



# Test Report : GSM60X24

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60W AC-DC Reliable Green Slim Wall-mounted Medical Adaptor

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection Function Test

## ■ SAFETY TEST

Safety Test

## ■ RELIABILITY TEST

Environment Test

Other test

## DESIGN VERIFY TEST

### OUTPUT FUNCTION TEST

| NO | TEST ITEM         | SPECICATION     | TEST CONDITION                                    | RESULT          | VERDICT |
|----|-------------------|-----------------|---|-----------------|---------|
| 1  | RIPPLE & NOISE    | 120 mVp-p (Max) | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C            | 47 mVp-p        | P       |
| 2  | VOLTAGE TOLERANCE | -3% ~ +3% (Max) | I/P:90VAC~264VAC<br>O/P:FULL~MIN. LOAD<br>Ta:25°C | +0.14% ~ +1.18% | P       |
| 3  | LINE REGULATION   | -1% ~ +1% (Max) | I/P:90VAC ~264VAC<br>O/P:FULL LOAD<br>Ta:25°C     | +0.16% ~ +0.05% | P       |
| 4  | LOAD REGULATION   | -2% ~ +2% (Max) | I/P:230VAC<br>O/P:FULL ~MIN LOAD<br>Ta:25°C       | -0.53% ~ +0.50% | P       |
| 5  | SET UP TIME       | 1000ms          | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C            | 837.1ms         | P       |
| 6  | RISE TIME         | 100ms           | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C            | 72.04ms         | P       |
| 7  | HOLD UP TIME      | 10 ms (Min)     | I/P:115VAC<br>O/P:FULL LOAD<br>Ta:25°C            | 40.05ms         | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM                 | SPECICATION                                       | TEST CONDITION   | RESULT                             | VERDICT |
|----|---------------------------|---|--|------------------------------------|---------|
| 1  | VOLTAGE RANGE             | 80VAC ~ 264VAC                                    | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25°C                      | 54.5V ~ 264V                       | P       |
| 2  | FREQUENCY RANGE           | 50HZ - 60HZ (Typ)<br>NO DAMAGE OSC                | I/P: 100VAC ~ 240VAC<br>O/P:FULL~MIN LOAD<br>Ta:25°C         | TEST: OK                           | P       |
| 3  | EFFICIENCY                | 88%   | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C                       | 89.19%                             | P       |
| 4  | AVERAGE EFFICIENCY        | 88.0% ( DoE Level VI )<br>89.0% ( CoC Version 5 ) | I/P:115/230VAC<br>O/P:25% 、 50% 、 75% 、 100% LOAD<br>Ta:25°C | 91.06% (115VAC)<br>90.68% (230VAC) | P       |
| 5  | AC CURRENT                | 1.5 A (Max)                                       | I/P: 100VAC<br>O/P:FULL LOAD<br>Ta:25°C                      | 1.04A                              | P       |
| 6  | NO LOAD POWER CONSUMPTION | < 0.15W (Max)                                     | I/P:230VAC<br>O/P: NO LOAD<br>Ta:25°C                        | 0.0837W                            | P       |

|   |                 |                      |  |                          |   |
|---|-----------------|----------------------|--|--------------------------|---|
| 7 | INRUSH CURRENT  | < 100A<br>COLD START | I/P:230VAC<br>O/P:FULL LOAD<br>Ta:25°C | 79.2A                    | P |
| 8 | LEAKAGE CURRENT | < 100μA              | I/P:264VAC<br>O/P:Min LOAD<br>Ta:25°C  | L-FG: 20μA<br>N-FG: 20μA | P |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECICATION                      | TEST CONDITION                         | RESULT   | VERDICT |
|----|-------------------------|----------------------------------|--|--|---------|
| 1  | OVER LOAD PROTECTION    | 105%~160%                        | I/P:230VAC<br>O/P:TESTING<br>Ta:25°C   | 160%<br>HICCUP MODE<br>RESET : AUTO RECOVER    | P       |
| 2  | OVER VOLTAGE PROTECTION | 110%~140%                        | I/P:230VAC<br>O/P:MIN LOAD<br>Ta:25°C  | 118.1% (MMSZ5254BF )<br>Clamp by ZENER diode   | P       |
| 3  | SHORT PROTECTION        | SHORT OUTPUT<br>1 HOUR NO DAMAGE | I/P:264VAC<br>O/P:FULL LOAD<br>Ta:25°C | NO DAMAGE<br>HICCUP MODE<br>RESET AUTO RECOVER | P       |

## ■ SAFETY TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECICATION          | TEST CONDITION                  | RESULT                       | VERDICT |
|----|----------------------|----------------------|---------------------------------|------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P:5656 VDC/min | I/P-O/P:5656 VDC/min<br>Ta:25°C | I/P-O/P: 0.03uA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P:500VDC>100MΩ | I/P-O/P:500 VDC<br>Ta:25°C      | I/P-O/P>100MΩ<br>NO DAMAGE   | P       |

## ■ RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM                    | SPECICATION  | TEST CONDITION                               | RESULT    | VERDICT |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
|----|------------------------------|--|--|-----------|---------|----|----------|---|---|---|---|-----|--------|--------|--------|---|----|--------|--------|--------|---|--------|--------|---------|---------|---|----|--------|---------|---------|---|--------|--------|--------|--------|---|--------|--------|--------|--------|---|-------|--------|---------|---------|---|-------|--------|---------|---------|---|----|--------|--------|--------|----|------|--------|--------|--------|
| 1  | TEMPERATURE RISE TEST        | 1. ROOM AMBIENT BURN-IN : 4HRS<br>I/P:230VAC O/P:100% LOAD Ta=25°C<br>2. HI AMBIENT BURN-IN : 4HRS<br>I/P:230VAC O/P:100% LOAD Ta=40°C<br>3. HI AMBIENT BURN-IN : 4HRS<br>I/P:230VAC O/P:50% LOAD Ta=70°C  |  |           | P       |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
|    |                              | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr style="background-color: #cccccc;"> <th>NO</th> <th>Position</th> <th>1</th> <th>2</th> <th>3</th> </tr> </thead> <tbody> <tr><td>1</td><td>BD1</td><td>73.9°C</td><td>87.9°C</td><td>93.0°C</td></tr> <tr><td>2</td><td>C1</td><td>72.4°C</td><td>68.8°C</td><td>93.1°C</td></tr> <tr><td>3</td><td>O/P D4</td><td>87.0°C</td><td>101.0°C</td><td>101.0°C</td></tr> <tr><td>4</td><td>Q1</td><td>92.4°C</td><td>105.8°C</td><td>100.2°C</td></tr> <tr><td>5</td><td>O/P C4</td><td>74.4°C</td><td>89.0°C</td><td>94.5°C</td></tr> <tr><td>6</td><td>O/P C5</td><td>68.1°C</td><td>82.8°C</td><td>91.2°C</td></tr> <tr><td>7</td><td>T1 鐵芯</td><td>68.8°C</td><td>102.3°C</td><td>100.1°C</td></tr> <tr><td>8</td><td>T1 線圈</td><td>91.8°C</td><td>107.1°C</td><td>102.2°C</td></tr> <tr><td>9</td><td>L1</td><td>63.3°C</td><td>77.6°C</td><td>88.7°C</td></tr> <tr><td>10</td><td>CASE</td><td>67.5°C</td><td>81.4°C</td><td>88.3°C</td></tr> </tbody> </table> |  |           |         | NO | Position | 1 | 2 | 3 | 1 | BD1 | 73.9°C | 87.9°C | 93.0°C | 2 | C1 | 72.4°C | 68.8°C | 93.1°C | 3 | O/P D4 | 87.0°C | 101.0°C | 101.0°C | 4 | Q1 | 92.4°C | 105.8°C | 100.2°C | 5 | O/P C4 | 74.4°C | 89.0°C | 94.5°C | 6 | O/P C5 | 68.1°C | 82.8°C | 91.2°C | 7 | T1 鐵芯 | 68.8°C | 102.3°C | 100.1°C | 8 | T1 線圈 | 91.8°C | 107.1°C | 102.2°C | 9 | L1 | 63.3°C | 77.6°C | 88.7°C | 10 | CASE | 67.5°C | 81.4°C | 88.3°C |
| NO | Position                     | 1  | 2  | 3         |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 1  | BD1                          | 73.9°C   | 87.9°C                                       | 93.0°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 2  | C1                           | 72.4°C   | 68.8°C                                       | 93.1°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 3  | O/P D4                       | 87.0°C   | 101.0°C                                      | 101.0°C   |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 4  | Q1                           | 92.4°C   | 105.8°C                                      | 100.2°C   |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 5  | O/P C4                       | 74.4°C   | 89.0°C                                       | 94.5°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 6  | O/P C5                       | 68.1°C   | 82.8°C                                       | 91.2°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 7  | T1 鐵芯                        | 68.8°C   | 102.3°C                                      | 100.1°C   |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 8  | T1 線圈                        | 91.8°C   | 107.1°C                                      | 102.2°C   |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 9  | L1                           | 63.3°C   | 77.6°C                                       | 88.7°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 10 | CASE                         | 67.5°C   | 81.4°C                                       | 88.3°C    |         |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |
| 2  | LOW TEMPERATURE TURN ON TEST | TURN ON AFTER 2 HOURS  | I/P : 230VAC<br>O/P : 100% LOAD<br>Ta= -20°C | TEST : OK | P       |    |          |   |   |   |   |     |        |        |        |   |    |        |        |        |   |        |        |         |         |   |    |        |         |         |   |        |        |        |        |   |        |        |        |        |   |       |        |         |         |   |       |        |         |         |   |    |        |        |        |    |      |        |        |        |

### OTHER

| NO                 | TEST ITEM            | SPECICATION   | TEST CONDITION | RESULT            | VERDICT |
|--------------------|----------------------|---|----------------|-------------------|---------|
| 1                  | CAPACITOR LIFE CYCLE | SUPPOSE C6 IS THE MOST CRITICAL COMPONENT (6000hrs)<br>I/P:230 VAC O/P:100% LOAD Ta=25°C LIFE TIME= 129062.68HRS<br>I/P:230 VAC O/P:100% LOAD Ta=40°C LIFE TIME= 46589.34 HRS |                |                   | P       |
| 2                  | MTBF                 | MIL-KDBK-217F NOTICES 2 PARTS COUNT<br>TOTAL FAILURE RATE : 2.042375<br>M.T.B.F : 489626.05 HRS   |                |                   | P       |
| <b>TEST RESULT</b> |                      | <b>TESTER</b>   |                | <b>APPROVAL</b>   |         |
| <b>PASS</b>        |                      | <b>Archen Hsiao</b>   |                | <b>Peter Chen</b> |         |