



# Test Report: IRM-10-24

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10W Single Output Encapsulated 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 TEST

| NO | TEST ITEM                | SPECIFICATION                                 | TEST CONDITION                                                                                                                                                                                                  | RESULT                                                         | VERDICT |
|----|--------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---------|
| 1  | RIPPLE & NOISE           | V1 : 200 mVp-p (Max )                         | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                    | V1 : 32 mVp-p (Max )                                           | P       |
| 2  | OUTPUT VOLTAGE TOLERANCE | V1 : -2.5 %~ +2.5 % (Max)                     | I/P : 85 VAC / 264 VAC<br>O/P : FULL/ MIN LOAD<br>Ta : 25°C                                                                                                                                                     | V1 : -0.025 %~ 0.025 %                                         | P       |
| 3  | LINE REGULATION          | V1 : -0.3 %~ +0.3 % (Max)                     | I/P : 100VAC ~ 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                          | V1 : 0 %~ 0 %                                                  | P       |
| 4  | LOAD REGULATION          | V1 : -0.5 %~ +0.5 % (Max)                     | I/P : 230 VAC<br>O/P : FULL ~MIN LOAD<br>Ta : 25°C                                                                                                                                                              | V1 : -0.025 %~ 0.025 %                                         | P       |
| 5  | SET UP TIME              | 230VAC : 600 ms (Max)<br>115VAC : 600 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 339 ms<br>115VAC/ 372 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/ 13.4 ms<br>115VAC/ 13.2 ms                             | P       |
| 7  | HOLD UP TIME             | 230VAC : 30 ms (TYP)<br>115VAC : 8 ms (TYP)   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 68.6 ms<br>115VAC/ 14.5 ms                             | P       |
| 8  | OVER/UNDERSHOOT TEST     | < ±5%                                         | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                   | TEST : <5 %                                                    | P       |
| 9  | DYNAMIC LOAD             | V1 : 2400 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) 146 mVp-p<br>(2) 78 mVp-p<br>(3) 65 mVp-p<br>(4) 268 mVp-p | P       |

## INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                            | TEST CONDITION                                                                                                                                                                                 | RESULT                                       | VERDICT |
|----|-----------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE   | 85VAC~264 VAC                            | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C<br>I/P :<br>LOW-LINE-3V= 82 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 ) | 58.7 V~264V<br><br>TEST : PASS               | P       |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~440 HZ<br>NO DAMAGE OSC            | I/P : 85 VAC ~ 264 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25°C                                                                                                                                     | TEST : OK                                    | P       |
| 3  | EFFICIENCY            | 82% (TYP)                                | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 84.6 %                                       | P       |
| 4  | INPUT CURRENT         | 230V/ 0.15 A (TYP)<br>115V/ 0.25 A (TYP) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                 | I = 0.102 A/ 230 VAC<br>I = 0.183 A/ 115 VAC | P       |
| 5  | INRUSH CURRENT        | 230V/ 40 A (TYP)<br>COLD START           | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | I = 35.3 A/ 230 VAC                          | P       |
| 6  | LEAKAGE CURRENT       | < 0.25 mA /240 VAC                       | I/P : 240 VAC<br>O/P : Min LOAD<br>Ta : 25°C                                                                                                                                                   | L-FG : 0.018 mA<br>N-FG : 0.018 mA           | P       |
| 7  | NO LOAD CONSUMPTION   | < 0.1 W                                  | I/P : 240VAC<br>O/P : NO LOAD<br>Ta : 25°C                                                                                                                                                     | < 0.0579 W                                   | P       |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECIFICATION                          | TEST CONDITION                                               | RESULT                                              | VERDICT |
|----|-------------------------|----------------------------------------|--------------------------------------------------------------|-----------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION    | 115 % ~ 190 %                          | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25°C | 146.6 %/ 230 VAC<br>136.2 %/ 115 VAC<br>Hiccup Mode | P       |
| 2  | OVER VOLTAGE PROTECTION | CH1 : 27.6 V ~ 32.4 V                  | O/P : MIN LOAD<br>Ta : 25°C                                  | 29.912 V<br>shut down clamping by zener diode       | P       |
| 3  | SHORT PROTECTION        | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P : 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                | NO DAMAGE<br>Hiccup Mode                            | P       |

## COMPONENT STRESS TEST

| NO | TEST ITEM                                            | SPECIFICATION            | TEST CONDITION                                                                                                                               | RESULT                                 | VERDICT |
|----|------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|---------|
| 1  | Power Transistor<br>DRAIN TO GND <b>Peak Voltage</b> | U1 Rated: 800 V 1.5 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°C                          | (1) 548 V<br>(2) 596 V<br>(3) 528 V    | P       |
| 2  | Diode Peak <b>Voltage</b>                            | D100 Rated: 2 A 300 V    | 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°C                           | (1) 176 V<br>(2) 175 V<br>(3) 156 V    | P       |
| 3  | Clamp Diode Peak Voltage                             | D 2 Rated : 800 V 2 A    | I/P : High-Line +3V = 267 V<br>O/P : (1) Dynamic Load<br>90%Duty/1KHz<br>(2)Full load continue<br>Ta : 25°C                                  | (1) 496 V<br>(2) 508 V                 | P       |
| 4  | Input Capacitor Voltage                              | C5 Rated: 27u/400V 105°C | 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°C | (1) 376 V<br>(2) 376 V<br>(3) 376 V    | P       |
| 5  | Control IC Voltage Test                              | U1 Rated : 27 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°C | (1) 19.1 V<br>(2) 17.2 V<br>(3) 18.7 V | P       |

## ■ SAFETY & E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION          | TEST CONDITION                       | RESULT                          | VERDICT |
|----|----------------------|------------------------|--------------------------------------|---------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 3 KVAC/min   | I/P-O/P : 3.6 KVAC/min<br>Ta : 25°C  | I/P-O/P : 0.978 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       |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                        | TEST CONDITION                                           | RESULT                        | VERDICT |
|----|---------------------------------------------|------------------------------------------------------|----------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS B                               | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55022<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                                   | EN55022<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>INDUSTRY<br>AIR : 8KV / Contact : 4KV | 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>INDUSTRY<br>INPUT : 2KV               | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>INDUSTRY<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 |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
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| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL :   IRM-10-24</div> <div>1. ROOM AMBIENT   BURN-IN : 2   HRS</div> <div>                  I/P :   230VAC   O/P :   FULL LOAD   Ta=25.6   °C</div> <div>2. HIGH AMBIENT   BURN-IN : 2 HRS</div> <div>                  I/P :   230VAC   O/P :   FULL LOAD   Ta= 47.8°C</div> <table><tr><td>NO</td><td>Position</td><td>ROOM AMBIENT<br/>Ta=   25.6°C</td><td>HIGH AMBIENT<br/>Ta= 47.8°C</td></tr><tr><td>1</td><td>BD1</td><td>54.1°C</td><td>73.7°C</td></tr><tr><td>2</td><td>C4</td><td>53.7°C</td><td>72.9°C</td></tr><tr><td>3</td><td>L1</td><td>56.7°C</td><td>76.2°C</td></tr><tr><td>4</td><td>C5</td><td>58.6°C</td><td>78.0°C</td></tr><tr><td>5</td><td>U1</td><td>69.8°C</td><td>89.6°C</td></tr><tr><td>6</td><td>T1</td><td>64.1°C</td><td>83.5°C</td></tr><tr><td>7</td><td>D2</td><td>65.7°C</td><td>85.6°C</td></tr><tr><td>8</td><td>C101</td><td>54.6°C</td><td>74.0°C</td></tr><tr><td>9</td><td>ZD41</td><td>56.1°C</td><td>75.3°C</td></tr><tr><td>10</td><td>D3</td><td>60.2°C</td><td>79.9°C</td></tr><tr><td>11</td><td>D100</td><td>67.0°C</td><td>86.2°C</td></tr><tr><td>12</td><td>C37</td><td>53.6°C</td><td>73.0°C</td></tr></table> |                                                                        |                         | NO      | Position | ROOM AMBIENT<br>Ta=   25.6°C | HIGH AMBIENT<br>Ta= 47.8°C | 1 | BD1 | 54.1°C | 73.7°C | 2 | C4 | 53.7°C | 72.9°C | 3 | L1 | 56.7°C | 76.2°C | 4 | C5 | 58.6°C | 78.0°C | 5 | U1 | 69.8°C | 89.6°C | 6 | T1 | 64.1°C | 83.5°C | 7 | D2 | 65.7°C | 85.6°C | 8 | C101 | 54.6°C | 74.0°C | 9 | ZD41 | 56.1°C | 75.3°C | 10 | D3 | 60.2°C | 79.9°C | 11 | D100 | 67.0°C | 86.2°C | 12 | C37 | 53.6°C | 73.0°C |  | P |
| NO | Position                                                          | ROOM AMBIENT<br>Ta=   25.6°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | HIGH AMBIENT<br>Ta= 47.8°C                                             |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 1  | BD1                                                               | 54.1°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 73.7°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 2  | C4                                                                | 53.7°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 72.9°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 3  | L1                                                                | 56.7°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 76.2°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 4  | C5                                                                | 58.6°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 78.0°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 5  | U1                                                                | 69.8°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 89.6°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 6  | T1                                                                | 64.1°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 83.5°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 7  | D2                                                                | 65.7°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 85.6°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 8  | C101                                                              | 54.6°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 74.0°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 9  | ZD41                                                              | 56.1°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 75.3°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 10 | D3                                                                | 60.2°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 79.9°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 11 | D100                                                              | 67.0°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 86.2°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 12 | C37                                                               | 53.6°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 73.0°C                                                                 |                         |         |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P :   230 VAC<br>O/P : 125 % LOAD<br>Ta : 25°C                       | 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   °C          | 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   °C<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | I/P :   272 VAC<br>O/P : FULL LOAD<br>Ta= 50   °C<br>HUMIDITY= 95 %R.H | TEST : OK               | P       |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ± 0.03 %/°C (0~50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P :   230 VAC<br>O/P : FULL LOAD                                     | ± 0.005   %/°C (0~50°C) | P       |          |                              |                            |   |     |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |    |        |        |   |      |        |        |   |      |        |        |    |    |        |        |    |      |        |        |    |     |        |        |  |   |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -40°C~ +85°C<br>2. Temperature change rate : 25°C / 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°C~ +70°C<br>2. Temperature change rate : 25°C / 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 : 5G<br>(5) Test Time : 60min in each axis (X.Y.Z)<br>(6) Ta : 25℃                                                                           | TEST : OK                                                                 | P |
| 9  | CAPACITOR<br>LIFE CYCLE     | IRM-10-24 SUPPOSE C 101 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) 385174.2 HRS<br>(2) 82674.3 HRS<br>(3) 141581.4 HRS<br>(4) 195483 HRS | P |
| 10 | MTBF                        | MIL-HDBK-217F NOTICE S2 PARTS COUNT<br>TOTAL FAILURE RATE : 1495.8 KHRS                                                                                                                                                                                                         |                                                                           | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 50℃                                                                                                                                                                                            |                                                                           | P |

| DATE      | SAMPLE                        | TEST RESULT | TESTER | APPROVAL |
|-----------|-------------------------------|-------------|--------|----------|
| 2013.5.31 | RD SAMPLE                     | PASS        | Shenym | Wangdz   |
| 2013.7.30 | PRODUCT SAMPLE<br>(Y1307D069) | PASS        | Shenym | Wangdz   |

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