Procedure: Pulse Oximeter **Estimated Time: 15 Minutes**

EQUIPMENT INFORMATION

Control Number:_____ Hospital:_____
Manufacturer:_____ Model:_____
Serial Number:_____ Location:_____

TEST INFORMATION

Technician:_____ Date:_____
Test Type: Incoming_____ Post Repair_____

Test Equipment Needed: ISA 601 Electrical Safety Analyzer (or equivalent)
Index 2 SpO_2 Analyzer (or equivalent)

Test Result				
Pass	**Fail**	**N/A**	**PHYSICAL CONDITION**	
			Device is clean and decontaminated	
			No Physical Damage to case, display, mounts, cart, or components	
			Switches and controls operable and correctly aligned	
			Display intensity adequate for daytime use	
			Control numbers, labeling, warnings present and legible	
			Inlets and hoses	
			Power cord, accessory cables, charger	
			Filters and vents clean	
Pass	**Fail**	**N/A**	**ELECTRICAL SAFETY**	
			Ground wire resistance	< 0.3Ω
			Chassis leakage	< 100µA NC < 500µA SFC
			Patient leakage current	< 100µA B & BF < 10µA CF
			Patient lead leakage current – isolation test (mains on patient applied part)	< 100µA BF < 10µA CF
			Insulation test (optional) 500V	< 2 M Ω
Pass	**Fail**	**N/A**	**PREVENTATIVE MAINTENANCE**	
			Clean recorder paper compartment, rollers and paper guides	
			Lubricate motor and paper drive mechanism	
			Verify proper time and date. Correct if necessary	
			Replace battery every 24 months	
			Complete model specific preventive maintenance	
Pass	**Fail**	**N/A**	**PERFORMANCE TESTING**	
			Verify unit operates on battery	
			Heart rate accuracy	±5%
			SpO_2 accuracy	±3%
			Recorder operation	
			Alarm function	

			Complete model specific performance testing

Physical Condition: Check the physical condition of the device, as described in the General Equipment Procedure.

Electrical Safety: Perform electrical safety checks as described in Chapter 5, Electrical Safety. Check ground wire resistance and chassis leakage.

Clean recorder paper compartment, rollers and paper guides: Inspect the rollers and paper guides and remove any debris. Check for bits of torn paper caught in the rollers.

Lubricate motor and paper drive mechanism: Follow the manufacturer's instructions in the service manual for lubricating the motor and paper drive mechanism. Not all motors will need to be lubricated.

Verify proper time and date. Correct if necessary: Verify that the time and date displayed on the monitor is correct. If the time and date is not displayed on the monitor, print a strip from the recorder. The time and date should appear on the printed strip. Correct the time and date as necessary.

Replace battery: The battery should be replaced every 24 months. Replace if necessary.

Complete model specific preventive maintenance: Refer to the pulse oximeter's service manual for preventative maintenance tasks specific to the device. Complete the preventative maintenance per manufacturer's procedure.

Verify unit operates on battery: Check that the AC power indicator is lit when the power cord is plugged into an outlet. Unplug the AC power cord and perform the remainder of the functional test on battery power. The AC power indicator should go out when the power cord is unplugged and the battery indicator should light. Be sure to plug the power cord back in at the conclusion of the test.

Heart rate accuracy: Attach a finger probe to the pulse oximeter. Place the finger sensor on the finger simulator of the Index 2 simulator. From the main menu of the Index 2, hit the soft key labeled 'more' for the second menu and then hit the soft key labeled 'MAKE'. Use the plus and minus keys to scroll through the available makes. Select the make of the pulse oximeter to be tested. When the correct make appears on the screen, hit the 'esc' key to return to the main menu.

Pulse oximeter connected to Index 2 SpO2 simulator

From the main menu, hit the soft key labeled 'SIM' to enter the simulation mode. Begin a manual simulation by hitting the soft key labeled 'MAN'. Use the plus and minus keys to adjust the O_2 level and heart rate. Set the heart rate to 80bpm. Turn on the pulse oximeter and initiate a measurement. The displayed heart rate should be within 5% of the set heart rate. For a simulated heart rate of 80bpm, the displayed heart rate should be between 76bpm and 84bpm.

O_2 accuracy: Adjust the O_2 level on the Index 2 to 96%. Initiate a measurement on the pulse oximeter. The displayed SpO_2 value should be within 3 digits of the set value. For a simulated SpO_2 of 96%, the displayed value should be between 93% and 99%.

Recorder operation: After taking some blood pressure measurements, print the results with the recorder. Ensure that the recorder prints clearly and legibly. If the date and time is present on the recorded strip, ensure that the date and time is accurate.

Alarm function: Check that all alarms are functional and that the volume is adequately loud. Ensure that appropriate visual indicators are functioning.

Set the high O_2 alarm on the pulse oximeter to 98%. Set the low O_2 alarm to 90%. Set the Index 2 for a manual simulation with the SpO_2 at 96% and the heart rate 80bpm. Initiate a measurement on the pulse oximeter. Adjust the SpO_2 on the Index 2 to 100%. The high

O_2 alarm on the pulse oximeter should activate. Bring the SpO_2 back down to 96% and clear the alarm. Adjust the SpO_2 on the Index 2 to 88%. The low O_2 alarm on the pulse oximeter should activate. Bring the SpO_2 back to 96% and clear the alarm.

Set the high heart rate alarm on the pulse oximeter to 120bpm and set the low heart rate alarm to 60bpm. Adjust the heart rate on the Index 2 to 125bpm. The high heart rate alarm should activate. Return the heart rate to 80bpm and clear the alarm. Adjust the heart rate on the Index 2 to 55bpm. The low heart rate alarm should activate. Return the heart rate to 80bpm and clear the alarm. Return all alarm limits to their original settings.

Complete model specific performance testing: Refer to the service manual for performance inspection tasks specific to the device. Complete the performance inspection per manufacturer's procedure.

Return to service:
Before returning to use, return any settings that were adjusted back to their original settings. Ensure that the volume of the audible alarms is loud enough to be heard in normal operating conditions. Plug in the power cord to ensure that the battery remains charged.