ASUS TUF Gaming 650W Gold EVO

Serial Number 2Q014131925

Lab ID AS65003264

Certification ID 263264

Test Result Report ID: 26PS3264A

Certificate Issue Date: Apr 28, 2026

Scheme: ETA-EMI PSU

115V



230V



Scheme: LAMBDA PSU

115V



230V





Outside Validation Scope



General Information

Test Equipment

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 Chroma 63640-80-80 x10 Chroma 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P, GW Instek ASR-3500
Power Analyzers	Rohde & Schwarz HMC8015 & NPA701
Oscilloscopes	Picoscope 4444, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A
EMI Analyzer	TekBox TBMR-110M-EU
Isolation Transformer	4kVA
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Testing Methodology	Cybenetics PSU Test Protocol

DUT Information
(Non-accredited measurements)

Product Identification Details	
Brand	ASUS
Model	TUF Gaming 650W Gold EVO
OEM/ODM	Great Wall
Serial Number	2Q014131925
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240

Rated Current (Arms)	6-10
Rated Frequency (Hz)	47-63
Rated Power (W)	650
Operating Temperature (Continuous Full Load) (°C)	0 - 40
Type	ATX12V
Cable Design	Fully Modular
Warranty	8 years
Cybenetics Measurements	
Dimensions (W x H x D)	150 x 85 x 140mm
Weight	1.29 kg (2.84 lb)
Cooling	135mm Ball Bearing Fan (HA13525M12B-Z)
Semi-Passive Operation	✗
Cybenetics Testing Information	
Lab ID	AS65003264
Date of receipt	Apr 8, 2026
Testing Date	Apr 24, 2026
Report Issued Date	Apr 28, 2026
Engineer Name	Ioannis Kalyviotis
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors
(Non-accredited measurements)

Modular Cables				
Description	**Cable Count**	**Connector Count (Total)**	**Gauge**	**Cable Type**
ATX connector 20+4 pin (500mm)	1	1	18AWG	Tinned Copper
4+4 pin EPS12V (650mm+100mm)	1	2	18AWG	Tinned Copper
6+2 pin PCIe (500mm)	1	1	18AWG	Tinned Copper
12+4 pin PCIe (500mm) (600W)	1	1	16-24AWG	Tinned Copper
SATA (400mm+115mm) / 4-pin Molex (+115mm)	2	4 / 2	18AWG	Tinned Copper

Protection Features

Under Voltage Protection	✓
Over Power Protection	✓
Over Current (+12V) Protection	✓
Over Temperature Protection	✓
Short Circuit Protection	✓
Surge Protection	✓
Inrush Current Protection	✓
Fan Failure Protection	✗

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	54.16	3	0.3
	Watts	110		650	15	3.6
Total Max. Power (W)		650				

Parts Description

General Data	
Manufacturer (OEM)	Great Wall
PCB Type	Double-Sided
Primary Side	
Transient Filter	4x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	1x NTC Thermistor SCK-056 (5 Ohm @ 20°C) & Relay
Bridge Rectifier	1x (@ 100°C)
APFC MOSFETs	1x CRMicro CRJQ69N60G2 (600V, 25A @ 100°C, Rds(on): 0.073 Ohm)
APFC Boost Diode	1x SMC S3D06065A (650V, 6A @ 150°C)
Bulk Cap(s)	1x Samxon (420V, 390uF, 2,000h @ 105°C, HP)
Main Switchers	2x ST STF24N60DM2 (600V, 11A @ 100°C, Rds(on): 0.2 Ohm)
PFC/PWM Combo Controller	MPS HR1280

Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETs	4x ONSEMI NTMFS5C430NL (40V, 140A @ 100°C, Rds(on): 1.4 mOhm)
5V & 3.3V	DC-DC Converters: 4x AP4024GEMT-HF (30V, 60A @ 25°C, Rds(on): 4.5 mOhm) PWM Controller(s): ANPEC APW7159C
Filtering Capacitors	Electrolytic: 4x Elite (5000 @ 105°C, EJ) 3x Elite (4000 @ 105°C, EK) 1x Elite (4000 @ 105°C, ED) 1x Elite (4000 @ 105°C, EY) 1x Lelon (1000 @ 105°C, RA) Polymer: 3x Nichicon FPCAP, 2x Elite, 4x Nippon Chemi-con
Supervisor IC	NDP NDP5201KC
Fan Controller	BCD AS358M
Fan Model	Hong Hua HA13525M12B-Z (135mm, 12V, 0.36A, Dual Ball Bearing Fan)
5VSB Circuit	
Rectifier	DIODES SDT8A60VP5 (60V,8A)
Standby PWM Controller	Lendtrend LD5537E1

Test Results

Temperature & Compliance Info

Temperature Range (°C /°F)	28-32 / 82.4-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	88.561%
Average Noise Output (>1450 Load Combinations)	22.89dBA
Average PF (>1450 Load Combinations)	0.966
Efficiency With 10W (≤500W) or 2% (>500W) Load	71.500%
Standby Power Consumption	0.0449W
Non-Accredited	
12V Ripple (Full Load)	64.44mV
5V Ripple (Full Load)	29.82mV
3.3V Ripple (Full Load)	27.40mV
5VSB Ripple (Full Load)	17.44mV
12V Load Regulation	1.04%
5V Load Regulation	1.55%
3.3V Load Regulation	3.42%
5VSB Load Regulation	2.66%
Inrush Current	32.780A

230V

Accredited	
Average Efficiency (>1450 load combinations)	91.045%
Average Noise Output (>1450 Load Combinations)	22.24dBA
Average PF (>1450 Load Combinations)	0.960
Efficiency With 10W (≤500W) or 2% (>500W) Load	74.115%
Standby Power Consumption	0.1309W
Non-Accredited	
12V Ripple (Full Load)	58.92mV
5V Ripple (Full Load)	33.51mV
3.3V Ripple (Full Load)	31.40mV

5VSB Ripple (Full Load)		18.93mV
12V Load Regulation		1.06%
5V Load Regulation		1.55%
3.3V Load Regulation		3.71%
5VSB Load Regulation		2.68%
Inrush Current		74.660A
12V Transient Response (200%)		11.42V
5V Transient Response (200%)		4.967V
3.3V Transient Response (200%)		3.169V
5VSB Transient Response (200%)		5.071V
Hold-Up Time & PWR_OK Signal		20.10ms
AC Loss to PWR_OK Hold Up Time		18.10ms
PWR_OK Inactive to DC Loss Delay		2.00ms
PSU Timings: T1 (20% / 100%)	53.0ms	53.0ms
PSU Timings: T3 (20% / 100%)	123.0ms	126.0ms
12V OCP (29.3°C / 41.2°C)	68.40A (126.29%), 11.955V	68.00A (125.55%), 11.957V
5V OCP (29.3°C / 41.2°C)	27.6A (138.00%), 5.065V *High Ripple (53.27mV)	27.4A (137.00%), 5.065V
3.3V OCP (29.3°C / 41.2°C)	27.1A (135.50%), 3.206V	26.9A (134.50%), 3.202V
5VSB OCP (29.3°C / 41.2°C)	4.2A (140.00%), 5.071V	4.2A (140.00%), 5.072V
OPP (28.69°C / 41.74°C)	124.72%	123.94%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	20.1
AC Loss to PWR_OK Hold Up Time (ms)	18.1
PWR_OK Inactive to DC Loss Delay (ms)	2

Vampire Power

Tables

115V

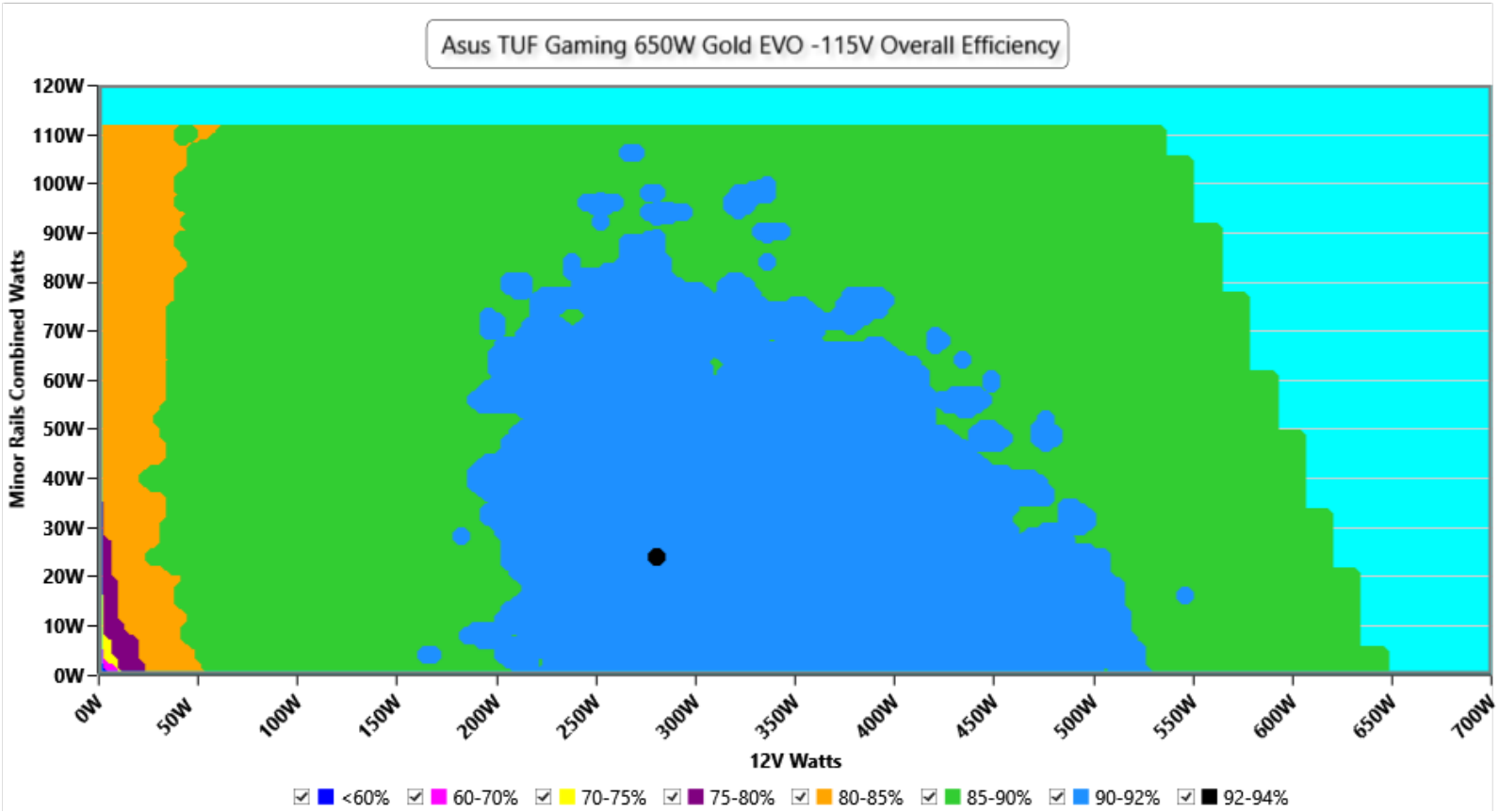
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.03 V	115.02 V	113.85 V	115.06 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.94 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.415	1.340	1.417	1.490	PASS
Mains Voltage THD:	0.13 %	0.11 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.045 W	0.013 W	N/A	0.075 W	N/A	N/A
Apparent Power:	13.279 W	13.259 W	N/A	13.303 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	230.05 V	230.03 V	227.70 V	230.12 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	50.00 Hz	49.50 Hz	50.00 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.415	1.415	1.340	1.416	1.490	PASS
Mains Voltage THD:	0.14 %	0.13 %	N/A	0.16 %	2.00 %	PASS
Real Power:	0.131 W	0.093 W	N/A	0.177 W	N/A	N/A
Apparent Power:	43.830 W	43.780 W	N/A	43.884 W	N/A	N/A
Power Factor:	0.004	N/A	N/A	N/A	N/A	N/A

Efficiency Graph

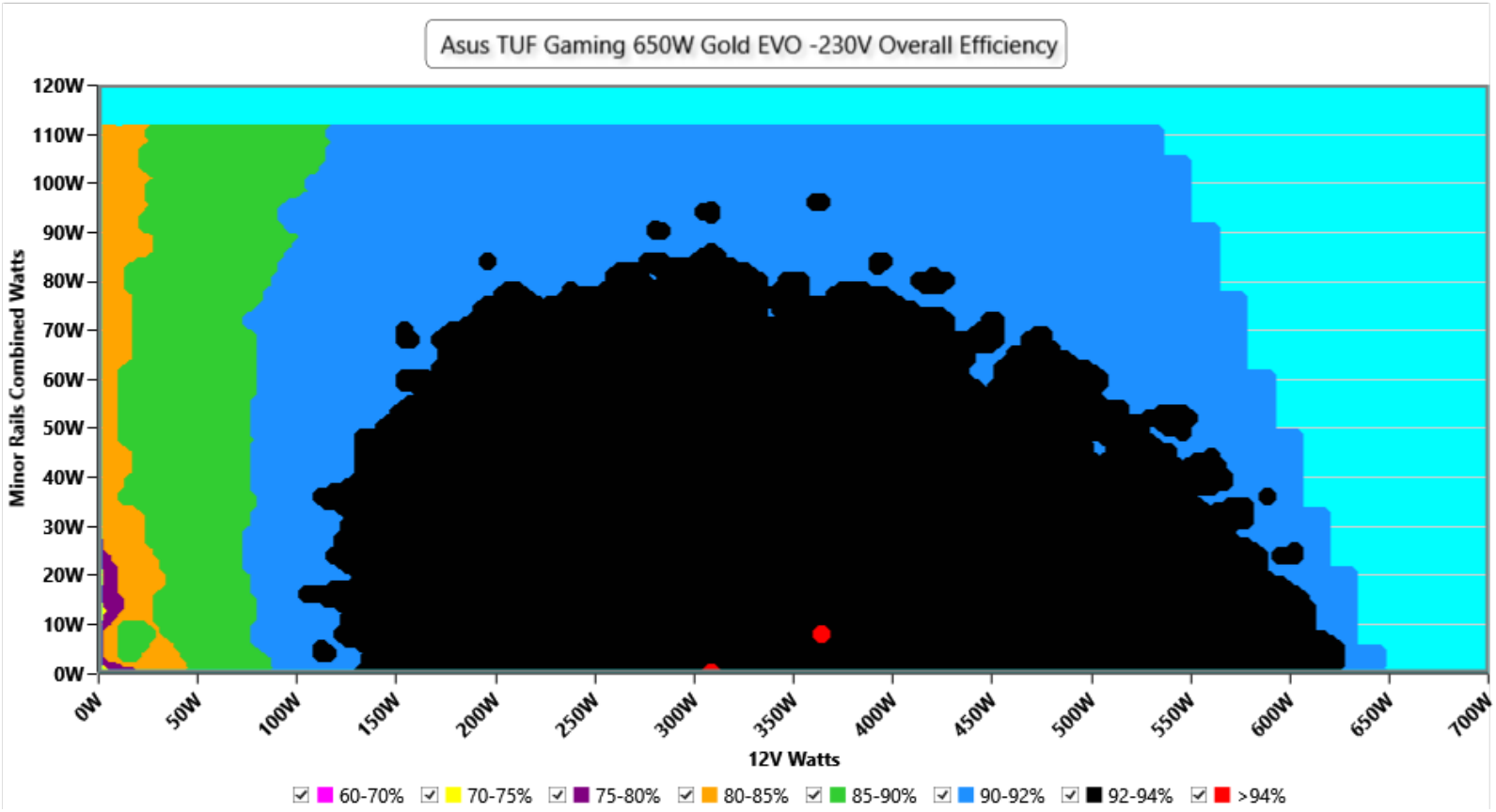
115V



INFO

This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

230V

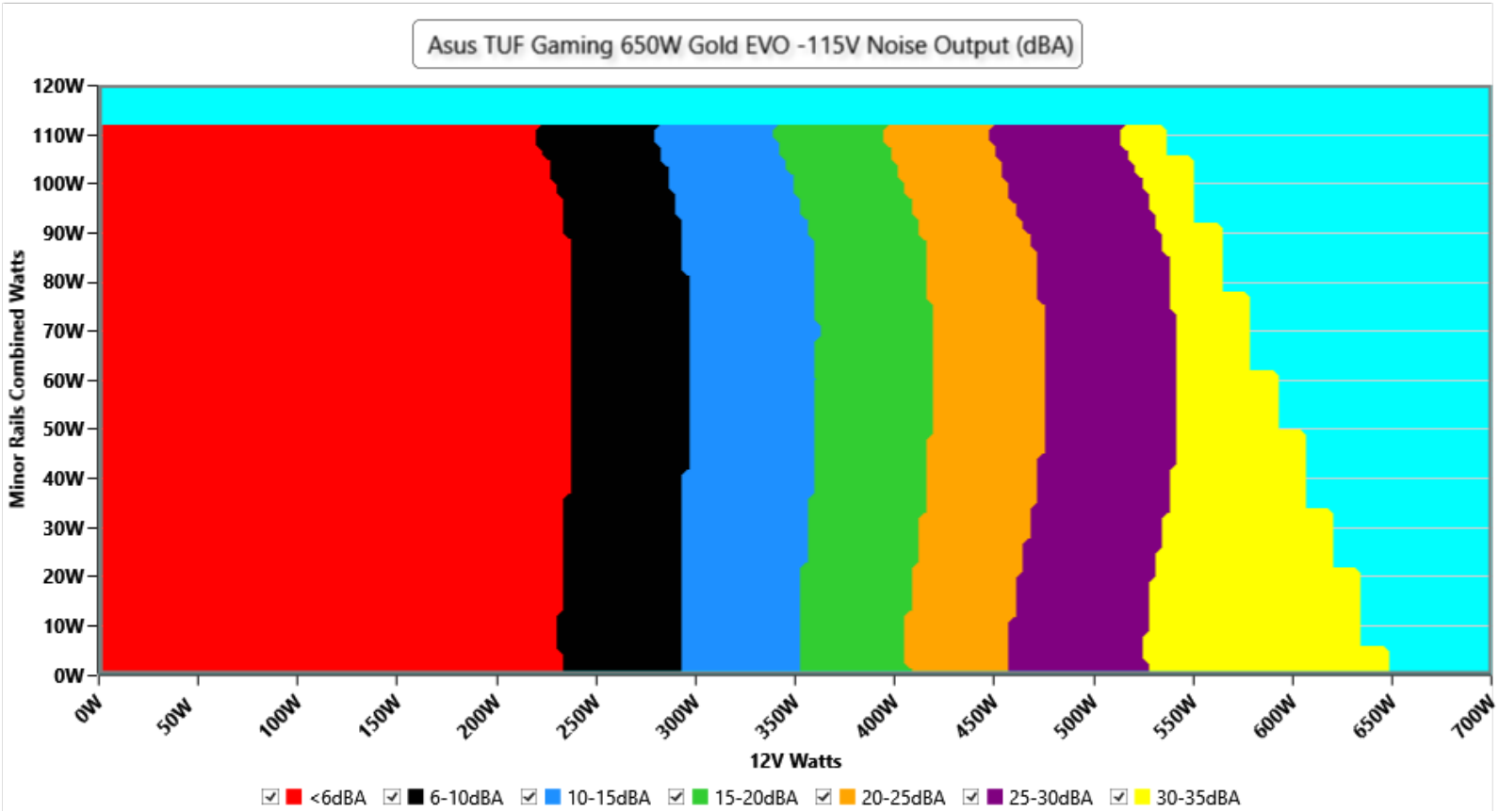


INFO

This graph depicts the PSU`s efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

Noise Graph

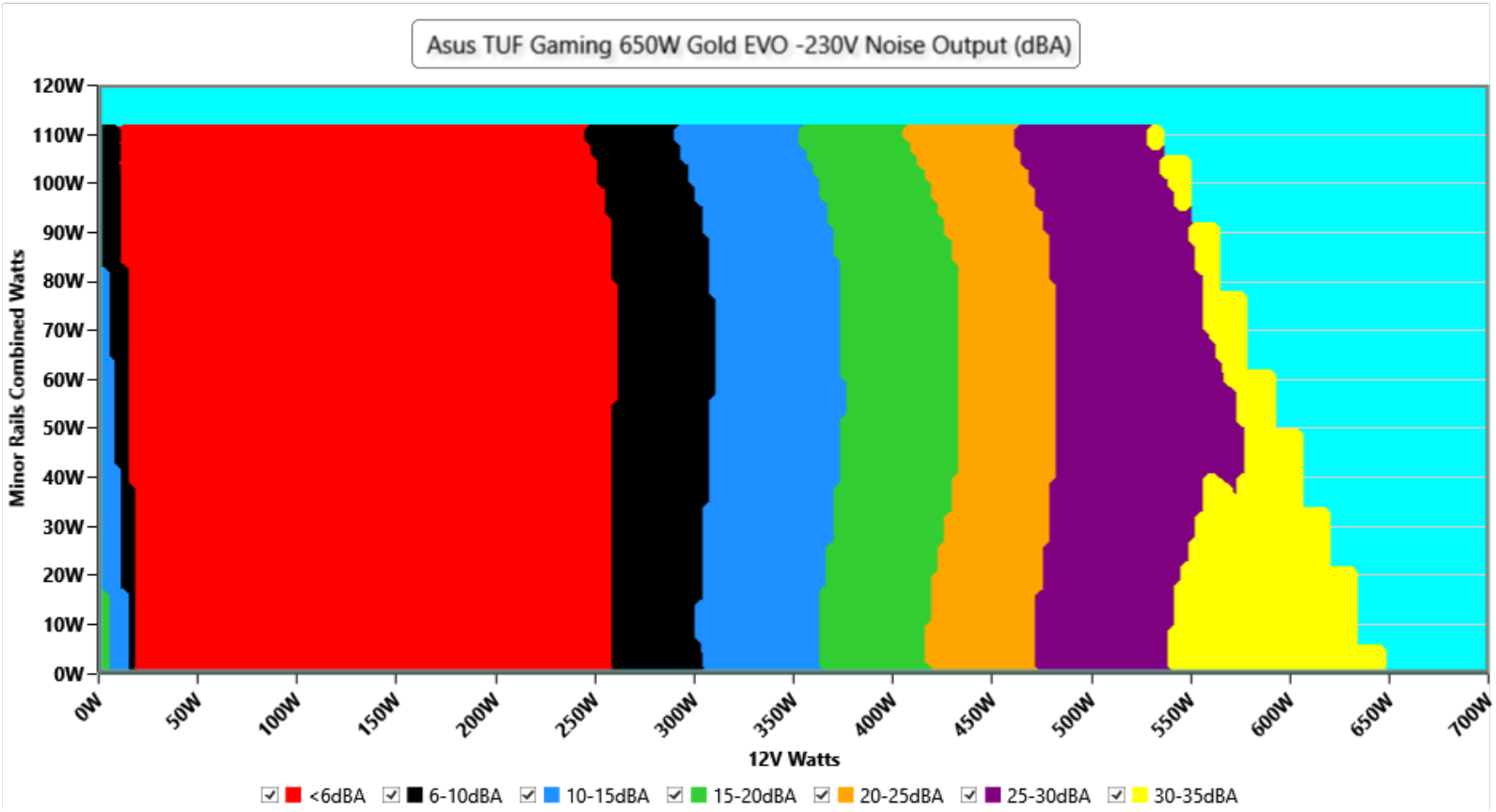
115V



INFO

The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

230V



INFO

The PSU`s noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Noise under high ambient temperature (indicative)

115V

Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	329 RPM · <6.0 dB(A) · 30.9 °C	396 RPM · <6.0 dB(A) · 40.2 °C	<6.0 in both
20%	352 RPM · <6.0 dB(A) · 31.1 °C	470 RPM · 9.3 dB(A) · 41.0 °C	<6.0 → 9.3 dB(A)
50%	401 RPM · <6.0 dB(A) · 30.2 °C	673 RPM · 20.1 dB(A) · 42.4 °C	<6.0 → 20.1 dB(A)
100%	903 RPM · 29.1 dB(A) · 30.9 °C	1450 RPM · 43.3 dB(A) · 45.7 °C	**+14.2 dB(A)**

230V

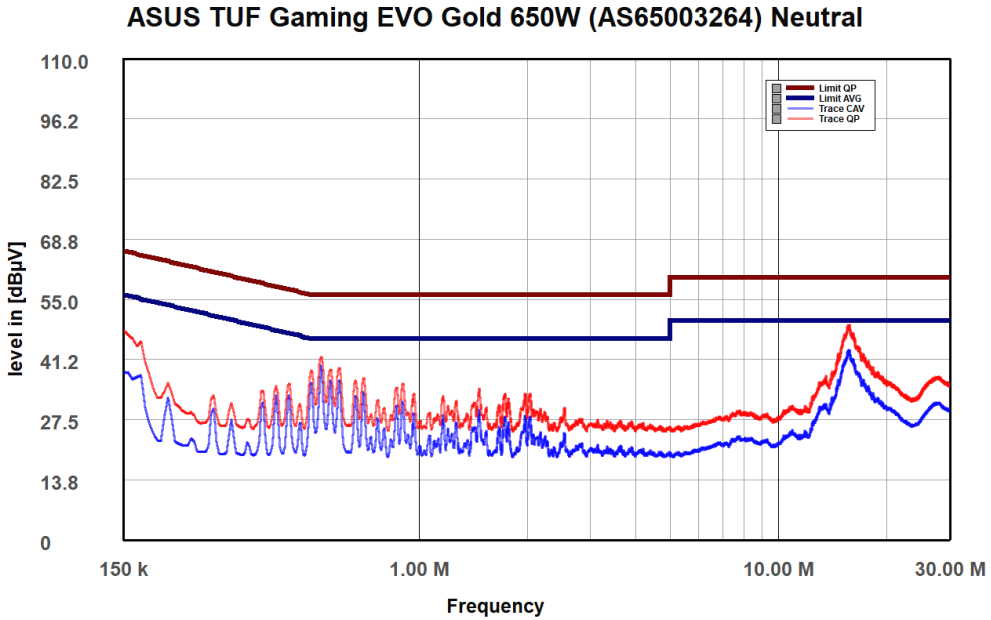
Load	Normal ambient fan · noise · intake	High ambient fan · noise · intake	Noise change
10%	317 RPM · <6.0 dB(A) · 30.7 °C	432 RPM · 7.5 dB(A) · 40.1 °C	<6.0 → 7.5 dB(A)
20%	321 RPM · <6.0 dB(A) · 31.0 °C	493 RPM · 9.7 dB(A) · 40.8 °C	<6.0 → 9.7 dB(A)
50%	323 RPM · <6.0 dB(A) · 30.7 °C	653 RPM · 19.3 dB(A) · 42.3 °C	<6.0 → 19.3 dB(A)
100%	821 RPM · 26.6 dB(A) · 30.5 °C	1422 RPM · 42.8 dB(A) · 45.6 °C	**+16.2 dB(A)**

INFO

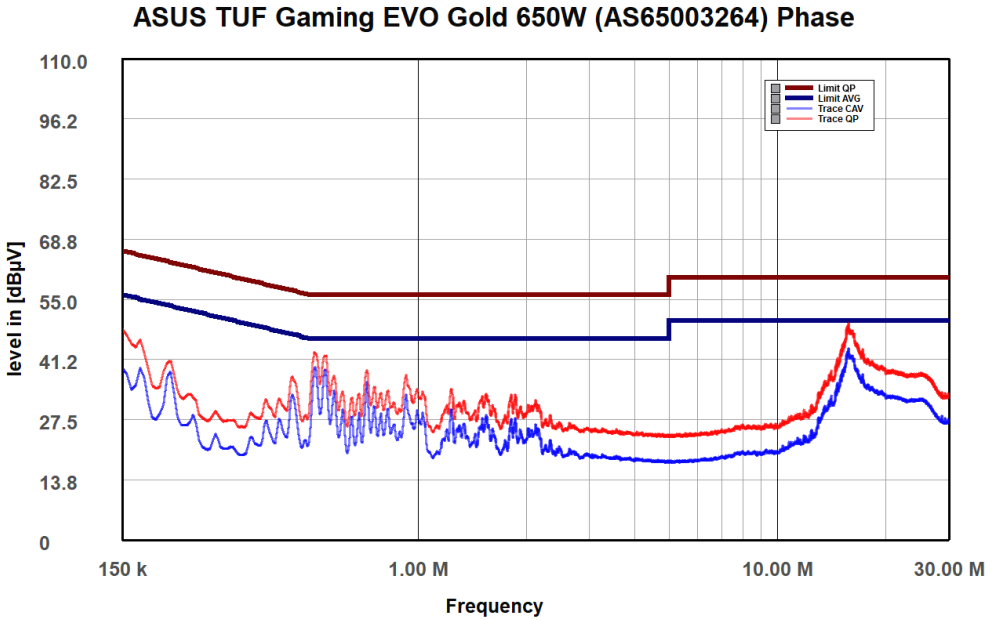
Fan speed, noise and the measured intake temperature at 10, 20, 50 and 100 % load, from the two load regulation tests: at normal ambient (about 30-32 °C) and at high ambient (about 40-47 °C). These are stabilized readings at fixed loads, not averages over the certification sweep, so they are indicative of how the fan behaves when it is hot. "<6.0" is the floor of our sound meter: the fan is stopped or too quiet to measure (the fan speed column says which); with the fan stopped, the intake sensor can read higher than the chamber air.

Informational. Not part of the ETA or LAMBDA rating.

Conducted Emissions EN 55032 & CISPR 32



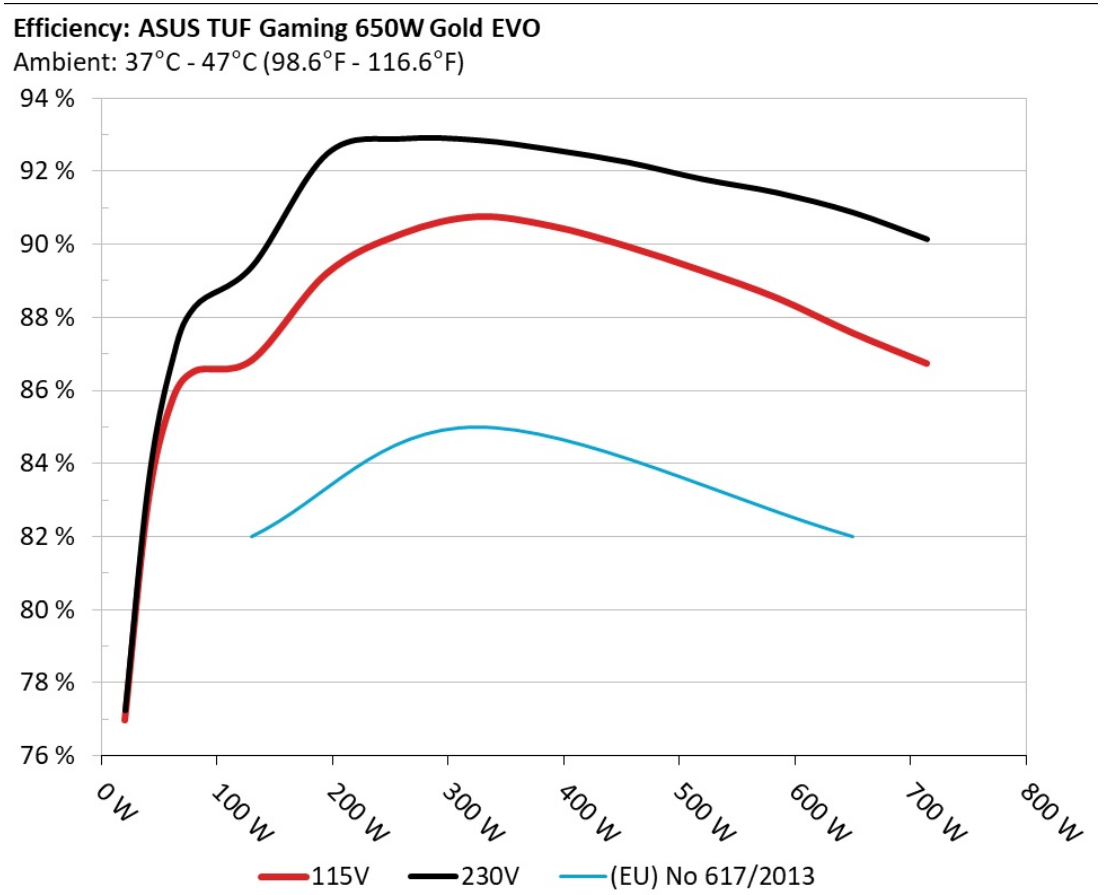
NEUTRAL



PHASE

Indicative Performance

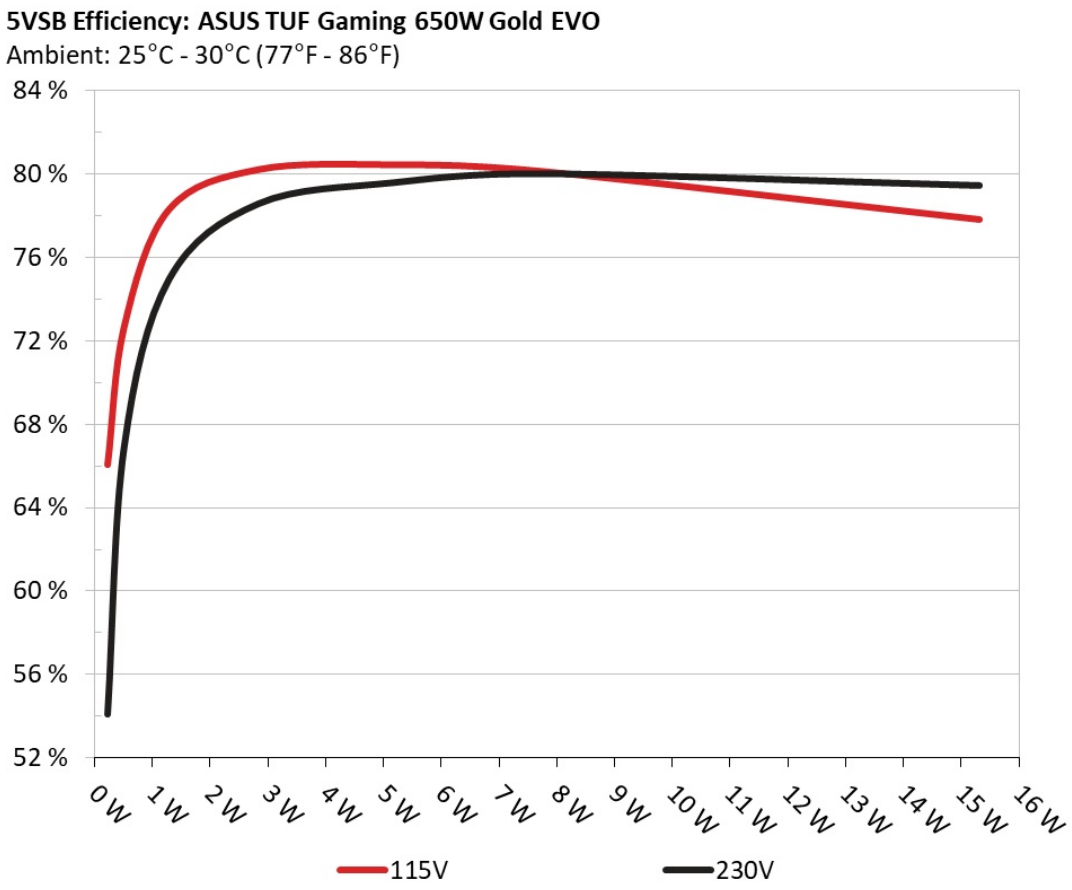
Efficiency under high ambient temperature



INFO

The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5VSB Efficiency



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

5VSB Efficiency (ERP LOT 3/6 & CEC)

115V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.233W	66.08%	0.027
	5.181V	0.353W		114.9V
2	**0.09A**	0.466W	72.253%	0.048
	5.179V	0.645W		114.9V
3	**0.55A**	2.842W	80.206%	0.225
	5.167V	3.543W		114.89V
4	**1A**	5.157W	80.438%	0.33
	5.156V	6.411W		114.89V
5	**1.5A**	7.716W	80.128%	0.392
	5.143V	9.63W		114.89V
6	**3A**	15.315W	77.818%	0.484
	5.105V	19.681W		114.89V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	**0.045A**	0.233W	54.125%	0.01
	5.183V	0.433W		229.89V
2	**0.09A**	0.466W	66.963%	0.015
	5.181V	0.697W		229.89V
3	**0.55A**	2.843W	78.569%	0.077
	5.169V	3.62W		229.88V
4	**1A**	5.158W	79.573%	0.133
	5.157V	6.483W		229.89V
5	**1.5A**	7.717W	80.003%	0.185
	5.144V	9.646W		229.89V
6	**3A**	15.317W	79.439%	0.298
	5.105V	19.28W		229.89V

Protection Features

OCP (Normal @ 29.3°C)	12V: 68.4A (126.29%), 11.955V 5V: 27.6A (138%), 5.065V *High Ripple (53.27mV) 3.3V: 27.1A (135.5%), 3.206V 5VSB: 4.2A (140%), 5.071V
OCP (Hot @ 41.2°C)	12V: 68A (125.55%), 11.957V 5V: 27.4A (137%), 5.065V 3.3V: 26.9A (134.5%), 3.202V 5VSB: 4.2A (140%), 5.072V
OPP (Normal @ 28.7°C)	810.66W (124.72%)
OPP (Hot @ 41.7°C)	805.61W (123.94%)
OTP	✓ (110°C @ 12V Heatsink)
SCP	12V to Earth: ✓ 5V to Earth: ✓ 3.3V to Earth: ✓ 5VSB to Earth: ✓ -12V to Earth: ✓
PWR_OK	Proper Operation
UVP (Full Load @ 90V)	✓
UVP (No Damage @ 80V)	✓
Conducted Emissions EN55032 & CISPR 32	✓
NLO	✓
Fan Failure Protection	✗
SIP	Surge: MOV Inrush: NTC & Bypass Relay

Supplementary Tests (For Reference)

Typical Load Tests

115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	**3.584A**	**1.966A**	**1.992A**	**0.971A**	65.002	84.897%	396	<6.0	40.16°C	0.866
	12.108V	5.087V	3.314V	5.152V	76.574				43.59°C	114.86V
20%	**8.188A**	**2.953A**	**2.998A**	**1.167A**	129.932	86.82%	470	9.3	40.95°C	0.908
	12.095V	5.079V	3.302V	5.141V	149.547				45.86°C	114.76V
30%	**13.150A**	**3.45A**	**3.507A**	**1.365A**	194.935	89.2%	505	11	41.28°C	0.932
	12.082V	5.072V	3.293V	5.13V	218.122				47.01°C	114.75V
40%	**18.132A**	**3.949A**	**4.02A**	**1.563A**	260.022	90.284%	565	13.9	41.52°C	0.968
	12.068V	5.065V	3.284V	5.119V	288.02				47.88°C	114.8V
50%	**22.770A**	**4.944A**	**5.043A**	**1.762A**	325.021	90.748%	673	20.1	42.37°C	0.987
	12.056V	5.057V	3.272V	5.107V	358.179				48.78°C	114.77V
60%	**27.368A**	**5.942A**	**6.075A**	**1.963A**	389.37	90.492%	771	23.9	42.73°C	0.995
	12.041V	5.049V	3.26V	5.096V	430.272				49.3°C	114.75V
70%	**32.051A**	**6.944A**	**7.115A**	**2.164A**	454.689	89.938%	922	29.7	43.08°C	0.996
	12.030V	5.041V	3.247V	5.084V	505.58				50.94°C	114.73V
80%	**36.749A**	**7.947A**	**8.161A**	**2.267A**	519.483	89.271%	1084	34.8	43.75°C	0.997
	12.016V	5.032V	3.235V	5.074V	581.924				51.93°C	114.7V
90%	**41.859A**	**8.457A**	**8.679A**	**2.369A**	584.905	88.521%	1278	40	44.53°C	0.998
	12.002V	5.025V	3.226V	5.066V	660.812				53.4°C	114.68V
100%	**46.716A**	**8.968A**	**9.231A**	**2.975A**	649.749	87.572%	1450	43.3	45.73°C	0.998
	11.989V	5.017V	3.217V	5.043V	741.915				55.46°C	114.64V
110%	**51.452A**	**9.982A**	**10.391A**	**2.979A**	714.374	86.73%	1590	46.5	46.59°C	0.999
	11.974V	5.009V	3.204V	5.036V	823.665				58.25°C	114.61V
CL1	**0.116A**	**13.088A**	**13.491A**	**0A**	111.295	81.667%	968	31.4	41.51°C	0.901
	12.104V	5.058V	3.239V	5.164V	135.926				51.11°C	114.59V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	**0.116A**	**19.699A**	**0A**	**0A**	101.353	80.654%	797	25.3	40.05°C	0.897
	12.108V	5.074V	3.303V	5.168V	125.657				49.34°C	114.84V
CL3	**0.114A**	**0A**	**20.479A**	**0A**	67.382	74.327%	698	21.2	41.56°C	0.877
	12.107V	5.062V	3.222V	5.168V	90.651				49.79°C	114.86V
CL4	**54.210A**	**0A**	**0A**	**0A**	649.562	88.782%	1317	40.4	45.71°C	0.998
	11.982V	5.041V	3.278V	5.131V	731.583				53.87°C	114.64V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	**3.586A**	**1.966A**	**1.992A**	**0.971A**	65.009	86.562%	432	7.5	40.07°C	0.809
	12.107V	5.087V	3.313V	5.152V	75.065				44.24°C	229.88V
20%	**8.189A**	**2.954A**	**3A**	**1.167A**	129.949	89.396%	493	9.7	40.81°C	0.927
	12.094V	5.079V	3.3V	5.141V	145.348				45.26°C	229.86V
30%	**13.153A**	**3.451A**	**3.51A**	**1.365A**	194.954	92.472%	493	9.7	41.17°C	0.956
	12.080V	5.072V	3.291V	5.13V	210.824				45.81°C	229.86V
40%	**18.135A**	**3.949A**	**4.023A**	**1.563A**	260.049	92.879%	558	13.8	41.65°C	0.973
	12.067V	5.065V	3.282V	5.119V	279.976				46.71°C	229.84V
50%	**22.776A**	**4.945A**	**5.049A**	**1.763A**	325.048	92.84%	653	19.3	42.25°C	0.979
	12.053V	5.057V	3.269V	5.107V	350.125				47.35°C	229.83V
60%	**27.375A**	**5.943A**	**6.083A**	**1.963A**	389.427	92.58%	763	23.7	42.87°C	0.984
	12.040V	5.049V	3.255V	5.095V	420.618				48.37°C	229.82V
70%	**32.061A**	**6.945A**	**7.126A**	**2.164A**	454.752	92.237%	912	29.5	43.29°C	0.986
	12.028V	5.041V	3.242V	5.083V	493.059				49.55°C	229.82V
80%	**36.759A**	**7.948A**	**8.175A**	**2.267A**	519.542	91.776%	1089	34.8	43.71°C	0.989
	12.015V	5.032V	3.229V	5.073V	566.078				50.89°C	229.79V
90%	**41.869A**	**8.458A**	**8.697A**	**2.37A**	584.955	91.4%	1256	39.6	44.51°C	0.99
	12.001V	5.025V	3.219V	5.065V	640.038				52.5°C	229.79V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	**46.726A**	**8.969A**	**9.254A**	**2.976A**	649.784	90.868%	1422	42.8	45.58°C	0.991
	11.987V	5.017V	3.209V	5.042V	715.067				54.06°C	229.78V
110%	**51.464A**	**9.984A**	**10.421A**	**2.98A**	714.418	90.133%	1573	46.5	46.09°C	0.994
	11.972V	5.008V	3.195V	5.035V	792.657				56.03°C	229.76V
CL1	**0.116A**	**13.09A**	**13.539A**	**0A**	111.298	84.596%	861	27.7	40.96°C	0.915
	12.103V	5.057V	3.227V	5.162V	131.505				49.68°C	229.87V
CL2	**0.116A**	**19.702A**	**0A**	**0A**	101.359	82.938%	735	22.7	40.97°C	0.905
	12.107V	5.074V	3.303V	5.168V	122.238				48.85°C	229.89V
CL3	**0.115A**	**0A**	**20.536A**	**0A**	67.384	75.831%	665	19.8	40.62°C	0.851
	12.106V	5.061V	3.213V	5.168V	88.853				48.54°C	229.88V
CL4	**54.223A**	**0A**	**0A**	**0A**	649.614	91.752%	1283	40	45.45°C	0.991
	11.980V	5.04V	3.278V	5.131V	707.906				52.25°C	229.77V

The results above are not used in the certification process

Light Load Tests

115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	**1.226A**	**0.491A**	**0.496A**	**0.193A**	19.996	76.967%	326	<6.0	36.63°C	0.744
	12.114V	5.095V	3.327V	5.177V	26.008				39.17°C	114.88V
40W	**2.700A**	**0.687A**	**0.695A**	**0.29A**	39.998	82.905%	327	<6.0	37.73°C	0.828
	12.110V	5.093V	3.325V	5.173V	48.243				40.43°C	114.87V
60W	**4.174A**	**0.884A**	**0.894A**	**0.387A**	59.999	85.628%	334	<6.0	38.44°C	0.862
	12.106V	5.091V	3.322V	5.169V	70.075				41.17°C	114.88V
80W	**5.644A**	**1.081A**	**1.094A**	**0.484A**	79.94	86.513%	377	<6.0	39.14°C	0.879
	12.104V	5.088V	3.319V	5.164V	92.403				42.83°C	114.86V

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	**1.226A**	**0.491A**	**0.496A**	**0.193A**	20.007	77.251%	365	<6.0	36.48°C	0.413
	12.114V	5.095V	3.328V	5.177V	25.96				41.25°C	229.89V
40W	**2.700A**	**0.687A**	**0.695A**	**0.29A**	40.007	83.455%	363	<6.0	37.2°C	0.653
	12.110V	5.093V	3.325V	5.172V	47.947				41.25°C	229.88V
60W	**4.174A**	**0.884A**	**0.894A**	**0.387A**	60.006	86.728%	376	<6.0	38.45°C	0.786
	12.106V	5.09V	3.321V	5.168V	69.192				41.92°C	229.88V
80W	**5.646A**	**1.081A**	**1.094A**	**0.484A**	79.956	88.284%	397	<6.0	39.41°C	0.856
	12.102V	5.088V	3.318V	5.164V	90.563				43.01°C	229.88V

The results above are not used in the certification process

Ripple Measurements

115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	38.77mV	23.09mV	20.83mV	14.98mV	Pass
20% Load	39.30mV	24.94mV	22.98mV	17.80mV	Pass
30% Load	36.77mV	26.74mV	24.68mV	18.98mV	Pass
40% Load	40.61mV	29.10mV	26.22mV	18.73mV	Pass
50% Load	41.33mV	27.61mV	25.04mV	18.93mV	Pass
60% Load	44.70mV	28.17mV	24.68mV	17.65mV	Pass
70% Load	46.24mV	29.46mV	26.94mV	16.52mV	Pass
80% Load	50.58mV	29.61mV	27.14mV	19.75mV	Pass
90% Load	59.48mV	27.20mV	25.29mV	16.93mV	Pass
100% Load	64.44mV	29.82mV	27.40mV	17.44mV	Pass
110% Load	68.54mV	30.64mV	28.78mV	17.44mV	Pass
Crossload1	37.90mV	33.92mV	30.01mV	20.47mV	Pass
Crossload2	60.40mV	43.73mV	27.86mV	21.55mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	50.79mV	25.97mV	34.99mV	19.03mV	Pass
Crossload4	63.83mV	26.38mV	25.03mV	17.80mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	34.52mV	24.53mV	21.39mV	14.83mV	Pass
20% Load	27.16mV	24.99mV	21.65mV	14.47mV	Pass
30% Load	32.02mV	28.58mV	23.34mV	16.11mV	Pass
40% Load	37.24mV	27.45mV	25.19mV	16.11mV	Pass
50% Load	41.22mV	27.66mV	25.70mV	15.85mV	Pass
60% Load	43.22mV	29.51mV	28.17mV	17.09mV	Pass
70% Load	45.18mV	30.74mV	28.93mV	17.04mV	Pass
80% Load	51.91mV	31.41mV	28.68mV	20.06mV	Pass
90% Load	53.96mV	32.23mV	29.40mV	22.22mV	Pass
100% Load	58.92mV	33.51mV	31.40mV	18.93mV	Pass
110% Load	62.35mV	33.98mV	31.45mV	18.68mV	Pass
Crossload1	32.07mV	31.61mV	26.78mV	16.73mV	Pass
Crossload2	49.05mV	39.83mV	24.63mV	17.29mV	Pass
Crossload3	47.67mV	26.89mV	35.25mV	17.29mV	Pass
Crossload4	57.90mV	28.02mV	26.52mV	19.81mV	Pass

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ASUS TUF Gaming 650W Gold EVO



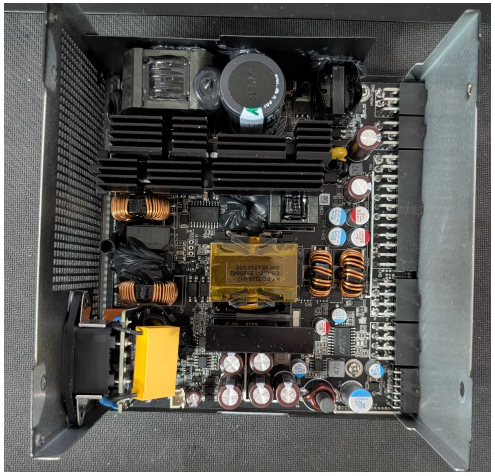
Top side



Power specifications label



Third Photo



Fourth Photo

All data and graphs included in this test report can be used by any individual on the following conditions:
› It should be mentioned that the test results are provided by Cybenetics
› The link to the original test results document should be provided in any case

Cybenetics runs voluntary certification programs for power supplies - ETA for efficiency, LAMBDA for noise and SAFE for safety and correct operation - and for cooling products, with DELTA for chassis soundproofing and PHI for fan airflow and static pressure. THETA rates cooler performance on AMD AM5 and Intel LGA1851 outside ISO 17065 and accreditation scope

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