# Touch 1
## Performance Verification Manual
Version 2012.1.0
April 12, 2012

**CIRRIS**®

# Touch 1 Performance Verification Manual
Version 2012.1.0
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## Cirris Systems Corporation
1991 W. Parkway Boulevard
Salt Lake City, Utah 84119
USA

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## Introduction

The Touch 1 Performance Verification Kit allows you to verify the calibration and proper operation of the Touch 1 tester.  Each performance verification kit has a life cycle of two years from the time of purchase.  At the end of two years, the kit can be recalibrated or replaced.  All components for this performance verification kit are tested with instruments traceable to the National Institute of Standards and Technology (NIST).

You should run performance verification on your Touch 1 tester at least once a year and any time you suspect that the tester is not operating properly.  If any step in the performance verification procedure fails, send the tester back to Cirris for repair.
No external adjustments can be made to fix the tester.

For information on setting up a quality system that meets national quality standards such as ANSI/NCSL Z540-1, and ISO 10012-1, see the appendix of this manual.

### Disclaimer
All calibration procedures are performed in-house at the factory.  Older versions of the software may use the word "calibration" during the verification process.  Note that in these instances "calibration" means verification.

# Hipot Warning!

## Possible electric shock!

Cirris hipot testers are designed to be safe for operators.  Injuries from hipot testing are rare; however, not every hipot test situation is safe.  Hipot testing is not a danger to healthy individuals.  At times an occasional mild electric shock may be experienced.  Small shocks only occur during a hipot test when the operator touches an energized connection point.  Any shock from the tester may result in a hipot test failure.

### Medical Warning!
A child or individual wearing a cardiac pacemaker, an insulin pump, or an electronically controlled medical device should NOT perform Hipot testing.

For more information on improving hipot safety visit:
*www.cirris.com/testing/guidelines/hipot_safety.html*

## Setting Up

### Performance Verification Certificate
You will find the Touch 1 Performance Verification Certificate at the end of this manual.  You can record verification data on this document for your records.  If you choose to use this document, make photocopies to maintain a master copy for future use.

### Install Add-On Scanners
Install add-on scanners if you have any. For instructions, see your Touch 1 Users Manual.

**Note**: The examples in this manual use a Touch 1  with no expansion boxes.

### Plug in the Tester
Plug one end of the power cord into the tester.  Plug the other end into a grounded outlet.

### Plug in a Printer
To print Tester Checkout results, connect a printer to the tester using the parallel port.

### Parts List

Make sure you received the following parts:

- Resistor Leak Adapter
- Capacitance/4-Wire Adapter
- Zero Ohm Adapter

### Required Tools (not provided by Cirris)

❑ Volt Meter

Fluke 70/80 Series (or equivalent)
Input Resistance: 10M Ω ±10%
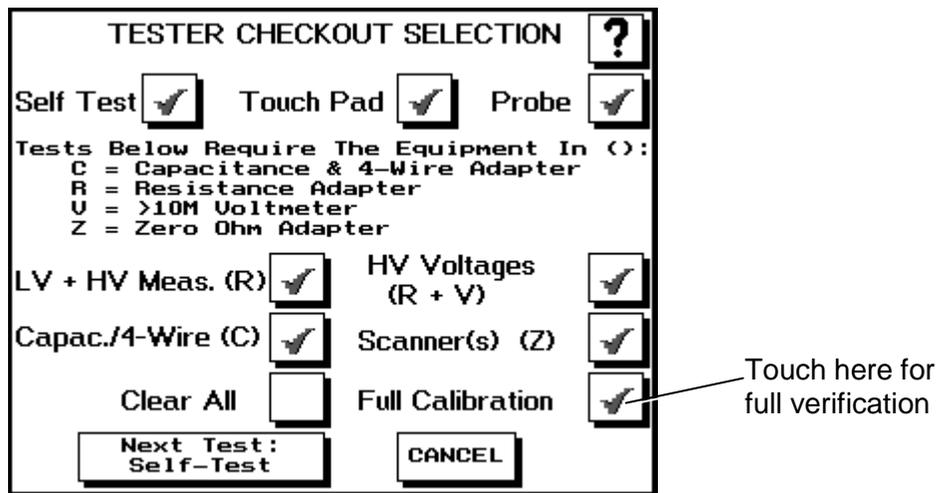
(avoid using a bench top meter)

❑ High Voltage Probe

Fluke 80K-6 (or equivalent)
Input Resistance: >50M Ω

(use alligator clip test lead from tip to terminal on PCB)

**Caution!**  Your volt meter may become damaged if you do not take the following precautions:

- High voltage verification requires measurements that are beyond the range of most volt meters.  A high voltage probe is required for all measurements.

- Test voltages of 1000 VDC will be used.  Measurement equipment must be able to safely withstand over 1500 VDC, and input resistance must be no less than 50M ohms.

## Tester Checkout Tests

1. From the Main Menu, press **System Setup**.

2. At the System Setup screen, press **Tester Checkout**.

3. The Tester Checkout Selection screen allows you to decide which tests you want to run for the verification process. You can select **Full Calibration** (full verification) to run all of the tests or you can select an individual test to run.

```
        TESTER CHECKOUT SELECTION    [?]

 Self Test [✓]   Touch Pad [✓]    Probe [✓]

 Tests Below Require The Equipment In ():
     C = Capacitance & 4-Wire Adapter
     R = Resistance Adapter
     V = >10M Voltmeter
     Z = Zero Ohm Adapter

 LV + HV Meas. (R) [✓]    HV Voltages     [✓]
                          (R + V)

 Capac./4-Wire (C) [✓]    Scanner(s) (Z)  [✓]

    Clear All   [ ]       Full Calibration [✓]

  [ Next Test:         [ CANCEL ]
    Self-Test ]
```

Touch here for full verification

### General Procedures for all Tests

- To turn a test option on, touch the button for that test so a checkmark appears inside the box. If there is no checkmark, the test is turned off.

- To start a test, press **Next Test X** where X lists the test to be performed. The Touch 1 will perform the test and then show a Pass or Fail result. You can abort any test except the Touch Screen Test by pressing the **Abort** button. The Touch Screen Test will automatically abort if the screen is not touched for ten seconds.

- To proceed to the next test you have selected, press **Next Test X**. If all the tests have finished, press **Show Summary**.

- If during testing you want to cancel all remaining tests and see a summary of the test results so far, press **Cancel.**

- To print the results on a printer, press **Print.** Some tests have individual summary results you can also print.
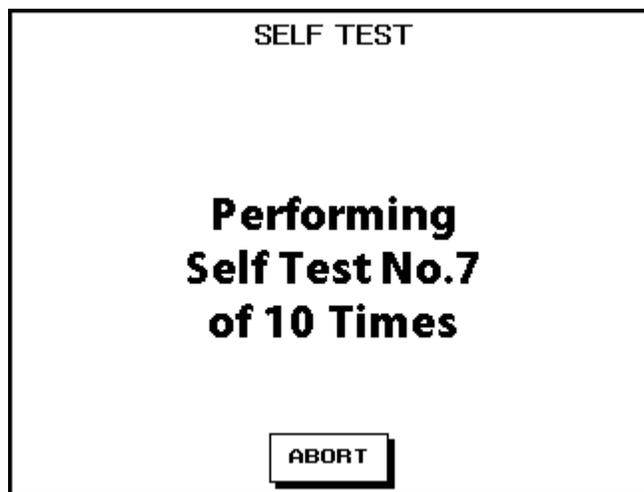
## Self Test

When this test is selected, the Touch 1 will perform ten passes of several major tests. These are the same tests performed automatically on power up. They test the basic functionality of the tester to see if it can perform reasonable measurements within specification.  The tests verify the following:

- The voltage measurement circuitry and current sources
- The high voltage circuitry
- The scanners and test points
- The capacitance measurement curcuitry
- The twisted pair circuitry

**To start the test:**

1. Press **Next Test: Self-Test**.

2. All ten passes must complete without errors for the tester to pass Self Test.

```
            SELF TEST




         Performing
       Self Test No.7
       of 10 Times



           ABORT
```

This screen shows the seventh pass for the group of self tests being done.

## Touch Pad Test

This test checks the proper operation of the touch screen.

**To start the test:**

1. Press **Next Test: Touchpad.**

2. A screen with a target button in the upper lefthand corner will display. Use a pointed object to touch the center of the target button.

3. Another target button will appear in the bottom righthand corner. Use a pointed object to touch the center of the button.

**Step 1:** Use a pointed object to touch the center of the button.

**Touch Center Of Button For Touchscreen Calibration**

**Step 2:** Use a pointed object to touch the center of the button.

4. A screen with five buttons displays. To verify that the touch screen is operating properly, press each button within ten seconds of each other. When you press a button, a star appears where the screen was touched. If the star is not drawn where the screen was touched, the touch screen is not correct. Let the test fail by waiting ten seconds without touching the screen and perform the Touch Pad test again to correct the touchscreen.

5. To pass the test, all five buttons must be pressed before the timeout.

**Touch Buttons To Check Calibration**
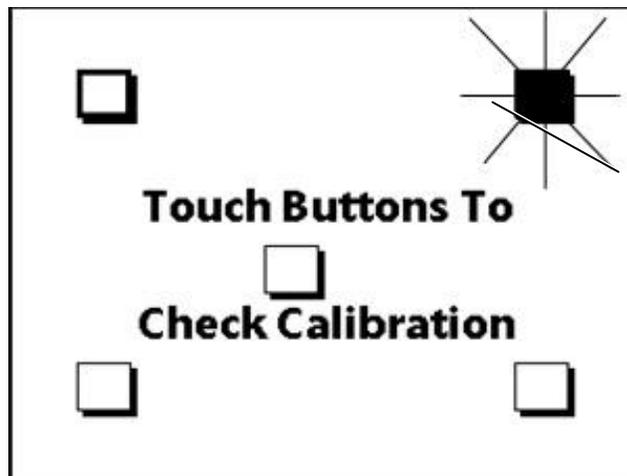
To verify that your Touch 1 is operating properly, touch all five buttons. If a star appears in the center of the darkened boxes, the operation is correct.

## Probe Test

This test checks the proper operation of the probe. You can either use the Resistor Leak adapter or Capacitance adapter to perform this test.

1. Plug in the probe that you received with your Touch 1 tester.



2. To start the test, press **Next Test: Probe.**

3. A screen will prompt you to install either adapter in the J1 position on the scanner. Install the adapter in the J1-J2 position as shown and then press **OK.**



4. Touch the tip of the probe to the exposed pads of any test points on the adapter. If the probe is working correctly, a pop-up window will display the correct point(s) touched by the probe. If no pop-up window is displayed when the test point(s) are probed, press **No Response.** The test will fail and a Failed Probe Test screen will display.
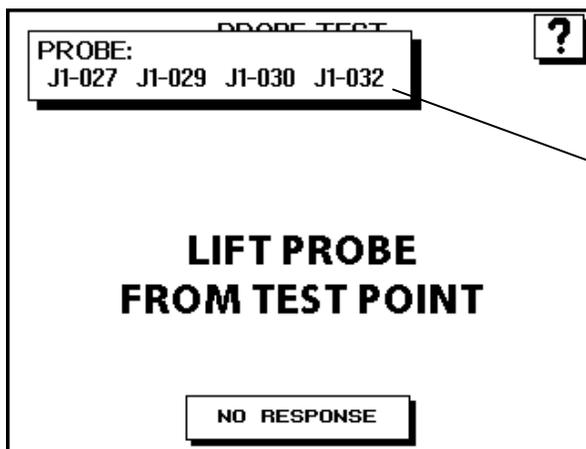


To display the pop-up probe window, touch the probe to the exposed pads of any test points on the adapter.

5. When the probe is released from a test point, a Passed Probe Test screen will display. If the screen does not change when the probe is released from a test point, press **No Response.** The test will fail and a Failed Probe Test screen will display.

## LV + HV Meas. (R) Test

This test checks the low voltage and high voltage measurements. To pass the test, the Touch 1 must measure the resistor's value to ±1% ±0.1 ohm and the high voltage leakage at 5M ohm ±10%. The Resistance Adapter included in the Performance Verification Kit is needed to perform this test.

1. To start the test, press **Next Test: LV/HV Meas.**

2. A screen will prompt you to install the Resistance Adapter in the J1 position on the scanner. Install the Resistor Leak Adapter in the J1-J2 position as shown and then press **OK.**



3. The Touch 1 will perform the tests and display either a Pass or Fail result for each test.
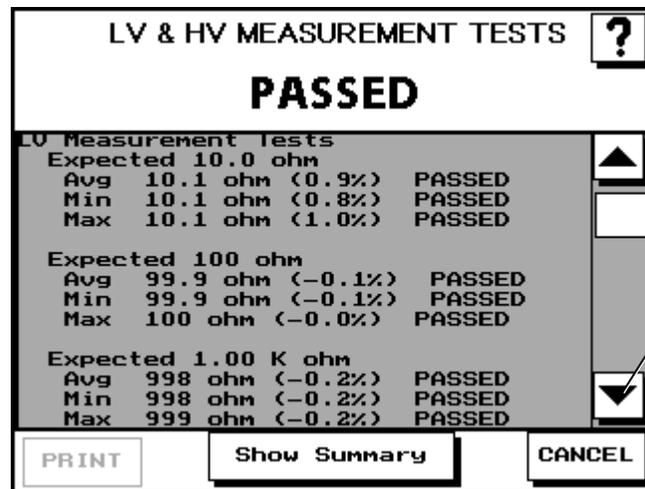


Scroll down to view the results for all the tests.

## HV Voltages (R + V) Test

This test checks that all the voltages in the high voltage settings are within range. To pass this test, all the voltages must be within ±10% of the high voltage setting. The Resistance Adapter included in the Performance Verification Kit is needed to perform this test. This test requires the voltmeter and high voltage probe.
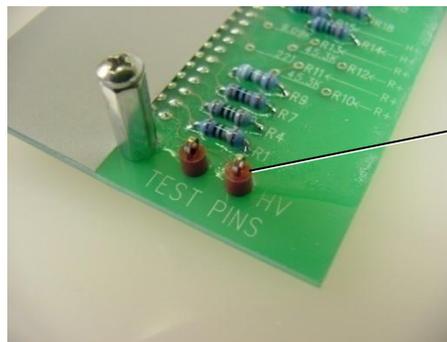
**To start the test:**

1. Press **Next Test: HV Volts.**

2. A screen will prompt you to install the Resistance Adapter in the J1 position on the scanner.



A high voltage probe is required to perform the HV Volts test.

3. Install the Resistance adapter and connect your high voltage probe to the HV test pins on the adapter as shown. Then press **OK.**



Attach the high voltage probe to the test pins shown here.

4. The Touch 1 will apply high voltage during each test so keep your hands clear from all connections during the test. Press **START** to begin the test.
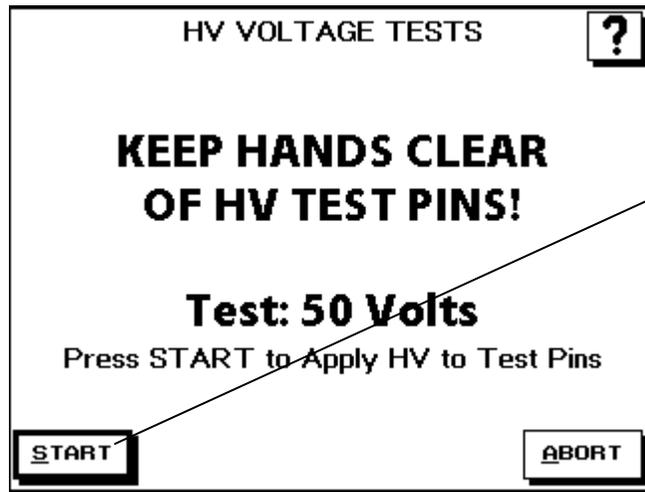


Press START to begin the series of high voltage tests.

5. Read the voltage from your voltmeter and press **RECORD VOLTAGE** to enter the reading from the voltmeter. Press **OK** to continue on to the next voltage or press **RETRY x V** where **x** is the voltage the test will retry.

    **Note:** The HV Test will timeout if the Record Voltage button is not pressed.
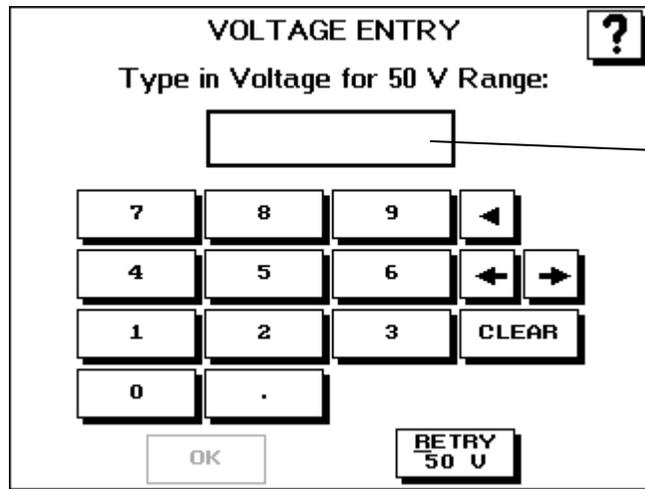


Enter the voltage displayed on the voltmeter here.

6. Repeat steps 4 and 5 until all the voltages have been tested and recorded. After 50 volts, the tests will increment by 100 volts up to 1000V or 1500V depending on the tester type. The Touch 1 will perform the tests and display an overall summary with either a Pass or Fail result for each test. If any of the the voltages do not pass, the entire HV Test will fail.

## Capacitance/4-Wire (C) Test

This test checks that the Touch 1 can accurately measure capacitance and perform a 4-Wire test. To pass the test, the Touch 1 must measure the capacitor's value to ±10% and the 4-Wire resistor to ±1% ±0.001 ohm. The Capacitance/4-Wire Adapter included in the Performance Verification Kit is needed to perform this test.

**To start the test:**

1. Press **Next Test: Cap. & 4W.**

2. A screen will prompt you to install the Capacitance/4-Wire Adapter in the J1 position on the scanner. Install the Capacitance/4-Wire Adapter in the J1-J2 position as shown and then press **OK.**



3. The Touch 1 will perform the tests and display either a Pass or Fail result for each test.
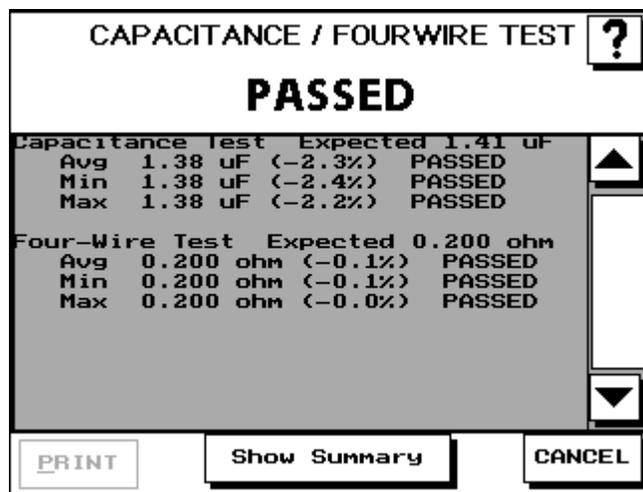


Results will be displayed for both the capacitance and four-wire tests.

## Scanner Test

The Scanner Test verifies that the analog circuitry and relays inside the scanners are working properly all the way to each test point. The test checks for loose scanners making sure the cables are connected properly. Run this test to isolate capacitor measurement errors, high resistance shorts, and leakage errors by eliminating or identifying contamination on scanners as the cause of the problem. The Zero Ohm Adapter included in the Performance Verification Kit is needed to perform this test.

**To start the test:**

1. Press **Next Test: Scanners.**

2. A screen will prompt you to install the Zero Ohm Adapter in the J1 position on the scanner. Install the Zero Ohm Adapter in the J1-J2 position as shown and then press **OK.**



3. The Touch 1 will perform the test and display either a Pass or Fail result for each portion of the test. A screen will then prompt you to remove the adapter and install it in the next "J" position on the scanner. Two tests are done for each scanner. One for each double-high position.

4. The test automatically sequences to the next step if it can detect the removal of the adapter. If it cannot detect the adapter was removed, you must press the **NO RESPONSE** button.
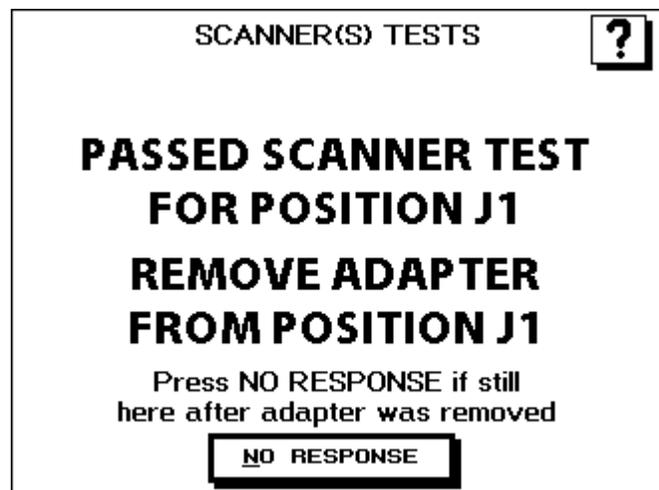


Remove the adapter to automatically proceed to the next test.

5.  Remove the Zero Ohm Adapter and place it in the J3-J4 position as shown.



6.  If the tester has any expansion boxes installed, continue testing the other scanners by moving the Zero Ohm Adapter to each of the "J" positions and running the test.

7.  At the end of all the tests, a scanner summary screen will be displayed listing the results for each test section. If any of the the individual scanner tests do not pass, the entire ScannerTest will fail.
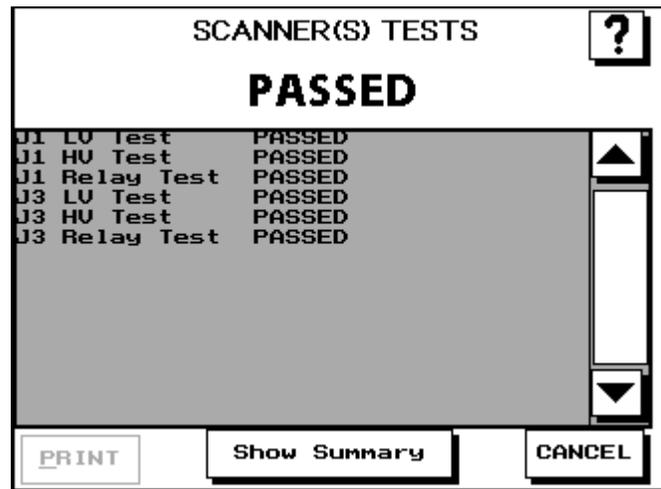


Results for six separate tests will be displayed for each scanner attached.

## Tester Checkout Summary

1. To see the TESTER CHECKOUT SUMMARY screen for all the Tester Checkout Tests, press **Show Summary.** Press the arrow or scroll buttons to view all the results.

    - The summary will display ABORTED for any aborted tests.

    - The summary will display SKIPPED for any skipped tests.
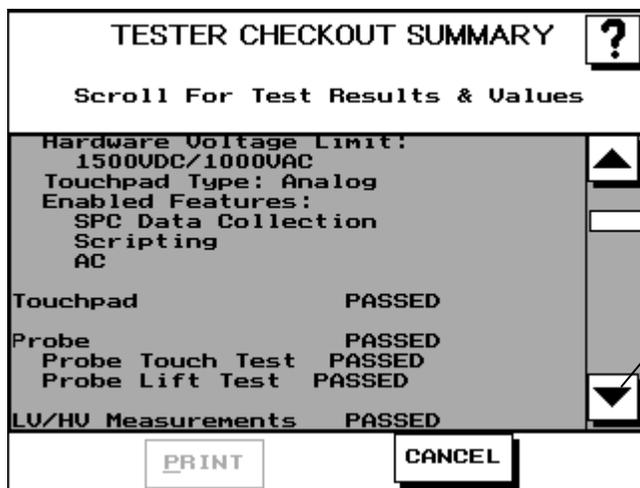
    - The summary will display FAILED for any failed tests.

2. To save the Test Summary results, you must either print them or copy them to paper by hand. If you have a printer connected to your Touch 1, you can print the Test Summary by pressing **PRINT.**

```
        TESTER CHECKOUT SUMMARY      [?]

       Scroll For Test Results & Values

 Self Test              PASSED              [▲]
 Touchpad               PASSED
 Probe                  PASSED
 LV/HV Measurements     PASSED              [ ]
 HV Voltages            PASSED
 Capacitance & 4-Wire   PASSED
 Scanners               PASSED

 DETAILS FOR TESTS:
 Self Test              PASSED
   Hardware Version: 2.0
   Software Version: 4.2e
   Point Count: 128
   Scanner Type: 1500V                      [▼]
   Hardware Voltage Limit:

       [ PRINT ]         [ CANCEL ]
```
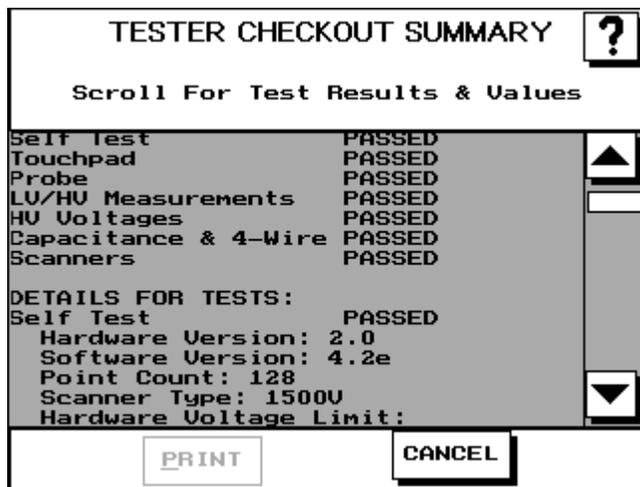
An overall summary is given for each test along with the individual test results.

```
        TESTER CHECKOUT SUMMARY      [?]

       Scroll For Test Results & Values

   Hardware Voltage Limit:                  [▲]
     1500VDC/1000VAC
   Touchpad Type: Analog
   Enabled Features:                        [ ]
     SPC Data Collection
     Scripting
     AC

 Touchpad               PASSED

 Probe                  PASSED
   Probe Touch Test     PASSED
   Probe Lift Test      PASSED              [▼]

 LV/HV Measurements     PASSED

       [ PRINT ]         [ CANCEL ]
```

Scroll down to view the individual results for all the tests.

If any of the tests failed, contact your Cirris representative at 1-800-441-9910 for recalibration and possible repairs.

## Appendix

The following information can be used as a guide for setting up a formal quality system in your organization.

### Quality Standards

These standards are quality system requirements for organizations that perform quality tests and use calibrated equipment. Establishing a quality system according to quality standards ensures that tests are done competently and lends credibility to the organization. In the United States, common quality standards include ANSI/NCSL Z540-1, ISO/IEC Guide 25, ISO 10012-1, and the former MIL-STD 45662A.

You can review the ANSI/NCSL Z540 standard referred to above, as well as other metrology information, from the National Conference of Standards Laboratories International (NCSL) at 1-303-440-3339 or www.ncsli.org. You can also review the ISO standards from the International Standards Organization (ISO) at www.iso.net.

In the metrology industry, the word "standards" often refers to a centralized and most accurate unit of measurement regulated by countries. The National Institute of Standards and Technology (NIST) maintains the national standards for measurements in the United States.

### Good Quality Practices

Quality standards, such as ANSI/NCSL Z540-1 and ISO 10012-1, require several good practices for the calibration industry including the following areas:

#### Recall System

How do you ensure that your company will remember to send an instrument in for calibration? Use a card file or a computerized database recall system. This system includes calibration dates, due dates, calibration sources, and other instrument records. The recall system ensures that instruments are recalibrated in a timely manner.

#### Verification Labels

How do you know if calibration has been verified without looking for the paperwork? When an instrument's calibration is verified, the quality standards require the instrument to be labeled as such. These labels, which are applied to instruments, have fields for the instrument serial number, verification date, verification due date, and by whom. A good source of inexpensive labels is United Ad Label at 1-800-992-5755.

#### Accuracy Ratios

Can you use a ruler to verify your digital calipers? The answer is no. Wherever possible, quality standards require an accuracy ratio of at least four to one. In other words, the instrument being used to measure the calibrated instrument should be at least four times as accurate as the calibrated instrument.

**Performance Verification Certificate**
How do you know that an instrument has been verified?  The Performance
Verification Certificate is a record of who, when, and by what equipment the
instrument was verified.   A Touch 1 Performance Verification Certificate is provided
in the appendix of this manual.

**Traceability**
Traceability refers to each unbroken link of valid verifications going back to national
standards such as those maintained by the NIST in the United States.  To maintain
traceablity, qualified personnel must perform the performance verification under
controlled conditions, using correctly calibrated instruments with correct test
accuracy ratios.

Several years ago NIST numbers (ie. reference numbers issued on NIST reports)
were commonly copied on successive certificates as a means of showing
traceability. This practice has been discontinued. Therefore, if you are writing a
performance verification procedure, do not require NIST numbers be copied on
reports to show traceability. NIST numbers are sometimes confused with other
numbers that calibration laboratories create for reference such as "asset numbers",
"NIST trace numbers", "ID numbers", and report numbers. For more information
regarding the discontinued use of NIST numbers, contact Cirris for a copy of the
position paper from the National Conference of Standards Laboratories.

# Touch 1 Performance Verification Certificate

| **Name and Address of Organization:** | |
|---|---|
| **Certificate Number:** | **Performed by:** |
| **Verification Date:** | **Due Date:** |
| **Applicable Quality Standard(s):** | **Procedure:**<br>Touch 1 Performance Verification<br>Version _____ |
| **Temperature:** | **Relative Humidity:** |

**Tester Serial Number:**

| Instruments used | Serial Number | Cal. Date | Due Date |
|---|---|---|---|
| Zero Ohm Adapter | | | |
| Resistor Leak Adapter | | | |
| Capacitance/Fourwire Adapter | | | |
| Voltmeter | | | |

Statement of Traceablility:

Certified by: