

MODEL : HRP-300-36

## OUTPUT FUNCTION TEST

| NO | TEST ITEM                      | SPECIFICATION                                     | TEST CONDITION                                                     | RESULT                                              | VERDICT |
|----|--------------------------------|---------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------|---------|
| 1  | RIPPLE & NOISE                 | V1: 250 mVp-p (Max)                               | I/P: 230VAC<br>O/P: FULL LOAD<br>Ta: 25°C                          | V1 : 100 mVp-p (Max)                                | P       |
| 2  | OUTPUT VOLTAGE<br>ADJUST RANGE | CH1 : 28.8 V~ 39.6 V                              | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C      | 27.69 V~ 42.99 V/ 230 VAC<br>28 V~ 42.97 V/ 115 VAC | P       |
| 3  | OUTPUT VOLTAGE<br>TOLERANCE    | V1 : 1 %~ -1 % (Max)                              | I/P : 100 VAC / 264 VAC<br>O/P : FULL/ MIN LOAD<br>Ta : 25°C       | V1 : 0.16 %~ -0.16 %                                | P       |
| 4  | LINE REGULATION                | V1 : 0.2%~ -0.2 % (Max)                           | I/P : 100 VAC ~ 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C            | V1 : 0.01 %~ -0.01 %                                | P       |
| 5  | LOAD REGULATION                | V1 : 0.5 %~ -0.5 % (Max)                          | I/P : 230 VAC<br>O/P : FULL ~MIN LOAD<br>Ta : 25°C                 | V1 : 0.18 %~ -0.17 %                                | P       |
| 6  | SET UP TIME                    | 230VAC : 1000 ms (Max)<br>115 VAC : 2500 ms (Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C     | 230VAC/ 257.2 ms<br>115VAC/ 514.4 ms                | P       |
| 7  | RISE TIME                      | 230VAC : 50 ms (Max)<br>115VAC : 50 ms (Max)      | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C     | 230VAC/ 12.4 ms<br>115VAC/ 12.37 ms                 | P       |
| 8  | HOLD UP TIME                   | 230VAC : 16 ms (TYP)<br>115VAC : 16 ms (TYP)      | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C     | 230VAC/ 25.9 ms<br>115VAC/ 20.7 ms                  | P       |
| 9  | OVER/UNDERSHOOT<br>TEST        | < ±5%                                             | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                      | TEST : < ±5 %                                       | P       |
| 10 | DYNAMIC LOAD                   | V1 : 3600 mVp-p                                   | I/P : 230 VAC<br>O/P : FULL /Min LOAD<br>90%DUTY/1KHZ<br>Ta : 25°C | 1262 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                                                                                                 | 67.2 V~264V                                 | P       |
|    |                       |                                                   | I/P :<br>LOW-LINE-3V= 97 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 ) | TEST : OK                                   |         |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE OSC                      | I/P : 100 VAC ~ 264 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25°C                                                                                   | TEST : OK                                   | P       |
| 3  | POWER FACTOR          | 0.95 / 230 VAC(TYP)<br>0.99 / 115 VAC(TYP)        | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | PF= 0.987 / 230 VAC<br>PF= 1 / 115 VAC      | P       |
| 4  | EFFICIENCY            | 88% (TYP)                                         | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                 | 89 %                                        | P       |
| 5  | INPUT CURRENT         | 230V/ 2.5 A (TYP)<br>115V/ 4.5 A (TYP)            | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | I = 1.628 A/ 230 VAC<br>I = 3.32 A/ 115 VAC | P       |
| 6  | INRUSH CURRENT        | 230V/ 70 A (TYP)<br>115V/ 35 A(TYP)<br>COLD START | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | I = 60.05 A/ 230 VAC<br>I = 30 A/ 115 VAC   | P       |
| 7  | LEAKAGE CURRENT       | < 1.2 mA / 240 VAC                                | I/P : 264 VAC<br>O/P : Min LOAD<br>Ta : 25°C                                                                                                  | L-FG : 0.85 mA<br>N-FG : 0.5 mA             | P       |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM                   | SPECIFICATION                                                                                                        | TEST CONDITION                                                | RESULT                                                                                                               | VERDICT |
|----|-----------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION        | 105 %~ 135 %                                                                                                         | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25°C  | 116%/ 230 VAC<br>116%/ 115 VAC<br>Constant current limiting, recovers automatically after fault condition is removed | P       |
| 2  | OVER VOLTAGE PROTECTION     | CH1 : 41.4V~ 48.6V                                                                                                   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 44.5 V/ 230 VAC<br>44.5 V/ 115 VAC<br>Shut down Re- power ON                                                         | P       |
| 3  | OVER TEMPERATURE PROTECTION | SPEC :<br>TSW1 : 90 ± 5°C detect on heatsink of power transistor<br>TSW2 : 95 ± 5°C detect on O/P CHOCK<br>NO DAMAGE | I/P : 230 VAC<br>O/P : FULL LOAD                              | O.T.P. Active<br>Shut down o/p voltage, recovers automatically after temperature goes down                           | P       |
| 4  | 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>Constant current limiting, recovers automatically after fault condition is removed                      | P       |

## CONTROL FUNCTION TEST

| NO | TEST ITEM               | SPECIFICATION                                       | TEST CONDITION                               | RESULT                                      | VERDICT |
|----|-------------------------|-----------------------------------------------------|----------------------------------------------|---------------------------------------------|---------|
| 1  | DC OK SIGNAL            | PSU turn on : 3.3 ~ 5.6V ;<br>PSU turn off : 0 ~ 1V | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃ | PSU turn on : 5.178 V<br>PSU turn off : 0 V | P       |
| 2  | REMOTE SENSE            | >0.5V                                               | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃ | > 0.3V                                      | P       |
| 3  | FAN ON/OFF control test | ----                                                | I/P : 230 VAC<br>O/P : TESTING<br>Ta : 25℃   | > 31 %LOAD FAN ON<br>< 30 %LOAD FAN OFF     | P       |

## ENVIRONMENT TEST

| NO | TEST ITEM                                                         | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TEST CONDITION                                                     | RESULT                      | VERDICT |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
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| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL : HRP-300-24</div> <div>1. ROOM AMBIENT BURN-IN : 1 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta= 31.8 °C</div> <div>2. HIGH AMBIENT BURN-IN : 5.5 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta= 52.9 °C</div> <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT<br/>Ta= 31.8 °C</th><th>HIGH AMBIENT<br/>Ta= 52.9 °C</th></tr><tr><td>1</td><td>U1</td><td>FAN4801NY</td><td>54.1°C</td><td>76.8°C</td></tr><tr><td>2</td><td>C5</td><td>100u/400V 105°C 18*25 KMG</td><td>38.8°C</td><td>62.0°C</td></tr><tr><td>3</td><td>Q1</td><td>IRFP460A 20A/500V</td><td>43.3°C</td><td>65.8°C</td></tr><tr><td>4</td><td>D1</td><td>BYC8-600 8A/600V</td><td>42.1°C</td><td>64.3°C</td></tr><tr><td>5</td><td>L3</td><td>TR838</td><td>40.1°C</td><td>63.7°C</td></tr><tr><td>6</td><td>BD1</td><td>10A/800V SILICON US10KB80R</td><td>41.9°C</td><td>63.7°C</td></tr><tr><td>7</td><td>Q101</td><td>FME-220B 20A/150V</td><td>51.6°C</td><td>74.0°C</td></tr><tr><td>8</td><td>Q105</td><td>FME-220B 20A/150V</td><td>46.7°C</td><td>67.4°C</td></tr><tr><td>9</td><td>T1 COIL</td><td>TF1871 130°C</td><td>79.8°C</td><td>103.9°C</td></tr><tr><td>10</td><td>L100</td><td>TR844 155°C</td><td>50.1°C</td><td>74.2°C</td></tr><tr><td>11</td><td>C106</td><td>1000u/35V UL10Kh 12.5*25 KY</td><td>34.1°C</td><td>57.0°C</td></tr><tr><td>12</td><td>TSW1</td><td>ST-22 90°C</td><td>44.2°C</td><td>66.4°C</td></tr><tr><td>13</td><td>TSW2</td><td>ST-22 95°C</td><td>54.3°C</td><td>76.4°C</td></tr><tr><td>14</td><td>D22</td><td>SBYV26C 1A/600V</td><td>56.9°C</td><td>80.9°C</td></tr></table> |                                                                    |                             | NO      | Position | P/N | ROOM AMBIENT<br>Ta= 31.8 °C | HIGH AMBIENT<br>Ta= 52.9 °C | 1 | U1 | FAN4801NY | 54.1°C | 76.8°C | 2 | C5 | 100u/400V 105°C 18*25 KMG | 38.8°C | 62.0°C | 3 | Q1 | IRFP460A 20A/500V | 43.3°C | 65.8°C | 4 | D1 | BYC8-600 8A/600V | 42.1°C | 64.3°C | 5 | L3 | TR838 | 40.1°C | 63.7°C | 6 | BD1 | 10A/800V SILICON US10KB80R | 41.9°C | 63.7°C | 7 | Q101 | FME-220B 20A/150V | 51.6°C | 74.0°C | 8 | Q105 | FME-220B 20A/150V | 46.7°C | 67.4°C | 9 | T1 COIL | TF1871 130°C | 79.8°C | 103.9°C | 10 | L100 | TR844 155°C | 50.1°C | 74.2°C | 11 | C106 | 1000u/35V UL10Kh 12.5*25 KY | 34.1°C | 57.0°C | 12 | TSW1 | ST-22 90°C | 44.2°C | 66.4°C | 13 | TSW2 | ST-22 95°C | 54.3°C | 76.4°C | 14 | D22 | SBYV26C 1A/600V | 56.9°C | 80.9°C | P |
| NO | Position                                                          | P/N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ROOM AMBIENT<br>Ta= 31.8 °C                                        | HIGH AMBIENT<br>Ta= 52.9 °C |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 1  | U1                                                                | FAN4801NY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 54.1°C                                                             | 76.8°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 2  | C5                                                                | 100u/400V 105°C 18*25 KMG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 38.8°C                                                             | 62.0°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 3  | Q1                                                                | IRFP460A 20A/500V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 43.3°C                                                             | 65.8°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 4  | D1                                                                | BYC8-600 8A/600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 42.1°C                                                             | 64.3°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 5  | L3                                                                | TR838                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 40.1°C                                                             | 63.7°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 6  | BD1                                                               | 10A/800V SILICON US10KB80R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 41.9°C                                                             | 63.7°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 7  | Q101                                                              | FME-220B 20A/150V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 51.6°C                                                             | 74.0°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 8  | Q105                                                              | FME-220B 20A/150V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 46.7°C                                                             | 67.4°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 9  | T1 COIL                                                           | TF1871 130°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 79.8°C                                                             | 103.9°C                     |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 10 | L100                                                              | TR844 155°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50.1°C                                                             | 74.2°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 11 | C106                                                              | 1000u/35V UL10Kh 12.5*25 KY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 34.1°C                                                             | 57.0°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 12 | TSW1                                                              | ST-22 90°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 44.2°C                                                             | 66.4°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 13 | TSW2                                                              | ST-22 95°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 54.3°C                                                             | 76.4°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 14 | D22                                                               | SBYV26C 1A/600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 56.9°C                                                             | 80.9°C                      |         |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P : 230 VAC<br>O/P : 111 % LOAD<br>Ta : 25°C                     | TEST : OK                   | P       |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P : 230 VAC<br>O/P : 100 % LOAD<br>Ta= -40 °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 %(0~50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | I/P : 230 VAC<br>O/P : FULL LOAD                                   | ± 0.017 %(0~50°C)           | P       |          |     |                             |                             |   |    |           |        |        |   |    |                           |        |        |   |    |                   |        |        |   |    |                  |        |        |   |    |       |        |        |   |     |                            |        |        |   |      |                   |        |        |   |      |                   |        |        |   |         |              |        |         |    |      |             |        |        |    |      |                             |        |        |    |      |            |        |        |    |      |            |        |        |    |     |                 |        |        |   |



|   |                |                                                                                                                                                                                                        |           |   |
|---|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|
| 6 | VIBRATION TEST | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 10min/sweep cycle<br>(4) Acceleration : 5G<br>(5) Test Time : 1 hour in each axis (X.Y.Z)<br>(6) Ta : 25℃ | TEST : OK | P |
|---|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|

## SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION                                                            | TEST CONDITION                                                                        | RESULT                                                                 | VERDICT |
|----|----------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 3 KVAC/min<br>I/P-FG : 2 KVAC/min<br>O/P-FG : 0.5 KVAC/min     | I/P-O/P : 3.6 KVAC/min<br>I/P-FG : 2.4 KVAC/min<br>O/P-FG : 0.6 KVAC/min<br>Ta : 25°C | I/P-O/P : 6.38 mA<br>I/P-FG : 5.26 mA<br>O/P-FG : 4.51 mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ<br>I/P-FG : 500VDC>100MΩ<br>O/P-FG : 500VDC>100MΩ | I/P-O/P : 500 VDC<br>I/P-FG : 500 VDC<br>O/P-FG : 500 VDC<br>Ta : 25°C / 70%RH        | I/P-O/P : 25.3 GΩ<br>I/P-FG : 17.9 GΩ<br>O/P-FG : 30 GΩ<br>NO DAMAGE   | P       |
| 3  | GROUNDING CONTINUITY | FG(PE) TO CHASSIS<br>OR TRACE < 100 mΩ                                   | 40 A / 2min<br>Ta : 25°C / 70%RH                                                      | 2 mΩ                                                                   | P       |
| 4  | APPROVAL             | TUV : Certificate NO : R 50156798<br>UL : File NO : E183223              |                                                                                       |                                                                        | P       |

## E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                         | TEST CONDITION                                           | RESULT                        | VERDICT |
|----|---------------------------------------------|-------------------------------------------------------|----------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2,-3<br>CLASS A                             | 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 : 2KV<br>L,N-PE : 4KV | 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 |                                                       |                                                          |                               |         |

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

| NO | TEST ITEM               | SPECIFICATION                                                                                                                                                                                                                                                                                                         | TEST CONDITION | RESULT | VERDICT |
|----|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------|---------|
| 1  | CAPACITOR<br>LIFE CYCLE | HRP-300-24:SUPPOSE C106 IS THE MOST CRITICAL COMPONENT<br>I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME= 1994965 HRS<br>I/P : 230VAC O/P : FULL LOAD Ta= 50 °C LIFE TIME= 298605 HRS<br>I/P : 230VAC O/P : 75% LOAD Ta= 50 °C LIFE TIME= 360111 HRS<br>I/P : 230VAC O/P : 50% LOAD Ta= 50 °C LIFE TIME= 413658 HRS |                |        | P       |
| 2  | MTBF                    | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE : 176K HRS                                                                                                                                                                                                                                                   |                |        | P       |

## COMPONENT STRESS TEST

| NO | TEST ITEM                                              | SPECIFICATION                                                              | TEST CONDITION                                                                                                                            | RESULT                                               | VERDICT |
|----|--------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------|
| 1  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q4 Rated<br>2SK4106 : 12A/500V                                             | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>Ta : 25°C                                                | (1) 468 V<br>(2) 416 V                               | P       |
| 2  | Diode Peak Voltage                                     | Q101 Rated<br>FMX-12SL : 10A/200V<br><br>Q104 Rated<br>FMX-12SL : 10A/200V | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2)Output Short<br>Ta : 25°C                                                 | (1) 164 V<br>(2) 182 V<br><br>(1) 184 V<br>(2) 182 V | P       |
| 3  | Input Capacitor Voltage                                | C5 Rated<br>100u/400V 105°C<br>PEAK 450V                                   | 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 Change<br>Ta : 25°C | (1) 426 V<br>(2) 404 V<br>(3) 420 V                  | P       |
| 4  | Control IC Voltage Test                                | U1 Rated<br>FAN4801NY : 9.3V~ 30V                                          | 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 Change<br>Ta : 25°C | (1) 17.13 V<br>(2) 13.3 V<br>(3) 17 V                | P       |
| 5  | P.F.C Transistor<br>( D to S) or (C to E) Peak Voltage | Q1 Rated<br>IRFP460A : 20A/500V                                            | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>Ta : 25°C                                                | (1) 500 V<br>(2) 386 V                               | P       |

| DATE      | SAMPLE                     | TEST RESULT | TESTER     | APPROVAL      |
|-----------|----------------------------|-------------|------------|---------------|
| 2009/4/29 | RD SAMPLE                  | PASS        | SANFORD SU | VINCENT TSENG |
| 2009/6/12 | PRODUCT SAMPLE<br>W0905B34 | PASS        | SANFORD SU | VINCENT TSENG |

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