



Test Report: XDR-120E-48

120W 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

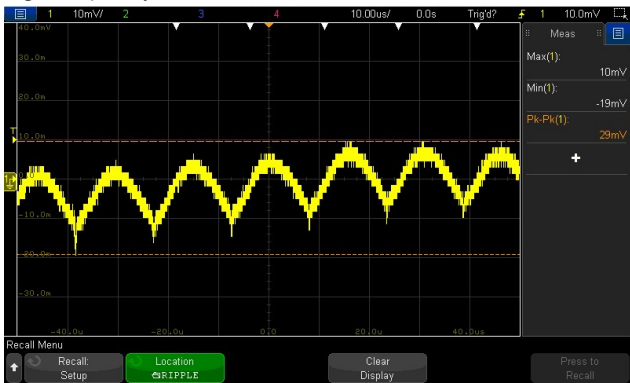
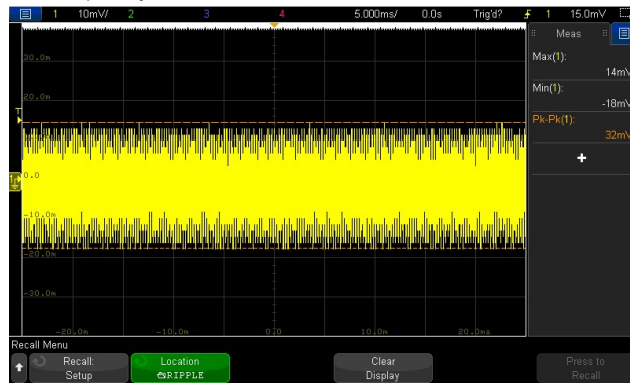
E.M.C. Test

■ RELIABILITY TEST

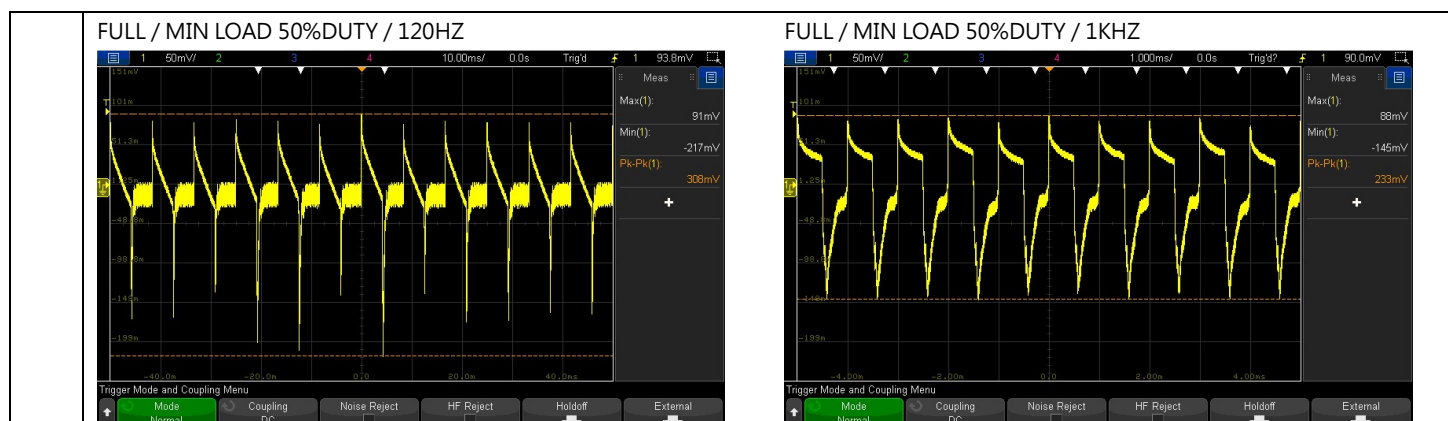
ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

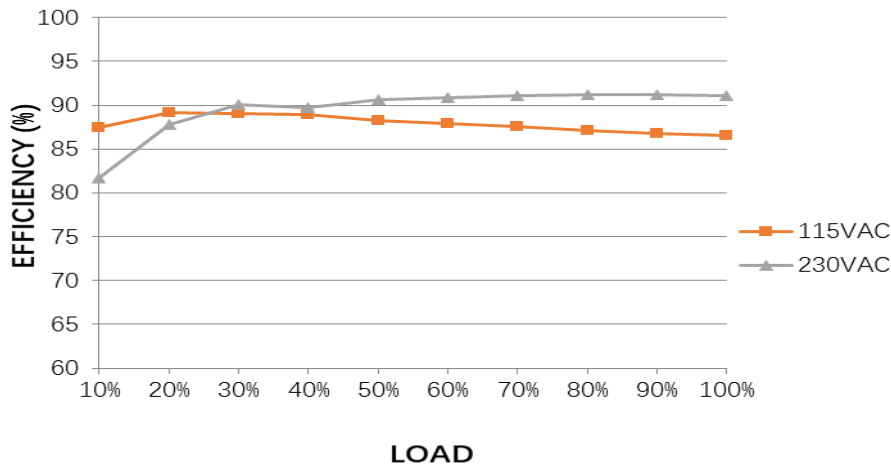
NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48V~55V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOA Ta : 25°C	46.523V~56.28V/230VAC 46.516V~56.29V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~ 264VAC O/P:FULL~ MIN. LOAD Ta:25°C	V1: -0.02% ~0.01%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: 0% ~0.01 %
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.02% ~0.01%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD Ta:25°C	0.46% →FULL LOAD 0.81% →NO LOAD
6	RIPPLE & NOISE (Max)	V1: 150mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 29mVp-p / high frequency 32mVp-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/ 312.0ms 115VAC/ 351.4ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage			INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage	

8	RISE TIME (Max)	230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	230VAC/ 24.4ms 115VAC/ 32.8ms
	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/ 58.2ms 115VAC/ 10.8ms
	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°C	308mVp-p 233mVp-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 / 75% LOAD (2) I/P: DC TESTING (L: + N: -) O/P: FULL / 75% LOAD (3) I/P: DC TESTING (L: - N: +) O/P: FULL / 75% LOAD Ta:25°C	(1) 92.1V~264V/ FULL LOAD 69.3V~264V/ 75% LOAD (2) 104.0Vdc~370Vdc/FULL LOAD 101.0Vdc~370Vdc/75% LOAD (3) 104.0Vdc~370Vdc/FULL LOAD 101.0Vdc~370Vdc/75% 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°C	TEST : OK
3	INPUT CURRENT (Typ.)	230V/ 1.3A 115V/ 2.25A	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C	I =1.053A/ 230VAC I =1.952A/ 115VAC
4	LEAKAGE CURRENT	< 1mA / 240 VAC	I/P : 240 VAC/60HZ O/P : Min LOAD Ta : 25°C	0.565mA
5	NO LOAD CONSUMPTION	< 1W	I/P : 230VAC I/P : 115VAC O/P : NO LOAD Ta : 25°C	0.864W/ 230VAC 0.518W/ 115VAC
6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	91.08%
	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 =29.0A/ 230VAC I =14.3A/ 115VAC T50=860 us/230V
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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 Protection type: Constant current limiting without shutdown, recovers automatically after fault condition is removed	I/P: 264VAC I/P: 230VAC I/P: 100VAC O/P: TESTING Ta: 25°C	119.6%/ 264VAC 119.6%/ 230VAC 119.6%/ 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°C	59.1V/ 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°C	NO DAMAGE OK PROTECTION TYPE : Constant current limiting, 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) Peak Voltage	Q1 Rated : 650V/14A	AC ON/OFF I/P: High-Line +3V = 267V VDS: O/P: (1) Full Load (2) Output Short (3) Dynamic Load Full Load/	VDS: (1) 541V (2) 553V (3) 553V (4) 553V (5) 557V

			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	(6) 553V (7) 549V
2	Diode Peak Voltage	Q100 Rated : 10A/300 V	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) 236V (2) 238V (3) 238V (4) 238V (5) 240V (6) 238V (7) 240V (8) 242V <u>VO=Vnormal</u> (1) 228V
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) 376V
4	Control IC Voltage Test	PWM IC 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°C	U1 U107 (1) 17.0V (1) 11.68V (2) 17.0V (2) 11.68V (3) 17.0V (3) 11.68V (4) 17.0V (4) 11.49V (5) 17.0V (5) 10.63V
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) 473V (2) 473V

■ 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: 6.57 mA I/P - F G : 8.06 mA O/P - F G : 4.85 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: 10 GΩ I/P - F G : 10 GΩ O/P - F G : 10 GΩ NO DAMAGE
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40A / 2min Ta:25°C	12 mΩ

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-120E-48 1. ROOM AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.0 °C 2. HIGH AMBIENT BURN-IN : 2 HRS I/P : 230VAC O/P : FULL LOAD Ta= 50.6 °C <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 25.0°C</th><th>HIGH AMBIENT Ta= 50.6°C</th></tr><tr><td>1</td><td>C1</td><td>39.9°C</td><td>66.8°C</td></tr><tr><td>2</td><td>LF2</td><td>54.3°C</td><td>78.9°C</td></tr><tr><td>3</td><td>RTH1</td><td>72.7°C</td><td>88°C</td></tr><tr><td>4</td><td>RTH2</td><td>75.5°C</td><td>90.8°C</td></tr><tr><td>5</td><td>T1 Core</td><td>51.5°C</td><td>75.4°C</td></tr><tr><td>6</td><td>C35</td><td>54.1°C</td><td>78.1°C</td></tr><tr><td>7</td><td>RTH3</td><td>56.1°C</td><td>79.6°C</td></tr><tr><td>8</td><td>T1 Coil</td><td>62.2°C</td><td>85.5°C</td></tr><tr><td>9</td><td>C118</td><td>61.6°C</td><td>84.4°C</td></tr><tr><td>10</td><td>U1</td><td>50.7°C</td><td>75.5°C</td></tr><tr><td>11</td><td>J110</td><td>56.1°C</td><td>80.3°C</td></tr><tr><td>12</td><td>Q200</td><td>60.7°C</td><td>84.4°C</td></tr><tr><td>13</td><td>D14</td><td>49°C</td><td>73.6°C</td></tr><tr><td>14</td><td>D102</td><td>62.5°C</td><td>85.6°C</td></tr><tr><td>15</td><td>ZNR1</td><td>41.5°C</td><td>67.6°C</td></tr><tr><td>16</td><td>LF1</td><td>43.3°C</td><td>69.3°C</td></tr><tr><td>17</td><td>RY1</td><td>49.5°C</td><td>74.2°C</td></tr><tr><td>18</td><td>LF100</td><td>46.9°C</td><td>72°C</td></tr><tr><td>19</td><td>C115</td><td>45.1°C</td><td>70.3°C</td></tr><tr><td>20</td><td>R6</td><td>65.2°C</td><td>83.4°C</td></tr><tr><td>21</td><td>D10</td><td>63°C</td><td>86.3°C</td></tr><tr><td>22</td><td>R12</td><td>66°C</td><td>89°C</td></tr><tr><td>23</td><td>C105</td><td>56°C</td><td>80.2°C</td></tr><tr><td>24</td><td>C108</td><td>49.7°C</td><td>74.9°C</td></tr><tr><td>25</td><td>Q101</td><td>65.2°C</td><td>88.7°C</td></tr><tr><td>26</td><td>Q100</td><td>66.2°C</td><td>89.4°C</td></tr><tr><td>27</td><td>U2</td><td>49.6°C</td><td>73.6°C</td></tr><tr><td>28</td><td>U107</td><td>50°C</td><td>74.3°C</td></tr><tr><td>29</td><td>Q2</td><td>63.8°C</td><td>86.5°C</td></tr><tr><td>30</td><td>BD1</td><td>49.6°C</td><td>74.4°C</td></tr><tr><td>31</td><td>C5</td><td>48°C</td><td>73.1°C</td></tr><tr><td>32</td><td>R50</td><td>59°C</td><td>83.4°C</td></tr><tr><td>33</td><td>Q1</td><td>56.2°C</td><td>81.5°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 25.0°C	HIGH AMBIENT Ta= 50.6°C	1	C1	39.9°C	66.8°C	2	LF2	54.3°C	78.9°C	3	RTH1	72.7°C	88°C	4	RTH2	75.5°C	90.8°C	5	T1 Core	51.5°C	75.4°C	6	C35	54.1°C	78.1°C	7	RTH3	56.1°C	79.6°C	8	T1 Coil	62.2°C	85.5°C	9	C118	61.6°C	84.4°C	10	U1	50.7°C	75.5°C	11	J110	56.1°C	80.3°C	12	Q200	60.7°C	84.4°C	13	D14	49°C	73.6°C	14	D102	62.5°C	85.6°C	15	ZNR1	41.5°C	67.6°C	16	LF1	43.3°C	69.3°C	17	RY1	49.5°C	74.2°C	18	LF100	46.9°C	72°C	19	C115	45.1°C	70.3°C	20	R6	65.2°C	83.4°C	21	D10	63°C	86.3°C	22	R12	66°C	89°C	23	C105	56°C	80.2°C	24	C108	49.7°C	74.9°C	25	Q101	65.2°C	88.7°C	26	Q100	66.2°C	89.4°C	27	U2	49.6°C	73.6°C	28	U107	50°C	74.3°C	29	Q2	63.8°C	86.5°C	30	BD1	49.6°C	74.4°C	31	C5	48°C	73.1°C	32	R50	59°C	83.4°C	33	Q1	56.2°C	81.5°C
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 116 % 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	± 0.009 %/°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 C105 IS THE MOST CRITICAL COMPONENT (1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME (2) I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME (3) I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME (4) I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME		(1) 218973 HRS (2) 42654 HRS (3) 60658.8 HRS (4) 82616.9 HRS
10	MTBF	Conducted by Parts Stress Analysis Prediction 2223.1K 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	LIUTT	LIUTT	WANGZD

2020.10.1 TAG-QA-009