



# Test Report: APV-25-5

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25W 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 : 120 mVp-p (Max )                           | I/P : 230VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                          | V1 : 80 mVp-p (Max )                   | P       |
| 2  | OUTPUT VOLTAGE TOLERANCE | V1 : 5 %~ -5 % (Max)                            | I/P : 100 VAC / 264 VAC<br>O/P : FULL/ MIN LOAD<br>Ta : 25°C                                                          | V1 : 0.764 %~ -1.550 %                 | P       |
| 3  | LINE REGULATION          | V1 : 1 %~ -1 % (Max)                            | I/P : 100 VAC ~ 264 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                               | V1 : 0 %~ 0 %                          | P       |
| 4  | LOAD REGULATION          | V1 : 2 %~ -2 % (Max)                            | I/P : 230 VAC<br>O/P : FULL ~MIN LOAD<br>Ta : 25°C                                                                    | V1 : 0.764 %~ -0.843 %                 | P       |
| 5  | SET UP TIME              | 230VAC : 1500 ms (Max)<br>115VAC : 1500 ms(Max) | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                        | 230VAC/ 280.77 ms<br>115VAC/ 282.44 ms | P       |
| 6  | 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/ 2.62 ms<br>115VAC/ 2.73 ms     | P       |
| 7  | HOLD UP TIME             | 230VAC : 20 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/ 90.15 ms<br>115VAC/ 19.09 ms   | P       |
| 8  | OVER/UNDERSHOOT TEST     | < $\pm 10\%$                                    | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25°C                                                                         | TEST : < 10 %                          | P       |
| 9  | DYNAMIC LOAD             | V1 : 1000 mVp-p                                 | I/P : 230 VAC<br>(1).O/P : FULL /Min LOAD 90%DUTY/<br>1KHZ<br>(2).O/P : FULL /Min LOAD 50%DUTY/<br>120HZ<br>Ta : 25°C | (1) 179 mVp-p<br>(2) 230 mVp-p         | P       |

### INPUT FUNCTION TEST

| NO | TEST ITEM             | SPECIFICATION                                                            | TEST CONDITION                                                                                                                                                                                  | RESULT                                       | VERDICT |
|----|-----------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------|
| 1  | INPUT VOLTAGE RANGE   | 90VAC~264 VAC                                                            | I/P:TESTING<br>O/P:FULL LOAD<br>Ta:25℃                                                                                                                                                          | 87 V~ 264 V                                  | P       |
|    |                       |                                                                          | (1)I/P: LOW-LINE-3V= 87 V<br>HIGH-LINE+15%= 300 V<br>O/P:FULL/MIN LOAD<br>ON: 30 Sec . OFF: 30 Sec 10MIN<br>(2) I/P:230VAC<br>ON: 0.5 Sec . OFF: 0.5 Sec 20MIN<br>( AC POWER ON/OFF NO DAMAGE ) | TEST:<br>(1) OK<br>(2) OK                    |         |
| 2  | INPUT FREQUENCY RANGE | 47HZ ~63 HZ<br>NO DAMAGE OSC                                             | I/P : 90 VAC ~ 264 VAC<br>O/P : FULL~MIN LOAD<br>Ta : 25℃                                                                                                                                       | TEST : OK                                    | P       |
| 3  | EFFICIENCY            | 75.5% (TYP)                                                              | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                                                                    | 75.84 %                                      | P       |
| 4  | INPUT CURRENT         | 230V/ 0.4 A (TYP)<br>115V/ 0.8 A (TYP)                                   | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                                                   | I = 0.239 A/ 230 VAC<br>I = 0.358 A/ 115 VAC | P       |
| 5  | INRUSH CURRENT        | 230V/ 45 A (TYP)<br>Twidh =310 us measured at 50%<br>Ipeak<br>COLD START | I/P : 230 VAC<br>O/P : FULL LOAD<br>Ta : 25℃                                                                                                                                                    | I = 37.4 A/ 230 VAC<br>Twidh =245 us         | P       |
| 6  | LEAKAGE CURRENT       | < 0.25 mA / 240 VAC                                                      | I/P : 240 VAC<br>O/P : Min LOAD<br>Ta : 25℃                                                                                                                                                     | L-CASE : 0.003 mA<br>N-CASE : 0.003 mA       | P       |

### PROTECTION FUNCTION TEST

| NO | TEST ITEM               | SPECIFICATION                          | TEST CONDITION                                               | RESULT                                                                              | VERDICT |
|----|-------------------------|----------------------------------------|--------------------------------------------------------------|-------------------------------------------------------------------------------------|---------|
| 1  | OVER LOAD PROTECTION    | >105%                                  | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : TESTING<br>Ta : 25℃  | 146.00 %/ 230 VAC<br>144.29 %/ 115 VAC<br>Hiccup Mode                               | P       |
| 2  | OVER VOLTAGE PROTECTION | CH1 : 5.75 V ~ 6.95 V                  | I/P : 230 VAC<br>I/P : 115 VAC<br>O/P : MIN LOAD<br>Ta : 25℃ | 6.35 V/ 230 VAC<br>6.35 V/ 115 VAC<br>Shut down o/p voltage, re-power on to recover | 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, recovers automatically after fault condition is removed.  | 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 | Q1 Rated :<br>NDF06N60ZG : 600 V/ 6.0 A  | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2) Output Short<br>(3)Full load continue<br>Ta : 25°C                          | (1) 540 V<br>(2) 480 V<br>(3) 494 V    | P       |
| 2  | Diode Peak Voltage                                     | D100 Rated :<br>STPS2045CTC:45V/ 20 A    | I/P : High-Line +3V = 267 V<br>O/P : (1)Full Load Turn on<br>(2)Output Short<br>(3)Full load continue<br>Ta : 25°C                           | (1) 40.6 V<br>(2) 31.4 V<br>(3) 37.2 V | P       |
| 3  | Input Capacitor Voltage                                | C5 Rated :<br>47u/200V 105°C 18*20 KM    | 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) 396 V<br>(2) 376 V<br>(3) 390 V    | P       |
| 4  | Control IC Voltage Test                                | U 1 Rated :<br>NCP1200D100R2G: 16V (MAX) | 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) 11.8 V<br>(2) 11.8 V<br>(3) 11.7 V | P       |

## SAFETY & E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM            | SPECIFICATION          | TEST CONDITION                       | RESULT                          | VERDICT |
|----|----------------------|------------------------|--------------------------------------|---------------------------------|---------|
| 1  | WITHSTAND VOLTAGE    | I/P-O/P : 3 KVAC/min   | I/P-O/P : 3.6 KVAC/min<br>Ta : 25°C  | I/P-O/P : 0.875 mA<br>NO DAMAGE | P       |
| 2  | ISOLATION RESISTANCE | I/P-O/P : 500VDC>100MΩ | I/P-O/P : 500 VDC<br>Ta : 25°C/70%RH | I/P-O/P : >9999 MΩ<br>NO DAMAGE | P       |

### E.M.C TEST

| NO | TEST ITEM                                   | SPECIFICATION                                          | TEST CONDITION                                                     | RESULT                        | VERDICT |
|----|---------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------|-------------------------------|---------|
| 1  | HARMONIC                                    | EN61000-3-2<br>CLASS A                                 | I/P:230VAC/240VAC/220VAC50HZ<br>O/P:100% LOAD<br>CLASS A<br>Ta:25℃ | PASS                          | P       |
| 2  | CONDUCTION                                  | EN55022<br>CLASSB                                      | I/P: 230 VAC (50HZ)/115V[60HZ]<br>O/P:FULL LOAD<br>Ta:25℃          | PASS<br>Test by certified Lab | P       |
| 3  | RADIATION                                   | EN55022<br>CLASSB                                      | I/P: 230 VAC (50HZ)/115V[60HZ]<br>O/P: FULL LOAD<br>Ta:25℃         | 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℃                       | 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℃                       | CRITERIA A                    | P       |
| 6  | SURGE                                       | IEC61000-4-5<br>INDUSTRY<br>L-N :2KV                   | I/P: 230 VAC/50HZ<br>O/P:FULL LOAD<br>Ta:25℃                       | CRITERIA A                    | P       |
| 7  | Test by certified Lab & Test Report Prepare |                                                        |                                                                    |                               |         |

## RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM             | SPECIFICATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TEST CONDITION              | RESULT                      | VERDICT |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
|----|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|---------|----------|-----|-----------------------------|-----------------------------|---|-----|--------|--------|--------|---|-----|---------|--------|--------|---|----|--------------|--------|--------|---|----|--------------|--------|--------|---|----|------------|--------|--------|---|-----|----------|--------|--------|---|----|------------|--------|--------|---|----|---------------|--------|--------|---|----|---------|--------|--------|----|------|-------------|--------|---------|----|------|---------------|--------|--------|----|------|---------------|--------|--------|----|-------|--------|--------|--------|---|
| 1  | TEMPERATURE RISE TEST | <div>MODEL : APV-25-5</div> <div>1. ROOM AMBIENT BURN-IN : 2.5 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=32.3 °C</div> <div>2. HIGH AMBIENT BURN-IN : 3.5 HRS</div> <div>I/P : 230VAC O/P : FULL LOAD Ta=42.5 °C</div> <table><tr><th>NO</th><th>Position</th><th>P/N</th><th>ROOM AMBIENT<br/>Ta= 32.3 °C</th><th>HIGH AMBIENT<br/>Ta= 42.5 °C</th></tr><tr><td>1</td><td>LF1</td><td>LF-804</td><td>61.2°C</td><td>69.7°C</td></tr><tr><td>2</td><td>BD1</td><td>KBP208G</td><td>63.1°C</td><td>71.6°C</td></tr><tr><td>3</td><td>C5</td><td>47uF/420V KM</td><td>59.7°C</td><td>67.7°C</td></tr><tr><td>4</td><td>C9</td><td>100uF/25V KY</td><td>69.2°C</td><td>77.6°C</td></tr><tr><td>5</td><td>Q1</td><td>NDF06N60ZG</td><td>83.4°C</td><td>92.3°C</td></tr><tr><td>6</td><td>ZD1</td><td>P6KE180A</td><td>77.0°C</td><td>86.4°C</td></tr><tr><td>7</td><td>D1</td><td>S1M 1A/1KV</td><td>80.1°C</td><td>89.2°C</td></tr><tr><td>8</td><td>U1</td><td>NCP1200D60R2G</td><td>69.4°C</td><td>78.2°C</td></tr><tr><td>9</td><td>T1</td><td>TF-6393</td><td>82.4°C</td><td>90.7°C</td></tr><tr><td>10</td><td>D100</td><td>STPS2045CTC</td><td>94.1°C</td><td>103.3°C</td></tr><tr><td>11</td><td>C106</td><td>1200uF/10V GL</td><td>80.1°C</td><td>88.8°C</td></tr><tr><td>12</td><td>C107</td><td>1000uF/10V GL</td><td>75.8°C</td><td>83.8°C</td></tr><tr><td>13</td><td>LF100</td><td>TR-574</td><td>67.6°C</td><td>75.9°C</td></tr></table> |                             |                             | NO      | Position | P/N | ROOM AMBIENT<br>Ta= 32.3 °C | HIGH AMBIENT<br>Ta= 42.5 °C | 1 | LF1 | LF-804 | 61.2°C | 69.7°C | 2 | BD1 | KBP208G | 63.1°C | 71.6°C | 3 | C5 | 47uF/420V KM | 59.7°C | 67.7°C | 4 | C9 | 100uF/25V KY | 69.2°C | 77.6°C | 5 | Q1 | NDF06N60ZG | 83.4°C | 92.3°C | 6 | ZD1 | P6KE180A | 77.0°C | 86.4°C | 7 | D1 | S1M 1A/1KV | 80.1°C | 89.2°C | 8 | U1 | NCP1200D60R2G | 69.4°C | 78.2°C | 9 | T1 | TF-6393 | 82.4°C | 90.7°C | 10 | D100 | STPS2045CTC | 94.1°C | 103.3°C | 11 | C106 | 1200uF/10V GL | 80.1°C | 88.8°C | 12 | C107 | 1000uF/10V GL | 75.8°C | 83.8°C | 13 | LF100 | TR-574 | 67.6°C | 75.9°C | P |
| NO | Position              | P/N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ROOM AMBIENT<br>Ta= 32.3 °C | HIGH AMBIENT<br>Ta= 42.5 °C |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 1  | LF1                   | LF-804                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 61.2°C                      | 69.7°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 2  | BD1                   | KBP208G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 63.1°C                      | 71.6°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 3  | C5                    | 47uF/420V KM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 59.7°C                      | 67.7°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 4  | C9                    | 100uF/25V KY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 69.2°C                      | 77.6°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 5  | Q1                    | NDF06N60ZG                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 83.4°C                      | 92.3°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 6  | ZD1                   | P6KE180A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 77.0°C                      | 86.4°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 7  | D1                    | S1M 1A/1KV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 80.1°C                      | 89.2°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 8  | U1                    | NCP1200D60R2G                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 69.4°C                      | 78.2°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 9  | T1                    | TF-6393                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 82.4°C                      | 90.7°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 10 | D100                  | STPS2045CTC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 94.1°C                      | 103.3°C                     |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 11 | C106                  | 1200uF/10V GL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 80.1°C                      | 88.8°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 12 | C107                  | 1000uF/10V GL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 75.8°C                      | 83.8°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |
| 13 | LF100                 | TR-574                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 67.6°C                      | 75.9°C                      |         |          |     |                             |                             |   |     |        |        |        |   |     |         |        |        |   |    |              |        |        |   |    |              |        |        |   |    |            |        |        |   |     |          |        |        |   |    |            |        |        |   |    |               |        |        |   |    |         |        |        |    |      |             |        |         |    |      |               |        |        |    |      |               |        |        |    |       |        |        |        |   |

|    |                                                                   |                                                                                                                                                                                                                                                                                   |                                                                    |                    |   |
|----|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------|---|
| 2  | OVER LOAD BURN-IN TEST                                            | NO DAMAGE<br>1 HOUR ( MIN )                                                                                                                                                                                                                                                       | I/P : 230 VAC<br>O/P : 144 % 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 : FULL 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 : 264 VAC<br>O/P : FULL LOAD<br>Ta= 40 °C<br>HUMIDITY= 95 %R.H | TEST : OK          | P |
| 5  | TEMPERATURE<br>COEFFICIENT                                        | ± 0.2 % (0~50°C)                                                                                                                                                                                                                                                                  | I/P : 230 VAC<br>O/P : FULL LOAD                                   | ± 0.021 % (0~50°C) | P |
| 6  | STORAGE TEMPERATURE TEST                                          | 1. Thermal shock Temperature : -45°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 : -35°C ~ +45°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 : 72min in each axis (X.Y.Z)<br>(6) Ta : 25°C                                                                            | TEST : OK                                                          |                    | P |
| 9  | CAPACITOR<br>LIFE CYCLE                                           | APV-25-5 :SUPPOSE C106 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                                                         | (1) 53906.9 HRS<br>(2) 21169.4 HRS<br>(3) 28688.6 HRS              |                    | P |
| 10 | MTBF                                                              | MIL-HDBK-217F NOTICES2 PARTS COUNT<br>TOTAL FAILURE RATE : 518.9KHRS                                                                                                                                                                                                              |                                                                    |                    | P |
| 11 | DMTBF/Accelerated Life Test                                       | Demonstration Mean Time Between Failure(Expected Life) :<br>20,000 hours @ Tcase 70°C ; 50,000 hours @ Tcase 55°C                                                                                                                                                                 |                                                                    |                    | P |

| DATE       | SAMPLE         | TEST RESULT | TESTER | APPROVAL |
|------------|----------------|-------------|--------|----------|
| 2012/05/30 | PRODUCT SAMPLE | PASS        | ZOULF  | HOWAY    |

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