

Report NO: 13I0A0007\_I

# FS9029 of NVR-Q67S-A10-RM Power Electronics Test Report

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

Issue date	Approval	Test Engineer
<b>07/30/2013</b>	<b>Tom Lin</b>	<b>Sean Hsu</b>

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**1. Project**

FS9029 AC-DC Power for NVR-Q67S-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\*8

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

4.5. Memory : Transcend DDR3- 1333 4GB

4.6. Power Supply : AcBel Polytech Inc , M/N : FS9029 , O/P : 500Watt

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 : 500W

## 6. Test Item

Test Item	Test Condition / Specification		Sanction	
			Measured	Result
6.1. AC Input Current	I/P:100VAC	6.3A	5.8A	PASS
6.2. MAX Inrush Current	I/P:115VAC	60A	A	N/A
	I/P:230VAC	60A	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	@87%Min	88.1%	PASS
	I/P:230VAC FULL LOAD	@87%Min	88.5%	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)	1.44/-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 O/P:MINLOAD~FULL 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 LOAD	V1 : 3.7~4.5	-	N/A
		V2 : 5.6~6.5	-	N/A
		V3 : 13.3~15.5	-	N/A
6.9. Over-Circuit Protection	O/P: 3.3V	110~150%(MAX)	135%	PASS
	O/P: 5V	110~150%(MAX)	138%	PASS
	O/P: 12V	110~150%(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	$\leq 100\text{mv}(3.3\text{V})$	88.7mv	PASS
		$\leq 100\text{mv}(5\text{V})$	89.4mv	PASS
		$\leq 200\text{mv}(12\text{V})$	83.7mv	PASS
		$\leq 200\text{mv}(-12\text{V})$	118.5mv	PASS
	I/P:230VAC O/P:FULL LOAD	$\leq 80\text{mv}(5\text{VSB})$	35.5mv	PASS
		$\leq 100\text{mv}(3.3\text{V})$	87.7mv	PASS
		$\leq 100\text{mv}(5\text{V})$	80.5mv	PASS
		$\leq 200\text{mv}(12\text{V})$	86.6mv	PASS
		$\leq 200\text{mv}(-12\text{V})$	117.5mv	PASS
		$\leq 80\text{mv}(5\text{VSB})$	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

<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		389	PASS
<b>6.22. Power Fall Signal</b>			-	-
<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 ( 40 °C )After 2HR Power On			-
<b>6.25. Room Burn-in test</b>	I/P:115VAC O/P: FULL LOAD TA:25 °C 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 0.73 A 72.3W	O/P: 3.3V/1.55A 5V/3.75A 12V/1.98A -12V/0.03A 5VSB/0.03A Total:48.135 W	PASS
	Run Prime95	I/P: 100 VAC 1.09A 109.5W	O/P: 3.3V/1.6A 5V/2.85A 12V/6.25A -12V/0.03A 5VSB/0.03A Total:95.04W	PASS