



# Test Report: EPS-65-7.5

---

65W Single Output Switching Power Supply

## ■ 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 : 100 mVp-p (Max )                           | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                    | V1 : 23 mVp-p (Max )                                             | P       |
| 2  | OUTPUT VOLTAGE<br>ADJUST RANGE | CH1 : 7.13 V ~ 8.25 V                           | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25°C                                                                                                                                                   | 6.68 V ~ 9.01 V/ 230 VAC<br>6.67 V ~ 9.01 V/ 115 VAC             | P       |
| 3  | OUTPUT VOLTAGE<br>TOLERANCE    | V1 : -2 % ~ +2 % (Max)                          | I/P : 85 VAC / 264 VAC<br>O/P : FULL / MIN LOAD<br>Ta : 25°C                                                                                                                                                    | V1 : -0.02 % ~ 0 %                                               | P       |
| 4  | LINE REGULATION                | V1 : -0.5 % ~ +0.5 % (Max)                      | I/P : 100VAC ~ 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                          | V1 : 0 % ~ 0 %                                                   | P       |
| 5  | LOAD REGULATION                | V1 : -1 % ~ +1 % (Max)                          | I/P : 230 VAC<br>O/P : FULL ~ MIN LOAD<br>Ta : 25°C                                                                                                                                                             | V1 : 0 % ~ 0 %                                                   | P       |
| 6  | SET UP TIME                    | 230VAC : 1000 ms (Max)<br>115VAC : 2000 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 594 ms<br>115VAC/ 793 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/ 5.2 ms<br>115VAC/ 4.7 ms                                 | P       |
| 8  | HOLD UP TIME                   | 230VAC : 50 ms (TYP)<br>115VAC : 12 ms (TYP)    | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                  | 230VAC/ 67.5 ms<br>115VAC/ 12.5 ms                               | P       |
| 9  | OVER/UNDERSHOOT<br>TEST        | < ±5%                                           | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                                                                                                                   | TEST : 3.4 %                                                     | P       |
| 10 | DYNAMIC LOAD                   | V1 : 1500 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) 820 mVp-p<br>(2) 808 mVp-p<br>(3) 804 mVp-p<br>(4) 916 mVp-p | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                        | TEST CONDITION                                                                                                                                | RESULT                                     | VERDICT |
|----|-----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE   | 85VAC~264 VAC                        | I/P : TESTING<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                  | 63 V~264V                                  | P       |
|    |                       |                                      | I/P :<br>LOW-LINE-3V= 82 V<br>HIGH-LINE+15%=300 V<br>O/P : FULL/MIN LOAD<br>ON : 30 Sec . OFF : 30 Sec 10MIN<br>( AC POWER ON/OFF NO DAMAGE ) | TEST : OK                                  |         |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE OSC         | I/P : 85 VAC ~ 264 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25℃                                                                                     | TEST : OK                                  | P       |
| 3  | EFFICIENCY            | 84 % (TYP)                           | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                  | 84.5 %                                     | P       |
| 4  | INPUT CURRENT         | 230V/ 1 A (TYP)<br>115V/ 1.8 A (TYP) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                 | I = 0.69 A/ 230 VAC<br>I = 1.09 A/ 115 VAC | P       |
| 5  | INRUSH CURRENT        | 230V/ 60 A (TYP)<br>COLD START       | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                  | I = 38.6 A/ 230 VAC                        | P       |
| 6  | LEAKAGE CURRENT       | < 2 mA / 240 VAC                     | I/P : 264 VAC<br>O/P : Min LOAD<br>Ta : 25℃                                                                                                   | L-FG : 0.74 mA<br>N-FG : 0.71 mA           | P       |
| 7  | NO LOAD CONSUMPTION   | < 0.3 W                              | I/P : 240VAC<br>O/P : NO LOAD<br>Ta : 25℃                                                                                                     | < 0.285 W                                  | P       |

### PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECIFICATION                          | TEST CONDITION                                               | RESULT                                                       | VERDICT |
|----|-------------------------|----------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION    | 115 % ~ 160 %                          | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25℃  | 138.7 %/ 230 VAC<br>132.3 %/ 115 VAC<br>Hiccup Mode          | P       |
| 2  | OVER VOLTAGE PROTECTION | CH1 : 8.63 V ~10.1 V                   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25℃ | 9.45 V/ 230 VAC<br>9.47 V/ 115 VAC<br>Shut down Re- power ON | P       |
| 3  | SHORT PROTECTION        | SHORT EVERY OUTPUT<br>1 HOUR NO DAMAGE | I/P : 264 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                 | 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 | Q 1    Rated :    650    V    12    A    | I/P : High-Line +3V = 267 V<br>O/P :    (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25℃                          | (1)        596        V<br>(2)        520        V<br>(3)        544        V    | P       |
| 2  | Diode Peak Voltage                                     | Q101    Rated :    75    V    80    A    | I/P : High-Line +3V = 267 V<br>O/P :    (1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25℃                           | (1)        41.6        V<br>(2)        39.2        V<br>(3)        36.4        V | P       |
| 3  | Clamp Diode Peak Voltage                               | D 1        Rated :    600    V    3    A | I/P : High-Line +3V = 267 V<br>O/P :    (1) Dynamic Load<br>90%Duty/1KHz<br>(2)Full load continue<br>Ta : 25℃                                  | (1)        538        V<br>(2)        512        V                               | P       |
| 4  | Input    Capacitor Voltage                             | C5        Rated : 100 u /400V/105℃       | 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℃ | (1)        394        V<br>(2)        392        V<br>(3)        392        V    | P       |
| 5  | Control IC Voltage Test                                | U1        Rated :    28    V             | I/P : High-Line +3V = 267 V<br>O/P :    (1)Full Load Turn on /Off<br>(2) Min load Turn on /Off<br>(3)Full Load /Min load<br>Change<br>Ta : 25℃ | (1)        22.8        V<br>(2)        23.5        V<br>(3)        22.9        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 : 2.4KVAC/min<br>O/P-FG : 0.6 KVAC/min<br>Ta : 25°C | I/P-O/P : 3.72 mA<br>I/P-FG : 4.69 mA<br>O/P-FG : 3.8 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 : 9999 GΩ<br>I/P-FG : 9999 GΩ<br>O/P-FG : 9999 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                                                     | 3 mΩ                                                                   | P       |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                         | TEST CONDITION                                           | RESULT                        | VERDICT |
|----|---------------------------------------------|-------------------------------------------------------|----------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS A                                | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55022<br>CLASS B                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL/50% LOAD<br>Ta : 25°C | PASS<br>Test by certified Lab | P       |
| 3  | RADIATION                                   | EN55022<br>CLASS B                                    | I/P : 230 VAC (50HZ)<br>O/P : FULL LOAD<br>Ta : 25°C     | PASS<br>Test by certified Lab | P       |
| 4  | E.S.D                                       | EN61000-4-2<br>INDUSTRY<br>AIR : 8KV / Contact : 4KV  | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 5  | E.F.T                                       | EN61000-4-4<br>INDUSTRY<br>INPUT : 2KV                | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>INDUSTRY<br>L-N : 2KV<br>L,N-PE : 4KV | I/P : 230 VAC/50HZ<br>O/P : FULL LOAD<br>Ta : 25°C       | CRITERIA A                    | P       |
| 7  | Test by certified Lab & Test Report Prepare |                                                       |                                                          |                               |         |

## RELIABILITY TEST

### ENVIRONMENT TEST

#### ENVIRONMENT TEST

| NO | TEST ITEM                                                         | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TEST CONDITION                                                     | RESULT                     | VERDICT |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
|----|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------|---------|----------|-------------|----------------------------|----------------------------|---|-----|------------------------------------|--------|--------|---|-----|----------------------------|--------|--------|---|----|----------------------------------|--------|--------|---|----|------------------------------------|---------|---------|---|-----|------------------|--------|--------|---|----|-----------------------------------|--------|---------|---|----|-----------------------------------|--------|--------|---|----|--------------------------|--------|---------|---|------|-------------------------|--------|--------|----|------|--------------------------------|--------|---------|----|------|-----------------------------------|--------|--------|---|
| 1  | TEMPERATURE RISE TEST                                             | <div>MODEL : EPS-65-5 PCB ONLY</div> <div>1. ROOM AMBIENT BURN-IN : 2 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=33.7 °C</div> <div>2. HIGH AMBIENT BURN-IN : 2 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta= 39.9°C</div> <table><tr><th>NO</th><th>Position</th><th>PART NUMBER</th><th>ROOM AMBIENT<br/>Ta= 33.7°C</th><th>HIGH AMBIENT<br/>Ta= 39.9°C</th></tr><tr><td>1</td><td>LF1</td><td>TR732-R5 T(9×5×3)<br/>1.41m RPT-75C</td><td>76.8°C</td><td>83.9°C</td></tr><tr><td>2</td><td>BD1</td><td>BD 4A/800V GLASS<br/>GBU408</td><td>75.1°C</td><td>81.4°C</td></tr><tr><td>3</td><td>C5</td><td>C/E 100u/400V 105°C<br/>18*25 KMG</td><td>68.2°C</td><td>74.1°C</td></tr><tr><td>4</td><td>D1</td><td>RD 3A/600V 1N5406<br/>DO-201 T-52mm</td><td>100.0°C</td><td>105.8°C</td></tr><tr><td>5</td><td>R42</td><td>R/NW 2W 0.22Ω 5%</td><td>87.5°C</td><td>92.6°C</td></tr><tr><td>6</td><td>Q1</td><td>FET STF14NM65N<br/>12A/650V TO220F</td><td>98.7°C</td><td>104.3°C</td></tr><tr><td>7</td><td>T1</td><td>MT TF5085-R2 EER-28<br/>EPS-65-5 B</td><td>88.0°C</td><td>93.8°C</td></tr><tr><td>8</td><td>U1</td><td>PWM NCP1380BDR2G<br/>SO-8</td><td>98.7°C</td><td>103.5°C</td></tr><tr><td>9</td><td>U100</td><td>CONTROL TEA1791T<br/>SO8</td><td>90.2°C</td><td>97.8°C</td></tr><tr><td>10</td><td>Q101</td><td>FET AP9963GP<br/>160A/40V TO220</td><td>91.3°C</td><td>100.8°C</td></tr><tr><td>11</td><td>C105</td><td>C/E 2200u/10V UL10Kh<br/>10*25 KZM</td><td>75.6°C</td><td>83.5°C</td></tr></table> |                                                                    |                            | NO      | Position | PART NUMBER | ROOM AMBIENT<br>Ta= 33.7°C | HIGH AMBIENT<br>Ta= 39.9°C | 1 | LF1 | TR732-R5 T(9×5×3)<br>1.41m RPT-75C | 76.8°C | 83.9°C | 2 | BD1 | BD 4A/800V GLASS<br>GBU408 | 75.1°C | 81.4°C | 3 | C5 | C/E 100u/400V 105°C<br>18*25 KMG | 68.2°C | 74.1°C | 4 | D1 | RD 3A/600V 1N5406<br>DO-201 T-52mm | 100.0°C | 105.8°C | 5 | R42 | R/NW 2W 0.22Ω 5% | 87.5°C | 92.6°C | 6 | Q1 | FET STF14NM65N<br>12A/650V TO220F | 98.7°C | 104.3°C | 7 | T1 | MT TF5085-R2 EER-28<br>EPS-65-5 B | 88.0°C | 93.8°C | 8 | U1 | PWM NCP1380BDR2G<br>SO-8 | 98.7°C | 103.5°C | 9 | U100 | CONTROL TEA1791T<br>SO8 | 90.2°C | 97.8°C | 10 | Q101 | FET AP9963GP<br>160A/40V TO220 | 91.3°C | 100.8°C | 11 | C105 | C/E 2200u/10V UL10Kh<br>10*25 KZM | 75.6°C | 83.5°C | P |
| NO | Position                                                          | PART NUMBER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ROOM AMBIENT<br>Ta= 33.7°C                                         | HIGH AMBIENT<br>Ta= 39.9°C |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 1  | LF1                                                               | TR732-R5 T(9×5×3)<br>1.41m RPT-75C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 76.8°C                                                             | 83.9°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 2  | BD1                                                               | BD 4A/800V GLASS<br>GBU408                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 75.1°C                                                             | 81.4°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 3  | C5                                                                | C/E 100u/400V 105°C<br>18*25 KMG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 68.2°C                                                             | 74.1°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 4  | D1                                                                | RD 3A/600V 1N5406<br>DO-201 T-52mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 100.0°C                                                            | 105.8°C                    |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 5  | R42                                                               | R/NW 2W 0.22Ω 5%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 87.5°C                                                             | 92.6°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 6  | Q1                                                                | FET STF14NM65N<br>12A/650V TO220F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 98.7°C                                                             | 104.3°C                    |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 7  | T1                                                                | MT TF5085-R2 EER-28<br>EPS-65-5 B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 88.0°C                                                             | 93.8°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 8  | U1                                                                | PWM NCP1380BDR2G<br>SO-8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 98.7°C                                                             | 103.5°C                    |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 9  | U100                                                              | CONTROL TEA1791T<br>SO8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 90.2°C                                                             | 97.8°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 10 | Q101                                                              | FET AP9963GP<br>160A/40V TO220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 91.3°C                                                             | 100.8°C                    |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 11 | C105                                                              | C/E 2200u/10V UL10Kh<br>10*25 KZM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 75.6°C                                                             | 83.5°C                     |         |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P : 230 VAC<br>O/P : 126 % LOAD<br>Ta : 25°C                     | TEST : OK                  | P       |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 3  | LOW TEMPERATURE<br>TURN ON TEST                                   | TURN ON AFTER 2 HOUR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P : 264VAC/100VAC<br>O/P : 100 % LOAD<br>Ta= -30 °C              | TEST : OK                  | P       |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 4  | HIGH HUMIDITY<br>HIGH TEMPERATURE<br>HIGH VOLTAGE<br>TURN ON TEST | AFTER 12 HOURS<br>IN CHAMBER ON<br>CONTROL 40 °C<br>NO DAMAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | I/P : 272 VAC<br>O/P : FULL LOAD<br>Ta= 40 °C<br>HUMIDITY= 95 %R.H | TEST : OK                  | P       |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ± 0.03 %/°C (0~50°C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | I/P : 230 VAC<br>O/P : FULL LOAD                                   | ± 0.013 %/°C (0~50°C)      | P       |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -40°C~ +85°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 5 CYCLE<br>5. Input/Output condition : STATIC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    | OK                         | P       |          |             |                            |                            |   |     |                                    |        |        |   |     |                            |        |        |   |    |                                  |        |        |   |    |                                    |         |         |   |     |                  |        |        |   |    |                                   |        |         |   |    |                                   |        |        |   |    |                          |        |         |   |      |                         |        |        |    |      |                                |        |         |    |      |                                   |        |        |   |

|    |                             |                                                                                                                                                                                                                                                                                             |                                                                    |   |
|----|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---|
| 7  | THERMAL SHOCK TEST          | 1. Thermal shock Temperature : -30°C ~ +70°C<br>2. Temperature change rate : 25°C / MIN<br>3. Dwell time low and high temperature : 30 MIN/EACH<br>4. Total test cycle : 10 CYCLE<br>5. Input/Output condition : 230VAC/Full Load AC ON/OFF TEST<br>turn on 58sec ; turn off 2sec           | OK                                                                 | P |
| 8  | VIBRATION TEST              | 1 Carton & 1 Set<br>(1) Waveform : Sine Wave<br>(2) Frequency : 10~500Hz<br>(3) Sweep Time : 12min/sweep cycle<br>(4) Acceleration : 2G<br>(5) Test Time : 60min in each axis (X.Y.Z)<br>(6) Ta : 25°C                                                                                      | TEST : OK                                                          | P |
| 9  | CAPACITOR LIFE CYCLE        | EPS-65-5 PCB ONLY SUPPOSE C 105 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=40 °C LIFE TIME<br>(3) I/P : 230VAC O/P : 75% LOAD Ta= 40 °C LIFE TIME<br>(4) I/P : 230VAC O/P : 50% LOAD Ta= 40 °C LIFE TIME | (1) 148297 HRS<br>(2) 47247 HRS<br>(3) 60671 HRS<br>(4) 147240 HRS | P |
| 10 | MTBF                        | MIL-HDBK-217F NOTICE S2 PARTS COUNT<br>TOTAL FAILURE RATE : 563 KHR                                                                                                                                                                                                                         |                                                                    | P |
| 11 | DMTBF/Accelerated Life Test | Demonstration Mean Time Between Failure (Expected Life): Above 30,000 hours @ TA 40°C                                                                                                                                                                                                       |                                                                    | P |

| DATE      | SAMPLE         | TEST RESULT | TESTER | APPROVAL |
|-----------|----------------|-------------|--------|----------|
| 2011.7.18 | RD SAMPLE      | PASS        | Shenym | Wangdz   |
| Y1201C65H | PRODUCT SAMPLE | PASS        | Shenym | Wangdz   |

2007/3/20 A50-S014