MODEL：TN1500-224

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	RATED POWER (TYP)	1500W	IP: 24VDC Ta:25℃	1436 W	P
2	WAVEFORM	True sine wave (THD<3%)	IP: 24VDC OP: FULL LOAD/NO LOAD Ta:25℃	FULL LOAD: 1.02 % NO LOAD: 0.86%	P
3	FREQUENCY	60HZ ± 1HZ	IP: 24VDC OP: FULL LOAD/NO LOAD Ta:25℃	FULL LOAD: 59.99HZ NO LOAD: 60.02HZ	P
6	AC REGULATION (TYP)	3%~-3%	IP: 24VDC OP: FULL LOAD/NO LOAD Ta:25℃	0.3% ~ -0.3%	P
7	TRANSFER TIME (TYP)	10 ms (By pass to inverter, vice versa inverter By pass)	IP: 24VDC OP: FULL LOAD Ta:25℃	By pass to Inverter: 3 ms Inverter to By pass: 3 ms	P
8	SAVING MODE TO NORMAL	≤3S (5W~25W)	IP: 24VDC OP:NO LOAD Ta:25℃	OK	P

INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC CURRENT (TYP)	75A	IP: 24VDC OP:NO LOAD Ta:25℃	66A	P
2	NO LOAD DISSIPATION	≦18W @ saving mode	IP: 24VDC OP:NO LOAD Ta:25℃	9W	P
3	OFF MODE DRAW CURRENT	<1mA	IP: SW OFF OP:NO LOAD Ta:25℃	0.03mA	P
4	VOLTAGE RANGE (TYP)	21VDC~30VDC	IP: TESTING OP:NO LOAD Ta:25℃	20.2 VDC~ 29.8 VDC	P
5	EFFICIENCY(TYP)	90%	IP: 24VDC OP: 1000W Ta:25℃	91.4%	P

BATTERY INPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	BAT LOW ALARM	22.5VDC ± 4%	IP: TESTING OP: NO LOAD Ta:25℃	22.2 V	P
2	BAT LOW SHUT DOWN	21VDC ± 4%	IP: TESTING OP: NO LOAD Ta:25℃	21 V Shunt down Recovery	P
3	BAT POLARITY	BY INTERNAL FUSE	IP: 24VDC OP: NO LOAD Ta:25℃	OK	P

OUTPUT PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	OVER TEMPERATURE	40℃~45℃ at full load , Reset: re-power on	IP: 24VDC OP: FULL LOAD Ta:25℃	O.T.P Active Reset: re-power on	P
2	OUTPUT SHORT	Shut-off , Reset: re-power on	IP: 24VDC OP: FULL LOAD Ta:25℃	Shut-off , Reset: re-power on	P
3	OVER LOAD (INVERTER)	100%~115% ± 5% LOAD 180sec 115%~150%± 5% LOAD 10sec Shunt down Re-power ON	IP: 24VDC OP: TESTING Ta:25℃	104 %/ 180 SEC 116 %/ 10 SEC Shut down Re-power ON	P
4	OVER LOAD (AC LINE)	CIRCUIT BREAKER PROTECTION	IP: 220VAC OP: TESTING Ta:25℃	CIRCUIT BREAKER PROTECTION	P

AC CHARGER FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	CHARGE CURRENT	2.7A ± 0.4A	IP: 220VAC OP: BAT LOAD Ta:25℃	3.05 A	P
2	CHARGE VOLTAGE	29VDC± 4%	IP: 220VAC OP: BAT LOAD Ta:25℃	28.7 VDC	P
3	SHORT CIRCUIT PROTECTION	Constant current limiting	IP: 220VAC OP: BAT LOAD Ta:25℃	NO DAMAGE Constant current limiting	P

SOLAR CHARGER FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	MAX OPEN CIRCUIT VOLTAGE	45V	IP: TESTING OP: BAT LOAD Ta:25℃	45V	P
2	CHARGE CURRENT (MAX)	30A	IP: OPEN CIRCUIT VOLTAGE 45V OP: BAT LOAD Ta:25℃	30A	P
3	V max CHARGE VOLTAGE	29VDC± 4%	IP: OPEN CIRCUIT VOLTAGE 45V OP: BAT LOAD Ta:25℃	28.7 VDC	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：TN-1500-212
1. ROOM AMBIENT BURN-IN：2HRS
I/P: 12 VDC O/P: FULL LOAD Ta= 27.5 ℃
2. HIGH AMBIENT BURN-IN：1 HRS
I/P: 12 VDC O/P: FULL LOAD Ta= 41.6 ℃
<table>
<tr><th>NO</th><th>Position</th><th>ROOM AMBIENT Ta= 27.5℃</th><th>HIGH AMBIENT Ta= 41.6℃</th></tr>
<tr><td>1</td><td>C301</td><td>54.2℃</td><td>66.6℃</td></tr>
<tr><td>2</td><td>C311</td><td>60.0℃</td><td>73.8℃</td></tr>
<tr><td>3</td><td>PCB</td><td>85.5℃</td><td>103.7℃</td></tr>
<tr><td>4</td><td>L301</td><td>92.8℃</td><td>108.4℃</td></tr>
<tr><td>5</td><td>D413</td><td>54.5℃</td><td>65.5℃</td></tr>
<tr><td>6</td><td>T302</td><td>78.4℃</td><td>90.9℃</td></tr>
<tr><td>7</td><td>C416</td><td>50.2℃</td><td>61.8℃</td></tr>
<tr><td>8</td><td>L13</td><td>74.1℃</td><td>85.9℃</td></tr>
<tr><td>9</td><td>C7</td><td>32.7℃</td><td>44.3℃</td></tr>
<tr><td>10</td><td>L1</td><td>40.7℃</td><td>55.7℃</td></tr>
<tr><td>11</td><td>CT1</td><td>28.1℃</td><td>41.7℃</td></tr>
<tr><td>12</td><td>Q328</td><td>61.3℃</td><td>73.7℃</td></tr>
<tr><td>13</td><td>RTH3</td><td>59.2℃</td><td>71.5℃</td></tr>
<tr><td>14</td><td>Q11</td><td>56.3℃</td><td>67.4℃</td></tr>
<tr><td>15</td><td>U301</td><td>45.6℃</td><td>55.5℃</td></tr>
<tr><td>16</td><td>Q602</td><td>39.6℃</td><td>49.6℃</td></tr>
<tr><td>17</td><td>D601</td><td>42.3℃</td><td>52.0℃</td></tr>
<tr><td>18</td><td>RG602</td><td>37.1℃</td><td>46.1℃</td></tr>
<tr><td>19</td><td>RG601</td><td>42.0℃</td><td>51.6℃</td></tr>
<tr><td>20</td><td>U509</td><td>31.0℃</td><td>38.6℃</td></tr>
<tr><td>21</td><td>Q702</td><td>32.9℃</td><td>44.8℃</td></tr>
<tr><td>22</td><td>D806</td><td>34.8℃</td><td>47.1℃</td></tr>
<tr><td>23</td><td>T701</td><td>33.8℃</td><td>46.6℃</td></tr>
<tr><td>24</td><td>Q802</td><td>36.4℃</td><td>49.5℃</td></tr>
<tr><td>25</td><td>C811</td><td>32.7℃</td><td>45.9℃</td></tr>
<tr><td>26</td><td>內環溫</td><td>43.9℃</td><td>53.8℃</td></tr>
</table></td><td>P</td></tr>
<tr><td>3</td><td>LOW TEMPERATURE
TURN ON TEST</td><td>TURN ON AFTER 2 HOUR</td><td>IP: 12VDC
OP:FULL LOAD
Ta= -10℃</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 40℃
NO DAMAGE</td><td>IP: 13.6VDC
OP:FULL LOAD
Ta:= 40℃
HUMIDITY= 95 %R.H</td><td>TEST：OK</td><td>P</td></tr>
<tr><td>5</td><td>VIBRATION TEST</td><td colspan="2">1 Carton & 1 Set
(1) Waveform: Sine Wave (2) Frequency:10~500Hz
(3) Sweep Time:10min/sweep cycle (4) Acceleration:3G
(5) Test Time:1 hour in each axis (X.Y.Z) (6) Ta:25℃</td><td>TEST：OK</td><td>P</td></tr>
</table>

SAFETY TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	BAT I/P-AC I/P: 3 KVAC/min BAT I/P-AC O/P: 3 KVAC/min AC I/P-FG: 1.5 KVAC/min	BAT I/P-AC I/P: 3.3 KVAC/min BAT I/P-AC O/P: 3.3 KVAC/min AC I/P-FG: 1.8 KVAC/min Ta:25℃	BAT I/P-AC I/P: 9.05 mA BAT I/P-AC O/P: 9.05 mA AC I/P-FG: 9.12 mA NO DAMAGE	P
2	GROUNDING CONTINUITY	FG(PE) TO CHASSIS OR TRACE < 100 mΩ	40 A / 2min Ta:25℃	21 mΩ	P
3	APPROVAL	TUV: Certificate NO ： UL: File NO ：			N/A

E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	HARMONIC	EN61000-3-2 CLASS A	I/P: 230 VAC/50HZ O/P:FULL 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 LIGHT 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 LIGHT INDUSTRY INPUT: 1KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA A	P
6	SURGE	IEC61000-4-5 LIGHT INDUSTRY L-N :1KV L,N-PE:2KV	I/P: 230 VAC/50HZ O/P:FULL LOAD Ta:25℃	CRITERIA B	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	TN-1500-112 : SUPPOSE C812 IS THE MOST CRITICAL COMPONENT I/P: 12VDC O/P:FULL LOAD Ta= 25℃ LIFE TIME= 420711 HRS I/P: 12VDC O/P:FULL LOAD Ta= 40℃ LIFE TIME= 136874 HRS			P

COMPONENT STRESS TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDITION	RESULT	VERDICT
1	DC TO DC Power Transistor (D to S) or (C to E) **Peak Voltage**	Q324 Rated STP80NF10 : 100V 80A	I/P:27 VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 112 V (2) 74 V (3) 74 V	P
2	DCTO DC Diode Peak **Voltage**	D414 Rated HFA16TA60C : 8A 600V	I/P:27VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 396 V (2) 384 V (3) 394 V	P
3	**Input Capacitor Voltage**	C417 Rated : 220u / 450V/ 105℃	I/P:27VDC O/P: (1)Full Load Turn on /Off (2) Min load Turn on /Off (3)Full Load /Min load Change (4)Burn in 1hour Ta:25℃	(1) 352 V (2) 369 V (3) 369 V	P
4	INVERTER Power Transistor (D to S) or (C to E) **Peak Voltage**	Q12 Rated HGTG12N60A4D : 12A/ 600V	I/P:27VDC O/P: (1)Full Load Turn on (2) Full Load (3)Output Short Ta:25℃	(1) 510 V (2) 492 V (3) 490 V	P

DATE	SAMPLE	TEST RESULT	TESTER	APPROVAL
2006/4/18	RD SAMPLE	PASS	VINCENT TSENG	MAX LIN
2006/9/25	PRODUCT SAMPLE W0605A45	PASS	VINCENT TSENG	MAX LIN
2007/5/15	PRODUCT SAMPLE W0703A19	PASS	VINCENT TSENG	MAX LIN

2003/12/12 A50-F023