

VISION 2020 「From Domestic No.1 to Global Top 10」



SiW Panel Test Control Guide

v 0.1

2016.11.10

R&D / TS Team

History

Version	Date	Description
0.1	2016.12.15	1 st release

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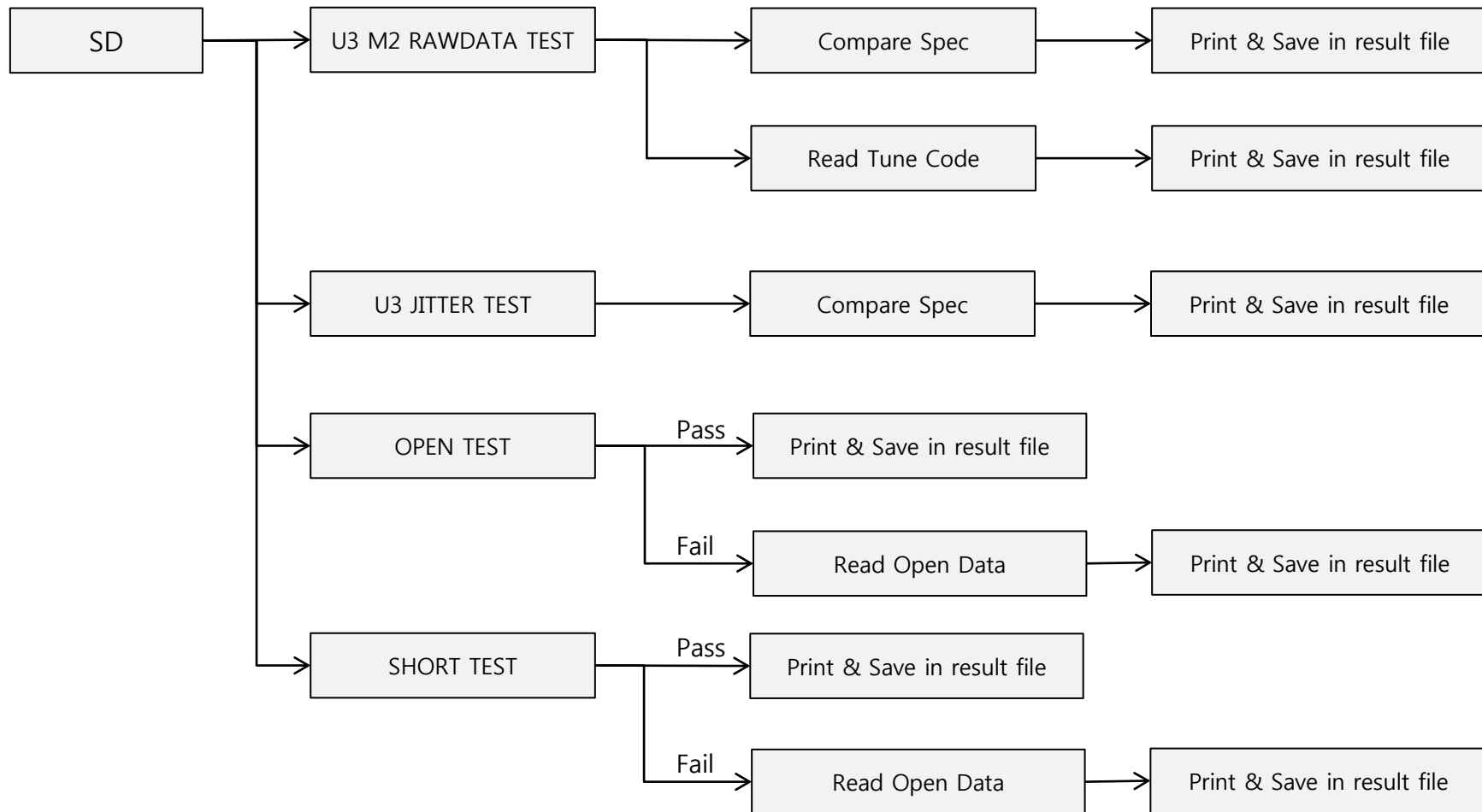
1. Overview

This document is Panel Test Control Guide for Siliconworks Touch IC. This Test Control provides test function to check for connection error between the chip and the TSP and to check the TSP sensor status.

Test can be performed using the Sysfs Node and Spec File and Result File.

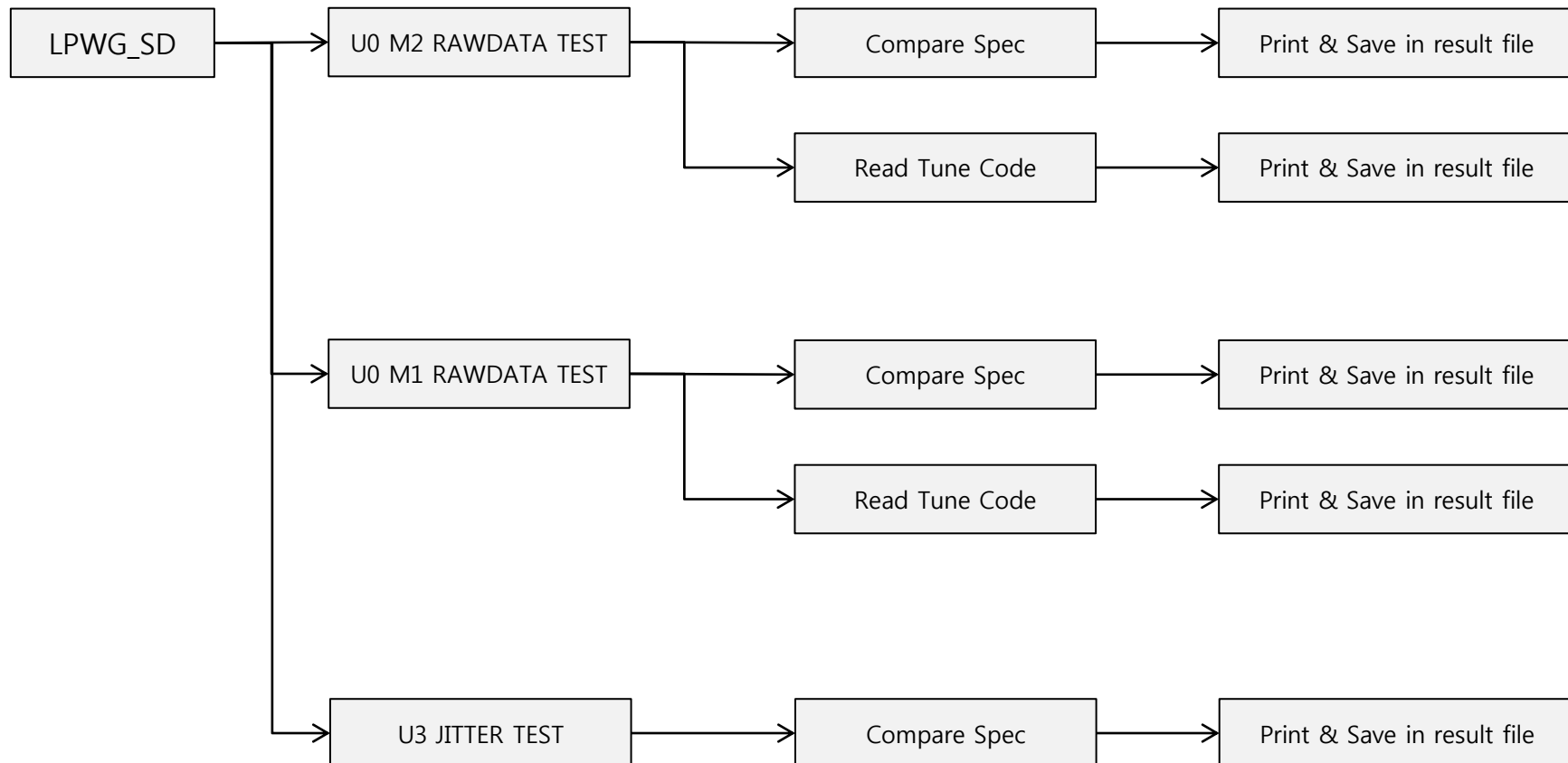
2. Panel Test Configuration

(1) SD test : this is U3 mode Panel Auto test



2. Panel Test Configuration

(2) LPWG_SD test : this is U0 mode Panel Auto test



3. Main Features

Based on the **Spec File**, Panel Test will determine whether the TSP is good or bad and provide the result to the User in the **Result File**.

Panel test begins when SD or LPG SD command is entered

3. Main Features

3.1 Spec File

Spec File is used as a basis for determining whether a TSP is good or defective.

Spec File name : "Project Name"_test_spec_"Vesion".txt

Save Location : "Root directory"/sdcard/siw/"Project Name"_test_spec_"Vesion".txt

Example

```
root@odroidxu3:/sdcard/siw # ls
lg4946_test_spec_V0.1.txt
sw49105_test_spec_V0.1.txt
sw49105_test_spec_mfts_V0.1.txt
touch_self_test.txt
root@odroidxu3:/sdcard/siw # cat lg4946_test_spec_V0.1.txt
U3_M2_Lower = {
    3900,
}
U3_M2_Upper = {
    5100,
}
U0_M2_Lower = {
    3900,
}
U0_M2_Upper = {
    5100,
}
U0_M1_Lower = {
    800,
}
U0_M1_Upper = {
    1400,
}
U3_Jitter_Lower = {
    0,
}
U3_Jitter_Upper = {
    49,
}
```

Ex) When "U3 M2 RAWDATA TEST" Operation

$U3_M2_Lower < U3_M2_Data < U3_M2_Upper$

$3900 < U3_M2_Data < 5100$

→ Test Pass

3. Main Features

3.2 Panel Test Sysfs Node

(1) SD : Full Auto Test in U3 mode

ATTR location : “Root directory”/sys/devices/virtual/input/siw_touch_input/sd

You can see the result “Pass” or “Fail”

Example(1) – linux shell

```
root@odroidxu3:/sys/devices/virtual/input/siw_touch_input # cat sd
```

```
=====RESULT=====
Raw Data : Pass
U3 Jitter : Pass
Channel Status : Pass
```

You can see the result in linux shell

3. Main Features

Example(2) – kernel Log

```

root@odroidxu3:/sys/devices/virtual/input/siw_touch_input # cat sd
[ 6002.062197] siw_touch spil.0: irq(512) disabled
[ 6002.084916] siw_touch spil.0: spil.0-prd : show_sd test begins
[ 6002.109338] siw_touch spil.0: spil.0-prd : wr prd_tc_test_mode_ctl[0C6Eh] = 1
[ 6002.147068] siw_touch spil.0: spil.0-prd : rd prd_tc_test_mode_ctl[0C6Eh] = 0
[ 6002.152755] siw_touch spil.0: current driving mode is STOP
[ 6002.158352] siw_touch spil.0: DDI Display Mode[0021h] = 0x00000003
[ 6002.164513] siw_touch spil.0: TC Driving[0C03h] wr 0x00000002

.....

[ 6002.418195] siw_touch spil.0: irq(512) enabled
[ 6002.422622] siw_touch spil.0: irq(512) wake enabled
[ 6002.427474] siw_touch spil.0: spil.0-prd : =====U3_M2_RAWDATA_TEST=====
[ 6002.435518] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(23, 23)
[ 6002.443993] siw_touch spil.0: spil.0-prd : write testmode[0C04h] = 305
[ 6002.707254] siw_touch spil.0: spil.0-prd : test[0292h] type 0, even offset 0B1Bh, odd offset 0B1Bh
[ 6002.717473] siw_touch spil.0: spil.0-prd : ----- EVEN Data(32 18) -----
[ 6002.723183] siw_touch spil.0: spil.0-prd :      : [ 0] [ 1] [ 2] [ 3] [ 4] [ 5] [ 6] [ 7] [ 8] [ 9] [10] [11] [12] [13] [14] [15] [16] [17]
[ 6002.735613] siw_touch spil.0: spil.0-prd : [ 0] 4042 3999 4123 3965 3889 4078 4055 3968 4088 4043 4071 4208 4125 4101 4201 4140 4153 4080

.....

[ 6010.911874] siw_touch spil.0: LG4946 reset control(2)
[ 6010.916890] siw_touch spil.0: HW Reset(Sync)

.....

[ 6010.790038] =====RESULT=====
[ 6010.790038] Raw Data : Pass
[ 6010.790038] U3 Jitter : Pass
[ 6010.790038] Channel Status : Pass
[ 6010.790038]
[ 6010.808136] siw_touch spil.0: spil.0-prd : wr prd_tc_test_mode_ctl[0C6Eh] = 0
[ 6010.847016] siw_touch spil.0: spil.0-prd : rd prd_tc_test_mode_ctl[0C6Eh] = 0
[ 6010.853357] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(39, 39)
[ 6010.862213] siw_touch spil.0: spil.0-prd : show_sd test terminated

```

You can see the progress in kernel log

3. Main Features

3.2 Panel Test Sysfs Node

(2) LPWG_SD : Full Auto Test in U0 mode

ATTR location : “Root directory”/sys/devices/virtual/input/siw_touch_input/lpwg_sd

You can see the result “Pass” or “Fail”

Example(1) – linux shell

```
root@odroidxu3:/sys/devices/virtual/input/siw_touch_input # cat lpwg_sd
```

```
=====RESULT=====
```

```
Raw Data : Pass
```

```
U0 Jitter : Pass
```

You can see the result in linux shell

3. Main Features

Example(2) – kernel Log

```

root@odroidxu3:/sys/devices/virtual/input/siw_touch_input # cat lpwg_sd
[ 1041.310949] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(19, 19)
[ 1041.319928] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(23, 23)
[ 1041.328368] siw_touch spil.0: spil.0-prd : show_sd test begins
[ 1041.334687] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(84, 84)
[ 1041.344099] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(128, 128)
[ 1041.352752] siw_touch spil.0: spil.0-prd : wr prd_tc_test_mode_ctl[0C6Eh] = 1
[ 1041.392043] siw_touch spil.0: spil.0-prd : rd prd_tc_test_mode_ctl[0C6Eh] = 1
[ 1041.397734] siw_touch spil.0: current driving mode is STOP
[ 1041.403324] siw_touch spil.0: DDI Display Mode[0021h] = 0x00000003
[ 1041.409476] siw_touch spil.0: TC Driving[0C03h] wr 0x00000002
[ 1041.437017] siw_touch spil.0: command done: mode 6, running_sts 00h
[ 1041.441842] siw_touch spil.0: spil.0-prd : =====U0_M2_RAWDATA_TEST=====
[ 1041.449482] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(23, 23)
[ 1041.458220] siw_touch spil.0: spil.0-prd : write testmode[0C04h] = 5
[ 1041.722180] siw_touch spil.0: spil.0-prd : test[0292h] type 0, even offset 0B1Bh, odd offset 0B1Bh
[ 1041.732384] siw_touch spil.0: spil.0-prd : ----- EVEN Data(32 18) -----
[ 1041.738093] siw_touch spil.0: spil.0-prd :      : [ 0] [ 1] [ 2] [ 3] [ 4] [ 5] [ 6] [ 7] [ 8] [ 9] [10] [11] [12] [13] [14] [15] [16] [17]
[ 1041.750523] siw_touch spil.0: spil.0-prd : [ 0] 4046 4123 4259 4094 4027 4082 4059 3973 4091 4149 4178 4327 4243 4097 4193 4132 4147 4202
[ 1041.762901] siw_touch spil.0: spil.0-prd : [ 1] 4073 4235 4326 4367 4126 4124 4317 4076 4122 4060 3909 4037 4183 3844 3911 4097 3908 4090
[ 1041.775339] siw_touch spil.0: spil.0-prd : [ 2] 4064 4085 3993 3963 3958 3944 4067 4016 3922 4116 4171 4137 4236 4147 4018 4145 4195 4051

.....

[12786.304439] siw_touch 5-0028: SW49105 reset control(2)
[12786.309570] siw_touch 5-0028: HW Reset(Sync)

.....

[12786.409570] =====RESULT=====
[12786.409570] Raw Data : Pass
[12786.409570] U3 Jitter : Pass

[12786.514675] siw_touch spil.0: spil.0-prd : wr prd_tc_test_mode_ctl[0C6Eh] = 0
[12786.514675] siw_touch spil.0: spil.0-prd : rd prd_tc_test_mode_ctl[0C6Eh] = 1
[12786.514675] siw_touch spil.0: spil.0-prd : file write done : /sdcard/siw/touch_self_test.txt(39, 39)
[12786.514675] siw_touch spil.0: spil.0-prd : show_sd test terminated

```

You can see the progress in kernel log

3. Main Features

3.3 Result File

Panel Test result file.

Panel Test result file name: touch_self_test.txt.”Number”

Save Location : “Root directory”/sdcard/siw/touch_self_test.txt.”Number”

Example

```
root@odroidxu3:/sdcard/siw # ls
lg4946_test_spec_V0.1.txt
sw49105_test_spec_V0.1.txt
sw49105_test_spec_mfts_V0.1.txt
touch_self_test.txt
root@odroidxu3:/sdcard/siw # cat touch_self_test.txt
Show_sd Test Start
[11-10 05:05:52.443]

===== Firmware Info =====
version : v0.01
revision : 0
product id : LOW57SF6

===== Production Info =====
lot : 0
serial : 0x0
date : 0x0 0x0
date : 0000.00.00 00:00:00 Site0

.....

=====RESULT=====
Raw Data : Pass
Blu Jitter Data : Pass
Channel Status : Fail (1/0)

[11-10 05:05:54.823]
Show_sd Test End
```

You can see the Summary results
in “touch_self_test.txt”

4. Reference Documents

- * Touch Programmer's Guide
- * Memory Map
- * Panel_Test_Guide