



SPECIFICATION

Gel Imaging System

1. Scope

This specification describes the requirements for a gel imaging system (hereinafter referred to as “the System”) to analyse protein, DNA and RNA samples extracted from plant tissue. The system shall be able to perform multiplex fluorescent western blotting, chemiluminescence detection, general gel documentation applications, and stain-free technology imaging, such as stain-free protein normalization. The End-User will be the Scientific Research Council, Jamaica.

2. Requirements

2.1. Functional and Performance Requirements

The System shall meet the following functional and performance requirements:

- 2.1.1. Be able to automatically adjust imaging parameters and camera settings.
- 2.1.2. Gather maximum information from a blot that has both intense and weak signals in a single image through 4 orders of linear dynamic range for all samples.
- 2.1.3. Have a resolution that allows maximum spectral information to be recovered from a sample, acquire images in extended wavelength range of 400-900nm.
- 2.1.4. Be able to utilise wide range of dyes and stains in wide spectral range, such as: chemiluminescence, stain-free, EtBr, SYBR Green, SYBR Safe, SYBR Gold, GelGreen; GelRed, Fluorescein; Oli Green; Oriole; SYPRO Ruby; Coomassie Fluor Orange; Alexa Fluor 488; DyLight 488, Qdot 565, Qdot625 and others.
- 2.1.5. Image a wide variety of applications, including nucleic acid and protein detection via colorimetric and fluorescent stains.
- 2.1.6. Be able to provide multiplex images
- 2.1.7. Be able to use stain-free technology, allowing researchers to perform QC on their results at each stage of blotting process.

2.2. Technical Requirements

The System shall meet the following technical requirements:

- 2.2.1. Have deeply cooled high resolution charged-coupled device (CCD).
- 2.2.2. Have light emitting diodes (LED) for detection of wide range (400 nm – 900 nm) of dyes and fluorophores.
- 2.2.3. Be pre-calibrated optimized for all applications
- 2.2.4. Be able to acquire images through auto-selection of emission filters
- 2.2.5. Have operational software to carry out basic instrument operations such as, image optimization, image acquisition, image assessment and export.
- 2.2.6. Possibility for safety band excision avoiding unintentional UV exposure



- 2.2.7. Have statistical software for data analysis (instrument independent software package dedicated to capture optimized image, analyzing captured images, edit and produce customized reports.
- 2.2.8. Meet requirements of the electrical system on the User Site (operating voltage: 100-250V)
- 2.2.9. The casing shall protect electrical enclosures against dust and water sprays to IP65

3. Marking

The System shall have all safety markings and any additional relevant markings in the English language.

4. Packing

The System, 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 for this kind of equipment.

5. Quality Requirements

- 5.1. The System shall be manufactured, shipped and installed in accordance with the Contractor's ISO quality assurance system or an equivalent quality assurance system.
- 5.2. The Contractor shall document the compliance with this quality assurance system

6. Testing and Acceptance

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

The System, after installation, shall be tested by the Contractor together with the End-User to demonstrate that the performance meets the manufacturer's performance specifications and the minimum requirements specified herein as determined by the IAEA and the End-User.

The results of the testing of the System shall be documented by the Contractor in an acceptance protocol that shall be signed by the End-User.

7. Installation and Training

The Contractor shall install the System at the End-User's premises.

The Contractor shall provide 3 days training for up to three staff of the End-User in the operation and maintenance of the System at the End-User's location immediately after the installation of the System.

8. Deliverable Data Items

The Contractor shall provide two complete sets of operation and servicing manuals and technical drawings in the English language.