Queensland Government

Radiation Safety Act 1999

RADIATION SAFETY STANDARD

Standard for non-ionising radiation apparatus–medical or cosmetic procedures, or related practices (2021)

Standard for non-ionising radiation apparatus – medical or cosmetic procedures, or related practices

Preface

This radiation safety standard sets out the minimum performance expectations for non-ionising radiation apparatus used to carry out medical or cosmetic procedures, or related practices.

Persons who hold an appropriate Accreditation Certificate, issued under the *Radiation Safety Act 1999*, must be engaged from time to time to assess whether or not an apparatus complies, or does not comply, with this radiation safety standard. Compliance with the tests means that the apparatus may continue to be used to carry out the radiation practice. Failure of any test in the standard means that the apparatus must not be used.

Notwithstanding the above, a possession licensee has an on-going obligation to take reasonable steps to ensure that the radiation apparatus continues to comply with the radiation safety standard at all times whenever a non-ionising radiation apparatus is used to carry out a practice.

These requirements are made to ensure that non-ionising radiation apparatus used in Queensland continue to meet a minimum standard of radiation safety whenever they are used to carry out a practice.

I, Yvette D'Ath MP, Minister for Health and Ambulance Services and Leader of the House, pursuant to section 16(1) of the *Radiation Safety Act 1999*, hereby make the radiation safety standard *Standard for non-ionising radiation apparatus–medical or cosmetic procedures, or related practices (2021)*, for the purposes of the Act.

SIGNED BY

Yvette D'Ath MP
Minister for Health and Ambulance Services
and Leader of the House

13 / 08 / 2021

Section 1 – General

1.1 Scope

This radiation safety standard sets out the minimum performance expectations for non-ionising radiation apparatus used to carry out medical or cosmetic procedures, or related practices.

For clarity, the standard includes non-ionising radiation apparatus used to carry out dental procedures.

1.2 Expiry

This radiation safety standard expires on 31 August 2031.

Section 2 – Specific Requirements

Requirements for laser apparatus used to carry out medical or cosmetic procedures, or related practices

The following table sets out the minimum test requirements for a laser apparatus used to carry out a medical or cosmetic procedure, or a related practice.

For the purpose of these tests, the following definitions apply:

- '*access panel*' means any parts of the protective housing that are intended to be removed or displaced for operational maintenance or clinical use, which would allow access to radiation.
- '*accessible emission limits for Class 1*' means the maximum accessible emission limits permitted for a Class 1 laser with the same wavelength as the apparatus being tested.
- '*durably*', when describing the acceptability of a label, means made of a material and marked in a way that can withstand the long-term effects of exposure to the environment in which the laser apparatus is used.
- '*operational maintenance*' means maintenance which is expected to be undertaken by the owner of the laser apparatus, as detailed in operator manuals supplied with the apparatus, and excludes technical servicing of the apparatus.

Test	Compliance test	Criteria for passing the test
1	Protective housing	The protective housing must be in place and not visibly damaged. Any accessible point outside of the protective housing must not exceed radiation levels in excess of the accessible emission limits for Class 1. Note: For the purpose of this test, 'protective housing' means the outermost enclosure of the laser apparatus (including the hand piece): (a) which contains the laser medium and the mechanism to deliver the laser radiation to the aperture, and (b) which is designed to prevent human access to laser radiation during normal operation.
2	Access panels	Access panels must either: (a) be interlocked so that the laser de-activates, or reduces hazard to below the accessible emission limits for Class 1, when the panel is opened or removed; or (b) be secured in such a way that removal or displacement of the parts requires the use of tools, or be key locked.

Test	Compliance test	Criteria for passing the test
		If an access panel is interlocked, resetting of the interlock must not cause the laser to automatically commence laser operation.
3	Override mechanisms	If a safety interlock for an access panel has a deliberate override mechanism, it must: (a) be clear that the apparatus is in an override status; or (b) not allow the access panel to return to its normal position. Such a panel must be clearly labelled with words to the effect of: • 'Caution', 'Warning' or 'Danger'; and • 'Laser radiation when open and interlocks defeated'; and • 'Avoid eye or skin exposure to direct or scattered radiation' If the output of the laser apparatus is: (a) outside the wavelength range of 400 nanometres to 700 nanometres, the words 'laser radiation' must be replaced by words to the effect of 'invisible laser radiation'; or (b) at wavelengths both inside and outside the wavelength range mentioned in (a), the words 'laser radiation' must be replaced by words to the effect of 'visible and invisible laser radiation'.
4	Labels for access panels	Each access panel of a protective enclosure which, when removed or displaced, permits human access to laser radiation in excess of the accessible emission standards for Class 1, must be labelled with words to the effect of: • 'Caution – laser radiation when open' • 'Avoid eye or skin exposure to direct or scattered radiation' If the output of the laser apparatus is: (a) outside the wavelength range of 400 nanometres to 700 nanometres, the words 'laser radiation' must be replaced by words to the effect of 'invisible laser radiation'; or (b) at wavelengths both inside and outside the wavelength range mentioned in (a), the words 'laser radiation' must be replaced by words to the effect of 'visible and invisible laser radiation'.
5	Remote interlock connector	If a remote interlock electrical connector is fitted to the laser, and is intended to be used, the hazard from the accessible radiation must reduce to below the accessible emission limits for Class 1 when the terminals of the connector are open-circuited.
6	Key control	A key operated control must be connected so that generation of laser radiation is only possible when the key is engaged. For the purposes of this test, a key could be a magnetic card, numeric panel, USB key, password or similar. Removal of the key must cause the laser apparatus to stop laser operation. Note: Removal of a key can constitute physical removal of a key or, for digital systems, logging out and for which a virtual key must be entered to re-enable the laser system.
7	Radiation warning device	The laser apparatus must give an audible or visible warning when the laser radiation is being emitted. The warning device must be clearly visible or audible to all persons in the vicinity of the operational control or laser aperture when the laser radiation is being emitted.

Test	Compliance test	Criteria for passing the test
8	Aperture indication	Where the laser emission may be distributed through more than one output aperture, there must be an unambiguous indicator showing which aperture is in use. This indicator must be clearly visible to a person in the vicinity of the operational control or laser aperture.
9	Aperture warning label	A label must be affixed close to each aperture and must contain the aperture warning label as prescribed in the laser standard, and words (or pictorial equivalent) to the effect of: • 'Laser aperture'; or • 'Avoid exposure – laser radiation is emitted from this aperture' Lettering and symbols must be black on a yellow background.
10	Viewing optics	Laser apparatus which provides viewing optics or viewports must provide sufficient attenuation to prevent human access to radiation in excess of the accessible emission limits for Class 1 during laser emission. Laser radiation measurements must be performed on all viewing optics or viewports to satisfy the requirement of this test. Attenuation must be provided for all viewing optics and viewports intended to be used during the operation of the laser apparatus. All shutters or variable attenuators must: (a) prevent human access to radiation in excess of the accessible emission limits for Class 1 when the shutter is opened or the attenuation is varied; and (b) prevent opening of the shutter or variation of the attenuator when exposure to laser radiation in excess of the accessible emission limits for Class 1 is possible.

11	Radiation warning label	The external surface of the laser apparatus must be durably and legibly marked with a label incorporating the following information in a conspicuous location:
		• the laser hazard symbol, as prescribed in the laser standard
		• words (or pictorial equivalent) to the effect of:
		  ○ 'laser radiation'
		  ○ 'avoid eye or skin exposure to direct or scattered radiation'
		  ○ 'Class 4 laser product'
		
		If the output of the laser is:
		(a) outside the wavelength range of 400 nanometres to 700 nanometres the words 'laser radiation' must be replaced by words to the effect of 'invisible laser radiation'; or
		(b) at wavelengths both inside and outside the wavelength range mentioned in (a) above, the 'laser radiation' must be replaced by words to the effect of 'visible and invisible laser radiation'.
		
		Lettering and symbols must be black on a yellow background.

12	Explanatory label	Each laser apparatus must be durably labelled with the following information, either on the laser apparatus or the energy source or control device: • the maximum energy output or power of the laser radiation • the pulse duration (if able to be pulsed) • the emitted wavelength(s) • the identity number and publication date of the Australian Standard, or equivalent, to which the product was classified

Test	Compliance test	Criteria for passing the test
		This label must be permanently fixed, legible and clearly visible, and must be positioned so that it can be read without the necessity for human exposure to laser radiation.
13	Radiation output	The measured power output, wavelength and pulse duration from the laser apparatus must be within ± 20 percent of the selected parameters for five different settings, in the normal operating range, of the laser apparatus. Note: The wavelength measurement need not be performed if the laser is a single wavelength laser.
14	Emergency stop	Where an emergency stop is provided on the laser apparatus, it must be operational and readily accessible. If an emergency stop is used, resetting of the emergency stop must not cause the laser to automatically commence laser operations.