



# TEST REPORT: MFM-10-24

---

## 10W Green Reliable Medical On Board Type

### ■ 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

| NO | TEST ITEM                      | SPECIFICATION                                                                | TEST CONDITION                                                               | RESULT                           |
|----|--------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------|
| 1  | OUTPUT VOLTAGE TOLERANCE (Max) | V1 : 2.5% ~ -2.5%                                                            | I/P : 100VAC / 264VAC<br>O/P: FULL / MINLOAD<br>TA: 25°C                     | V1: 0.30% ~ -0.40%               |
| 2  | LINE REGULATION (MAX.)         | V1 : 0.3% ~ -0.3%                                                            | I/P : 100VAC / 264VAC<br>O/P: FULL LOAD<br>TA: 25°C                          | V1: 0.00% ~ 0.00%                |
| 3  | LOAD REGULATION(MAX.)          | V1 : 0.5% ~ -0.5%                                                            | I/P : 230VAC<br>O/P: MIN LOAD ~ FULL LOAD<br>TA: 25°C                        | V1: 0.00% ~ 0.00%                |
| 4  | OVER/UNDERSHOOT TEST           | < ±5%                                                                        | I/P : 230VAC<br>O/P: FULL LOAD<br>TA: 25°C                                   | TEST< 1.7 %                      |
| 5  | RIPPLE & NOISE(Max)            | V1 : 200 mVp-p                                                               | I/P : 230VAC<br>O/P: FULL LOAD<br>TA: 25°C                                   | V1 : 57.6 mVp-p                  |
|    |                                |                                                                              | high frequency: low frequency:                                               |                                  |
| 6  | SET UP TIME (MAX.)             | 230VAC : 1000ms<br>115VAC : 1000ms                                           | I/P : 230VAC<br>I/P : 115VAC<br>O/P: FULL LOAD<br>TA: 25°C                   | 230VAC : 416ms<br>115VAC : 372ms |
|    |                                | INPUT=230VAC/50HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage | INPUT=115VAC/60HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage |                                  |

|   |                                                                                  |  |                                                                                                      |  |                                            |
|---|----------------------------------------------------------------------------------|--|------------------------------------------------------------------------------------------------------|--|--------------------------------------------|
| 7 | <b>RISE TIME (MAX.)</b><br>230VAC : 30ms<br>115VAC : 30ms                        |  | I/P : 230VAC<br>I/P : 115VAC<br>O/P: FULL LOAD<br>TA : 25°C                                          |  | 230VAC : 16.2ms<br>115VAC : 16.2ms         |
|   | INPUT=230VAC/50HZ @ FULL LOAD<br>CH1 : Output Voltage<br>                        |  | INPUT=115VAC/60HZ @ FULL LOAD<br>CH1 : Output Voltage<br>                                            |  |                                            |
| 8 | <b>HOLD UP TIME (TYP.)</b><br>230VAC : 40ms<br>115VAC : 8ms                      |  | I/P : 230VAC<br>I/P : 115VAC<br>O/P: FULL LOAD<br>TA : 25°C                                          |  | 230VAC : 62.0ms<br>115VAC : 12.0ms         |
|   | INPUT=230VAC/50HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage<br> |  | INPUT=115VAC/60HZ @ FULL LOAD<br>CH1 : Output Voltage CH2 : AC Input Voltage<br>                     |  |                                            |
| 9 | <b>DYNAMIC LOAD</b><br>V1 : 2400 mVp-p                                           |  | I/P : 230VAC<br>O/P:<br>(1)Full/Min load 50%duty/120HZ<br>(2)Full/Min load 50%duty/1KHZ<br>TA : 25°C |  | (1). (2).<br>V1: 362mv 348mv<br>unit:mVp-p |
|   | FULL /MIN LOAD 50%DUTY / 120HZ<br>                                               |  | FULL /MIN% LOAD 50%DUTY / 1KHZ<br>                                                                   |  |                                            |



## INPUT FUNCTION TEST

| NO                                                                                                                                                                                        | TEST ITEM                 | SPECIFICATION                                                                      | TEST CONDITION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | RESULT                                                          |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|--|------|---------------------|---------------------|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|----|
| 1                                                                                                                                                                                         | INPUT VOLTAGE RANGE       | 80VAC ~ 264VAC                                                                     | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 64.0VAC ~ 264VAC                                                |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
|                                                                                                                                                                                           |                           |                                                                                    | I/P :<br>LOW-LINE = 97VAC<br>HIGH-LINE = 300VAC<br>O/P : FULL/MIN LOAD<br>ON:30 Sec ; OFF:30 Sec 10MIN<br>( POWER ON/OFF NO DAMAGE )                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TEST : OK                                                       |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 2                                                                                                                                                                                         | INPUT FREQUENCY RANGE     | 47HZ ~ 440HZ<br>NO DAMAGE                                                          | I/P : 100VAC ~ 264VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TEST : OK                                                       |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 3                                                                                                                                                                                         | INPUT CURRENT (TYP.)      | 0.2A / 230VAC<br>0.3A / 115VAC                                                     | I/P : 230VAC<br>I/P : 115VAC<br>O/P : FULL LOAD<br>TA : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I= 0.08A / 230VAC<br>I= 0.161A / 115VAC                         |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 4                                                                                                                                                                                         | LEAKAGE CURRENT           | < 0.08mA                                                                           | I/P : 240VAC<br>O/P : MIN LOAD<br>TA : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.0275 mA                                                       |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 5                                                                                                                                                                                         | NO LOAD POWER CONSUMPTION | < 0.075W                                                                           | I/P : 230VAC<br>O/P : MIN LOAD<br>TA : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | < 0.0574 W                                                      |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 6                                                                                                                                                                                         | EFFICIENCY (TYP.)         | 84.0%                                                                              | I/P : 230VAC<br>O/P : FULL LOAD<br>TA : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 85.42 %                                                         |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
|                                                                                                                                                                                           |                           |                                                                                    | <table><caption>Efficiency Data (Approximate)</caption><tr><th>Load</th><th>230V Efficiency (%)</th><th>115V Efficiency (%)</th></tr><tr><td>10%</td><td>66</td><td>68</td></tr><tr><td>20%</td><td>66</td><td>69</td></tr><tr><td>30%</td><td>66</td><td>78</td></tr><tr><td>40%</td><td>74</td><td>80</td></tr><tr><td>50%</td><td>80</td><td>82</td></tr><tr><td>60%</td><td>82</td><td>82</td></tr><tr><td>70%</td><td>82</td><td>82</td></tr><tr><td>80%</td><td>83</td><td>83</td></tr><tr><td>90%</td><td>85</td><td>84</td></tr><tr><td>100%</td><td>86</td><td>85</td></tr></table> |                                                                 |  | Load | 230V Efficiency (%) | 115V Efficiency (%) | 10% | 66 | 68 | 20% | 66 | 69 | 30% | 66 | 78 | 40% | 74 | 80 | 50% | 80 | 82 | 60% | 82 | 82 | 70% | 82 | 82 | 80% | 83 | 83 | 90% | 85 | 84 |
| Load                                                                                                                                                                                      | 230V Efficiency (%)       | 115V Efficiency (%)                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 10%                                                                                                                                                                                       | 66                        | 68                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 20%                                                                                                                                                                                       | 66                        | 69                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 30%                                                                                                                                                                                       | 66                        | 78                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 40%                                                                                                                                                                                       | 74                        | 80                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 50%                                                                                                                                                                                       | 80                        | 82                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 60%                                                                                                                                                                                       | 82                        | 82                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 70%                                                                                                                                                                                       | 82                        | 82                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 80%                                                                                                                                                                                       | 83                        | 83                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 90%                                                                                                                                                                                       | 85                        | 84                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 100%                                                                                                                                                                                      | 86                        | 85                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| 7                                                                                                                                                                                         | INRUSH CURRENT (TYP.)     | 45A / 230VAC<br>25A / 115VAC<br>twidth= 555 us measured at 50% Ipeak<br>COLD START | I/P : 230VAC<br>I/P : 115VAC<br>O/P : FULL LOAD<br>TA : 25°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I= 24.0A / 230VAC<br>I= 11.6A / 115VAC<br>T50= 180.0us / 230VAC |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
|                                                                                                                                                                                           |                           | INPUT=230VAC/50HZ @ FULL LOAD INPUT=115VAC/50HZ @ FULL LOAD                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| CH2 : AC Input Voltage CH4 : Input current (1V=1A) CH2 : AC Input Voltage CH4 : Input current (1V=1A)                                                                                     |                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |
| <div><div><p>Δ: 200mV<br/>@: 12.2 V<br/>Δ: 180μs<br/>@: 200μs</p><p>Ch4 Max 24.0 V</p></div><div><p>Δ: 800mV<br/>@: 5.30 V<br/>Δ: 200μs<br/>@: 200μs</p><p>Ch4 Max 11.6 V</p></div></div> |                           |                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                 |  |      |                     |                     |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |     |    |    |



# 10W Green Reliable Medical On Board Type MFM-10 series

## PROTECTION FUNCTION TEST

| NO | TEST ITEM                   | SPECIFICATION                          | TEST CONDITION                                                        | RESULT                                                            |
|----|-----------------------------|----------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------|
| 1  | OVER LOAD PROTECTION        | 110% ~ 180%                            | I/P: 264VAC<br>I/P: 230VAC<br>I/P: 100VAC<br>O/P: TESTING<br>Ta: 25°C | 157.00% 264VAC<br>150.00% 230VAC<br>142.80% 100VAC<br>Hiccup Mode |
| 2  | OVER VOLTAGE PROTECTION     | 27.60V ~ 32.40V                        | Ta: 25°C                                                              | 30.40V<br>Shut off o/p voltage,damping by zener diode             |
| 3  | OVER TEMPERATURE PROTECTION | Shut down Re- power ON                 | I/P: 264VAC<br>I/P: 80VAC<br>O/P: FULL LOAD                           | O.T.P. Active<br>Shut down Re- power ON                           |
| 4  | SHORT PROTECTION            | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P: 264VAC<br>I/P: 80VAC<br>O/P: FULL LOAD<br>Ta: 25°C               | NO DAMAGE<br>Hiccup Mode                                          |

## COMPONENT STRESS TEST

| NO | TEST ITEM            | SPECIFICATION                       | TEST CONDITION                                                                                                                                     | RESULT                                                              |
|----|----------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| 1  | PWM Power Transistor | U1 Rated : 800V 2.0A                | I/P : 267VAC<br>VDS :<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25°C                                      | VIN: 267VAC<br>VDS:<br>(1). 516.00V<br>(2). 544.00V<br>(3). 520.00V |
| 2  | O/P Diode            | D100 Rated : 300V 2.0A              | I/P : 267VAC<br>VDS :<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue                                                   | D100<br>VDS :<br>(1). 324.00V<br>(2). 370.00V<br>(3). 208.00V       |
| 3  | Input Capacitor      | C5 Rated : 10uf 400V                | I/P : 267VAC<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)Full Load Continue<br>Ta : 25°C | (1). 396.00V<br>(2). 396.00V<br>(3). 394.00V<br>(4). 392.00V        |
| 4  | Control IC           | U1 Rated : 27V (max)<br>-0.3V (min) | I/P : 267VAC<br>O/P : (1)Full Load<br>(2)Output Short<br>(3)O.L.P<br>(4)Low Line No Load Vo(min)<br>Ta : 25°C                                      | U1<br>(1). 17.20V<br>(2). 16.90V<br>(3). 17.30V<br>(4). 16.80V      |
| 5  | Clamp Diode          | D2 Rated : 1000V 1.0A               | I/P : 267VAC<br>O/P : (1)Dynamic Load Full/Min Load<br>(2)Full load continue<br>Ta : 25°C                                                          | (1). 480.00V<br>(2). 484.00V                                        |

## SAFETY & E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION            | TEST CONDITION                       | RESULT                       |
|----|----------------------|--------------------------|--------------------------------------|------------------------------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 4.000KVAC /min | I/P-O/P: 4.250KVAC /min<br>Ta : 25°C | I/P-O/P: 0.63mA<br>NO DAMAGE |
| 2  | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ   | I/P-O/P: 500VDC<br>Ta : 25°C /70%RH  | I/P-O/P: 9999MΩ<br>NO DAMAGE |

### E.M.C. TEST

| NO | TEST ITEM | SPECIFICATION          | TEST CONDITION                                     | RESULT |
|----|-----------|------------------------|----------------------------------------------------|--------|
| 1  | HARMONIC  | EN61000-3-2<br>CLASS A | I/P : 230VAC /50HZ<br>O/P : FULL LOAD<br>Ta : 25°C | PASS   |



# 10W Green Reliable Medical On Board Type MFM-10 series

|   |            |                                                |                                                               |                               |
|---|------------|------------------------------------------------|---------------------------------------------------------------|-------------------------------|
| 2 | CONDUCTION | EN55011<br>CLASS B                             | I/P : 230VAC /50HZ<br>O/P : FULL LOAD / 50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab |
| 3 | RADIATION  | EN55015<br>CLASS B                             | I/P : 230VAC /50HZ<br>O/P : FULL LOAD<br>Ta : 25°C            | PASS<br>Test by certified Lab |
| 4 | E.S.D      | EN61000-4-2<br>MEDICAL AIR: 8KV / Contact: 8KV | I/P : 230VAC /50HZ<br>O/P : FULL LOAD<br>Ta : 25°C            | CRITERIA A                    |
| 5 | E.F.T      | EN61000-4-4<br>MEDICAL INPUT: 2KV              | I/P : 230VAC /50HZ<br>O/P : FULL LOAD<br>Ta : 25°C            | CRITERIA A                    |
| 6 | SURGE      | IEC61000-4-5<br>MEDICAL L-N:1KV;L/N-PE: 2KV    | I/P : 230VAC /50HZ<br>O/P : FULL LOAD<br>Ta : 25°C            | CRITERIA A                    |

## RELIABILITY TEST

| NO                                                   | TEST ITEM              | SPECIFICATION                                                                                                                                             | TEST CONDITION                                         | RESULT                                         |                                                                   |                    |
|------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------|--------------------|
| 1                                                    | TEMPERATURE RISE TEST  | MODEL : MFM-10-24                                                                                                                                         |                                                        |                                                |                                                                   |                    |
|                                                      |                        | 1. ROOM AMBIENT BURN-IN : 1.0hrs                                                                                                                          |                                                        |                                                |                                                                   |                    |
|                                                      |                        | IP: 230VAC O/P: 100% LOAD TA= 21.1℃                                                                                                                       |                                                        |                                                |                                                                   |                    |
|                                                      |                        | 2. HIGH AMBIENT BURN-IN : 1.0hrs                                                                                                                          |                                                        |                                                |                                                                   |                    |
|                                                      |                        | IP: 230VAC O/P: 100% LOAD TA= 56.3℃                                                                                                                       |                                                        |                                                |                                                                   |                    |
|                                                      |                        |                                                                                                                                                           | NO. Position ROOM AMBIENT 21.1℃ HIGH AMBIENT Ta: 56.3℃ |                                                |                                                                   |                    |
|                                                      |                        | 1 C4                                                                                                                                                      | 45.4℃                                                  | 76.9℃                                          |                                                                   |                    |
|                                                      |                        | 2 C5                                                                                                                                                      | 50.0℃                                                  | 80.8℃                                          |                                                                   |                    |
|                                                      |                        | 3 C37                                                                                                                                                     | 47.5℃                                                  | 73.8℃                                          |                                                                   |                    |
|                                                      |                        | 4 R1                                                                                                                                                      | 51.5℃                                                  | 80.8℃                                          |                                                                   |                    |
|                                                      |                        | 5 U1                                                                                                                                                      | 76.4℃                                                  | 101.1℃                                         |                                                                   |                    |
|                                                      |                        | 6 T1                                                                                                                                                      | 60.8℃                                                  | 90.5℃                                          |                                                                   |                    |
| 2                                                    | OVER LOAD BURN-IN TEST | NO DAMAGE                                                                                                                                                 | I/P : 230VAC                                           | TEST : OK                                      |                                                                   |                    |
|                                                      |                        | 1 HOUR ( MIN )                                                                                                                                            | O/P : 133.00% LOAD                                     |                                                |                                                                   |                    |
|                                                      |                        |                                                                                                                                                           | Ta : 25℃                                               |                                                |                                                                   |                    |
|                                                      |                        | 3                                                                                                                                                         | LOW TEMPERATURE TURN ON TEST                           | NO DAMAGE                                      | I/P : 264VAC / 100VAC                                             | TEST : OK          |
|                                                      |                        | 1 HOUR ( MIN )                                                                                                                                            | O/P : FULL LOAD                                        |                                                |                                                                   |                    |
|                                                      |                        |                                                                                                                                                           | Ta : -35.0℃                                            |                                                |                                                                   |                    |
|                                                      |                        | 4                                                                                                                                                         | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 50℃ | I/P : 272VAC<br>O/P : FULL LOAD<br>Ta : 50℃<br>HUMIDITY= 95.0% RH | TEST : OK          |
|                                                      |                        | 5                                                                                                                                                         | TEMPERATURE COEFFICIENT                                | ±0.03% /(0℃~50℃)                               | I/P : 230VAC<br>O/P : FULL LOAD                                   | ±0.0032% /(0℃~50℃) |
|                                                      |                        | 6                                                                                                                                                         | STORAGE TEMPERATURE TEST                               | 1. Thermal shock Temperature : -45℃ ~ +100℃    |                                                                   | TEST : OK          |
|                                                      |                        |                                                                                                                                                           |                                                        | 2. Temperature change rate : 25℃ / MIN         |                                                                   |                    |
| 3. Dwell time low and high temperature : 30 MIN/EACH |                        |                                                                                                                                                           |                                                        |                                                |                                                                   |                    |
| 4. Total test cycle : 10 CYCLE                       |                        |                                                                                                                                                           |                                                        |                                                |                                                                   |                    |
| 5. Input/Output condition : STATIC                   |                        |                                                                                                                                                           |                                                        |                                                |                                                                   |                    |
| 7                                                    | THERMAL SHOCK TEST     | 1. Thermal shock Temperature : -35℃ ~ +55℃                                                                                                                |                                                        | TEST : OK                                      |                                                                   |                    |
|                                                      |                        | 2. Temperature change rate : 25℃ / MIN                                                                                                                    |                                                        |                                                |                                                                   |                    |
|                                                      |                        | 3. Dwell time low and high temperature : 30 MIN/EACH                                                                                                      |                                                        |                                                |                                                                   |                    |
|                                                      |                        | 4. Total test cycle : 16 CYCLE                                                                                                                            |                                                        |                                                |                                                                   |                    |
|                                                      |                        | 5. Input/Output condition :<br>230VAC Full Load AC ON/OFF test turn on 3sec ; turn off 1sec @ 15CYCLE<br>230VAC Full Load AC ON turn on continue @ 1CYCLE |                                                        |                                                |                                                                   |                    |
| 8                                                    | VIBRATION TEST         | 1 Carton & 1 Set                                                                                                                                          |                                                        | TEST : OK                                      |                                                                   |                    |
|                                                      |                        | (1) Waveform : Sine Wave                                                                                                                                  |                                                        |                                                |                                                                   |                    |
|                                                      |                        | (2) Frequency : 10~500Hz                                                                                                                                  |                                                        |                                                |                                                                   |                    |
|                                                      |                        | (4) Acceleration : 5G                                                                                                                                     |                                                        |                                                |                                                                   |                    |
|                                                      |                        | (5) Test Time : 60 min in each axis (X.Y.Z)                                                                                                               |                                                        |                                                |                                                                   |                    |
|                                                      |                        | (6) Ta : 25℃                                                                                                                                              |                                                        |                                                |                                                                   |                    |



# 10W Green Reliable Medical On Board Type MFM-10 series

|    |                              |                                                                                      |                 |           |           |      |              |
|----|------------------------------|--------------------------------------------------------------------------------------|-----------------|-----------|-----------|------|--------------|
| 9  | CAPACITOR LIFE CYCLE         | :SUPPOSE C101 IS THE MOST CRITICAL COMPONENT                                         |                 |           |           |      |              |
|    |                              | (1) I/P : 230VAC                                                                     | O/P : FULL LOAD | Ta= 25.0℃ | LIFE TIME | (1). | 484095.4 HRS |
|    |                              | (2) I/P : 230VAC                                                                     | O/P : FULL LOAD | Ta= 50.0℃ | LIFE TIME | (2). | 138052.3 HRS |
|    |                              | (3) I/P : 230VAC                                                                     | O/P : 75% LOAD  | Ta= 50.0℃ | LIFE TIME | (3). | 105759.4 HRS |
|    |                              | (4) I/P : 230VAC                                                                     | O/P : 50% LOAD  | Ta= 50.0℃ | LIFE TIME | (4). | 161622 HRS   |
| 10 | MTBF                         | Conducted by Parts Stress Analysis Prediction<br>1756.2Khrs min. MIL-HDBK-217F (25℃) |                 |           |           |      |              |
| 11 | DMTBF /Accelerated Life test | Demonstration Mean Time Between Failure (Expected Life): Above 30000HRS @ TA 50℃     |                 |           |           |      |              |

|             |        |        |          |
|-------------|--------|--------|----------|
| TEST RESULT | TESTER | REVIEW | APPROVAL |
| PASS        | LIUTT  |        | WANGDZ   |

2007/3/20 A50-S014