FINGERPRINTS

SENSOR TEST TOOL

USER GUIDE

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FINGERPRINTS

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INSTALL THE APPLICATION

The application can be installed in two different ways.

1. **Signed APK:**
    a. Install the application.
        i. **adb install –r [Path to .apk]**
2. **Unsigned APK:**
    a. Verify the application is not already installed.
        i. **adb shell pm list packages | grep sensortesttool**
    b. If the application is already installed, find the location and remove it manually.
        i. **adb shell pm path com.fingerprints.sensortesttool**
    c. Ensure that you have write privileges to the system.
        i. **adb root**
        ii. **adb remount**
    d. Push the application.
        i. **adb push [Path to .apk] /system/priv-app/SensorTestTool/SensorTestTool.apk** or **/vendor/app/SensorTestTool/SensorTestTool.apk** if the device is running Android O or later.
    e. Restart your device.
        i. **adb reboot**

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START THE APPLICATION

Go to your Home Screen of your device and locate the Sensor Test Tool application. Press on the icon and the application will start.

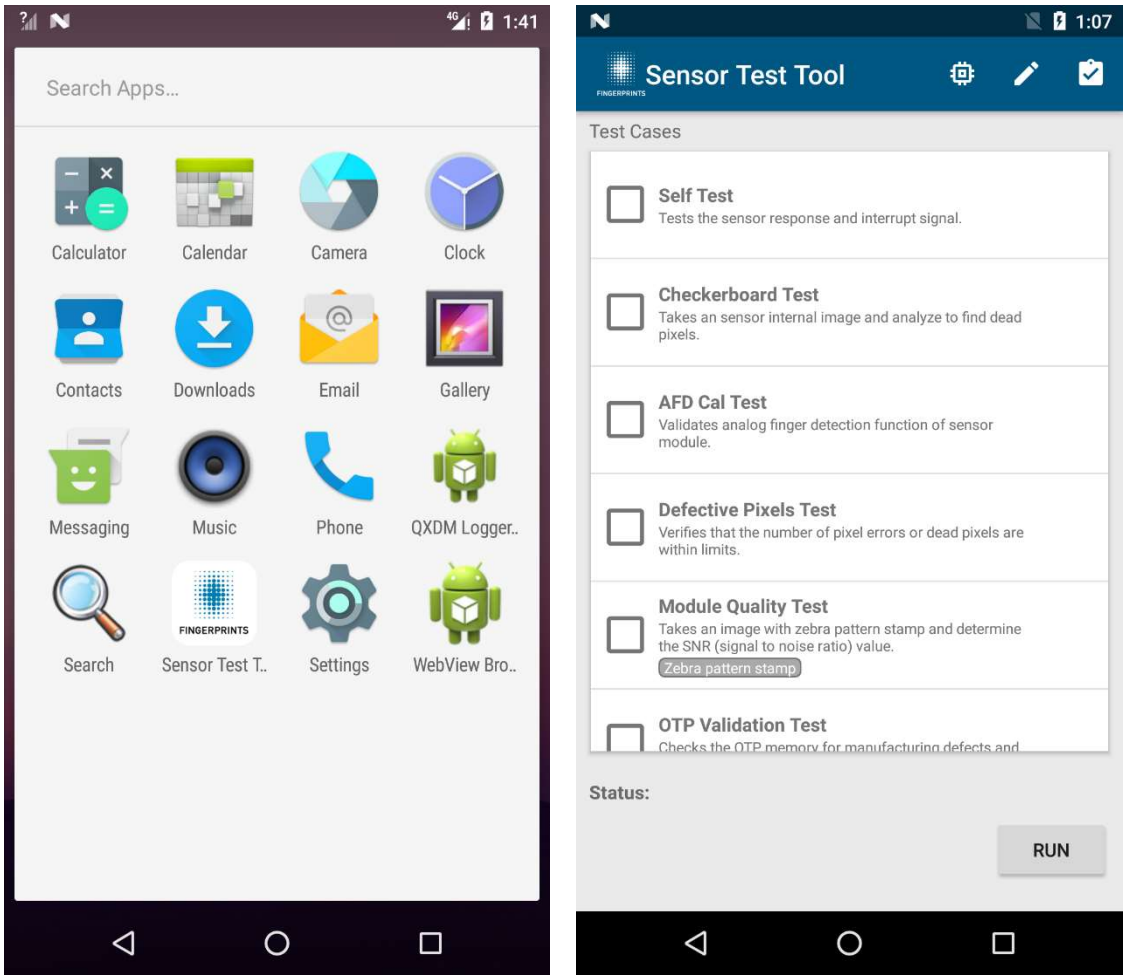

Figure 1 - Starting Sensor Test Tool

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SENSOR TEST TOOL

Sensor Test Tool (STT) application is a reference implementation and basic test tool that can be used on an Android device in order to test the FPC sensor. It is also possible to use the FPC sensortest API's to build completely new test applications based on the reference implementation.

STT features a list of tests that can be executed automatically after one another (see Figure 1). Each test is noted with a status and a summary is available at the bottom of the screen. Some test cases require manual input from the user, and will wait until input has been received. This state is noted by a different icon as seen in the bottom of Figure 2.

MENU OPTIONS

SENSOR INFORMATION

- View information about the fingerprint sensor in the device.

TEST SELECTION

- Select multiple tests at a time (see Figure 3).

LOGS

- STT features a simple log window, noting the status of each test if available.

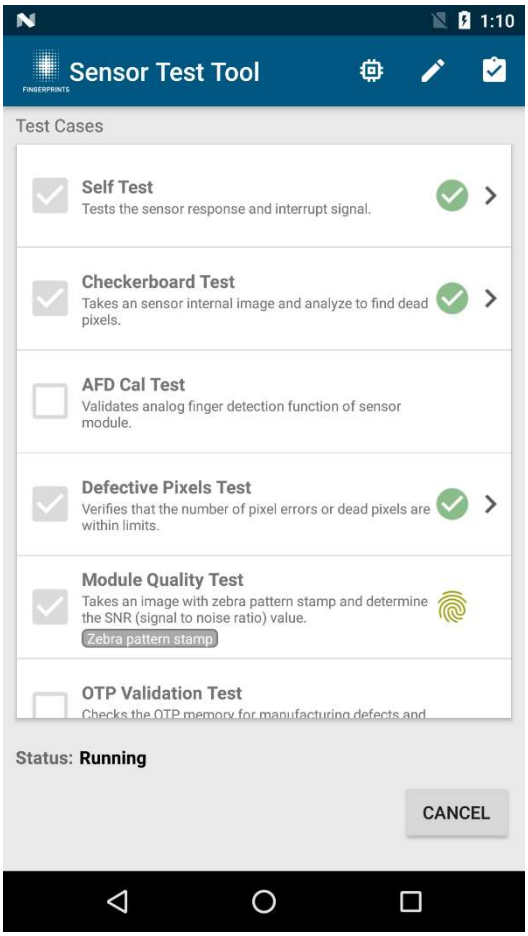

Figure 2 – STT Main Screen

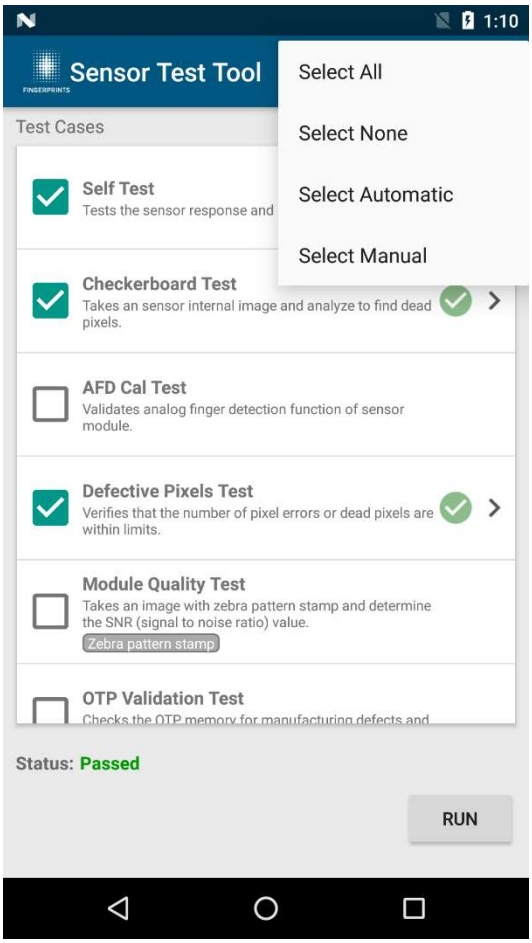

Figure 3 – Options Menu

DEFECTIVE TEST

Defective Pixel Test, extensive data is presented in form of limits and pictures from the test execution.

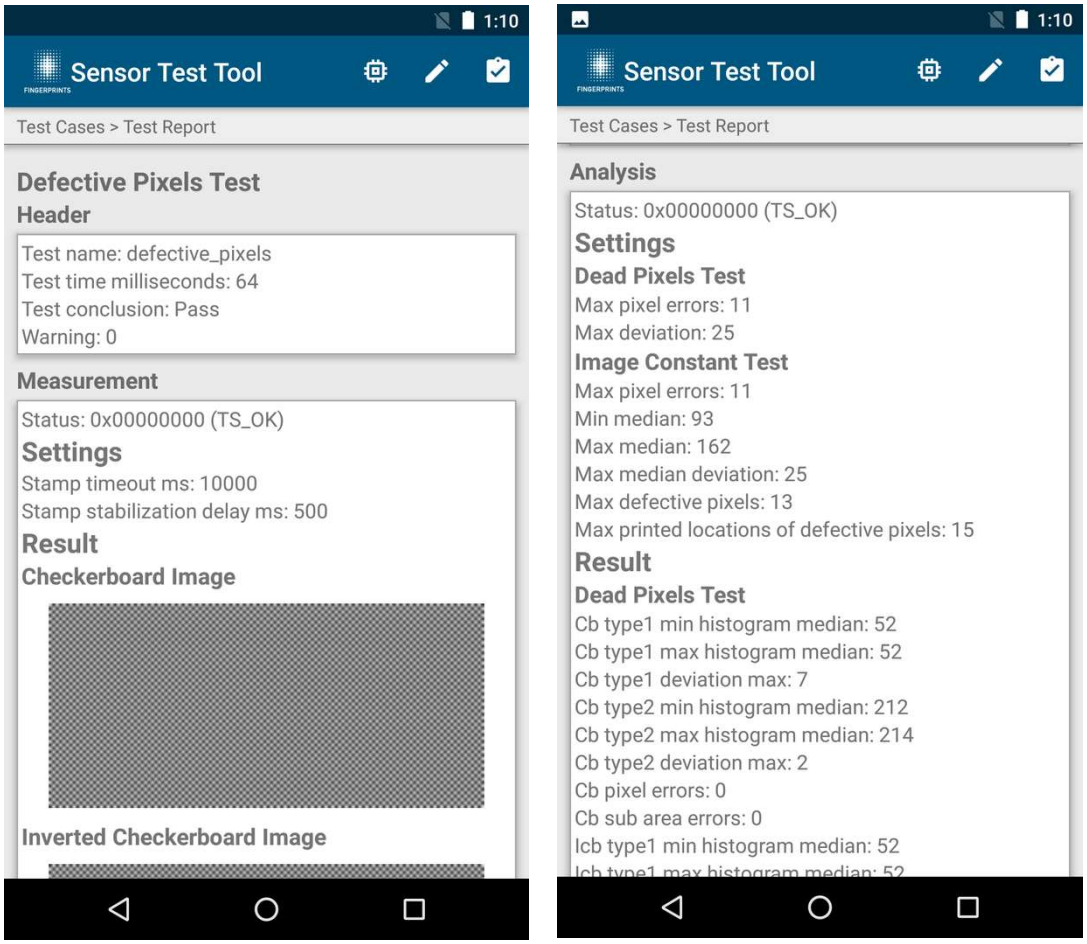

Figure 4, 5 – Showing parts of the test report

TEST/USE CASES

All test cases supported by the sensor in the device are fetched dynamically. Please refer to the application main screen for available test cases and corresponding description.

For more information please consult the In Device Test Specification (ITS).

CALIBRATION

CAPTURE AND STORE PN IMAGE (Only available if the sensor has pixel noise suppression support)

After the calibration has been started, use a flat rubberstamp to calibrate the pixel noise data. The calibration is very sensitive to pressure, so use a jig to get even pressure.

Sensetouch™ CALIBRATION (Note: This is only applicable for calibrating the trigger level of sensors equipped with HW Sensetouch™ solutions.)

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Upon starting the calibration a sub view will appear.

- First the ground force level will be calibrated, leave the sensor with no additional force for three seconds. The pressure value should be as low as possible, preferably around zero.
- The procedure will then move on to calibrate the trigger value. Apply a stable pressure and keep it stable for three seconds to finish the calibration. The trigger value must be higher than the ground force level.
- The trigger level is now calibrated and ready to be used by other application.

ENGINEERING vs RELEASE builds

Some debug features are, due to security, disabled if you run the application in a consumer device. Such features include detailed logcat logs and the ability to extract images from certain tests.

For engineering/debug builds, you will find any stored debug data from the test under:

/sdcard/Android/data/com.fingerprints.sensortesttool/cache/SensorTestTool/TestRun_<X>, where X is a number increased each time you run a set of tests.

Note: During the test nothing can be in contact with the active sensor area. This will affect the test result.

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TEST AUTOMATION

All STT tests can be activated from command line using Android Debug Bridge (ADB). Please make sure the test cases executed this way are supported by the sensor. Here are some examples:

RUN ALL AUTOMATIC TEST CASES

- *adb shell am start -n com.fingerprints.sensortesttool/.activities.MainActivity -e autorun true -e automatic true*

RUN SPECFIC TEST CASE (including manual ones)

- *adb shell am start -n com.fingerprints.sensortesttool/.activities.MainActivity -e autorun true -e <TEST_CASE_ID> true*

Where <TEST_CASE_ID> is one of the following:

- self_test
- checkerboard_test
- image_quality_test
- image_reset_pixel_test
- afd_calibration_test
- module_quality_test
- otp_validation_test
- pn_image_test
- defective_pixels_test
- afd_cal_test

The parameters can be combined to run multiple selected tests. For example:

- *adb shell am start -n com.fingerprints.sensortesttool/.activities.MainActivity -e autorun true -e self_test true -e image_quality_test true*

RESULT FILE

The result is stored in XML-format on the device. To fetch it, simple use.

- *adb pull /sdcard/Android/data/com.fingerprints.sensortesttool/cache/STTTestResult.xml*

It will include all test results plus sensor information.

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APPENDIX

XML CONFIGURATION

- Format
  - SensorTest
    - Test
      - name: Name of sensor test
      - Limit
        - key: Name of the key
        - value: Value
- Place the file under */sdcard/Android/data/com.fingerprints.sensortesttool/cache /fpc_sensortest_test_limits.xml*

MODULE QUALITY TEST PARAMETERS

<SensorTest>

<Test name="Module Quality Test">

<Limit key="SNR" value="7.0"/>

<Limit key="SNRLimitPreset" value="2"/>

<Limit key="SNRCropping" value="4,4,4,4"/>

<Limit key="StabilizationMS" value="500"/>

</Test>

</SensorTest>

SNR

- SNR limits float value

SNRLimitPreset

- SNR_LIMITS_PRESET_GENERIC_0_3_MM = 0
- SNR_LIMITS_PRESET_GENERIC_0_4_MM = 1
- SNR_LIMITS_PRESET_HVV = 2
- SNR_LIMITS_PRESET_CMNS_0_3_MM = 3
- SNR_LIMITS_PRESET_CMNS_0_4_MM = 4

SNRCropping

- left, top, right, bottom
- left /* Number of pixels to crop from left edge. */
- top /* Number of pixels to crop from top edge. */
- right /* Number of pixels to crop from right edge. */
- bottom /* Number of pixels to crop from bottom edge. */

StabilizationMS

- Stabilization delay after finger detect in milliseconds.

Revision history

Rev	Date	Changes	Author
SW30-3.54	2020-04-10	Adapt to the newest app	Dave Xu
SW38-3.55	2021-09-08	Change to use cache directory instead of Pictures	Andy Hong