

Report NO: 12I0A0004\_I

# FSP180-50LE of FWS-7200 Power Electronics Test Report

|                     |   |       |       |             |
|---------------------|---|-------|-------|-------------|
| Summary             | <input checked="" type="checkbox"/> Pass<br><input type="checkbox"/> Fail<br><input type="checkbox"/> Pass with Deviation<br>Comment: _____ |       |       |             |
| Test Result Summary |   |       |       |             |
|                     | Critical  | Major | Minor | Enhancement |
| Defect Found        | 0   | 0     | 0     | 0           |
| Defect Unsolved     | 0   | 0     | 0     | 0           |

|                   |                     |                 |
|-------------------|---------------------|-----------------|
| Issue date        | Approval            | Test Engineer   |
| <b>06/15/2012</b> | <b>Vincent Chen</b> | <b>Sean Hsu</b> |

## Table of Contents

|       |                                    |   |
|-------|------------------------------------|---|
| 1.    | Project.....                       | 3 |
| 2.    | Power Manufacturer .....           | 3 |
| 3.    | Team Member .....                  | 3 |
| 4.    | Test Equipment .....               | 3 |
| 5.    | AC Adapter Spec.....               | 3 |
| 6.    | Test Item .....                    | 4 |
| 6.1.  | AC Input Current.....              | 4 |
| 6.2.  | MAX Inrush Current .....           | 4 |
| 6.3.  | Input Frequency & Voltage .....    | 4 |
| 6.4.  | Switching Test .....               | 4 |
| 6.5.  | Efficiency.....                    | 4 |
| 6.6.  | Line Regulation.....               | 4 |
| 6.8.  | Over-Voltage Protection .....      | 4 |
| 6.9.  | Over-Circuit Protection .....      | 4 |
| 6.10. | Over-Load Protection .....         | 5 |
| 6.11. | Short Circuit Protect.....         | 5 |
| 6.12. | Line Voltage Surge.....            | 5 |
| 6.13. | Line Voltage Sag .....             | 5 |
| 6.14. | Ripple & Noise .....               | 5 |
| 6.15. | Setup Time .....                   | 5 |
| 6.16. | Hold up Time.....                  | 5 |
| 6.17. | Rise Time.....                     | 5 |
| 6.18. | Turn on Overshoot .....            | 5 |
| 6.19. | Turn off Undershoot .....          | 6 |
| 6.20. | Remote ON/OFF .....                | 6 |
| 6.21. | Power Good Signal.....             | 6 |
| 6.22. | Power Fall Signal .....            | 6 |
| 6.23. | Power On In Low Temperature .....  | 6 |
| 6.24. | Power On In High Temperature ..... | 6 |
| 6.25. | Room Burn-in test .....            | 6 |
| 6.26. | On/Off Cycling .....               | 6 |
| 6.27. | Power Consumption Test.....        | 6 |

**1. Project**

FSP180-50LE AC-DC Power for FWS-7200

**2. Power Manufacturer**

FSP

**3. Team Member**

PM : Jill Chu ; ISD H/W : Jeff Lee

**4. Test Equipment**

4.1. PCB : FWB-7200 A1.0 BIOS R0.0(FW72AM00)05/23/2012

4.2. CPU : Intel ATOM D525 1.8GHz

4.3. Memory : DSL DDR3-1066 2GB\*2

4.4. SATA HDD : WD WD1600BEVT-00A23 160GB

4.5. Power Supply : FSP180-50LE 180W

4.6. LCD Monitor : CHIMEI , Model : A170E2-T08

4.7. USB Keyboard : Logitech , Model : Y-BL49

4.8. USB Mouse : Logitech , Model : M-BT85

**5. AC Adapter Spec**

AC Input : 100VAC~240VAC / 47Hz~63Hz

DC Output : 180W

## 6. Test Item

| Test Item                      | Test Condition / Specification                  |                   | Sanction    |        |
|--------------------------------|---|-------------------|-------------|--------|
|                                |   |                   | Measured    | Result |
| 6.1. AC Input Current          | I/P:115VAC                                      | 4A                | 1.99A       | PASS   |
| 6.2. MAX Inrush Current        | I/P:115VAC                                      | A                 | 10.16A      | -      |
|                                | I/P:230VAC                                      | A                 | 11.41A      | -      |
| 6.3. Input Frequency & Voltage | I/P:90VAC/47HZ                                  | ■ON □ OFF         | -           | -      |
|                                | I/P:90VAC/63HZ                                  | ■ON □ OFF         | -           | -      |
|                                | I/P:264VAC/47HZ                                 | ■ON □ OFF         | -           | -      |
|                                | I/P:264VAC/63HZ                                 | ■ON □ OFF         | -           | -      |
| 6.4. Switching Test            | Switching Time: 0.5 Sec<br>MIN Load / Full Load | @90VAC □ON □ OFF  | -           | -      |
|                                | Switching Time: 0.5 Sec<br>MIN Load / Full Load | @115VAC □ON □ OFF | -           | -      |
|                                | Switching Time: 0.5 Sec<br>MIN Load / Full Load | @230VAC □ON □ OFF | -           | -      |
|                                | Switching Time: 0.5 Sec<br>MIN Load / Full Load | @264VAC □ON □ OFF | -           | -      |
| 6.5. Efficiency                | I/P:115VAC<br>FULL LOAD                         | @68%Min           | 76.416%     | PASS   |
|                                | I/P:230VAC<br>FULL LOAD                         | @68%Min           | 78.429%     | PASS   |
| 6.6. Line Regulation           | I/P:90VAC~264VAC                                | <±5%(3.3V)        | 0%          | PASS   |
|                                |   | <±5%(5V)          | 0%          | PASS   |
|                                |   | <±5%(12V)         | 0%          | PASS   |
|                                |   | <±10%(-12V)       | 0.125%      | PASS   |
|                                |   | <±5%(5VSB)        | 0%          | PASS   |
| 6.7. Load Regulation           | I/P:115VAC<br>O/P:MINLOAD~FULL<br>LOAD          | <±5%(3.3V)        | 1.44/-2.9%  | PASS   |
|                                |   | <±5%(5V)          | 1.65/-4.4%  | PASS   |
|                                |   | <±5%(12V)         | 0.25/0.375% | PASS   |
|                                |   | <±10%(-12V)       | -0.78/2.21% | PASS   |
|                                |   | <±5%(5VSB)        | 0.95/-2.2%  | PASS   |
|                                | I/P:230VAC<br>O/P:MINLOAD~FULL<br>LOAD          | <±5%(3.3V)        | 1.44/-2.95% | PASS   |
|                                |   | <±5%(5V)          | 1.75/-4.4%  | PASS   |
|                                |   | <±5%(12V)         | 0.17/0.38%  | PASS   |
|                                |   | <±10%(-12V)       | -0.88/-2.4% | PASS   |
|                                |   | <±5%(5VSB)        | 0.9/-2.2%   | PASS   |
| 6.8. Over-Voltage Protection   | I/P:230VAC O/P:MIN<br>LOAD                      | V1 : 4.5(MAX)     | -           | -      |
|                                |   | V2 : 6.5(MAX)     | -           | -      |
|                                |   | V3 : 15.6(MAX)    | -           | -      |
| 6.9. Over-Circuit Protection   | O/P: 3.3V                                       | 35A(MAX)          | 32A         | PASS   |
|                                | O/P: 5V   | 35(MAX)           | 31A         | PASS   |
|                                | O/P: 12V  | 25A(MAX)          | 15A         | PASS   |

|                                    |   |  |          |      |
|------------------------------------|---|--|----------|------|
| <b>6.10. Over-Load Protection</b>  | I/P:90VAC O/P:MIN LOAD  | -  | -        | -    |
|                                    | I/P:115VAC O/P:MIN LOAD   | -  | -        | -    |
|                                    | I/P:230VAC O/P:MIN LOAD   | -  | -        | -    |
|                                    | I/P:264VAC O/P:MIN LOAD   | -  | -        | -    |
| <b>6.11. Short Circuit Protect</b> | I/P:115VAC O/P:MIN LOAD   | 5V&GND Short   | -        | PASS |
|                                    | I/P:230VAC O/P:MIN LOAD   | 5V&GND Short   | -        | PASS |
| <b>6.12. Line Voltage Surge</b>    | O/P: FULL LOAD  | Surge voltage from 132VAC to 147VAC (0.5sec), back to 132VDC | -        | PASS |
|                                    | O/P: FULL LOAD  | Surge voltage from 264VAC to 293VAC (0.5sec), back to 264VAC | -        | PASS |
| <b>6.13. Line Voltage Sag</b>      | O/P: FULL LOAD  | Sag voltage from 108VAC to 80VAC (0.5sec), back to 108VAC    | -        | PASS |
|                                    | O/P: FULL LOAD  | Sag voltage from 198VAC to 161VAC (0.5sec), back to 198VDC   | -        | PASS |
| <b>6.14. Ripple &amp; Noise</b>    | I/P:115VAC O/P:FULL LOAD  | ≤ 50mv(3.3V)   | 48.7mv   | PASS |
|                                    |   | ≤ 50mv(5V)   | 39.4mv   | PASS |
|                                    |   | ≤ 120mv(12V)   | 83.7mv   | PASS |
|                                    |   | ≤ 120mv(-12V)  | 118.5mv  | PASS |
|                                    | I/P:230VAC O/P:FULL LOAD  | ≤ 50mv(5VSB)   | 35.5mv   | PASS |
|                                    |   | ≤ 50mv(3.3V)   | 47.7mv   | PASS |
|                                    |   | ≤ 50mv(5V)   | 40.5mv   | PASS |
|                                    |   | ≤ 120mv(12V)   | 86.6mv   | PASS |
|                                    | ≤ 120mv(-12V)   | 117.5mv  | PASS     |      |
|                                    | ≤ 50mv(5VSB)  | 36.5mv   | PASS     |      |
| <b>6.15. Setup Time</b>            | I/P:115VAC O/P:FULL LOAD  | mS(MAX)(5V)  | 120.25ms | -    |
|                                    | I/P:230VAC O/P:FULL LOAD  | mS(MAX) (5V)   | 55.75ms  | -    |
| <b>6.16. Hold up Time</b>          | I/P:115VAC O/P:FULL LOAD  | 17mS(MIN) (5V)   | 29.5ms   | PASS |
|                                    | I/P:230VAC O/P:FULL LOAD  | 17mS(MIN) (5V)   | 32.5ms   | PASS |
| <b>6.17. Rise Time</b>             | I/P:115VAC O/P:FULL LOAD  | 20mS(MAX) (5V)   | 4.38ms   | PASS |
|                                    | I/P:230VAC O/P:FULL LOAD  | 20mS(MAX) (5V)   | 4.39ms   | PASS |
| <b>6.18. Turn on Overshoot</b>     | Turn on overshoot shall not exceed 10% over nominal voltages@ 20 % LOAD |  | -        | PASS |
|                                    | Turn on overshoot shall not exceed 10% over nominal voltages@ 20 % LOAD |  | -        | PASS |

|   |   |                           |  |      |
|---|---|---------------------------|--|------|
| <b>6.19. Turn off Undershoot</b>          | Turn off undershoot shall not exceed 10% over nominal voltages  |                           | -  | PASS |
|   | Turn off undershoot shall not exceed 10% over nominal voltages  |                           | -  | PASS |
| <b>6.20. Remote ON/OFF</b>                | Simulate TTL signal to test this function                       |                           |  | -    |
| <b>6.21. Power Good Signal</b>            | Shall go high level with a delay of 100~500ms                   |                           | 304ms  | PASS |
| <b>6.22. Power Fall Signal</b>            | 1mS(MIN)  |                           | 8.5ms  | PASS |
| <b>6.23. Power On In Low Temperature</b>  | I/P:115VAC ( 0°C ) After 2HR Power On                           |                           |  | -    |
| <b>6.24. Power On In High Temperature</b> | I/P:115VAC ( 50 °C )After 2HR Power On                          |                           |  | -    |
| <b>6.25. Room Burn-in test</b>            | I/P:115VAC O/P: FULL LOAD TA:25 °C<br>BURN-IN DURATION : 2 hour |                           |  | -    |
| <b>6.26. On/Off Cycling</b>               | Times / on: 20 sec / off: 10 sec                                |                           |  | -    |
| <b>6.27. Power Consumption Test</b>       | No Run Prime95  | I/P: 100 VAC 0.24 A 23.7W | O/P:<br>3.3V/0.53A<br>5V/1.1A<br>12V/0.74A<br>-12V/0.157A<br>5VSB/0.3A | PASS |
|   | Run Prime95   | I/P: 100 VAC 0.3 A 29.6 W | O/P:<br>3.3V/0.53A<br>5V/1.28A<br>12V/0.78A<br>-12V/0.12A<br>5VSB/0.4A | PASS |