

# FSP060-DBAE1 of FWS-2160 Power Electronics Test Report

Summary	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input checked="" type="checkbox"/> Pass with Deviation <b>Comment: Measured Efficiency not meet Power Supply product spec</b>			
Test Result Summary				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date  
**07/16/2013**

Approval  
**Tom Lin**

Test Engineer  
**Sean Hsu**

## 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
6.7. Load Regulation .....	4
6.8. Over-Voltage Protection .....	4
6.9. Over-Circuit Protection .....	4
6.10. Over-Load Protection .....	4
6.11. Short Circuit Protect.....	4
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 .....	5
6.20. Remote ON/OFF .....	5
6.21. Power Good Signal.....	5
6.22. Power On In Low Temperature .....	5
6.23. Power On In High Temperature .....	5
6.24. System Power Consumption Test .....	5

**1. Project**

FSP060-DBAE1 AC-DC Adapter for FWS-2160

**2. Power Manufacturer**

FSP

**3. Team Member**

PM : Randy Chang ; H/W : Jeff Lee

**4. Test Equipment**

4.1. PCB : FWS-2160 A0.1 REV.R0.3 K216AM03 (07/02/2013)

4.2. CPU : AMD G-series 1GHz

4.3. Memory : Transcend DDR3-1333 2GB\*2

4.4. HDD : WD , WD2500BPVT , 250GB

4.5. AC Adapter : FSP , Model : FSP060-DBAE1 , O/P : 12V/5A , 60Watt

4.6. LCD Monitor : CHIMEI , Model : 22SH-L

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

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

**5. AC Adapter Spec**

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

DC Output : 12Vdc Min Load : 0A Full Load : 5A / 60W

## 6. Test Item

Test Item	Test Condition / Specification		Sanction	
			Measured	Result
6.1. AC Input Current	I/P:90VAC	1.5A	1.4A	PASS
6.2. MAX Inrush Current	I/P:115VAC	A	8.54A	-
	I/P:230VAC	A	9.51A	-
6.3. Input Frequency & Voltage	I/P:90VAC/47HZ	■ON □ OFF	-	PASS
	I/P:90VAC/63HZ	■ON □ OFF	-	PASS
	I/P:264VAC/47HZ	■ON □ OFF	-	PASS
	I/P:264VAC/63HZ	■ON □ OFF	-	PASS
6.4. Switching Test	Switching Time: 0.5 Sec MIN Load / Full Load	@90VAC ■ON □ OFF	-	PASS
	Switching Time: 0.5 Sec MIN Load / Full Load	@115VAC ■ON □ OFF	-	PASS
	Switching Time: 0.5 Sec MIN Load / Full Load	@230VAC ■ON □ OFF	-	PASS
	Switching Time: 0.5 Sec MIN Load / Full Load	@264VAC ■ON □ OFF	-	PASS
6.5. Efficiency	I/P:90VAC O/P:5A	@%Min	84.244%	-
	I/P:115VAC O/P:5A	@87%Min	85.453%	Fail
	I/P:230VAC O/P:5A	@87%Min	86.113%	Fail
	I/P:264VAC O/P:5A	@%Min	86.002%	-
6.6. Line Regulation	I/P:90VAC~264VAC	<±3%	0.4%	PASS
6.7. Load Regulation	I/P:115VAC O/P:MIN~FULL LOAD	<±5%	4.375%	PASS
	I/P:230VAC O/P:MIN~FULL LOAD	<±5%	4.483%	PASS
6.8. Over-Voltage Protection	I/P:230VAC O/P:MIN LOAD	V1 : 13~18 (MAX)	-	-
6.9. Over-Circuit Protection	O/P: 12V	2A(MAX)	6.72A	PASS
6.10. Over-Load Protection	I/P:90VAC O/P:MIN LOAD	200%	124%	PASS
	I/P:115VAC O/P:MIN LOAD	200%	134.4%	PASS
	I/P:230VAC O/P:MIN LOAD	200%	138.4%	PASS
	I/P:264VAC O/P:MIN LOAD	200%	138%	PASS
6.11. Short Circuit Protect	I/P:115VAC O/P:MIN LOAD	12V&GND Short	-	PASS
	I/P:230VAC O/P:MIN LOAD	12V&GND Short	-	PASS

**FSP060-DBAE1 of FWS-2160 Power Electronics Test Report**

<b>6.12. Line Voltage Surge</b>	O/P: FULL LOAD	Surge voltage from 132VAC to 147VAC (0.5sec), back to 132VAC	-	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 198VAC	-	PASS
<b>6.14. Ripple &amp; Noise</b>	I/P:115VAC O/P:FULL LOAD	$\leq 150\text{mv}$	93.8mv	PASS
	I/P:230VAC O/P:FULL LOAD	$\leq 150\text{mv}$	89.1mv	PASS
<b>6.15. Setup Time</b>	I/P:90VAC O/P:FULL LOAD	3S(MAX)	1.27ms	PASS
	I/P:230VAC O/P:FULL LOAD	mS(MAX)	670ms	-
<b>6.16. Hold up Time</b>	I/P:115VAC O/P:FULL LOAD	8mS(MIN)	22ms	PASS
	I/P:230VAC O/P:FULL LOAD	20mS(MIN)	52.4ms	PASS
<b>6.17. Rise Time</b>	I/P:115VAC O/P:FULL LOAD	40mS(MAX)	14.1ms	PASS
	I/P:230VAC O/P:FULL LOAD	mS(MAX)	11.2ms	-
<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 of100~500ms		-	-
<b>6.22. Power On In Low Temperature</b>	I/P:115VAC ( 0°C ) After 2HR Power On		-	-
<b>6.23. Power On In High Temperature</b>	I/P:115VAC ( °C )After 2HR Power On		-	-
<b>6.24. System Power Consumption Test</b>	No Run Prime95	I/P:100VAC 0.29A 14.5W	O/P: 12V/1.11A 13.32W	PASS
	Run Prime95	I/P:100VAC 0.35A 15.5W	O/P: 12V/1.13A 13.56W	PASS