MODEL：SDR-240-24

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RIPPLE & NOISE	V1: 50 mVp-p (Max)	I/P: 230VAC O/P:FULL LOAD Ta:25℃	V1: 20 mVp-p (Max)	P
2	PEAK POWER	V1:360W (>3sec.)	I/P: 230VAC O/P:360W Ta:25℃	Ok	P
3	OUTPUT VOLTAGE ADJUST RANGE	CH1: 24 V~ 28V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	23.29 V~ 28.61 V/ 230 VAC 23.29 V~ 28.61 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: 0.05 %~ -0.05 %	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: 0.05 %~ -0.05 %	P
7	SET UP TIME	230VAC: 650 ms (Max) 115 VAC: 1300 ms (Max)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	230VAC/ 443.7 ms 115VAC/ 890 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/ 29.3 ms 115VAC/ 28.8 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/ 34.4 ms 115 VAC 30.4 ms	P
10	OVER/UNDERSHOOT TEST	< ±5%	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	TEST: <5 %	P
11	DYNAMIC LOAD	V1: 2400 mVp-p	I/P: 230 VAC O/P:FULL /Min LOAD 90%DUTY/1KHZ Ta:25℃	468 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℃	82 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	I/P: 100 VAC ~ 264 VAC O/P:FULL~MIN LOAD Ta:25℃	TEST: OK	P
3	POWER FACTOR	0.94 / 230 VAC(TYP) 0.99 / 115 VAC(TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	PF= 0.947 / 230 VAC PF= 0.997 / 115 VAC	P
4	EFFICIENCY	94% (TYP)	I/P: 230 VAC O/P:FULL LOAD Ta:25℃	94.1 %	P
5	INPUT CURRENT	230V/ 1.3 A (TYP) 115V/ 2.6 A (TYP)	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 1.17 A/ 230 VAC I = 2.29 A/ 115 VAC	P
6	INRUSH CURRENT	230V/ 55 A (TYP) 115V/ 33 A(TYP) COLD START	I/P: 230 VAC I/P: 115 VAC O/P:FULL LOAD Ta:25℃	I = 54.85 A/ 230 VAC I = 32.3 A/ 115 VAC	P
7	LEAKAGE CURRENT	< 1 mA / 240 VAC	I/P: 264 VAC O/P:Min LOAD Ta:25℃	L-FG: 0.72 mA N-FG: 0.72 mA	P

PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER LOAD PROTECTION	110 %~ 150 % Normally works within 110 ~ 150% rated output power for more than 3 seconds and then shut down o/p voltage with auto-recovery >150% rated power, constant current limiting with auto-recovery within 2 seconds and may cause to shut down if over 2 seconds	I/P: 230 VAC I/P: 115 VAC O/P:TESTING Ta:25℃	121 %/ 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 with auto-recovery >150% rated power, constant current limiting with auto-recovery within 2 seconds and may cause to shut down if over 2 seconds	P
2	OVER VOLTAGE PROTECTION	CH1: 29 V~ 33V	I/P: 230 VAC I/P: 115 VAC O/P:MIN LOAD Ta:25℃	30.09 V/ 230 VAC 30.1 V/ 115 VAC Shut down o/p voltage with auto-recovery	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-240-24
1. ROOM AMBIENT BURN-IN：2 HRS
I/P: 230VAC O/P: FULL LOAD Ta=25.2 ℃
2. HIGH AMBIENT BURN-IN：1 HRS
I/P: 230VAC O/P: FULL LOAD Ta=66.2 ℃
<table>
<tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT Ta=25.2 ℃</th><th>HIGH AMBIENT Ta= 66.2 ℃</th></tr>
<tr><td>1</td><td>Q1</td><td>STP21NM60N 17A/600V</td><td>44.9℃</td><td>85.4℃</td></tr>
<tr><td>2</td><td>Q5</td><td>STF25NM50N 22A/500V</td><td>44.9℃</td><td>85.6℃</td></tr>
<tr><td>3</td><td>U1</td><td>NCP1606A</td><td>56.4℃</td><td>97.0℃</td></tr>
<tr><td>4</td><td>U900</td><td>L6599D</td><td>61.3℃</td><td>103.4℃</td></tr>
<tr><td>5</td><td>C16</td><td>47u/25V UL10Kh YXM</td><td>61.3℃</td><td>100.3℃</td></tr>
<tr><td>6</td><td>C27</td><td>100u/25V UL10Kh YXM</td><td>64.7℃</td><td>102.9℃</td></tr>
<tr><td>7</td><td>C151</td><td>100u/25V UL10Kh 6.3*11 YXM</td><td>62.2℃</td><td>101.3℃</td></tr>
<tr><td>8</td><td>C105</td><td>1500u/35V UL10Kh ZLH</td><td>61.1℃</td><td>102.4℃</td></tr>
<tr><td>9</td><td>C20</td><td>22u/50V UL10Kh 5*11 YXM</td><td>52.6℃</td><td>94.3℃</td></tr>
<tr><td>10</td><td>C5</td><td>220u/450V 105℃ HU</td><td>49.8℃</td><td>90.5℃</td></tr>
<tr><td>11</td><td>C58</td><td>100u/25V UL5Kh KY</td><td>48.3℃</td><td>88.4℃</td></tr>
<tr><td>12</td><td>C60</td><td>100u/25V UL5Kh KY</td><td>45.8℃</td><td>85.9℃</td></tr>
<tr><td>13</td><td>C9</td><td>105/400V 10% 6A2G105K</td><td>50.3℃</td><td>94.1℃</td></tr>
<tr><td>14</td><td>C109</td><td>560u/35V ZLH</td><td>55.7℃</td><td>96.8℃</td></tr>
<tr><td>15</td><td>T1 COIL</td><td>TF1863</td><td>78.6℃</td><td>119.3℃</td></tr>
<tr><td>16</td><td>T1 CORE</td><td>TF1863</td><td>74.2℃</td><td>113.8℃</td></tr>
<tr><td>17</td><td>T2</td><td>TF1865</td><td>56.1℃</td><td>96.5℃</td></tr>
<tr><td>18</td><td>L1</td><td>TR837</td><td>47.7℃</td><td>89.0℃</td></tr>
<tr><td>19</td><td>Q100</td><td>IRFB3307 130A/75V</td><td>60.3℃</td><td>104.3℃</td></tr>
<tr><td>20</td><td>BD1</td><td>10A/600VGLASS D10XB60</td><td>47.1℃</td><td>87.6℃</td></tr>
<tr><td>21</td><td>TSW</td><td>ST-22 95℃/W-TYPE</td><td>46.1℃</td><td>86.5℃</td></tr>
<tr><td>22</td><td>D3</td><td>BYT79X-600 15A/600V</td><td>50.9℃</td><td>91.8℃</td></tr>
<tr><td>23</td><td>LF1</td><td>TR827</td><td>45.4℃</td><td>86.3℃</td></tr>
<tr><td>24</td><td>LF2</td><td>TR828</td><td>48.2℃</td><td>89.5℃</td></tr>
<tr><td>25</td><td>TA</td><td></td><td>25.2℃</td><td>66.2℃</td></tr>
</table></td><td>P</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: 110 % 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: 230 VAC
O/P: 100 % 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: 272 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: 230 VAC
O/P:FULL LOAD</td><td>± 0.001 %(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: 2 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: 2.4 KVAC/min O/P-FG: 0.6 KVAC/min O/P-DC OK: 0.6 KVAC/min Ta:25℃	I/P-O/P: 6.07 mA I/P-FG: 4.62 mA O/P-FG: 21.71 mA O/P-DC OK: 0.032 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: 2.54 GΩ I/P-FG: 1.86 GΩ O/P-FG: 23.2 GΩ NO DAMAGE	P
3	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃ / 70%RH	25 mΩ	P
4	APPROVAL	TUV: Certificate NO ：R50136177 UL: File NO ：E215312			p

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2,-3 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-240-24:SUPPOSE C 105 IS THE MOST CRITICAL COMPONENT I/P: 230VAC O/P:FULL LOAD Ta= 25 ℃ LIFE TIME= 261285 HRS I/P: 230VAC O/P:FULL LOAD Ta= 60 ℃ LIFE TIME= 22614 HRS I/P: 230VAC O/P:75%OAD Ta= 60 ℃ LIFE TIME= 43752 HRS			p
2	MTBF	MIL-HDBK-217F NOTICES2 PARTS COUNT TOTAL FAILURE RATE: 169.3K HRS			p
3	DMTBF/Accelerated Life Test	Demonstration Mean Time Between Failure : Above 30,000 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 5 Rated STF25NM50N 22A/550V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2) Output Short Ta:25℃	(1) 498 V (2) 452 V	P
2	Diode Peak **Voltage**	Q100 Rated IRFB3307 130A/75V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 64.4 V (2) 70 V	P
3	**PFC Transistor** **(D to S) or (C to E)** Peak Voltage	Q1 Rated STP21NM60N 17A/600V	I/P:High-Line +3V = 267 V O/P: (1)Full Load Turn on (2)Output Short Ta:25℃	(1) 595 V (2) 478 V	P
4	**Input Capacitor Voltage**	C5 Rated 220u/450V 105℃ HU	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) 424 V (2) 418 V (3) 424 V	P
5	**Control IC Voltage Test**	U900 Rated L6599D 16V (max) 8.85V (min)	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) 12.52 V (2) 10 V (3) 12.47 V	P

TEST RESULT	TESTER	APPROVAL
PASS	SANFORD SU	VINCENT TSENG

2003/12/12 A50-F023