

# GE Advantx MPPU (Medium Frequency) X-ray Controls Maintenance Course

Course length: 1 Week  
CEU's Awarded: 4

## COURSE INTRODUCTION

The GE Advantx MPPU 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. Inverter circuitry
    1. Full bridge mode
    2. Half bridge mode
  - 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. H-bridge chopper
  - 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. Automatic exposure control circuitry
  - A. Ion chamber
  - B. KV compensation
  - C. Area compensation
  - D. Short time compensation
  - E. Field selection
  - F. Photospot

- II. Rotor controller circuitry
  - A. Tire inverter
  - B. Tire microprocessor

## LAB ACTIVITIES

- I. AEC waveform analysis
- II. AEC calibration
  - A. Ion chamber leakage test
  - B. Ion chamber area balance
  - C. Density adjustment
- III. Rotor controller waveform analysis

## 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