

MODEL : TN1500-124

### OUTPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION   | TEST CONDITION                                | RESULT   | VERDICT |
|----|-----------------------|---|---|--|---------|
| 1  | RATED POWER (TYP)     | 1500W   | IP: 24VDC<br>Ta:25°C                          | 1444 W   | P       |
| 2  | WAVEFORM              | True sine wave (THD<3%)                                       | IP: 24VDC<br>OP: FULL LOAD/NO LOAD<br>Ta:25°C | FULL LOAD: 0.51%<br>NO LOAD: 0.64%                     | P       |
| 3  | FREQUENCY             | 60HZ ± 1HZ  | IP: 24VDC<br>OP: FULL LOAD/NO LOAD<br>Ta:25°C | FULL LOAD: 59.98 HZ<br>NO LOAD: 60.02 HZ               | P       |
| 6  | AC REGULATION (TYP)   | 3%~3%   | IP: 24VDC<br>OP: FULL LOAD/NO LOAD<br>Ta:25°C | 0.8% - -0.8 %  | P       |
| 7  | TRANSFER TIME         | < 10 ms<br>(By pass to inverter, vice versa inverter By pass) | IP: 24VDC<br>OP: FULL LOAD<br>Ta:25°C         | By pass to Inverter: 3 ms<br>Inverter to By pass: 3 ms | P       |
| 8  | SAVING MODE TO NORMAL | ≤3S (5W~25W)  | IP: 24VDC<br>OP:NO LOAD<br>Ta:25°C            | OK   | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION      | TEST CONDITION                        | RESULT             | VERDICT |
|----|-----------------------|--------------------|---------------------------------------|--------------------|---------|
| 1  | DC CURRENT (TYP)      | 75A                | IP: 24VDC<br>OP:NO LOAD<br>Ta:25°C    | 68.4A              | P       |
| 2  | NO LOAD DISSIPATION   | ≤18W @ saving mode | IP: 24VDC<br>OP:NO LOAD<br>Ta:25°C    | 13W                | P       |
| 3  | OFF MODE DRAW CURRENT | <1mA               | IP: SW OFF<br>OP:NO LOAD<br>Ta:25°C   | 0.1mA              | P       |
| 4  | VOLTAGE RANGE(TYP)    | 21VDC~30VDC        | IP: TESTING<br>OP:NO LOAD<br>Ta:25°C  | 20.7 VDC~ 30.2 VDC | P       |
| 5  | EFFICIENCY(TYP)       | 89%                | IP: 26VDC<br>OP: FULL LOAD<br>Ta:25°C | 89.8%              | P       |

### BATTERY INPUT PROTECTION FUNCTION TEST

| NO | TEST ITEM         | SPECIFICATION    | TEST CONDITION                                 | RESULT                        | VERDICT |
|----|-------------------|------------------|--|-------------------------------|---------|
| 1  | BAT LOW ALARM     | 21VDC $\pm$ 2%   | IP: TESTING<br>OP: NO LOAD<br>SW:ON<br>Ta:25°C | 21.2 V                        | P       |
| 2  | BAT LOW SHUT DOWN | 20VDC $\pm$ 2%   | IP: TESTING<br>OP: NO LOAD<br>SW:ON<br>Ta:25°C | 20.7 V<br>Shunt down Recovery | P       |
| 3  | BAT POLARITY      | BY INTERNAL FUSE | IP: 24VDC<br>OP: NO LOAD<br>SW:ON<br>Ta:25°C   | OK                            | P       |

### OUTPUT PROTECTION FUNCTION TEST

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDITION                                 | RESULT  | VERDICT |
|----|----------------------|---|--|---|---------|
| 1  | OVER TEMPERATURE     | 40°C~45°C at full load ,<br>Reset: re-power on  | IP: 24VDC<br>OP: FULL LOAD<br>SW:ON<br>Ta:25°C | O.T.P Active<br>Reset: re-power on                        | P       |
| 2  | OUTPUT SHORT         | Shut-off , Reset: re-power on   | IP: 24VDC<br>OP: FULL LOAD<br>SW:ON<br>Ta:25°C | Shut-off , Reset: re-power on                             | P       |
| 3  | OVER LOAD (INVERTER) | 100%~117% $\pm$ 5% LOAD 180sec<br>117%~150% $\pm$ 5% LOAD 10sec<br>Shunt down Re-power ON | IP: 24VDC<br>OP: TESTING<br>SW:ON<br>Ta:25°C   | 115 %/ 180 SEC<br>125 %/ 10 SEC<br>Shunt down Re-power ON | P       |
| 4  | OVER LOAD (AC LINE)  | CIRCUIT BREAKER PROTECTION  | IP: 110VAC<br>OP: TESTING<br>SW:ON<br>Ta:25°C  | CIRCUIT BREAKER PROTECTION                                | P       |

### AC CHARGER FUNCTION TEST

| NO | TEST ITEM                | SPECIFICATION             | TEST CONDITION                                 | RESULT                                 | VERDICT |
|----|--------------------------|---------------------------|--|--|---------|
| 1  | CHARGE CURRENT           | 2.7A $\pm$ 0.4A           | IP: 110VAC<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C | 2.81A                                  | P       |
| 2  | CHARGE VOLTAGE           | 29VDC $\pm$ 4%            | IP: 110VAC<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C | 28.9VDC                                | P       |
| 3  | SHORT CIRCUIT PROTECTION | Constant current limiting | IP: 110VAC<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C | NO DAMAGE<br>Constant current limiting | P       |

**SOLAR CHARGER FUNCTION TEST**

| NO | TEST ITEM                | SPECIFICATION  | TEST CONDITION   | RESULT   | VERDICT |
|----|--------------------------|----------------|--|----------|---------|
| 1  | MAX OPEN CIRCUIT VOLTAGE | 45V            | IP: TESTING<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C                  | 25V      | P       |
| 2  | CHARGE CURRENT (MAX)     | 30A            | IP: OPEN CIRCUIT VOLTAGE 45V<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C | 30 A     | P       |
| 3  | V max CHARGE VOLTAGE     | 29VDC $\pm$ 4% | IP: OPEN CIRCUIT VOLTAGE 45V<br>OP: BAT LOAD<br>SW:ON<br>Ta:25°C | 28.9 VDC | P       |



### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION   | TEST CONDITION   | RESULT  | VERDICT |
|----|----------------------|---|--|---|---------|
| 1  | WITHSTAND VOLTAGE    | BAT I/P-AC I/P: 3 KVAC/min<br>BAT I/P-AC O/P: 3 KVAC/min<br>AC I/P-FG: 1.5 KVAC/min | BAT I/P-AC I/P: 3.3 KVAC/min<br>BAT I/P-AC O/P: 3.3 KVAC/min<br>AC I/P-FG: 1.8 KVAC/min<br>Ta:25°C | BAT I/P-AC I/P: 9.28 mA<br>BAT I/P-AC O/P: 9.28 mA<br>AC I/P-FG: 9.12 mA<br>NO DAMAGE | P       |
| 2  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ  | 40 A / 2min<br>Ta:25°C   | 21 mΩ   | P       |
| 3  | APPROVAL             | TUV: Certificate NO :<br>UL: File NO :  |  |   | N/A     |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION  | TEST CONDITION                                      | RESULT                        | VERDICT |
|----|---|----------------|---|-------------------------------|---------|
| 1  | CONDUCTION                                  | FCC<br>CLASS A | I/P: 110 VAC (50HZ)<br>O/P:FULL/50% LOAD<br>Ta:25°C | PASS<br>Test by certified Lab | P       |
| 2  | RADIATION                                   | FCC<br>CLASS A | I/P: 110 VAC (50HZ)<br>O/P:FULL LOAD<br>Ta:25°C     | PASS<br>Test by certified Lab | P       |
| 3  | Test by certified Lab & Test Report Prepare |                |   |                               |         |

### M.T.B.F & LIFE CYCLE CALCULATION

| NO | TEST ITEM               | SPECIFICATION   | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|---|----------------|--------|---------|
| 1  | CAPACITOR<br>LIFE CYCLE | TN-1500-112 : SUPPOSE C812 IS THE MOST CRITICAL COMPONENT<br>I/P: 12VDC O/P:FULL LOAD Ta= 25°C LIFE TIME= 420711 HRS<br>I/P: 12VDC O/P:FULL LOAD Ta= 40°C LIFE TIME= 136874 HRS |                |        | P       |

COMPONENT STRESS TEST

| NO | TEST ITEM   | SPECIFICATION                       | TEST CONDITION   | RESULT                              | VERDICT |
|----|---|-------------------------------------|--|-------------------------------------|---------|
| 1  | DC TO DC<br>Power Transistor<br>( D to S) or (C to E) <b>Peak Voltage</b> | Q324 Rated<br>STP80NF10 : 100V 80A  | I/P:27VDC<br>O/P: (1)Full Load Turn on<br>(2) Full Load<br>(3)Output Short<br>Ta:25°C  | (1) 111 V<br>(2) 76 V<br>(3) 78 V   | P       |
| 2  | DCTO DC<br>Diode <b>Peak Voltage</b>                                      | D414 Rated<br>SF20LC30 : 300V 20A   | I/P:27VDC<br>O/P: (1)Full Load Turn on<br>(2) Full Load<br>(3)Output Short<br>Ta:25°C  | (1) 255 V<br>(2) 247 V<br>(3) 255 V | P       |
| 3  | <b>Input Capacitor Voltage</b>  | C417 Rated<br>: 330u / 250V/ 105°C  | I/P:27VDC<br>O/P: (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load Change<br>(4)Burn in 1hour<br>Ta:25°C | (1) 214 V<br>(2) 222 V<br>(3) 222 V | P       |
| 4  | INVERTER<br>Power Transistor<br>( D to S) or (C to E) <b>Peak Voltage</b> | Q12 Rated<br>IRGP50B60PD : 600V 50A | I/P:27VDC<br>O/P: (1)Full Load Turn on<br>(2) Full Load<br>(3)Output Short<br>Ta:25°C  | (1) 438 V<br>(2) 378 V<br>(3) 420 V | P       |

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

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