



SPECIFICATION

Alpha and Beta Radiometer

1. Scope

- 1.1. This specification describes the requirements for an alpha and beta radiometer, hereinafter referred to as the “Equipment,” to be donated to the SSE - Chornobyl Nuclear Power Plant, Ukraine (hereinafter referred to as the “End-User”).
- 1.2. The scope of delivery also includes installation and testing of equipment using the End-User’s process environment, training and warranty service.
- 1.3. The technical cooperation project is aimed at assisting the End-User in performing radiometric work in the field of radioactively contaminated water, radioactive waste, and radioactive materials treatment. The Equipment will be used in the measuring water and radiochemical laboratory to determine the total activity of alpha and beta emitting radionuclides in the test samples.

2. Applicable documents

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

- ISO 18589-3:2007 Measurement of radioactivity in the environment -Soil - Part 6: Measurement of gross alpha and gross beta activities.

In the event of any discrepancies between the documents mentioned above and the content of this specification, this specification shall take precedence to resolve the conflict.

3. Requirements

3.1 Functional and Performance Requirements

The Equipment shall meet the following functional and performance requirements:

- 3.1.1 Built-in software.
- 3.1.2 Control of operations using the front panel buttons with the possibility of control on the LCD display.
- 3.1.3 Shall be equipped with a cell or tray designed for placing controlled samples in manual mode.

3.2 Technical requirements

The Equipment shall meet the following technical requirements:

- 3.2.1 Power supply shall be provided from alternating current network of 220 V, frequency of 60 Hz and autonomous power supply based on batteries.
- 3.2.2 Shall measure beta emitting radionuclides in the range of energies from 0.125 to 2.28 meV;
- 3.2.3 Shall measure alpha emitting radionuclides in the range of energies from 3.0 to 9.6 meV;
- 3.2.4 The range of measured activity of beta emitting radionuclides shall be from 2.0E-02 Bq to 1.0E+04 Bq;
- 3.2.5 The range of measured activity of alpha emitting radionuclides shall be from 3.0E-02 Bq to 1.0E+04 Bq.



4. Labelling

- 4.1. The Equipment shall have the appropriate labelling with identification of equipment model, manufacturer, serial number, and bar-code.
- 4.2. The Equipment shall have all safety labelling in English language.

5. Packaging

- 5.1. The Equipment delivered to the End User shall be packed in accordance with international standards applicable to air or ground transportation.
- 5.2. All labels on components and packaging shall be in English with a clear indication of the address and contact person of the End User.

6. Quality requirements

- 6.1. The Equipment shall be manufactured and installed in accordance with the manufacturer's ISO quality assurance system or equivalent quality assurance system.
- 6.2. The Contractor shall document the compliance with the quality assurance system requirements (international calibration certificate of CIPM MRA, or verification/calibration certificate issued by a metrological centre of Ukraine).

7. Testing and acceptance

- 7.1. The Equipment, prior to shipment, shall be tested for compliance with manufacturer's technical parameters and minimum requirements specified herein.
- 7.2. The Equipment, after installation at the End-User site, shall be tested by the Contractor in the presence of the End-User to demonstrate that the performance meets the manufacturer's performance specification and the minimum requirements specified in Section 3 above.
- 7.3. The results of the testing of the Equipment shall be documented by the Contractor in an acceptance protocol that shall be signed by the End-User.

8. Installation and Training

- 8.1. The Contractor shall install the Equipment at the End-User facility. In one month after receipt of the Purchase Order, the Contractor shall notify the End-User of the requirements for installation and site preparation (if any).
- 8.2. The Contractor shall provide a two (2) 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 immediately after installation.

9. Deliverable Data Items

- 9.1. The Contractor shall provide, in both hard copy and electronic format, two (2) complete sets of operation and servicing manuals both in English language.



9.2. The Contractor shall provide a CIPM MRA international calibration certificate, or a verification/calibration certificate issued by a metrological centre of Ukraine.