|  |  |  |
| --- | --- | --- |
|  | **Systems ATE report** | Model Name : 24V 65W adapter |
|  |
|  |  |  |
| Referance Design Number | PMP9643 | | |
| - BOM | E1 | | |
|  | 25 deg ambient | | |
| Control IC - Description | SO-IC 7 | | |

**Test Notes**

CH1 = Vout

CH2 = Vin AC

CH3 = Iout

Vout measurements taken with no output cable

All output measurements are taken with 1uF and a 0.1uF MLCC across the DUT output.

**Hardware used for Tests**

Chroma 8000 ATE

AC source Chroma 61513

DC source Chroma 62012

Timing/Noise Analyser Chroma 80611

Electronic load Chroma 63630-80-60, Chroma 63610-80-20

Short circuit / OVP tester Chroma 80612

DMM Agilent 34970

Power Meter Chroma 66202

Digital Oscilloscope TektronixTDS3014C

Current probe Tektronix TCP202

Current probe Tektronix AM503B Amplifier with A6303 Current probe

Differential probe Tektronix P5205 100 MHz High Voltage Differential Probe

**No Load Power Test**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| No Load Power | | | | | |
| Vin (V) | F (Hz) | Pin (W)  Measured | Pin (W)  Max Spec | Vout (V)(Load\_1) | Pass? |
| 115 | 60 | 0.057 | 0.070 | 24.42 | PASS |
| 230 | 50 | 0.065 | 0.070 | 24.40 | PASS |

**Single Point Efficiency Tests**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Power Efficiency | | | | | | | | | | |
| Extension | Vin (V) | F (Hz) | Pin (W) | Iout (A) | Vout (V) | Pout (W) | Eff (%) | Pin Max Spec (W) | Eff (%) Min Spec | Pass? |
| 0.25W mode | 115 | 60 | 0.341 | 0.010 | 24.227 | 0.252 | 74.08 | \* | 52 | PASS |
| 0.5W mode | 115 | 60 | 0.634 | 0.021 | 24.225 | 0.504 | 79.46 | \* | 53 | PASS |
| 1W mode | 115 | 60 | 1.208 | 0.042 | 24.228 | 1.008 | 83.41 | \* | 59 | PASS |
| 2W mode | 115 | 60 | 2.355 | 0.083 | 24.219 | 2.015 | 85.58 | \* | 65 | PASS |
| 5W mode | 115 | 60 | 5.703 | 0.208 | 24.155 | 5.032 | 88.23 | \* | 70 | PASS |
| 10W mode | 115 | 60 | 11.161 | 0.417 | 23.996 | 10.012 | 89.70 | \* | 75 | PASS |
| 15W mode | 115 | 60 | 16.716 | 0.626 | 24.018 | 15.028 | 89.90 | \* | 80 | PASS |
| 20W mode | 115 | 60 | 22.285 | 0.834 | 24.014 | 20.032 | 89.89 | \* | 82 | PASS |
| Rated load | 115 | 60 | 73.180 | 2.713 | 24.007 | 65.133 | 89.00 | \* | 87 | PASS |
| 0.25W mode | 230 | 50 | 0.387 | 0.010 | 23.988 | 0.250 | 64.60 | \* | 52 | PASS |
| 0.5W mode | 230 | 50 | 0.664 | 0.021 | 23.963 | 0.499 | 75.11 | \* | 53 | PASS |
| 1W mode | 230 | 50 | 1.233 | 0.042 | 23.967 | 0.997 | 80.86 | \* | 59 | PASS |
| 2W mode | 230 | 50 | 2.382 | 0.083 | 23.958 | 1.993 | 83.70 | \* | 65 | PASS |
| 5W mode | 230 | 50 | 5.781 | 0.208 | 23.952 | 4.989 | 86.30 | \* | 70 | PASS |
| 10W mode | 230 | 50 | 11.233 | 0.417 | 23.931 | 9.984 | 88.88 | \* | 75 | PASS |
| 15W mode | 230 | 50 | 16.670 | 0.626 | 23.913 | 14.961 | 89.74 | \* | 80 | PASS |
| 20W mode | 230 | 50 | 22.165 | 0.834 | 23.920 | 19.952 | 90.01 | \* | 82 | PASS |
| Rated load | 230 | 50 | 72.193 | 2.713 | 23.909 | 64.863 | 89.85 | \* | 87 | PASS |

**Average Efficiency Tests**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Average Efficiency Test | | | | | | | | |
| Vin(V) | F(Hz) | Pin(W) | Pout(W) | Eff(%) | PF | Measured Avg Eff (%) | Spec Avg Eff (%) | Pass? |
| 115 | 60 | 90.584 | 80.483 | 88.849 | 0.475 | 89.592 | 88.00 | PASS |
| 67.511 | 60.337 | 89.374 | 0.433 |
| 44.778 | 40.258 | 89.907 | 0.400 |
| 22.395 | 20.209 | 90.238 | 0.410 |
| 230 | 50 | 88.977 | 80.074 | 89.994 | 0.366 | 90.338 | 88.00 | PASS |
| 66.464 | 60.066 | 90.375 | 0.365 |
| 44.298 | 40.102 | 90.529 | 0.362 |
| 22.258 | 20.133 | 90.453 | 0.355 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Data for Characterisation Plot | | | | | | | | | | |
| All lines | 88V/47Hz | 90V/50Hz | 100V/60Hz | 120V/60Hz | 143V/63Hz | 200V/47Hz | 220V/50Hz | 230V/50Hz | 240V/50Hz | 269V/63Hz |
| Io set | Vo | Vo | Vo | Vo | Vo | Vo | Vo | Vo | Vo | Vo |
| 0.000 | 24.255 | 24.259 | 24.269 | 24.252 | 24.190 | 24.058 | 24.066 | 24.025 | 24.028 | 24.033 |
| 0.100 | 24.223 | 24.240 | 24.243 | 24.234 | 24.165 | 24.014 | 24.025 | 23.990 | 23.993 | 23.992 |
| 0.200 | 24.191 | 24.201 | 24.214 | 24.181 | 24.148 | 24.003 | 24.016 | 23.986 | 23.989 | 23.987 |
| 0.300 | 24.009 | 24.019 | 24.016 | 24.006 | 23.999 | 23.965 | 23.953 | 23.948 | 23.941 | 23.947 |
| 0.400 | 24.000 | 24.009 | 24.013 | 24.011 | 24.003 | 23.974 | 23.967 | 23.961 | 23.952 | 23.956 |
| 0.500 | 24.005 | 24.016 | 24.015 | 24.006 | 23.998 | 23.959 | 23.952 | 23.951 | 23.950 | 23.951 |
| 0.600 | 24.020 | 24.028 | 24.034 | 24.024 | 23.997 | 23.956 | 23.944 | 23.941 | 23.938 | 23.937 |
| 0.700 | 24.019 | 24.024 | 24.025 | 24.019 | 24.009 | 23.971 | 23.956 | 23.942 | 23.930 | 23.933 |
| 0.800 | 24.025 | 24.034 | 24.029 | 24.026 | 24.009 | 23.963 | 23.954 | 23.946 | 23.940 | 23.937 |
| 0.900 | 24.021 | 24.028 | 24.029 | 24.026 | 24.014 | 23.970 | 23.958 | 23.945 | 23.940 | 23.938 |
| 1.000 | 24.009 | 24.019 | 24.019 | 24.015 | 24.006 | 23.969 | 23.955 | 23.952 | 23.944 | 23.944 |
| 1.100 | 24.012 | 24.023 | 24.021 | 24.015 | 24.000 | 23.959 | 23.948 | 23.942 | 23.939 | 23.940 |
| 1.200 | 24.012 | 24.024 | 24.021 | 24.013 | 24.002 | 23.958 | 23.940 | 23.932 | 23.929 | 23.928 |
| 1.300 | 24.007 | 24.015 | 24.018 | 24.013 | 23.997 | 23.960 | 23.946 | 23.937 | 23.932 | 23.934 |
| 1.400 | 24.003 | 24.010 | 24.005 | 23.998 | 23.993 | 23.955 | 23.945 | 23.938 | 23.930 | 23.931 |
| 1.500 | 24.008 | 24.016 | 24.013 | 24.003 | 23.984 | 23.949 | 23.938 | 23.932 | 23.927 | 23.927 |
| 1.600 | 24.003 | 24.010 | 24.008 | 24.004 | 23.990 | 23.938 | 23.928 | 23.925 | 23.920 | 23.919 |
| 1.700 | 24.002 | 24.009 | 24.008 | 23.996 | 23.983 | 23.943 | 23.926 | 23.915 | 23.911 | 23.909 |
| 1.800 | 24.006 | 24.013 | 24.004 | 23.997 | 23.982 | 23.940 | 23.931 | 23.920 | 23.918 | 23.916 |
| 1.900 | 24.014 | 24.016 | 24.013 | 23.999 | 23.980 | 23.935 | 23.922 | 23.915 | 23.913 | 23.911 |
| 2.000 | 24.011 | 24.015 | 24.011 | 24.003 | 23.988 | 23.935 | 23.918 | 23.909 | 23.909 | 23.907 |
| 2.100 | 24.010 | 24.015 | 24.010 | 24.004 | 23.988 | 23.934 | 23.917 | 23.907 | 23.908 | 23.908 |
| 2.200 | 24.007 | 24.012 | 24.008 | 24.000 | 23.987 | 23.941 | 23.920 | 23.912 | 23.905 | 23.903 |
| 2.300 | 24.019 | 24.018 | 24.014 | 24.000 | 23.987 | 23.935 | 23.920 | 23.914 | 23.909 | 23.910 |
| 2.400 | 24.022 | 24.021 | 24.014 | 24.006 | 23.988 | 23.937 | 23.919 | 23.913 | 23.904 | 23.903 |
| 2.500 | 24.023 | 24.021 | 24.016 | 24.005 | 23.990 | 23.939 | 23.918 | 23.910 | 23.902 | 23.901 |
| 2.600 | 24.030 | 24.027 | 24.013 | 24.006 | 23.985 | 23.941 | 23.919 | 23.910 | 23.900 | 23.900 |
| 2.700 | 24.033 | 24.033 | 24.016 | 24.002 | 23.987 | 23.939 | 23.923 | 23.912 | 23.900 | 23.904 |
| 2.800 | 24.041 | 24.038 | 24.023 | 24.006 | 23.989 | 23.937 | 23.920 | 23.908 | 23.901 | 23.903 |
| 2.900 | 24.040 | 24.039 | 24.024 | 24.013 | 23.997 | 23.937 | 23.918 | 23.908 | 23.902 | 23.896 |
| 3.000 | 24.049 | 24.045 | 24.028 | 24.014 | 23.997 | 23.940 | 23.916 | 23.909 | 23.899 | 23.899 |
| 3.100 | 24.055 | 24.050 | 24.025 | 24.012 | 23.996 | 23.945 | 23.922 | 23.910 | 23.899 | 23.897 |
| 3.200 | 24.059 | 24.054 | 24.032 | 24.015 | 24.001 | 23.945 | 23.927 | 23.918 | 23.906 | 23.906 |
| 3.300 | 24.068 | 24.063 | 24.037 | 24.017 | 24.002 | 23.951 | 23.926 | 23.915 | 23.909 | 23.904 |
| 3.400 | 24.066 | 24.064 | 24.039 | 24.021 | 24.008 | 23.953 | 23.928 | 23.919 | 23.908 | 23.904 |

**Brownout and Recovery Tests**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Brownout Static | | | | | | |
| Vin\_start (V) | F (Hz) | Vin\_step (V) | Delay (ms) | Load (A) | Vin\_off (V) | Pass? |
| 90 | 50 | 1 | 1000 | 2.710 | 65 | PASS |

|  |
| --- |
|  |
| Extended Name = Brownout static load |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Brownout under dynamic load | | | | | | | | | |
| Vin\_start (V) | F (Hz) | Vin\_step (V) | Delay (ms) | Load\_1 (A) | Time\_1 (ms) | Load\_2 (ms) | Time\_2 (ms) | Vin\_off (V) | Pass? |
| 90 | 50 | 1.0 | 1000 | 0.833 | 1960 | 3.530 | 40 | 65 | PASS |

|  |
| --- |
|  |
| Extended Name = Brownout dynamic load  Brownout under dynamic load |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Recovery | | | | | | | |
| Vin\_start (V) | F (Hz) | Vin\_step (V) | Delay (ms) | Load (A) | Vout\_trigger (V) | Vin\_startup (V) | Pass? |
| 20.0 | 50 | 1.0 | 1000.0 | 2.710 | 18 | 78 | PASS |

|  |
| --- |
|  |
| Extended Name = Brownout recovery  Recovery under static load |

**Power Line Disturbances**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Dip Interrupt | | | | | | | |
| Description | Vin | Load (A) | Vpk Min (V)  Measured | Vpk Min (V)  Spec'd | Vpk Max (V)  Measured | Vpk Max (V)  Spec'd | Pass? |
| 100V/50Hz, 0 phase | 100 | 1.360 | > 23 | 23 | < 26 | 26 | PASS |
| 100V/50Hz, 180 phase | 100 | 1.360 | > 23 | 23 | < 26 | 26 | PASS |
| 120V/60Hz, 0 phase | 120 | 1.360 | > 23 | 23 | < 26 | 26 | PASS |
| 120V/60Hz, 180 phase | 120 | 1.360 | > 23 | 23 | < 26 | 26 | PASS |
| 200V/50Hz, 0 phase | 200 | 2.710 | > 23 | 23 | < 26 | 26 | PASS |
| 200V/50Hz, 180 phase | 200 | 2.710 | > 23 | 23 | < 26 | 26 | PASS |
| 240V/50Hz, 0 phase | 240 | 2.710 | > 23 | 23 | < 26 | 26 | PASS |
| 240V/50Hz, 180 phase | 240 | 2.710 | > 23 | 23 | < 26 | 26 | PASS |

|  |
| --- |
|  |
| Extended Name = 100V/50Hz, 0 phase |

|  |
| --- |
|  |
| Extended Name = 100V/50Hz, 180 phase |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 0 phase |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 180 phase |

|  |
| --- |
|  |
| Extended Name = 200V/50Hz, 0 phase |

|  |
| --- |
|  |
| Extended Name = 200V/50Hz, 180 phase |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 0 phase |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 180 phase |

During the dip interrupt recovery tests, there is a short delay after the disturbance before Vout is measured

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Dip Interrupt Recovery | | | | | | | |
| Description | Vin | Load (A) | Time before Vout  measurement (ms) | Vout;  measured (V) | Vout  spec min (V) | Vout  spec max(V) | Pass? |
| 120V/60Hz, 100% dip, 1 cycle | 120 | 2.710 | 3000 | 24.005 | 22.500 | 25.500 | PASS |
| 120V/60Hz, 60% dip, 5 cycles | 120 | 2.710 | 3000 | 24.008 | 22.500 | 25.500 | PASS |
| 120V/60Hz, 60% dip, 10 cycles | 120 | 2.710 | 3000 | 24.010 | 22.500 | 25.500 | PASS |
| 120V/60Hz, 30% dip, 25 cycles | 120 | 2.710 | 3000 | 24.011 | 22.500 | 25.500 | PASS |
| 120V/60Hz, 30% dip, 50 cycles | 120 | 2.710 | 3000 | 24.013 | 22.500 | 25.500 | PASS |
| 240V/50Hz, 100% dip, 1 cycle | 240 | 2.710 | 3000 | 23.919 | 22.500 | 25.500 | PASS |
| 240V/50Hz, 60% dip, 5 cycles | 240 | 2.710 | 3000 | 23.919 | 22.500 | 25.500 | PASS |
| 240V/50Hz, 60% dip, 10 cycles | 240 | 2.710 | 3000 | 23.920 | 22.500 | 25.500 | PASS |
| 240V/50Hz, 30% dip, 25 cycles | 240 | 2.710 | 3000 | 23.917 | 22.500 | 25.500 | PASS |
| 240V/50Hz, 30% dip, 50 cycles | 240 | 2.710 | 3000 | 23.918 | 22.500 | 25.500 | PASS |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 100% dip, 1 cycle |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 60% dip, 5 cycles |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 60% dip, 10 cycles |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 30% dip, 25 cycles |

|  |
| --- |
|  |
| Extended Name = 120V/60Hz, 30% dip, 50 cycles |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 100% dip, 1 cycle |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 60% dip, 5 cycles |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 60% dip, 10 cycles |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 30% dip, 25 cycles |

|  |
| --- |
|  |
| Extended Name = 240V/50Hz, 30% dip, 50 cycles |

**Step Load**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Dynamic test | | | | | | | | | | |
| Vin (V) | Load\_1 (A) | Time\_1 (ms) | Load\_2 (A) | Time\_2 (ms) | Slew rate (A/us) | Vpk min  meas'd (V) | Vpk min  spec'd (V) | Vpk max  meas'd (V) | Vpk max  spec'd (V) | Pass? |
| 90 | 0.136 | 100 | 1.360 | 100 | 0.200 | 23.36 | 21.500 | 24.760 | 25.500 | PASS |
| 90 | 0.271 | 100 | 2.438 | 100 | 0.200 | 23.08 | 22.500 | 24.960 | 25.500 | PASS |
| 115 | 0.136 | 100 | 1.360 | 100 | 0.200 | 23.28 | 22.500 | 24.760 | 25.500 | PASS |
| 115 | 0.271 | 100 | 2.438 | 100 | 0.200 | 23.04 | 22.500 | 24.920 | 25.500 | PASS |
| 230 | 0.136 | 100 | 1.360 | 100 | 0.200 | 23.24 | 22.500 | 24.640 | 25.500 | PASS |
| 230 | 0.271 | 100 | 2.438 | 100 | 0.200 | 22.96 | 22.500 | 24.840 | 25.500 | PASS |
| 90 | 1.360 | 100 | 2.710 | 100 | 0.200 | 23.56 | 22.500 | 24.600 | 25.500 | PASS |
| 115 | 1.360 | 100 | 2.710 | 100 | 0.200 | 23.56 | 22.500 | 24.560 | 25.500 | PASS |
| 230 | 1.360 | 100 | 2.710 | 100 | 0.200 | 23.44 | 22.500 | 24.520 | 25.500 | PASS |

|  |
| --- |
|  |
| Extended Name = 5% - 50% Full load transient @ 90Vac |

|  |
| --- |
|  |
| Extended Name = 10% - 90% Full load transient @ 90Vac |

|  |
| --- |
|  |
| Extended Name = 5% - 50% Full load transient @ 115Vac |

|  |
| --- |
|  |
| Extended Name = 10% - 90% Full load transient @ 115Vac |

|  |
| --- |
|  |
| Extended Name = 0% - 100% load transient @ 230Vac |

|  |
| --- |
|  |
| Extended Name = 5% - 50% Full load transient @ 230Vac |

|  |
| --- |
|  |
| Extended Name = 10% - 90% Full load transient @ 230Vac |

|  |
| --- |
|  |
| Extended Name = 50% - 100% Full load transient @ 90Vac |

|  |
| --- |
|  |
| Extended Name = 50% - 100% Full load transient @ 115Vac |

|  |
| --- |
|  |
| Extended Name = 50% - 100% Full load transient @ 230Vac |

**Startup and Risetime**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Startup time | | | | | |
| Vin (V) | F (Hz) | Load (A) | Startup time (ms);  measured | Startup time (ms);  spec max | Pass? |
| 90 | 50 | 2.710 | 1006 | 4000 | PASS |
| 230 | 50 | 2.710 | 338 | 4000 | PASS |

|  |
| --- |
|  |
| Extended Name = Start Up Time, 90Vac, Rated load  Startup |

|  |
| --- |
|  |
| Extended Name = Start Up Time, 230Vac, Rated load  Startup |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Risetime 10% - 90% | | | | | |
| Vin (V) | F (Hz) | Load (A) | Risetime 10%-90% (ms) | Risetime (ms) max;  Spec | Pass? |
| 90 | 50 | 2.710 | 13 | 100 | PASS |
| 230 | 50 | 2.710 | 11 | 100 | PASS |

|  |
| --- |
|  |
| Extended Name = Rise Time, 90Vac, Rated load |

|  |
| --- |
|  |
| Extended Name = Rise Time, 230Vac, Rated load |

**On/off cycling**

UUT is power cycled with 0.5, 1, 2, 4, 8, 16, 32, 64 and 128 second On/Off times, repeating each cycle four times. Output must be in regulation for On-time greater than four (4) seconds. If it is not in regulation, the On/Off time and cycle is recorded (see "Failed on cycle?" in table below). A zero indicates no-fail.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Vin (V) | F (Hz) | Load (A) | Cycle Period (s) | Failed On Cycle? | Result |
| 90 | 50 | 0.000 | 0.50 | 0 | PASS |
| --- | 1.00 | 0 |
| --- | 2.00 | 0 |
| --- | 4.00 | 0 |
| --- | 8.00 | 0 |
| --- | 16.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| 90 | 50 | 2.710 | 0.50 | 0 | PASS |
| --- | 1.00 | 0 |
| --- | 2.00 | 0 |
| --- | 4.00 | 0 |
| --- | 8.00 | 0 |
| --- | 16.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| 230 | 50 | 0.000 | 0.50 | 0 | PASS |
| --- | 1.00 | 0 |
| --- | 2.00 | 0 |
| --- | 4.00 | 0 |
| --- | 8.00 | 0 |
| --- | 16.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| 230 | 50 | 2.710 | 0.50 | 0 | PASS |
| --- | 1.00 | 0 |
| --- | 2.00 | 0 |
| --- | 4.00 | 0 |
| --- | 8.00 | 0 |
| --- | 16.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |
| --- | 0.00 | 0 |

**Over Current Protection Test**

**Short Circuit Test** – Auto Recovery when short is removed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Vin (V) | F (Hz) | Vout before short (V) | Vout after short (V) | Pass? |
| 115 | 60 | 23.98 | 24.00 | PASS |

**Output Current Characteristics**

Load in CR mode. Apply a low load resistance for 200ms, measure Vout, Iout. Apply a background load resistance (e.g. 200R) for 1000ms. Decrease the low load resistance and repeat the cycle until load resistance < 1.5R.

**Ripple and Noise Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | PARD | |  |
| Vin (V) | Load (A) | meas. (V) | max (V) | Pass ? |
| 90 | 0.00 | 0.056 | 0.450 | PASS |
| 90 | 3.34 | 0.212 | 0.450 | PASS |
| 230 | 0.00 | 0.068 | 0.450 | PASS |
| 230 | 3.34 | 0.124 | 0.450 | PASS |

|  |
| --- |
|  |
| Extended Name = 90V/50Hz, Load = 0W |

|  |
| --- |
|  |
| Extended Name = 90V/50Hz, Load = 65W |

|  |
| --- |
|  |
| Extended Name = 230V/50Hz, Load = 0W |

|  |
| --- |
|  |
| Extended Name = 230V/50Hz, Load = 65W |