

QA RADCHEX Meter



- Calibrate computed radiography (CR) plate readers and automatic exposure control (AEC)
- Assess ongoing performance of the CR plate reader, AEC and automatic programmed radiography (APR)
- Set and maintain desired clinical system speed (dose) of the CR system
- QA RADCHEX is an indispensable tool for service engineers, physicists and quality assurance personnel

Introduction

The QA Radchex is a factory, X-ray-calibrated and PTB traceable meter that is used for manufacturers and custom Quality Assurance Programs. In addition, the instrument can be used to assess, calibrate, and balance CR plate readers throughout a department; the automatic exposure control (AEC) calibration, chamber balance, and density control settings; assess the operating speed of the CR system; and be used as a daily and long term indicator of the X-ray and CR system 'drift'. This meter comes with "data logging" Excel software so technologists can enter and "track" daily/weekly calibration "drift" of the AEC system, tube output, and plate reader. The "data logging software" allows Centralized Equipment Monitoring for an entire region for each of its radiology departments. This enables a regional system to take cost-effective, corrective action when equipment does not meet established calibration tolerance limits for ALARA. The QA Radchex has the same X-ray energy response as a CR system (x-ray-to-light conversion), so it can be used as an accurate and precise replacement for the plate reader's light measurement value (exposure indicator value, S#, EI#, IgM#).

Applications

The QA Radchex is ideal for use by QA personnel to periodically check and document the performance of the CR system and to compare CR to film/screen systems to achieve desired ALARA objectives. The service and biomedical engineers can use the meter to initially calibrate and troubleshoot the CR plate reader, AEC, and density selector settings and chamber balance. Physicists can use the instrument to assess the performance of CR systems for compliance to clinical system speed objectives and patient dose. QA Radchex is designed to work with all major brands of CR equipment.

Specifications

X-ray energy dependence: Simulates relative light output of Photostimulable Phosphor Plate (PSP) within +/- 3% over kVp range of 60 kVp to 120 kVp and a patient equivalent thickness range of 5 cm to 35 cm (within specified operating rates)

Digital range: Computed Radiography Light Units; CRLU 0 to 5000.0

Minimum CRLU Rate: 7/sec (approx. 0.7mR/sec entrance exposure rate)

Maximum CRLU Rate: 25000/sec (approx. 2500 mR/sec entrance exposure rate)

Power On/Off: Manual Switch

Power requirements: Built in NiMH rechargeable battery pack (9.6V).

Typical battery life between charging: Greater than 20 hours.

Operating Environment: 15°C to 35°C (59°F to 95°F)

X-ray beam filter: 1.5mm Copper(B152-110); 6" by 6" with Velcro straps.

Electronic Cassette: Dimensions: 10" x 12" x 0.5" (24cm x 30cm x 1.3cm)

Weight: 1.8kg (3.9lbs)

Features

The QA Radchex is a simple, easy-to-use, and an inexpensive instrument that is self-contained and provides three values when exposed to x-rays: CRLU, which represents the plate reader light output from a CR imaging plate when exposed to x-rays (also represents the pixel values on the image); Exposure indicator values for all CR manufacturers (S#, EI#, IgM#) and Speed (which represents the relative system speed at which the CR system is operating compared to a film/screen system). Once its 'electronic' cassette has been exposed to x-rays, the three values appear automatically on an LCD display on the front of the cassette.

A pressure sensitive On/Off switch activates the meter and is used to RESET the meter between exposures. The size of the electronic cassette is the same as a standard CR cassette (10" x 12") and can be placed in the Bucky tray for 'in-Bucky' or 'table-top' measurements.

When used with the Fuji 'FRC 1 Shot Phantom Plus' Program, instead of a dosimeter, the calibrated and traceable CR Radchex insures that Fuji's exposure requirements for constancy testing are met and is used to determine the relative sensitivity of the image plate reader.

The QA Radchex provides a reliable and reproducible method of accurately assessing and maintaining a CR Manufacturer's specific plate reader factory calibration.

Since the meter has the same energy response to x-rays as the imaging plate, the meter can take the place of the plate and reader when assessing the AEC system performance for thickness and kVp 'tracking', density selector settings, and chamber balance.