Test Report: XDR-150E-48

150W AC/DC Economical 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

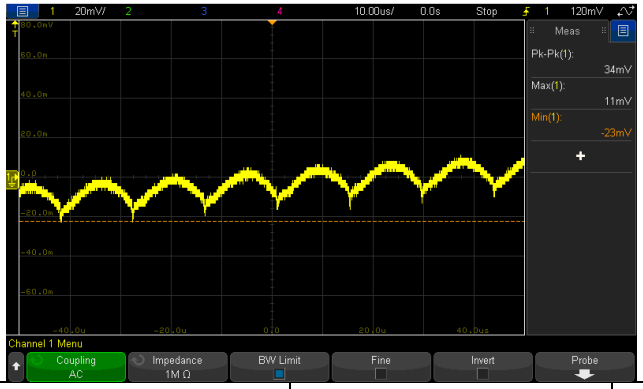
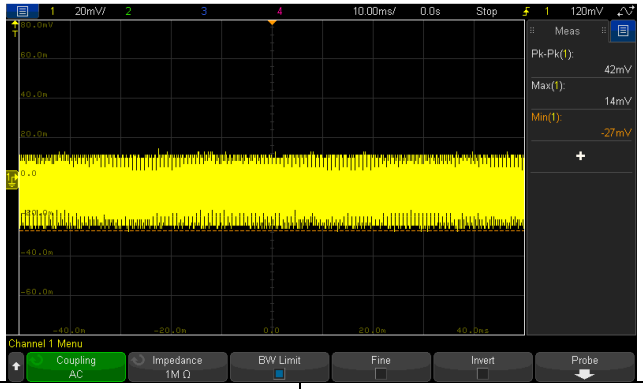
Safety Test
E.M.C. Test

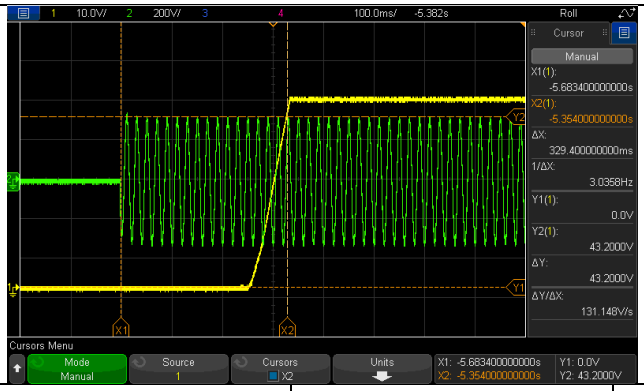
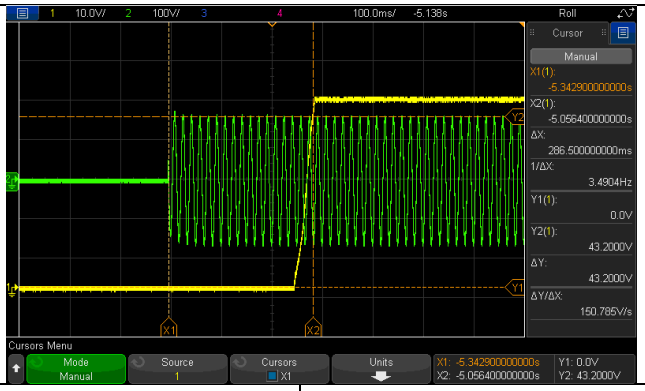
■ RELIABILITY TEST

ENVIRONMENT TEST

■ DESIGN VERIFY TEST

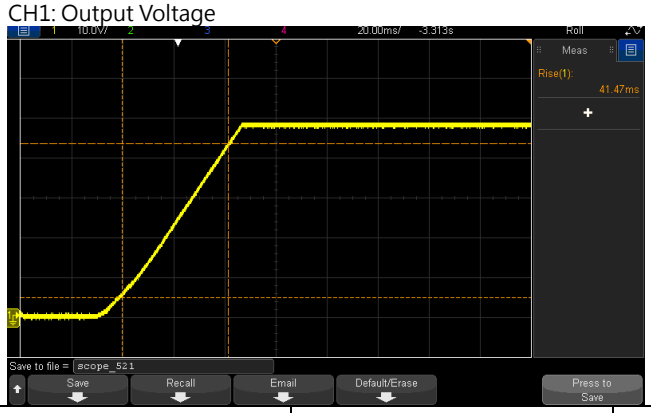
OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V~55V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25℃	46.038V~56.53V/230VAC 46.038V~56.53V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~ 264VAC O/P:FULL~ MIN. LOAD Ta:25℃	V1: -0.0208 % ~ 0.017%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~264VAC O/P:FULL LOAD Ta:25℃	V1: -0.0125% ~0.00208 %
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: -0.0208 % ~ 0.017%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD Ta:25℃	2.1% →FULL LOAD 1.3% →NO LOAD
6	RIPPLE &NOISE (Max)	V1:200mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25℃	34mVp-p / high frequency 42mVp-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/329.4ms 115VAC/286.5ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage	

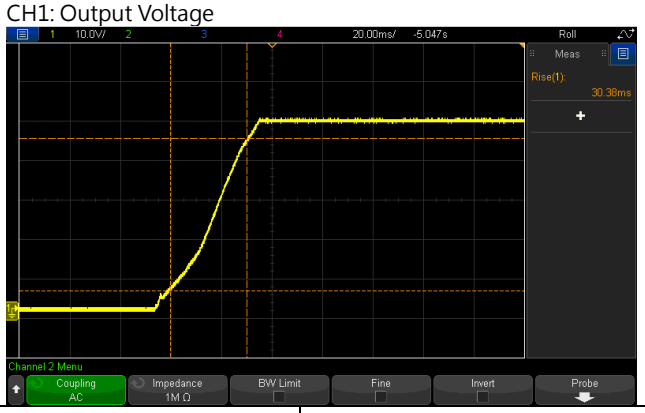



8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/ 41.47ms 115VAC/ 30.38ms

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

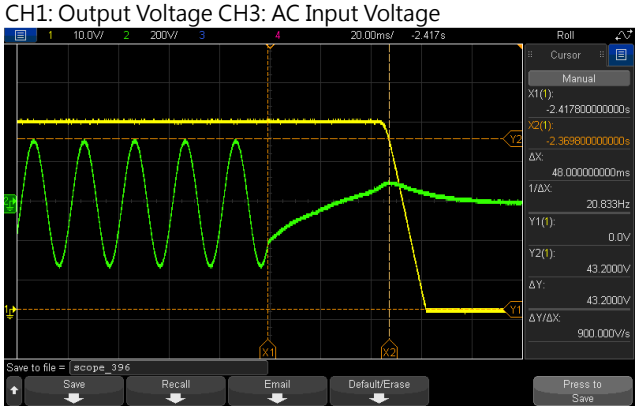


INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage

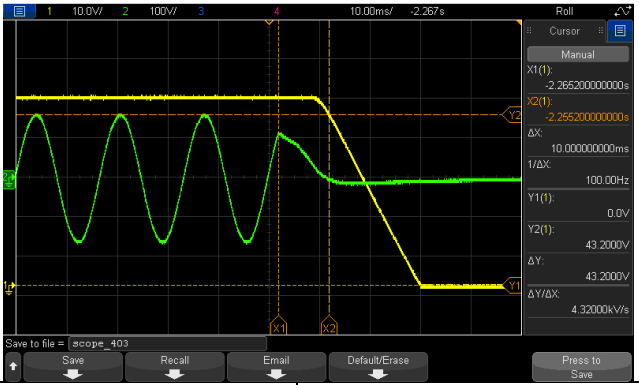


9	HOLD UP TIME(Typ.)	230VAC/16ms 115VAC/8ms	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	230VAC/48.0ms 115VAC/10.0 ms

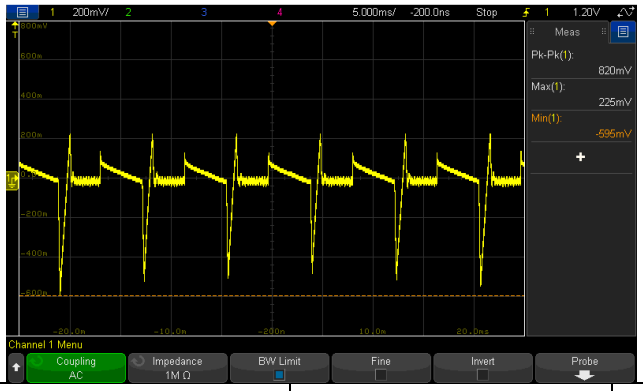
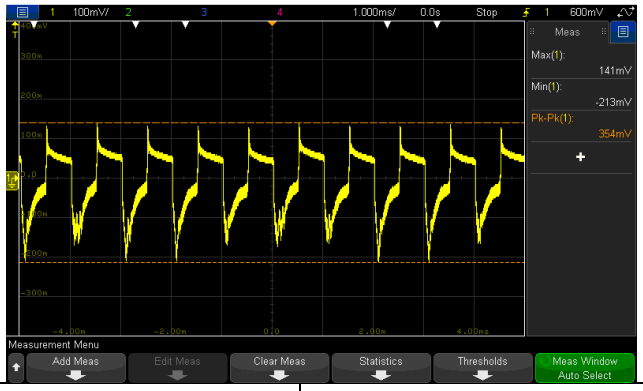
INPUT=230VAC/50HZ @ FULL LOAD
CH1: Output Voltage CH3: AC Input Voltage



INPUT=115VAC/60HZ @ FULL LOAD
CH1: Output Voltage CH3: AC Input Voltage



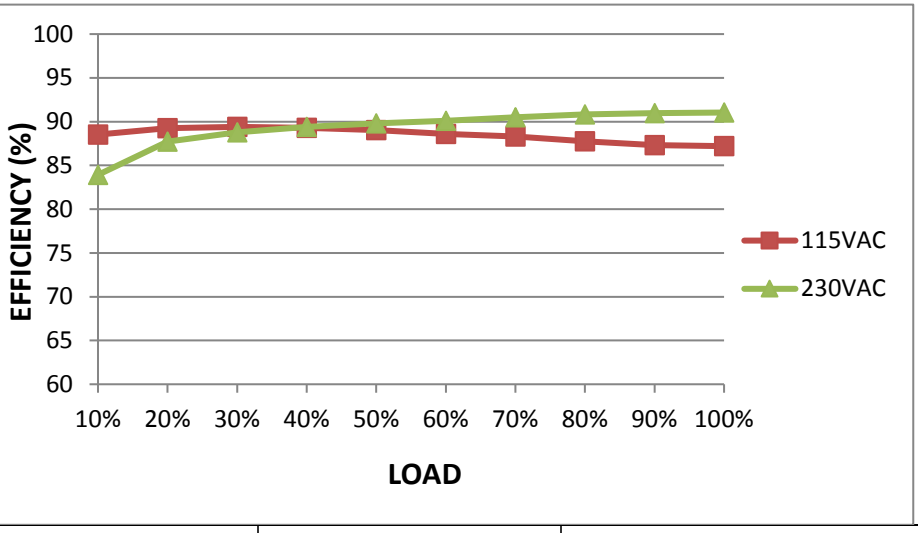
10	DYNAMIC LOAD	V1: 4800mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY/120HZ (2) FULL/ MIN LOAD 50%DUTY/ 1KHZ Ta:25℃	820mVp-p 354mVp-p

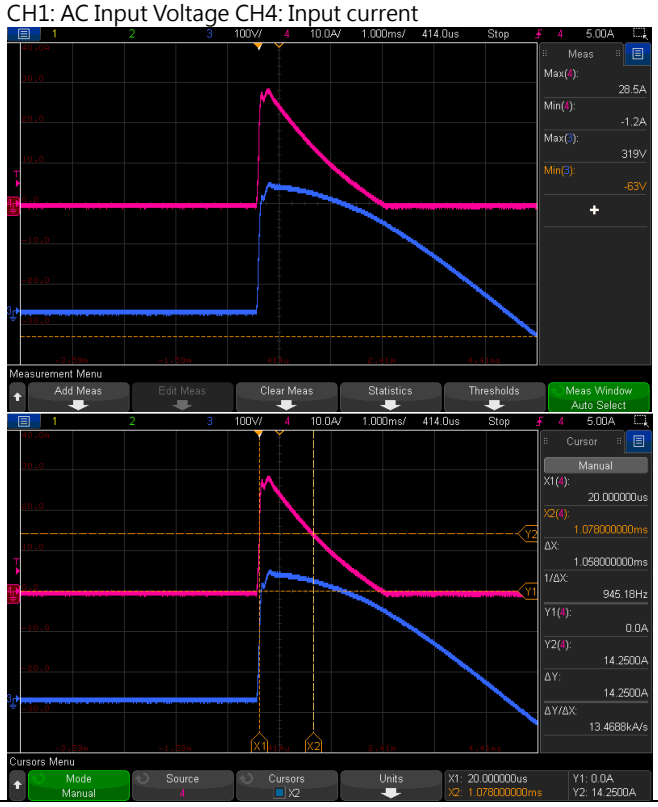
	FULL / MIN LOAD 50%DUTY/120HZ 		FULL / MIN LOAD 50%DUTY/ 1KHZ 	
11	TRANSIENT RECOVERY TIME	V1:4800mVp-p <500us	I/P: 230VAC O/P:40% LOAD CHANGE 50%DUTY/120HZ 1.25A/us	211mVp-p 0us

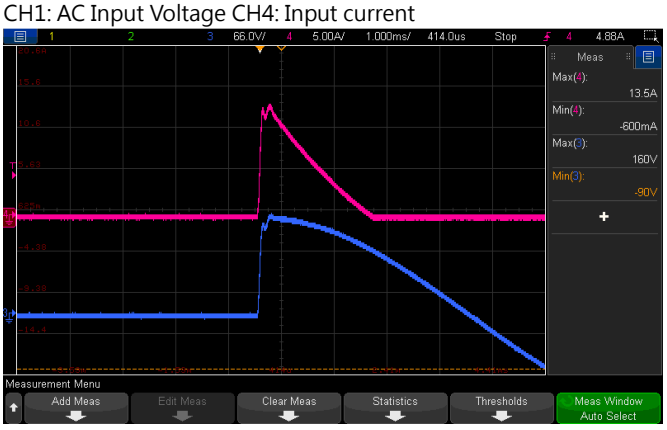
INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	INPUT VOLTAGE RANGE	85VAC~264VAC 120VDC~ 370VDC	(1) I/P: TESTING O/P: FULL / 80% LOAD/ 70% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 80% LOAD/ 70% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 80% LOAD/ 70% LOAD Ta:25℃	(1) 90.8V~264V/ FULL LOAD 69.2V~264V/ 80% LOAD 67.5V~264V/ 70% LOAD (2) 95.5Vdc~370Vdc/FULL LOAD 94.9Vdc~370Vdc/80% LOAD 94.8Vdc~370Vdc/70% LOAD (3) 95.1Vdc~370Vdc/FULL LOAD 95.0Vdc~370Vdc/80% LOAD 94.6Vdc~370Vdc/70% LOAD
			I/P: HIGH-LINE+15%=300V O/P:FULL/MIN LOAD (PLEASE CHECK DERATING CURVE) ON: 30 Sec OFF: 30 Sec 10MIN (POWER ON/OFF NO DAMAGE)	TEST：OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:85VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST：OK
3	INPUT CURRENT(Typ.)	230V/ 1.6A 115V/ 2.6A	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =1.4613A/ 230VAC I =2.0763A/ 115VAC
4	LEAKAGE CURRENT	<1mA / 240 VAC	I/P： 240 VAC/60HZ O/P：Min LOAD Ta：25℃	0.7587 mA
5	NO LOAD CONSUMPTION	<1W	I/P：230VAC I/P：115VAC O/P：NO LOAD Ta：25℃	0.856W/230VAC 0.492W/ 115VAC

6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25℃	91.04%
	EFFICIENCY vs LOAD			
7	INRUSH CURRENT(Typ.)	230V/40A 115V/20A COLD START	I/P： 230 VAC I/P： 115 VAC O/P：FULL LOAD Ta：25℃	I =28.5A/ 230VAC I =13.5A/ 115VAC T50= 1058us/230V
	INPUT=230VAC/50HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current		INPUT=115VAC/ 60HZ @ FULL LOAD CH1: AC Input Voltage CH4: Input current	







PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OVER LOADPROTECTION	105%~130% rated output power/230VAC 105%~150% rated output power/115VAC Protection type: Constant current limiting without shutdown, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 230VAC I/P: 180VAC I/P: 165VAC I/P: 115VAC I/P: 100VAC O/P:TESTING Ta:25℃	111.84%/ 264VAC 112.15%/ 230VAC 111.53%/180VAC 139.42%/ 165VAC 139.8%/ 115VAC 135.76%/100VAC PROTECTION TYPE : Constant current limiting without shutdown, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	56V~65V Protection type: Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P:85VAC O/P:MIN LOAD Ta:25℃	58.9V/264VAC 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 fault condition is removed	I/P: 264VAC I/P: 85VAC O/P:FULL LOAD	O.T.P. Active OK Protection type : Shut down o/p voltage,recovers automatically after fault condition is removed
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE Protection type: Constant current limiting without shutdown, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 85VAC O/P: FULL LOAD Ta:25℃	NO DAMAGE OK PROTECTION TYPE : Constant current limiting without shutdown, recovers automatically after fault condition is removed

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℃	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 : 14A/650V	AC ON/OFF I/P:High-Line +3V =267V VDS: O/P: (1)Full Load 3.25A (2)Output Short (3)Dynamic Load Full Load/ Min. Load 90%Duty/1KHz	Q1 VDS: (1) 548V (2) 544V (3) 548V (4) 556V (5) 556V

			(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 Ta:25℃	(6) 556V (7) 548V
2	Diode PeakVoltage	Q100 : Rated : 10A/300V	AC ON/OFF I/P: High-Line +3V =267 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 VO=Vnormal O/P: (1) Full Load Ta:25℃	VO= Vomax VDS: (1) 245V (2) 245V (3) 245V (4) 245V (5) 245V (6) 245V (7) 247V (8) 245V VO=Vnormal (1) 238V
3	Input Capacitor Voltage	C5 Rated: 180μ/ 400V	I/P:High-Line +3V =267V O/P: (1)Full Load input on/off (2) Min load input on /Off (3)Full Load /Min load Change (4)Full load continue Ta:25℃	(1)376V (2)376V (3)376V (4)372V
4	Control IC Voltage Test	PWM IC U1: Rated : 9.5V~ 27V IC U107 : Rated : 3V~30V	AC ON/OFF I/P: High-Line +3V =267 V O/P: (1) FULL LOAD (2) Output Short (3) O.L.P (4) O.V.P. (5) NO LOAD VRmin (LOW LINE) Ta:25℃	U1 U107 (1) 17.0V (1) 11.7V (2) 17.0V (2) 12.3V (3) 17.1V (3) 12.0V (4) 17.2V (4) 11.5V (5) 17.0V (5) 11.5V
5	Clamp Diode Peak Voltage	D10 : Rated : 620V/1A	AC ON/OFF I/P : High-Line +3V = 267 V O/P : (1) Dynamic Load 90%Duty/1KHz (2) Full load continue Ta : 25℃	(1)471V (2)467V

■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTANDVOLTAGE	I/P-O/P: 4 K VAC/min I/P-FG: 2 K VAC/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: 6.66 mA I/P-FG: 5.50 mA O/P-FG: 6.48 mA O/P-DC OK: 0.005 mA NO DAMAGE
2	ISOLATIONRESISTANCE	I/P-O/P: 500 VDC>100MΩ O/P-FG: 500 VDC>100MΩ I/P-FG: 500 VDC >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	GROUNDINGCONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25℃	8mΩ

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 : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25℃	CRITERIA A
5	E.F.T	BS EN/EN61000-4-4 INDUSTRY INPUT : 2KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25℃	CRITERIA A
6	SURGE	BS EN/EN61000-4-5 INDUSTRY Line-Line : 2KV Line-Line-Chassis : 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-150E-48
1. ROOM AMBIENT BURN-IN： 2HRS
I/P： 230VAC O/P： FULL LOAD Ta= 25.8 ℃
2. HIGH AMBIENT BURN-IN： 2HRS
I/P： 230VAC O/P： FULL LOAD Ta= 50 ℃</td></tr>
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NO	Position	ROOM AMBIENTTa= 25.8℃	HIGH AMBIENT Ta= 50℃
1	ZNR1	46.6℃	70.9℃
2	LF1	49.3℃	73.5℃
3	RY1	57.3℃	80.3℃
4	LF100	55℃	78.4℃
5	C115	51.6℃	75℃
6	C1	50.3℃	75.2℃
7	LF2	61.7℃	85.2℃
8	RTH2	87.4℃	101℃
9	RTH1	80.4℃	95.7℃
10	R6	71.7℃	88℃
11	BD1	52.4℃	75.2℃
12	C5	55.3℃	78.2℃
13	C35	60.8℃	83.3℃
14	R50	67.3℃	90.3℃
15	Q1	67.1℃	91.6℃
16	T1 Coil	66.7℃	88.9℃
17	T1 Core	59.2℃	81.7℃
18	RTH3	61.5℃	83.7℃
19	C118	65.5℃	87.8℃
20	C107	60.1℃	83.2℃
21	C105	63.8℃	86.7℃
22	R100	73.3℃	96.7℃
23	Q100	76.6℃	98.7℃
24	J110	68.4℃	91.7℃
25	U1	56.7℃	79.7℃
26	U107	55.6℃	78.3℃
27	U2	53.2℃	76℃
28	D10	70.3℃	93.3℃
29	Q2	65.5℃	88℃
30	D102	72℃	94.3℃
31	D7	65.5℃	87.4℃
32	Q200	68.3℃	91.6℃

2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P： 230 VAC O/P： 110.77% LOAD Ta：25℃	TEST：OK
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P： 264VAC/100VAC O/P： 100% LOAD Ta= -30℃	TEST：OK
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50℃/95 %R.H NO DAMAGE	I/P： 272 VAC O/P：FULL LOAD Ta= 50℃ HUMIDITY= 95 %R.H	TEST：OK
5	TEMPERATURE COEFFICIENT	± 0.03 %/℃(0~50℃)	I/P： 230 VAC O/P：FULL LOAD	±0.012 %/℃(0~50℃)
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	-30~50℃	1. Thermal shock Temperature： -35℃~ +55℃ 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 C107 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= 50℃ LIFE TIME (3) I/P： 230VAC O/P：75% LOAD Ta= 50℃ LIFE TIME (4) I/P： 230VAC O/P：50% LOAD Ta= 50℃ LIFE TIME	(1) 164208.5HRS (2) 31328.1HRS (3) 46699.6HRS (4) 69432.3HRS	
10	MTBF	Conducted by Parts Stress Analysis Prediction 2201.7K hrs min. Telcordia SR-332 (Bellcore) ; 440.4K hrs min. MIL-HDBK-217F (25℃)		
11	Ongoing Reliability Test	I/P：230VAC O/P：FULL LOAD TA=50℃ Demonstration Mean Time Between Failure : 30,000 hours		

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	YUWEI	LIUTT	WANGZD

2020.10.1 TAG-QA-009