

Standard Operating Procedure <b>Biohazard Class II Cabinet Electrical Tests</b>	SOP No. 8.024
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Revision No.: 1

**Effective:** 3-5-99  
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- 1 Purpose
  - 1.1 To establish a standard procedure for measuring the electrical leakage, ground resistance, ground fault interrupter (GFI) performance and polarity of Class II Biohazard Cabinets manufactured before 2002.
- 2 Scope
  - 2.1 This procedure applies to Class II Biohazard Cabinets manufactured before 2002.
- 3 Reference
  - 3.1 NSF Standard 49, 2002
  - 3.2 NSF Standard 49, 1992 Annex F, Section II, Test Method F Subsection 3c paragraph (3) for GFI's procedure and standards of acceptance.
- 4 Definition
  - 4.1 MA: milliampere
  - 4.2  $\mu$ A: microampere
- 5 Responsibility
  - 5.1 Test and Air Balance (TAB) technicians shall record all test measurements in electrical Test Section on Form FN 8.057.3 (Biohazard Safety Cabinet Test Report Details II) and indicate test result, Pass or Fail, on Form FN 8.057.1 (Biohazard Safety Cabinet Test Report Summary Sheet).
  - 5.2 All test reports shall be saved in files, located in the TAB department of Therma.
  - 5.3 All test equipment utilized shall be in calibration in accordance with National Environment Balancing Bureau (NEBB) Standards and traceable to the National Institute of Standards and Technology (NIST).

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## 6 Materials Requirement

6.1 None

## 7 Test Equipment

7.1 Leviton GFI Circuit Tester

7.2 Ohmic Instruments Safety Inspector, Model SI-100ND

7.3 20 amp to 15 amp plug adapter

## 8 General Procedures

### 8.1 Polarity

8.1.1 Use Leviton Circuit Tester to test the polarity and ground of the Biosafety Cabinet wall outlet.

8.1.2 Record Pass or Fail in the Polarity box under Electrical Tests Section on Form FN 8.057.3 (Biological Safety Cabinet Test Report Detail II sheet) .

### 8.2 Electrical Leakage

8.2.1 Plug the Ohmic SI-100N into a properly polarized and grounded 120VAC outlet and switch it on.

8.2.2 Place the Selector switch in NORMAL (Left) position and depress the 100 $\mu$ A. Display should read 100 $\mu$ A. Switch SI-100N off.

8.2.3 Place all cabinet electrical switches in off position.

8.2.4 Plug cabinet main power cord into the LEAKAGE outlet of the SI-100N. Switch the SI-100N on.

8.2.5 Simulate an open ground by depressing and holding the OPEN GROUND switch.

8.2.6 Measure electrical leakage by contacting the cabinet work surface tray, cabinet inside wall, cabinet front, and cabinet drain handle with the probe (DO NOT PRESS THE BUTTON ON THE SIDE OF THE PROBE). If the measurement exceeds the display capability, depress the X10 Mult. Button to properly display the measurement.

8.2.7 Release the OPEN GROUND switch.

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8.2.8 Turn all cabinet electrical switches on.

8.2.9 Repeat steps 8.2.1 - 8.2.7

8.2.10 Repeat steps 8.2.2 - 8.2.9 with the SI-100N Selector switch in the REVERSE (Right) position.

8.2.11 Repeat steps 8.2.2 - 8.2.10 on any other power cord.

8.2.12 Record the highest  $\mu\text{A}$  measurement obtained in steps 8.2.6 - 8.2.11 in the Electrical Leakage box under the Electrical Tests Section on Form FN 8.057.3 (Biological Safety Cabinet Test Report Detail II sheet).

8.2.13 To pass this test, the highest measurement shall not exceed 500  $\mu\text{A}$ .

### 8.3 Ground Resistance

8.3.1 Place the SI-100N Selector switch in the RESISTANCE (Center) position. Insert the tip of the test probe into the 0.25-OHM TEST JACK. Depress the button on the probe and adjust the OHMS ADJUST knob until the display indicates 0.25 ohm.

8.3.2 Place all cabinet electrical switches in off position.

8.3.3 Plug cabinet main power cord into the GROUNDING outlet of the SI-100N. Switch the SI-100N on.

8.3.4 Measure ground resistance by contacting the cabinet work surface tray, cabinet inside wall, cabinet front, and cabinet drain handle with the probe and depressing the button located on the probe. If the measurement exceeds the display capability, depress the X10 Mult. Button to properly display the measurement.

8.3.5 Place all cabinet electrical switches in on position.

8.3.6 The POOR INSUL. LED will come on if the combined hot-and-neutral to ground resistance of the Biohazard Cabinet is less than 1 megohm. Record in Notes section of the Test Sheet if the LED comes on.

8.3.7 Repeat step 8.3.4 with cabinet electrical switches in on position.

8.3.8 Repeat steps 8.3.2 - 8.3.7 on the other power cord, if any.

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8.3.9 Record the highest ohm measurement obtained in steps 8.3.4 - 8.3.8 in the Ground Circuit Resistance box under the Electrical Tests Section on Form FN 8.057.3 (Biological Safety Cabinet Test Report Detail II sheet).

8.3.10 The highest measurement shall not exceed 0.15 ohms.

#### 8.4 Ground Fault Interrupter (GFI) Test

8.4.1 Refer to NSF 49, 1992 Annex F, Section II, Test Method F, Subsection 3c paragraph (3) for procedure and standards of acceptance.

8.4.2 Record the ma setting in the GFI Trips box under Electrical Tests Section on Form FN 8.057.3 (Biological Safety Cabinet Test Report Detail II).

8.5 TAB technicians shall indicate Pass or Fail for the electrical tests, on Form FN 8.057.1 (Biohazard Safety Cabinet Test Report Summary Sheet).

### 9 Review and Approval

9.1 TAB technicians shall return the Form FN 8.057.1 (Biohazard Safety Cabinet Test Report Summary Sheet) and the Form FN 8.057.3 (Biological Safety Cabinet Test Report Detail II) to the TAB Department for review.

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## Document Approval

  
 Test and Balance Supervisor

10/01/03  
 Date

  
 Engineering Manager

10/01/03  
 Date

  
 Quality Assurance Manager

11-15-03  
 Date

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