

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 1 of 8
TITLE: Generic SCT & PCT System Test Procedure			

1.0 PURPOSE

This procedure describes the process for testing a 3MTS SCT & PCT USB touch system.

2.0 SCOPE

This applies to integrated touch screen, controller & display on a production line or in the field.

3.0 REQUIRED TOOLS/FIXTURES/EQUIPMENT

DESCRIPTION	3M PART #
PC with Software Diagnostic Utility (SDU) version 7.12.1.5 or higher	Engineering supplied
MT7.13.1 or higher Driver	Engineering supplied
CBL USB TYPE A TO 2MM (PCT & SCT)	7312256
CABLE RS232 P&P CNTLR TEAL (PCT) or CABLE RS232 CNTLR (SCT)	7319630 7310101
ESD Wrist Strap	

4.0 SUPPORTING DOCUMENTATION and DEFINITIONS

- PCT = Projected Capacitive Technology
- SCT = Surface Capacitive Technology
- SDU = Software Diagnostic Utility
- 36024 – MT7 Software Diagnostic Users Guide
- 25695 – MT7 Reference Guide

5.0 RESPONSIBILITY

- All Quality and supporting Engineers

6.0 PROCESS STEPS.

6.1. Set Up of Test

- 6.1.1. Power on the computer
 - Ensure MT7.13 driver is installed on the computer (refer to 36024 – MT7 Software Diagnostic Users Guide for installation instructions)
 - Ensure the SDU is installed on the computer
- 6.1.2. Put on an ESD wrist strap before handling of integrated display.
- 6.1.3. Plug the Serial or USB cable into test computer
- 6.1.4. Turn power on the touch integrated display

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 2 of 8
TITLE: Generic SCT & PCT System Test Procedure			

6.1.5. Run the SDU

6.2. Test Procedure

6.2.1. The SDU should find the controller. If not, click on the “Find Controller” icon that appears as a magnifying glass on the tool bar pictured in figure 1.



Figure 1: SDU Tool Bar opening window

6.2.2. A pop up window should open similar to Figure 2 that will provide specific controller information.

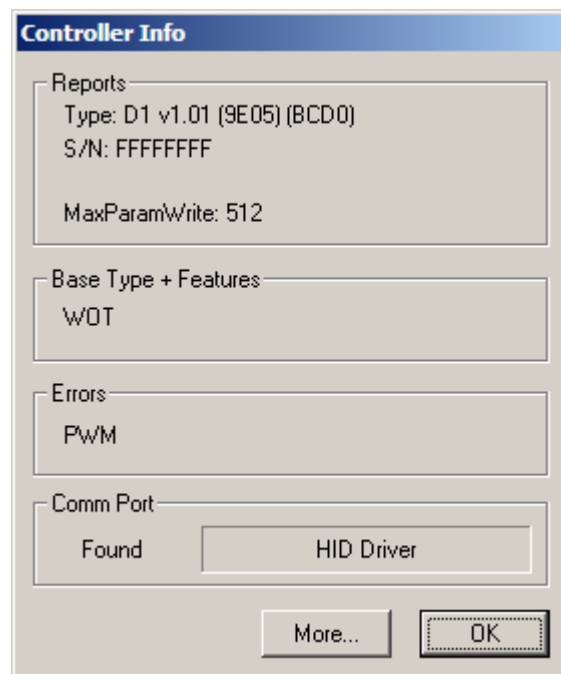


Figure 2: Controller Information

6.2.3. On the Tool Bar Menu click the icon that is a square with 2 red targets labeled “Cal”. This operation performs a 2 point calibration. A draw screen will appear with a red target in the lower left corner, press and hold on the target for approximately 2-3 seconds; upon finger lift off a second red target will appear in the upper right of the touch screen. Press on the second target and hold for approximately 2-3 seconds. Upon finger lift off of the second target the 2 point calibration should be complete.

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 3 of 8
TITLE: Generic SCT & PCT System Test Procedure			

6.2.4. Draw test

6.2.4.1. On the Tool Bar Menu click the icon labeled “Full” which will provide a Full Screen Draw Test.

6.2.4.2. For SCT using one finger, draw a box shape around the perimeter of the sensor. The drawing should occur between 0.5 – 1” in from the outer border of the sensor. You should observe results similar to the screen shown in Figure 3.

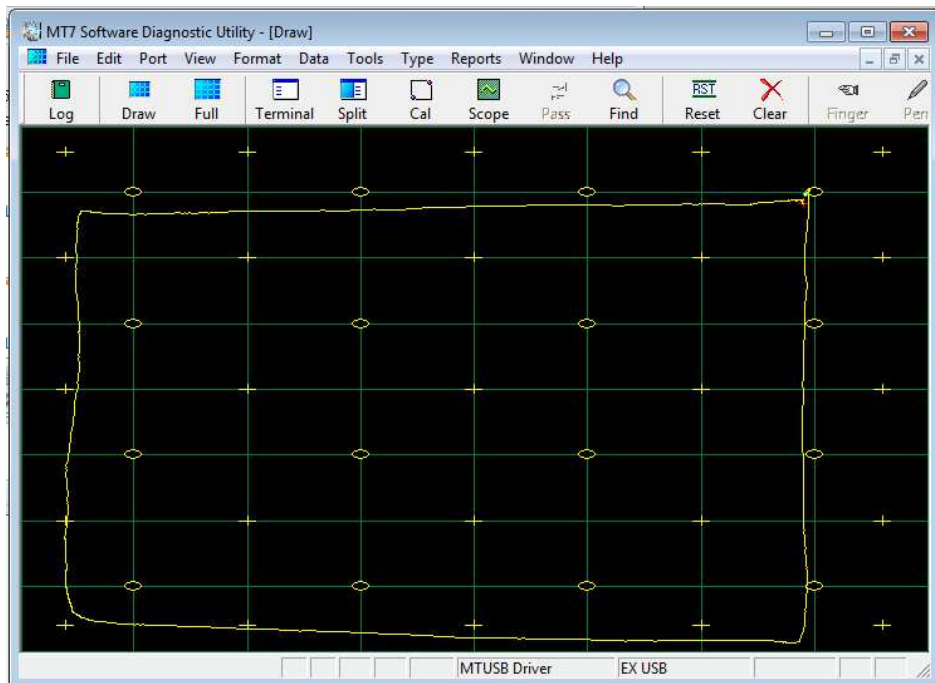


Figure 3 Full Draw Screen that is good

6.2.4.2.1. If the results observed are not square in shape or are similar to something of a triangle shown in (Figure 4); the touch screen has a damaged corner or a break in the pattern near a corner. The open corner will be related to the same open corner result from the draw screen.

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 4 of 8
TITLE: Generic SCT & PCT System Test Procedure			

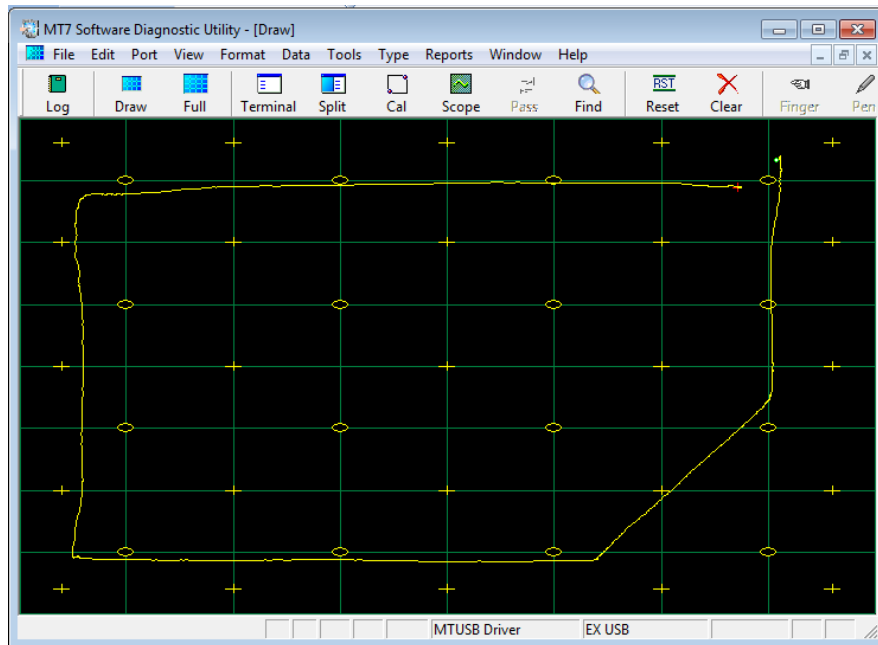


Figure 4 Full Draw Screen that is bad, broken bottom right corner

6.2.4.2.2. To test for a deep scratch, simply draw vertical and horizontal lines throughout the touch screen, (See Figure 5). If there is a scratch the line draw will track around the scratch and appear as Figure 6.

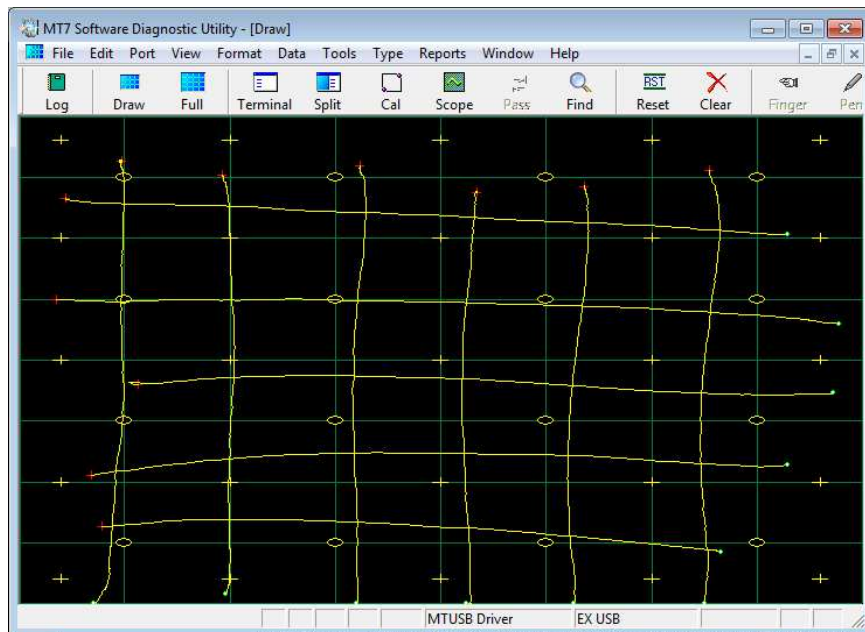


Figure 5 Full Draw Screen drawing vertical and horizontal lines

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 5 of 8
TITLE: Generic SCT & PCT System Test Procedure			

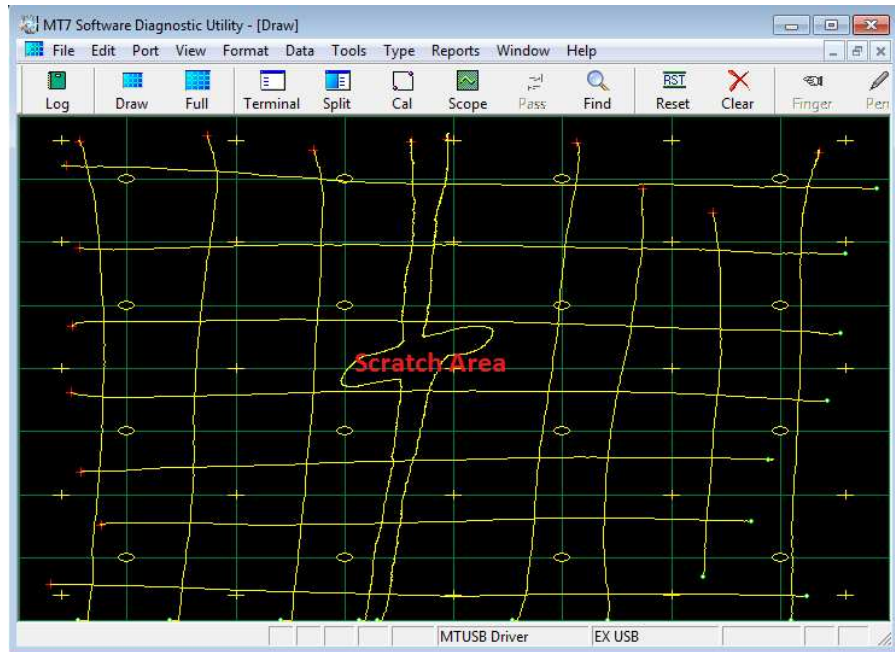


Figure 6 Full Draw Screen drawing vertical and horizontal lines with a scratch

6.2.4.3. For PCT using one finger, draw a box shape around the perimeter of the sensor. The drawing should occur between 0.5 – 1” in from the outer border of the sensor. There should be no drop outs, breaks in the line, or false touches if the finger has remained in contact with the sensor. See Figure 7

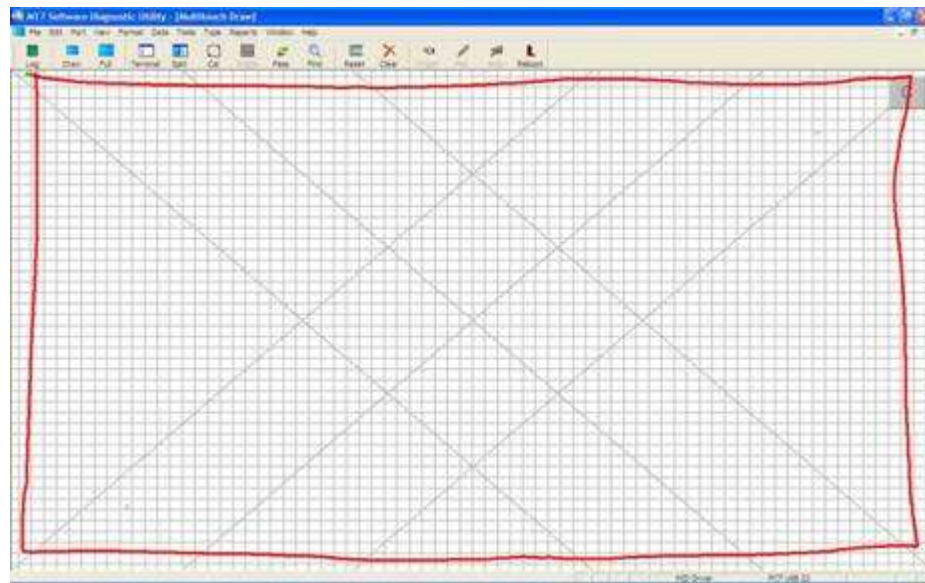


Figure 7: Box Drawing

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 6 of 8
TITLE: Generic SCT & PCT System Test Procedure			

6.2.4.4. If you have skips within the line draw then proceed to the Multi-Graph test in section 6.2.6.

6.2.5. PCT – Multi Graph Tool. On the tool bar (pictured in Figure 1) select from the menu 'Tools' → 'Flex' → 'Multi Graph'. A new window will appear as in Figure 8.

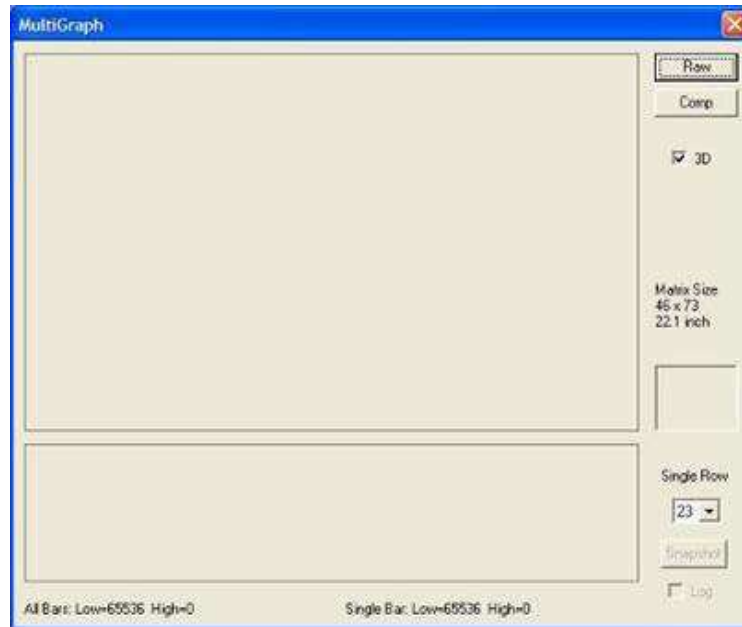


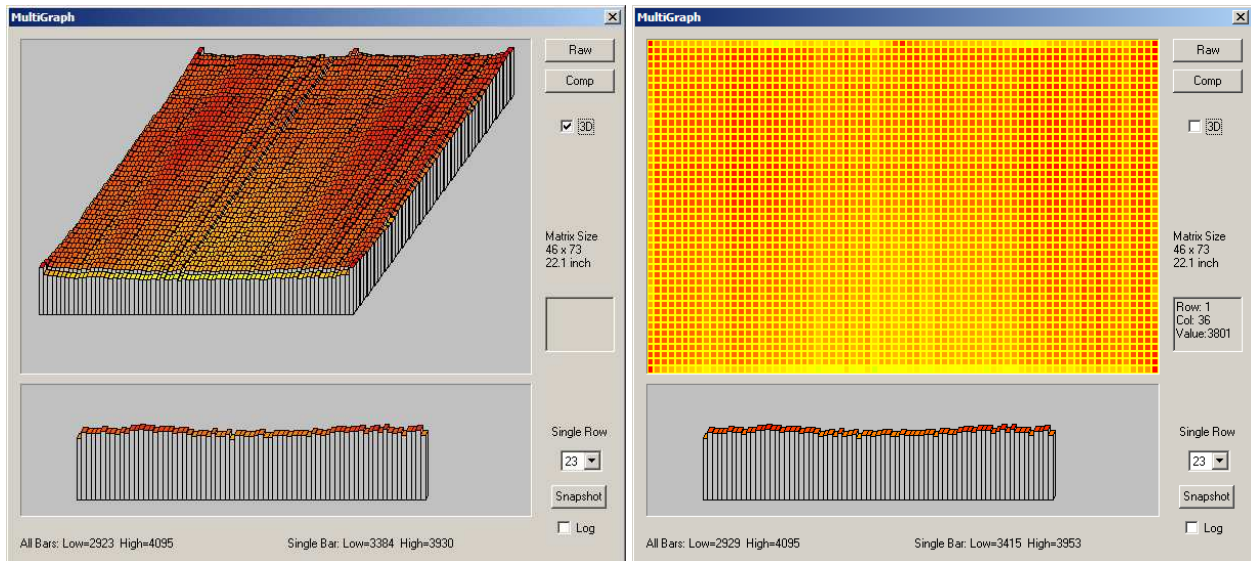
Figure 8: Multi Graph Feature & Window

6.2.5.1. Click on 'Raw'. This will provide a graph of all the row/columns in 3D mode.

Uncheck the '3D' checkbox to obtain a 2D view of the sensor. This will allow the tester to more easily see dead rows/columns.

- The Raw Mode 3D Graph should look similar to the Figure 9. The picture should look fairly uniform in coloration (red, orange, yellow) and height.
- Some differences in height between rows or columns are acceptable. Bars do not need to be uniform.
- In 2D mode the graph should look like Figure 9. Colors should be red, orange, yellow, or green. If a blue section occurs there are defective rows or columns.

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 7 of 8
TITLE: Generic SCT & PCT System Test Procedure			



Good sensor/controller 3D mode checked (left) 2D mode unchecked (right)

Figure 1: Signal Strength 3D Mode - Good Sensor/ Controller

- In 2D mode moving the mouse cursor over the active area will display the X and Y coordinates
- If there are any rows or columns that are bad, they will be significantly lower than the other bars and have a different coloration. If there is a completely dead zone, the bars will be blue and appear as shown in Figure 10. **If any row/column is blue, the product should be replaced. Warning: If multiple rows or columns appear to be dead, confirm that the tail zif connector is inserted completely into the mating connector and that it is fully locked into position. The flex circuit should be confirmed to be properly inserted prior to replacing the touch screen or controller.**

3M Touch Systems	Document Number:	Originator: Paul Hatin	Date Created: 1/24/11
	Revision: 01	Revised By / Date:	Page: 8 of 8
TITLE: Generic SCT & PCT System Test Procedure			

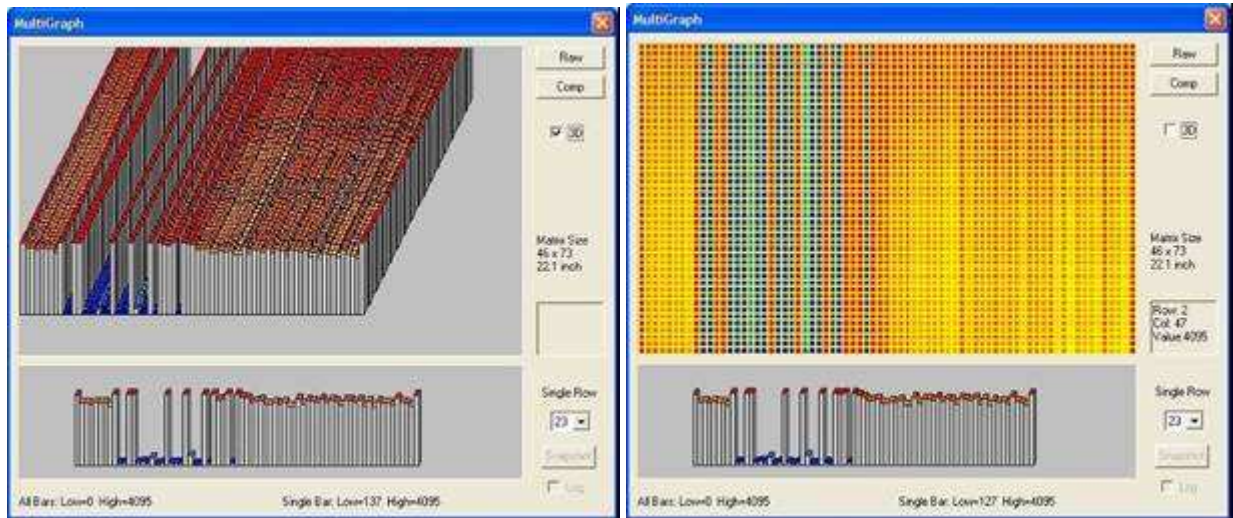


Figure 10: Illustration of dead columns (Zif slide mechanism not fully locked)

NOTE: If needed for clarification, click on the single row box and scroll (using keyboard arrows) to a view of any single 3D row. (Row 0 is at the top)

End of Procedure