



ElecoTek INC

1640 W. Hubbard Street

Unit B

Chicago IL 60622

312-631-3692

<https://www.elecotek.com>

## Test Record

### TEST PASSED

**Test Performed**

Date: 07/03/2016  
 Record: Zoll  
 E.#AB07B003540.mtr  
 Plug-In: ESA620  
 Template: Zoll E.mtt  
 Template Version: 1.2.49

**Ansur Components Used**

Ansur Version 3.0.0  
 Plug-In: AVPI Version 2.4.11  
 Version 1.1.11  
 Plug-In: Impulse7000 Version 1.1.4  
 Plug-In: Index2 Version 1.0.5  
 Plug-In: BPPump2 Version 1.0.3

## Test Setup

### Selections

Service Events Performed	Standards Performed
	User defined AAMI/NFPA-99 (M)

### Device under test

Serial Number	AB07B003540	Model	Defibrillator
Manufacturer	Zoll	Location	ElecoTek
Type	E series		

### MTI Data

Test Instrument	Serial Number	Firmware Version
IMPULSE 7000DP	1363056	2.07
Index 2XL FE	9726020	3.00
BPPump2	9210008	2.01S

# Signatures

ElecoTek INC

9552E790-B72A-A34C-B59C-3A5270EB5FC7

## Test Result

Test Element	Test Type	Fail
Restore Defaults <b>Procedure:</b> Restore all default settings press soft key buttons 1 and 5 simultaneously and turn DUT on. <b>Result:</b> All defaults restored	Checklist  <b>Recorded Value</b> Pass	
Setting Time and Date <b>Procedure:</b> Setting Time and Date Check the time and date on the recorder annotation. If it is not correct, reset the time and date (from System Utilities mode) manually, by dial-up to a National Institute for Science and Technology (NIST) site, or using the GPS synchronization feature. After implementing time reset using any of the methods described below, verify that the time and date are set correctly by pressing the RECORDER button to generate a stripchart recording. Check that the stripchart is correctly annotated with the current time and date, selected ECG size, source and heart rate. Verify that the real-time clock is operating correctly by waiting for several minutes then running the stripchart recorder again. Set the time on the unit at least once every 2 weeks to prevent significant discrepancies between the unit's time and standard Greenwich Mean Time (GMT). Turn the selector switch to OFF. The device must remain off for at least 10 seconds before entering System Utilities mode. Note: Time and date may require resetting if the device's internal battery is depleted or the time zone has changed. Note: For both automated dial-up and GPS synchronization methods, the correct time zone and DST option must be set in System Configuration mode for the updated date and time to be correct. Manual Method 1. Press and hold the left-most softkey on the unit while turning the selector switch to MONITOR (ON for AED units). When the "System Utilities" screen appears on the monitor, release the softkey. 2. Press the MORE softkey and then the Clock Sync softkey to display the set time option menu. 3. Press the Manual Time Set softkey to display the Set Time screen. The month field will be highlighted. 4. Press the Inc Value or Dec Value softkeys to select the appropriate month. 5. Press the Next Field softkey to set the selected month and move the highlight to the next field (day). 6. Repeat steps 4 and 5 to set the correct day, year, hours and minutes field. Note: The last field does not automatically scroll (wrap) to the beginning. You must press the Prev Field	Checklist	

Test Element	Test Type	Fail
<p>softkey to enter the values for the last field.                      If you need to make corrections, press the Prev Field softkey to move the highlight to the field previously entered.                      7. Press the Enter and Return softkey to set all values and return to normal monitoring mode.                      Note: Repeated display of the "SET CLOCK" or "CLOCK FAULT" message may indicate that the internal battery powering the unit's Real Time Clock is depleted. See the Troubleshooting Guidelines in Section 13 of this manual for more information.</p> <p><b>Result:</b></p> <p>Setting Time and Date                      Check the time and date on the recorder annotation. If it is not correct, reset the time and date (from System Utilities mode) manually, by dial-up to a National Institute for Science and Technology (NIST) site, or using the GPS synchronization feature.                      After implementing time reset using any of the methods described below, verify that the time and date are set correctly by pressing the RECORDER button to generate a stripchart recording. Check that the stripchart is correctly annotated with the current time and date, selected ECG size, source and heart rate. Verify that the real-time clock is operating correctly by waiting for several minutes then running the stripchart recorder again. Set the time on the unit at least once every 2 weeks to prevent significant discrepancies between the unit's time and standard Greenwich Mean Time (GMT). Turn the selector switch to OFF. The device must remain off for at least 10 seconds before entering System Utilities mode.                      Note: Time and date may require resetting if the device's internal battery is depleted or the time zone has changed.                      Note: For both automated dial-up and GPS synchronization methods, the correct time zone and DST option must be set in System Configuration mode for the updated date and time to be correct.</p> <p><b>Manual Method</b>                      1. Press and hold the left-most softkey on the unit while</p>	<p><b>Recorded Value</b></p> <p>Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b>                      turning the selector switch to MONITOR (ON for AED units). When the "System Utilities" screen appears on the monitor, release the softkey.                      2. Press the MORE softkey and then the Clock Sync softkey to display the set time option menu.                      3. Press the Manual Time Set softkey to display the Set Time screen.                      The month field will be highlighted.                      4. Press the Inc Value or Dec Value softkeys to select the appropriate month.                      5. Press the Next Field softkey to set the selected month and move the highlight to the next field (day).                      6. Repeat steps 4 and 5 to set the correct day, year, hours and minutes field.                      Note: The last field does not automatically scroll (wrap) to the beginning. You must press the Prev Field softkey to enter the values for the last field.                      If you need to make corrections, press the Prev Field softkey to move the highlight to the field previously entered.                      7. Press the Enter and Return softkey to set all values and return to normal monitoring mode.                      Note: Repeated display of the "SET CLOCK" or "CLOCK FAULT" message may indicate that the internal battery powering the unit's Real Time Clock is depleted. See the Troubleshooting Guidelines in Section 13 of this manual for more information.</p>	<p><b>Recorded Value</b></p>	
<hr/>		
Housing	Checklist	
<p><b>Procedure:</b>                      Visual inspection  <b>Result:</b>                      Is the unit clean and undamaged?                      Does the unit show signs of excessive wear?                      Does the handle work properly?                      Does the recorder door open and close properly?                      Are input connectors clean and undamaged?                      Are there any cracks in the housing?</p>	<p><b>Recorded Value</b></p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p> <p style="text-align: center;">Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b>                      Do the front panel or selector switches have any damage or cracks?                      Are there any loose housing parts?</p>	<p><b>Recorded Value</b>                      Pass                      Pass</p>	
Cables	Checklist	
<p><b>Procedure:</b>                      Visual Inspection</p> <p><b>Result:</b></p> <p>Are the cables free of cracks, cuts, exposed or broken wires?                      Are all bend/strain reliefs undamaged and free of excessive cable wear?</p>	<p><b>Recorded Value</b>                      Pass                      Pass</p>	
Battery	Checklist	
<p><b>Procedure:</b>                      visual Inspection</p> <p><b>Result:</b></p> <p>Is the Zoll battery fully charged?                      is the battery seated in the battery well correctly?</p>	<p><b>Recorded Value</b>                      Pass                      Pass</p>	
Front Panel Button Test	Checklist	
<p><b>Procedure:</b></p> <ol style="list-style-type: none"> <li>1. Install strip chart paper into recorder tray.</li> <li>2. Install the battery in the unit or connect the A/C power cord to the unit and then plug the cord into an electrical outlet.</li> <li>3. Connect the universal cable and ECG cable (3 lead, 5 lead, or 12 lead) to the Fluke Biomedical Impulse 7000DP.</li> </ol> <p><b>Result:</b></p> <p>Turn the selector switch to MONITOR. (For AED units, turn the selector switch to ON and select Manual mode.) Listen for 4 beep tones. PADS and MONITOR display on the monitor. NOTE: Pads is a factory default setting.                      Press the LEAD button, three times for the 3 lead cable and seven times for the 5 lead cable. Each time you press the LEAD button, a different lead number appears under the LEAD heading on the display. PADS, I, II, III will display a 3 lead ECG cable if connected or no ECG cable is connected. PADS, I, II, III, AVR, AVL, AVF, V1 will display a 5 lead ECG cable.                      Connect the 12 lead cable to unit and simulator. Press the LEAD button and select the lead for each of the 12 lead settings. A 12 Lead cable will display PADS I, II, III, AVR, AVL, AVF, VI, V2, V3, V4, V5, V6</p>	<p><b>Recorded Value</b>                      Pass                      Not Applicable                      Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b> Set the simulator to NSR of 120 BPM. To Check the size of the ECG waveform, press the SIZE button. As you press the size button five times (0.5, 1.0, 1.5, 2.0, 3.0), note that the size of the ECG waveform appropriately changes on the display.</p>	<p><b>Recorded Value</b>  Pass</p>	
<p>Press the ALARM SUSPEND button. Alarm symbol changes from disabled to enabled. If the alarm sounds, press the ALARM SUSPEND button to turn it off. The alarm will only be suspended for 90 seconds at this point. Press and hold the ALARM SUSPEND button for 3 seconds to disable alarms.</p>	<p>Pass</p>	
<p>Press the RECORDER button. The strip chart paper moves out of the unit from the paper tray. Check that the correct time, date, ECG lead annotation and waveform are recorded on the paper. (Set Time and Date, if necessary.)</p>	<p>Pass</p>	
<p>Open the paper compartment door. Press the RECORDER button. CHECK RECORDER message appears on the monitor.</p>	<p>Pass</p>	
<p>Close the paper compartment door. Press RECORDER button. Strip chart paper flows out of paper tray. verify that the CHECK RECORDER message no longer displays.</p>	<p>Pass</p>	
<p>Press RECORDER button. Strip chart paper stops flowing out of paper tray. Press the VOLUME softkey. To increase the volume of the beep, press the Inc. softkey. The volume bar graph displays. Audible beep when the QRS wave displays. The bar graph increases on the display indicating an increase in volume. This action does not increase the volume which is normal. Note: The QRS tone is on or off. There is no gradual change in volume. This action does not increase the vloume. If equipped, voice prompts are gradual. Note: The voice volume has 5 settings. Setting 3 is in the mid-range.</p>	<p>Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b> To decrease the volume of the beep, press the Dec. Softkey. The bar graph decreases on the display indicating a decrease in volume. The volume shuts off at the last bar, otherwise, the volume is the same as originally set.</p>	<p><b>Recorded Value</b>  Pass</p>	
<p>Press the CONTRAST button. Contrast menu displays.</p>	<p>Pass</p>	
<p>Press the CONTRAST button. To increase the contrast of the display, press the Inc. softkey. Background light and characters display. The bar graph increases on the display indicating an increase in contrast.</p>	<p>Pass</p>	
<p>To decrease the contrast of the display, press the Dec. softkey. The bar graph decreases on the display indicating a decrease in contrast. The display contrast changes.</p>	<p>Pass</p>	
<p>Press the SUMMARY button. Summary menu displays on the monitor showing the summary report options.</p>	<p>Pass</p>	
<p>Press the CODEMARKER button. Code marker menu displays.</p>	<p>Pass</p>	
<p>Connect a/c current and install the battery. Turn the unit off. the CHARGER ON indicator lights. The amber green lights illuminate. Note: If both lights flash ON/OFF, the unit is defective or no battery is installed.</p>	<p>Pass</p>	
<p>Remove the battery. Note that both charge lights (green and amber) flash alternately.</p>	<p>Pass</p>	
<p>Replace the battery and turn the unit on. Note that the yellow charge light illuminates. Connect Fluke Impulse 7000 and 7010.</p>	<p>Pass</p>	
<p>Press the ANALYZE button. The SLECT DEFIB MODE message appears on the monitor. (For manual devices.)</p>	<p>Pass</p>	
<p>Move the selector switch to DEFIB. Select 2J. Press the CHARGE button. the display shows that the unit is charging. The SHOCK button lights.</p>	<p>Pass</p>	
<p>Press and hold the ENERGY SLECT down arrow. Unit discharges internally and selected energy decrements to 1J.</p>	<p>Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b>                      Press and release the ENERGY SELECT up arrow 19 times. 1-10, 15, 20, 30, 50, 70, 85, 100, 150, 200J.                      Press the CHARGE button. Note the display shows the unit charged up to 200J and the SHOCK button lights.                      Press the SHOCK button. The unit discharges and the SHOCK button is no longer lit. A 15 second strip chart automatically prints, displaying the number of joules delivered (if equipped with recorder and configured to print event.)</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<hr/>		
12 Leads Test	Checklist	
<p><b>Procedure:</b>                      Test each cable seperately.</p> <p>1. The E series unit must be configured to display ECG LEAD OFF message.</p> <p>2. Connect the lead wires appropriate to each test to the Fluke Biomedical Impulse 7000DP.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<p><b>Result:</b>                      Turn the selector switch to MONITOR. For AED units, turn the selector switch to ON and select Manual mode.) Select leads. NO ECG LEADS OFF message displayed.                      Disconnect one lead from the simulator. The ECG LEAD OFF message displays within 3 seconds (if configured).                      Reconnect the lead. Repeat step 3.2 with the remaining leads. Wait for ECG LEAD OFF message to clear from the display (if configured).                      Repeat 3.2 and 3.3 for 12 lead cables. Note: If heart rate alarm sounds, press and hold the ALARM SUSPEND button for 4 seconds to disable the alarms. Note: When testing the 12 lead cable, the ECG LEAD OFF message displays when you pull off a limb lead. When you pull off a V lead, the ECG VX LEAD OFF message displays where "X" is the number between 1 and 6.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
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Power Supply Test	Checklist	
<p><b>Procedure:</b>                      Tools Needed:                      2 red miniature alligator leads .                      1 black miniature alligator test lead. DC power supply (15 Amp minimum) 0.1 OHM 1% resistor (1/4 or greater). 1000 OHM 1% 1/4W resistor.                      Fluke 75 multimeter or equivalent. Set to DC.</p>		



Test Element	Test Type	Fail												
<p>Test Setup:</p> <ol style="list-style-type: none"> <li>1. make sure the unit and power supply are turned off. Unplugged.</li> <li>2. Connect one end of the black lead to the "-" terminal in the battery well.</li> <li>3. Connect the other end of the black lead to the "-" terminal of the power supply.</li> <li>4. Connect the red lead to "+" terminal socket of the battery well. Use the middle pin with the plastic gaurd around it. Connect the other end of the red lead to the "+" terminal of the power supply.</li> <li>5. Set the power supply voltage to 7V. Caution: Be sure to connect the power supply properly to the E series battery well terminals or damage to the unit may result. Do NOT raise the power supply voltage above 12V.</li> </ol>														
<p><b>Result:</b></p> <p>Turn the selector switch to MONITOR. (For AED units, turn the selector switch to ON and select Manual mode.) The unit should not turn on.</p> <p>Turn the unit off.</p> <p>Adjust the power supply voltage to 10.3V and turn the selector switch to MONITOR (for AED units, turn the selector switch to ON). The unit should turn on.</p> <p>Low Battery Test. Set voltage to 9.9V. No LOW BATTERY message displays.</p> <p>Set voltage to 9.4V. LOW BATTERY message displays within 30 seconds.</p> <p>Shut Down Voltage Test. Set voltage to 8.5V. Unit should shut off within 30 seconds.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>													
<p>Test Setup for Off Current Test</p> <p><b>Procedure:</b></p> <p>Test Setup for Off Current Test:</p> <ol style="list-style-type: none"> <li>1. Remove 0.1O resistor and replace with 1KO.</li> <li>2. Connect DMM across resistor.</li> <li>3. Set voltage scale to DCV.</li> <li>4. Measure voltage across resistor</li> </ol> <p><b>Result:</b></p> <p>Off Current Test Measure across resistor with unit turned off. Voltage should be less than 450 mV (&lt;450 µA of current)</p>	<p><i>Checklist</i></p> <p><b>Recorded Value</b></p> <p>Pass</p>													
<p>Earth Leakage Current</p> <p><b>Procedure:</b></p> <p>Tools Needed: See the manufacturer's instructions or supplied specifications for the leakage tester you use.</p> <p>Test Setup: See the manufacturer's instructions or supplied specifications for the leakage tester you use. Repeat leakage test with accessories: MFC, external paddles, and anterior/posterior paddles.</p> <p>Maximum Leakage Acceptance Limits</p> <table border="1"> <thead> <tr> <th></th> <th>Normal Condition</th> <th>Single Fault Condition*</th> </tr> </thead> <tbody> <tr> <td>ECG</td> <td>10µA</td> <td>50µA</td> </tr> <tr> <td>MFC</td> <td>100µA</td> <td>100µA</td> </tr> <tr> <td>Earth</td> <td>500µA</td> <td>1000µA</td> </tr> </tbody> </table> <p>*Single fault considered AC mains on applied part</p> <p><b>Configuration:</b></p> <p>Unused Applied Parts: Floating</p>		Normal Condition	Single Fault Condition*	ECG	10µA	50µA	MFC	100µA	100µA	Earth	500µA	1000µA	<p><i>Earth Leakage Current</i></p>	
	Normal Condition	Single Fault Condition*												
ECG	10µA	50µA												
MFC	100µA	100µA												
Earth	500µA	1000µA												

Test Element	Test Type	Fail
Normal Condition <b>Result:</b> Normal Condition	Earth Leakage Current Normal Condition <b>Value</b> 0.8 <b>Unit</b> uAAC+DC <b>High Limit</b> <b>Low Limit</b> <b>Standard</b> AAMI/NFPA-99 (M)	
Open Neutral <b>Result:</b> Open Neutral	Earth Leakage Current Open Neutral <b>Value</b> 1 <b>Unit</b> uAAC+DC <b>High Limit</b> <b>Low Limit</b> <b>Standard</b> AAMI/NFPA-99 (M)	
Normal Condition, Reversed mains <b>Result:</b> Normal Condition, Reversed mains	Earth Leakage Current Normal Condition, Reversed mains <b>Value</b> 0.7 <b>Unit</b> uAAC+DC <b>High Limit</b> <b>Low Limit</b> <b>Standard</b> AAMI/NFPA-99 (M)	
Open Neutral, Reversed Mains <b>Result:</b> Open Neutral, Reversed Mains	Earth Leakage Current Open Neutral, Reversed Mains <b>Value</b> 0.8 <b>Unit</b> uAAC+DC <b>High Limit</b> <b>Low Limit</b> <b>Standard</b> AAMI/NFPA-99 (M)	
AAMI/NFPA-99 (Manufacturer) <b>Procedure:</b> (1) Connect the DUT to the ESA620 as indicated in the operators manual. (2) Ensure that DUT power is off. (3) Click module setup and specify the patient leads that are to be tested. (4) Connect patient leads as indicated. (5) Press Start Test to perform the AAMI safety test.	Auto Sequence	

**Applied Part setup**

#	Applied Part info	Class	Leads
1	A.P. Code Serial No. Type	RA	I 1
2	A.P. Code Serial No. Type	LL	I 1
3	A.P. Code Serial No. Type	LA	I 1
4	A.P. Code Serial No. Type	RL	I 1
5	A.P. Code Serial No. Type	V1	I 1
6	A.P. Code Serial No. Type	V2	I 1
7	A.P. Code Serial No. Type	V3	I 1
8	A.P. Code Serial No. Type	V4	I 1
9	A.P. Code Serial No. Type	V5	I 1
10	A.P. Code Serial No. Type	V6	I 1

Test Element	Test Type	Fail
AAMI/NFPA-99 (Manufacturer) - Power Off	Auto Sequence	
Line Voltage <b>Procedure:</b> Test checks 120V. The voltage of a power transmission circuit or distribution circuit up to the point of transformation or utilization.	Mains Voltage	
Live to Neutral <b>Result:</b> Live to Neutral	Mains Voltage Live to Neutral <b>Value</b> 124.6 <b>Unit</b> V <b>High Limit</b> <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Neutral to Ground <b>Result:</b> Neutral to Ground	Mains Voltage Neutral to Earth <b>Value</b> 0.2 <b>Unit</b> V <b>High Limit</b> <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Live to Ground <b>Result:</b> Live to Ground	Mains Voltage Live to Earth <b>Value</b> 124.8 <b>Unit</b> V <b>High Limit</b> <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Ground Wire Resistance <b>Configuration:</b> Test Current: Low <b>Result:</b> PE Resistance1	Earth Resistance <b>Value</b> 0.004 <b>Unit</b> Ohm <b>High Limit</b> 0.3 <b>Low Limit</b>	<b>Standard</b> User defined
Protective Earth Resistance <b>Configuration:</b> Test Current: Low <b>Result:</b> PE Resistance1	Protective Earth Resistance <b>Value</b> 0.015 <b>Unit</b> Ohm <b>High Limit</b> 0.3 <b>Low Limit</b>	<b>Standard</b> User defined
Chassis Leakage Current <b>Configuration:</b> Unused Applied Parts: Floating	Enclosure Leakage Current	
Normal Condition <b>Result:</b> Normal Condition	Enclosure Leakage Current Normal Condition <b>Value</b> 1 <b>Unit</b> uAAC+DC <b>High Limit</b> 300 <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Open Neutral <b>Result:</b> Open Neutral	Enclosure Leakage Current Open Neutral <b>Value</b> 0.9 <b>Unit</b> uAAC+DC <b>High Limit</b> 500 <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Open Ground <b>Result:</b> Open Ground	Enclosure Leakage Current Open Earth <b>Value</b> 0.3 <b>Unit</b> uAAC+DC <b>High Limit</b> 300 <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)
Normal Condition, Reversed mains <b>Result:</b> Normal Condition, Reversed mains	Enclosure Leakage Current Normal Condition, Reversed mains <b>Value</b> 0.9 <b>Unit</b> uAAC+DC <b>High Limit</b> 300 <b>Low Limit</b>	<b>Standard</b> AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Open Neutral, Reversed Mains	<i>Enclosure Leakage Current</i> <i>Open Neutral, Reversed Mains</i>					
<b>Result:</b> Open Neutral, Reversed Mains	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
	0.9	uAAC+DC	500		AAMI/NFPA-99 (M)	
Open Ground, Reversed Mains	<i>Enclosure Leakage Current</i> <i>Open Earth, Reversed Mains</i>					
<b>Result:</b> Open Ground, Reversed Mains	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
	127.5	uAAC+DC	300		AAMI/NFPA-99 (M)	
Leads Isolation	<i>Mains on Applied Parts</i>					
<b>Configuration:</b> Total Leakage: No Unused Applied Parts: Floating						
Single Fault Condition	<i>Mains on Applied Parts</i> <i>Single Fault Condition</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	12.8	uA	50		AAMI/NFPA-99 (M)	
LL	12.9	uA	50		AAMI/NFPA-99 (M)	
LA	12.3	uA	50		AAMI/NFPA-99 (M)	
RL	12.9	uA	50		AAMI/NFPA-99 (M)	
V1	12.2	uA	50		AAMI/NFPA-99 (M)	
V2	12.3	uA	50		AAMI/NFPA-99 (M)	
V3	12.3	uA	50		AAMI/NFPA-99 (M)	
V4	12.3	uA	50		AAMI/NFPA-99 (M)	
V5	12.2	uA	50		AAMI/NFPA-99 (M)	
V6	12.2	uA	50		AAMI/NFPA-99 (M)	
Single Fault Condition, Reversed Mains	<i>Mains on Applied Parts</i> <i>Single Fault Condition, Reversed Mains</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	12.8	uA	50		AAMI/NFPA-99 (M)	
LL	12.9	uA	50		AAMI/NFPA-99 (M)	
LA	12.4	uA	50		AAMI/NFPA-99 (M)	
RL	12.1	uA	50		AAMI/NFPA-99 (M)	
V1	12.3	uA	50		AAMI/NFPA-99 (M)	
V2	12.3	uA	50		AAMI/NFPA-99 (M)	
V3	12.2	uA	50		AAMI/NFPA-99 (M)	
V4	12.3	uA	50		AAMI/NFPA-99 (M)	
V5	12.2	uA	50		AAMI/NFPA-99 (M)	
V6	12.2	uA	50		AAMI/NFPA-99 (M)	
Lead to Ground Leakage Current	<i>Patient Leakage Current</i>					
<b>Configuration:</b> Total Leakage: No Unused Applied Parts: Floating						
Normal Condition	<i>Patient Leakage Current</i> <i>Normal Condition</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
RL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V1	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V2	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V3	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V4	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V5	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V6	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
Open Ground	<i>Patient Leakage Current</i> <i>Open Earth</i>					
<b>Result:</b> RA	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
	4.3	uAAC+DC	50		AAMI/NFPA-99 (M)	

Test Element	Test Type					Fail	
Result:	Value	Unit	High Limit	Low Limit	Standard		
LL	4.4	uAAC+DC	50		AAMI/NFPA-99 (M)		
LA	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
RL	5.7	uAAC+DC	50		AAMI/NFPA-99 (M)		
V1	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
V2	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
V3	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
V4	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
V5	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
V6	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)		
<hr/>							
Normal Condition, Reversed mains		<i>Patient Leakage Current</i>					
<i>Normal Condition, Reversed mains</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
RA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
LL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
LA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
RL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V1	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V2	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V3	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V4	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V5	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
V6	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)		
<hr/>							
Open Ground, Reversed Mains		<i>Patient Leakage Current</i>					
<i>Open Earth, Reversed Mains</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
RA	4.1	uAAC+DC	50		AAMI/NFPA-99 (M)		
LL	4.3	uAAC+DC	50		AAMI/NFPA-99 (M)		
LA	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)		
RL	5.5	uAAC+DC	50		AAMI/NFPA-99 (M)		
V1	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)		
V2	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)		
V3	3.7	uAAC+DC	50		AAMI/NFPA-99 (M)		
V4	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)		
V5	3.7	uAAC+DC	50		AAMI/NFPA-99 (M)		
V6	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)		
<hr/>							
AAMI/NFPA-99 (Manufacturer) - Power On		<i>Auto Sequence</i>					
<hr/>							
Enclosure Leakage Current		<i>Enclosure Leakage Current</i>					
<b>Configuration:</b>							
Unused Applied Parts: Floating							
<hr/>							
Open Neutral		<i>Enclosure Leakage Current</i>					
<i>Open Neutral</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
Open Neutral	0.9	uAAC+DC	500		AAMI/NFPA-99 (M)		
<hr/>							
Open Ground		<i>Enclosure Leakage Current</i>					
<i>Open Earth</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
Open Ground	131.3	uAAC+DC	300		AAMI/NFPA-99 (M)		
<hr/>							
Normal Condition, Reversed mains		<i>Enclosure Leakage Current</i>					
<i>Normal Condition, Reversed mains</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
Normal Condition, Reversed mains	1	uAAC+DC	300		AAMI/NFPA-99 (M)		
<hr/>							
Open Neutral, Reversed Mains		<i>Enclosure Leakage Current</i>					
<i>Open Neutral, Reversed Mains</i>							
Result:	Value	Unit	High Limit	Low Limit	Standard		
Open Neutral, Reversed Mains	1	uAAC+DC	500		AAMI/NFPA-99 (M)		

Test Element	Test Type					Fail
Open Ground, Reversed Mains	<i>Enclosure Leakage Current Open Earth, Reversed Mains</i>					
<b>Result:</b> Open Ground, Reversed Mains	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
	126.1	uAAC+DC	300		AAMI/NFPA-99 (M)	
Lead to Ground Leakage Current	<i>Patient Leakage Current</i>					
<b>Configuration:</b> Total Leakage: No Unused Applied Parts: Floating						
Normal Condition	<i>Patient Leakage Current Normal Condition</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
RL	0.4	uAAC+DC	10		AAMI/NFPA-99 (M)	
V1	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V2	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V3	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V4	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V5	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V6	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
Open Ground	<i>Patient Leakage Current Open Earth</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	4.3	uAAC+DC	50		AAMI/NFPA-99 (M)	
LL	4.4	uAAC+DC	50		AAMI/NFPA-99 (M)	
LA	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
RL	5.7	uAAC+DC	50		AAMI/NFPA-99 (M)	
V1	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
V2	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
V3	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
V4	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
V5	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
V6	3.9	uAAC+DC	50		AAMI/NFPA-99 (M)	
Normal Condition, Reversed mains	<i>Patient Leakage Current Normal Condition, Reversed mains</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LL	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
LA	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
RL	0.4	uAAC+DC	10		AAMI/NFPA-99 (M)	
V1	0.4	uAAC+DC	10		AAMI/NFPA-99 (M)	
V2	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V3	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V4	0.4	uAAC+DC	10		AAMI/NFPA-99 (M)	
V5	0.3	uAAC+DC	10		AAMI/NFPA-99 (M)	
V6	0.4	uAAC+DC	10		AAMI/NFPA-99 (M)	
Open Ground, Reversed Mains	<i>Patient Leakage Current Open Earth, Reversed Mains</i>					
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>	
RA	4.2	uAAC+DC	50		AAMI/NFPA-99 (M)	
LL	4.3	uAAC+DC	50		AAMI/NFPA-99 (M)	
LA	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
RL	5.6	uAAC+DC	50		AAMI/NFPA-99 (M)	
V1	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
V2	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
V3	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
V4	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
V5	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
V6	3.8	uAAC+DC	50		AAMI/NFPA-99 (M)	
Leads Isolation	<i>Mains on Applied Parts</i>					

Test Element	Test Type	Fail																																																																		
<p><b>Configuration:</b>                      Total Leakage: No                      Unused Applied Parts: Floating</p>																																																																				
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Single Fault Condition	Mains on Applied Parts Single Fault Condition																																																																			
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Mains Voltage	Mains Voltage																																																																			
<p><b>Procedure:</b>                      Checks voltage at 120V. The voltage of a power transmission circuit or distribution circuit up to the point of transformation or utilization.</p>																																																																				
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Live to Neutral	Mains Voltage Live to Neutral																																																																			
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Insulation Resistance	Insulation Resistance																																																																			
<p><b>Procedure:</b>                      The measured resistance is intended to indicate the condition of the insulation or dielectric between two conductive parts, where the higher the resistance, the better the condition of the insulation. Ideally, the insulation resistance would be infinite "XX."  <b>Configuration:</b>                      Test Voltage: 500V</p>																																																																				
<b>Applied Part setup</b>																																																																				
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Test Element	Test Type				Fail
3	Serial No. Type A.P. Code	LA	I	1	
4	Serial No. Type A.P. Code	RL	I	1	
5	Serial No. Type A.P. Code	V1	I	1	
6	Serial No. Type A.P. Code	V2	I	1	
7	Serial No. Type A.P. Code	V3	I	1	
8	Serial No. Type A.P. Code	V4	I	1	
9	Serial No. Type A.P. Code	V5	I	1	
12	Serial No. Type A.P. Code	V6	I	1	
<hr/>					
Mains to Protective Earth		<i>Insulation Resistance</i> <i>Mains to Protective Earth</i>			
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>
Mains to Protective Earth	99999	MOhm			AAMI/NFPA-99 (M)
<hr/>					
Applied Parts to Protective Earth		<i>Insulation Resistance</i> <i>Applied Parts to Protective Earth</i>			
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>
Applied Parts to Protective Earth	99999	MOhm			AAMI/NFPA-99 (M)
<hr/>					
Mains to Applied Parts		<i>Insulation Resistance</i> <i>Mains to Applied Parts</i>			
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>
Mains to Applied Parts	99999	MOhm			AAMI/NFPA-99 (M)
<hr/>					
Mains to Non-Earth Accessible Conductive Part		<i>Insulation Resistance</i> <i>Mains to Non-Earth Accessible Conductive Part</i>			
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>
Mains to Non-Earth Accessible Conductive Part	99999	MOhm			AAMI/NFPA-99 (M)
<hr/>					
Applied Parts to Non-Earth Accessible Conductive Part		<i>Insulation Resistance</i> <i>Applied Parts to Non-Earth Accessible Conductive Part</i>			
<b>Result:</b>	<b>Value</b>	<b>Unit</b>	<b>High Limit</b>	<b>Low Limit</b>	<b>Standard</b>
Applied Parts to Non-Earth Accessible Conductive Part	99999	MOhm			AAMI/NFPA-99 (M)
<hr/>					
Impulse 6000D/7000DP Normal Sinus Wave Test		<i>Normal Sinus Wave Test</i>			
<b>Procedure:</b>					
Simulates a normal sinus waveform on the defibrillator monitor.					
Tools Needed:					
<ul style="list-style-type: none"> <li>• Calibrated ECG simulator with 60Hz sine wave output capability.</li> <li>• Mini-phone plug for measuring output signal from 1 Volt ECG OUT jack (optional).</li> </ul>					



Test Element	Test Type	Fail																																				
<p>• ECG Cable (3 or 5 leads).                      Test Setup:                      1. Turn the selector switch to MONITOR. Press LEAD button until "I" displays.                      2. Connect the ECG leads to the Fluke Biomedical Impulse 4000 or equivalent.                      3. Connect the ECG cable to the unit.  <b>Configuration:</b></p> <table border="0"> <tr> <td></td> <td style="text-align: right;"><b>Value</b></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Duration</td> <td style="text-align: right;">60 s</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Rate</td> <td style="text-align: right;">120 BPM</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>ECG Amplitude</td> <td style="text-align: right;">1.00 mV</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p><b>Result:</b></p> <table border="0"> <tr> <td></td> <td style="text-align: right;"><b>Value</b></td> <td style="text-align: center;"><b>Unit</b></td> <td style="text-align: center;"><b>High limit</b></td> <td style="text-align: center;"><b>Low limit</b></td> <td style="text-align: center;"><b>Standard</b></td> </tr> <tr> <td>ECG Monitor</td> <td style="text-align: right;">80</td> <td style="text-align: center;">BPM</td> <td style="text-align: center;">122</td> <td style="text-align: center;">118</td> <td style="text-align: center;">AAMI/NFPA-99 (M)</td> </tr> </table>		<b>Value</b>					Duration	60 s					Rate	120 BPM					ECG Amplitude	1.00 mV						<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	ECG Monitor	80	BPM	122	118	AAMI/NFPA-99 (M)		
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ECG Monitor	80	BPM	122	118	AAMI/NFPA-99 (M)																																	
<p>Calibrating Pulses on Strip Chart Test</p> <p><b>Result:</b></p> <p>Press the RECORDER button</p> <p>Press and hold SIZE button to activate the calibration signal. The strip chart displays a signal of 300 ppm with an amplitude of 10 mm +/- 1 mm. The signal also appears on the video display.</p>	<p style="text-align: right;"><i>Checklist</i></p> <p style="text-align: right;"><b>Recorded Value</b></p> <p style="text-align: right;">Pass</p> <p style="text-align: right;">Pass</p>																																					
<p>Notch Filter Test</p> <p><b>Procedure:</b>                      Tools Needed: Fluke Biomedical Impulse 7000.</p> <p>Test Setup:                      1. Connect the ECG cable to the Fluke Biomedical Impulse 4000 or equivalent.                      2. Connect the ECG cable to the unit</p> <p><b>Result:</b></p> <p>Turn the selector switch to MONITOR mode. (For AED units, turn the selector switch to ON and select Manual mode.)</p> <p>Select lead I, size 3x. Select 60Hz (or 50 Hz for a 50Hz unit) on the Fluke Biomedical Impulse 7000.</p> <p>Press RECORDER button. Verify that the waveform amplitude on the strip chart is less than 1.5 mm.</p> <p>Turn the ECG simulator off.</p>	<p style="text-align: right;"><i>Checklist</i></p> <p style="text-align: right;"><b>Recorded Value</b></p> <p style="text-align: right;">Pass</p> <p style="text-align: right;">Pass</p> <p style="text-align: right;">Pass</p> <p style="text-align: right;">Pass</p>																																					
<p>Heart Rate Alarm Test</p> <p><b>Procedure:</b>                      Tools Needed: Fluke Biomedical Impulse 7000.</p> <p><b>Result:</b></p> <p>Turn the selector switch to MONITOR mode. (For AED units, turn the selector switch to ON and select Manual mode.) Connect the ECG leads to the Fluke Biomedical Impulse 7000. Set the simulator to 120 BPM and the defibrillator to lead II. Lead II message displays. NSR ECG at 120 BPM +/- 2 displayed.</p> <p>Press ALARMS. The alarm menu displays.</p>	<p style="text-align: right;"><i>Checklist</i></p> <p style="text-align: right;"><b>Recorded Value</b></p> <p style="text-align: right;">Pass</p> <p style="text-align: right;">Pass</p>																																					

Test Element	Test Type	Fail
<b>Result:</b>	<b>Recorded Value</b>	
Press SELECT PARAM softkey until ECG HR displays. Cursor scrolls through parameters.	Pass	
Press INC> for state. Cursor scrolls through ENABLE, AUTO and DISABLE.	Pass	
Press DEC>for state. Cursor scrolls through ENABLE, DISABLE, AND AUTO.	Pass	
Press INC> until ENABLE displays. ENABLE displays.	Pass	
Set LOW limit to 30, HIGH limit to 150 then, press the RETURN softkey. MONITOR displays.	Pass	
Press ALARM SUSPEND button. No alarm sounds.	Pass	
Remove a lead wire from the Fluke Biomedical Impulse 7000. The alarm symbol flashes and the heart symbol stops flashing. The ECG LEAD OFF alarm tone sounds. Recorder prints a stripchart showing a low heart rate, if enabled.	Pass	
Reattach ECG Lead wire to Fluke Biomedical Impulse 7000 and hold the ALARM SUSPEND button on unit for 4 seconds. The alarm symbol has an "X" through it. The heart symbol flashes with each QRS wave.	Pass	
Press the ALARM SUSPEND button. Alarm is enabled. Alarm symbol (without "X") displays	Pass	
Set simulator to 160 BPM or higher. Heart Rate Value is highlighted, alarm tone sounds, the alarm and the heart symbol both flash.	Pass	
Press the ALARM SUSPEND button in the unit. Alarm is suspended for 90 seconds. The alarm symbol has an "X" through it. The heart symbol flashes with each QRS wave.	Pass	
Press and hold ALARM SUSPEND for 4 seconds to disable alarms.	Pass	

Defibrillator Self Test

Checklist

**Procedure:**

SHOCK HAZARD!

TAKE THE NECESSARY PRECAUTIONS TO GUARD AGAINST SHOCK OR INJURY BEFORE YOU START CONDUCTING THE DEFIBRILLATOR TESTS.

Keep hands and all other objects clear of the multi-function cable connections and defibrillator analyzer when discharging the defibrillator. Before you discharge the defibrillator, warn everyone near the equipment to STAND CLEAR.

Caution Do NOT internally discharge the unit more than 3 times in 1 minute. Note that multiple rapidly repeating internal discharges at more than 30 Joules may damage the unit.

Tools Needed:

Test Element	Test Type	Fail
<ul style="list-style-type: none"> <li>• MFC Test Port Connector 1004-0053-99 with universal cable.</li> <li>• MFC Test Adaptor Connector (Fluke Biomedical Part Number 3010-0378 or equivalent).</li> <li>• Fluke Biomedical Impulse 7000 or equivalent defibrillator analyzer.</li> <li>• ECG Cable.</li> <li>• Stop watch.</li> </ul> <p>Test Setup:                      1. Ensure the unit is turned off                      2. Ensure the ECG cable is connected to the unit and analyzer.                      Note: The universal cable should not be connected to any equipment at the beginning of this test.</p> <p><b>Result:</b></p>	<p><b>Recorded Value</b></p> <p>Turn the selector switch to DEFIB mode. (For AED units, turn the selector switch to ON and select Manual mode.) Set leads to PADS. CHECK PADS/POOR PAD CONTACT message displays.</p> <p>Connect the universal cable to the MFC test port. DEFIB PAD SHORT message displays.</p> <p>Select energy level of 100J and press the CHARGE button. The charge time is &gt;2 second and &lt;10 seconds and SELECT 30J FOR TEST is displayed.</p> <p>Press the SHOCK button. Unit does not discharge. DEFIB PAD SHORT message displays.</p> <p>Set energy level to 30J. Unit internally discharges.</p> <p>Press the CHARGE button. Unit charges to 30J and displays DEFIB 30J READY. The charge ready tone sounds.</p> <p>Press and hold SHOCK button. Unit discharges. TEST OK message and number of joules delivered message displays. For example, using the message at the top of the printed strip chart would read as follows:                      30 JOULES TEST OK.                      TEST_CUR=10-14A                      DEFIB_IMPED=0.                      The impedance value may range from 0 to 50.</p>	<p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>

Impulse 6000D/7000DP Charge Time Test	Charge Time Test					
<p><b>Procedure:</b>                      Measures the time it takes to charge to a given energy and then discharge the defibrillator.</p> <p><b>Configuration:</b></p> <p>ECG Waveform Normal Sinus                      ECG Amplitude 1.00 mV                      Post Shock Waveform No Convert                      Rate 90 BPM                      External Load 50 Ohms</p> <p><b>Result:</b></p>	<p><b>Value</b></p>	<p><b>Unit</b></p>	<p><b>High limit</b></p>	<p><b>Low limit</b></p>	<p><b>Standard</b></p>	
Type = Biphasic Charge Time	3.4	s	10	2	AAMI/NFPA-99 (M)	
Energy	30.0	29.7	J		AAMI/NFPA-99 (M)	

Test Element	Test Type						Fail																																									
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard																																										
Phase 1 Peak Voltage		437	V			AAMI/NFPA-99 (M)																																										
Phase 1 Average Voltage		407	V			AAMI/NFPA-99 (M)																																										
Phase 1 Peak Current		8.7	A			AAMI/NFPA-99 (M)																																										
Phase 1 Average Current		8.1	A			AAMI/NFPA-99 (M)																																										
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)																																										
Phase 2 Peak Voltage		428	V			AAMI/NFPA-99 (M)																																										
Phase 2 Average Voltage		327	V			AAMI/NFPA-99 (M)																																										
Phase 2 Peak Current		8.6	A			AAMI/NFPA-99 (M)																																										
Phase 2 Average Current		6.5	A			AAMI/NFPA-99 (M)																																										
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)																																										
<hr/>																																																
Synchronized Cardioversion Test	<i>Checklist</i>																																															
<p><b>Procedure:</b>                      Tools Needed: Fluke 7000DP Defibrillator Analyzer.                      Test Setup:                      1. Connect the universal cable via the adapter (D.N.I #3010-0378) to the defibrillator analyzer.                      2. Set ECG on analyzer to 60 -120 BPM.</p>																																																
<p><b>Result:</b></p> <p>Press LEAD button to select PADS and Size x1</p> <p style="text-align: center;">Pass</p>																																																
<p>Press the SYNC softkey on the defibrillator. Enter synchronized cardioversion timing test mode on the defibrillator analyzer. Sync markers appear on display.</p> <p style="text-align: center;">Pass</p> <p>Note: Sync markers display on the monitor. The sync marker appears as a down arrow over the ECG R-wave peaks on strip chart and display.</p>																																																
<hr/>																																																
Impulse 6000D/7000DP Sync Time Test	<i>Sync Time Test</i>																																															
<p><b>Procedure:</b>                      Measures defibrillator energy, peak voltage, peak current and cardio delay time.                      Tools Needed: Fluke Biomedical Impulse 7000 defibrillator analyzer.                      Test Setup:                      1. Connect the universal cable via the adapter (D.N.I #3010-0378) to the defibrillator analyzer.</p>																																																
<p><b>Configuration:</b></p> <table> <tr> <td>ECG Waveform</td> <td>Normal Sinus</td> </tr> <tr> <td>ECG Amplitude</td> <td>1.00 mV</td> </tr> <tr> <td>Post Shock Waveform</td> <td>No Convert</td> </tr> <tr> <td>Rate</td> <td>90 BPM</td> </tr> <tr> <td>External Load</td> <td>50 Ohms</td> </tr> </table>							ECG Waveform	Normal Sinus	ECG Amplitude	1.00 mV	Post Shock Waveform	No Convert	Rate	90 BPM	External Load	50 Ohms																																
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<p><b>Result:</b></p> <table> <thead> <tr> <th></th> <th>Preset Value</th> <th>Value</th> <th>Unit</th> <th>High limit</th> <th>Low limit</th> <th>Standard</th> </tr> </thead> <tbody> <tr> <td>Type = Monophasic Sync Time</td> <td></td> <td>NO SYNC</td> <td>ms</td> <td>60</td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Energy</td> <td>200.0</td> <td>0.0</td> <td>J</td> <td></td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Peak Voltage</td> <td></td> <td>6047</td> <td>V</td> <td></td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Peak Current</td> <td></td> <td>121.0</td> <td>A</td> <td></td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Pulse Width 50%</td> <td></td> <td>8.7</td> <td>ms</td> <td></td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> </tbody> </table>								Preset Value	Value	Unit	High limit	Low limit	Standard	Type = Monophasic Sync Time		NO SYNC	ms	60		AAMI/NFPA-99 (M)	Energy	200.0	0.0	J			AAMI/NFPA-99 (M)	Peak Voltage		6047	V			AAMI/NFPA-99 (M)	Peak Current		121.0	A			AAMI/NFPA-99 (M)	Pulse Width 50%		8.7	ms			AAMI/NFPA-99 (M)
	Preset Value	Value	Unit	High limit	Low limit	Standard																																										
Type = Monophasic Sync Time		NO SYNC	ms	60		AAMI/NFPA-99 (M)																																										
Energy	200.0	0.0	J			AAMI/NFPA-99 (M)																																										
Peak Voltage		6047	V			AAMI/NFPA-99 (M)																																										
Peak Current		121.0	A			AAMI/NFPA-99 (M)																																										
Pulse Width 50%		8.7	ms			AAMI/NFPA-99 (M)																																										

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Pulse Width 10%		8.7	ms			AAMI/NFPA-99 (M)

Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

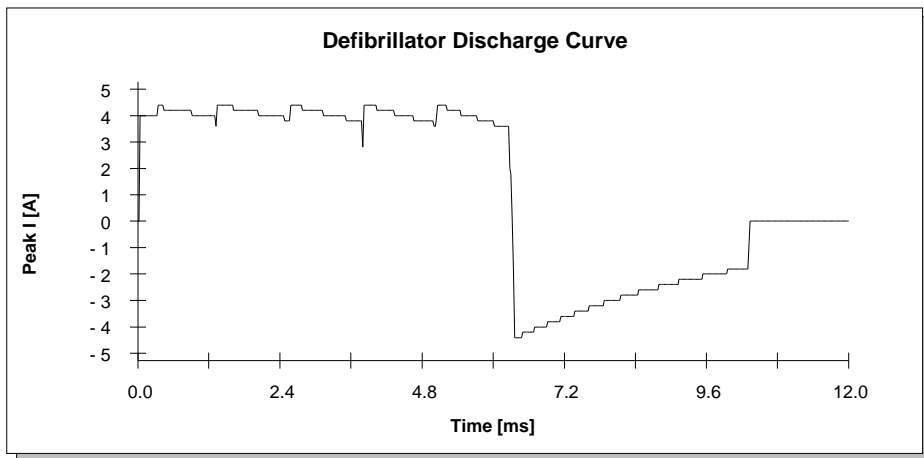
Measures a defibrillator pulse. Connect Fluke Impulse 7010.

**Configuration:**

ECG Waveform Off  
 External Load 25 Ohms

**Result:**

	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	3.4	J	4.6	3.4	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		113	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		101	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		4.6	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		4.0	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		110	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		72	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		4.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		2.8	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Measures a defibrillator pulse.

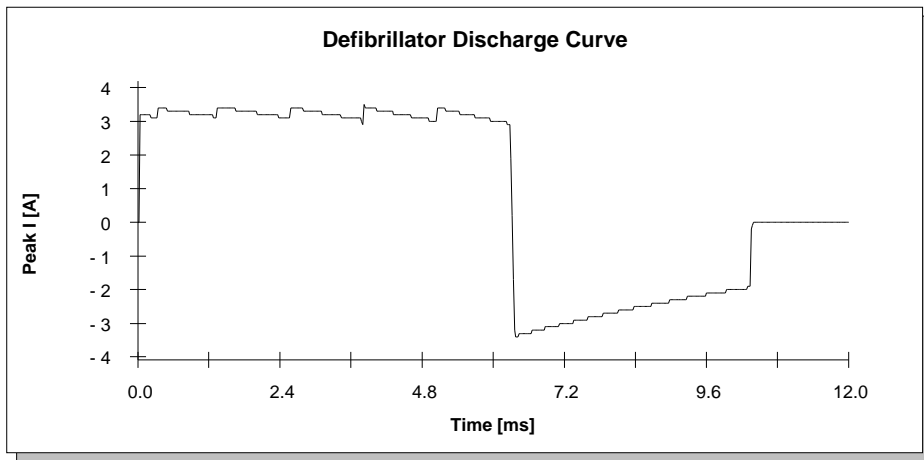
**Configuration:**

ECG Waveform Off  
 External Load 50 Ohms

**Result:**

	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	4.6	J	5	3	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		173	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		161	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		3.5	A			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 1 Average Current		3.2	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		168	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		129	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		3.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		2.6	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Measures a defibrillator pulse.

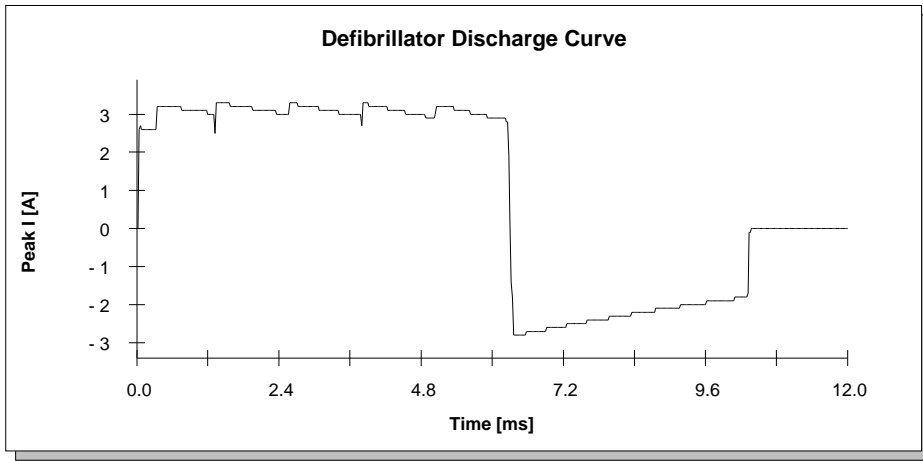
**Configuration:**

ECG Waveform Off  
 External Load 75 Ohms

**Result:**

	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	6.0	J	6.9	5.1	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		251	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		231	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		3.3	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		3.1	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		210	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		170	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		2.8	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		2.3	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Measures a defibrillator pulse.

**Configuration:**

ECG Waveform

Value

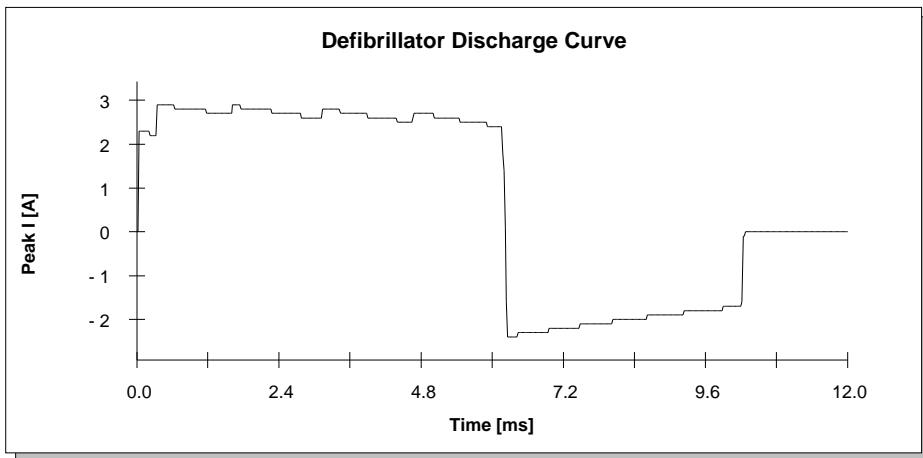
Off

External Load

100 Ohms

**Result:**

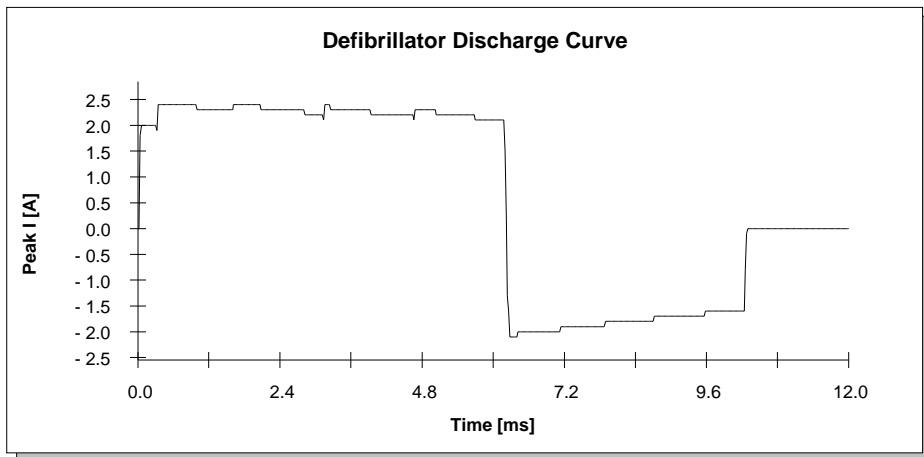
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic						
Energy	5.0	6.0	J	6.9	5.1	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		290	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		264	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		2.9	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		2.6	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		238	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		202	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		2.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		2.0	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		125 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	5.5	J	6.9	5.1	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		305	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		283	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		2.4	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		2.3	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		258	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		225	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		2.1	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		1.8	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

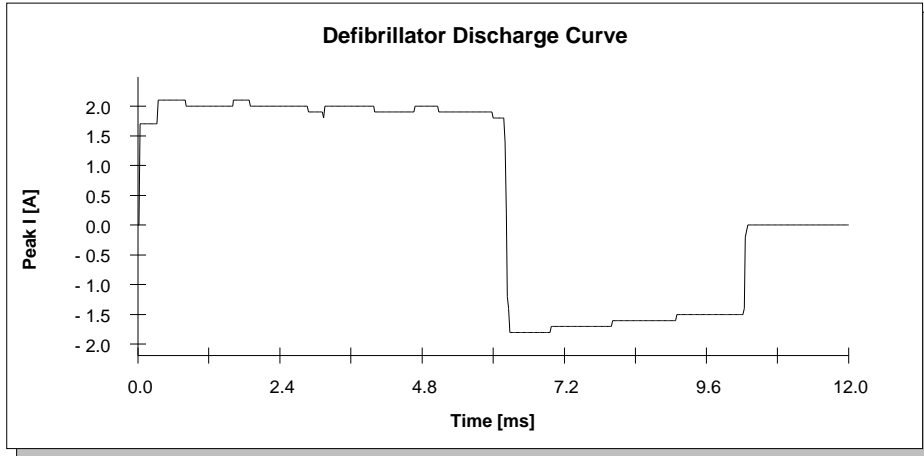


Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		150 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	5.1	J	5.75	4.25	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		315	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		294	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		2.1	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		2.0	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		273	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		243	V			AAMI/NFPA-99 (M)



Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		1.8	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		1.6	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



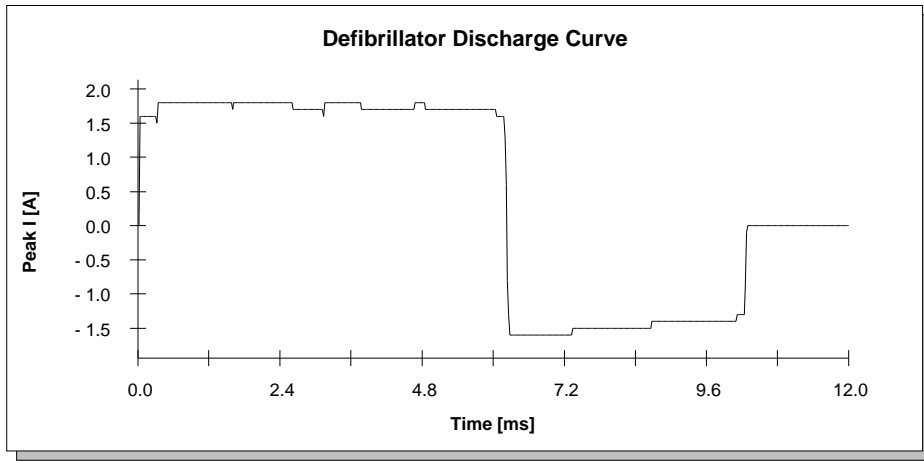
Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 175 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	5.0	4.9	J	5.75	4.25	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		322	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		305	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		1.8	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		1.7	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		284	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		259	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		1.6	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		1.5	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

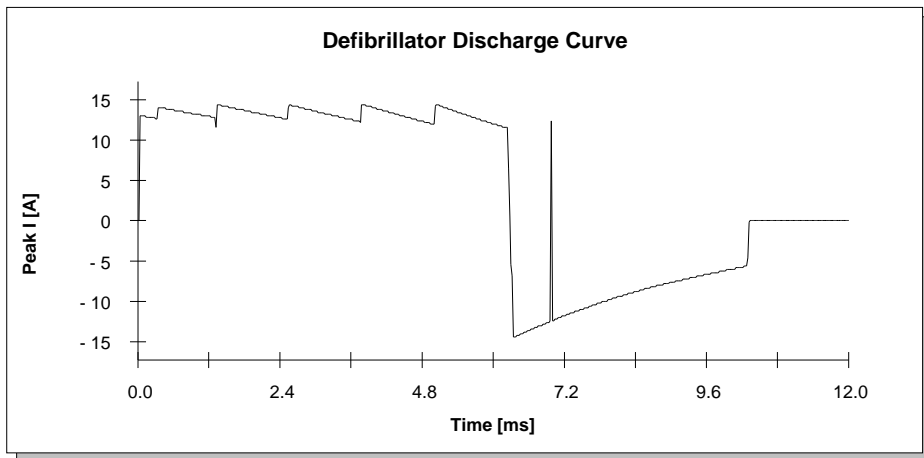
Measures a defibrillator pulse.

**Configuration:**

ECG Waveform Off  
 External Load 25 Ohms

**Result:**

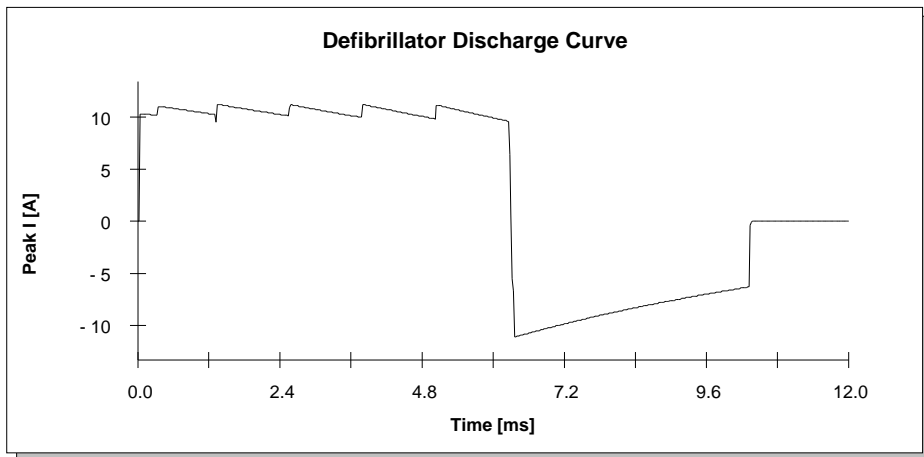
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	36.8	J	42.5	31.45	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		364	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		330	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		14.6	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		13.2	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		361	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		233	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		14.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		9.4	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

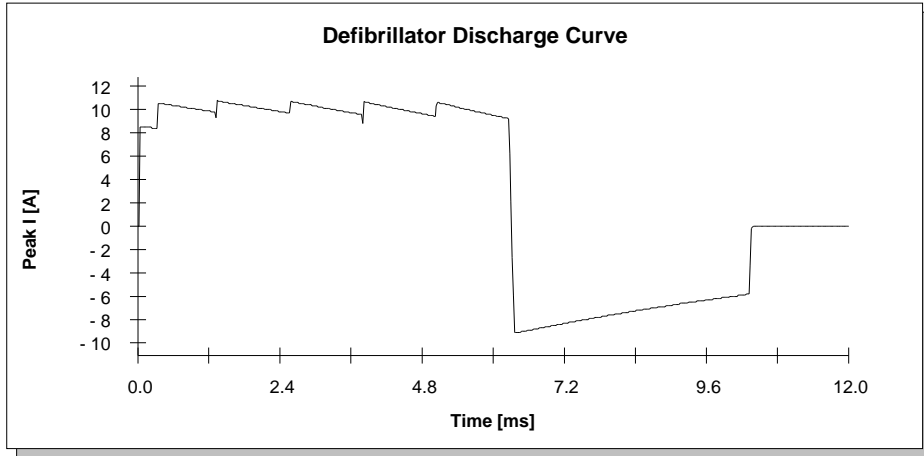
Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		50 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	49.5	J	55	41	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		564	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		525	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		11.3	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		10.5	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		554	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		423	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		11.1	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		8.5	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		75 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	63.6	J	72.5	53.55	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		809	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		747	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		10.8	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		10.0	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		686	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		549	V			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		9.1	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		7.3	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



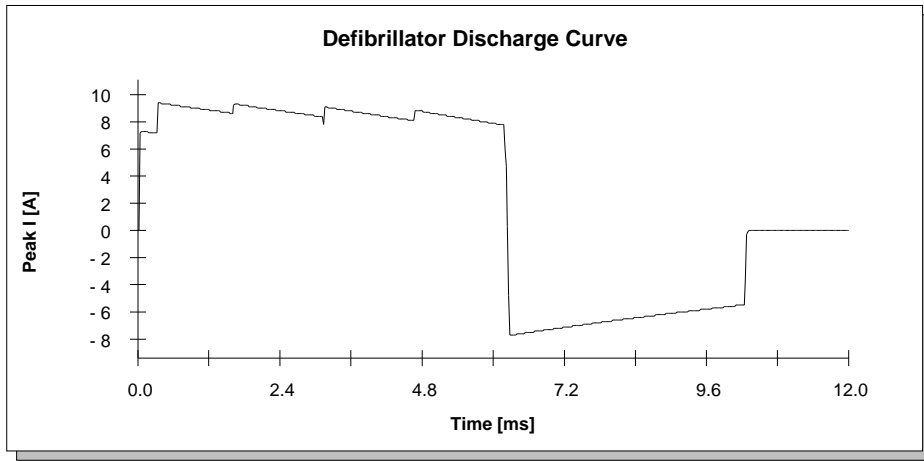
Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 100 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	63.0	J	71.3	52.7	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		936	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		856	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		9.4	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		8.6	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		770	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		650	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		7.7	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		6.5	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

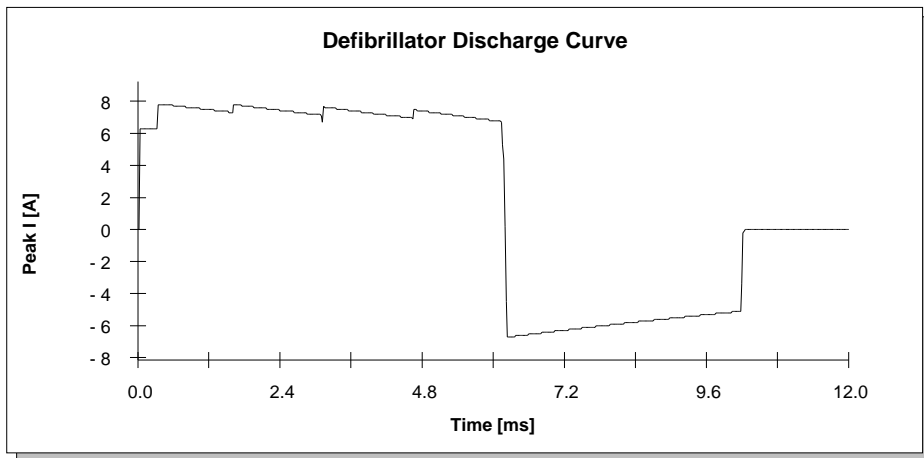
Measures a defibrillator pulse.

**Configuration:**

ECG Waveform Off  
 External Load 125 Ohms

**Result:**

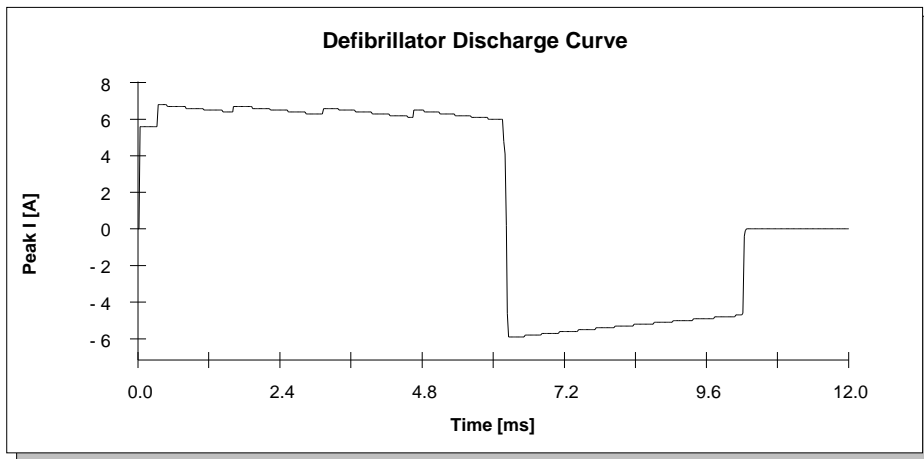
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	58.3	J	66.7	49.3	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		980	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		910	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		7.8	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		7.3	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		838	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		730	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		6.7	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		5.8	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

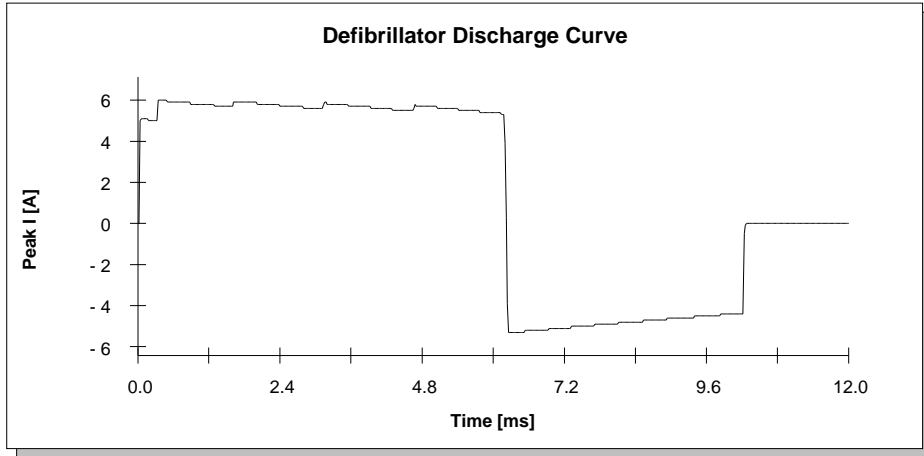
Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		150 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	54.6	J	62.1	45.9	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1017	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		954	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		6.8	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		6.4	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		888	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		792	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		5.9	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		5.3	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		175 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	50.0	51.1	J	57.5	42.5	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1047	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		987	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		6.0	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		5.6	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		931	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		840	V			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		5.3	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		4.8	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



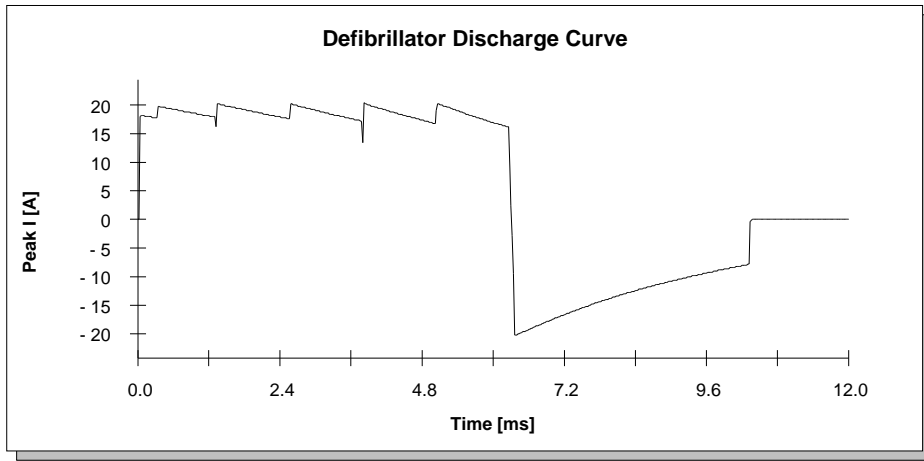
Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 25 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	100.0	72.4	J	85.1	62.9	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		510	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		462	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		20.4	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		18.4	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		507	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		327	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		20.2	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		13.0	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Measures a defibrillator pulse.

**Configuration:**

ECG Waveform

**Value**

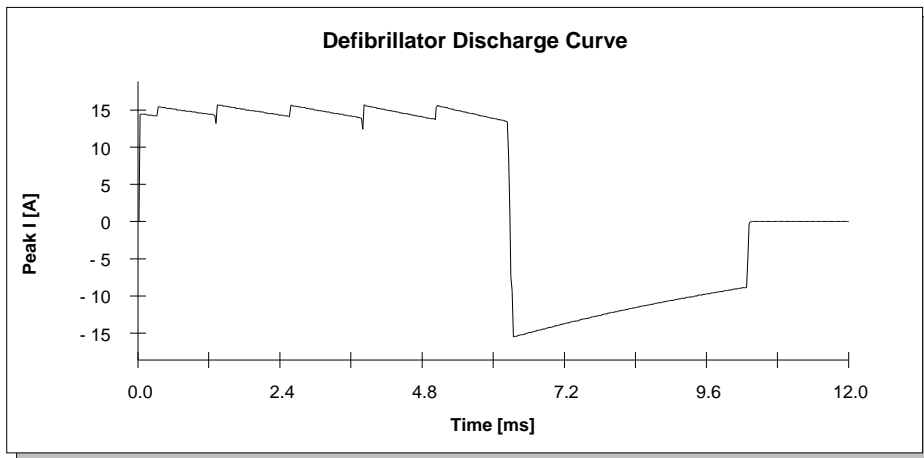
Off

External Load

50 Ohms

**Result:**

	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>
Type = Biphasic						
Energy	100.0	96.5	J	122	83	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		787	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		733	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		15.7	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		14.7	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		773	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		590	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		15.5	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		11.8	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

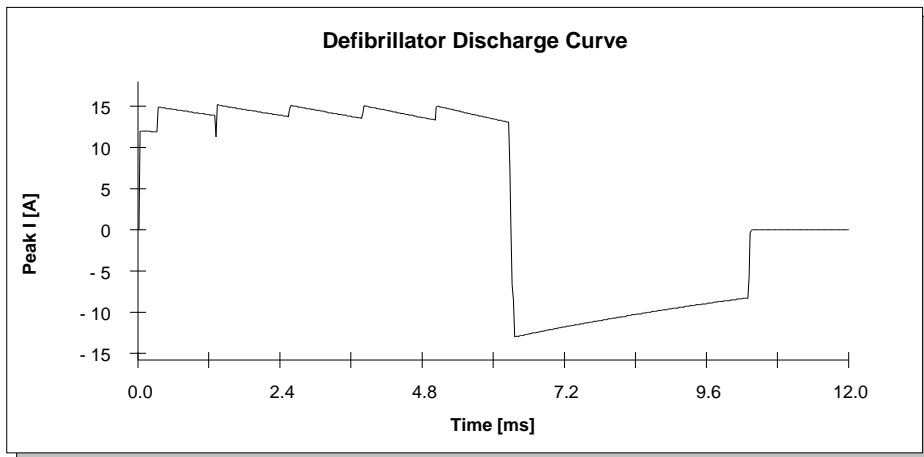


Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**



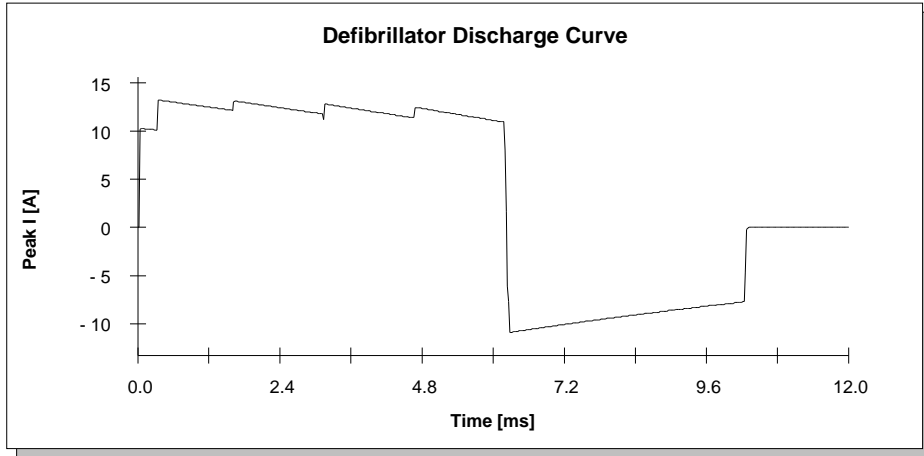
Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		75 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	100.0	127.4	J	144.9	107.1	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1143	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1058	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		15.2	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		14.1	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		972	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		780	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		13.0	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		10.4	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		100 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	100.0	125.0	J	143.75	106.255	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1320	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1206	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		13.2	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		12.1	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1088	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		918	V			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		10.9	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		9.2	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



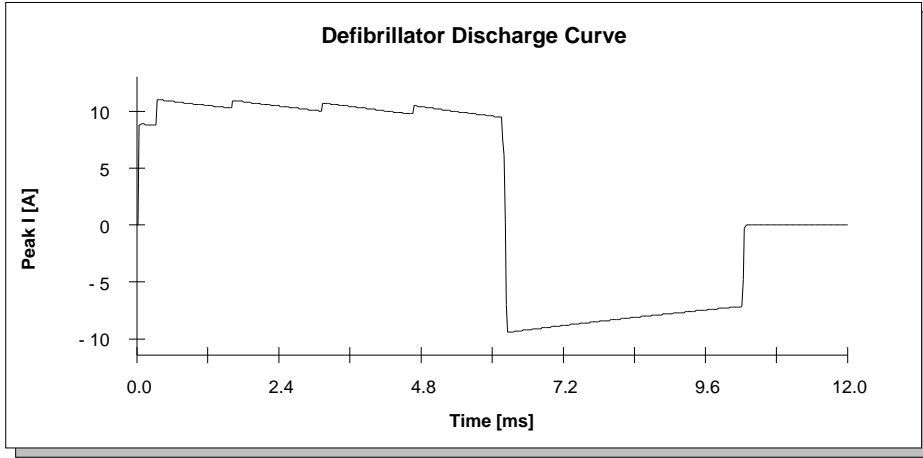
Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 125 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic						
Energy	100.0	115.0	J	133.4	98.6	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1378	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1278	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		11.0	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		10.2	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1175	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1025	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		9.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		8.2	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

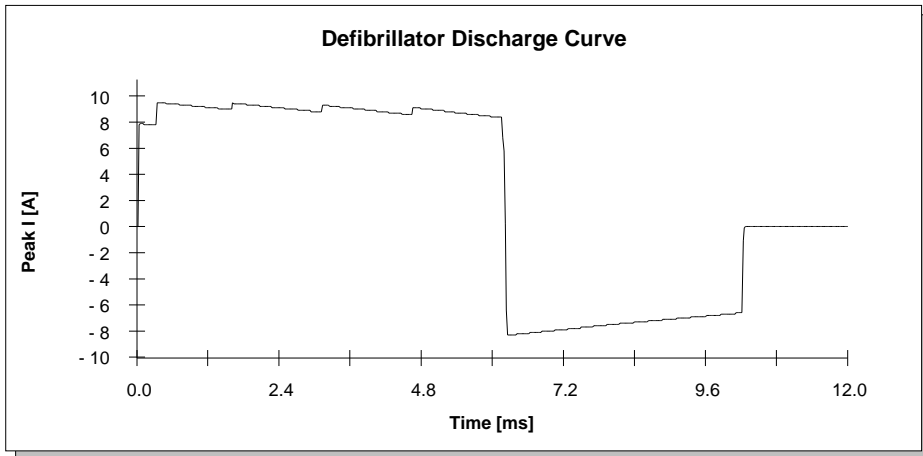
Measures a defibrillator pulse.

**Configuration:**

ECG Waveform                    **Value**  
   Off  
 External Load                    150 Ohms

**Result:**

	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>
Type = Biphasic Energy	100.0	107.1	J	124.2	91.8	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1426	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1339	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		9.5	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		8.9	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1245	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1110	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		8.3	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		7.4	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		175 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	100.0	99.8	J	115	85	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1467	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1383	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		8.4	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		7.9	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1303	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1180	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		7.4	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		6.7	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

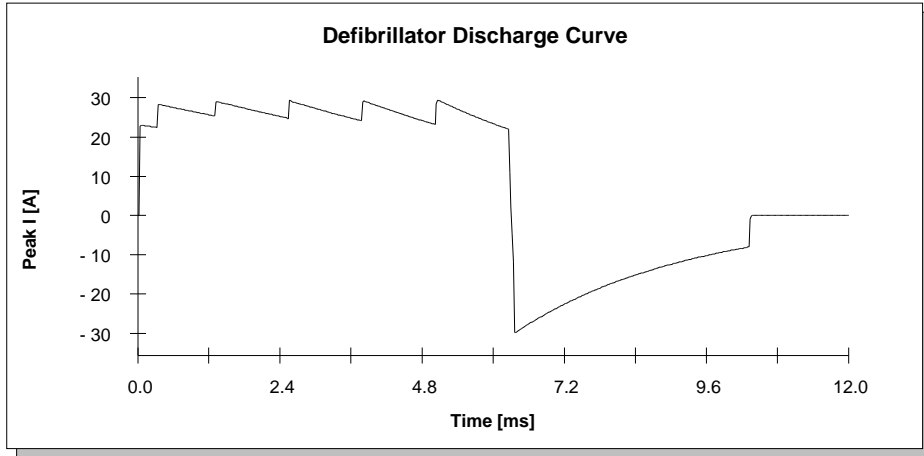
  

The graph, titled 'Defibrillator Discharge Curve', plots Peak Current (I) in Amperes (A) on the y-axis against Time in milliseconds (ms) on the x-axis. The y-axis ranges from -8 to 8 with major ticks every 2 units. The x-axis ranges from 0.0 to 12.0 with major ticks every 2.4 units. The curve shows a biphasic pulse: it starts at 0, rises to a peak of approximately 8A at 0.2ms, remains relatively constant until about 6.5ms, then drops sharply to a second phase of approximately -7A, which continues until about 10ms before returning to 0.

Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		25 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	139.4	J	167.9	124.1	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		738	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		652	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		29.6	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		26.0	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.3	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		745	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		415	V			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		29.8	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		16.6	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



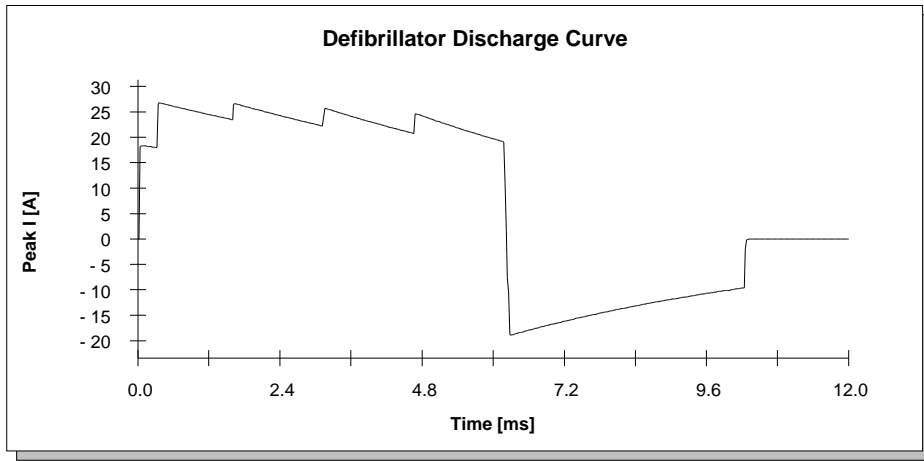
Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 50 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	207.7	J	247	182	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1337	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1159	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		26.8	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		23.2	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		943	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		685	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		18.9	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		13.7	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)

Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

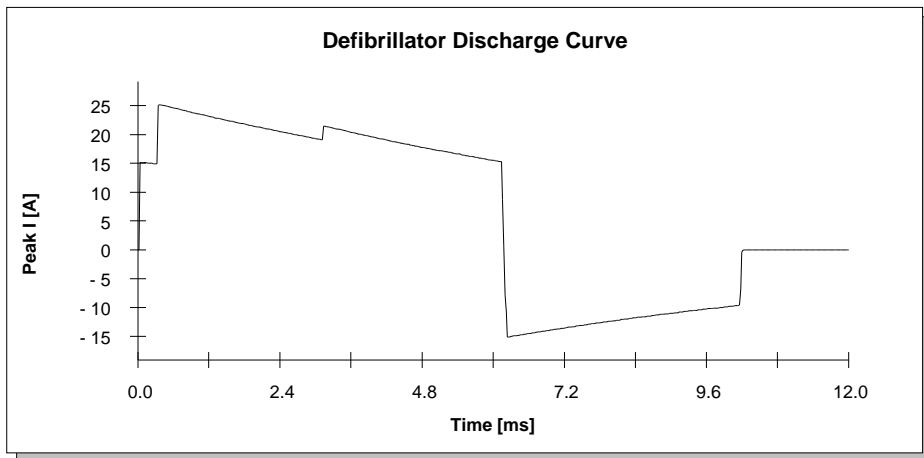
Measures a defibrillator pulse.

**Configuration:**

ECG Waveform Off  
 External Load 75 Ohms

**Result:**

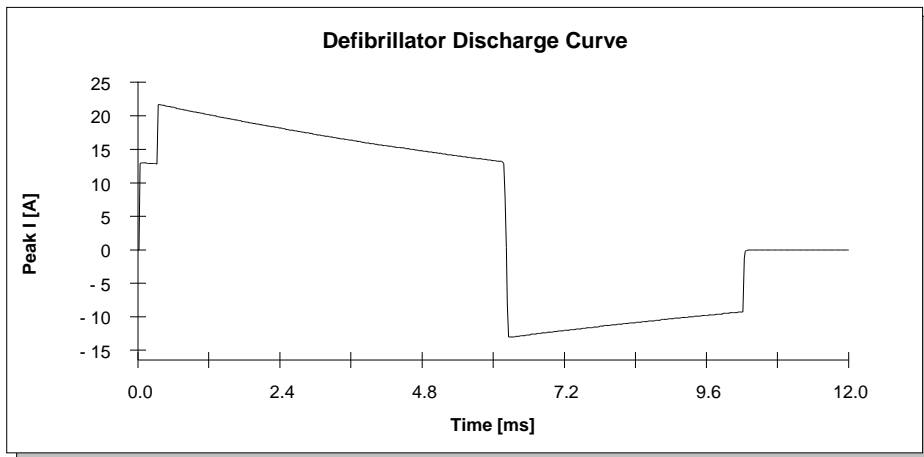
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	228.6	J	273.7	202.3	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		1889	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1481	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		25.2	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		19.8	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.1	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1131	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		909	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		15.1	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		12.1	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

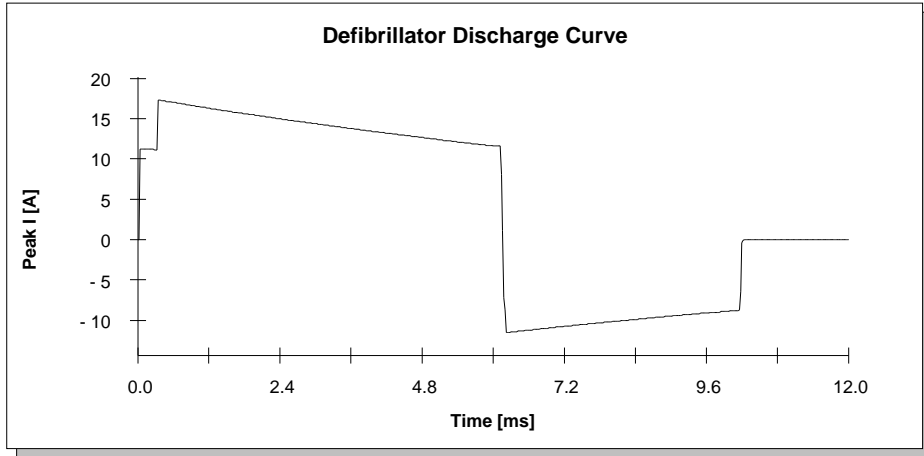
Test Element	Test Type					Fail
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		100 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	228.7	J	269.1	198.9	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		2169	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1683	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		21.7	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		16.8	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1304	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1102	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		13.0	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		11.0	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

<b>Procedure:</b>						
Measures a defibrillator pulse.						
<b>Configuration:</b>						
ECG Waveform		Value				
		Off				
External Load		125 Ohms				
<b>Result:</b>						
	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	206.1	J	244.95	181.05	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		2163	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1758	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		17.3	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		14.1	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1436	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1250	V			AAMI/NFPA-99 (M)

Test Element	Test Type					Fail
Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Phase 2 Peak Current		11.5	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		10.0	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

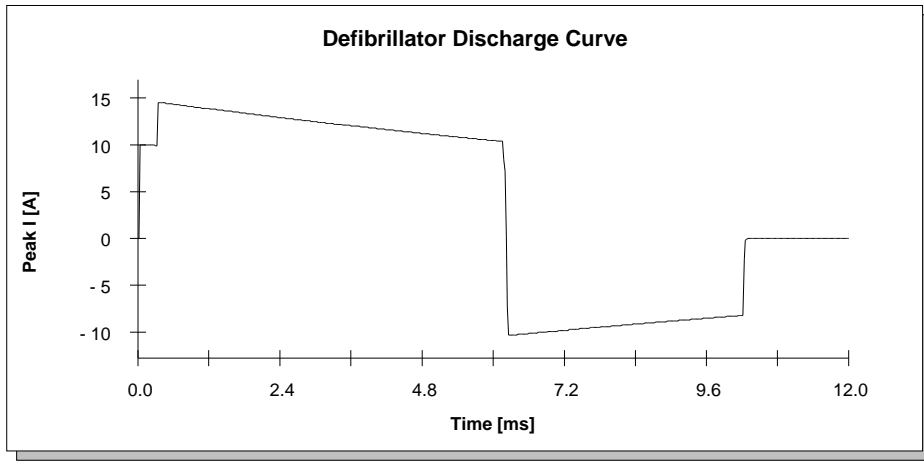
**Procedure:**  
Measures a defibrillator pulse.

**Configuration:**  
ECG Waveform Off  
External Load 150 Ohms

Result:	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	191.2	J	224.25	165.75	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		2182	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1831	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		14.5	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		12.2	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1549	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1381	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		10.3	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		9.2	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Test Element	Test Type	Fail
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Impulse 6000D/7000DP Energy Measurement Test *Energy Measurement Test*

**Procedure:**

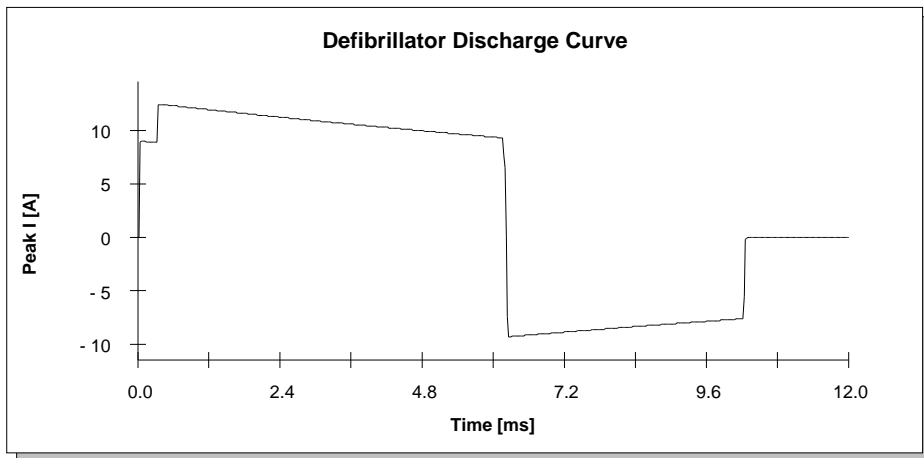
Measures a defibrillator pulse.

**Configuration:**

ECG Waveform Off  
 External Load 175 Ohms

**Result:**

	Preset Value	Value	Unit	High limit	Low limit	Standard
Type = Biphasic Energy	200.0	174.4	J	205.85	152.15	AAMI/NFPA-99 (M)
Phase 1 Peak Voltage		2178	V			AAMI/NFPA-99 (M)
Phase 1 Average Voltage		1870	V			AAMI/NFPA-99 (M)
Phase 1 Peak Current		12.4	A			AAMI/NFPA-99 (M)
Phase 1 Average Current		10.7	A			AAMI/NFPA-99 (M)
Phase 1 Pulse Width		6.2	ms			AAMI/NFPA-99 (M)
Phase 2 Peak Voltage		1621	V			AAMI/NFPA-99 (M)
Phase 2 Average Voltage		1467	V			AAMI/NFPA-99 (M)
Phase 2 Peak Current		9.3	A			AAMI/NFPA-99 (M)
Phase 2 Average Current		8.4	A			AAMI/NFPA-99 (M)
Phase 2 Pulse Width		4.0	ms			AAMI/NFPA-99 (M)



Shock Test

**Procedure:**

*Checklist*

Test Element	Test Type	Fail
<p>200J and 50 Ohm</p> <p><b>Result:</b>                      Press the CHARGE button and start timing with a stopwatch. Stop timing when the SHOCK button lights. The charge time is between 3-6 seconds.                      Press the SHOCK button. On the strip chart, the Patient Current is between 20-24 Amps, and the Defib Impedance is between 46-54 Ohms                      Turn unit to Defib (for AED units, turn to on and select Manual Mode                      Set energy level to 200 Joules. Press CHARGE. When the SHOCK button lights, press the Energy SELECT DOWN ARROW.                      The unit does not display any fault messages, and the Fluke Impluse 7000 Defibrillator Analyzer shows that no discharges have been delivered                      Set energy level to 200 Joules. Have the stop watch ready. Press CHARGE. When the SHOCK button lights, start the stop watch.                      The unit holds the energy for 60 seconds (15 seconds for AED units), then the unit discharges internally. The unit does not display fault messages.                      (AED units only.)                      Disconnect the cable from the analyzer.                      The unit issues the CHECK PADS audio prompt.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<hr/>		
<p>Summary Report Test</p> <p><b>Procedure:</b>                      Test Setup:                      1. Connect the universal cable to the defibrillator analyzer.                      2. If you are using paddles, place the paddles on the analyzer's discharge plates.</p> <p><b>Result:</b>                      Press and hold the SUMMARY softkey for 4 to 8 seconds to erase any previously stored data. ERASING REPORT displays.                      Set selector switch to DEFIB. Select 200J using the ENERGY SELECT button, and press the CHARGE button. When charged, press the SHOCK button to discharge into the defibrillator analyzer. The unit successfully discharges and prints a strip chart.</p>	<p><i>Checklist</i></p> <p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b>                      Wait 18 seconds, then press the Code Marker softkey. Press the CPR softkey. The Code Markers display.                      Turn the unit off. Wait 10 seconds and then turn the unit on. Press the SUMMARY softkey, then press the PRINT CHART softkey. Summary report prints. The report displays the correct date, time, the shock delivered and Code Marker event.</p>	<p><b>Recorded Value</b>                       Pass                       Pass</p>	
<hr/>		
Advisory Message Test	Checklist	
<p><b>Procedure:</b>                      Test Setup:                      1. Connect the universal cable via the adapter (D.N.I #3010-0378).                      2. Attach the E Series to the defibrillator analyzer  <b>Result:</b>                      Turn the selector switch to DEFIB mode. (For AED units, turn the selector switch to ON.)                      Select VF (ventricular fibrillation) on the simulator, then press the ANALYZE button. ANALYZING ECG message displays. STAND CLEAR message displays.* SHOCK ADVISED message displays.* PRESS SHOCK message displays*+ *AED's audio prompts are standard. Advisory audio prompts are user configurable.                      +If configured for auto charge.                      Press the SHOCK button. Unit discharges.                      Select the NSR (normal sinus rhythm) on the simulator, then press the ANALYZE button. ANALYZING ECG message. STAND CLEAR message.* NO SHOCK ADVISED message.*                      *AED's audio prompts are standard.</p>	<p><b>Recorded Value</b>                       Pass                       Pass                       Pass                       Pass</p>	
<hr/>		
Pacer Test (1)	Checklist	
<p><b>Procedure:</b>                      Tools Needed: Fluke Biomedical Impulse 7000 Analyzer (software 1.06 or higher) with optional external plug in pacing module (TQA-17) or equivalent.</p> <p>Note: The following tests are to be performed only on E Series units equipped with the optional pacing function. The pacer output can be measured using an oscilloscope set to DC coupling connected across a load resistor. (See diagram in column for universal cable connector polarity.) The load resistor is a 100 ohm, 5 watt or greater. The pacer output is a positive going pulse, 40 +/- 2 ms duration with an amplitude of 0.1 volt per milliamp of selected output (e.g., 40 milliamps of selected output has an amplitude of 4 +/- 0.5 volts the specified tolerance displayed on the oscilloscope).                      If an external non-invasive pacer analyzer is being used, then follow the manufacturer's guidelines for measuring the frequency (ppm), output (mA) and the pulse width measured in milliseconds. Note that the analyzer pace load resistor must be less than 250 ohms.</p> <p>Test Setup:                      1. Connect the universal cable from the E Series to the External Pacer Load (TQA-17) of the Impulse 7000.</p>		

Test Element	Test Type						Fail
<p><b>Result:</b> Turn the Main Selector knob of the unit to Pacer Mode. Set the PACER OUTPUT to 14 mA and disconnect MFC connector from the Fluke Impulse 7000 analyzer. The unit displays the CHECK PADS and POOR PAD CONTACT messages displays, and the pace alarm is active. Reconnect the universal cable to the Fluke Biomedical Impulse 7000. Press Clear Pace Alarm softkey. CHECK PADS and POOR PAD CONTACT message disappears. The pace alarm is cleared. Set rate to 180 ppm, output to 0mA. No output appears on the Impulse 7000DP.</p>	<b>Recorded Value</b>						
	Pass						
	Pass						
	Pass						
<hr/>							
Impulse 7000DP Pacer Parameter Test	<i>Pacer Parameter Test</i>						
<b>Procedure:</b> Collects measurements from pacer signals.							
<b>Configuration:</b>							
Input Jacks		<b>Value</b>					
Load		Pacer					
Brand		100 Ohms					
		Zoll					
<b>Result:</b>	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	
Pacer Rate	180.0	179.6	PPM			AAMI/NFPA-99 (M)	
Pacer Amplitude	120.0	122.4	mA	126	114	AAMI/NFPA-99 (M)	
Pulse Width		39.6	ms			AAMI/NFPA-99 (M)	
Pacer Energy		59.2	mJ			AAMI/NFPA-99 (M)	
<hr/>							
Impulse 7000DP Pacer Parameter Test	<i>Pacer Parameter Test</i>						
<b>Procedure:</b> Collects measurements from pacer signals.							
<b>Configuration:</b>							
Input Jacks		<b>Value</b>					
Load		Pacer					
Brand		100 Ohms					
		Zoll					
<b>Result:</b>	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	
Pacer Rate	180.0	179.6	PPM			AAMI/NFPA-99 (M)	
Pacer Amplitude	140.0	142.1	mA	147	133	AAMI/NFPA-99 (M)	
Pulse Width		39.7	ms			AAMI/NFPA-99 (M)	
Pacer Energy		80.1	mJ			AAMI/NFPA-99 (M)	
<hr/>							
Impulse 7000DP Pacer Parameter Test	<i>Pacer Parameter Test</i>						
<b>Procedure:</b> Collects measurements from pacer signals.							
<b>Configuration:</b>							
Input Jacks		<b>Value</b>					
Load		Pacer					
Brand		100 Ohms					
		Zoll					

Test Element	Test Type						Fail
<b>Result:</b>	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	
Pacer Rate	180.0	179.7	PPM			AAMI/NFPA-99 (M)	
Pacer Amplitude	40.0	38.0	mA	45	35	AAMI/NFPA-99 (M)	
Pulse Width		39.7	ms	42	38	AAMI/NFPA-99 (M)	
Pacer Energy		5.74	mJ			AAMI/NFPA-99 (M)	
<hr/>							
Impulse 7000DP Pacer Parameter Test	<i>Pacer Parameter Test</i>						
<b>Procedure:</b> Collects measurements from pacer signals.							
<b>Configuration:</b>							
Input Jacks		Value	Pacer				
Load		100 Ohms					
Brand		Zoll					
<b>Result:</b>	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	
Pacer Rate	30.0	30.2	PPM	31	29	AAMI/NFPA-99 (M)	
Pacer Amplitude	60.0	60.1	mA			AAMI/NFPA-99 (M)	
Pulse Width		39.7	ms			AAMI/NFPA-99 (M)	
Pacer Energy		14.3	mJ			AAMI/NFPA-99 (M)	
<hr/>							
Impulse 7000DP Pacer Parameter Test	<i>Pacer Parameter Test</i>						
<b>Procedure:</b> Collects measurements from pacer signals.							
<b>Configuration:</b>							
Input Jacks		Value	Pacer				
Load		100 Ohms					
Brand		Zoll					
<b>Result:</b>	<b>Preset Value</b>	<b>Value</b>	<b>Unit</b>	<b>High limit</b>	<b>Low limit</b>	<b>Standard</b>	
Pacer Rate	180.0	179.6	PPM	183	177	AAMI/NFPA-99 (M)	
Pacer Amplitude	60.0	60.1	mA			AAMI/NFPA-99 (M)	
Pulse Width		39.7	ms			AAMI/NFPA-99 (M)	
Pacer Energy		14.3	mJ			AAMI/NFPA-99 (M)	
<hr/>							
Pacer Test (2)	<i>Checklist</i>						
<b>Result:</b>	<b>Recorded Value</b>						
Connect the ECG cable to the E Series and 7000DP. Select the ECG at 60 BPM on the 7000DP. Decrease the pacer rate on the unit to 58ppm. The unit displays ECG at 60 BPM with no stimulus markers.	Pass						
Press the Async Pace softkey. The unit displays ECG at 60 BPM with stimulus markers, and displays the Async pace message.	Pass						
Turn off the analyzer. Set Pacer Rate to 100ppm. Press the RECORDER ON button. The unit displays pace stimulus markers every 15mm +/-1mm.	Pass						

Test Element	Test Type	Fail																																										
<p><b>Result:</b> Press and hold 4:1 button. The unit displays pace stimulus markers every 60 mm+/- 1.5 mm.</p>	<p><b>Recorded Value</b>  Pass</p>																																											
<hr/>																																												
<p>SpO2 Monitor Test (1)</p> <p><b>Procedure:</b> Tools Needed: • Masimo® Reusable Sensor. • Masimo® Patient Cable. • Fluke Biomedical Index 2PFE SpO2 Simulator (or equivalent).</p> <p>Test Setup: 1. Connect the universal cable to the MFC test plug. 2. DO NOT connect the ECG cable to the simulator. 3. Install the Masimo® Patient Cable and attach the Masimo® sensor to the patient cable. 4. Connect the Masimo® sensor to the finger simulation post. 5. Place a fully charged battery into the battery well or connect to ac power (dc power, if equipped). 6. Ensure that the SpO2 Simulator is off</p> <p><b>Result:</b> Turn the selector switch to MONITOR. (For AED units, turn the selector switch to ON and select Manual mode.) The SpO2 saturation percentage appears as a dashed line on the monitor Wait ten seconds. Turn on the SpO2 simulator. Press the SIM softkey on the Index SpO2 Simulator. Press the MAN softkey. The unit displays the SpO2 PULSE SEARCH message.</p>	<p><i>Checklist</i>  Pass  Pass</p>																																											
<hr/>																																												
<p>SpO2 Simulation Test</p> <p><b>Procedure:</b> Depending on the vintage of oximeter being tested, the detection-time, and settling-time before the actual simulated values are displayed on the oximeter may be long. Wait for the simulation values to be displayed.</p> <p><b>Configuration:</b></p> <table border="1"> <thead> <tr> <th></th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Simulation Type</td> <td>Optical</td> <td></td> </tr> <tr> <td>Oximeter make name</td> <td>Masimo</td> <td></td> </tr> <tr> <td>TLC</td> <td>4000</td> <td></td> </tr> <tr> <td>SpO2 level</td> <td>98</td> <td>%</td> </tr> <tr> <td>Beats per minute</td> <td>80</td> <td>BPM</td> </tr> <tr> <td>Pulse amplitude</td> <td>5</td> <td>%</td> </tr> </tbody> </table> <p><b>Result:</b></p> <table border="1"> <thead> <tr> <th></th> <th>Preset</th> <th>Value</th> <th>Unit</th> <th>High Value</th> <th>Low Value</th> <th>Limits:</th> </tr> </thead> <tbody> <tr> <td>SpO2 level</td> <td>98</td> <td>97</td> <td>%</td> <td>99</td> <td>97</td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Beats per minute</td> <td>80</td> <td>80</td> <td>BPM</td> <td></td> <td></td> <td>AAMI/NFPA-99 (M)</td> </tr> </tbody> </table>		Value	Unit	Simulation Type	Optical		Oximeter make name	Masimo		TLC	4000		SpO2 level	98	%	Beats per minute	80	BPM	Pulse amplitude	5	%		Preset	Value	Unit	High Value	Low Value	Limits:	SpO2 level	98	97	%	99	97	AAMI/NFPA-99 (M)	Beats per minute	80	80	BPM			AAMI/NFPA-99 (M)	<p><i>SpO2 Simulation Test</i></p>	
	Value	Unit																																										
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Oximeter make name	Masimo																																											
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Pulse amplitude	5	%																																										
	Preset	Value	Unit	High Value	Low Value	Limits:																																						
SpO2 level	98	97	%	99	97	AAMI/NFPA-99 (M)																																						
Beats per minute	80	80	BPM			AAMI/NFPA-99 (M)																																						
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<p>SpO2 Simulation Test</p> <p><b>Procedure:</b> Depending on the vintage of oximeter being tested, the detection-time, and settling-time before the actual simulated values are displayed on the oximeter may be long. Wait for the simulation values to be displayed.</p> <p><b>Configuration:</b></p> <table border="1"> <thead> <tr> <th></th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Simulation Type</td> <td>Optical</td> <td></td> </tr> <tr> <td>Oximeter make name</td> <td>Masimo</td> <td></td> </tr> <tr> <td>TLC</td> <td>4000</td> <td></td> </tr> <tr> <td>SpO2 level</td> <td>98</td> <td>%</td> </tr> <tr> <td>Beats per minute</td> <td>230</td> <td>BPM</td> </tr> <tr> <td>Pulse amplitude</td> <td>5</td> <td>%</td> </tr> </tbody> </table> <p><b>Result:</b></p> <table border="1"> <thead> <tr> <th></th> <th>Preset</th> <th>Value</th> <th>Unit</th> <th>High Value</th> <th>Low Value</th> <th>Limits:</th> </tr> </thead> <tbody> <tr> <td>SpO2 level</td> <td>98</td> <td>97</td> <td>%</td> <td>100</td> <td>96</td> <td>AAMI/NFPA-99 (M)</td> </tr> <tr> <td>Beats per minute</td> <td>230</td> <td>230</td> <td>BPM</td> <td>234</td> <td>226</td> <td>AAMI/NFPA-99 (M)</td> </tr> </tbody> </table>		Value	Unit	Simulation Type	Optical		Oximeter make name	Masimo		TLC	4000		SpO2 level	98	%	Beats per minute	230	BPM	Pulse amplitude	5	%		Preset	Value	Unit	High Value	Low Value	Limits:	SpO2 level	98	97	%	100	96	AAMI/NFPA-99 (M)	Beats per minute	230	230	BPM	234	226	AAMI/NFPA-99 (M)	<p><i>SpO2 Simulation Test</i></p>	
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Beats per minute	230	BPM																																										
Pulse amplitude	5	%																																										
	Preset	Value	Unit	High Value	Low Value	Limits:																																						
SpO2 level	98	97	%	100	96	AAMI/NFPA-99 (M)																																						
Beats per minute	230	230	BPM	234	226	AAMI/NFPA-99 (M)																																						

Test Element	Test Type						Fail
SpO2 Simulation Test	<i>SpO2 Simulation Test</i>						
<b>Procedure:</b> Depending on the vintage of oximeter being tested, the detection-time, and settling-time before the actual simulated values are displayed on the oximeter may be long. Wait for the simulation values to be displayed.							
<b>Configuration:</b>							
		<b>Value</b>	<b>Unit</b>				
Simulation Type		Optical					
Oximeter make name		Masimo					
TLC		4000					
SpO2 level		98	%				
Beats per minute		50	BPM				
Pulse amplitude		5	%				
<b>Result:</b>							
	<b>Preset</b>	<b>Value</b>	<b>Unit</b>	<b>High Value</b>	<b>Low Value</b>	<b>Limits:</b>	
SpO2 level	98	97	%	100	96	AAMI/NFPA-99 (M)	
Beats per minute	50	50	BPM	54	46	AAMI/NFPA-99 (M)	
SpO2 Simulation Test	<i>SpO2 Simulation Test</i>						
<b>Procedure:</b> Depending on the vintage of oximeter being tested, the detection-time, and settling-time before the actual simulated values are displayed on the oximeter may be long. Wait for the simulation values to be displayed.							
<b>Configuration:</b>							
		<b>Value</b>	<b>Unit</b>				
Simulation Type		Optical					
Oximeter make name		Masimo					
TLC		4000					
SpO2 level		72	%				
Beats per minute		50	BPM				
Pulse amplitude		5	%				
<b>Result:</b>							
	<b>Preset</b>	<b>Value</b>	<b>Unit</b>	<b>High Value</b>	<b>Low Value</b>	<b>Limits:</b>	
SpO2 level	72	70	%	74	70	AAMI/NFPA-99 (M)	
Beats per minute	50	54	BPM	54	46	AAMI/NFPA-99 (M)	
SpO2 Monitor Test (2)	<i>Checklist</i>						
<b>Result:</b>							
Press Wave 2 softkey. Select the SpO2 waveform. For CCT units: Press the Traces softkey, and then select SET TRACE 2, and press Enter. Select SPO2, press Enter. Plethysmographic waveform appears on the ZOLL display Press RECORDER. The plethysmographic waveform prints on the strip chart paper	<b>Recorded Value</b>						
	Pass						
	Pass						
SpO2 Simulation Test	<i>SpO2 Simulation Test</i>						
<b>Procedure:</b> Depending on the vintage of oximeter being tested, the detection-time, and settling-time before the actual simulated values are displayed on the oximeter may be long. Wait for the simulation values to be displayed.							
<b>Configuration:</b>							
		<b>Value</b>	<b>Unit</b>				
Simulation Type		Optical					
Oximeter make name		Masimo					
TLC		4000					
SpO2 level		72	%				
Beats per minute		230	BPM				
Pulse amplitude		5	%				
<b>Result:</b>							
	<b>Preset</b>	<b>Value</b>	<b>Unit</b>	<b>High Value</b>	<b>Low Value</b>	<b>Limits:</b>	
SpO2 level	72	70	%	74	70	AAMI/NFPA-99 (M)	
Beats per minute	230	230	BPM	234	226	AAMI/NFPA-99 (M)	

Test Element	Test Type	Fail
<p>EtCO2 Monitor Test (for EtCO2 Option)</p> <p><b>Procedure:</b> Tools Needed: CAPNOSTAT 5 Mainstream cable with airway adapter, or CAPNOSTAT 5 Sidestream cable with cannula.</p> <p>Test Setup: 1. Install the battery.</p> <p><b>Result:</b></p> <p>Connect the CAPNOSTAT 5 CO2 Mainstream cable with airway adapter attached, or the CAPNOSTAT 5 Sidestream cable with the cannula attached, to the yellow connector at the back of the E Series. NOTE: Make sure the airway adapter (for Mainstream), or the cannula (for Sidestream) is installed in the CO2 cable.</p> <p>Set the front panel switch to MONITOR or ON. For AED units, enter Manual Mode. WARM UP message appears on the display. NOTE: Warming up may take about 1 minute When the WARM UP message disappears, press the Param softkey, then select EtCO2 and press Enter.</p> <p>Press the ZERO softkey, then wait for the ZERO DONE message. The ZERO DONE message appears.</p> <p>Press the Return softkey.</p> <p>Press the Wave 2 softkey until the CO2 waveform appears. A flat baseline CO2 waveform appears.</p> <p>Breath normally into the airway adapter. A capnogram waveform appears.</p>	<p><i>Checklist</i></p> <p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<p>Barometric Pressure Calibration Check</p> <p><b>Procedure:</b> *The barometric pressure can be obtained from a calibrated barometer, or from the National Weather Service at <a href="http://www.nws.noaa.gov">www.nws.noaa.gov</a> (enter your local zip code to get the local barometric pressure). Note that the barometric pressure is in inches of mercury, multiply it by 25.4 to convert to mmHg.</p> <p><b>Result:</b></p> <p>Connect the CAPNOSTAT 5 CO2 Sensor to the yellow connector at the back of the E Series unit, and connect an airway adapter to the sensor.</p> <p>While pressing and holding the second softkey from the left, turn the selector switch to Monitor (ON for AED units). The unit displays EtCO2 Calibration screen.</p>	<p><i>Checklist</i></p> <p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p>	



Test Element	Test Type	Fail
<p><b>Result:</b>                      Wait for the sensor to warm up. The message WARM UP is displayed for approximately one minute.                      Obtain the local barometric pressure in mmHg.*                      Press the Baro Pr. softkey to enter the Barometric Pressure Calibration screen.                      Use the Inc&gt; and Dec&lt; softkeys to set the second value on the pressure display line equal to your local barometric pressure.                      Press the Return softkey to store the offset and return to the main EtCO2 Calibration screen.</p>	<p><b>Recorded Value</b>                       Pass                       Pass                       Pass                       Pass                       Pass</p>	
<p>Accuracy Check (Optional test to check EtCO2 sensor)</p>	<p>Checklist</p>	<p>NA</p>
<p><b>Procedure:</b>                      The calibration gas mixture and regulator are available from Respironics Novamatrix. (Equivalent alternatives are available from other suppliers.)                      • Gas Regulator: PN 6081-00                      • Calibration Gas (carton of 4 tanks): PN 8964-00</p>	<p><b>Result:</b>  <b>Recorded Value</b>                      NA                      NA                      NA                      NA                      NA                      NA                      NA                      NA                      NA                      NA                      NA                      NA</p>	
<p>NIBP Volume Leak Test with Fluke Biomedical NIBP Analyzer (1)</p>	<p>Checklist</p>	
<p><b>Procedure:</b>                      The volume leak test verifies the integrity of the pneumatic system on the NIBP module. This test is optional at 6 months, but should be performed annually or every 10,000 readings, whichever comes first.                      Tools Needed: Fluke NIBP simulator (the values and procedure that we provide are specific to the BP Pump 2).                      Test Setup:                      Connect the Analyzer's simulator hose to the NIBP connector on the E Series unit.                      Configure the NIBP Analyzer for the volume leak test. For example, on the Fluke Biomedical BP Pump:                      Press the Cuff softkey for volume cuff test.                      Verify the cuff is set to External                      Make sure the ECG cable is not connected to the E Series unit.                      If the SpO2 option is installed, make sure that the Masimo cable is NOT connected to the E Series unit.</p>	<p><b>Result:</b>  <b>Recorded Value</b>                       Pass                       Pass</p>	

Test Element	Test Type	Fail
<p><b>Result:</b>                      On the NIBP simulator, set the pressure parameter to 200 mmHg. The NIBP simulator displays a pressure reading of 200 mmHg.                      On the M Series unit, press the Close Valves softkey. The Valves status changes from OPEN to CLOSED.                      Press the START TEST softkey within 30 seconds after closing the valve.                      Note: This test takes approximately 3 minutes.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<hr/>		
<p>NIBP Volume Leak Test with Fluke Biomedical NIBP Analyzer (2)</p>	<p><i>Checklist</i></p>	
<p><b>Result:</b>                      In addition, the M Series unit displays the simulator's pressure reading in the "Cuff Pressure" field. After approximately 3 minutes, the valves open on the M Series unit.                      On the NIBP Analyzer, press the STOP TEST softkey. The NIBP simulator terminates the Volume Leak Test.                      On the M Series unit, press the EXIT softkey twice. The M Series unit returns to the main NIBP Service Mode screen, then to normal Monitor mode operation.</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p>	
<hr/>		
<p>NIBP Transducer Calibration Test</p>	<p><i>Checklist</i></p>	
<p><b>Procedure:</b>                      The NIBP module's pressure transducers are factory-calibrated prior to shipment. However, you can perform a two-point calibration procedure periodically to ensure accurate pressure measurements. This procedure is optional at 6 months, but should be performed annually or every 10,000 readings, whichever comes first.                      Tools Needed: Fluke NIBP simulator (the values and procedure that we provide are specific to the BP Pump 2).                      Test Setup:                      Connect the Analyzer's simulator hose to the NIBP connector on the E Series unit. Configure the NIBP Analyzer to simulate cuff pressure. For example, on the Fluke Biomedical BP Pump 2: Press the Home button, then the Pressure Tests button, and then the Static Pressure button. These instructions apply to the Fluke Biomedical BP Pump; for equivalent devices, follow the manufacturer's instructions.                      Make sure the ECG cable is not connected to the E Series unit. If the SpO2 option is installed, make sure that the Masimo cable is NOT connected to the E Series unit.                       Warning! NIBP transducer calibration can affect clinical readings of the NIBP parameter. Ensure that the NIBP Transducer Calibration procedure is performed correctly, followed by an NIBP Monitor Test for verify proper operation.</p>		

Test Element	Test Type	Fail																
<p><b>Result:</b>                      Turn the Selector Switch to OFF. After 10 seconds, press and hold the fourth softkey from the left and turn the Selector Switch to MONITOR. The E Series powers on in the NIBP Service Mode. Press the NIBP Calib softkey. The E Series displays the NIBP Transducer Calibration Screen. On the NIBP simulator, set the pressure parameter to 0 mmHg. The NIBP Analyzer displays a pressure reading of 0 mmHg. On the M Series unit, press the Set Low softkey to calibrate the transducer to a 0 mmHg pressure reading. The NIBP pressure transducer registers its voltage output at a known pressure of 0 mmHg. The field adjacent to the 0 mmHg value changes to PASS. Note: If the M Series unit displays a FAIL reading, verify the NIBP simulator's pressure setting and connection to the M Series and repeat the step</p>	<p><b>Recorded Value</b></p> <p>Pass</p> <p>Pass</p> <p>Pass</p> <p>Pass</p>																	
<p>Static Pressure Test</p>	<p>Static Pressure Test</p>																	
<p><b>Procedure:</b>                      Verify the pressure on the blood pressure monitor.  <b>Configuration:</b>                      Inflate Pressure 250 mmHg  <b>Limits:</b>                      AAMI - AAMI/NFPA-99                      (M)  <b>Result:</b></p> <table border="1" data-bbox="263 1339 1074 1518"> <thead> <tr> <th></th> <th>High Value</th> <th>Low Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Pressure</td> <td></td> <td>261</td> <td>mmHg</td> </tr> <tr> <td>BPPump2 Pressure</td> <td></td> <td>261</td> <td>mmHg</td> </tr> <tr> <td>Difference</td> <td></td> <td>0</td> <td>mmHg</td> </tr> </tbody> </table>		High Value	Low Value	Unit	Pressure		261	mmHg	BPPump2 Pressure		261	mmHg	Difference		0	mmHg		
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Test Element	Test Type	Fail
<p><b>Result:</b> On the E Series unit, press the EXIT softkey twice. The E Series returns to the main NIBP Service Mode screen, then to normal Monitor mode operation.</p>	<p><b>Recorded Value</b>  Pass</p>	
<hr/>		
<p>NIBP Monitor Test</p>	<p><i>Checklist</i></p>	
<p><b>Procedure:</b> The NIBP monitor test verifies the accuracy of the systolic, diastolic, and mean blood pressure measurements, as well as the patient pulse rate calculation. Tools Needed: Fluke Biomedical BP Pump NIBP Monitor Analyzer. Test Setup: 1. Connect the Analyzer's simulator hose to the NIBP connector on the E Series unit. 2. Set the following parameters on the NIBP Analyzer: Parameter Value Systolic pressure 120 mmHg Diastolic pressure 80 mmHg Mean pressure 93 mmHg Heart pressure 80 bpm Make sure the ECG cable is not connected to the M Series unit. If the SpO2 option is installed, make sure that the Masimo cable is NOT connected to the M Series unit. 1 NIBP Simulators may produce a reading on the NIBP monitor that is shifted from the simulator's setting. The offset value must be established based on a statistical sample of monitors and readings. Please contact ZOLL Technical Support if you require assistance establishing the offset of the simulator and test set-up that you are utilizing. 2 If you are using the Fluke® BiomedicalCuftlink, you must change the shift value of the Blood Pressure Envelope to +3 on the Pressure Curve Adjust Menu. 3 Not all simulators have a setting of 93mmHg. Check the simulators user's manual for recommendations. 4 These values only apply for test set-ups utilizing the BP Pump 2 Simulator. Variations of the test set-up or different simulators may produce readings outside the provided values and will require end-user facility to establish the appropriate offset and tolerances. Please contact ZOLL Technical Support if you require assistance establishing the offset of your simulator and test set-up</p>		
<p><b>Result:</b> Turn the selector switch to MONITOR mode. (For AED units, turn the selector switch to ON and select Manual mode.)</p>	<p><b>Recorded Value</b>  Pass</p>	
<p>Ensure that the LEADS parameters is set to PADS (default). If necessary, press the LEADS button to cycle through the values to select PADS. The M Series unit displays PADS in the Lead selection field on the monitor.</p>	<p>Pass</p>	
<hr/>		
<p>Blood Pressure Test - Standard</p>	<p><i>BP Test Standard</i></p>	
<p><b>Procedure:</b> Simulates a blood pressure. Note: Trend report available in software version &gt;=30.0 The NIBP monitor test verifies the repeatability of the systolic, diastolic, and mean blood pressure measurements, as well as the patient pulse rate calculation. Tools Needed: Fluke NIBP simulator (the values and procedure that we provide are specific to the BP Pump 2). Note: The primary propose of an NIBP simulator is to reproduce a pressure profile similar to a live patient to be used for testing the repeatability and functionality of the system. There are many different NIBP simulators on the market, each manufacturer uses a different method to develop their algorithm. Consequently, readings from different simulators may vary. To test for repeatability, you should first establish the offset1 of your simulator. The offset value should then be used to determine the expected values. NIBP simulators cannot be used as a source for testing the accuracy of the non-invasive blood pressure measurements of devices such as the ZOLL M Series monitor/defibrillator. Test Setup:</p>		

Test Element	Test Type	Fail																				
<p>Connect the Analyzer's simulator hose to the NIBP connector on the M Series unit.                      Make sure the ECG cable is not connected to the M Series unit.                      If the SpO2 option is installed, make sure that the Masimo cable is NOT connected to the M Series unit.                      1 NIBP Simulators may produce a reading on the NIBP monitor that is shifted from the simulator's setting. The offset value must be established based on a statistical sample of monitors and readings. Please contact ZOLL Technical Support if you require assistance establishing the offset of the simulator and test set-up that you are utilizing.                      2 If you are using the Fluke® BiomedicalCufflink, you must change the shift value of the Blood Pressure Envelope to +3 on the Pressure Curve Adjust Menu.                      3 Not all simulators have a setting of 93mmHg. Check the simulators user's manual for recommendations.</p>																						
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<p>Trend report available in software version &gt;=30.0  <b>Result:</b></p>	<p>Checklist  <b>Recorded Value</b>                      NA</p>	<p>NA</p>																				
<p>Bluetooth Test  <b>Procedure:</b>                      Tools Needed: USB Bluetooth dongle with driver CD. Bluetooth application software BlueSoleil.                      Test Setup:                      Verify that the E Series unit is configured as follows: Bluetooth -- INSTALLED; Bluetooth Baud Rate -- 115200.  <b>Result:</b></p>	<p>Checklist  <b>Recorded Value</b>                      NA                      NA                      NA                      NA                      NA</p>	<p>NA</p>																				