



Test Report: XDR-480-36

480W AC/DC High-End Ultra Slim Industrial DIN Rail
Power

■ 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

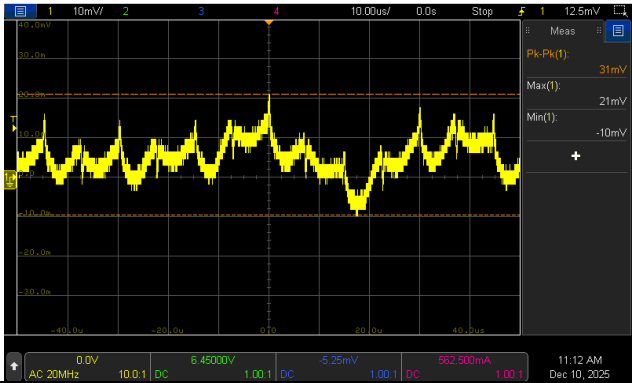
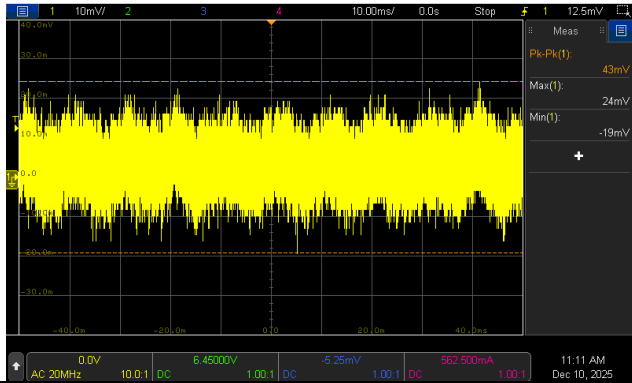
E.M.C. Test

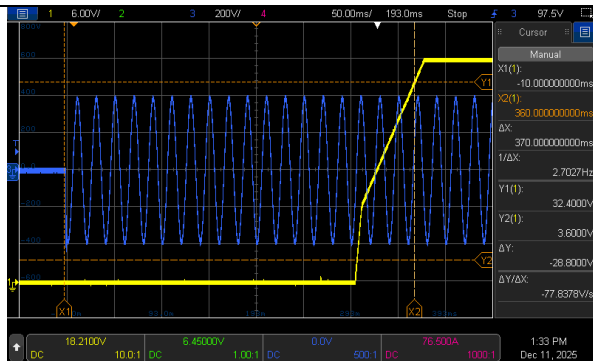
■ RELIABILITY TEST

ENVIRONMENT TEST

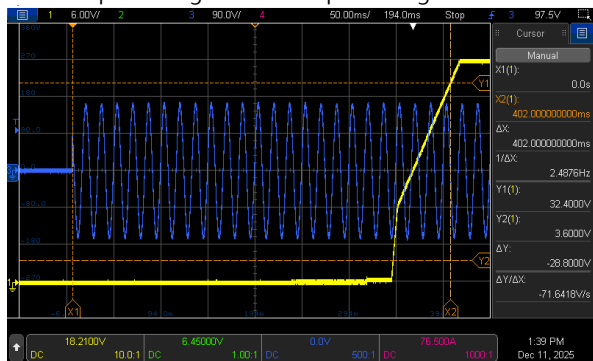
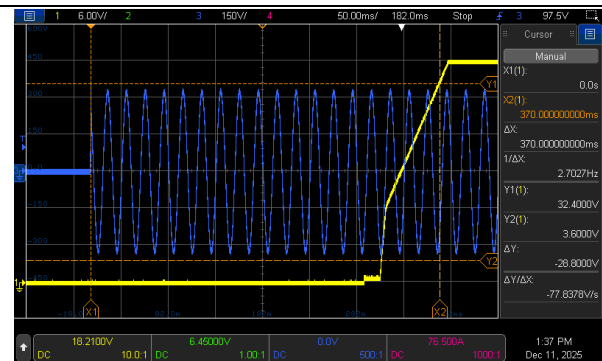
■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 36V~42V	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	34.888V~43.162V/277VAC 34.889V~43.162V/230VAC 34.888V~43.162V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~305VAC O/P:FULL~MIN. LOAD Ta:25°C	V1: -0.0472% ~ 0.0417%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 305VAC O/P:FULL LOAD Ta:25°C	V1: 0% ~ 0.0139%
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.0472% ~ 0.0417%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD/ PEAK LOAD Ta:25°C	1.25%
6	RIPPLE & NOISE (Max)	V1: 120mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	31mVp-p / high frequency 43 mVp-p / low frequency
high frequency :  low frequency : 				
7	SET UP TIME(Max)	230VAC/1500ms 115VAC/3000ms	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	277VAC/ 370ms 230VAC/ 370ms 115VAC/402 ms
INPUT=277VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage			INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage	



INPUT=230VAC/50HZ @ FULL LOAD
CH1: Output Voltage CH3: AC Input Voltage



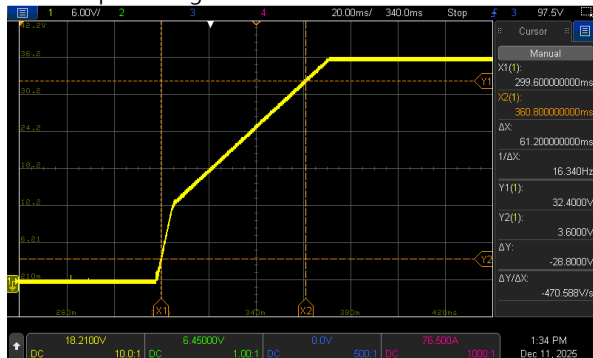
8 RISE TIME (Max)

230VAC/150ms
115VAC/150ms

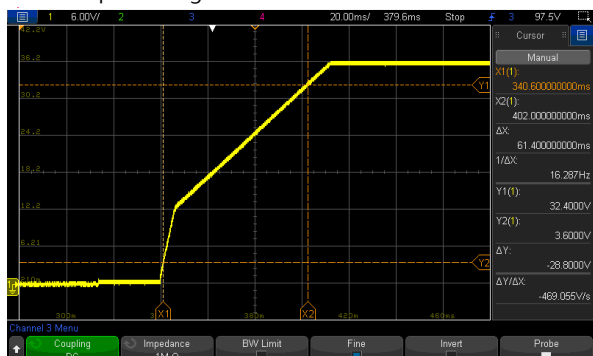
I/P : 277 VAC
I/P : 230 VAC
I/P : 115 VAC
O/P : FULL LOAD
Ta : 25°C

277VAC/61.2 ms
230VAC/ 61.4ms
115VAC/ 61.4ms

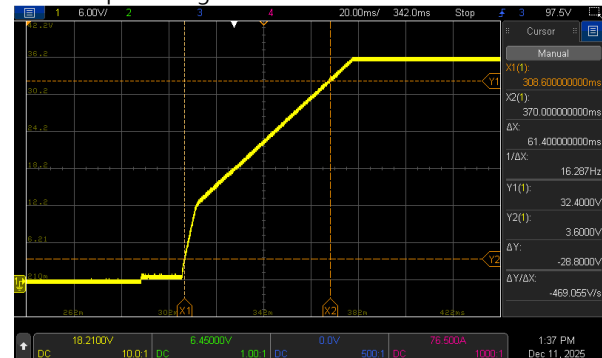
INPUT=277VAC/50HZ @ FULL LOAD
CH1: Output Voltage

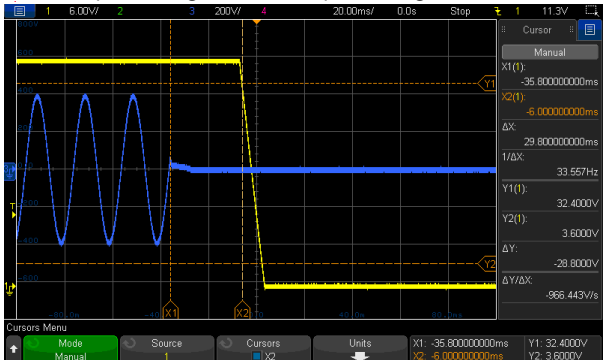
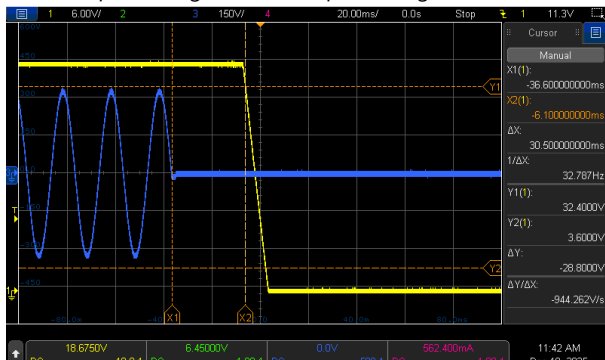
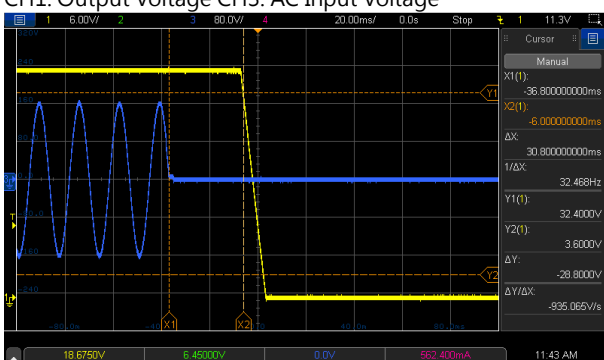
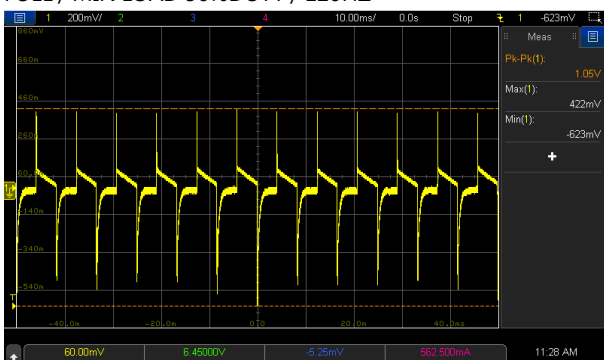
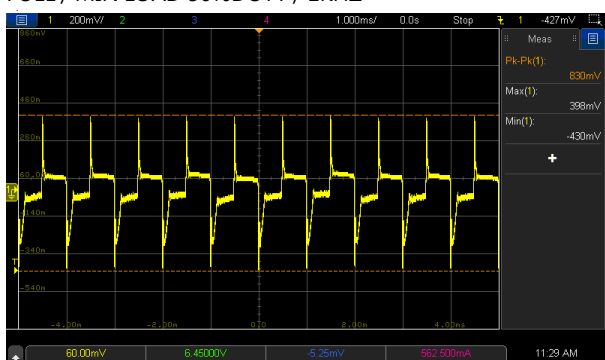


INPUT=230VAC/50HZ @ FULL LOAD
CH1: Output Voltage

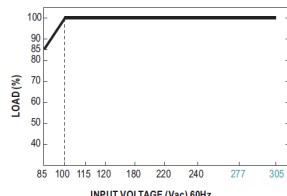
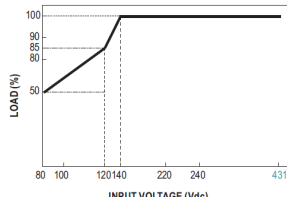


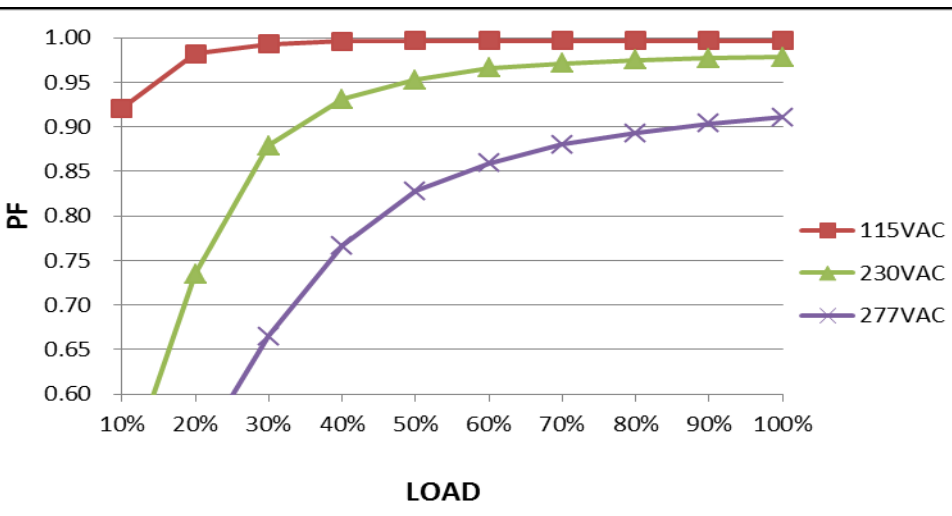
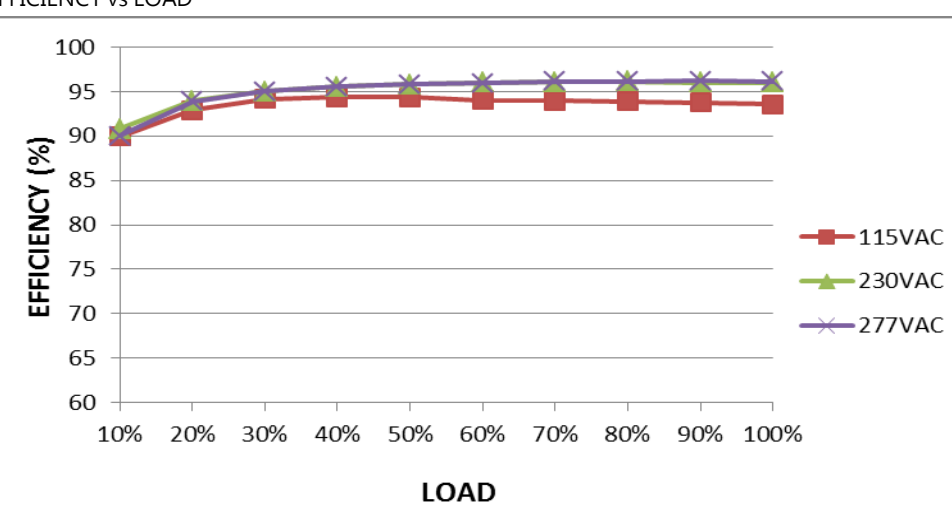
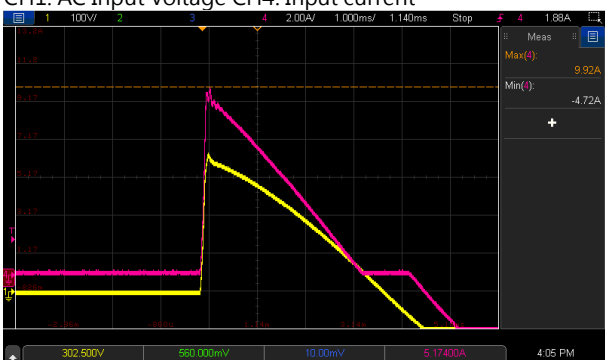
INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage



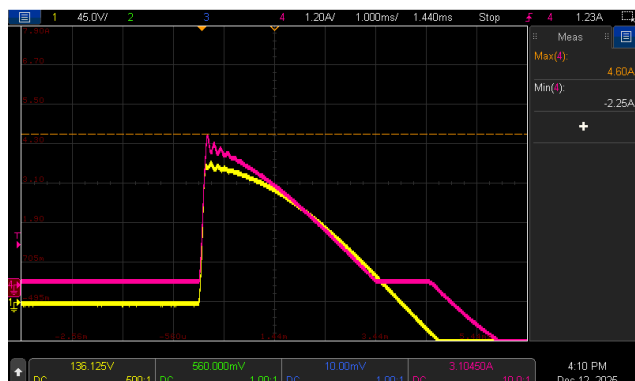
9	HOLD UP TIME (Typ.)	230VAC/ 15ms 115VAC/ 15ms	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	277VAC/ 29.8ms 230VAC/ 30.5ms 115VAC/ 30.8ms
INPUT=277VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage  INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage  INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage 				
10	DYNAMIC LOAD	V1: 3600mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY / 120HZ (2) FULL/ MIN LOAD 50%DUTY / 1KHZ Ta:25°C	1050mVp-p 830mVp-p
FULL / MIN LOAD 50%DUTY / 120HZ  FULL / MIN LOAD 50%DUTY / 1KHZ 				
11	TRANSIENT RECOVERY TIME	V1: 3600mVp-p <500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	386mVp-p

INPUT FUNCTION TEST

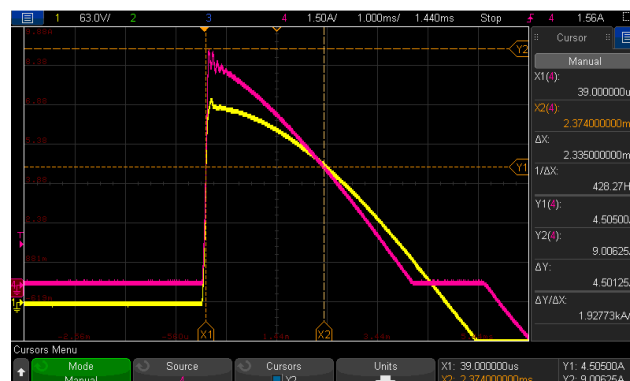
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT												
1	INPUT VOLTAGE RANGE Note	85VAC~305VAC 80VDC~ 431VDC  	(1) I/P: TESTING O/P: FULL / 85% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 85% LOAD/ 50% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 85% LOAD/ 50% LOAD Ta:25°C	(1) 77.7V~305V/ FULL LOAD 77.5V~305V/ 85% LOAD (2) 74.9Vdc~431Vdc/FULL LOAD 74.9Vdc~431Vdc/85% LOAD 74.9Vdc~431Vdc/50% LOAD (3) 74.9 Vdc~431Vdc/FULL LOAD 74.9Vdc~431Vdc/85% LOAD 74.9Vdc~431Vdc/50% LOAD												
		I/P: HIGH-LINE+10V=315V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST : OK													
		Derating 50% Load @80VDC	I/P: 80VDC O/P: 50% Load	TEST : OK												
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P: 85VAC~ 305VAC O/P:FULL~MIN LOAD Ta:25°C	TEST : OK												
3	INPUT CURRENT (Typ.)	277V/ 2.5A 230V/ 3A 115V/ 6A	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =1.9419A/ 277VAC I =2.2121A/ 230VAC I =4.476A/ 115VAC												
4	LEAKAGE CURRENT	< 1mA@240Vac < 1.5mA@277Vac	I/P : 240VAC/60HZ I/P : 277VAC/60HZ O/P : Min LOAD Ta : 25°C	0.41mA@240Vac 0.478mA@277Vac												
5	NO LOAD CONSUMPTION	Remote Power OFF: 1W@115Vac & 230Vac & 277Vac Remote Power ON: 3W@115Vac & 230Vac & 277Vac	I/P : 115VAC I/P : 230VAC I/P : 277VAC O/P : NO LOAD Ta : 25°C	TEST: <table><tr><td></td><td>Remote Power OFF</td><td>Remote Power ON</td></tr><tr><td>115VAC</td><td>0.584W</td><td>2.27W</td></tr><tr><td>230VAC</td><td>0.738W</td><td>2.29W</td></tr><tr><td>277VAC</td><td>0.827W</td><td>2.29W</td></tr></table>		Remote Power OFF	Remote Power ON	115VAC	0.584W	2.27W	230VAC	0.738W	2.29W	277VAC	0.827W	2.29W
	Remote Power OFF	Remote Power ON														
115VAC	0.584W	2.27W														
230VAC	0.738W	2.29W														
277VAC	0.827W	2.29W														
6	POWER FACTOR (Typ.)	0.9/277VAC 0.95/ 230VAC 0.98/115VAC	I/P : 277VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	PF=0.9236/277VAC PF=0.9792/230VAC PF=0.9974/115VAC												
	P.F vs LOAD															

				
7	EFFICIENCY(Typ.)	95.5%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	96.18%
	EFFICIENCY vs LOAD 			
8	INRUSH CURRENT(Typ.)	277V/15A 230V/10A 115V/6A COLD START	I/P : 277 VAC I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =9.92A / 277VAC I =9.01A / 230VAC I =4.6A / 115VAC T50=2335us/230V
	INPUT=277VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current  INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current 			

INPUT=115VAC/ 60HZ @ FULL LOAD
CH1: AC Input Voltage CH4: Input current

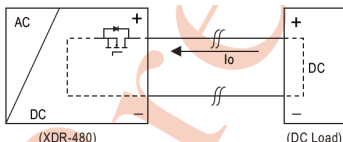


T50@230VAC :

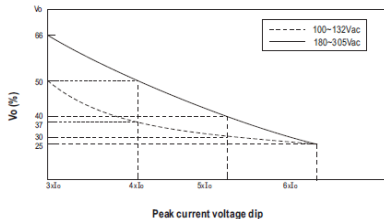
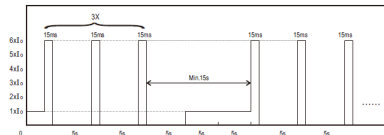


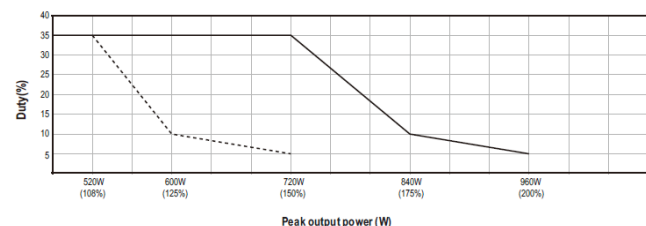
PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when $V_o=30\%\sim 100\%$; Hiccup mode when $V_o<30\%$ rated voltage	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P: TESTING Ta:25°C	OLP 第一段 : 127.82%/305VAC 127.82%/230VAC 127.82%/100VAC Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when $V_o=30\%\sim 100\%$; Hiccup mode when $V_o<30\%$ rated voltage
2	OVER VOLTAGE PROTECTION	43V~50V Protection type: Shut down o/p voltage, re-power on to recover	I/P: 305VAC I/P: 85VAC O/P: MIN LOAD Ta:25°C	46.5V/ 305VAC 46.2V/ 85VAC PROTECTION TYPE : Shut down o/p voltage, re-power on to recover
3	OVER TEMPERATURE PROTECTION	Protection type: Shut down o/p voltage, recovers automatically after temperature goes down	I/P: 305VAC I/P: 85VAC O/P: FULL LOAD	O.T.P Active Protection type : Shut down o/p voltage, recovers automatically after temperature goes down
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type: Hiccup mode when $V_o<30\%$ rated voltage , recovers automatically after fault condition is removed	I/P: 305VAC I/P: 85VAC O/P: FULL LOAD	NO DAMAGE PROTECTION TYPE : Hiccup mode when $V_o<30\%$ rated voltage , recovers automatically after fault condition is removed

5	Protection against Inverse Voltages from the Load	Prevent PSU damage from Back Electro magnetic Force during deceleration of motor or inductive load 	I/P: 230VAC O/P: TESTING Ta: 25°C	TEST : <u>ok</u>
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CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																								
1	DC OK CONTACT RATINGS	30VDC/1A , 30VAC/0.5A RESISTIVE LOAD	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: <u>OK</u>																																								
2	REMOTE CONTROL	Power ON: Pin9 and Pin10 Short or keep 4~5Vdc Power OFF: Pin9 and Pin10 Open or keep < 0.5Vdc	I/P:230VAC O/P:FULL LOAD Ta:25°C	TEST: <u>OK</u>																																								
3	PULSE CURRENT CAPABILTY	<table><thead><tr><th>Load</th><th>100~132Vac Vo(%)</th><th>180~305Vac Vo(%)</th><th>Time</th></tr></thead><tbody><tr><td>3xIo</td><td>50</td><td>66</td><td>100ms</td></tr><tr><td>4xIo</td><td>37</td><td>50</td><td>70ms</td></tr><tr><td>5xIo</td><td>30</td><td>40</td><td>40ms</td></tr><tr><td>6xIo</td><td>25</td><td>25</td><td>15ms</td></tr></tbody></table>	Load	100~132Vac Vo(%)	180~305Vac Vo(%)	Time	3xIo	50	66	100ms	4xIo	37	50	70ms	5xIo	30	40	40ms	6xIo	25	25	15ms	I/P: 180VAC I/P: 100VAC O/P: TESTING Ta:25°C	180VAC : <table><thead><tr><th>Load</th><th>Iout_Time(ms)</th></tr></thead><tbody><tr><td>3xIo</td><td>109</td></tr><tr><td>4xIo</td><td>110</td></tr><tr><td>5xIo</td><td>53</td></tr><tr><td>6xIo</td><td>28</td></tr></tbody></table> 100VAC : <table><thead><tr><th>Load</th><th>Iout_Time(ms)</th></tr></thead><tbody><tr><td>3xIo</td><td>109</td></tr><tr><td>4xIo</td><td>109.4</td></tr><tr><td>5xIo</td><td>51.4</td></tr><tr><td>6xIo</td><td>26.2</td></tr></tbody></table>	Load	Iout_Time(ms)	3xIo	109	4xIo	110	5xIo	53	6xIo	28	Load	Iout_Time(ms)	3xIo	109	4xIo	109.4	5xIo	51.4	6xIo	26.2
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4	PULSE CURRENT CAPABILTY		I/P:230VAC O/P: TESTING Ta:25°C	TEST : <u>OK</u>																																								
5	LED Status Indictors	LED :	I/P:230VA0C O/P: TESTING Ta:25°C	TEST : <u>OK</u>																																								

		<table><tr><td>Description</td><td>Output of alarm</td></tr><tr><td>Restore Factory Settings</td><td>Green : 3 Blink/Pause </td></tr><tr><td>DC OK</td><td>Green </td></tr><tr><td>DC Fail</td><td>Red </td></tr><tr><td>Overload (115Vac: >150% rated current) (230Vac: >200% rated current)</td><td>Red : 1 Blink/Pause </td></tr><tr><td>Over voltage</td><td>Red : 2 Blink/Pause </td></tr><tr><td>Over temperature</td><td>Red : 3 Blink/Pause </td></tr><tr><td>Against Inverse Voltages From The Load</td><td>Red : 4 Blink/Pause </td></tr><tr><td>High Ambient Temperature Warning</td><td>Red : Blink </td></tr><tr><td>Others (Note)</td><td>Red : 5 Blink/Pause </td></tr></table> Note: Others include protection status AC UVP, Internal Communication error and EEPROM error.	Description	Output of alarm	Restore Factory Settings	Green : 3 Blink/Pause 	DC OK	Green 	DC Fail	Red 	Overload (115Vac: >150% rated current) (230Vac: >200% rated current)	Red : 1 Blink/Pause 	Over voltage	Red : 2 Blink/Pause 	Over temperature	Red : 3 Blink/Pause 	Against Inverse Voltages From The Load	Red : 4 Blink/Pause 	High Ambient Temperature Warning	Red : Blink 	Others (Note)	Red : 5 Blink/Pause 		
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High Ambient Temperature Warning	Red : Blink 																							
Others (Note)	Red : 5 Blink/Pause 																							
6	PARALLEL	Up to 1920W (3+1), please refer to Function Manual for more details	I/P: TESTING O/P: TESTING LOAD Ta:25°C	TEST : <u>OK</u>																				
7	PEAK Power	I/P: 100/200VAC O/P:  -----100VAC ————200VAC																						

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q5/Q6 : Rated: 45A/ 600V	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	Q5 Q6 VDS: VDS: (1) 474V (1) 467V (2) 523V (2) 474V (3) 474V (3) 458V (4) 474V (4) 461V (5) 474V (5) 458V (6) 474V (6) 458V (7) 523V (7) 490V (8) 487V (8) 477V
2	P.F.C Transistor (D to S) or (C to E) Peak Voltage	Q1/Q2 : Rated: 31A/ 600V	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/	VDS: (1) 431V (2) 444V (3) 431V (4) 431V (5) 431V

			Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	(6) 425V (7) 466V (8) 447V
3	P.F.C DIODE	D1 : Rated: 10A/650V	I/P: High-Line +3V =308 V AC ON/OFF O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (4) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (5) Peak Load Ta:25°C	(1) 416V (2) 463V (3) 425V (4) 422V (5) 441V
4	Diode Peak Voltage	Q100/Q103: Rated: 120V/86A	AC ON/OFF I/P: High-Line +3V =308 V <u>VO=Vomax</u> O/P: (1)Full Load11.43 (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load.45.72 (8).NO LOAD (9) Peak Load22.86 <u>V VO=Vonormal</u> O/P: (1) Full Load Ta:25°C	Q101: <u>VO=Vomax</u> VDS: (1) 101.1V (2) 101.5V (3) 102.2V (4) 102.2V (5) 102.2V (6) 102.2V (7) 99.3V (8) 92.8V (9) 101.5V <u>VO=Vonormal</u> (1) 86.8V Q103: <u>VO=Vomax</u> VDS: (1) 97.1V (2) 99.3V (3) 98.6V (4) 98.6V (5) 96.4V (6) 96.4V (7) 97.9V (8) 91.4V (9) 97.9V <u>VO=Vonormal</u> (1) 91.2V
5	AUX Transistor (D to S) or (C to E) Peak Voltage	U2 : SC1144D1 Rated: 725V/654mA	AC ON/OFF I/P: High-Line +3V =308V VDS: O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz	VDS: (1) 567V (2) 571V (3) 571V (4) 571V (5) 571V (6) 567V (7) 574V (8) 574V

			(5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8) Peak Load Ta:25°C	
6	AUX Clamp Diode Peak Voltage	D 19 : D1P6 Rated : 1A/ 600V	AC ON/OFF I/P : High-Line +3V = 308V O/P : (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta : 25°C	(1) 553V (2) 521V
7	AUX Diode Peak Voltage	D200 : ES1J Rated : 1A/600V D22 : ES1J Rated : 1A/600V	AC ON/OFF I/P: High-Line +3V =308 V O/P: (1)Full Load (2)Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz (4) Dynamic Load Full Load/ Min. Load 90%Duty/3KHz (5) Dynamic Load Full Load/ Min. Load 90%Duty/5KHz (6) Dynamic Load 100% Load/ Min. Load 50%Duty/120Hz (7)0%→400% Load. (8).NO LOAD (9) Peak Load Ta:25°C	D200: D22: VDS: VDS: (1) 84.1V (1) 100.9V (2) 83.5V (2) 101.6V (3) 82.9V (3) 100.2V (4) 83.5V (4) 101.6V (5) 82.9V (5) 100.2V (6) 82.9V (6) 100.2V (7) 85.9V (7) 103.1V (8) 83.5V (8) 100.2V (9) 85.3V (9) 102.3V
8	Input Capacitor Voltage	C5 : RHB151M2WBKF2235 Rated: 150μ /450V	I/P: High-Line +3V =308V O/P: (1)Full Load input on/off (2) Min load input on /Off (3) Full Load /Min load Change (4) Full load continue (5) Peak Load on/off (6) Peak Load continue Ta:25°C	(1) 439V (2) 449V (3) 436V (4) 423V (5) 446V (6) 429V
9	Control IC Voltage Test	PFC/PWM IC U1 : Rated : 12.5V~ 27.9V O/P IC U101: Rated: 4.75V~38V IC U404 : Rated : 3V~36V AUX IC U2 : Rated : 5.65V~6.8V	AC ON/OFF I/P: High-Line +3V =308V O/P: (1) Full Load (2) Output Short (3) O.L.P (4) O.V.P. (5) No Load VR min (Low Line) Ta:25°C	U1 U2 (1) 14.7V (1) 6.46V (2) 14.7V (2) 6.48V (3) 14.7V (3) 6.48V (4) 14.7V (4) 6.54 V (5) 14.7V (5) 6.40V U101 U9 (1) 15.6V (1) 3.307V (2) 16.0V (2) 3.307V (3) 15.6V (3) 3.307V (4) 15.4V (4) 3.307V

		MCU IC U9 : Rated : 2V~3.6V Level: 3.2835~3.3165V		(5) 15.4V U404 (1) 6.3V (2) 6.25V (3) 6.16V (4) 5.63V (5) 5.87V	(5) 3.307V U306 (1) 3.303V (2) 3.303V (3) 3.303V (4) 3.303V (5) 3.303V
		MCU IC U306: Rated : 2.4V~ 3.6V Level: 3.2835~3.3165V			

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	I/P-O/P: 4 KVAC/min I/P-FG : 2 KVAC/min O/P-FG:1.5 KVAC/min O/P-DC OK: 0.5 KVAC/min	I/P-O/P: 4.4 KVAC/min I/P-FG: 2.4 KVAC/min O/P-FG: 1.8 KVAC/min O/P-DC OK: 0.6 KVAC/min Ta:25°C	I/P-O/P: 3.15mA I/P-FG: 2.57mA O/P-FG: 3.08mA O/P-DC OK: 0.005mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 600 VDC I/P-FG: 600 VDC O/P-FG: 600 VDC Ta:25°C	I/P-O/P: 50GΩ I/P-FG: 50GΩ O/P-FG: 50GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100mΩ	40A /2min Ta:25°C	4mΩ

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	HARMONIC	BS EN/EN61000-3-2 CLASS A	I/P:230VAC/50HZ O/P:FULL LOAD Ta:25°C	PASS
2	CONDUCTION	BS EN/EN55032 (CISPR32) BS EN/EN61204-3 CNS15936 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL/50% LOAD Ta : 25°C	PASS Test by certified Lab
3	RADIATION	BS EN/EN55032 (CISPR32) BS EN/EN61204-3 CNS15936 CLASS B	I/P : 230 VAC (50HZ) O/P : FULL LOAD Ta : 25°C	PASS Test by certified Lab
4	E.S.D	BS EN/EN 61000-4-2 AIR : 15KV / Contact : 8KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A

5	E.F.T	BS EN/EN 61000-4-4 INPUT : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
6	SURGE	BS E/EN 61000-4-5 L-N : 2KV L,N-PE : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	CRITERIA A
7	Test by certified Lab & Test Report Prepare Any contradictions of the test results, please refer to the latest EMC test report			

■ RELIABILITY TEST

ENVIRONMENT TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT																																																																																												
1	TEMPERATURE RISE TEST	MODEL : XDR-480-48 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=23.3°C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta=60.1°C																																																																																														
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta=23.3°C</th><th>HIGH AMBIENT Ta=60.1°C</th></tr><tr><td>1</td><td>Q2</td><td>56.1°C</td><td>90.6°C</td></tr><tr><td>2</td><td>Q1</td><td>52.0°C</td><td>89.0°C</td></tr><tr><td>3</td><td>D1</td><td>56.3°C</td><td>93.3°C</td></tr><tr><td>4</td><td>R6</td><td>52.8°C</td><td>91.6°C</td></tr><tr><td>5</td><td>Q5</td><td>53.5°C</td><td>93.0°C</td></tr><tr><td>6</td><td>L2</td><td>47.0°C</td><td>85.5°C</td></tr><tr><td>7</td><td>RTH3</td><td>52.2°C</td><td>89.8°C</td></tr><tr><td>8</td><td>L1</td><td>51.9°C</td><td>89.4°C</td></tr><tr><td>9</td><td>C5</td><td>49.0°C</td><td>85.7°C</td></tr><tr><td>10</td><td>T2</td><td>47.5°C</td><td>86.5°C</td></tr><tr><td>11</td><td>Q103</td><td>55.1°C</td><td>94.1°C</td></tr><tr><td>12</td><td>Q100</td><td>53.1°C</td><td>91.9°C</td></tr><tr><td>13</td><td>RTH5</td><td>51.5°C</td><td>89.1°C</td></tr><tr><td>14</td><td>U2</td><td>50.1°C</td><td>88.2°C</td></tr><tr><td>15</td><td>U101</td><td>52.4°C</td><td>91.0°C</td></tr><tr><td>16</td><td>U1</td><td>57.0°C</td><td>96.2°C</td></tr><tr><td>17</td><td>U8</td><td>55.6°C</td><td>93.5°C</td></tr><tr><td>18</td><td>T1coil</td><td>74.8°C</td><td>114.0°C</td></tr><tr><td>19</td><td>T1core</td><td>50.0°C</td><td>102.3°C</td></tr><tr><td>20</td><td>LF2</td><td>50.0°C</td><td>87.6°C</td></tr><tr><td>21</td><td>U9</td><td>49.1°C</td><td>87.1°C</td></tr><tr><td>22</td><td>BD1</td><td>54.2°C</td><td>91.1°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta=23.3°C	HIGH AMBIENT Ta=60.1°C	1	Q2	56.1°C	90.6°C	2	Q1	52.0°C	89.0°C	3	D1	56.3°C	93.3°C	4	R6	52.8°C	91.6°C	5	Q5	53.5°C	93.0°C	6	L2	47.0°C	85.5°C	7	RTH3	52.2°C	89.8°C	8	L1	51.9°C	89.4°C	9	C5	49.0°C	85.7°C	10	T2	47.5°C	86.5°C	11	Q103	55.1°C	94.1°C	12	Q100	53.1°C	91.9°C	13	RTH5	51.5°C	89.1°C	14	U2	50.1°C	88.2°C	15	U101	52.4°C	91.0°C	16	U1	57.0°C	96.2°C	17	U8	55.6°C	93.5°C	18	T1coil	74.8°C	114.0°C	19	T1core	50.0°C	102.3°C	20	LF2	50.0°C	87.6°C	21	U9	49.1°C	87.1°C	22	BD1	54.2°C	91.1°C
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30	U4	49.9°C	87.5°C																																						
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 123%LOAD Ta : 25°C	TEST : OK																																					
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 305VAC/100VAC O/P : 80%/100 %LOAD Ta= -45°C/-35°C	TEST : OK																																					
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60°C/95 %R.H NO DAMAGE	I/P : 315VAC O/P : FULL LOAD Ta= 60°C HUMIDITY= 95 %R.H	TEST : OK																																					
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0~60°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.006%/°C(0~60°C)																																					
6	STORAGE TEMPERATURE TEST	-40~85°C	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 : 10 CYCLE 5. Input/Output condition : STATIC																																						
7	THERMAL SHOCK TEST	-30~60°C	1. Thermal shock Temperature : -35°C~ +65°C 2. Temperature change rate : 25°C / MIN 3. Dwell time low and high temperature : 30 MIN/EACH 4. Total test cycle : 16 CYCLE 5. Input/Output condition : 15cycle:230V/ FULL LOAD AC ON 3sec/AC OFF 1sec TEST 1cycle:230V/ FULL LOAD Burn In Test																																						
8	VIBRATION TEST	10 ~ 500Hz, 2G 10min./1cycle, 60min. each along X, Y, Z axes	1 Carton & 1 Set (1) Waveform : Sine Wave (2) Frequency : 10~500Hz (3) Sweep Time : 10min/sweep cycle (4) Acceleration : 3G (5) Test Time : 180min in each axis (X.Y.Z) (6) Ta : 25°C																																						
9	CAPACITOR LIFE CYCLE	SUPPOSE C109 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 60°C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 60°C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 60°C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 60°C LIFE TIME		(1) 1636230 HRS (2) 112685 HRS (3) 178025 HRS (4) 237845 HRS																																					
10	MTBF	Conducted by Parts Stress Analysis Prediction 1139.7K hrs min. Telcordia SR-332 (Bellcore) ; 154.5K hrs min. MIL-HDBK-217F (25°C)																																							



11	Ongoing Reliability Test	I/P : 230VAC O/P : FULL LOAD TA=50°C Demonstration Mean Time Between Failure : 50,000 hours
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TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	Hanxr	Liutt	Wangzd

2020.10.1 TAG-QA-009