hand or using star maps).

6. End-of-Event Expectations

- Ensure all society-owned devices are returned to the Event Lead.
- Report any concerns to the Event Lead for inclusion in the Laser Safety Log.
- Share observations that might improve future events.

Appendix E Device-Inspection Checklist

A standardised checklist for verifying that any laser pointer—society-owned or privately owned—is safe and compliant before use at an event.

1. Device Identification

See Section 7: Laser Classification and Safety Principles

- Manufacturer name and model present.
- CE mark visible and legitimate.
- Class label present (Class 1, 2, or 3R only).
- Wavelength and output power clearly stated.
- Serial number or unique identifier recorded.

2. Physical Condition

- Casing intact with no cracks or loose components.
- Aperture clean and unobstructed.
- Battery compartment secure; no corrosion.
- Switch operates smoothly and does not stick.
- No signs of modification or tampering.

3. Safety Features

- IR filter confirmed (mandatory for green lasers).
- Beam is stable, not flickering or flaring.
- Beam divergence appears normal (no excessive scatter).
- No evidence of "burning" capability or high-power behaviour.

4. Power Verification

- Output checked with a calibrated power meter (if available).

- Reading within class limits (Class 2 <1 mW; Class 3R <5 mW).
- Any device exceeding limits is immediately withdrawn.

5. Labelling and Legitimacy

- No “<5 mW” claims without proper class marking.
- No “astronomy laser”, “burning laser”, or unbranded imports.
- No devices lacking manufacturer details or safety warnings.

6. Operational Test

- Beam activates cleanly and switches off reliably.
- No delay, afterglow, or unintended continuous emission.
- Demonstrator confirms comfortable, controlled handling.

7. Approval Decision

- Approved for use
- Approved for restricted use (Designated Demonstrator only)
- Rejected (unsafe or non-compliant)

Record the decision in the Laser Safety Log as required by Section 10

Devices failing any safety check must be withdrawn immediately

See Section 10: Society Governance and Controls.