



# Test Report: RSP-200-24

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200W Single Output With PFC Function

## ■ DESIGN VERIFY TEST

Output Function Test

Input Function Test

Protection 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 : 150 mVp-p (Max )                           | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                    | V1 : 64 mVp-p (Max )                                             | P       |
| 2  | OUTPUT VOLTAGE<br>ADJUST RANGE | CH1 : 20V ~ 26.4V                               | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C                                                                                                                                                   | 18.725 V ~ 27.680 V/ 230 VAC<br>18.729 V ~ 27.681 V/ 115 VAC     | P       |
| 3  | OUTPUT VOLTAGE<br>TOLERANCE    | V1 : 1 %~ -1% (Max)                             | I/P : 100VAC / 264 VAC<br>O/P : FULL/ MIN LOAD<br>Ta : 25°C                                                                                                                                                     | V1 : 0.03 %~ 0.03 %                                              | 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 %~ 0 %                                                    | 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 : 0.03 %~ -0.03 %                                             | P       |
| 6  | SET UP TIME                    | 230VAC : 1500 ms (Max)<br>115VAC : 3000 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 436 ms<br>115VAC/ 872 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/ 10 ms<br>115VAC/ 11 ms                                   | P       |
| 8  | HOLD UP TIME                   | 230VAC : 8 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/ 20 ms<br>115VAC/ 15 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 : 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) 624 mVp-p<br>(2) 676 mVp-p<br>(3) 688 mVp-p<br>(4) 660 mVp-p | P       |

## INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                                     | TEST CONDITION                                                                                                                                | RESULT                                     | VERDICT |
|----|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE   | 100VAC~264 VAC                                    | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                 | 69 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>0.98 / 115 VAC(TYP)        | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | PF= 0.974 / 230 VAC<br>PF= 0.996 / 115 VAC | P       |
|    |                       |                                                   |                                                                                                                                               |                                            |         |
| 4  | EFFICIENCY            | 89.5% (TYP)                                       | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                 | 90 %                                       | P       |
| 5  | INPUT CURRENT         | 230V/ 1.3 A (TYP)<br>115V/ 2.5 A (TYP)            | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | I = 1 A/ 230 VAC<br>I = 2 A/ 115 VAC       | P       |
|    |                       |                                                   |                                                                                                                                               |                                            |         |
| 6  | INRUSH CURRENT        | 230V/ 40 A (TYP)<br>115V/ 20 A(TYP)<br>COLD START | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                | I = 28 A/ 230 VAC<br>I = 12 A/ 115 VAC     | P       |
|    |                       |                                                   |                                                                                                                                               |                                            |         |
| 7  | LEAKAGE CURRENT       | < 1 mA / 240 VAC                                  | I/P : 264 VAC<br>O/P : Min LOAD<br>Ta : 25°C                                                                                                  | L-FG : 0.8 mA<br>N-FG : 0.8 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  | 119 %/ 230 VAC<br>119%/ 115 VAC<br>Hiccup Mode                                                    | P       |
| 2  | OVER VOLTAGE PROTECTION     | CH1 : 27.6V ~ 32.4V                          | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C | 30.266 V/ 230 VAC<br>30.243 V/ 115 VAC<br>Shut down Re- power ON                                  | P       |
| 3  | OVER TEMPERATURE PROTECTION | SPEC :<br>TSW1 : 100±5°C O.T.P.<br>NO DAMAGE | I/P : 230 VAC<br>O/P : FULL LOAD                              | O.T.P. Active<br>Shut down o/p voltage , recovers<br>automatically after temperature<br>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>Hiccup Mode                                                                          | 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 | Q3 Rated :<br>STP14NM50N 12A/500V                                                | 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) 410 V<br>(2) 422 V<br>(3) 398 V                                         | P       |
| 2  | Diode Peak Voltage                                     | Q102 Rated :<br>STPS20120CT 20A/120V<br><br>Q104 Rated :<br>STPS20120CT 20A/120V | 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><br>(1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25°C | (1) 116 V<br>(2) 104 V<br>(3) 112 V<br><br>(1) 108 V<br>(2) 95.6<br>(3) 104 | P       |
| 4  | Input Capacitor Voltage                                | C 5 Rated :<br>180u/400V 105°C 18*40 KMG<br>(SURGE VOLTAGE 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<br>Change<br>Ta : 25°C                                               | (1) 402 V<br>(2) 488 V<br>(3) 412 V                                         | P       |
| 5  | Control IC Voltage Test                                | U 1 Rated :<br>PWM FAN4800AUN<br>12V~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<br>Change<br>Ta : 25°C                                               | (1) 16.5 V<br>(2) 16.4 V<br>(3) 16.8 V                                      | P       |
| 6  | Power Transistor<br>( D to S) or (C to E) Peak Voltage | Q 2 Rated :<br>STP19NM50N 13A/500V                                               | 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) 414 V<br>(2) 406 V<br>(3) 398 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<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 : 5.49 mA<br>I/P-FG : 5.98 mA<br>O/P-FG : 9.25 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 : 30 GΩ<br>I/P-FG : 30 GΩ<br>O/P-FG : 28.6 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                                                      | 9 mΩ                                                                   | P       |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                               | TEST CONDITION                                           | RESULT                        | VERDICT |
|----|---------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS A<br>CLASS D                           | 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>LIGHT 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>LIGHT INDUSTRY<br>INPUT : 1KV                | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>LIGHT INDUSTRY<br>L-N : 1KV<br>L,N-PE : 2KV | 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 : RSP-200-24</div> <div>1. ROOM AMBIENT    BURN-IN : 2 HRS</div> <div>    I/P : 230VAC    O/P : FULL LOAD    Ta=31.3 ℃</div> <div>2. HIGH AMBIENT    BURN-IN : 2 HRS</div> <div>    I/P : 230VAC    O/P : FULL LOAD    Ta=55.5 ℃</div> <table><tr><th>NO</th><th>Position</th><th>PART NUMBER</th><th>ROOM AMBIENT<br/>Ta= 31.3 ℃</th><th>HIGH AMBIENT<br/>Ta=55.5 ℃</th></tr><tr><td>1</td><td>LF1</td><td>TR1021</td><td>58.6℃</td><td>79.7℃</td></tr><tr><td>2</td><td>C10</td><td>105/450V 10% P=15 B32672P4</td><td>65.8℃</td><td>86.7℃</td></tr><tr><td>3</td><td>BD1</td><td>10A/800V GLASS KBJ1008G</td><td>62.9℃</td><td>83.4℃</td></tr><tr><td>4</td><td>D1</td><td>STTH8S06D 8A/600V</td><td>68.3℃</td><td>89.3℃</td></tr><tr><td>5</td><td>Q2</td><td>STP19NM50N 13A/500V</td><td>67.7℃</td><td>89.2℃</td></tr><tr><td>6</td><td>Q3</td><td>STP14NM50N 12A/500V</td><td>64.0℃</td><td>84.7℃</td></tr><tr><td>7</td><td>C5</td><td>180u/400V 105℃ 18*40 KMG</td><td>64.0℃</td><td>81.3℃</td></tr><tr><td>8</td><td>L1</td><td>TR1022</td><td>85.5℃</td><td>106.3℃</td></tr><tr><td>9</td><td>U1</td><td>FAN4800AUN</td><td>63.1℃</td><td>84.0℃</td></tr><tr><td>10</td><td>T2</td><td>TR1048</td><td>60.9℃</td><td>78.0℃</td></tr><tr><td>11</td><td>C18</td><td>47u/50V L5Kh 6.3*11 YXF</td><td>79.5℃</td><td>101.2℃</td></tr><tr><td>12</td><td>T1 COIL</td><td>TF2438</td><td>93.8℃</td><td>113.9℃</td></tr><tr><td>13</td><td>TSW1</td><td>100℃</td><td>66.6℃</td><td>88.1℃</td></tr><tr><td>14</td><td>RTH2</td><td>5KΩ 5Φ TDC05C20J 5%</td><td>74.8℃</td><td>95.7℃</td></tr><tr><td>15</td><td>Q101</td><td>STPS20120CT 20A/120V</td><td>79.0℃</td><td>99.3℃</td></tr><tr><td>16</td><td>Q104</td><td>STPS20120CT 20A/120V</td><td>69.2℃</td><td>91.3℃</td></tr><tr><td>17</td><td>L100</td><td>TR1064</td><td>80.8℃</td><td>102.5℃</td></tr><tr><td>18</td><td>C105</td><td>1000u/35V UL10Kh 12.5*20 ZLH</td><td>60.9℃</td><td>81.9℃</td></tr></table> |                                                                   |                           | NO      | Position | PART NUMBER | ROOM AMBIENT<br>Ta= 31.3 ℃ | HIGH AMBIENT<br>Ta=55.5 ℃ | 1 | LF1 | TR1021 | 58.6℃ | 79.7℃ | 2 | C10 | 105/450V 10% P=15 B32672P4 | 65.8℃ | 86.7℃ | 3 | BD1 | 10A/800V GLASS KBJ1008G | 62.9℃ | 83.4℃ | 4 | D1 | STTH8S06D 8A/600V | 68.3℃ | 89.3℃ | 5 | Q2 | STP19NM50N 13A/500V | 67.7℃ | 89.2℃ | 6 | Q3 | STP14NM50N 12A/500V | 64.0℃ | 84.7℃ | 7 | C5 | 180u/400V 105℃ 18*40 KMG | 64.0℃ | 81.3℃ | 8 | L1 | TR1022 | 85.5℃ | 106.3℃ | 9 | U1 | FAN4800AUN | 63.1℃ | 84.0℃ | 10 | T2 | TR1048 | 60.9℃ | 78.0℃ | 11 | C18 | 47u/50V L5Kh 6.3*11 YXF | 79.5℃ | 101.2℃ | 12 | T1 COIL | TF2438 | 93.8℃ | 113.9℃ | 13 | TSW1 | 100℃ | 66.6℃ | 88.1℃ | 14 | RTH2 | 5KΩ 5Φ TDC05C20J 5% | 74.8℃ | 95.7℃ | 15 | Q101 | STPS20120CT 20A/120V | 79.0℃ | 99.3℃ | 16 | Q104 | STPS20120CT 20A/120V | 69.2℃ | 91.3℃ | 17 | L100 | TR1064 | 80.8℃ | 102.5℃ | 18 | C105 | 1000u/35V UL10Kh 12.5*20 ZLH | 60.9℃ | 81.9℃ |  | P |
| NO | Position                                                          | PART NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ROOM AMBIENT<br>Ta= 31.3 ℃                                        | HIGH AMBIENT<br>Ta=55.5 ℃ |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 1  | LF1                                                               | TR1021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 58.6℃                                                             | 79.7℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 2  | C10                                                               | 105/450V 10% P=15 B32672P4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 65.8℃                                                             | 86.7℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 3  | BD1                                                               | 10A/800V GLASS KBJ1008G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 62.9℃                                                             | 83.4℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 4  | D1                                                                | STTH8S06D 8A/600V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 68.3℃                                                             | 89.3℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 5  | Q2                                                                | STP19NM50N 13A/500V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 67.7℃                                                             | 89.2℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 6  | Q3                                                                | STP14NM50N 12A/500V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 64.0℃                                                             | 84.7℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 7  | C5                                                                | 180u/400V 105℃ 18*40 KMG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 64.0℃                                                             | 81.3℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 8  | L1                                                                | TR1022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 85.5℃                                                             | 106.3℃                    |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 9  | U1                                                                | FAN4800AUN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 63.1℃                                                             | 84.0℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 10 | T2                                                                | TR1048                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 60.9℃                                                             | 78.0℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 11 | C18                                                               | 47u/50V L5Kh 6.3*11 YXF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 79.5℃                                                             | 101.2℃                    |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 12 | T1 COIL                                                           | TF2438                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 93.8℃                                                             | 113.9℃                    |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 13 | TSW1                                                              | 100℃                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 66.6℃                                                             | 88.1℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 14 | RTH2                                                              | 5KΩ 5Φ TDC05C20J 5%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 74.8℃                                                             | 95.7℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 15 | Q101                                                              | STPS20120CT 20A/120V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 79.0℃                                                             | 99.3℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 16 | Q104                                                              | STPS20120CT 20A/120V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 69.2℃                                                             | 91.3℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 17 | L100                                                              | TR1064                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 80.8℃                                                             | 102.5℃                    |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 18 | C105                                                              | 1000u/35V UL10Kh 12.5*20 ZLH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 60.9℃                                                             | 81.9℃                     |         |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I/P : 230 VAC<br>O/P : 119 % LOAD<br>Ta : 25℃                     | TEST : OK                 | P       |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | I/P : 264VAC/100VAC<br>O/P : 100 % LOAD<br>Ta= -35 ℃              | 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 45 ℃<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | I/P : 272 VAC<br>O/P : FULL LOAD<br>Ta= 45 ℃<br>HUMIDITY= 95 %R.H | TEST : OK                 | P       |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ±0.03 %/℃(0~50℃)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | I/P : 230 VAC<br>O/P : FULL LOAD                                  | ±0 %/℃(0~50℃)             | P       |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -45℃~ +90℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 5 CYCLE<br>5. Input/Output condition : STATIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                   | OK                        | P       |          |             |                            |                           |   |     |        |       |       |   |     |                            |       |       |   |     |                         |       |       |   |    |                   |       |       |   |    |                     |       |       |   |    |                     |       |       |   |    |                          |       |       |   |    |        |       |        |   |    |            |       |       |    |    |        |       |       |    |     |                         |       |        |    |         |        |       |        |    |      |      |       |       |    |      |                     |       |       |    |      |                      |       |       |    |      |                      |       |       |    |      |        |       |        |    |      |                              |       |       |  |   |

|    |                             |                                                                                                                                                                                                                                                                                     |                                                                  |   |
|----|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---|
| 7  | THERMAL SHOCK TEST          | 1. Thermal shock Temperature : -35℃~ +50℃<br>2. Temperature change rate : 25℃ / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST<br>turn on 58sec ; turn off 2sec       | OK                                                               | P |
| 8  | VIBRATION TEST              | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 12min/sweep cycle<br>(4) Acceleration : 2G<br>(5) Test Time : 60min in each axis (X.Y.Z)<br>(6) Ta : 25℃                                                                               | TEST : OK                                                        | P |
| 9  | CAPACITOR LIFE CYCLE        | RSP-200-24:SUPPOSE C105 IS THE MOST CRITICAL COMPONENT<br>(1) I/P : 230VAC O/P : FULL LOAD Ta= 25 °C LIFE TIME<br>(2) I/P : 230VAC O/P : FULL LOAD Ta=45 °C LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 45 °C LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 45 °C LIFE TIME | (1) 405511HRS<br>(2) 122277HRS<br>(3) 165852HRS<br>(4) 217260HRS | P |
| 10 | MTBF                        | MIL-HDBK-217F NOTICE S2 PARTS COUNT<br>TOTAL FAILURE RATE : 224.5 KHRS                                                                                                                                                                                                              |                                                                  | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 45℃                                                                                                                                                                                                |                                                                  | P |

| DATE       | SAMPLE         | TEST RESULT | TESTER     | APPROVAL      |
|------------|----------------|-------------|------------|---------------|
| 2012/8/30  | RD SAMPLE      | PASS        | SANFORD SU | VINCENT TSENG |
| 2012/10/17 | PRODUCT SAMPLE | PASS        | SANFORD SU | VINCENT TSENG |

2009/08/04 A50-F023