

# GE Advantx SCPU (High Frequency) X-ray Controls Maintenance Course

Course length: 1 Week  
CEU's Awarded: 4

## COURSE INTRODUCTION

The GE Advantx SCPU course is designed to teach the service professional those skills necessary to fully service this x-ray generator. This includes all calibration procedures, functional checks, and troubleshooting techniques. The course includes integrated lectures, labs, and documentation which compliment each other ensuring the maximum learning environment.

## COURSE OBJECTIVES

At the conclusion of this course, attendees will be able to:

- Troubleshoot to the component or board level.
- Calibrate all circuitry to the manufacturer's specification.
- Perform all related CDRH compliance testing.
- Verify the system performance.

## PREREQUISITES FOR ADMISSION

Attendees must possess the knowledge acquired through attendance at our Advanced Concepts of Radiographic Imaging Maintenance-Level II or the equivalent electronics and service experience. A strong microprocessor background is recommended.

### DAY 1

- I. Introduction
  - A. Basic operation
  - B. System layout
- II. Console operation
  - A. Knobology
  - B. Operator menus
- III. System block diagram
- IV. System on/off circuitry

### LAB ACTIVITIES

- I. System operation
- II. Physical layout
  - A. Cabinet layout
  - B. Module layout
- III. Calibration software operation
  - A. Loading
  - B. Backing up
  - C. Restoring

### DAY 2

- I. KV control circuitry
  - A. IGBT inverter
  - B. Frequency control circuitry
  - C. Inverter supply
  - D. KV monitoring circuitry

### LAB ACTIVITIES

- I. KV control waveform analysis
- II. KV calibration
  - A. KV meter
  - B. KV adjust
- III. KV control troubleshooting

### DAY 3

- I. Filament control circuitry
  - A. Half-bridge inverter
  - B. Voltage to frequency converter
- II. Real mA feedback circuitry
- III. Timer control circuitry
- IV. Exposure logic

### LAB ACTIVITIES

- I. Filament control waveform analysis
- II. mA calibration
  - A. mA meter
  - B. mA preheat
  - C. mA over demand
- III. Filament circuit troubleshooting

### DAY 4

- I. Rotor controller circuitry
  - A. Three leg inverter
  - B. PWM control
- II. Automatic exposure control circuitry
  - A. Ion chamber
  - B. KV compensation
  - C. Area compensation
  - D. Short time compensation
  - E. Field selection
  - F. Photospot

### LAB ACTIVITIES

- I. Rotor controller waveform analysis
- II. Rotor controller troubleshooting
- III. AEC waveform analysis
- IV. AEC calibration

- A. Ion chamber leakage test
- B. Ion chamber area balance
- C. Density adjustment
- V. AEC circuit troubleshooting

### DAY 5

- I. Automatic brightness control circuitry
  - A. Video stabilization
  - B. Fluoro mA
  - C. Fluoro KV
  - D. TV camera iris
  - E. Video gain
- II. System review
- III. Final exam and course critique
- IV. Parts sourcing

### LAB ACTIVITIES

- I. ABC waveform analysis
- II. Max R tabletop calibration