

# Quality Engineering Test Report

**SERIES: 45W DUAL OUTPUT OPEN FRAME SWITCHING POWER SUPPLY**

**SAMPLE:            A.MPD-45A            V1:+5V / 3.2A  
                         V2:+12V / 2A  
                         B.MPD-45B            V1:+5V /3.2A  
                         V2:+24V /1.2A**

| NO | TEST ITEM                | TEST CONDITION / SPECIFICATION  | RESULT  | VERDICT |
|----|--------------------------|---|---|---------|
| 1  | AC INPUT VOLTAGE RANGE   | I/P:TESTING            SPEC:85~264VAC<br>O/P:FULL LOAD  | <u>61.82VAC~267VAC</u>  | P       |
| 2  | LINE REGULATION          | I/P:85~264VAC            SPEC:<br>O/P:FULL LOAD            A : V1 : $\pm 0.5\%$<br>V2 : $\pm 1.5\%$<br>B : V1 : $\pm 1\%$<br>V2 : $\pm 2\%$ | A: V1: <u>+0.12%~-0.24%</u><br>V2: <u>+0.05%~-0.87%</u><br>B: V1: <u>+0 %~-0.62%</u><br>V2: <u>-0.11%~+1.37%</u>    | P       |
| 3  | LOAD REGULATION          | I/P:230VAC            SPEC:<br>O/P:MIN. TO FULL LOAD       A : V1 : $\pm 1\%$<br>V2 : $\pm 2\%$<br>B : V1 : $\pm 1\%$<br>V2 : $\pm 3\%$     | A: V1: <u>-0.12%~+0.12%</u><br>V2: <u>+0.51%~-0.26%</u><br>B: V1: <u>-0.49 %~+0.24%</u><br>V2: <u>+1.18%~-0.59%</u> | P       |
| 4  | OUTPUT VOLTAGE TOLERANCE | I/P:85~264VAC            SPEC:<br>A : V1 : 2%<br>V2 : 5%<br>O/P: EVERY OUTPUT 20% ~ FULL LOAD CHANGE<br>V1: SET 5.0V                        | A: V1: <u>+1 %~-1.88%</u><br>V2: <u>+3.06%~-3.49%</u>   | P       |
| 5  | RIPPLE&NOISE             | I/P:230VAC            SPEC:<br>O/P:FULL LOAD            A : V1 :50mV<br>V2 :120mV<br>B : V1 :50mV<br>V2 :180mV                              | A: V1: <u>12mV</u><br>V2: <u>81mV</u><br>B: V1: <u>4mV</u><br>V2: <u>30mV</u>                                       | P       |
| 6  | AC INPUT CURRENT         | I/P:230VAC            SPEC:230VAC---0.7A.RMS<br>O/P:FULL LOAD   | <u>A:0.474A</u>   | P       |
| 7  | MAX. INRUSH CURREN       | I/P:230VAC            SPEC:230VAC---40A.MAX<br>O/P: FULL LOAD COLD START  | <u>A:28.656A</u>  | P       |
| 8  | O/P VOLTAGE ADJ.RANGE    | I/P:230VAC            SPEC:4.75V~5.5V<br>O/P:MIN. LOAD            (-5%~+10%)  | <u>A:3V~6V</u>  | P       |
| 9  | SET UP TIME              | I/P:230VAC\60Hz       SPEC:800ms<br>O/P:FULL LOAD   | A: V1: <u>601.659mS</u><br>V2: <u>601.451mS</u>   | P       |
| 10 | HOLD UP TIME             | I/P:230VAC\60Hz       SPEC:20mS<br>O/P:FULL LOAD  | A: V1: <u>94.309mS</u><br>V2: <u>94.955mS</u>   | P       |
| 11 | EFFICIENCY               | I/P:230VAC            SPEC: A:77%<br>O/P:FULL LOAD            B:78%   | <u>A:78.8%</u><br><u>B:80.212%</u>  | P       |
| 12 | OVER LOAD PROTECTION     | I/P:230VAC            SPEC:53W~75W<br>O/P:TESTING                OUTPUT POWER   | <u>A:58.726W</u><br><u>B:70.784W</u>  | P       |
| 13 | OVER VOLTAGE PROTECTION  | I/P:230VAC            SPEC:5.5V~6.5VDC<br>O/P:FULL LOAD            ON V1  | A : V1: <u>6.05V</u><br>B : V2: <u>6.00V</u>  | P       |
| 14 | GROUND LEAKAGE CURRENT   | I/P:264VAC            SPEC:<br>L-FG---<0.3mA<br>N-FG---<0.3mA   | A: L-FG: <u>0.26mA</u><br>N-FG: <u>0.26mA</u>   | P       |

| NO       | TEST ITEM   | TEST CONDITION/SPECIFICATION  | RESULT                      | VERDICT  |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|----------|---|---|-----------------------------|----------|-----|------|--------|--|-----|--------------|--------|--------|--|----|-----------------|--------|--------|--|----|------------------|--------|--------|--|----|-----------|--------|--------|--|-----|----------------------|--------|--------|--|----|----------------|--------|--------|--|----|-----------|--------|--------|---|
| 18       | ENVIRONMENT TEST  | HIGH AMBIENT TEMPERATURE FULL LOAD TEST<br>I/P:230 VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:45°C  | A:<br>AFTER4hrs<br>NONBREAK | P        |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| 19       | TEMPERATURE RISE T rise<br>OF PARTS                                     | A: I/P :230VAC AFTER 4 hrs BURN-IN<br>O/P :FULL LOAD TA:25°C<br><table border="1"> <thead> <tr> <th></th> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>T rise</th> </tr> </thead> <tbody> <tr> <td></td> <td>BD1</td> <td>BRIDGE DIODE</td> <td>55.5°C</td> <td>30.5°C</td> </tr> <tr> <td></td> <td>Q1</td> <td>MAIN TRANSISTER</td> <td>65.1°C</td> <td>40.1°C</td> </tr> <tr> <td></td> <td>T1</td> <td>MAIN TRANSFORMER</td> <td>74.3°C</td> <td>49.3°C</td> </tr> <tr> <td></td> <td>D4</td> <td>O/P DIODE</td> <td>82.3°C</td> <td>57.3°C</td> </tr> <tr> <td></td> <td>C22</td> <td>O/P FILTER CAPACITOR</td> <td>73.2°C</td> <td>48.2°C</td> </tr> <tr> <td></td> <td>D1</td> <td>CLAMPING DIODE</td> <td>77.5°C</td> <td>52.5°C</td> </tr> <tr> <td></td> <td>L1</td> <td>O/P CHOKE</td> <td>83.1°C</td> <td>58.1°C</td> </tr> </tbody> </table> |                             | POSITION | P/N | TEMP | T rise |  | BD1 | BRIDGE DIODE | 55.5°C | 30.5°C |  | Q1 | MAIN TRANSISTER | 65.1°C | 40.1°C |  | T1 | MAIN TRANSFORMER | 74.3°C | 49.3°C |  | D4 | O/P DIODE | 82.3°C | 57.3°C |  | C22 | O/P FILTER CAPACITOR | 73.2°C | 48.2°C |  | D1 | CLAMPING DIODE | 77.5°C | 52.5°C |  | L1 | O/P CHOKE | 83.1°C | 58.1°C | P |
|          | POSITION  | P/N   | TEMP                        | T rise   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | BD1   | BRIDGE DIODE  | 55.5°C                      | 30.5°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | Q1  | MAIN TRANSISTER   | 65.1°C                      | 40.1°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | T1  | MAIN TRANSFORMER  | 74.3°C                      | 49.3°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | D4  | O/P DIODE   | 82.3°C                      | 57.3°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | C22   | O/P FILTER CAPACITOR  | 73.2°C                      | 48.2°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | D1  | CLAMPING DIODE  | 77.5°C                      | 52.5°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
|          | L1  | O/P CHOKE   | 83.1°C                      | 58.1°C   |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| 20       | LIFE CYCLE  | SUPPOSE C22 IS THE MOST CRITICAL COMPONENT<br>I/P:230VAC O/P:FULL LOAD Ta:25°C Tc22:73.2°C Life time:47578hrs<br>I/P:230VAC O/P:FULL LOAD Ta:45°C Tc22:85.1°C Life time:20853hrs  |                             | P        |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| 21       | CRITICAL COMPONENT<br>RECORD<br>( FOR QC INSPECTION<br>REFERENCE ONLY ) | FUSE :F4A/250VAC UL<br>BRIDGE DIODE :LT KB406G<br>LINE FILTER :LS TF-484-R1 ET-20V<br>TRANSFOMER :LS TF-447-R1 ETD-34<br>POWER SWITCHER :K2545 6A/600V TO-220F<br>OUTPUT DIODE :SF10SC4 10A/40V TO-220F<br>OUTPUT CAPACITOR :ELNA 3300uF/10V 105°C RJH<br>INPUT CAPACITOR :HITACHI 150uF/400V,85°C  |                             |          |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| DATE     | SAMPLE  | TEST RESULT   | TEST                        | APPROVL  |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| 20020102 | MPD-45A<br>MPD-45B  | PASS  | VINCENT                     | MAX LIN  |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |
| 20020720 | PRODUCT<br>A206C11<br>MPD-45A   | PASS  | VINCENT                     | MAX LIN  |     |      |        |  |     |              |        |        |  |    |                 |        |        |  |    |                  |        |        |  |    |           |        |        |  |     |                      |        |        |  |    |                |        |        |  |    |           |        |        |   |