

# Quality Engineering Test Report

**SERIES: MPS-65 65W WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY OPEN FRAME TYPE**

**SAMPLE: A.MPS-65-3.3 :3.3V/12A      D.MPS-65- 12 :12V/5.2A      G.MPS-65-24 :24V/2.7A**  
**B.MPS-65- 5 :5V/12A      E.MPS-65-13.5 :13.5V/4.7A      H.MPS-65-27 :27V/2.4A**  
**C.MPS-65-7.5 :7.5V/8A      F.MPS-65- 15 :15V/4.2A      I.MPS-65-48 :48V/1.35A**

| NO | TEST ITEM                | TEST CONDITION / SPECIFICATION   | RESULT   | VERDICT |
|----|--------------------------|--|--|---------|
| 1  | AC INPUT VOLTAGE RANGE   | I/P:TESTING      SPEC:90~264VAC<br>O/P:FULL LOAD   | B: <u>50.1VAC~264VAC</u>   | P       |
| 2  | LINE REGULATION          | I/P:90~264VAC      SPEC: A: ±1%<br>O/P:FULL LOAD      B: ±1%<br>C: ±1%<br>D: ±1%<br>E: ±1%<br>F: ±1%<br>G: ±1%<br>H: ±1%<br>I: ±1%               | A: -0.00% ~ +0.00%<br>B: -0.00% ~ +0.00%<br>C: -0.00% ~ +0.00%<br>D: -0.00% ~ +0.00%<br>E: -0.00% ~ +0.00%<br>F: +0.00% ~ +0.04%<br>G: -0.00% ~ +0.00%<br>H: -0.00% ~ +0.00%<br>I: -0.00% ~ +0.01% | P       |
| 3  | LOAD REGULATION          | I/P:230VAC      SPEC: A: ±3%<br>O/P:      B: ±3%<br>MIN. TO FULL LOAD      C: ±3%<br>D: ±2%<br>E: ±2%<br>F: ±2%<br>G: ±2%<br>H: ±2%<br>I: ±2%    | A: -0.76% ~ +0.76%<br>B: -0.24% ~ +0.12%<br>C: -0.24% ~ +0.16%<br>D: -0.1% ~ +0.1%<br>E: -0.04% ~ +0.09%<br>F: -0.08% ~ +0.08%<br>G: -0.05% ~ +0.05%<br>H: -0.02% ~ +0.02%<br>I: -0.01% ~ +0.01%   | P       |
| 4  | OUTPUT VOLTAGE TOLERANCE | I/P:90~264VAC      SPEC: A: ±3%<br>O/P:      B: ±3%<br>MIN. TO FULL LOAD      C: ±3%<br>D: ±2%<br>E: ±2%<br>F: ±2%<br>G: ±2%<br>H: ±2%<br>I: ±2% | A: -1.15% ~ +0.18%<br>B: -0.37% ~ +0.00%<br>C: -0.49% ~ +0.00%<br>D: -0.2% ~ +0.00%<br>E: -0.04% ~ +0.09%<br>F: -0.167% ~ +0.00%<br>G: -0.16% ~ -0.05%<br>H: -0.11% ~ -0.02%<br>I: -0.01% ~ +0.01% | P       |
| 5  | RIPPLE & NOISE           | I/P:230VAC      SPEC: A:80mV<br>O/P: FULL LOAD      B:100mV<br>C:100mV<br>D:100mV<br>E:100mV<br>F:100mV<br>G:100mV<br>H:100mV<br>I:100mV         | A: <u>16mV</u><br>B: <u>30mV</u><br>C: <u>18mV</u><br>D: <u>18mV</u><br>E: <u>16mV</u><br>F: <u>14mV</u><br>G: <u>18mV</u><br>H: <u>16mV</u><br>I: <u>13mV</u>                                     | P       |
| 6  | AC INPUT CURRENT         | I/P:230VAC      SPEC: 0.9A<br>O/P:FULL LOAD  | B: <u>0.729A</u>   | P       |

| NO | TEST ITEM                  | TEST CONDITION / SPECIFICATION |  | RESULT   | VERDICT |
|----|----------------------------|--------------------------------|--|--|---------|
| 7  | MAX. INRUSH CURRENT        | I/P:230VAC<br>O/P:FULL LOAD    | SPEC: 40A  | <u>B:26.921A</u>   | P       |
| 8  | O/P VOLTAGE<br>ADJ.RANGE   | I/P:230VAC<br>O/P:MIN. LOAD    | SPEC:±10%<br>A:2.97V~3.63V<br>B:4.5V~5.5V<br>C:6.75V~8.25V<br>D:10.8V~13.2V<br>E:12.15V~14.85V<br>F:13.5V~16.5V<br>G:21.6V~26.4V<br>H:24.3V~29.7V<br>I:43.2V~52.8V                                     | A:2.724V~4.01V<br>B:4.173V~5.596V<br>C:6.2V~9.00V<br>D:10.081V~13.792V<br>E:11.47V~16.34V<br>F:12.2V~17.26V<br>G:19.74V~27.29V<br>H:22.37V~32.20V<br>I:39.74V~54.68V             | P       |
| 9  | SET UP TIME                | I/P:230VAC<br>O/P:FULL LOAD    | SPEC:800ms   | <u>B:276.14mS</u>  | P       |
| 10 | HOLD UP TIME               | I/P:230VAC<br>O/P:FULL LOAD    | SPEC:20mS  | <u>B:85.126mS</u>  | P       |
| 11 | EFFICIENCY                 | I/P:230VAC<br>O/P: FULL LOAD   | SPEC:<br>A:66%<br>B:74%<br>C:76%<br>D:77%<br>E:78%<br>F:79%<br>G:80%<br>H:80%<br>I:80%   | A: <u>69.79%</u><br>B: <u>75.65%</u><br>C: <u>77.47%</u><br>D: <u>78.68%</u><br>E: <u>79.25%</u><br>F: <u>80.62%</u><br>G: <u>82.89%</u><br>H: <u>82.45%</u><br>I: <u>83.33%</u> | P       |
| 12 | OVER LOAD<br>PROTECTION    | I/P:230VAC<br>O/P: TESTING     | SPEC:<br>A: 51~75W<br>B: 70~105W<br>C: 73~105W<br>D: 73~105W<br>E: 73~105W<br>F: 73~105W<br>G: 73~105W<br>H: 73~105W<br>I: 73~105W   | A: <u>63.39W</u><br>B: <u>86.51W</u><br>C: <u>89.07W</u><br>D: <u>88.98W</u><br>E: <u>86.67W</u><br>F: <u>94.95W</u><br>G: <u>95.99W</u><br>H: <u>90.92W</u><br>I: <u>80.96W</u> | P       |
| 13 | OVER VOLTAGE<br>PROTECTION | I/P:230VAC<br>O/P:TESTING      | SPEC:115%~135%<br>A : 3.795V~4.455V<br>B : 5.75V~6.75V<br>C : 8.625V~10.125V<br>D : 13.8V~16.2V<br>E : 15.525V~18.225V<br>F : 17.25V~20.25V<br>G : 27.6V~32.4V<br>H : 31.05V~36.45V<br>I : 55.2V~64.8V | A: <u>4.03V</u><br>B: <u>6.18V</u><br>C: <u>9.49V</u><br>D: <u>15.2V</u><br>E: <u>16.7V</u><br>F: <u>18.4V</u><br>G: <u>31.8V</u><br>H: <u>33.5V</u><br>I: <u>59.1V</u>          | P       |

| NO       | TEST ITEM  | TEST CONDITION / SPECIFICATION   | RESULT  | VERDICT  |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
|----------|--|--|---|----------|-----|------|-------|-----|--------------|--------|------|----|-----------------|--------|--------|----|-----------------------|--------|--------|-----|-----------|--------|--------|----|----------------------|--------|--------|-----|----------------------|--------|--------|----|-----------------------|--------|--------|----|-------------|--------|--------|-----|-------------|--------|--------|---|
| 14       | GROUND LEAKAGE CURRENT   | I/P:264VAC<br>SPEC:<br>L-FG--<0.3mA<br>N-FG--<0.3mA  | A: L-FG:0.22 mA<br>N-FG:0.23mA  | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 15       | INSULATION RESISTANCE  | SPEC: O/P-FG 500VDC/100MOhms MIN.<br>I/P-O/P 500VDC/100MOhms MIN.<br>I/P-FG 500VDC/100MOhms MIN.   | B: O/P-FG >100MOhms<br>I/P-O/P >100MOhms<br>I/P-FG >100MOhms  | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 16       | DIELECTRIC / WITHSTAND VOLTAGE                                 | SPEC: I/P- O/P: 4000VAC/ 60 sec (10mA CUT-OFF)<br>I/P - FG: 1500VAC/ 60 sec (10mA CUT-OFF)<br>O/P - FG : 500VAC/ 60sec (10mA CUT-OFF)  | B: I/P-O/P :2.44mA<br>I/P-FG :1.539mA<br>O/P- FG :3.56mA  | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 17       | BURN-IN TEST   | I/P: 230VAC O/P:FULL LOAD<br>TA:25°C BURN-IN DURATION : 1 hrs  | B: NON BREAK  | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 18       | ENVIRONMENT TEST   | 1.LOW TEMPERATURE TEST<br>I/P:230VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:-7.3°C   | AFTER 5.5 hrs<br>POWER ON OK  | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
|          |  | 2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST<br>I/P:230VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:44.3°C  | AFTER 12.5 hrs<br>NON BREAK   |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
|          |  | 3.ACCELERATED LIFE TEST<br>I/P:267VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE: 25 °C<br>AMBIENT HUMIDITY: 95 %  | AFTER 14.5 hrs<br>NON BREAK   |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 19       | TEMPERATURE RISE TEST Trise OF PARTS                           | I/P :230VAC<br>O/P :FULL LOAD<br>AFTER 3 hrs BURN-IN<br>TA:31.0°C  | <table border="1"> <thead> <tr> <th>POSITION</th> <th>P/N</th> <th>TEMP</th> <th>Trise</th> </tr> </thead> <tbody> <tr> <td>BD1</td> <td>BRIDGE DIODE</td> <td>72.0°C</td> <td>41°C</td> </tr> <tr> <td>Q1</td> <td>MAIN TRANSISTOR</td> <td>83.3°C</td> <td>52.3°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER COIL</td> <td>76.4°C</td> <td>45.4°C</td> </tr> <tr> <td>D40</td> <td>O/P DIODE</td> <td>97.9°C</td> <td>66.9°C</td> </tr> <tr> <td>C5</td> <td>I/P FILTER CAPACITOR</td> <td>86.5°C</td> <td>55.5°C</td> </tr> <tr> <td>C41</td> <td>O/P FILTER CAPACITOR</td> <td>76.6°C</td> <td>45.6°C</td> </tr> <tr> <td>T1</td> <td>MAIN TRANSFORMER CORE</td> <td>88.5°C</td> <td>57.5°C</td> </tr> <tr> <td>D1</td> <td>CLAMP DIODE</td> <td>98.6°C</td> <td>67.6°C</td> </tr> <tr> <td>LF1</td> <td>LINE FILTER</td> <td>55.3°C</td> <td>24.3°C</td> </tr> </tbody> </table> | POSITION | P/N | TEMP | Trise | BD1 | BRIDGE DIODE | 72.0°C | 41°C | Q1 | MAIN TRANSISTOR | 83.3°C | 52.3°C | T1 | MAIN TRANSFORMER COIL | 76.4°C | 45.4°C | D40 | O/P DIODE | 97.9°C | 66.9°C | C5 | I/P FILTER CAPACITOR | 86.5°C | 55.5°C | C41 | O/P FILTER CAPACITOR | 76.6°C | 45.6°C | T1 | MAIN TRANSFORMER CORE | 88.5°C | 57.5°C | D1 | CLAMP DIODE | 98.6°C | 67.6°C | LF1 | LINE FILTER | 55.3°C | 24.3°C | P |
| POSITION | P/N  | TEMP   | Trise   |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| BD1      | BRIDGE DIODE   | 72.0°C   | 41°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| Q1       | MAIN TRANSISTOR  | 83.3°C   | 52.3°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| T1       | MAIN TRANSFORMER COIL  | 76.4°C   | 45.4°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| D40      | O/P DIODE  | 97.9°C   | 66.9°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| C5       | I/P FILTER CAPACITOR   | 86.5°C   | 55.5°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| C41      | O/P FILTER CAPACITOR   | 76.6°C   | 45.6°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| T1       | MAIN TRANSFORMER CORE  | 88.5°C   | 57.5°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| D1       | CLAMP DIODE  | 98.6°C   | 67.6°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| LF1      | LINE FILTER  | 55.3°C   | 24.3°C  |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 20       | LIFE CYCLE   | SUPPOSE C41 IS THE MOST CRITICAL COMPONENT<br>I/P:230VAC O/P:FULL LOAD Ta:25°C Tc41:76.6°C Life: 47045.6 hrs<br>I/P:230VAC O/P:FULL LOAD Ta:40°C Tc41:89.2°C Life: 17474.1 hrs   |   | P        |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |
| 21       | CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY ) | FUSE :4A/250VAC MET<br>BRIDGE DIODE :D3SB60<br>LINE FILTER :TF-484.<br>TRANSFOMER :LS TF-765<br>POWER SWITCHER :2SK2628<br>OUTPUT DIODE :D83-004.<br>OUTPUT CAPACITOR :ELNA 1200uF/16V , 105°C, ZL<br>INPUT CAPACITOR :HITACHI 150uF/400V,85°C<br>P.C.B :MPS-65,CEM-3 2OZ SS |   |          |     |      |       |     |              |        |      |    |                 |        |        |    |                       |        |        |     |           |        |        |    |                      |        |        |     |                      |        |        |    |                       |        |        |    |             |        |        |     |             |        |        |   |

| DATE     | SAMPLE  | TEST RESULT | TEST    | PROVAL  |
|----------|---|-------------|---------|---------|
| 20010605 | RD SAMPLE<br>3.3V,5V,7.5V,12V<br>13.5V,24V,27V,48V          | PASS        | VINCENT | Max Lin |
| 20010824 | PRODUCT<br>A107C28<br>3.3V,5V,7.5V,12V<br>13.5V,24V,27V,48V | PASS        | VINCENT | Max Lin |
| 20020411 | PRODUCT<br>A203B04<br>5V,12V                                | PASS        | VINCENT | Max Lin |
| 20020620 | PRODUCT<br>A205D03B<br>27V                                  | PASS        | VINCENT | Max Lin |