Test Report: XDR-75-48

75W 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

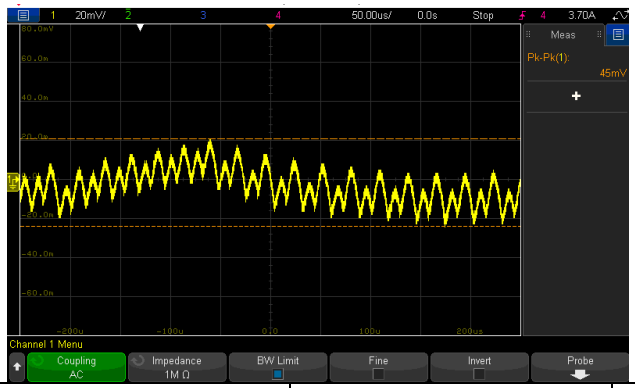
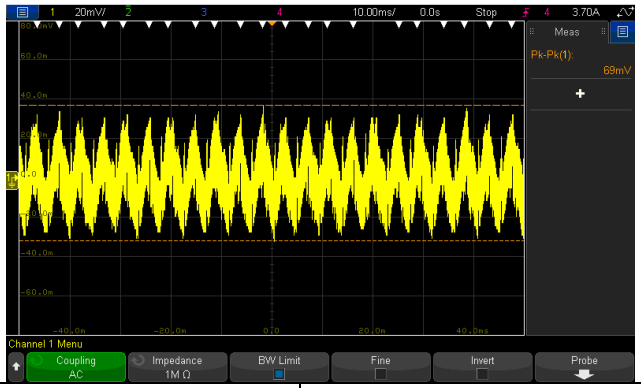
Safety Test
E.M.C. Test

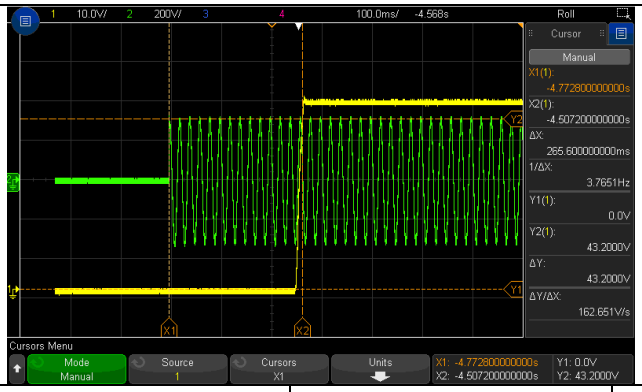
■ RELIABILITY TEST

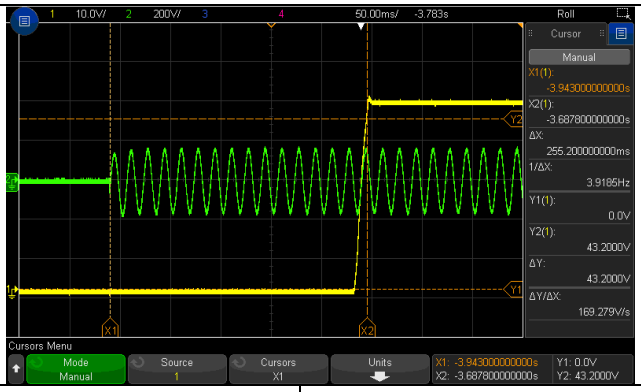
ENVIRONMENT TEST

■ DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

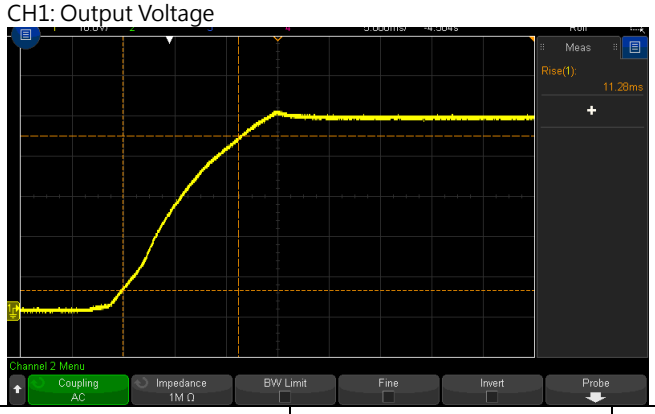
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V~56V	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P：MIN LOAD Ta：25℃	45.577V~57.21V/277VAC 45.576V~57.21V/230VAC 45.577V~57.21V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~305VAC O/P:FULL~MIN. LOAD Ta:25℃	V1: -0.021% ~0.017%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 305VAC O/P:FULL LOAD Ta:25℃	V1: 0% ~ 0.013%
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.021% ~0.017%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD/ PEAK LOAD Ta:25℃	2.9% / FULL LOAD 3.8%/ NO LOAD 2.1%/ PEAK LOAD
6	RIPPLE & NOISE (Max)	V1: 120mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25℃	45mVp-p / high frequency 69mVp-p / low frequency
	high frequency：  low frequency： 			
7	SET UP TIME(Max)	230VAC/1200ms 115VAC/2500ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 265.6ms 115VAC/ 255.2ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH2: AC Input Voltage	



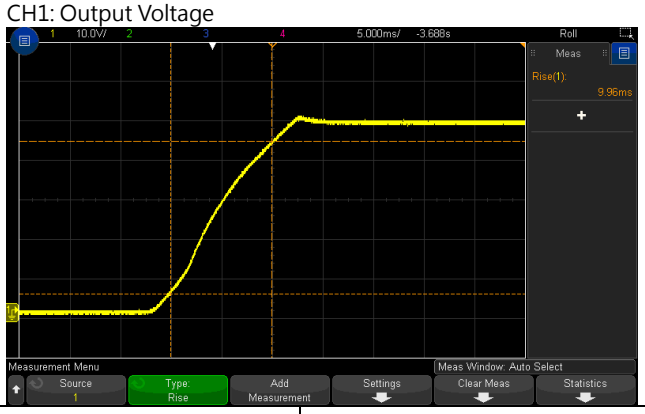


8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 11.28ms 115VAC/ 9.96ms

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

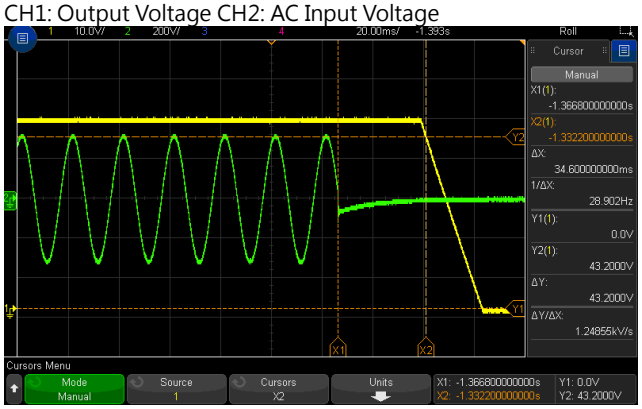


INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage

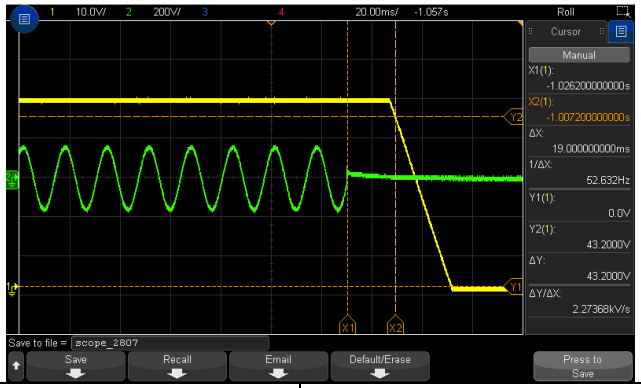


9	HOLD UP TIME (Typ.)	230VAC/ 16ms 115VAC/ 10ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/34.6 ms 115VAC/ 19.0ms

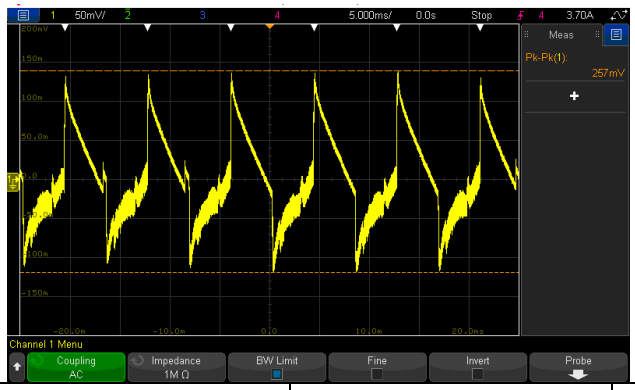
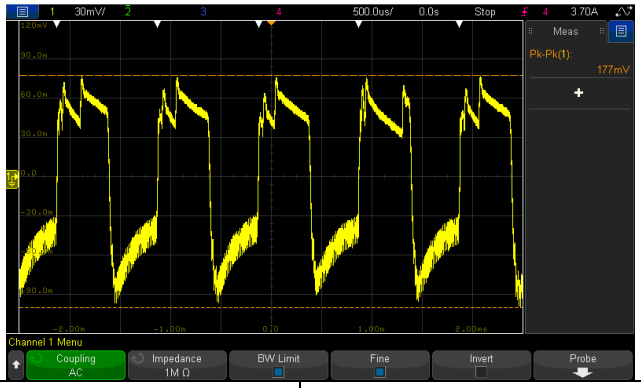
INPUT=230VAC/50HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage CH2: AC Input Voltage



10	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY / 120HZ (2) FULL/ MIN LOAD 50%DUTY /	257mVp-p 177mVp-p

			1KHZ Ta:25℃	
	FULL / MIN LOAD 50%DUTY / 120HZ 		FULL / MIN LOAD 50%DUTY / 1KHZ 	
11	TRANSIENT RECOVERY TIME	V1: 4800mVp-p <500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	163mVp-p 0us

INPUT FUNCTION TEST

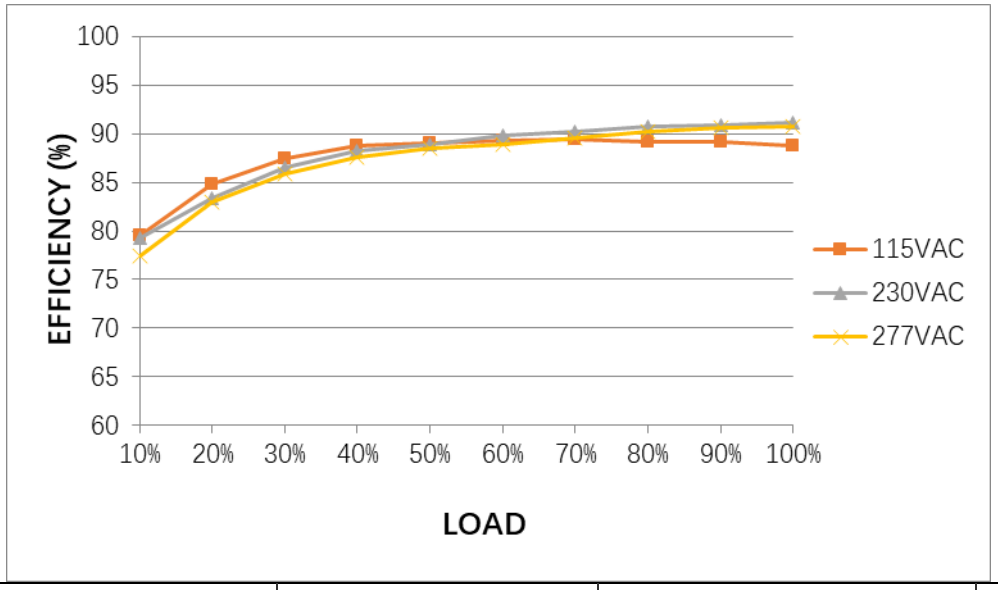
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	85VAC~305VAC 80VDC~ 431VDC	(1) I/P: TESTING O/P: FULL / 85% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 85% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 85% LOAD Ta:25℃	(1) 78V~305V/ FULL LOAD 77V~305V/ 85% LOAD (2) 75.8Vdc~431Vdc/FULL LOAD 75.8Vdc~431Vdc/85% LOAD (3) 75.8Vdc~431Vdc/FULL LOAD 75.6Vdc~431Vdc/85% 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℃	TEST: OK
3	INPUT CURRENT (Typ.)	277V/ 0.8A 230V/ 0.9A 115V/ 1.5A	I/P： 277 VAC I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =0.695A/ 277VAC I =0.786A/ 230VAC I =1.321A/ 115VAC

4	LEAKAGE CURRENT	< 1mA@240Vac < 1.5mA@277Vac	I/P：240VAC/60HZ I/P：277VAC/60HZ O/P：Min LOAD Ta：25℃	0.7851mA@240Vac 0.9mA@277Vac
5	NO LOAD CONSUMPTION	Remote Power OFF: 1W@115Vac & 230Vac Remote Power ON: 1.5W@115Vac & 230Vac	I/P：115VAC I/P：230VAC O/P：NO LOAD Ta：25℃	TEST：

	Remote Power OFF	Remote Power ON
115VAC	0.268W	0.859W
230VAC	0.469W	1.109W

6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	91.31%

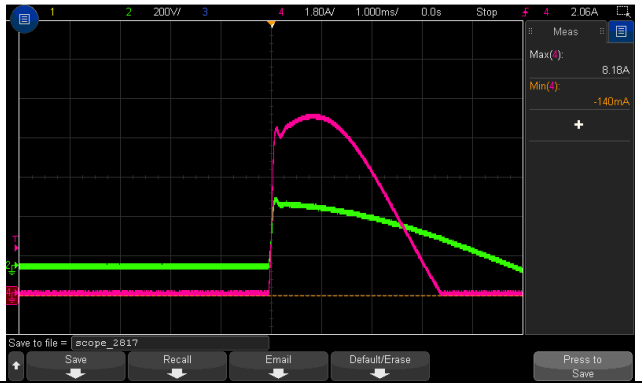
EFFICIENCY vs LOAD



7	INRUSH CURRENT(Typ.)	277V/15A 230V/10A 115V/6A COLD START	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =11.9A/ 230VAC I =8.18A/ 230VAC I =3.62A/ 115VAC T50=2350us/230V

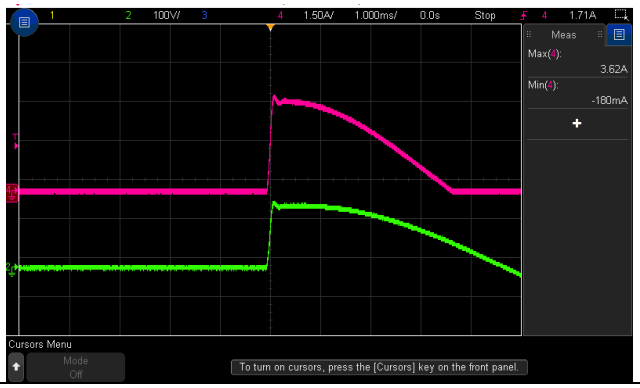
INPUT=230VAC/50HZ @ FULL LOAD

CH2: AC Input Voltage CH4: Input current

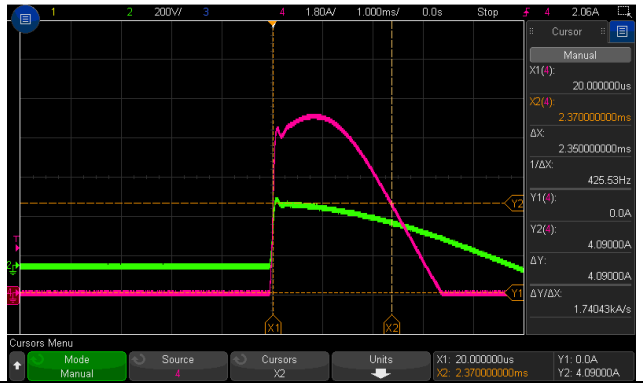


INPUT=115VAC/60HZ @ FULL LOAD

CH2: AC Input Voltage CH4: Input current



T50@230VAC:



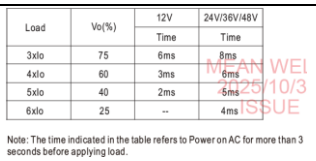
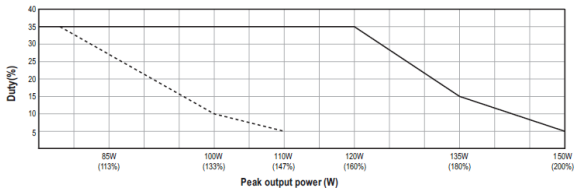
INPUT=277VAC/50HZ @ FULL LOAD
CH2: AC Input Voltage CH4: Input current



PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOAD PROTECTION	105%~200% rated output power Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when Vo=10%~100%; Constant current limiting mode or Latch mode when Vo < 10% rated voltage.	I/P: 305VAC I/P: 230VAC I/P: 100VAC O/P:TESTING Ta:25℃	120.51%/ 305VAC 119.87%/ 230VAC 119.87%/ 100VAC Protection type: 105%~200% rated output power for more than 5 sec then constant current limiting at rate current without shutdown when Vo=10%~100%; Constant current limiting mode or Latch mode when Vo < 10% rated voltage.
2	OVER VOLTAGE PROTECTION	57V~66V Protection type: Shut down o/p voltage, re-power on to recover	I/P: 305VAC I/P: 85VAC O/P:MIN LOAD Ta:25℃	59.1V/ 305VAC 59.1V/ 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 OK 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: Constant current limiting mode or Latch mode when Vo<10% rated voltage.	I/P: 305VAC I/P: 85VAC O/P:FULL LOAD	NO DAMAGE OK PROTECTION TYPE : Constant current limiting mode or Latch mode when Vo<10% rated voltage.

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	DC OK CONTACT RATINGS	Relay Contact Ratings(max.): 30Vdc/1A,30Vac/0.5A resistive load	I/P:230VAC O/P:FULL LOAD Ta:25℃	TEST: OK
2	REMOTE CONTROL	Power ON: RC + ~ RC- keep<0.5Vdc Power OFF: RC + ~ RC- keep 4~5Vdc	I/P:230VAC O/P:FULL LOAD Ta:25℃	TSET: OK Power ON: ≤ 1.95 V; Power OFF: ≥ 3.35V.
3	PULSE CURRENT CAPABLILTY	 Note: The time indicated in the table refers to Power on AC for more than 3 seconds before applying load.	I/P:230VAC O/P:FULL LOAD Ta:25℃	TEST: OK Load / Time(ms) 3xIo 29.4 4xIo 13.54 5xIo 9.86 6xIo 7.82
4	PEAK Power	I/P: 100/200VAC O/P:  ----------100VAC ——————200VAC		TEST: OK

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E) Peak Voltage	Q1 Rated: 800V/12A	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.	VO=Vomax VDS: (1) 695V (2) 683V (3) 691V (4) 695V (5) 691V (6) 687V (7) 699V (8) 699V

			(8) Peak Load Ta:25℃	
2	Diode Peak Voltage	Q101 Rated: 300V/10A	AC ON/OFF I/P: High-Line +3V =308 V VO=Vomax 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 VO=Vnormal O/P: (1) Full Load Ta:25℃	Q101: VO=Vomax VDS: (1) 233V (2) 233V (3) 239V (4) 241V (5) 235V (6) 235V (7) 233V (8) 233V (9) 233V VO=Vnormal (1) 229V
3	AUX Transistor (D to S) or (C to E) Peak Voltage	U5 Rated: 725V/645mA	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℃	VDS: (1) 518V (2) 518V (3) 518V (4) 514V (5) 522V (6) 514V (7) 506V (8) 510V
4	AUX Clamp Diode Peak Voltage	D19 Rated : 1A/1KV	AC ON/OFF I/P : High-Line +3V = 308V O/P : (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta:25℃	(1) 520V (2) 492V
5	AUX Diode Peak Voltage	D200 Rated : 1A/200V	AC ON/OFF I/P: High-Line +3V =308 V O/P: (1)Full Load	D200: VDS: (1) 126V D27: VDS: (1) 192V

		D27 Rated：1A/600V	(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℃	(2) 130V (3) 125V (4) 125V (5) 126V (6) 125V (7) 124V (8) 128V (9) 124V	(2) 204V (3) 192V (4) 190V (5) 192V (6) 190V (7) 192V (8) 190V (9) 192V
7	Input Capacitor Voltage	C5 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℃	(1) 433V (2) 433V (3) 433V (4) 433V (5) 437V (6) 437V	
8	Control IC Voltage Test	PWM IC U1 Rated：8V~ 26.5V IC U107 Rated：3V~30V AUX IC U5 Rated：5.65~6.8V	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℃	U1 (1) 18.3V (2) 17.9V (3) 17.8V (4) 18.1V (5) 18.4V U107 (1) 11.6V (2) 11.7V (3) 11.7V (4) 11.6V (5) 11.6V	U5 (1) 6.43V (2) 6.56V (3) 6.43V (4) 6.39V (5) 6.47V
9	Clamp Diode Peak Voltage	D5: DISA0162AF Rated：1A/620V	AC ON/OFF I/P：High-Line +3V = 308V O/P： (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta：25℃	(1) 556V (2) 548V	

■ 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℃	I/P-O/P: 4.38 mA I/P-FG: 3.10 mA O/P-FG: 4.70 mA O/P-DC OK: 0.009 mA 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℃	I/P-O/P: 50 GΩ I/P-FG: 50 GΩ O/P-FG: 50 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100mΩ	40A /2min Ta:25℃	18mΩ

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℃	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℃	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℃	PASS Test by certified Lab
4	E.S.D	BS EN/EN61000-4-2 INDUSTRY AIR：15KV / Contact：8KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INDUSTRY INPUT： 4KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	CRITERIA A
6	SURGE	BS EN/EN61000-4-5 INDUSTRY L-N ：2KV L,N-PE：4KV	I/P： 230 VAC/50HZ O/P：FULL LOAD Ta：25℃	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

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：XDR-75-24
1. ROOM AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 25 ℃
2. HIGH AMBIENT BURN-IN： 2 HRS
I/P： 230VAC O/P： FULL LOAD Ta= 60 ℃</td></tr>
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NO	Position	ROOM AMBIENT Ta= 25 ℃	HIGH AMBIENT Ta= 60 ℃
1	RTH3	60.8℃	92.9℃
2	U100	67.9℃	99.0℃
3	Q5	51.4℃	84.4℃
4	D27	54.4℃	87.7℃
5	LF2	41.9℃	77.0℃
6	C2	40℃	75.2℃
7	RY1	43.7℃	78℃
8	RTH1	43℃	77.8℃
9	R11	45.3℃	83.9℃
10	C48	53.3℃	86.7℃
11	D3	38.6℃	73.2℃
12	C5	46.4℃	79.2℃
13	SHR1	46.7℃	80.7℃
14	C49	46.5℃	80.8℃
15	C105	56.7℃	88.9℃
16	C108	49℃	82.4℃
17	C202	50.6℃	84.2℃
18	Q108	64.8℃	96.4℃
19	T2	51.2℃	86.6℃
20	C110	41.1℃	74.6℃
21	LF100	42.8℃	76.4℃
22	RY100	44.9℃	78.5℃
23	C1	37.9℃	72.2℃
24	ZNR1	37.2℃	71.5℃
25	BD1	44.9℃	78.5℃
26	Q101	63℃	94.8℃
27	U1	49.5℃	82.2℃
28	U5	70℃	102.9℃

			NO	Position	ROOM AMBIENT Ta= 25 ℃ / HIGH AMBIENT Ta= 60 ℃
			29	R50	57.5℃ / 89.7℃
			30	U2	43.8℃ / 77.6℃
			31	U107	47.7℃ / 81.3℃
			32	D5	70.6℃ / 102.9℃
			33	J110	58℃ / 90.2℃
			34	D201	47.9℃ / 81℃
			35	T1 Coil	62.4℃ / 93.4℃
			36	T1 Core	51.3℃ / 83.6℃
			37	Q1	51.2℃ / 84.4℃
			38	Q4	47.7℃ / 80.9℃
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P： 230 VAC O/P：117% LOAD Ta：25℃	TEST：OK	
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 305VAC/100VAC O/P： 50%/100% LOAD Ta= -40℃/-30℃	TEST：OK	
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 60 ℃/95 %R.H NO DAMAGE	I/P： 315 VAC O/P：FULL LOAD Ta= 60 ℃ HUMIDITY= 95 %R.H	TEST：OK	
5	TEMPERATURE COEFFICIENT	± 0.03 %/℃(0~60℃)	I/P： 230 VAC O/P：FULL LOAD	± 0.009 %/℃(0~60℃)	
6	STORAGE TEMPERATURE TEST	-40~85℃	1. Thermal shock Temperature： -45℃~ +90℃ 2. Temperature change rate ：25℃ / 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℃	1. Thermal shock Temperature： -35℃~ +65℃ 2. Temperature change rate ：25℃ / 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℃		
9	CAPACITOR LIFE CYCLE	SUPPOSE C108 IS THE MOST CRITICAL COMPONENT (1) I/P： 230VAC O/P：FULL LOAD Ta= 25 ℃ LIFE TIME (2) I/P： 230VAC O/P：FULL LOAD Ta= 60 ℃ LIFE TIME (3) I/P： 230VAC O/P：75% LOAD Ta= 60 ℃ LIFE TIME (4) I/P： 230VAC O/P：50% LOAD Ta= 60 ℃ LIFE TIME		(1) 647358.9 HRS (2) 63930 HRS (3) 88491.2 HRS (4) 119875.1 HRS	

10	MTBF	Conducted by Parts Stress Analysis Prediction 1907.3K hrs min. Telcordia SR-332 (Bellcore) ; 333.9K hrs min. MIL-HDBK-217F (25℃)
11	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 50,000 hours

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	YUWEI	LIUTT	WANGZD

2020.10.1 TAG-QA-009