

Report NO: 13I0A0009_I

FSP460-60PFG of NVR-Q67-A10-RM Power Electronics Test Report

Summary	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Pass with Deviation 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
07/30/2013	Tom Lin	Sean Hsu

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1. Project

FSP460-60PFG AC-DC Power for NVR-Q67-A10-RM

2. Power Manufacturer

FSP

3. Team Member

PM : Jason Liu ; H/W : Steve Yu

4. Test Equipment

4.1. CPU Board : AAEON , IMBM-Q67A-A10-G2 REV.A1.02

4.2. CPU : INTEL , CORE I5-2400 3.1GHz

4.3. HDD : WD , 3.5" WD3200AAKX , 320GB*6

4.4. HDD : WD , 2.5" WD2500BPVT 250GB*1

4.5. Memory : Transcend DDR3- 1333 4GB

4.6. Power Supply : FSP , M/N : FSP460-60PFG , O/P : 460Watt

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

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

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

5. AC Adapter Spec

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

DC Output : 460W

6. Test Item

Test Item	Test Condition / Specification		Sanction	
			Measured	Result
6.1. AC Input Current	I/P:100VAC	8A	A	N/A
6.2. MAX Inrush Current	I/P:115VAC	A	A	N/A
	I/P:230VAC	A	A	N/A
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	-	N/A
	Switching Time: 0.5 Sec MIN Load / Full Load	@115VAC □ON □ OFF	-	N/A
	Switching Time: 0.5 Sec MIN Load / Full Load	@230VAC □ON □ OFF	-	N/A
	Switching Time: 0.5 Sec MIN Load / Full Load	@264VAC □ON □ OFF	-	N/A
6.5. Efficiency	I/P:115VAC FULL LOAD	@82%Min	83.5%	PASS
	I/P:230VAC FULL LOAD	@82%Min	84.6%	PASS
6.6. Line Regulation	I/P:90VAC~264VAC	<±5%(3.3V)	0.8%	PASS
		<±5%(5V)	0.6%	PASS
		<±5%(12V)	0.8%	PASS
		<±10%(-12V)	1.2%	PASS
		<±5%(5VSB)	0.5%	PASS
6.7. Load Regulation	I/P:115VAC O/P:MINLOAD~FULL LOAD	<±5%(3.3V)	1.45/-2.5%	PASS
		<±5%(5V)	1.65/-4.8%	PASS
		<±5%(12V)	0.28/0.375%	PASS
		<±10%(-12V)	-0.88/2.21%	PASS
		<±5%(5VSB)	0.96/-2.2%	PASS
	I/P:230VAC O/P:MINLOAD~FULL LOAD	<±5%(3.3V)	1.84/-2.95%	PASS
		<±5%(5V)	1.85/-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 LOAD	V1 : 3.5~4.5	-	N/A
		V2 : 5.5~6.82	-	N/A
		V3 : 13.4~15.6	-	N/A
6.9. Over-Circuit Protection	O/P: 3.3V	45A(MAX)	28A	PASS
	O/P: 5V	45A(MAX)	32A	PASS
	O/P: 12V	44A(MAX)	-	N/A

6.10. Over-Load Protection	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	-	-	-
6.11. Short Circuit Protect	I/P:115VAC O/P:MIN LOAD	5V&GND Short	-	PASS
	I/P:230VAC O/P:MIN LOAD	5V&GND Short	-	PASS
6.12. Line Voltage Surge	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
6.13. Line Voltage Sag	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
6.14. Ripple & Noise	I/P:115VAC O/P:FULL LOAD	$\leq 50\text{mv}(3.3\text{V})$	48.5mv	PASS
		$\leq 50\text{mv}(5\text{V})$	47.5mv	PASS
		$\leq 120\text{mv}(12\text{V})$	98.5mv	PASS
		$\leq 120\text{mv}(-12\text{V})$	115.6mv	PASS
	I/P:230VAC O/P:FULL LOAD	$\leq 50\text{mv}(5\text{VSB})$	35.5mv	PASS
		$\leq 50\text{mv}(3.3\text{V})$	47.5mv	PASS
		$\leq 50\text{mv}(5\text{V})$	46.5mv	PASS
		$\leq 120\text{mv}(12\text{V})$	96.6mv	PASS
		$\leq 120\text{mv}(-12\text{V})$	117.5mv	PASS
		$\leq 50\text{mv}(5\text{VSB})$	36.5mv	PASS
6.15. Setup Time	I/P:115VAC O/P:FULL LOAD	mS(MAX)(5V)	-	-
	I/P:230VAC O/P:FULL LOAD	mS(MAX) (5V)	-	-
6.16. Hold up Time	I/P:115VAC O/P:FULL LOAD	17mS(MIN) (5V)	-	-
	I/P:230VAC O/P:FULL LOAD	17mS(MIN) (5V)	-	-
6.17. Rise Time	I/P:115VAC O/P:FULL LOAD	20mS(MAX) (5V)	-	-
	I/P:230VAC O/P:FULL LOAD	20mS(MAX) (5V)	-	-
6.18. Turn on Overshoot	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

6.19. Turn off Undershoot	Turn off undershoot shall not exceed 10% over nominal voltages		-	PASS
	Turn off undershoot shall not exceed 10% over nominal voltages		-	PASS
6.20. Remote ON/OFF	Simulate TTL signal to test this function			-
6.21. Power Good Signal	Shall go high level with a delay of 100~500ms		375	PASS
6.22. Power Fall Signal			-	-
6.23. Power On In Low Temperature	I/P:115VAC (0℃) After 2HR Power On			-
6.24. Power On In High Temperature	I/P:115VAC (40℃)After 2HR Power On			-
6.25. Room Burn-in test	I/P:115VAC O/P: FULL LOAD TA:25℃ BURN-IN DURATION : 2 hour			-
6.26. On/Off Cycling	Times / on: 20 sec / off: 10 sec			-
6.27. Power Consumption Test	No Run Prime95	I/P: 100 VAC 0.76 A 74.5W	O/P: 3.3V/1.05A 5V/3.6A 12V/3.77A -12V/0.03A 5VSB/0.47A Total:69.415 W	PASS
	Run Prime95	I/P: 100 VAC 1.51A 148.4W	O/P: 3.3V/1.24A 5V/3.94A 12V/9.15A -12V/0.03A 5VSB/0.47A Total:136.302 W	PASS