



Test Report: XDR-150E-36

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

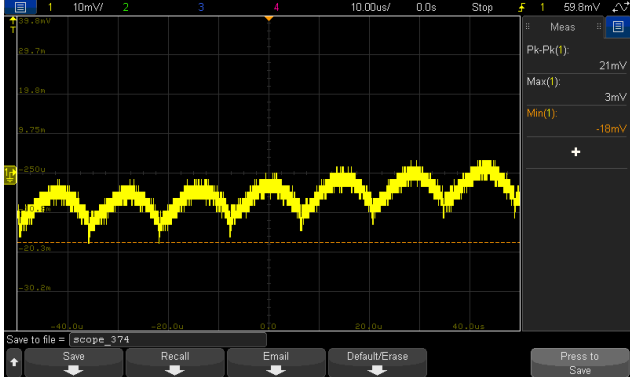
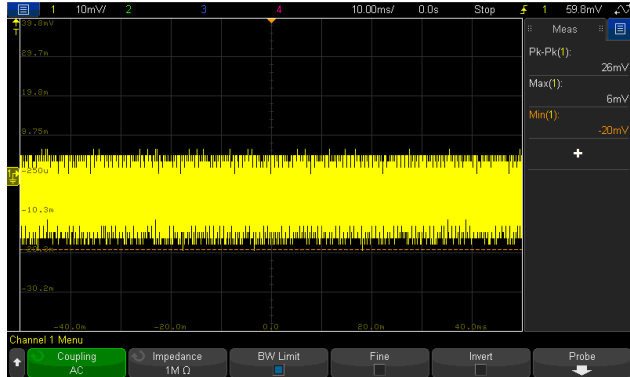
E.M.C. Test

■ RELIABILITY TEST

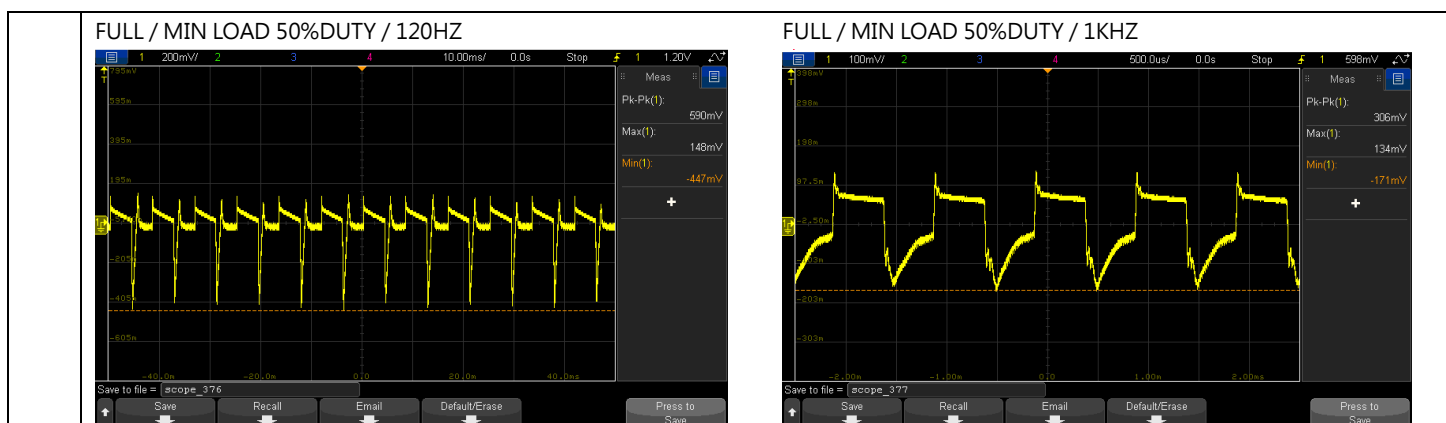
ENVIRONMENT TEST

DESIGN VERIFY TEST

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT
1	OUTPUT VOLTAGE ADJUST RANGE	CH1: 36V~42V	I/P : 230 VAC I/P : 115 VAC O/P : MIN LOAD Ta : 25°C	34.359V~43.402V/230VAC 34.359V~43.401V/115VAC
2	OUTPUT VOLTAGE TOLERANCE	V1: -1% ~ +1%	I/P: 85VAC~ 264VAC O/P:FULL~ MIN. LOAD Ta:25°C	V1: -0.0416% ~ 0.0333%
3	LINE REGULATION	V1: -0.5% ~ +0.5%	I/P: 85VAC~ 264VAC O/P:FULL LOAD Ta:25°C	V1: -0.0028% ~ 0.0222%
4	LOAD REGULATION	V1: -1% ~ +1%	I/P: 230VAC O/P:FULL ~MIN LOAD Ta:25°C	V1: -0.0416% ~ 0.0333%
5	OVER/UNDERSHOOT TEST	<±5%	I/P: 230VAC O/P:FULL LOAD / NO LOAD Ta:25°C	0.92% /FULL LOAD 0.94% /NO LOAD
6	RIPPLE & NOISE (Max)	V1: 150mVp-p	I/P:230VAC O/P:FULL LOAD Ta:25°C	V1: 21mVp-p / high frequency 26mVp-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/ 383.4ms 115VAC/ 322.8ms
INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage CH3: AC Input Voltage		

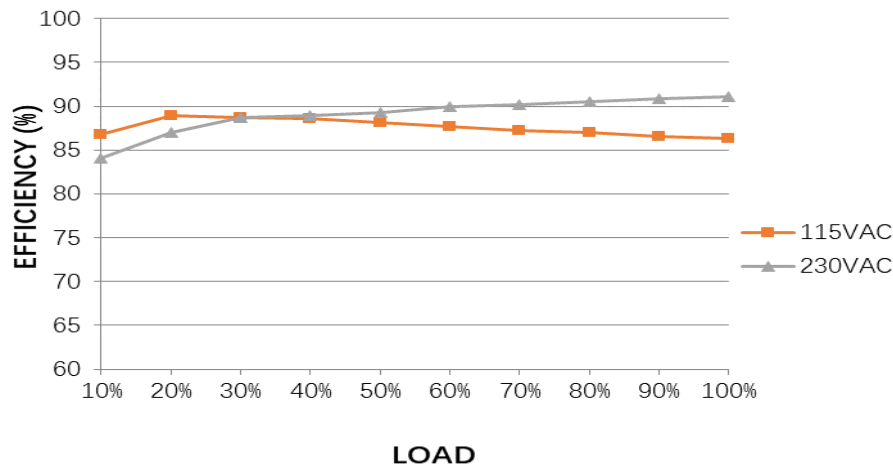
8	RISE TIME (Max) 230VAC/60ms 115VAC/60ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C 230VAC/ 46.53ms 115VAC/ 28.16ms
	INPUT=230VAC/50HZ @ FULL LOAD CH1: Output Voltage	INPUT=115VAC/60HZ @ FULL LOAD CH1: Output Voltage
9	HOLD UP TIME (Typ.) 230VAC/ 16ms 115VAC/ 8ms	I/P : 230 VAC I/P : 115 VAC O/P : FULL LOAD Ta : 25°C 230VAC/ 42.2ms 115VAC/ 12ms
	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: 3600mVp-p	I/P: 230VAC O/P: (1) FULL/ MIN LOAD 50%DUTY / 120HZ (2) FULL/ MIN LOAD 50%DUTY / 1KHZ Ta:25°C 590mVp-p 306mVp-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	(1) 96.9V~264V/ FULL LOAD 75.4V~264V/ 80% LOAD 72.4V~264V/ 70% LOAD (2) 99.9Vdc~370Vdc/FULL LOAD 94.7Vdc~370Vdc/80% LOAD 94.5Vdc~370Vdc/70% LOAD (3) 99.3Vdc~370Vdc/FULL LOAD 94.8Vdc~370Vdc/80% LOAD 94.7Vdc~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°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 =1.4503A/ 230VAC I =2.0838A/ 115VAC
4	LEAKAGE CURRENT	< 1mA / 240 VAC	I/P : 240 VAC/60HZ O/P : Min LOAD Ta : 25°C	0.8406mA
5	NO LOAD CONSUMPTION	< 1W	I/P : 230VAC I/P : 115VAC O/P : NO LOAD Ta : 25°C	0.826W/ 230VAC 0.459W/ 115VAC
6	EFFICIENCY(Typ.)	91%	I/P:230 VAC O/P:FULL LOAD Ta:25°C	91.06%

EFFICIENCY vs LOAD



7

INRUSH CURRENT(Typ.)

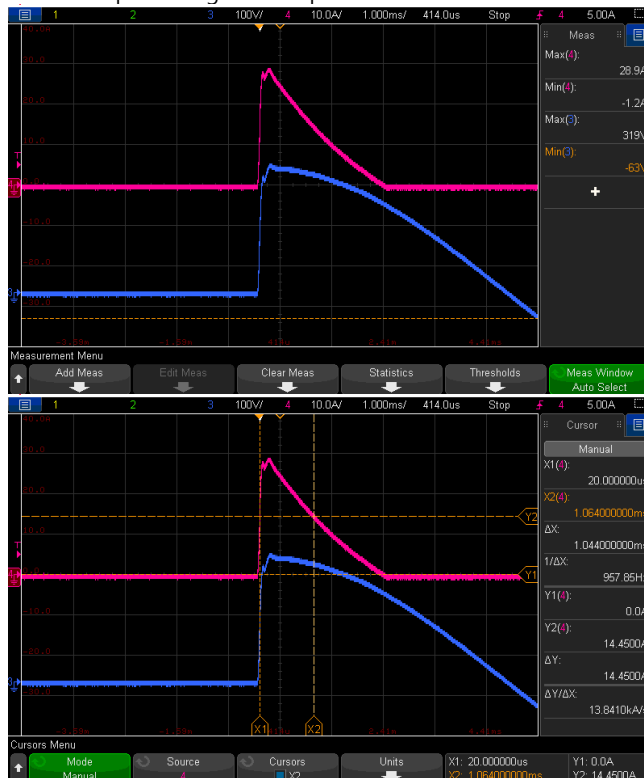
230V/40A
115V/20A
COLD START

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

I =28.9A/ 230VAC
I =13.7A/ 115VAC
T50= 1044us/230V

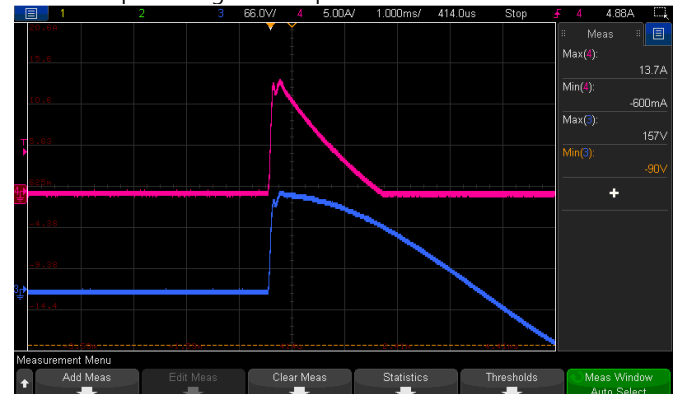
INPUT=230VAC/50HZ @ FULL LOAD

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	110.51%/ 264VAC 110.51%/ 230VAC 110.51%/ 180VAC 138.43%/ 165VAC 138.29%/ 115VAC 134.68%/ 100VAC PROTECTION TYPE : Constant current limiting without shutdown, recovers automatically after fault condition is removed
2	OVER VOLTAGE PROTECTION	43V~50V 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	47.2V/ 264VAC 47.2V/ 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 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, 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 : 14A/650V	AC ON/OFF I/P: High-Line +3V =267V VDS: O/P: (1) Full Load (2) Output Short (3) Dynamic Load Full Load/ Min. Load 90%Duty/1KHz	VDS: (1) 561V (2) 556V (3) 561V (4) 561V (5) 561V (6) 565V

			(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	(7) 552V
2	Diode Peak Voltage	Q100 : Rated : 20A/200V	AC ON/OFF I/P: High-Line +3V =267 V <u>VO=V_{Omax}</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=V_{normal}</u> O/P: (1) Full Load Ta:25°C	<u>VO=V_{Omax}</u> VDS: (1) 181V (2) 181V (3) 181V (4) 183V (5) 181V (6) 181V (7) 181V (8) 181V <u>VO=V_{normal}</u> (1) 173V
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 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) 17.2V (1) 11.4V (2) 17.1V (2) 11.8V (3) 17.2V (3) 11.7V (4) 17.2V (4) 11.6V (5) 17.1V (5) 9.4V
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) 467V

■ 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: 6.63 mA I/P - F G : 5.44 mA O/P - F G : 6.39 m A O/P-DC OK: 0.007 m A 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	11 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-150E-36 1. ROOM AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta= 25.8 °C 2. HIGH AMBIENT BURN-IN : 2HRS I/P : 230VAC O/P : FULL LOAD Ta= 50.0 °C																																																																																																																																										
		<table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 25.8°C</th><th>HIGH AMBIENT Ta= 50.0°C</th></tr><tr><td>1</td><td>C1</td><td>48°C</td><td>72.9°C</td></tr><tr><td>2</td><td>RTH2</td><td>85.8°C</td><td>100.1°C</td></tr><tr><td>3</td><td>RTH1</td><td>77.8°C</td><td>93.9°C</td></tr><tr><td>4</td><td>R6</td><td>62.9°C</td><td>82.6°C</td></tr><tr><td>5</td><td>BD1</td><td>52.5°C</td><td>75°C</td></tr><tr><td>6</td><td>C5</td><td>55.5°C</td><td>78.5°C</td></tr><tr><td>7</td><td>R50</td><td>68.8°C</td><td>92°C</td></tr><tr><td>8</td><td>Q1</td><td>72.8°C</td><td>98.3°C</td></tr><tr><td>9</td><td>C35</td><td>62.6°C</td><td>85.3°C</td></tr><tr><td>10</td><td>RTH3</td><td>63°C</td><td>85.3°C</td></tr><tr><td>11</td><td>T1 Coil</td><td>74.4°C</td><td>95.9°C</td></tr><tr><td>12</td><td>T1 Core</td><td>62.4°C</td><td>85°C</td></tr><tr><td>13</td><td>C118</td><td>65.8°C</td><td>88.8°C</td></tr><tr><td>14</td><td>C107</td><td>62.2°C</td><td>85.4°C</td></tr><tr><td>15</td><td>Q100</td><td>91.5°C</td><td>113.3°C</td></tr><tr><td>16</td><td>R100</td><td>77°C</td><td>100.3°C</td></tr><tr><td>17</td><td>J110</td><td>68.6°C</td><td>91.8°C</td></tr><tr><td>18</td><td>Q200</td><td>63.8°C</td><td>85.4°C</td></tr><tr><td>19</td><td>U107</td><td>56.4°C</td><td>79.2°C</td></tr><tr><td>20</td><td>LF2</td><td>64.3°C</td><td>86.1°C</td></tr><tr><td>21</td><td>U2</td><td>54.5°C</td><td>77.3°C</td></tr><tr><td>22</td><td>D14</td><td>55.8°C</td><td>78.7°C</td></tr><tr><td>23</td><td>U1</td><td>56.1°C</td><td>79.5°C</td></tr><tr><td>24</td><td>ZNR1</td><td>47.1°C</td><td>71.1°C</td></tr><tr><td>25</td><td>LF1</td><td>49.3°C</td><td>73.3°C</td></tr><tr><td>26</td><td>RY1</td><td>53.5°C</td><td>76.6°C</td></tr><tr><td>27</td><td>LF100</td><td>56.3°C</td><td>79.7°C</td></tr><tr><td>28</td><td>C115</td><td>52.3°C</td><td>75.7°C</td></tr><tr><td>29</td><td>C105</td><td>65°C</td><td>88.1°C</td></tr><tr><td>30</td><td>D10</td><td>79.6°C</td><td>103.5°C</td></tr><tr><td>31</td><td>D7</td><td>68.4°C</td><td>90°C</td></tr><tr><td>32</td><td>Q2</td><td>71.1°C</td><td>93.4°C</td></tr><tr><td>33</td><td>D102</td><td>76.5°C</td><td>99°C</td></tr></table>			NO	Position	ROOM AMBIENT Ta= 25.8°C	HIGH AMBIENT Ta= 50.0°C	1	C1	48°C	72.9°C	2	RTH2	85.8°C	100.1°C	3	RTH1	77.8°C	93.9°C	4	R6	62.9°C	82.6°C	5	BD1	52.5°C	75°C	6	C5	55.5°C	78.5°C	7	R50	68.8°C	92°C	8	Q1	72.8°C	98.3°C	9	C35	62.6°C	85.3°C	10	RTH3	63°C	85.3°C	11	T1 Coil	74.4°C	95.9°C	12	T1 Core	62.4°C	85°C	13	C118	65.8°C	88.8°C	14	C107	62.2°C	85.4°C	15	Q100	91.5°C	113.3°C	16	R100	77°C	100.3°C	17	J110	68.6°C	91.8°C	18	Q200	63.8°C	85.4°C	19	U107	56.4°C	79.2°C	20	LF2	64.3°C	86.1°C	21	U2	54.5°C	77.3°C	22	D14	55.8°C	78.7°C	23	U1	56.1°C	79.5°C	24	ZNR1	47.1°C	71.1°C	25	LF1	49.3°C	73.3°C	26	RY1	53.5°C	76.6°C	27	LF100	56.3°C	79.7°C	28	C115	52.3°C	75.7°C	29	C105	65°C	88.1°C	30	D10	79.6°C	103.5°C	31	D7	68.4°C	90°C	32	Q2	71.1°C	93.4°C	33	D102	76.5°C	99°C
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30	D10	79.6°C	103.5°C																																																																																																																																									
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2	OVER LOAD BURN-IN TEST	NO DAMAGE 1 HOUR (MIN)	I/P : 230 VAC O/P : 109.24 % 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	± 0.013 %/°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 C107 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) 289875.2HRS (2) 54921.1HRS (3) 86332.8HRS (4) 132952.6HRS
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