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Federal Department of Home Affairs FDHA
Federal Office of Public Health FOPH
Consumer Protection Directorate

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Guidance

Recognition of equivalence of training qualifications

Competence for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events involving laser radiation in accordance with O-NIRSA

Contact
Federal Office of Public Health
Radiation Protection Division
Non-Ionising Radiation and Dosimetry Section
Schwarzenburgstrasse 157
CH-3003 Bern

Contents

1 Introduction

Since 1 June 2019, events involving laser radiation in Switzerland have been regulated by the Federal Act of 16 June 2017[1] on Protection Against Hazards Arising from Non-Ionising Radiation and Sound (NIRSA) and the associated Ordinance of 27 February 2019[2] (O-NIRSA). With the entry into force of the NIRSA and O-NIRSA, the Sound Levels and Laser Ordinance of 28 February 2007[3] (SLO), whereby these matters were previously regulated, was repealed. From 1 December 2020 – after an 18-month transitional period – competence is legally required for the conduct of events involving laser radiation. Persons wishing to operate laser devices of Class 1M, 2M, 3R, 3B or 4 at events in Switzerland must, therefore, in accordance with Article 16 paragraphs 1 and 5 O-NIRSA:

- obtain, by means of an examination, a certificate of competence at level 1 (see Annexes A and C) or at level 2 (see Annexes B and D); or
- have their existing (Swiss or non-Swiss) laser training qualifications reviewed and recognised as equivalent (see Section 2).

Certificates of competence at level 1 and 2 are awarded by examining bodies listed in the Annex to the Ordinance of the Federal Department of Home Affairs (FDHA) on Certificates of Competence at Level 1 and 2 for Events Involving Laser Radiation[4]. At present, the bodies in question are as follows:

- Technische Berufsschule Zürich, Ausstellungsstrasse 70, 8090 Zürich
- Laserworld Switzerland AG, Kreuzlingerstrasse 5, 8574 Lengwil

Persons who have already obtained training qualifications in the area of events involving laser radiation, either in Switzerland or abroad, may have them reviewed and recognised as equivalent by the Federal Office of Public Health (FOPH). The procedure and the criteria for such recognition are described in the present document.

1.1 Criteria for recognition of training qualifications

- For training qualifications to be recognised, the requirements specified in Annex 3 Number 3 O-NIRSA must be met. This means that the training and examinations must reflect the current state of science and technology and cover the content set out in Annex 3 Numbers 3.1–3.3 (certificate of competence at level 1, see Annexes A and C) or Numbers 3.1–3.4 (certificate of competence at level 2, see Annexes B and D).

- Applicants must provide evidence of their training qualifications for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4. Practical experience is not in itself sufficient for recognition. Training qualifications must be available in the form of a confirmation of course attendance and/or a training certificate.

1.2 Time schedule for the procedure

The procedure takes up to 5½ months, depending on compliance with individual deadlines and any compensatory measures required (Figure 1). This means that an application must be submitted to the FOPH at least 5½ months before the planned conduct of an event involving laser radiation of Class 1M, 2M, 3R, 3B or 4 in Switzerland.

[1] SR 814.71

[2] SR 814.711

[3] SR 814.49

[4] SR 814.711.31

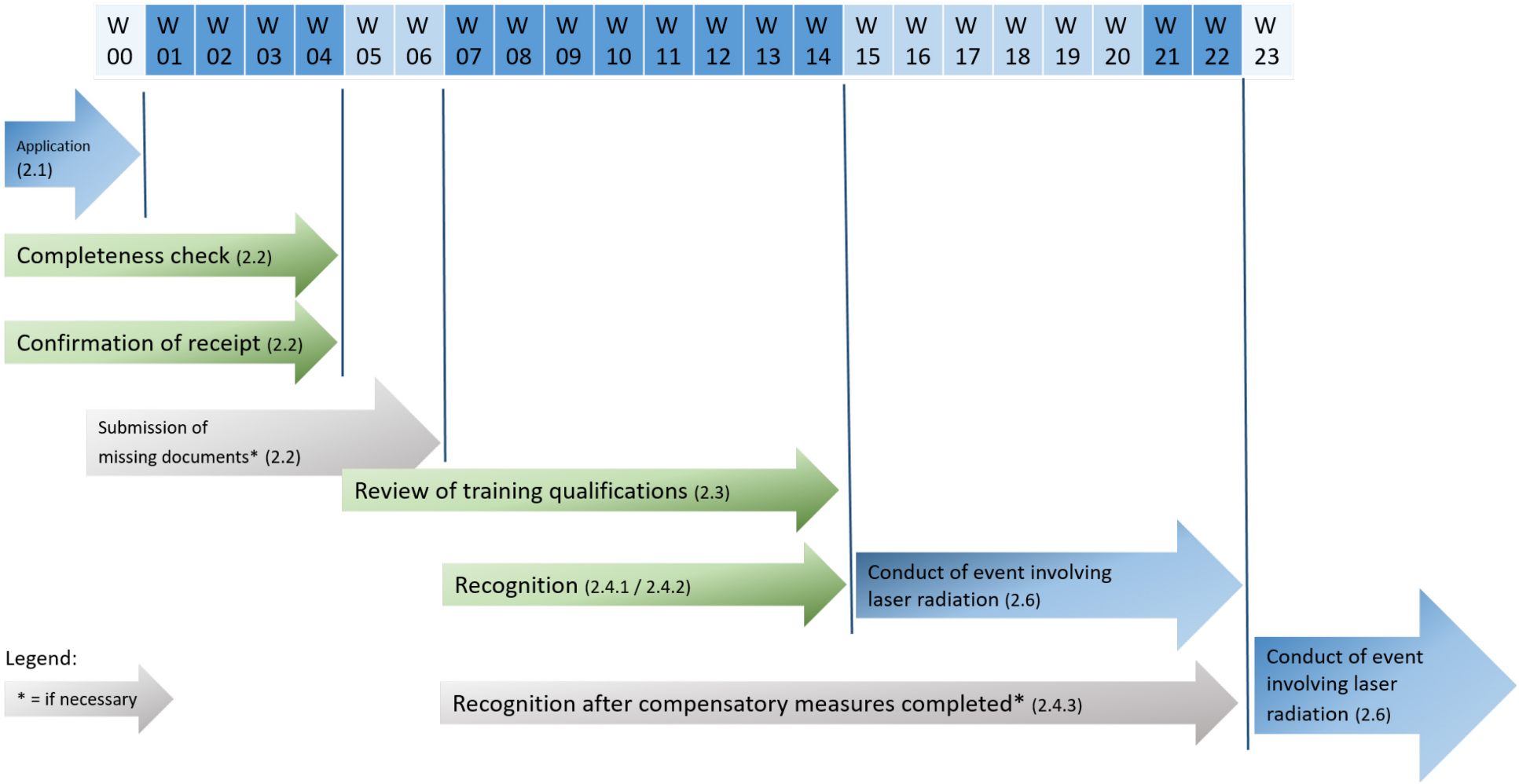

Figure 1. Overview of the time schedule for the procedure for recognition of equivalence of training qualifications

2 Procedure for recognition of training qualifications

This section describes the procedure whereby holders of Swiss or non-Swiss training qualifications can have them recognised as equivalent and thus become entitled to operate laser devices of Class 1M, 2M, 3R, 3B or 4 at events involving laser radiation in Switzerland.

The following applications can be submitted to the FOPH:

- Application for recognition of a training qualification for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events **without laser radiation** in the audience zone in accordance with O-NIRSA Annex 3 Numbers 3.1–3.3
- Application for recognition of a training qualification for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events **with laser radiation** in the audience zone in accordance with O-NIRSA Annex 3 Numbers 3.1–3.4

The procedure for the recognition of equivalence involves a case-specific process. The FOPH reviews each submission individually, taking into account the relevant legal requirements and the particular characteristics of the applicant's training and professional experience.

2.1 Application

Applications for recognition of training qualifications must be submitted to the FOPH at least 5½ months before the planned conduct of an event involving laser radiation of Class 1M, 2M, 3R, 3B or 4 in Switzerland. To this end, applicants must fully complete the form "Application for recognition of a training qualification for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events involving laser radiation in accordance with O-NIRSA" and submit it electronically, with all the required documentation, to the FOPH at laser@bag.admin.ch (attachments are to be submitted as separate PDF files).

Documentation must be submitted in English, French, German or Italian. Correspondence during the recognition procedure will be in French, German or Italian. The application can only be processed if all the documentation listed in the application form is submitted.

2.2 Completeness check and confirmation of receipt

After delivery, the FOPH will check the application and the accompanying documents for completeness. Within a month, it will confirm receipt of the application by e-mail. The applicant will be informed of any deficiencies. Any deficiencies must then be remedied by the applicant, and missing documents submitted, within an appropriate period.

2.3 Review of training qualifications

The FOPH will assess whether the qualifications obtained are equivalent to the knowledge and skills required to obtain the certificate of competence at level 1 or 2 in accordance with Annex 3 Number 3 O-NIRSA and the current state of science and technology (Art. 16 para. 1 and 3 O-NIRSA; see also Annexes A to D). For this purpose, the FOPH will, if necessary, also consult the relevant training and examination institution to obtain further information on the training received (training documentation, confirmation of course attendance) and any examinations taken (examination documentation and results).

The FOPH reserves the right not to process the application if the requested documents and information cannot be supplied by the applicant or by the training and examination institution.

2.4 Decision on recognition

No later than 2 months after delivery of the complete application, the FOPH will inform the applicant whether:

a) the training qualifications are to be recognised directly, without compensatory measures; or
b) the qualifications of which evidence has been provided differ substantially from the requirements for competence applicable in Switzerland and compensatory measures are necessary (in this case, the knowledge or skills lacking will be specified); or
c) the training qualifications are inadequate and the application for recognition is to be rejected.

2.4.1 Direct recognition

If the application is accepted, the FOPH will, within two months, issue either a “Recognition of the equivalence of training qualifications for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events **without** laser radiation in the audience zone in accordance with O-NIRSA” or a “Recognition of the equivalence of training qualifications for the operation of laser devices of Class 1M, 2M, 3R, 3B or 4 at events **with** laser radiation in the audience zone in accordance with O-NIRSA”. It thus declares the training qualifications to be equivalent to a certificate of competence at level 1 or 2 in accordance with Article 16 paragraph 1 O-NIRSA.

2.4.2 Rejection of application

If fundamental theoretical and practical knowledge and skills are lacking, the FOPH will reject the application for recognition. In this case, applicants must obtain a certificate of competence at level 1 or 2, as listed in the Ordinance of the FDHA on Certificates of Competence at Level 1 and 2 for Events Involving Laser Radiation, if they wish to notify and conduct an event involving laser radiation in Switzerland.

2.4.3 Recognition after compensatory measures completed

If, in the course of the recognition procedure, the FOPH determines that the fundamental theoretical and practical knowledge and skills have been conveyed, but that substantial differences exist between the training received and the requirements of the O-NIRSA, it may order compensatory measures prior to issuing a recognition. Only after a submission has been analysed can the applicant be informed as to what type of compensatory measures are necessary.

Compensatory measures for the recognition of training qualifications as equivalent are necessary, in particular, if applicants lack knowledge and skills in the following areas:

- Ordinance of 27 February 2019 on Protection Against Hazards Arising from Non-Ionising Radiation and Sound (O-NIRSA)[5]
- Notification via the electronic notification portal operated by the FOPH
- Laser radiation emitted into airspace

Applicants are responsible for organising and completing the compensatory measures as rapidly as possible, and demonstrating to the FOPH that these measures have been taken.

Applicants will generally receive the recognition decision from the FOPH approx. four months after delivery of the complete application and completion of the compensatory measures.

2.5 Costs and invoicing

Fees are charged for the recognition procedure, based on Article 13 paragraph 2 letter a number 1 of the Ordinance on Costs and Compensation in respect of Administrative Procedures[6]. The fees vary according to the processing effort required, ranging from CHF 250 to 3000 (payable in Swiss francs only). Applicants will receive a separate invoice, with a payment slip. Additional costs may arise for applicants if compensatory measures are necessary (see Section 2.4).

[5] SR 814.711

[6] SR 172.041.0

2.6 Conduct of an event involving laser radiation

The notification and conduct of an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4) in Switzerland is only permissible after the recognition decision has been issued by the FOPH. When an event involving laser radiation is notified to the FOPH via the electronic notification portal, the recognition decision must be uploaded instead of the certificate of competence at level 1 or 2.

3 Annex A: Orientation and performance objectives for the certificate of competence at level 1

Annex A describes with orientation and performance objectives the knowledge and skills that a person with a certificate of competence at level 1 must have. The training contents for obtaining the certificate of competence at level 1 must correspond to the state of the art and technology and are based on Annex 3, Sections 3.1-3.3 (O-NIRSA).

Orientation objectives 1 and 2:
Persons holding a certificate of competence at level 1 understand the fundamentals of lasers, know how risks can be reduced to a minimum and are familiar with various safety measures. They are aware of the hazard potential of a laser, and of possible effects on human health.

Table 1. Performance objectives relating to orientation objectives 1 and 2 for the certificate of competence at level 1

Topic	Performance objective	Examination
1. Laser technology and safety: certificate of competence at level 1		
1.1 Principle & structure of a laser device		
1.1.1 Laser	Describes the essential differences between a laser and a conventional light source. Enumerates different types of laser. Understands what a continuous wave (CW) laser is.	Theory
1.1.2 Show laser principle	Knows that a laser show mainly consists of one or more laser beams deflected by a high-speed mirror galvanometer (galvo), and that, in this process, lasers of different wavelengths are used, with additional colours being generated by superposition. Knows the difference between a beam show and a graphics show.	Theory
1.1.3 Show laser components	Describes and indicates the essential components of a show laser (dichroic filter, galvo, shutter, interface, software, emergency shut-off).	Practical
1.2 Laser classes		
1.2.1 Laser class limits	Knows the various laser classes (1, 1M, 1C, 2, 2M, 3R, 3B and 4) in accordance with SN EN 60825-1:2014.	Theory

1.2.2 Hazards of particular classes	Knows the hazards associated with the various classes, i.e. that Class 1 is safe for long-term exposure, Class 2 assumes a protective blink reflex within 0.25 seconds, Class 3R poses an increased risk, Class 3B is always hazardous for the eyes and Class 4 is hazardous for the eyes and skin.	Theory
1.3 Risks & safety measures		
1.3.1 Risks	Identifies any risks present.	Practical
1.3.2 Direct hazard – direct, reflected, scattered laser radiation	Describes how eye and skin hazards can arise both from direct and from reflected or diffusely scattered laser radiation.	Theory
1.3.3 Direct laser radiation	Explains that only a Class 1 laser is “safe” as regards direct hazards, and that with Class 2 an active blink reflex is necessary.	Theory
1.3.4 Uncontrolled reflected radiation	Is aware of the possibility of stray laser radiation from reflective objects.	Theory
1.3.5 Diffusely reflected radiation	Distinguishes specular and diffuse reflection. Knows that the radiant flux is much higher with direct than with diffuse reflection. Knows that most surfaces give rise to mixed reflection.	Theory
1.3.6 Indirect hazards	Describes how laser radiation poses risks to humans through dazzling, the development of toxic or carcinogenic vapours, or the ignition of materials.	Theory
1.3.7 Material damage	Knows that Class 4 (and possibly also Class 3B) lasers may also present a fire hazard. Knows that cameras and projectors can be destroyed by laser radiation.	Theory
1.3.8 Safety measures	Uses appropriate safety measures to prevent hazards according to the TOP principle (first: T = technical & structural safety measures; second: O = organisational safety measures; third: P = personal safety measures).	Practical
2. Health effects: certificate of competence at level 1		
2.1 Eye and skin injuries		
2.1.1 Anatomy of the eye	Knows the anatomy of the eye and thus the following terms: conjunctiva, cornea, pupil, iris, crystalline lens, vitreous body, retina, fovea, cones, rods, macula, blind spot and optic nerve.	Theory
2.1.2 Retinal image of conventional light source and laser	Describes how a conventional light source (image) and a laser (point) are represented on the retina.	Theory
2.1.3 Retinal injuries/damage	Understands that laser-induced retinal damage is often irreversible and severe since non-regenerable nerve cells are destroyed.	Theory

2.1.4 Skin hazards and skin damage	Knows examples of skin damage and is aware that the risk is greatest for stagehands, band members and technicians (outside the audience zone).	Theory
2.2 Dazzling, distraction		
2.2.1 Dazzling and vision	Is aware of the dazzling issue and understands that dazzling can temporarily impair vision.	Theory
2.2.2 Disturbance/distraction; dazzling; afterimages; damage	Describes the various effects of a laser on the eye.	Theory
2.3 Hazards for third parties and persons performing safety-critical activities		
2.3.1 Hazard potential and effects on third parties	Understands the direct and indirect hazard potential and possible effects on third parties.	Theory
2.3.2 Accident situations	Describes and reports eye injuries in the event of an accident.	Practical
2.3.3 Particular hazards involved in working with laser radiation	Understands that working with laser radiation involves particular hazards which, unless precautions are taken, can lead to serious accidents and damage to health.	Theory
2.3.4 Persons performing safety-critical activities	Understands that dazzling temporarily impairs vision and that, in persons performing safety-critical activities and in third parties, this visual disturbance leads to an increased risk of accidents (afterimages lasting up to several minutes).	Theory

Orientation objectives 3 and 4:

Persons holding a certificate of competence at level 1 are familiar with the legal foundations and with the specific responsibilities, roles and powers relating to the various areas of activity, and they know who is required to notify what via the notification portal, and how and when this is to be done. They can conduct an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4) in such a way that no exposure occurs in the audience zone.

Table 2. Performance objectives relating to orientation objectives 3 and 4 for the certificate of competence at level 1

Topic	Performance objective	Examination
3. Legal foundations: certificate of competence at level 1		
3.1 Legislation and O-NIRSA	-	
3.1.1 Regulations for events involving laser radiation (O-NIRSA)	Is familiar with Annex 3 O-NIRSA and knows that the O-NIRSA regulates situations involving health hazards associated with high-power laser products.	Theory
3.1.2 Difference between SLO and O-NIRSA	Knows that the O-NIRSA (in contrast to the Sound Levels and Laser Ordinance/SLO) requires laser show operators to acquire competence, and that the laser equipment may only be operated by a competent person. Knows that the notification must now be submitted centrally to the federal authorities and no longer to the cantons.	Theory
3.1.3 Transitional provisions SLO and O-NIRSA	Understands that from 1 December 2020 – after an 18-month transitional period from the SLO to the O-NIRSA – only the O-NIRSA is applicable (SLO = notification without competence to the canton; O-NIRSA = notification with competence to the FOPH via the notification portal).	Theory
3.1.4 Audience zone (Art. 10 let. b O-NIRSA)	Determines the audience zone for an event. Ensures, by means of barriers and other measures, that no audience members or third parties can enter areas where laser radiation is present.	Practical
3.1.5 Protection through the O-NIRSA and occupational safety law	Knows that the protection afforded by the O-NIRSA is restricted to the audience and performers and other service providers operating in the stage and audience zone, insofar as they are not employed by the event organiser. Otherwise they are covered by employee protection requirements.	Theory
3.2. Requirements of O-NIRSA for events not involving laser radiation in the audience zone (person with certificate of competence at level 1)		
3.2.1 No laser radiation in the audience zone, either during operation or in case of malfunction (O-NIRSA Annex 3, No. 1.1.1)	Ensures that laser radiation does not enter the audience zone either during scheduled operation or in the event of malfunction and that, to this end, the laser equipment is appropriately positioned or that the laser radiation is contained or shut off by physical or electronic equipment.	Practical
3.2.2 Reflective surfaces (O-NIRSA Annex 3, No. 1.1.2)	Ensures that laser radiation does not strike reflective surfaces or objects in an uncontrolled manner.	Practical

3.2.3 Secure installation (O-NIRSA Annex 3, No. 1.1.3)	Sets up laser devices, mirrors and targets in such a way that they are all securely installed and capable of withstanding shocks, vibrations and wind.	Practical
3.2.4 Performers and other event staff (O-NIRSA Annex 3, No. 1.1.4)	Ensures, through appropriate planning, that laser radiation does not endanger either performers or other event staff. Takes appropriate safety measures (in particular, laser safety glasses and protective clothing for performers, if radiation exceeds the MPE) and warns the persons concerned about hazardous laser radiation.	Practical
3.2.5 Not endangering third parties (O-NIRSA Annex 3, No. 1.1.5)	Ensures that laser radiation does not endanger third parties.	Practical
3.2.6 Successful test run (O-NIRSA Annex 3, No. 1.1.6)	Carries out a successful test run before the start of the event; i.e. the competent person fulfils all the requirements specified in Annex 3 Number 1.1.	Practical
3.2.7 Visual contact (O-NIRSA Annex 3, No. 1.2.4)	The person with a certificate of competence at level 2 or the person instructed by him/her with a certificate of competence at level 1 ensures that visual contact is maintained at all times with all laser devices, recognises malfunctions and unplanned hazard situations, and is able to interrupt the laser event at any time.	Practical
3.3 Notification and notification portal O-NIRSA		
3.3.1 Notification content, certificate of competence at level 1 (O-NIRSA Annex 3, No. 2.1–2.2)	Submits a notification via the notification portal to the FOPH, with the appropriate content and the relevant documents, no later than 14 days before the beginning of the event (as specified in Annex 3 Numbers 2.1 and 2.2).	Practical
3.3.2 Mandatory notification	Understands what mandatory notification means and that the conduct of the event involving laser radiation is subject only to mandatory notification, not to approval. In other words, the O-NIRSA relies on the individual responsibility of the competent person.	Theory
3.3.3 Certificate of competence at level 1	Knows what type of event can be notified by a person with a certificate of competence at level 1 (event not involving laser radiation in the audience zone) and what type cannot (event involving laser radiation in the audience zone).	Theory
3.3.4 Instruction of a person with a certificate of competence at level 1 by a person with a certificate of competence at level 2	Knows that, after a successful laser equipment test run carried out jointly, a person with a certificate of competence at level 2 may instruct a person with a certificate of competence at level 1 to supervise an event involving laser radiation in the audience zone. It lies within the responsibility and authority of the person with a certificate of competence at level 1 to conduct the event in accordance with the notification submitted by the person with a certificate of competence at level 2.	Theory
3.3.5 Plan of the venue with laser equipment marked	Prepares a complete plan of the venue for the event, with the laser equipment marked.	Practical
3.4 Rights and duties under O-NIRSA		

3.4.1 Responsibilities of the enforcement authority (Art. 24 O-NIRSA)	Knows the responsibilities of the FOPH: reviewing notifications, verifying compliance with requirements on-site, transmitting notifications concerning laser radiation emitted into airspace to the body responsible for air traffic control.	Theory
3.4.2 Event involving laser radiation emitted into airspace – notification (Art. 14 para. 2 O-NIRSA)	Knows that events involving radiation emitted into airspace by a laser of any class must be notified to the FOPH no later than 14 days before the beginning of the event.	Theory
3.4.3 Event involving laser radiation emitted into airspace – definition of airspace	Understands that airspace is defined as any part of the sky through which a manned aircraft may fly (aeroplane, helicopter, balloon, etc.).	Theory
3.4.4 Event involving laser radiation emitted into airspace – information (Art. 24 para. 1 let. b O-NIRSA)	Knows that the notification of emissions into airspace submitted via the notification portal is automatically passed on by the FOPH as information to the Special Flight Office of skyguide (air traffic control authority).	Theory
3.4.5 Event involving laser radiation emitted into airspace – details of emissions (Annex 3 Number 2.1 O-NIRSA)	Knows what additional details (coordinates, laser beam direction with azimuth 0–359° and elevation 0–90°, 0 to -90°) are required for an event involving laser radiation emitted into airspace.	Theory
3.4.6 Safety of emissions into airspace (Art. 14 para. 1 O-NIRSA)	Knows that any person who operates a laser device of any class emitting laser radiation in or into the open air must not endanger other people; in particular, pilots must not be dazzled.	Theory
3.4.7 Special Flight Office	Knows that the Special Flight Office can neither approve nor reject the emission of laser radiation into airspace. Knows that air traffic control is responsible for the monitoring of control zones (CTR = zones with the densest air traffic) and has no influence on aircraft movements outside the CTR. Is familiar with the control zones and is aware of non-controlled aircraft movements outside the CTR, e.g. in the vicinity of hospitals (helipads).	Theory
3.4.8 Controls by enforcement bodies and cooperation duties (Art. 27 O-NIRSA)	Knows that unannounced inspections and measurements can be carried out at any time and evidence collected. Knows that any information required must be provided free of charge, that any documents required must be made available, and that access must be granted to premises and event venues.	Theory
3.4.9 Immediate on-site measures ordered by the FOPH (Art. 9 NIRSA)	Knows that, in the event of on-site inspections, measures ordered by the FOPH are to be taken without delay so as to ensure protection of the health of the user or of third parties.	Theory
3.4.10 Revocation of certificate of competence (Art. 9 para. 3 let. e NIRSA)	Knows that, should it be necessary in order to protect the health of the user or of third parties, the FOPH may, in the event of repeated inappropriate commercial or professional use of potentially hazardous products, have the certificate of competence revoked.	Theory
3.4.11 Fees (Art. 26 O-NIRSA)	Knows that fees may be charged by the enforcement authorities, according to the time required, and that no fees are charged for controls that do not reveal any non-compliance.	Theory

4. Theoretical and practical foundations: certificate of competence at level 1		
4.1 Show laser set-up and operation		
4.1.1 Cable connection	Safely connects the cables required for a show laser.	Practical
4.1.2 Device installation & operation	Ensures that the laser device is stably mounted (including a stable base). For this purpose, uses (if available) stage trusses or solid stands. Ensures that the emergency shut-off switch is positioned in such a way that it can be operated at any time by the person responsible. Installs diaphragms, filters, etc. with suitable, secure mounting.	Practical
4.1.3 Projection zone	Determines the laser projection zone (direction, angle, height). Limits the projection zone (using masks, diaphragms, etc.).	Practical
4.1.4 Knowledge of control software	Knows the essential features of the control software used. Starts the software and uses it to define the projection zone.	Practical

4 Annex B: Orientation and performance objectives for the certificate of competence at level 2

Annex B describes with orientation and performance objectives the knowledge and skills that a person with a certificate of competence at level 2 must have. The training contents for obtaining the certificate of competence at level 2 must correspond to the state of the art and technology and are based on Annex 3, Sections 3.1-3.4 (O-NIRSA).

Orientation objectives 1 and 2:
Persons holding a certificate of competence at level 2 understand the fundamentals of lasers, know how risks can be reduced to a minimum and are familiar with various safety measures. They are aware of the hazard potential of a laser, and of possible effects on human health.

Table 3. Performance objectives relating to orientation objectives 1 and 2 for the certificate of competence at level 2

Topic	Performance objective	Examination
1. Laser technology and safety: certificate of competence at level 2		
1.1 Principle & structure of a laser device		
1.1.1 Laser	Describes the essential differences between a laser and a conventional light source. Enumerates different types of laser. Understands what a continuous wave (CW) laser is.	Theory
1.1.2 Laser parameters	Names the essential parameters (beam diameter, beam divergence, wavelength, radiant exposure, irradiance, radiant flux, radiant energy, angular velocity, exposure time) and the associated units (mm, mrad, nm, J/m^2, etc.).	Theory
1.1.3 Show laser principle	Knows that a laser show mainly consists of one or more laser beams deflected by a high-speed mirror galvanometer (galvo), and that, in this process, lasers of different wavelengths are used, with additional colours being generated by superposition. Knows the difference between a beam show and a graphics show.	Theory
1.1.4 Show laser components	Describes and indicates the essential components of a show laser (dichroic filter, galvo, shutter, interface, software, emergency shut-off).	Practical
1.1.5 Hardware characteristics	Knows the essential differences in quality between devices with regard to optical power, beam geometry, galvo speed, modulation technology. Knows that information on the galvo speed for the ILDA Test Pattern is only meaningful if the projection size is given. Knows the difference between analogue and digital modulation.	Practical
1.1.6 Control technology	Describes the advantages and disadvantages of the various control technologies (automatic, music, DMX, ILDA, network, other) and uses the control technologies.	Practical

1.2 Laser classes		
1.2.1 Laser class limits	Describes the various laser classes (1, 1M, 1C, 2, 2M, 3R, 3B and 4) in accordance with SN EN 60825-1:2014. Knows that Class 2 and 2M only apply to visible-light lasers. Knows the limits applicable to the laser classes for continuous wave (CW) laser radiation in the visible range. Knows that the limit depends on the exposure time.	Theory
1.2.2 Hazards of particular classes	Knows the hazards associated with the various classes, i.e. that Class 1 is safe for long-term exposure, Class 2 assumes a protective blink reflex within 0.25 seconds, Class 3R poses an increased risk, Class 3B is always hazardous for the eyes and Class 4 is hazardous for the eyes and skin.	Theory
1.3 Limits & MPE		
1.3.1 Laser standard	Possesses the currently valid laser safety standard (i.e. SN EN 60825-1:2014). Knows that the standard serves as the basis for the classification of laser products.	Theory
1.3.2 MPE values	Distinguishes the maximum permissible exposure (MPE) and the accessible emission limit (AEL).	Theory
1.3.3. Multiple pulses	Knows that with modulated laser radiation various limits need to be considered (single pulse, mean, possibly multiple pulse criterion) and the lowest limit is applicable.	Theory
1.3.4 NOHD	Knows that a hazard exists if a viewer is closer to the laser source than the nominal ocular hazard distance (NOHD).	Theory
1.3.5 Influence of fog and water	Knows that fog and water (as a medium) only have a minimal influence on the hazard potential.	Theory
1.4 Risks & safety measures		
1.4.1 Risks	Identifies any risks present.	Practical
1.4.2 Direct hazards – direct, reflected, scattered laser radiation	Describes how eye and skin hazards can arise both from direct and from reflected or diffusely scattered laser radiation.	Theory
1.4.3 Direct laser radiation	Explains that only a Class 1 laser is “safe” as regards direct hazards, and that with Class 2 an active blink reflex is necessary.	Theory
1.4.4 Uncontrolled reflected radiation	Is aware of the possibility of stray laser radiation from reflective objects.	Theory
1.4.5 Diffusely reflected radiation	Distinguishes specular and diffuse reflection. Knows that the radiant flux is much higher with direct than with diffuse reflection. Knows that most surfaces give rise to mixed reflection.	Theory

1.4.6 Indirect hazards	Describes how laser radiation poses risks to humans through dazzling, the development of toxic or carcinogenic vapours, or the ignition of materials.	Theory
1.4.7 Material damage	Knows that Class 4 (and possibly also Class 3B) lasers may also present a fire hazard. Knows that cameras and projectors can be destroyed by laser radiation.	Theory
1.4.8 Safety measures	Uses appropriate safety measures to prevent hazards according to the TOP principle (first: T = technical & structural safety measures; second: O = organisational safety measures; third: P = personal safety measures).	Practical
1.5 Optimal laser systems		
1.5.1 Optimum laser power level	Determines the optimum laser power level, based on the venue dimensions and beam divergence.	Practical
1.5.2 Small venues	Knows that most show lasers are not suitable for small venues and in particular for ceiling heights < 3 m.	Theory
1.5.3 Large halls, outdoors	Understands that the hazard at short distances is distance-independent, but that at greater distances it decreases according to the beam properties.	Theory
1.5.4 Projection distances	Selects a suitable device according to the projection distance and venue size (optical power and divergence).	Practical
1.5.5 Modulation	Understands that, with digital (TTL) modulation, the hazard can only be mitigated to a limited extent.	Theory
2. Health effects: certificate of competence at level 2		
2.1 Eye and skin injuries		
2.1.1 Anatomy of the eye	Knows the anatomy of the eye and thus the following terms: conjunctiva, cornea, pupil, iris, crystalline lens, vitreous body, retina, fovea, cones, rods, macula, blind spot and optic nerve.	Theory
2.1.2 Macula	Describes the macula (yellow spot). Knows that the macula is 3 mm in diameter and contains 4,000,000 of the total of 6,800,000 photosensitive cells (cones) which are responsible for colour vision.	Theory
2.1.3 Fovea	Describes the fovea. Knows that in the centre of the macula lies the fovea (about 1.5 mm in diameter), the area with the highest visual acuity.	Theory
2.1.4 Retinal image of conventional light source and laser	Describes how a conventional light source (image) and a laser (point) are represented on the retina.	Theory
2.1.5 Comparison of 1 mW laser and sunlight	Understands that a 1 mW laser pointer produces a 10 times higher irradiance on the retina than the sun.	Theory
2.1.6 Spectral sensitivity of the human eye	Knows in which wavelength range the eye is most sensitive.	Theory

2.1.7 Spectral sensitivity, red and green wavelengths, and power	Understands that, at the same power of the green and red wavelengths, the eye has greater spectral sensitivity towards green radiation (i.e. for the same perceived brightness of the two colours, the power can be reduced for green).	Theory
2.1.8 Spectral sensitivity, blue wavelength	Knows that the human eye has lower spectral sensitivity in the blue wavelength region and that therefore a higher power would need to be used for it to be perceived as of equal brightness to other colours. Knows that the limits partly depend on the wavelength and are most restrictive in the blue wavelength region.	Theory
2.1.9 Mechanisms of action of laser radiation on tissue	Understands that, depending on the wavelength, irradiance and duration of exposure, a laser may have various biological effects on the eye, which can be classified as thermal effects, photochemical effects, photoablation and photodisruption.	Theory
2.1.10 Thermal effects in the VIS & IR-A wavelength regions	Knows that in the wavelength range from 400 nm to 1400 nm, depending on laser power, the retina in particular can be damaged, and that in the IR-A region clouding of the crystalline lens is also possible.	Theory
2.1.11 Examples of thermal retinal damage	Knows examples of retinal damage and knows the effects caused by focusing the beam on the macula (dark spots in the visual field), on the blind spot (destruction of nerve tracts with considerable impairment or even complete loss of vision), or on peripheral areas of the retina (severe visual disturbances).	Theory
2.1.12 Retinal injuries/damage	Understands that laser-induced retinal damage is often irreversible and severe since non-regenerable nerve cells are destroyed.	Theory
2.1.13 Factors influencing retinal hazards	Names the factors on which retinal hazards depend (wavelength, power, exposure time, pulse duration, pulse number, geometry).	Theory
2.1.14 Photochemical effects in the UV (and 400–600 nm) wavelength region	Knows that in the UV and 400–600 nm wavelength region photochemical effects also occur, which show particularly low exposure limits.	Theory
2.1.15 UV-A, UV-B, UV-C and IR-B and IR-C	Knows that laser radiation in these wavelength regions can cause damage especially in the front of the eye, the crystalline lens, cornea and conjunctiva.	Theory
2.1.16 Skin hazards and skin damage	Knows examples of skin damage and is aware that the risk is greatest for stagehands, band members and technicians (outside the audience zone).	Theory
2.2 Dazzling, distraction		
2.2.1 Dazzling and vision	Is aware of the dazzling issue and understands that dazzling can temporarily impair vision.	Theory
2.2.2 Disturbance/distraction; dazzling; afterimages; damage	Describes the various effects of a laser on the eye.	Theory
2.2.3 Causes of flash blindness and afterimages	Describes how flash blindness and afterimages are caused by a sudden influx of light (retinal photopigments are oversaturated, so that no information-bearing electrical impulses can be sent to the brain).	Theory

2.3 Hazards for third parties and persons performing safety-critical activities		
2.3.1 Hazard potential and effects on third parties	Understands the direct and indirect hazard potential and possible effects on third parties.	Theory
2.3.2 Accident situations	Describes and reports eye injuries in the event of an accident.	Practical
2.3.3 Particular hazards involved in working with laser radiation	Understands that working with laser radiation involves particular hazards which, unless precautions are taken, can lead to serious accidents and damage to health.	Theory
2.3.4 Persons performing safety-critical activities	Understands that dazzling temporarily impairs vision and that, in persons performing safety-critical activities and in third parties, this visual disturbance leads to an increased risk of accidents (afterimages lasting up to several minutes).	Theory

Orientation objectives 3 and 4:

Persons holding a certificate of competence at level 2 are familiar with the legal foundations and with the specific responsibilities, roles and powers relating to the various areas of activity, and they know who is required to notify what via the notification portal, and how and when this is to be done. They can perform the necessary calculations, planning and installation for and conduct an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4) with a show laser of any kind in such a way that the MPE is complied with in the audience zone.

Table 4. Performance objectives relating to orientation objectives 3 and 4 for the certificate of competence at level 2

Topic	Performance objective	Examination
3. Legal foundations: certificate of competence at level 2		
3.1 Legislation and O-NIRSA		
3.1.1 Regulations for events involving laser radiation (O-NIRSA)	Is familiar with Annex 3 O-NIRSA and knows that the O-NIRSA regulates situations involving health hazards associated with high-power laser products (i.e. not the products themselves – see the Product Safety Act, SR 930.11).	Theory
3.1.2 Difference between SLO and O-NIRSA	Knows that the O-NIRSA (in contrast to the Sound Levels and Laser Ordinance/SLO) requires laser show operators to acquire competence, and that the laser equipment may only be operated by a competent person. Knows that the notification must now be submitted centrally to the federal authorities and no longer to the cantons.	Theory
3.1.3 Transitional provisions SLO and O-NIRSA	Understands that from 1 December 2020 – after an 18-month transitional period from the SLO to the O-NIRSA – only the O-NIRSA is applicable (SLO = notification without competence to the canton; O-NIRSA = notification with competence to the FOPH via the notification portal).	Theory
3.1.4 Audience zone (Art. 10 let. b O-NIRSA)	Defines “audience zone” and knows that the maximum permissible exposure (MPE) must always be complied with in the audience zone. Determines the audience zone for an event. Ensures that no audience members or third parties can enter the area where the MPE values are exceeded.	Practical
3.2. Requirements of O-NIRSA for events involving laser radiation in the audience zone (person with certificate of competence at level 2)		
3.2.1 Compliance with MPE during operation and in case of malfunction (O-NIRSA Annex 3, No. 1.2.1)	Ensures that laser radiation in the audience zone does not, either during scheduled operation or in the event of malfunction: • exceed the maximum permissible exposure (MPE) for the cornea, as specified in SN EN 60825-1:2014; • exceed the level of 0.02 x MPE for the cornea, if it cannot be ensured that instruments such as binoculars are not used by the audience.	Practical

3.2.2 Reflective surfaces (O-NIRSA Annex 3, No. 1.2.2)	Ensures that laser radiation does not strike reflective surfaces or objects in an uncontrolled manner.	Practical
3.2.3 Secure installation (O-NIRSA Annex 3, No. 1.2.3)	Sets up laser devices, mirrors and targets in such a way that they are all securely installed and capable of withstanding shocks, vibrations and wind.	Practical
3.2.4 Visual contact (O-NIRSA Annex 3, No. 1.2.4)	The person with a certificate of competence at level 2 or the person instructed by him/her with a certificate of competence at level 1 ensures that visual contact is maintained at all times with all laser devices, recognises malfunctions and unplanned hazard situations, and is able to interrupt the laser event at any time.	Practical
3.2.5 Performers and other event staff (O-NIRSA Annex 3, No. 1.2.5)	Ensures, through appropriate planning, that laser radiation does not endanger either performers or other event staff. Takes appropriate safety measures (in particular, laser safety glasses and protective clothing for performers, if radiation exceeds the MPE) and warns the persons concerned about hazardous laser radiation.	Practical
3.2.6 Not endangering third parties (O-NIRSA Annex 3, No. 1.2.6)	Ensures that laser radiation does not endanger third parties.	Practical
3.2.7 Successful test run (O-NIRSA Annex 3, No. 1.2.7)	Carries out a successful test run before the start of the event; i.e. the competent person fulfils all the requirements specified in Annex 3 Number 1.2, tests all the emergency procedures and ensures in particular that the MPE is not exceeded in the audience zone.	Practical
3.3 Notification and notification portal O-NIRSA		
3.3.1 Notification content, certificate of competence at level 2 (O-NIRSA Annex 3, 2.1 & 2.3)	Submits a notification via the notification portal to the FOPH, with the appropriate content and the relevant documents, no later than 14 days before the beginning of the event (as specified in Annex 3 Numbers 2.1 and 2.3).	Practical
3.3.2 Mandatory notification	Understands what mandatory notification means and that the conduct of the event involving laser radiation is subject only to mandatory notification, not to approval. In other words, the O-NIRSA relies on the individual responsibility of the competent person.	Theory
3.3.3 Certificate of competence at level 2	Knows that all types of notifications can be submitted by a person with a certificate of competence at level 2.	Theory
3.3.4 Instruction of a person with a certificate of competence at level 1 by a person with a certificate of competence at level 2	Knows that, after a successful laser equipment test run carried out jointly, a person with a certificate of competence at level 2 may instruct a person with a certificate of competence at level 1 to supervise an event involving laser radiation in the audience zone. It lies within the responsibility and authority of the person with a certificate of competence at level 1 to conduct the event in accordance with the notification submitted by the person with a certificate of competence at level 2.	Theory

3.3.5 Description of laser shapes	Prepares a fully detailed description of the laser shapes.	Practical
3.3.6 Plan of the venue with laser equipment marked	Prepares a complete plan of the venue for the event, with the laser equipment marked.	Practical
3.4 Product safety and employment law		
3.4.1 Product safety law	Knows that the Federal Act of 12 June 2009 on Product Safety (PrSG; SR 930.11) regulates the safe placing on the market of products. Thus, under the PrSG, with regard to product use, only the safety of the product can be controlled and not whether the user actually uses the product in accordance with the manufacturer's safety instructions.	Theory
3.4.2 NEV	Knows that most laser products are regulated by the Ordinance on Low-Voltage Electrical Equipment (NEV; SR 734.26) and that the competent supervisory authority is the Federal Inspectorate for Heavy Current Installations (ESTI). This means that, in the event of problems with the laser product, the competent person can contact the ESTI.	Theory
3.4.3 Product safety – inappropriate use	Knows that if high-power laser devices are inappropriately used, limits can be exceeded and the health of the audience can potentially be endangered as a result. Knows that these products are only safe if all the manufacturer's safety instructions are complied with and if they are used by a specially trained competent person.	Theory
3.4.4 Competent use (O-NIRSA)	Knows that, over and above the PrSG, the O-NIRSA regulates the competent use of laser devices. Knows that the O-NIRSA is designed to improve safety in the use of laser products and therefore makes competence a requirement and regulates the entire exposure situation at events open to the public.	Theory
3.4.5 Occupational safety law	Knows that occupational exposure from sources of non-ionising radiation (NIR) within the enterprise is covered by the Ordinance of 19 December 1983 on the Prevention of Accidents and Occupational Illnesses (VUV; SR 832.30), which is based on the Federal Act of 20 March 1981 on Accident Insurance (UVG; SR 832.20) and the Federal Act of 13 March 1964 on Work in Industry, Trade and Commerce (ArG; SR 822.11).	Theory
3.4.6 Protection against NIR sources at the workplace	Understands that occupational safety law is designed to protect employees and that the State Secretariat for Economic Affairs (SECO) and the Swiss National Accident Insurance Fund (SUVA) are responsible for protection against NIR at the workplace.	Theory
3.4.7 Protection through the O-NIRSA	Knows that the protection afforded by the O-NIRSA is restricted to the audience and performers and other service providers operating in the stage and audience zone, insofar as they are not employed by the event organiser. Otherwise they are covered by employee protection requirements.	Theory

3.5 Rights and duties under O-NIRSA		
3.5.1 Responsibilities of the enforcement authority (Art. 24 O-NIRSA)	Knows the responsibilities of the FOPH: reviewing notifications, verifying compliance with requirements on-site, transmitting notifications concerning laser radiation emitted into airspace to the body responsible for air traffic control.	Theory
3.5.2 Event involving laser radiation emitted into airspace – notification (Art. 14 para. 2 O-NIRSA)	Knows that events involving radiation emitted into airspace by a laser of any class must be notified to the FOPH no later than 14 days before the beginning of the event.	Theory
3.5.3 Event involving laser radiation emitted into airspace – definition of airspace	Understands that airspace is defined as any part of the sky through which a manned aircraft may fly (aeroplane, helicopter, balloon, etc.).	Theory
3.5.4 Event involving laser radiation emitted into airspace – information (Art. 24 para. 1 let. b O NIRSA)	Knows that the notification of emissions into airspace submitted via the notification portal is automatically passed on by the FOPH as information to the Special Flight Office of skyguide (air traffic control authority).	Theory
3.5.5 Event involving laser radiation emitted into airspace – details of emissions (Annex 3 Number 2.1 O-NIRSA)	Knows what additional details (coordinates, laser beam direction with azimuth 0–359° and elevation 0–90°, 0 to -90°) are required for an event involving laser radiation emitted into airspace.	Theory
3.5.6 Safety of emissions into airspace (Art. 14 para. 1 O-NIRSA)	Knows that any person who operates a laser device of any class emitting laser radiation in or into the open air must not endanger other people; in particular, pilots must not be dazzled.	Theory
3.5.7 Special Flight Office	Knows that the Special Flight Office can neither approve nor reject the emission of laser radiation into airspace. Knows that air traffic control is responsible for the monitoring of control zones (CTR = zones with the densest air traffic) and has no influence on aircraft movements outside the CTR. Is familiar with the control zones and is aware of non-controlled aircraft movements outside the CTR, e.g. in the vicinity of hospitals (helipads).	Theory
3.5.8 Controls by enforcement bodies and cooperation duties (Art. 27 O-NIRSA)	Knows that unannounced inspections and measurements can be carried out at any time and evidence collected. Knows that any information required must be provided free of charge, that any documents required must be made available, and that access must be granted to premises and event venues.	Theory
3.5.9 Immediate on-site measures ordered by the FOPH (Art. 9 NIRSA)	Knows that, in the event of on-site inspections, measures ordered by the FOPH are to be taken without delay so as to ensure protection of the health of the user or of third parties.	Theory
3.5.10 Revocation of certificate of competence (Art. 9 para. 3 let. e NIRSA)	Knows that, should it be necessary in order to protect the health of the user or of third parties, the FOPH may, in the event of repeated inappropriate commercial or professional use of potentially hazardous products, have the certificate of competence revoked.	Theory
3.5.11 Fees (Art. 26 O-NIRSA)	Knows that fees may be charged by the enforcement authorities, according to the time required, and that no fees are charged for controls that do not reveal any non-compliance.	Theory

4. Theoretical and practical foundations: certificate of competence at level 2		
4.1 Show laser set-up and operation	Can safely install and operate a laser device.	
4.1.1 Cable connection	Safely connects the cables required for a show laser. Knows the signals transmitted via an ILDA interface (galvo, laser power, emergency shut-off).	Practical
4.1.2 Device installation & operation	Ensures that the laser device is stably mounted (including a stable base). For this purpose, uses (if available) stage trusses or solid stands. Ensures that the emergency shut-off switch is positioned in such a way that it can be operated at any time by the person responsible. Installs diaphragms, diverging lenses, filters, etc. with suitable, secure mounting.	Practical
4.1.3 Projection zone	Determines the laser projection zone (direction, angle, height). Limits the projection zone (using masks, diaphragms, etc.).	Practical
4.1.4 Emergency procedures	Describes the emergency procedures (risk assessment, risk mitigation).	Practical
4.2 Laser show programming	Can programme a safe laser show.	
4.2.1 Frames, patterns, shapes	Knows which laser system is suitable for a graphics show or beam show.	Theory
4.2.2 Knowledge of control software	Knows the essential features of the control software used. Starts the software, uses it to define the projection zone and uses the beam attenuation map.	Practical
4.2.3 Pulse durations, corners, lines	Adjusts the angular velocities, repetition rate and pulse durations.	Practical
4.2.4 Brightness in software and laser output power	Adjusts the average and peak output power (with software and/or hardware).	Practical
4.2.5 Brightness and geometries	Knows that shapes of equal brightness can pose different risks.	Theory
4.2.6 Shape with corners	Minimises the hazard posed by corners (rounding corners, adjusting output).	Practical
4.2.7 Beam parameters	Describes the beam parameters (energy distribution, diameter, divergence, wavelengths).	Practical
4.2.8 Laser galvo	Knows that deflection is not linearly related to the control voltage.	Theory
4.2.9 Effects of short pulses	Knows the typical pulse durations for show laser devices and can relate these to the hazard level.	Theory
4.2.10 Minimising hazards	Adjusts the show laser so that no hazards arise (software: adjustment of output power, pulse duration, scanning speed; hardware: lenses, grey filters, increasing distance, changing device).	Practical
4.2.11 Avoiding uncontrolled reflected radiation	Ensures that no hazards arise from reflected radiation.	Practical
4.2.12 Beam shut-off reaction time in case of malfunction	Knows, for the product used, the maximum reaction time of the automatic shut-off system in the event of malfunction.	Practical

4.3 MPE		
4.3.1 Calculation of MPE	Calculates the MPE for a visible, non-pulsed laser with low beam divergence and an ideal beam profile. Compares the MPE with irradiance.	Theory
4.3.2 Laser beam modelling	Calculates the beam diameter for various distances.	Theory
4.3.3 Calculation of NOHD	Calculates the NOHD for a visible, non-pulsed laser with low beam divergence and an ideal beam profile.	Theory
4.3.4 Dispersing lenses	Determines the dimensions of a dispersing lens so that the limit is complied with.	Theory
4.3.5 Divergence	Knows the influence of beam divergence on irradiance.	Theory
4.3.6 Beam velocity	Calculates a pulse duration on the basis of the beam velocity, divergence and distance to the audience zone.	Theory
4.3.7 Repetition rate	Calculates the exposure time on the basis of the parameters beam velocity and repetition rate.	Theory
4.4 Measurement techniques		
4.4.1 Measurement with power meter	Measures the maximum permissible exposure with a power meter.	Practical
4.4.2 Requirements for measurement instruments	Knows the requirements for power meters (e.g. 7 mm aperture, power and wavelength range).	Theory
4.4.3 Types of power meter	Knows different types of power meter (thermopile, pyroelectric radiometer, photodiode).	Theory
4.4.4 Beam power	Determines the beam power of a static beam.	Practical
4.4.5 Pulse duration/repetition rate	Determines the pulse duration at the target site and the repetition rate and maximum exposure time of the laser pulse for the eye in the audience zone.	Practical
4.4.6 Beam energy	Determines the beam energy of a single pulse and a repeated shape.	Practical
4.4.7 Calibration	Only uses calibrated measurement instruments.	Practical
4.4.8 Optimisation	Makes specific proposals on how the MPE can be complied with if it is exceeded.	Practical
4.4.9 Checking calculations	Checks whether calculations are correct by means of measurement.	Practical

5 Annex C: Exam content certificate of competence at level 1

Candidates who successfully complete the examination receive a certificate of competence at level 1 and are qualified to:

- plan, notify and conduct, without endangering the audience or third parties, an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4), without laser radiation in the audience zone;
- following instruction by a person with a certificate of competence at level 2, conduct, without endangering the audience or third parties, an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4), with laser radiation in the audience zone, after a successful jointly carried out test run of the laser equipment, in accordance with the notification submitted by the person with a certificate of competence at level 2.

The theoretical part covers the following areas:

- Laser technology and safety
  - Laser classes

- Health effects
  - Dazzling
  - Hazards for third parties and persons performing safety-critical activities

- Legal foundations
  - Legislation and O-NIRSA
  - Requirements of O-NIRSA for competent person
  - Notification O-NIRSA
  - Rights and duties under O-NIRSA

The practical part covers following areas:

- Principle of a laser device
- Identifying risks and taking safety measures
- Set-up and operation of the laser device
- Safe operation without laser radiation in the audience zone
- Notification portal: submission of notification (without laser radiation in the audience zone, with laser radiation emitted into airspace)
- Instruction and handover of the laser device

6 Annex D: Exam content certificate of competence at level 2

Candidates who successfully complete the examination receive a certificate of competence at level 2 and are qualified to:

- plan, notify and conduct, without endangering the audience or third parties, an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4), with or without laser radiation in the audience zone;
- plan a safe laser show, submit a notification and instruct a person with a certificate of competence at level 1 to conduct an event involving laser radiation (Class 1M, 2M, 3R, 3B or 4), with laser radiation in the audience zone, after a successful test run carried out jointly.

The theoretical part covers the following areas:

- Laser technology and safety
  - Laser classes
  - Limits and MPE

- Health effects
  - Eye and skin injuries
  - Dazzling
  - Hazards for third parties and persons performing safety-critical activities

- Legal foundations
  - Legislation and O-NIRSA
  - Requirements of O-NIRSA for competent person
  - Notification O-NIRSA
  - Product safety and employment law
  - Rights and duties under O-NIRSA

The practical part covers following areas:

- Principle of a laser device
- Programming a laser show
- Optimum laser power level, based on venue dimensions and beam divergence
- Identifying risks and taking safety measures
- Set-up and operation of the laser device
- Measurement of laser radiation in the audience zone
- Safe operation with laser radiation in the audience zone, complying with MPE
- Instruction and handover of the laser device to the person with a certificate of competence at level 1
- Notification portal: submission of notification (with laser radiation in the audience zone, and with laser radiation emitted into airspace)