



Test Report: WDR-240-24

240W Single Output Industrial DIN RAIL Power Supply

■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

Control Function Test

Component Stress Test

■ SAFETY & E.M.C. TEST

Safety Test

E.M.C. Test

■ RELIABILITY TEST

ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1 : 150 mVp-p (Max)	I/P : 400VAC O/P : FULL LOAD Ta : 25°C	V1 : 50 mVp-p (Max)	P
2	OUTPUT VOLTAGE ADJUST RANGE	CH1 : 24 V ~ 28 V	I/P : 400 VAC I/P : 230 VAC O/P : MIN LOAD Ta : 25°C	23.501 V ~ 28.739 V/ 400 VAC 23.496 V ~ 28.734 V/ 230 VAC	P
3	OUTPUT VOLTAGE TOLERANCE	V1 : 1 %~ -1 % (Max)	I/P : 200 VAC / 550 VAC O/P : FULL/ MIN LOAD Ta : 25°C	V1 : 0.2 %~ -0.2 %	P
4	LINE REGULATION	V1 : 0.5%~ -0.5 % (Max)	I/P : 200 VAC ~ 550 VAC O/P : FULL LOAD Ta : 25°C	V1 : 0.03 %~ -0.03 %	P
5	LOAD REGULATION	V1 : 1 %~ -1 % (Max)	I/P : 400 VAC O/P : FULL ~MIN LOAD Ta : 25°C	V1 : 0.2 %~ -0.2 %	P
6	SET UP TIME	400VAC : 1500 ms (Max) 230VAC : 3000 ms(Max)	I/P : 400 VAC I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	400VAC/ 434 ms 230VAC/ 810 ms	P
7	RISE TIME	400VAC : 150 ms (Max) 230VAC : 150 ms (Max)	I/P : 400 VAC I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	400VAC/ 44 ms 230VAC/ 57 ms	P
8	HOLD UP TIME	400VAC : 16 ms (TYP) 230VAC : 14 ms (TYP)	I/P : 400 VAC I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	400VAC/ 22 ms 230VAC/ 20 ms	P
9	OVER/UNDERSHOOT TEST	< ±5%	I/P : 400 VAC O/P : FULL LOAD Ta : 25°C	TEST : < 5 %	P
10	DYNAMIC LOAD	V1 : 2400 mVp-p	I/P : 400 VAC (1).O/P : FULL /Min LOAD 90%DUTY/ 1KHZ (2).O/P : FULL /Min LOAD 50%DUTY/ 120HZ Ta : 25°C	(1). 293 mVp-p (2). 903 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	180VAC~550 VAC	I/P : TESTING O/P : FULL LOAD Ta : 25°C I/P : LOW-LINE-3V= 177 V HIGH-LINE+10V=560 V O/P : FULL/MIN LOAD ON : 30 Sec . OFF : 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	160 V~550V TEST : OK	P
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P : 180 VAC ~ 550 VAC O/P : FULL~MIN LOAD Ta : 25°C	TEST : OK	P
3	EFFICIENCY	91 % (TYP)	I/P : 400 VAC O/P : FULL LOAD Ta : 25°C	91.46 %	P
4	INPUT CURRENT	400V/ 1 A (TYP) 230V/ 2 A (TYP)	I/P : 400 VAC I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	I = 0.76 A/ 400 VAC I = 1.30 A/ 230 VAC	P
5	INRUSH CURRENT	400V/ 50 A (TYP) COLD START	I/P : 400 VAC O/P : FULL LOAD Ta : 25°C	I = 46 A/ 400 VAC	P
6	LEAKAGE CURRENT	< 3.5 mA / 530 VAC	I/P : 530 VAC O/P : Min LOAD Ta : 25°C	L-FG : 1.1 mA N-FG : 1.1 mA	P
7	POWER FACTOR	0.84 / 400VAC(TYP) 0.84 /230 VAC(TYP)	I/P : 400 VAC I/P : 230 VAC O/P : FULL LOAD Ta : 25°C	PF= 0.857 / 400VAC PF= 0.859 / 230 VAC	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	105 % ~ 130 %	I/P : 400 VAC I/P : 230 VAC O/P : TESTING Ta : 25°C	125.7 %/ 400 VAC 125.7 %/ 230 VAC Constant current limiting, unit will shut down after 3 sec. , auto-recovery after 1 minute if the fault condition is removed	P
2	OVER VOLTAGE PROTECTION	CH1 : 29~ 33 V	I/P : 400 VAC I/P : 230 VAC O/P : MIN LOAD Ta : 25°C	30.50 V/ 400 VAC 30.71 V/ 230 VAC Shut down o/p voltage,auto recovery after 1minute if the fault condition is removed.	P
3	OVER TEMPERATURE PROTECTION	SPEC : TSW1 : 90 ± 5°C O.T.P. NO DAMAGE	I/P : 400 VAC O/P : FULL LOAD	O.T.P. Active Shut down o/p voltage , recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P : 550 VAC O/P : FULL LOAD Ta : 25°C	NO DAMAGE Constant current limiting, unit will shut down after 3 sec. ,	P

				auto-recovery after 1 minute if the fault condition is removed	
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DO OK RELAY CONTACT RAYINGS	60VDC/0.3A 、 30VDC/1A 、 30VAC/0.5A resistive load	I/P : 550 VAC O/P : FULL LOAD Ta : 25°C	OK	P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 6 Rated : STP50NF25 45A/250V	I/P : High-Line +3V = 553 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 247 V (2) 247 V (3) 231 V	P
2	Diode Peak Voltage	Q100 Rated : IRFB3307 130A/75V	I/P : High-Line +3V = 553 V O/P : (1)Full Load Turn on (2)Output Short (3)Full load continue Ta : 25°C	(1) 61.2 V (2) 10 V (3) 59.6 V	P
3	Input Capacitor Voltage	C 5 Rated : 470u/250V 105°C 22*40 MXG	I/P : High-Line +3V = 553 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 213.66 V (2) 213.83 V (3) 213.79 V	P
4	Control IC Voltage Test	U900 Rated : L6599AD 8.85V~16V	I/P : High-Line +3V = 553 V O/P : (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta : 25°C	(1) 14.328 V (2) 14.339 V (3) 14.346 V	P
5	Power Transistor (D to S) or (C to E) Peak Voltage	Q203 Rated : STW25N95K3 22A/950V	I/P : High-Line +3V = 553 V O/P : (1)Full Load Turn on (2) Output Short (3)Full load continue Ta : 25°C	(1) 928 V (2) 820 V (3) 860 V	P

■ SAFETY & E.M.C. TEST

SAFETY TEST

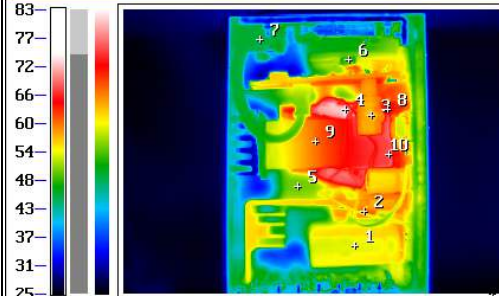
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P : 3 KVAC/min I/P-FG : 2 KVAC/min O/P-FG : 0.5 KVAC/min	I/P-O/P : 3.6 KVAC/min I/P-FG : 2.4 KVAC/min O/P-FG : 0.6 KVAC/min Ta : 25°C	I/P-O/P : 7.40 mA I/P-FG : 7.1 mA O/P-FG : 5.82 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P : 500VDC>100MΩ I/P-FG : 500VDC>100MΩ O/P-FG : 500VDC>100MΩ	I/P-O/P : 500 VDC I/P-FG : 500 VDC O/P-FG : 500 VDC Ta : 25°C / 70%RH	I/P-O/P : 15.9 GΩ I/P-FG : 4.99 GΩ O/P-FG : 30 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta : 25°C / 70%RH	13 mΩ	P
4	APPROVAL	TUV : Certificate NO : UL : File NO : E215312			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P : 400 / 240/220VAC 50HZ O/P : 100/75/50/25%LOAD Ta : 25°C	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P : 400 / 230VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P : 400 / 230VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 400 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 400 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N : 2KV L,N-PE : 4KV	I/P : 400 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT																																																																																																
1.	THERMO TEST (ROOM AMBIENT)	TRACER	MODEL: WDR-240-24 TEST CONDITION: 230 VAC FULL LOAD ROOM AMBIENT = 25 °C			P																																																																																															
04030007. IRI (定點測溫)			<table><tr><td></td><td>Position</td><td>Temp</td><td>VERDICT</td></tr><tr><td>P1</td><td>C105</td><td>54.6</td><td>PASS</td></tr><tr><td>P2</td><td>Q101</td><td>60.6</td><td>PASS</td></tr><tr><td>P3</td><td>C17</td><td>58.2</td><td>PASS</td></tr><tr><td>P4</td><td>T1 I/P</td><td>75.2</td><td>PASS</td></tr><tr><td>P5</td><td>C5</td><td>50.9</td><td>PASS</td></tr><tr><td>P6</td><td>Q6</td><td>49.6</td><td>PASS</td></tr><tr><td>P7</td><td>TSW</td><td>46</td><td>PASS</td></tr><tr><td>P8</td><td>T1O/P</td><td>65.8</td><td>PASS</td></tr><tr><td>P9</td><td>T1CORE</td><td>60.8</td><td>PASS</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>					Position	Temp	VERDICT	P1	C105	54.6	PASS	P2	Q101	60.6	PASS	P3	C17	58.2	PASS	P4	T1 I/P	75.2	PASS	P5	C5	50.9	PASS	P6	Q6	49.6	PASS	P7	TSW	46	PASS	P8	T1O/P	65.8	PASS	P9	T1CORE	60.8	PASS																																																							
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			p 1: 54.6℃ 195x, 199y p 2: 60.6℃ 203x, 170y p 3: 58.2℃ 209x, 89y p 4: 75.2℃ 187x, 84y p 5: 50.9℃ 147x, 149y p 6: 49.6℃ 190x, 42y p 7: 46.0℃ 115x, 25y p 8: 65.8℃ 223x, 84y p 9: 60.8℃ 162x, 111y p10: 68.4℃ 224x, 122y p11: p12: p13: p14: p15:																																																																																																		
熱顯像調整 座 標: 22, 26 自動調整 原資料溫度: 26.1℃(E0.94) 放射率: 0.94 補正後溫度: 26.1℃(E0.94) 高溫75.6℃ 環境 溫度: 28.2℃ 低溫24.8℃																																																																																																					
最高溫(H): 75.6℃ 座標: 187, 85 最低溫(L): 24.8℃ 座標: 311, 239 全域放射率: 0.940			日 期: 2010/ 4/ 3 時 間: 10: 4:36																																																																																																		
2	TEMPERATURE TEST	RISE	MODEL : WDR-240-24 1. ROOM AMBIENT BURN-IN : 2.5 HRS I/P : 400VAC O/P : FULL LOAD Ta=26.4℃ 2. HIGH AMBIENT BURN-IN : 3.5 HRS I/P : 400VAC O/P : FULL LOAD Ta=57.2 °C			P																																																																																															
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3	OVER LOAD TEST	BURN-IN	NO DAMAGE 1 HOUR (MIN)	I/P : 400 VAC O/P : 115 % LOAD Ta : 25℃	TEST : OK	P																																																																																															
4	LOW TEMPERATURE TEST	TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 550VAC/100VAC O/P : 100 % LOAD Ta= -30 °C	TEST : OK	P																																																																																															

5	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C NO DAMAGE	I/P : 553 VAC O/P : FULL LOAD Ta= 50 °C HUMIDITY= 95 %R.H	TEST : OK	P
6	TEMPERATURE COEFFICIENT	± 0.03 %(0~50°C)	I/P : 400 VAC O/P : FULL LOAD	± 0.004 %(0~50°C)	P
7	STORAGE TEMPERATURE TEST	1. Thermal shock Temperature : -45°C~ +90°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 5 CYCLE 5. Input/Output condition : STATIC		OK	P
8.	THERMAL SHOCK TEST	1. Thermal shock Temperature : -35°C~ +55°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 10 CYCLE 5. Input/Output condition : 400VAC/Full Load AC ON/OFF TEST turn on 58sec ; turn off 2sec		OK	P
9	VIBRATION TEST	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 12min/sweep cycle (4) Acceleration : 2G (5) Test Time : 60min in each axis (X.Y.Z) (6) Ta : 25°C		TEST : OK	P
10	CAPACITOR LIFE CYCLE	SUPPOSE C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 400VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 400VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 400VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME		(1) 154239 HRS (2) 30725 HRS (3) 53462 HRS	P
11	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE : 141.1 KHRS			P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2010/10/21	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2010/11/25	PRODUCT SAMPLE	PASS	SANFORD SU	VINCENT TSENG

2009/08/04 A50-F023