



# Test Report: GSM40B18-P1J

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40W AC-DC Single Output Medical Adaptor

## ■ 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                                                           | VERDICT |
|----|--------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------|
| 1  | RIPPLE & NOISE           | V1 : 120 mVp-p (Max )                           | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                    | V1 : 66.8 mVp-p (Max )                                           | P       |
| 2  | OUTPUT VOLTAGE TOLERANCE | V1 : -3 %~ +3 % (Max)                           | I/P : 80 VAC / 264 VAC<br>O/P : FULL/ MIN LOAD<br>Ta : 25°C                                                                                                                                                     | V1 : -0.558 %~ 0.592 %                                           | P       |
| 3  | LINE REGULATION          | V1 : -1 %~ +1 % (Max)                           | I/P : 100 VAC ~ 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                         | V1 : -0.033 %~ 0.033 %                                           | P       |
| 4  | LOAD REGULATION          | V1 : -3 %~ +3 % (Max)                           | I/P : 230 VAC<br>O/P : FULL ~MIN LOAD<br>Ta : 25°C                                                                                                                                                              | V1 : -0.558 %~ 0.592 %                                           | P       |
| 5  | SET UP TIME              | 230VAC : 1000 ms (Max)<br>115VAC : 1500 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 496.313 ms<br>115VAC/ 1128.729 ms                        | P       |
| 6  | RISE TIME                | 230VAC : 30 ms (Max)<br>115VAC : 30 ms (Max)    | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 9.042 ms<br>115VAC/ 12.479 ms                            | P       |
| 7  | HOLD UP TIME             | 230VAC : 50 ms (TYP)<br>115VAC : 15 ms (TYP)    | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 62.549 ms<br>115VAC/ 39.636 ms                           | P       |
| 8  | OVER/UNDERSHOOT TEST     | < ±5%                                           | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                   | TEST : 0 %                                                       | P       |
| 9  | DYNAMIC LOAD             | V1 : 1800 mVp-p                                 | I/P : 230 VAC<br>(1).O/P : FULL /Min LOAD 90%DUTY/<br>1KHZ<br>(2).O/P : FULL /Min LOAD 90%DUTY/<br>3KHZ<br>(3).O/P : FULL /Min LOAD 90%DUTY/<br>5KHZ<br>(4).O/P : FULL /Min LOAD 50%DUTY/<br>120HZ<br>Ta : 25°C | (1) 334 mVp-p<br>(2) 314 mVp-p<br>(3) 264 mVp-p<br>(4) 708 mVp-p | P       |

## INPUT FUNCTION TEST

| NO | TEST ITEM                          | SPECIFICATION                                          | TEST CONDITION                                                                                                                                                                                     | RESULT                                          | VERDICT |
|----|------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE                | 80VAC~264 VAC                                          | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C<br><br>I/P :<br>LOW-LINE-3V= 77 V<br>HIGH-LINE+15%=300 V<br>O/P : FULL/MIN LOAD<br>ON : 30 Sec . OFF : 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | 75.66V~264V<br><br>TEST : OK                    | P       |
| 2  | INPUT FREQUENCY RANGE              | 47HZ ~63 HZ<br>NO DAMAGE OSC                           | I/P : 80 VAC ~ 264 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25°C                                                                                                                                         | TEST : OK                                       | P       |
| 3  | EFFICIENCY                         | 89.5% (TYP)                                            | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                      | 91.04 %                                         | P       |
| 4  | INPUT CURRENT                      | 230V/ 0.5 A (TYP)<br>115V/ 1 A (TYP)                   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                     | I = 0.331 A/ 230 VAC<br>I = 0.676 A/ 115 VAC    | P       |
| 5  | INRUSH CURRENT                     | 230V/ 60 A (TYP)<br>115V/ 30 A (TYP)<br><br>COLD START | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                     | I = 41.476 A/ 230 VAC<br>I = 20.458 A/ 115 VAC  | P       |
| 6  | LEAKAGE CURRENT                    | < 50 uA / 264VAC                                       | I/P : 264 VAC<br>O/P : Min LOAD<br>Ta : 25°C                                                                                                                                                       | FOR PATIENT<br>38.4 $\mu$ A S1:CLOSE S3:CLOSE V | P       |
| 7  | NO LOAD CONSUMPTION<br>PS-ON SHORT | < 0.1 W                                                | I/P : 240VAC<br>O/P : NO LOAD<br>Ta : 25°C                                                                                                                                                         | < 0.0513 W                                      | P       |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECIFICATION         | TEST CONDITION                                                | RESULT                                                       | VERDICT |
|----|-------------------------|-----------------------|---------------------------------------------------------------|--------------------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION    | 105 % ~160 %          | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25°C  | 135.6 %/ 230 VAC<br>134.2 %/ 115 VAC 122.9%<br>Hiccup Mode   | P       |
| 2  | OVER VOLTAGE PROTECTION | CH1 : 18.9 V ~ 24.3 V | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 21.5 V/ 230 VAC<br>21.5 V/ 115 VAC<br>Shut down Re- power ON | P       |

|   |                             |                                        |                                              |                                            |   |
|---|-----------------------------|----------------------------------------|----------------------------------------------|--------------------------------------------|---|
| 3 | OVER TEMPERATURE PROTECTION | SPEC :<br>RTH2>70℃<br>NO DAMAGE        | I/P : 230 VAC<br>O/P : FULL LOAD             | O.T.P. Active<br><br>Shut down Re-power ON | P |
| 4 | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P : 264 VAC<br>O/P : FULL LOAD<br>Ta : 25℃ | NO DAMAGE<br>Hiccup Mode                   | P |

## CONTROL FUNCTION TEST

| NO | TEST ITEM           | SPECIFICATION         | TEST CONDITION                                               | RESULT                       | VERDICT |
|----|---------------------|-----------------------|--------------------------------------------------------------|------------------------------|---------|
| 1  | ERP STEP2 COMPLIANT | LEVEL $V \geq 87.6\%$ | I/P: 230 VAC/115VAC<br>O/P:100/75/50/25/0%<br>LOAD<br>Ta:25℃ | 230V 89.806%<br>115V 88.835% | P       |

## COMPONENT STRESS TEST

| NO | TEST ITEM                                              | SPECIFICATION               | TEST CONDITION                                                                                                                              | RESULT                                 | VERDICT |
|----|--------------------------------------------------------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------|
| 1  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q1 Rated : 700 V 10 A       | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25℃                          | (1) 622 V<br>(2) 510 V<br>(3) 608 V    | P       |
| 2  | Diode Peak Voltage                                     | D100 Rated : 100 V 20 A     | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25℃                           | (1) 64.8 V<br>(2) 52.4 V<br>(3) 48.4 V | P       |
| 3  | Input Capacitor Voltage                                | C 5 Rated : 120u /400V/105℃ | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25℃ | (1) 372 V<br>(2) 372 V<br>(3) 372 V    | P       |
| 4  | Control IC Voltage Test                                | U 1 Rated : 28 V            | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25℃ | (1) 17.0 V<br>(2) 16.9 V<br>(3) 15.0 V | P       |
| 5  | CLAMP DIODE                                            | D 1 Rated : 800 V 2 A       | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25℃                          | (3) 512 V<br>(4) 424 V<br>(3) 510 V    | P       |

## ■ SAFETY & E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION                          | TEST CONDITION                        | RESULT                          | VERDICT |
|----|----------------------|----------------------------------------|---------------------------------------|---------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 4 KVAC/min                   | I/P-O/P : 4.2KVAC/min<br>Ta : 25°C    | I/P-O/P : 1.685 mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ                 | I/P-O/P : 500 VDC<br>Ta : 25°C /70%RH | I/P-O/P : 9999 MΩ<br>NO DAMAGE  | P       |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ | 40 A / 2min<br>Ta : 25°C / 70%RH      | 11 mΩ                           | P       |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                 | TEST CONDITION                                           | RESULT                        | VERDICT |
|----|---------------------------------------------|-----------------------------------------------|----------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS A                        | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55011<br>CLASS B                            | I/P : 230 VAC (50HZ)<br>O/P : FULL/50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab | P       |
| 3  | RADIATION                                   | EN55011<br>CLASS B                            | I/P : 230 VAC (50HZ)<br>O/P : FULL LOAD<br>Ta : 25°C     | PASS<br>Test by certified Lab | P       |
| 4  | E.S.D                                       | EN61000-4-2<br><br>AIR : 15KV / Contact : 8KV | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 5  | E.F.T                                       | EN61000-4-4<br><br>INPUT : 2KV                | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 6  | SURGE                                       | EN61000-4-5<br><br>L-N : 1KV                  | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 7  | Test by certified Lab & Test Report Prepare |                                               |                                                          |                               |         |

## RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM                                                         | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TEST CONDITION                                                  | RESULT           | VERDICT |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
|----|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------|---------|----------|--------------------------|--------------------------|---|-----|-------|-------|---|-----|-------|-------|---|-----|-------|-------|---|----|-------|-------|---|----|-------|-------|---|-----|-------|-------|---|-----|-------|-------|---|--------|-------|-------|---|--------|-------|-------|----|------|-------|-------|----|------|-------|-------|----|----|-------|-------|----|------|-------|-------|----|----|-------|-------|----|--|--|--|---|
| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL : GSM40B24-P1J</div> <div>1. ROOM AMBIENT BURN-IN : 1HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=21.8℃</div> <div>2. HIGH AMBIENT BURN-IN : 2 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=47.4℃</div> <table><tr><th>NO</th><th>Position</th><th>ROOM AMBIENT<br/>Ta=21.8℃</th><th>HIGH AMBIENT<br/>Ta=47.4℃</th></tr><tr><td>1</td><td>LF1</td><td>41.9℃</td><td>66.1℃</td></tr><tr><td>2</td><td>LF2</td><td>49.0℃</td><td>72.3℃</td></tr><tr><td>3</td><td>BD1</td><td>52.4℃</td><td>75.3℃</td></tr><tr><td>4</td><td>C5</td><td>46.9℃</td><td>70.8℃</td></tr><tr><td>5</td><td>D1</td><td>51.9℃</td><td>75.7℃</td></tr><tr><td>6</td><td>D40</td><td>49.0℃</td><td>73.0℃</td></tr><tr><td>7</td><td>C40</td><td>49.5℃</td><td>73.4℃</td></tr><tr><td>8</td><td>T1coil</td><td>52.9℃</td><td>76.5℃</td></tr><tr><td>9</td><td>T1core</td><td>49.2℃</td><td>72.8℃</td></tr><tr><td>10</td><td>C105</td><td>45.3℃</td><td>69.3℃</td></tr><tr><td>11</td><td>D100</td><td>60.3℃</td><td>82.6℃</td></tr><tr><td>12</td><td>U1</td><td>45.5℃</td><td>69.3℃</td></tr><tr><td>13</td><td>CASE</td><td>41.4℃</td><td>64.8℃</td></tr><tr><td>14</td><td>Q1</td><td>48.6℃</td><td>72.3℃</td></tr><tr><td>15</td><td></td><td></td><td></td></tr></table> |                                                                 |                  | NO      | Position | ROOM AMBIENT<br>Ta=21.8℃ | HIGH AMBIENT<br>Ta=47.4℃ | 1 | LF1 | 41.9℃ | 66.1℃ | 2 | LF2 | 49.0℃ | 72.3℃ | 3 | BD1 | 52.4℃ | 75.3℃ | 4 | C5 | 46.9℃ | 70.8℃ | 5 | D1 | 51.9℃ | 75.7℃ | 6 | D40 | 49.0℃ | 73.0℃ | 7 | C40 | 49.5℃ | 73.4℃ | 8 | T1coil | 52.9℃ | 76.5℃ | 9 | T1core | 49.2℃ | 72.8℃ | 10 | C105 | 45.3℃ | 69.3℃ | 11 | D100 | 60.3℃ | 82.6℃ | 12 | U1 | 45.5℃ | 69.3℃ | 13 | CASE | 41.4℃ | 64.8℃ | 14 | Q1 | 48.6℃ | 72.3℃ | 15 |  |  |  | P |
| NO | Position                                                          | ROOM AMBIENT<br>Ta=21.8℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | HIGH AMBIENT<br>Ta=47.4℃                                        |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 1  | LF1                                                               | 41.9℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 66.1℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 2  | LF2                                                               | 49.0℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 72.3℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 3  | BD1                                                               | 52.4℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 75.3℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 4  | C5                                                                | 46.9℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 70.8℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 5  | D1                                                                | 51.9℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 75.7℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 6  | D40                                                               | 49.0℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 73.0℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 7  | C40                                                               | 49.5℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 73.4℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 8  | T1coil                                                            | 52.9℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 76.5℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 9  | T1core                                                            | 49.2℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 72.8℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 10 | C105                                                              | 45.3℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 69.3℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 11 | D100                                                              | 60.3℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 82.6℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 12 | U1                                                                | 45.5℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 69.3℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 13 | CASE                                                              | 41.4℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 64.8℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 14 | Q1                                                                | 48.6℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 72.3℃                                                           |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 15 |                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                 |                  |         |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I/P : 230 VAC<br>O/P : 120% LOAD<br>Ta : 25℃                    | TEST : OK        | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | I/P : 264VAC/100VAC<br>O/P : 100 % LOAD<br>Ta= -30℃             | TEST : OK        | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 50℃<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I/P : 272 VAC<br>O/P : FULL LOAD<br>Ta=50℃<br>HUMIDITY= 95 %R.H | TEST : OK        | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ±0.03%/℃ (0~50℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | I/P : 230 VAC<br>O/P : FULL LOAD                                | ±0.01%/℃ (0~50℃) | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -45℃~ +90℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 5 CYCLE<br>5. Input/Output condition : STATIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                 | OK               | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |
| 7  | THERMAL SHOCK TEST                                                | 1. Thermal shock Temperature : -30℃~ +50℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST<br>turn on 58sec ; turn off 2sec                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                 | OK               | P       |          |                          |                          |   |     |       |       |   |     |       |       |   |     |       |       |   |    |       |       |   |    |       |       |   |     |       |       |   |     |       |       |   |        |       |       |   |        |       |       |    |      |       |       |    |      |       |       |    |    |       |       |    |      |       |       |    |    |       |       |    |  |  |  |   |

|    |                             |                                                                                                                                                                                                                                                                   |                                                                |   |
|----|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|
| 8  | VIBRATION TEST              | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 12min/sweep cycle<br>(4) Acceleration : 2G<br>(5) Test Time : 60min in each axis (X.Y.Z)<br>(6) Ta : 25℃                                                             | TEST : OK                                                      | P |
| 9  | CAPACITOR<br>LIFE CYCLE     | SUPPOSE C105 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25℃ LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta= 50℃ LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 50℃ LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 50℃ LIFE TIME | (1) 425630HRS<br>(2) 84091HRS<br>(3) 93247HRS<br>(4) 144363HRS | P |
| 10 | MTBF                        | MIL-HDBK-217F NOTICE S2 PARTS COUNT<br>TOTAL FAILURE RATE : 740 KHRS                                                                                                                                                                                              |                                                                | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 50,000 hours @ TA 50℃                                                                                                                                                                              |                                                                | P |

| SAMPLE         | TEST RESULT | TESTER | APPROVAL |
|----------------|-------------|--------|----------|
| PRODUCT SAMPLE | PASS        | XUJ    | WANGDZ   |