MODEL：SDR-120-48

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 120 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 20 mVp-p (Max)	P
2	PEAK POWER	V1:180 W (>3sec.)	I/P: 230VAC O/P:180W Ta:25℃	Ok	P
3	OUTPUT VOLTAGE ADJUST RANGE	CH1: 48 V~55V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	46.38 V~ 56.04 V/ 230 VAC 46.38 V~ 56.04 V/ 115 VAC	P
4	OUTPUT VOLTAGE TOLERANCE	V1: 1 %~ -1 % (Max)	I/P: 100 VAC / 264 VAC O/P:FULL/ MIN LOAD Ta:25℃	V1: 0.03 %~ -0.03 %	P
5	LINE REGULATION	V1: 0.5 %~ -0.5 % (Max)	I/P: 100VAC ~ 264 VAC O/P:FULL LOAD Ta:25℃	V1: 0 %~ 0 %	P
6	LOAD REGULATION	V1: 1 %~ -1 % (Max)	I/P: 230 VAC O/P:FULL ~MIN LOAD Ta:25℃	V1: 0.03 %~ -0.03 %	P
7	SET UP TIME	230VAC: 1500 ms (Max) 115 VAC: 3000 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 458 ms 115VAC/ 916 ms	P
8	RISE TIME	230VAC: 60 ms (Max) 115VAC: 60 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 17 ms 115VAC/ 18 ms	P
9	HOLD UP TIME	230VAC: 20 ms (TYP) 115VAC: 20 ms (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 37 ms 115 VAC 37 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: < 5 %	P
11	DYNAMIC LOAD	V1: 4800 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	253 mVp-p	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	INPUT VOLTAGE RANGE	88VAC~264 VAC	I/P:TESTING O/P:FULL LOAD Ta:25℃	74 V ~264V	P
			I/P: LOW-LINE-3V= 85V HIGH-LINE+15%=300 V O/P:FULL/MIN LOAD ON: 30 Sec . OFF: 30 Sec 10MIN (AC POWER ON/OFF NO DAMAGE)	TEST: OK	
2	INPUT FREQUENCY RANGE	47HZ ~63 HZ NO DAMAGE OSC	I/P: 100 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.93 / 230 VAC(TYP) 0.96 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.932 / 230 VAC PF= 0.984 / 115 VAC	P
4	EFFICIENCY	90.5% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	90.8%	P
5	INPUT CURRENT	230V/ 0.7 A (TYP) 115V/ 1.4 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 0.708 A/ 230 VAC I = 1.37 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 70 A (TYP) 115V/ 35 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 52 A/ 230 VAC I = 26 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.56 mA N-FG: 0.56 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110 %~ 150 %	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	120%/ 230 VAC 120%/ 115 VAC Normally works within 110 ~ 150% rated output power for more than 3 seconds and then shut down o/p voltage >150% rated power, constant current limiting with auto-recovery within 3 seconds and more than 3 seconds shut down o/p voltage	P
2	OVER VOLTAGE PROTECTION	CH1: 56 V~ 65V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	58.9V/ 230 VAC 58.9V/ 115 VAC Shut down o/p voltage, re-power on to recover	P
3	OVER TEMPERATURE PROTECTION	SPEC: TSW1: 95 ± 5℃ O.T.P. NO DAMAGE	I/P: 230 VAC O/P:FULL LOAD	O.T.P. Active Shut down o/p voltage，recovers automatically after temperature goes down	P
4	SHORT PROTECTION	SHORT EVERY OUTPUT 1 HOUR NO DAMAGE	I/P: 264 VAC O/P:FULL LOAD Ta:25℃	NO DAMAGE Shut down Re-power ON	P

CONTROL FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC OK REALY CONTACT RATINGS (max.)	60Vdc/0.3A, 30Vdc/1A, 30Vac/0.5A resistive load	I/P: 230 VAC O/P:FULL LOAD	OK	P

ENVIRONMENT TEST

<table>
<tr><th>NO</th><th>TEST ITEM</th><th>SPECIFICATION</th><th>TEST CONDITION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>1</td><td>TEMPERATURE RISE TEST</td><td colspan="3">MODEL：SDR-120-24
1. ROOM AMBIENT　BURN-IN：1 HRS
I/P: 230VAC　O/P: FULL LOAD　Ta= 27.6 ℃
2. HIGH AMBIENT　BURN-IN：3.5 HRS
I/P: 230VAC　O/P: FULL LOAD　Ta=59.7 ℃</td><td>P</td></tr>
<tr><td colspan="6">
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta= 27.6 ℃</th><th>HIGH AMBIENT Ta= 59.7 ℃</th></tr>
<tr><td>1</td><td>L2</td><td>TR909</td><td>41.6℃</td><td>72.5℃</td></tr>
<tr><td>2</td><td>LF1</td><td>TR790-R1</td><td>47.9℃</td><td>79.1℃</td></tr>
<tr><td>3</td><td>LF2</td><td>TR910</td><td>44.8℃</td><td>76.4℃</td></tr>
<tr><td>4</td><td>BD1</td><td>BD 4A/800V　GBU408</td><td>53.6℃</td><td>83.8℃</td></tr>
<tr><td>5</td><td>D1</td><td>BYV29X-600 7A/600V</td><td>47.9℃</td><td>79.4℃</td></tr>
<tr><td>6</td><td>C5</td><td>100u/400V 105℃ 18*25 KMG</td><td>56.8℃</td><td>85.8℃</td></tr>
<tr><td>7</td><td>D3</td><td>3A/600V 1N5406</td><td>69.3℃</td><td>100.6℃</td></tr>
<tr><td>8</td><td>Q2</td><td>STP14NM65N 12A/650V</td><td>53.0℃</td><td>85.2℃</td></tr>
<tr><td>9</td><td>T1</td><td>TF1936</td><td>75.5℃</td><td>107.9℃</td></tr>
<tr><td>10</td><td>CN1</td><td>ST-22W-R0 90℃ 45mm</td><td>48.4℃</td><td>79.8℃</td></tr>
<tr><td>11</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>47.0℃</td><td>78.3℃</td></tr>
<tr><td>12</td><td>C52</td><td>10u/50V UL10Kh 5*11 YXM</td><td>50.5℃</td><td>81.6℃</td></tr>
<tr><td>13</td><td>C38</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>63.9℃</td><td>95.3℃</td></tr>
<tr><td>14</td><td>U1</td><td>TEA1750T</td><td>65.5℃</td><td>96.0℃</td></tr>
<tr><td>15</td><td>C105</td><td>1000u/35V UL10Kh 12.5*20 KY</td><td>63.0℃</td><td>93.6℃</td></tr>
<tr><td>16</td><td>C110</td><td>560u/35V UL10Kh 10*20 ZLH</td><td>55.1℃</td><td>85.6℃</td></tr>
<tr><td>17</td><td>Q101</td><td>IRFB4321PbF 83A/150V</td><td>67.6℃</td><td>100.7℃</td></tr>
<tr><td>18</td><td>C201</td><td>47u/50V UL10Kh 6.3*11 YXM</td><td>59.5℃</td><td>91.2℃</td></tr>
<tr><td>19</td><td>C207</td><td>220u/16V UL8Kh 6.3*11 ZLH</td><td>50.5℃</td><td>81.2℃</td></tr>
<tr><td>20</td><td>C260</td><td>47u/25V UL10Kh 5*11 YXM</td><td>56.8℃</td><td>88.9℃</td></tr>
<tr><td>21</td><td>C232</td><td>220u/16V UL8Kh 6.3*11 ZLH</td><td>55.0℃</td><td>86.8℃</td></tr>
<tr><td>22</td><td>L900</td><td>TR847-R2</td><td>55.7℃</td><td>86.6℃</td></tr>
<tr><td>23</td><td>C910</td><td>330u/35V L7Kh 10*16 YXG</td><td>51.6℃</td><td>82.3℃</td></tr>
<tr><td>24</td><td>C11</td><td>684/400V 10% P=10 MM</td><td>44.2℃</td><td>75.5℃</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>OVER LOAD BURN-IN TEST</td><td>NO DAMAGE
1 HOUR (MIN)</td><td>I/P: 230 VAC
O/P:120 % LOAD
Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER　2　HOUR</td><td>I/P: 230VAC
O/P:FULL LOAD
Ta= -30　℃</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>4</td><td>HIGH HUMIDITY
HIGH TEMPERATURE
HIGH VOLTAGE
TURN ON TEST</td><td>AFTER 12　HOURS
IN CHAMBER ON
CONTROL　60 ℃
NO DAMAGE</td><td>I/P: VAC
O/P:FULL LOAD
Ta=60℃
HUMIDITY=　95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>TEMPERATURE
COEFFICIENT</td><td>± 0.03 %(0~50℃)</td><td>I/P: 230VAC
O/P:FULL LOAD</td><td>± 0.005 %(0~50℃)</td><td>P</td></tr>
<tr><td>6</td><td>VIBRATION TEST</td><td colspan="2">A.1 Carton & 1 Set
(1) Waveform: Sine Wave　(2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle　(4) Acceleration:2G
(5) Test Time:1 hour in each axis (X.Y.Z)
(6) Ta:25℃
B. 1 Set
Mounting: Compliance to IEC60068-2-6</td><td>TEST：OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 3 KVAC/min I/P-FG: 1.5 KVAC/min O/P-FG: 0.5 KVAC/min O/P-DC OK:0.5KVAC/min	I/P-O/P: 3.6 KVAC/min I/P-FG: 1.8 KVAC/min O/P-FG: 0.6 KVAC/min O/P-DC OK: 0.6 KVAC/min Ta:25℃	I/P-O/P: 6.89 mA I/P-FG: 5.07 mA O/P-FG: 17.31 mA O/P-DC OK: 0.016 mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃/70%RH	I/P-O/P: 30 GΩ I/P-FG: 23.5 GΩ O/P-FG: 18.7 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃ / 70%RH	6 mΩ	P
4	APPROVAL	TUV: Certificate NO ： R50162435 UL: File NO ：E215312			P

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A CLASS D	I/P: 230/240/220 VAC/50HZ O/P:100/75/50/25%LOAD Ta:25℃	PASS	P
2	CONDUCTION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL/50% LOAD Ta:25℃	PASS Test by certified Lab	P
3	RADIATION	EN55022 CLASS B	I/P: 230 VAC (50HZ) O/P:FULL LOAD Ta:25℃	PASS Test by certified Lab	P
4	E.S.D	EN61000-4-2 INDUSTRY AIR:8KV / Contact:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
5	E.F.T	EN61000-4-4 INDUSTRY INPUT: 2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 INDUSTRY L-N :2KV L,N-PE:4KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
7	Test by certified Lab & Test Report Prepare				

M.T.B.F & LIFE CYCLE CALCULATION

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CAPACITOR LIFE CYCLE	SDR-120-24:SUPPOSE C105 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta=25℃ LIFE TIME= 270723 HRS I/P: 230VAC O/P:FULL LOAD Ta=60℃ LIFE TIME= 26568 HRS I/P: 230VAC O/P:75%OAD Ta= 60℃ LIFE TIME= 39975 HRS			P
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 289.9 K HRS			P
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 20,000 hours @ TA 60℃			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	Power Transistor (D to S) or (C to E) Peak Voltage	Q 2 Rated STP14NM65N :12A/650V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 594 V (2) 468 V	P
2	Diode Peak Voltage	Q101 Rated STTH2003CT: 20A/300V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 254 V (2) 244 V	P
3	Clamp Diode Peak Voltage	D3 Rated 1N5406:3A/600V	I/P ： High-Line +3V = 267 V O/P ： (1) Dynamic Load 90%Duty/1KHz Ta ： 25℃	(1) 518 V	P
4	Input Capacitor Voltage	C5 Rated 100u/400V 105℃ KMG	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 381 V (2) 375 V (3) 391 V	P
5	Control IC Voltage Test	U1 Rated TEA1750T : 14V~38V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change Ta:25℃	(1) 27.38 V (2) 27.34 V (3) 27.39 V	P
6	P.FC Transistor (D to S) or (C to E) Peak Voltage	Q 1 Rated IRFP460A: 20A/500V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 470 V (2) 406 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2009/6/16	RD SAMPLE	PASS	SANFORD SU	VINCENT TSENG
2009/7/22	PRODUCT SAMPLE W0907B49	PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023