



SPECIFICATION

Optically Stimulated Luminescence (OSL) Dosimeter Reader and Dosimeters

1. Scope

This specification describes the requirements for an Optically Stimulated Luminescence (OSL) dosimeter reader and OSL dosimeters (hereinafter referred to as 'the Equipment').

2. Applicable Documents

The following documents shall be applicable for this Specification to the extent specified hereinafter:

- IEC 62387 Edition 2.0 2020-01 Radiation protection instrumentation – Dosimetry system with integrating passive detectors for individual, workplace and environmental monitoring of photon and beta radiation.

In the event of conflict between the documents listed above and the content of this Specification, the content of this Specification shall take precedence to the extent of the conflict.

3. Definitions, Acronyms, and Abbreviations

The following definitions, acronyms, and abbreviations shall apply throughout this Specification unless defined otherwise hereinafter:

- Hp(10): Deep personal dose equivalent;
- Hp(0,07): Shallow personal dose equivalent;
- H*(10): Ambient dose equivalent
- OSL: Optically Stimulated Luminescence.

4. Requirements

4.1 The Equipment shall contain the following components:

- 4.1.1. OSL dosimeter reader with software and accessories;
- 4.1.2. OSL dosimeters for individual monitoring and environmental monitoring, including cards and holders;
- 4.1.3. one (1) set of quality control kit;
- 4.1.4. one (1) set of calibration card;
- 4.1.5. an Uninterrupted Power Supply (UPS); and
- 4.1.6. a power stabilizer.

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The Equipment shall meet the following requirements, and include the following components:

4.2. The OSL dosimeter reader that shall:

- 4.2.1. be compatible with the OSL dosimeters as stated in Section 4.2 below;
- 4.2.2. have a processing speed for the dosimeters not lower than 200 pcs/per hour;
- 4.2.3. the range shall be seven decade;
- 4.2.4. Stability shall be as per line 5 of Table 13 in the IEC 62387 Edition 2.0 2020-01;
- 4.2.5. Ambient temperature shall be as per line 5 of Table 13 in the IEC 62387 Edition 2.0 2020-01;
- 4.2.6. Electrical Power shall be 100 - 240 V, 50 - 60 Hz;
- 4.2.7. shall include one (1) PC with an operational system;
- 4.2.8. shall include operational software;
- 4.2.9. shall include a user manual;
- 4.2.10. shall include a power cable kit; and
- 4.2.11. shall include one (1) barcode reader.

4.3. OSL dosimeters for individual monitoring that shall meet the following requirements:

- 4.3.1. shall measure Hp(10) and Hp(0.07) for gamma, X ray and beta radiation;
- 4.3.2. shall be compatible with the OSL dosimeter reader as indicated in Section 4.1. above;
- 4.3.3. Photo energy measurement ranges for the dosimeters shall be:
 - (i) For Hp(10): 20 keV to 1.25 MeV; and
 - (ii) For Hp(0.07): 20 keV to 1.25 MeV.
- 4.3.4. Beta energy measurement ranges for the dosimeters
 - (i) For Hp(10) and Hp(0.07) shall be 250 keV to 2 MeV;
- 4.3.5. shall include OSL dosimeters for measuring H*(10) for environmental monitoring;
- 4.3.6. Dosimeter's Relative response due to nonlinearity shall be:
 - (i) For Hp(10): -13 % to +18 % within 0.1 mSv to 1 Sv; and
 - (ii) For Hp(0.07): -13 % to +18 %, within 1 mSv to 3 Sv.

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4.4. Accessories that shall be compatible with the reader and dosimeters, including:

- 4.4.1. One (1) OSL dosimeter annealer;
- 4.4.2. One (1) set of calibration kit; and
- 4.4.3. One (1) set of quality control kit.

5. Marking

The Equipment shall have all safety markings in the English language.

6. Packing

The Equipment, for the shipment by air to the End-User, shall be packed in accordance with international standards that are applicable for the shipment by air of this kind of equipment.

7. Quality Requirements

- 7.1. The Equipment shall be manufactured and shipped in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.
- 7.2. The Contractor shall document the compliance with this quality assurance system.

8. Testing and Acceptance

The Equipment, prior to shipment, shall be tested for conformance of the equipment with manufacturer's performance specifications and the minimum requirements specified herein.

9. Installation and Training

- 9.1. The Contractor shall install the Equipment at the site of the End-User or provide remote installation support.
- 9.2. The Contractor shall provide a one (1) day training for up to three (3) staff of the End-User in the operation and maintenance of the Equipment at the End-User's location or virtually, immediately after the installation of the System.

10. Deliverable Data Item

The Contractor shall provide two (2) complete sets of operation and servicing manuals and technical drawings in the English language and/or in a language as determined on individual case basis.



ANNEX 1

LIST OF ACCESSORIES

1. OSL dosimeter for X, gamma, beta radiation
2. Environmental OSL dosimeter, for X, gamma, beta radiation
3. Manual OSL dosimeter reader
4. Automatic OSL dosimeter reader
5. OSL dosimeter eraser
6. OSL dosimeters for quality control of the OSL reader
7. OSL dosimeters for calibration of the OSL reader
8. OSL dosimeter badge
9. OSL dosimeter detector
10. Annealer for OSL dosimeters