



Test Report: XDR-150E-24

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

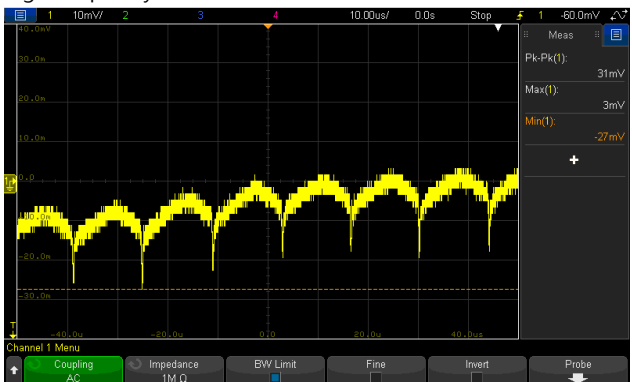
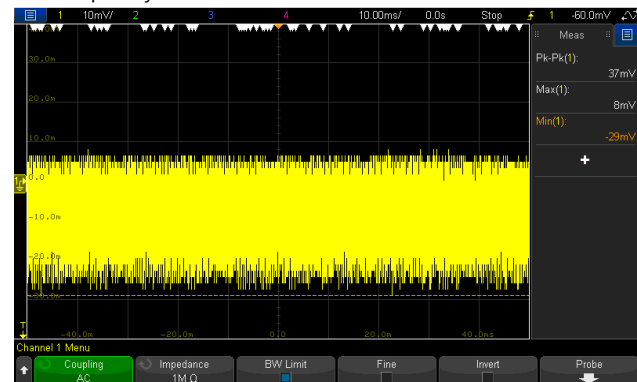
E.M.C. Test

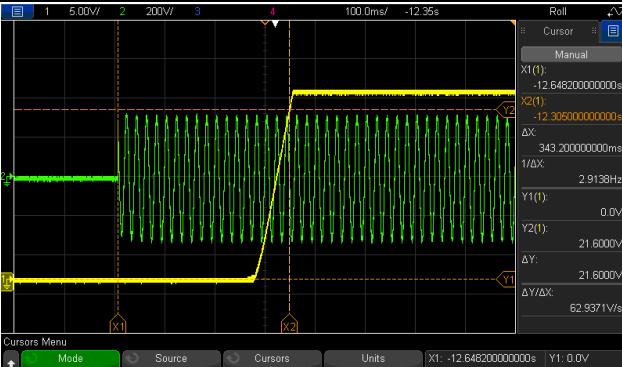
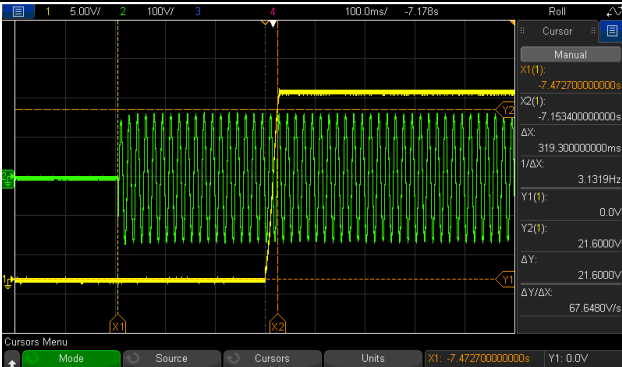
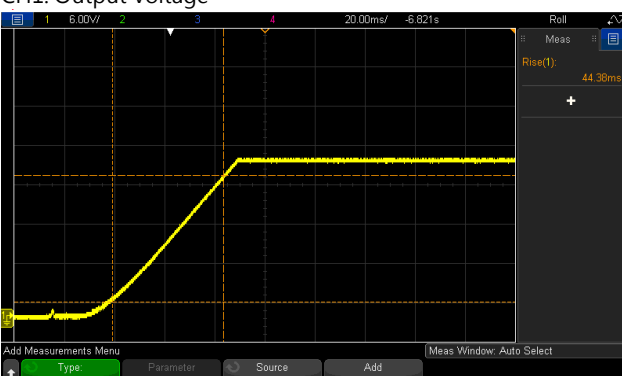
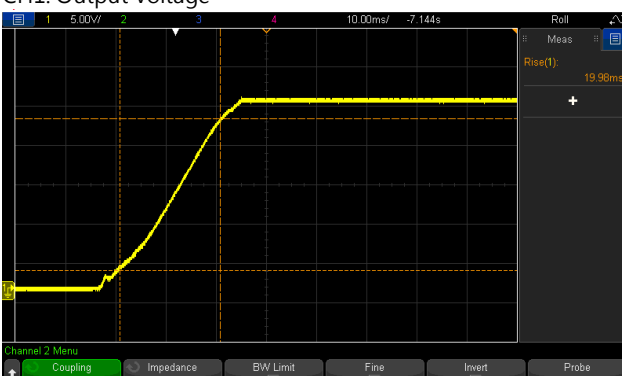
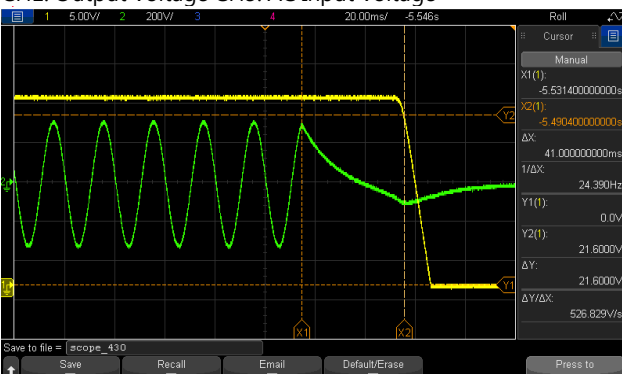
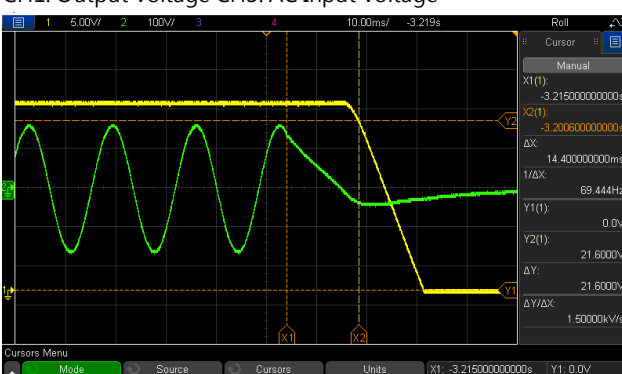
■ RELIABILITY TEST

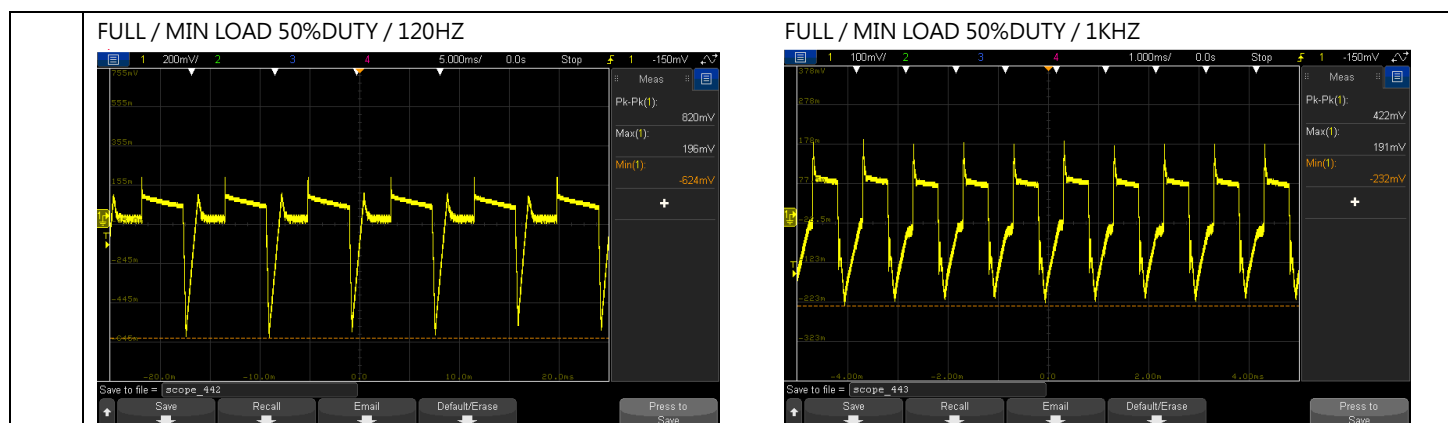
ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24V~29V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	22.581V~29.698V/230VAC 22.583V~29.699V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~ 264VAC O/P:FULL~ MIN. LOAD Ta:25°C	V1: -0.0833% ~ 0.0999%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.0042% ~ 0.0625%
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.0833% ~ 0.0999%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD Ta:25°C	2.1% →FULL LOAD 0.4% →NO LOAD
6	RIPPLE & NOISE (Max)	V1: 120mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 31mVp-p / high frequency 37mVp-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°C	230VAC/ 343.2ms 115VAC/ 319.3ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		

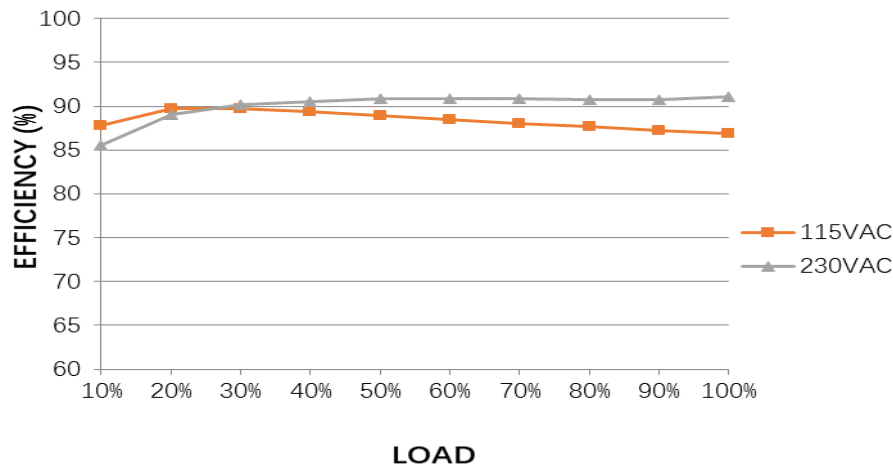
				
8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 44.38ms 115VAC/ 19.98ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage				
				
INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage				
				
9	HOLD UP TIME (Typ.)	230VAC/ 16ms 115VAC/ 8ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 41.0ms 115VAC/ 14.4ms
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: 2400mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY / 120HZ (2) FULL/ MIN LOAD 50%DUTY / 1KHZ Ta:25°C	820mVp-p 422mVp-p



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°C 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)	(1) 94.8V~264V/ FULL LOAD 74.6V~264V/ 80% LOAD 68.0V~264V/ 70% LOAD (2) 100.8Vdc~370Vdc/FULL LOAD 96.1Vdc~370Vdc/80% LOAD 95.2Vdc~370Vdc/70% LOAD (3) 98.5Vdc~370Vdc/FULL LOAD 95.7Vdc~370Vdc/80% LOAD 95.6Vdc~370Vdc/70% LOAD TEST : OK
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE	I/P:85VAC ~264 VAC O/P:FULL~MIN LOAD Ta:25°C	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°C	I =1.4631A/ 230VAC I =2.0762A/ 115VAC
4	LEAKAGE CURRENT	< 1mA / 240 VAC	I/P : 240 VAC/60HZ O/P : Min LOAD Ta : 25°C	0.792mA
5	NO LOAD CONSUMPTION	< 1W	I/P : 230VAC I/P : 115VAC O/P : NO LOAD Ta : 25°C	0.8678W/ 230VAC 0.436W/ 115VAC
6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	91.03%

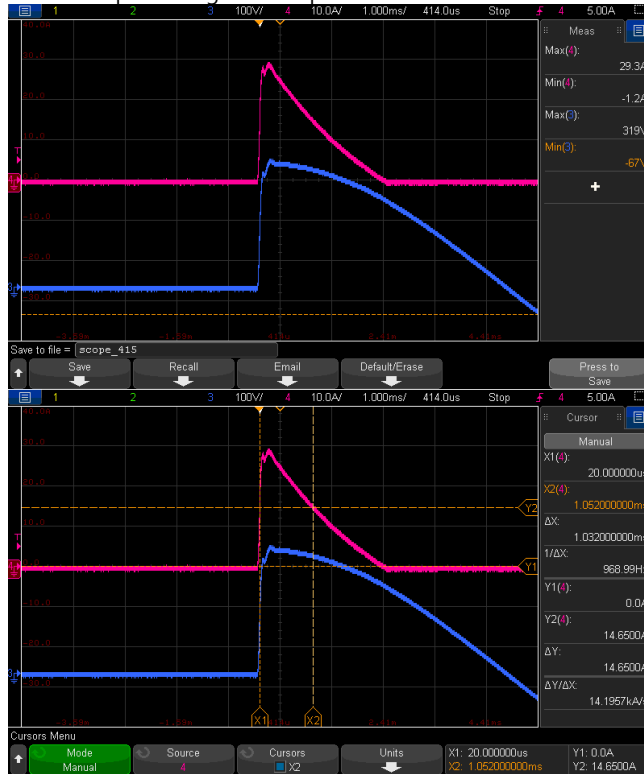
EFFICIENCY vs LOAD



7	INRUSH CURRENT(Typ.)	230V/40A 115V/20A COLD START	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =29.3A/ 230VAC I =13.9A/ 115VAC T50= 1032us/230V

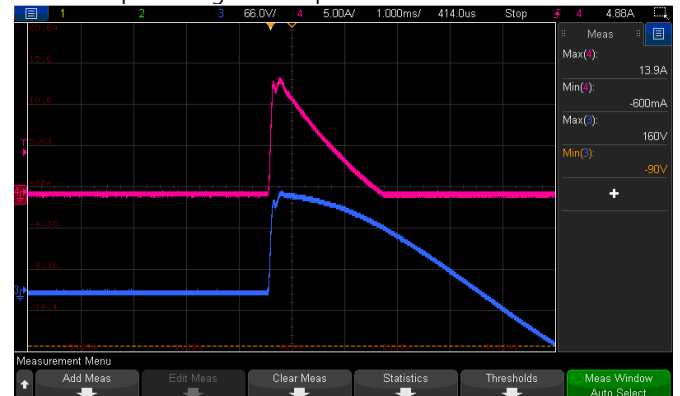
INPUT=230VAC/50HZ @ FULL LOAD

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 LOAD PROTECTION	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°C	107.69%/ 264VAC 110.76%/ 230VAC 110.76%/ 180VAC 138.46%/ 165VAC 138.46%/ 115VAC 138.46%/ 100VAC PROTECTION TYPE : Constant current limiting without shutdown, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	30V~34V Protection type: Shut down o/p voltage, re-power on to recover	I/P: 264VAC I/P: 85VAC O/P: MIN LOAD Ta:25°C	32.0V/ 264VAC 32.0V/ 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°C	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°C	TEST: <u>OK</u>

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	PWM Transistor (D to S) or (C to E)	Q1 : Rated : 650V/14A	AC ON/OFF I/P: High-Line +3V =267V	VDS: (1) 564V

	Peak Voltage		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 Ta:25°C	(2) 560V (3) 581V (4) 581V (5) 581V (6) 577V (7) 573V
2	Diode Peak Voltage	Q101 Rated : 50A/150V	AC ON/OFF I/P: High-Line +3V =267 V <u>VO=Vomax</u> 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 <u>VO=Vnormal</u> O/P: (1) Full Load Ta:25°C	<u>VO=Vomax</u> VDS: (1) 120V (2) 119V (3) 120V (4) 122V (5) 120V (6) 120V (7) 120V (8) 120V <u>VO=Vnormal</u> (1) 114V
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°C	(1) 376V (2) 376V (3) 376V (4) 372V
4	Control IC Voltage Test	PWM IC U1: Rated : 9.5V~ 27V O/P IC U100 Rated : 4V~13V 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°C	U1 (1) 17.5V (2) 17.6V (3) 17.6V (4) 17.6V (5) 17.5V U100 (1) 9.1V (2) 8.9V (3) 9.1V (4) 9.1V (5) 8.9V U107 (1) 11.7V (2) 11.8V (3) 11.8V (4) 11.5V (5) 9.1V

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°C	(1) 471V (2) 463V
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■ SAFETY& E.M.C. TEST

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	WITHSTAND VOLTAGE	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°C	I/P - O/P: 6.56 mA I / P - F G : 5.49 mA O / P - F G : 6.35 mA O/P-DC OK: 0.006 mA NO DAMAGE
2	ISOLATION RESISTANCE	I/P-O/P: 500 VDC>100MΩ O/P-FG: 500 VDC>100MΩ I/P - F G : 500 VDC >100MΩ	I/P-O/P: 600 VDC I/P - F G : 600 VDC O/P-FG: 600 VDC Ta:25°C	I/P - O/P: 50 GΩ I / P - F G : 50 GΩ O / P - F G : 50 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	11mΩ

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/EN61000-4-2 INDUSTRY AIR : 8KV / Contact : 4KV	I/P : 230 VAC/50HZ O/P : FULL LOAD Ta : 25°C	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°C	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°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-150E-24 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.8 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50.5 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 25.8°C</th><th>HIGH AMBIENT Ta= 50.5°C</th></tr><tr><td>1</td><td>C1</td><td>42.4°C</td><td>69.9°C</td></tr><tr><td>2</td><td>LF2</td><td>56.1°C</td><td>85.4°C</td></tr><tr><td>3</td><td>RTH2</td><td>86.5°C</td><td>104.3°C</td></tr><tr><td>4</td><td>RTH1</td><td>79°C</td><td>98.2°C</td></tr><tr><td>5</td><td>R6</td><td>69.8°C</td><td>87.5°C</td></tr><tr><td>6</td><td>BD1</td><td>60°C</td><td>82.2°C</td></tr><tr><td>7</td><td>C5</td><td>56.7°C</td><td>83.3°C</td></tr><tr><td>8</td><td>C34</td><td>61.1°C</td><td>86.7°C</td></tr><tr><td>9</td><td>R50</td><td>66.5°C</td><td>92.1°C</td></tr><tr><td>10</td><td>RTH3</td><td>64°C</td><td>92°C</td></tr><tr><td>11</td><td>Q1</td><td>64.7°C</td><td>99.2°C</td></tr><tr><td>12</td><td>T1 Coil</td><td>73.9°C</td><td>102.6°C</td></tr><tr><td>13</td><td>T1 Core</td><td>62.6°C</td><td>93.8°C</td></tr><tr><td>14</td><td>C118</td><td>66.1°C</td><td>90°C</td></tr><tr><td>15</td><td>C107</td><td>62.7°C</td><td>85°C</td></tr><tr><td>16</td><td>C105</td><td>62.6°C</td><td>85.8°C</td></tr><tr><td>17</td><td>C106</td><td>64.3°C</td><td>91°C</td></tr><tr><td>18</td><td>Q101</td><td>74.5°C</td><td>102.2°C</td></tr><tr><td>19</td><td>D102</td><td>73.4°C</td><td>100.8°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 25.8°C	HIGH AMBIENT Ta= 50.5°C	1	C1	42.4°C	69.9°C	2	LF2	56.1°C	85.4°C	3	RTH2	86.5°C	104.3°C	4	RTH1	79°C	98.2°C	5	R6	69.8°C	87.5°C	6	BD1	60°C	82.2°C	7	C5	56.7°C	83.3°C	8	C34	61.1°C	86.7°C	9	R50	66.5°C	92.1°C	10	RTH3	64°C	92°C	11	Q1	64.7°C	99.2°C	12	T1 Coil	73.9°C	102.6°C	13	T1 Core	62.6°C	93.8°C	14	C118	66.1°C	90°C	15	C107	62.7°C	85°C	16	C105	62.6°C	85.8°C	17	C106	64.3°C	91°C	18	Q101	74.5°C	102.2°C	19	D102	73.4°C	100.8°C
NO	Position	ROOM AMBIENT Ta= 25.8°C	HIGH AMBIENT Ta= 50.5°C																																																																																	
1	C1	42.4°C	69.9°C																																																																																	
2	LF2	56.1°C	85.4°C																																																																																	
3	RTH2	86.5°C	104.3°C																																																																																	
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6	BD1	60°C	82.2°C																																																																																	
7	C5	56.7°C	83.3°C																																																																																	
8	C34	61.1°C	86.7°C																																																																																	
9	R50	66.5°C	92.1°C																																																																																	
10	RTH3	64°C	92°C																																																																																	
11	Q1	64.7°C	99.2°C																																																																																	
12	T1 Coil	73.9°C	102.6°C																																																																																	
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14	C118	66.1°C	90°C																																																																																	
15	C107	62.7°C	85°C																																																																																	
16	C105	62.6°C	85.8°C																																																																																	
17	C106	64.3°C	91°C																																																																																	
18	Q101	74.5°C	102.2°C																																																																																	
19	D102	73.4°C	100.8°C																																																																																	

			NO	Position	ROOM AMBIENT Ta= 25.8°C	HIGH AMBIENT Ta= 50.5°C
			20	U1	57.4°C	84.8°C
			21	U2	59°C	84.3°C
			22	D14	67.2°C	80.2°C
			23	U107	61.7°C	89.1°C
			24	J110	77.2°C	102°C
			25	D6	67.1°C	106.1°C
			26	Q2	71.9°C	99.9°C
			27	D7	63.1°C	90.8°C
			28	U100	75.3°C	100.5°C
			29	Q200	89.6°C	105.4°C
			30	LF100	54°C	82.7°C
			31	RY1	58.9°C	87.7°C
			32	LF1	48.2°C	76°C
			33	ZNR1	45.5°C	72.8°C
			34	TB2	46.9°C	73.4°C
2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 111.92% LOAD Ta : 25°C	TEST : OK		
3	LOW TEMPERATURE TURN ON TEST	TURN ON AFTER 2 HOUR	I/P : 264VAC/100VAC O/P : 100% LOAD Ta= -30°C	TEST : OK		
4	HIGH HUMIDITY HIGH TEMPERATURE HIGH VOLTAGE TURN ON TEST	AFTER 12 HOURS IN CHAMBER ON CONTROL 50 °C/95 %R.H NO DAMAGE	I/P : 272 VAC O/P : FULL LOAD Ta= 50°C HUMIDITY= 95 %R.H	TEST : OK		
5	TEMPERATURE COEFFICIENT	± 0.03 %/°C(0~50°C)	I/P : 230 VAC O/P : FULL LOAD	± 0.011 %/°C(0~50°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	-30~50°C	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 : 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 C106 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (1) 229682.1HRS (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (2) 35346.5HRS (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (3) 73168.1HRS (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME (4) 129325.8HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2201.7K hrs min. Telcordia SR-332 (Bellcore) ; 440.4K 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 : 30,000 hours

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	YUWEI	LIUTT	WANGZD

2020.10.1 TAG-QA-009