

# Efficiency & Power Factor & Ripple & Energy Star Test Report

MODEL : HP1-O21000GD-F14C

Test Date: 15-Dec-22

Test Item: Efficiency, Power Factor, Ripple, Energy Star

Test Equipment : Chroma6560, 6630, 63123A, 63102A, 6314A, Fluke45, Tektronix-DPO3034

Test Result : PASS

Efficiency, Power Factor, Ripple

Typical Efficiency (50% Load) : 91.96%

Average Efficiency : 90.94%

80 Plus Compliant : Yes

80 Plus Level : GD

Test Result : PASS



## Specification :

Output Rail :	+5V	+3.3V	+12V1	-12V	+5Vs
Maximum load	24.0 A	24.0 A	83.3 A	0.5 A	3.0 A
Minimum load	0.0 A	0.0 A	0.0 A	0.0 A	0.0 A
Ripple Max	30 mV	30 mV	35 mV	80 mV	30 mV
Regulation	± 2.0 %	± 3.0 %	± 2.0 %	± 5 %	± 3 %
Combined Load	120.0 W		1000.0 W	6.0 W	15.0 W
Total Power	1000.0 W				

## Test Loading :

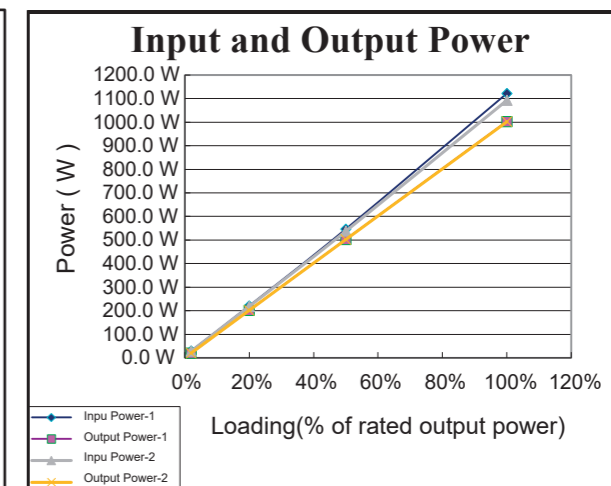
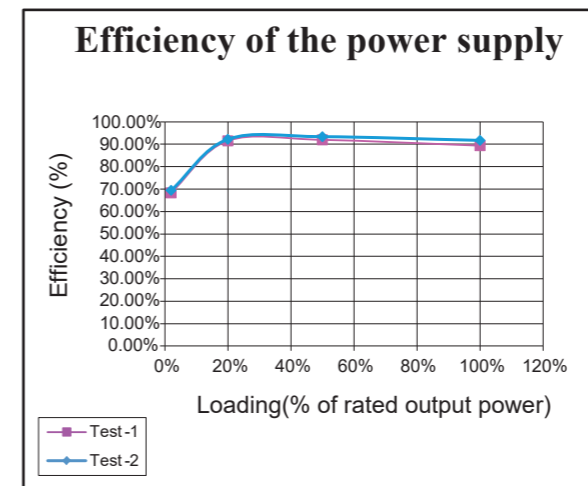
Loading	+5V	+3.3V	+12V1	-12V	+5Vsb	Pout
2%	0.25A	0.25A	1.46A	0.01A	0.05A	20.0 W
20%	2.53A	2.53A	14.61A	0.09A	0.53A	200.0 W
50%	6.34A	6.34A	36.52A	0.22A	1.31A	500.0 W
100%	12.67A	12.67A	73.04A	0.44A	2.63A	1000.0 W

## Test-1 AC Input:115V/60HZ

Loading	Output Voltage Measure Value					Pin (W)	Power Factor	Eff.	Pout (W)
	+5V	+3.3V	+12V1	-12V	+5Vsb				
No Load	5.050V	3.339V	11.993V	11.918V	5.064V	-	-	-	-
2%	5.050V	3.340V	11.983V	11.930V	5.059V	29.3 W	0.8288	68.31%	20.0 W
20%	5.047V	3.336V	12.082V	11.965V	5.029V	220.2 W	0.9904	91.49%	201.4 W
50%	5.034V	3.321V	12.052V	11.965V	4.980V	546.2 W	0.9965	91.96%	502.2 W
100%	5.021V	3.304V	12.031V	12.011V	4.890V	1121.6 W	0.9975	89.36%	1002.2 W
MAX.	1.00%	1.20%	0.69%	0.09%	1.28%				
MIN.	0.41%	0.11%	-0.14%	-0.69%	-2.20%				
Ripple	6 mV	6 mV	10 mV	13 mV	14 mV	No load			Comments:
Ripple	7 mV	6 mV	14 mV	15 mV	14 mV	2% load			Comments:
Ripple	9 mV	7 mV	14 mV	17 mV	13 mV	20% load			Comments:
Ripple	10 mV	7 mV	18 mV	23 mV	17 mV	50% load			Comments:
Ripple	13 mV	9 mV	19 mV	33 mV	22 mV	100% load			Comments:

## Test-2 AC Input:230V/50HZ

Loading	Output Voltage Measure Value					Pin (W)	Power Factor	Eff.	Pout (W)
	+5V	+3.3V	+12V1	-12V	+5Vsb				
No Load	5.050V	3.338V	11.993V	11.920V	5.065V	-	-	-	-
2%	5.051V	3.340V	11.984V	11.935V	5.059V	28.8 W	0.4603	69.45%	20.0 W
20%	5.047V	3.336V	12.081V	11.967V	5.028V	218.5 W	0.9368	92.19%	201.4 W
50%	5.034V	3.320V	12.054V	11.966V	4.979V	538.0 W	0.9825	93.36%	502.3 W
100%	5.021V	3.303V	12.033V	12.014V	4.889V	1092.9 W	0.9962	91.72%	1002.4 W
MAX.	1.01%	1.21%	0.67%	0.11%	1.29%				
MIN.	0.41%	0.08%	-0.13%	-0.67%	-2.22%				
Ripple	6 mV	6 mV	10 mV	13 mV	14 mV	No load			Comments:
Ripple	7 mV	6 mV	14 mV	14 mV	13 mV	2% load			Comments:
Ripple	9 mV	6 mV	14 mV	17 mV	14 mV	20% load			Comments:
Ripple	10 mV	7 mV	18 mV	23 mV	17 mV	50% load			Comments:
Ripple	13 mV	9 mV	19 mV	33 mV	22 mV	100% load			Comments:



## Energy Star

Test Condition : Test the power supply with normal line and the main outputs off (PS\_ON# High state) condition .

Pass/Fail Criteria : The power supply efficiency shall not less than specified limit.

Test Result : PASS

## Test-1

Vin (V)	+5Vs (PS_on# at high state)					Decide
	Current	Voltage	Pin (W)	Efficiency	Require.	
230V/50Hz	0.000A	5.062V	0.142V	-	<0.5W	PASS
	0.045A	5.061V	0.411V	55.5%	≥50%	
	0.090A	5.059V	0.696V	65.5%	≥55%	
	0.550A	5.045V	3.591V	77.3%	≥75%	
	1.000A	5.031V	6.399V	78.6%	≥75%	
	3.000A	4.960V	18.858V	78.9%	≥75%	