



ASUS TUF-550B-GAMING (#2)

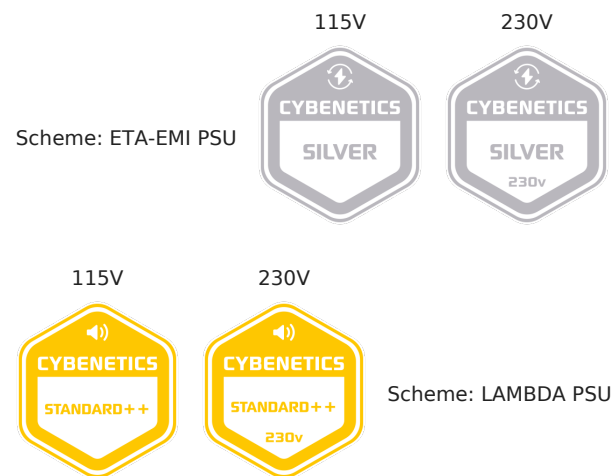
Serial Number

Lab ID AS55002085

Certification ID 252085

Test Result Report ID: 22PS2085A

Certificate Issue Date: Nov 4, 2022



Aristeidis Bitziopoulos, Certification Body General Manager

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-550B-GAMING (#2)
OEM/ODM	Great Wall
Serial Number	
Product Specifications	
Manufacturer-Provided Information	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	8-4
Rated Frequency (Hz)	47-63

Rated Power (W)	550
Operating Temperature (Continuous Full Load) (°C)	
Type	ATX12V
Cable Design	Fixed cables
Warranty	-
Cybenetics Measurements	
Dimensions (W x H x D)	
Weight	
Cooling	135mm Double Ball-Bearing Fan (CF1325H12D)
Semi-Passive Operation	✓
Cybenetics Testing Information	
Lab ID	AS55002085
Date of receipt	Aug 25, 2022
Testing Date	Nov 3, 2022
Report Issued Date	Nov 4, 2022
Engineer Name	-
Authorized By the Laboratory Technical Manager	Aristeidis Bitziopoulos
Signature	

Cables and Connectors(Non-accredited measurements)

Captive Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-20AWG	No
4+4 pin EPS12V (820mm)	1	1	18AWG	No
6+2 pin PCIe (610mm+100mm)	1	2	18AWG	No
SATA (400mm+110mm+110mm)	1	3	18AWG	No
SATA (410mm+110mm)	1	2	18AWG	No
4-pin Molex (400mm+150mm+150mm+150mm)	1	4	18AWG	No
Modular Cables				
AC Power Cord (1390mm) - C13 coupler	1	1	18AWG	-

Power Specifications

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	20	45.8	3	0.8
	Watts	120		549.6	15	9.6
Total Max. Power (W)		550				

Parts Description

General Data	-
Manufacturer (OEM)	Great Wall
PCB Type	Single Sided
Primary Side	-
Transient Filter	4x Y caps, 2x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor 15S1R5M (1.5 Ohm)
Bridge Rectifier(s)	1x GBU15K (800V, 15A @ 100°C)
APFC MOSFETs	2x ROHM R6020ENX (600V, 20A, Rds(on): 0.196Ohm)
APFC Boost Diode	1x NXP BYC8B-600 (600V, 8A)
Bulk Cap(s)	1x Lelon (450V, 330uF, 2,000h @ 105°C, LSG)
Main Switchers	2x STMicroelectronics STF24N60DM2 (600V, 11A @ 100°C, Rds(on): 0.2Ohm)
APFC Controller	Champion CM6500UNX & CM03AX
Resonant Controller	Champion CM6901X
Topology	Primary side: APFC, Half-Bridge & LLC converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	-
+12V MOSFETs	4x Advanced Power AP9990GP (60V, 80A @ 100°C, Rds(on): 6mOhm)
5V & 3.3V	DC-DC Converters
Filtering Capacitors	Electrolytic: 7x Lelon (4-7,000h @ 105°C, RXW), 2x Teapo (3-6,000h @ 105°C, SY) Polymer: 1x Elite, 5x Lelon, 2x no info
Supervisor IC	IN1S429I - DCG
Fan Model	Champion CF1325H12D (135mm, 12V, 0.6A, Double Ball Bearing)
5VSB Circuit	-
Rectifier	1x PFC PFR30L45CT SBR (45V, 30A)

Standby PWM Controller	Power Intergrations TNY278PN
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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	✓

Performance Summary

115V

Accredited	
Average Efficiency (>1450 load combinations)	86.057%
Average Noise Output (>1450 Load Combinations)	31.34dBA
Average PF (>1450 Load Combinations)	0.986
Efficiency With 10W (≤500W) or 2% (>500W) Load	62.671%
Standby Power Consumption	0.0543W
Non-Accredited	
12V Ripple (Full Load)	33.27mV
5V Ripple (Full Load)	19.62mV
3.3V Ripple (Full Load)	15.68mV
5VSB Ripple (Full Load)	31.93mV
12V Load Regulation	1.20%
5V Load Regulation	0.49%
3.3V Load Regulation	0.63%
5VSB Load Regulation	1.39%
Inrush Current	78.580A

230V

Accredited		
Average Efficiency (>1450 load combinations)	88.514%	
Average Noise Output (>1450 Load Combinations)	31.47dBA	
Average PF (>1450 Load Combinations)	0.951	
Efficiency With 10W (≤500W) or 2% (>500W) Load	-	
Standby Power Consumption	0.1174W	
Non-Accredited		
12V Ripple (Full Load)	34.15mV	
5V Ripple (Full Load)	18.01mV	
3.3V Ripple (Full Load)	15.12mV	
5VSB Ripple (Full Load)	30.34mV	
12V Load Regulation	1.12%	
5V Load Regulation	0.47%	
3.3V Load Regulation	0.63%	
5VSB Load Regulation	1.35%	
Inrush Current	93.990A	
Hold-Up Time & PWR_OK Signal	11.30ms	
AC Loss to PWR_OK Hold Up Time	7.80ms	
PWR_OK Inactive to DC Loss Delay	3.50ms	
PSU Timings: T1 (20% / 100%)	36.0ms	36.0ms
PSU Timings: T3 (20% / 100%)	129.0ms	128.0ms
OPP (26.43°C / 37.02°C)	133.19%	120.07%

Hold-Up Time & PWR_OK Signal

Hold-Up Time (ms)	11.3
AC Loss to PWR_OK Hold Up Time (ms)	7.8
PWR_OK Inactive to DC Loss Delay (ms)	3.5



Tables

115V

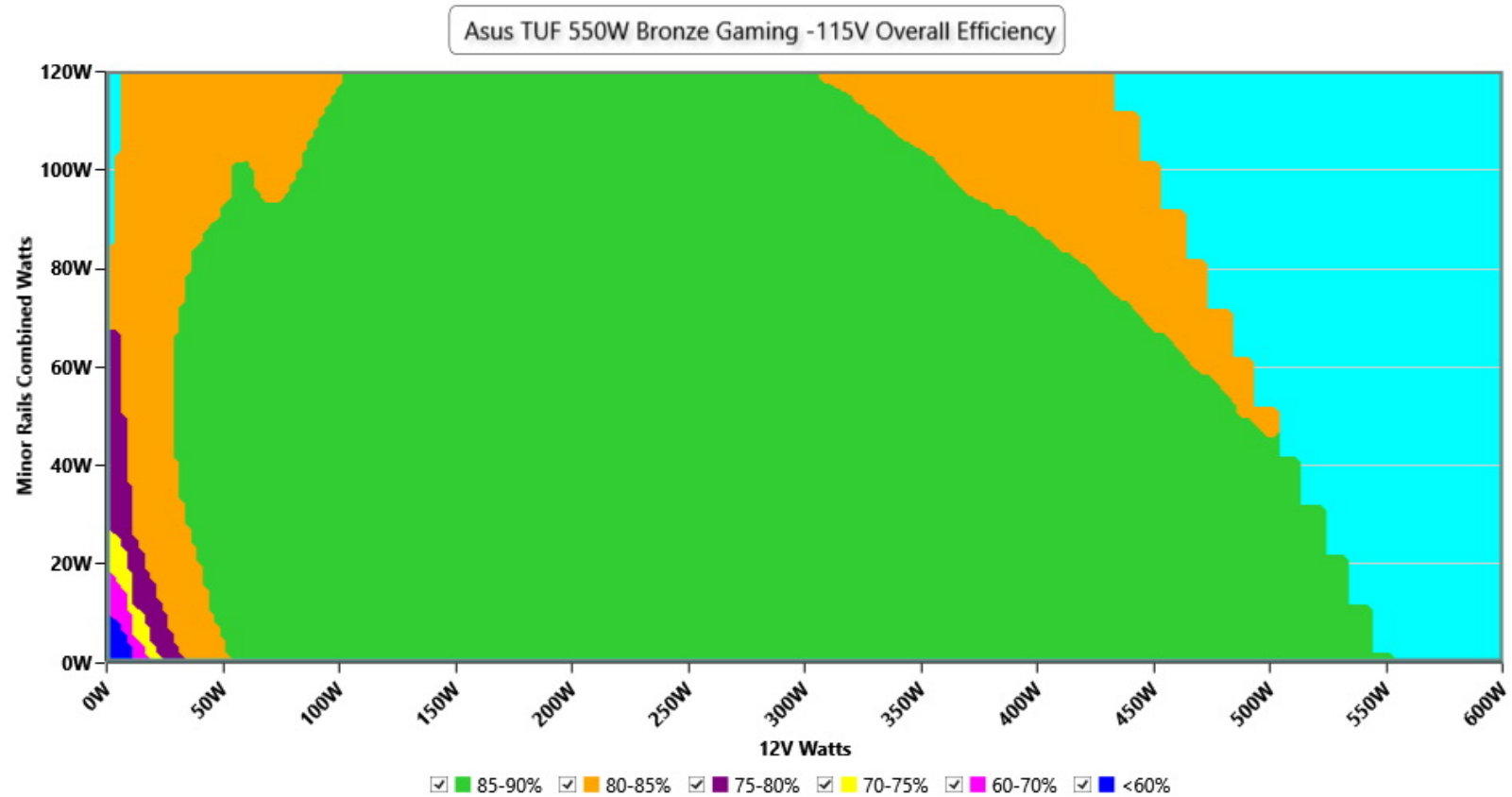
Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	114.86 V	114.81 V	113.85 V	114.89 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.99 Hz	59.40 Hz	60.01 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.416	1.416	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.15 %	0.12 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.054 W	0.002 W	N/A	0.080 W	N/A	N/A
Apparent Power:	12.233 W	12.199 W	N/A	12.280 W	N/A	N/A
Power Factor:	0.006	N/A	N/A	N/A	N/A	N/A

230V

Detailed Results						
	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	229.91 V	229.85 V	227.70 V	229.94 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:	0.13 %	0.11 %	N/A	0.15 %	2.00 %	PASS
Real Power:	0.117 W	0.083 W	N/A	0.155 W	N/A	N/A
Apparent Power:	42.144 W	42.104 W	N/A	42.179 W	N/A	N/A
Power Factor:	0.003	N/A	N/A	N/A	N/A	N/A

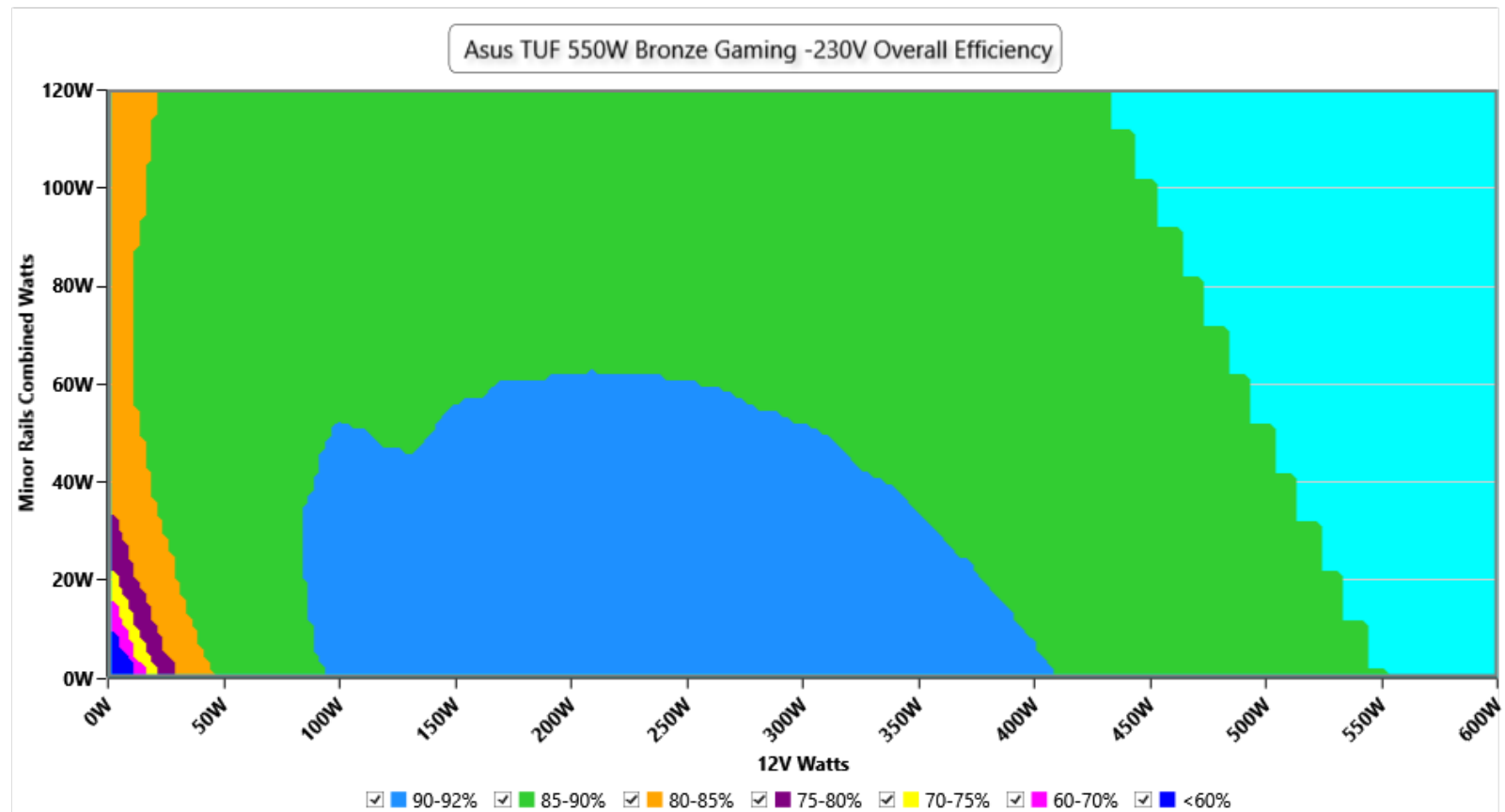
Efficiency Graph

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

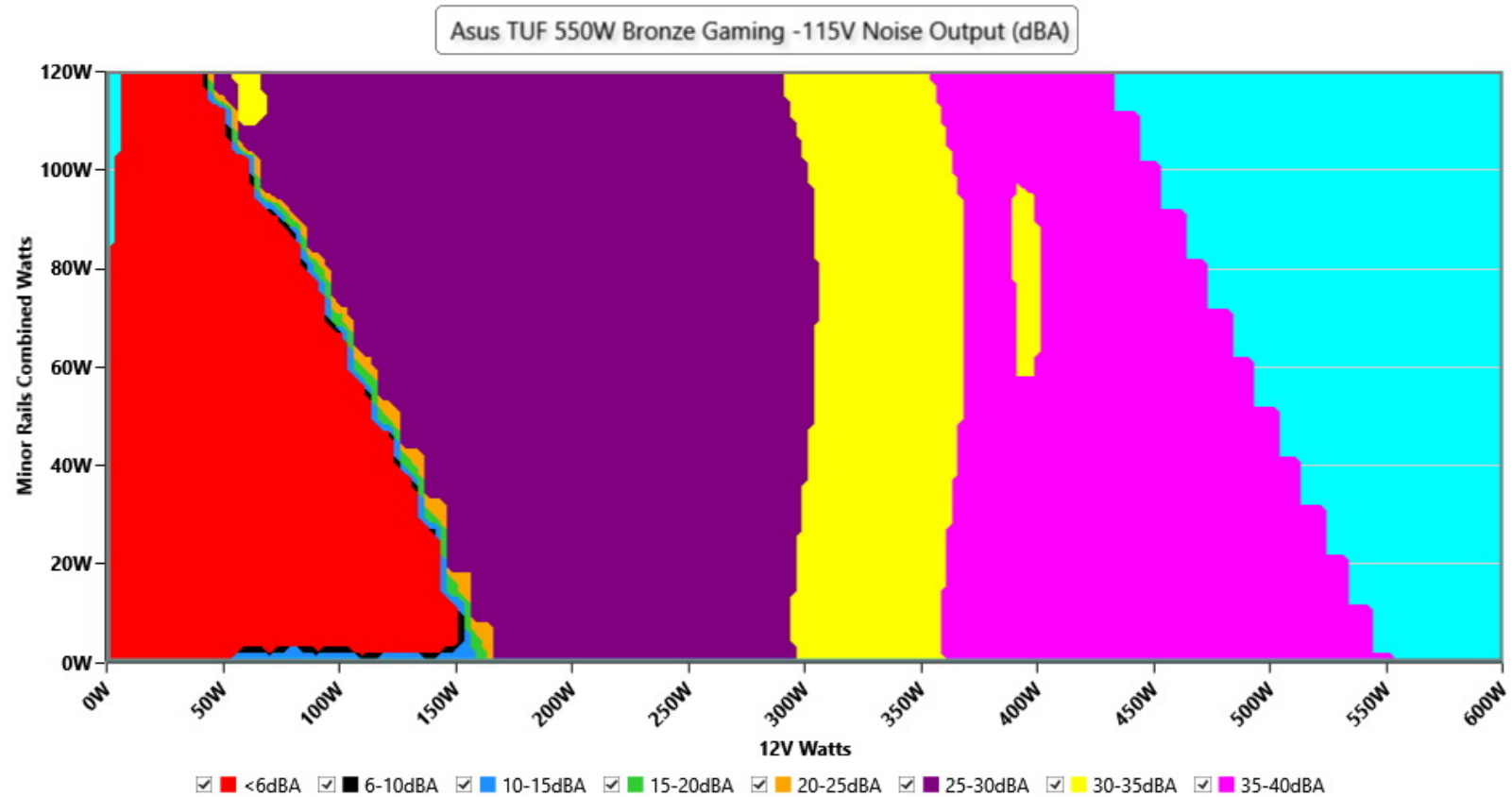


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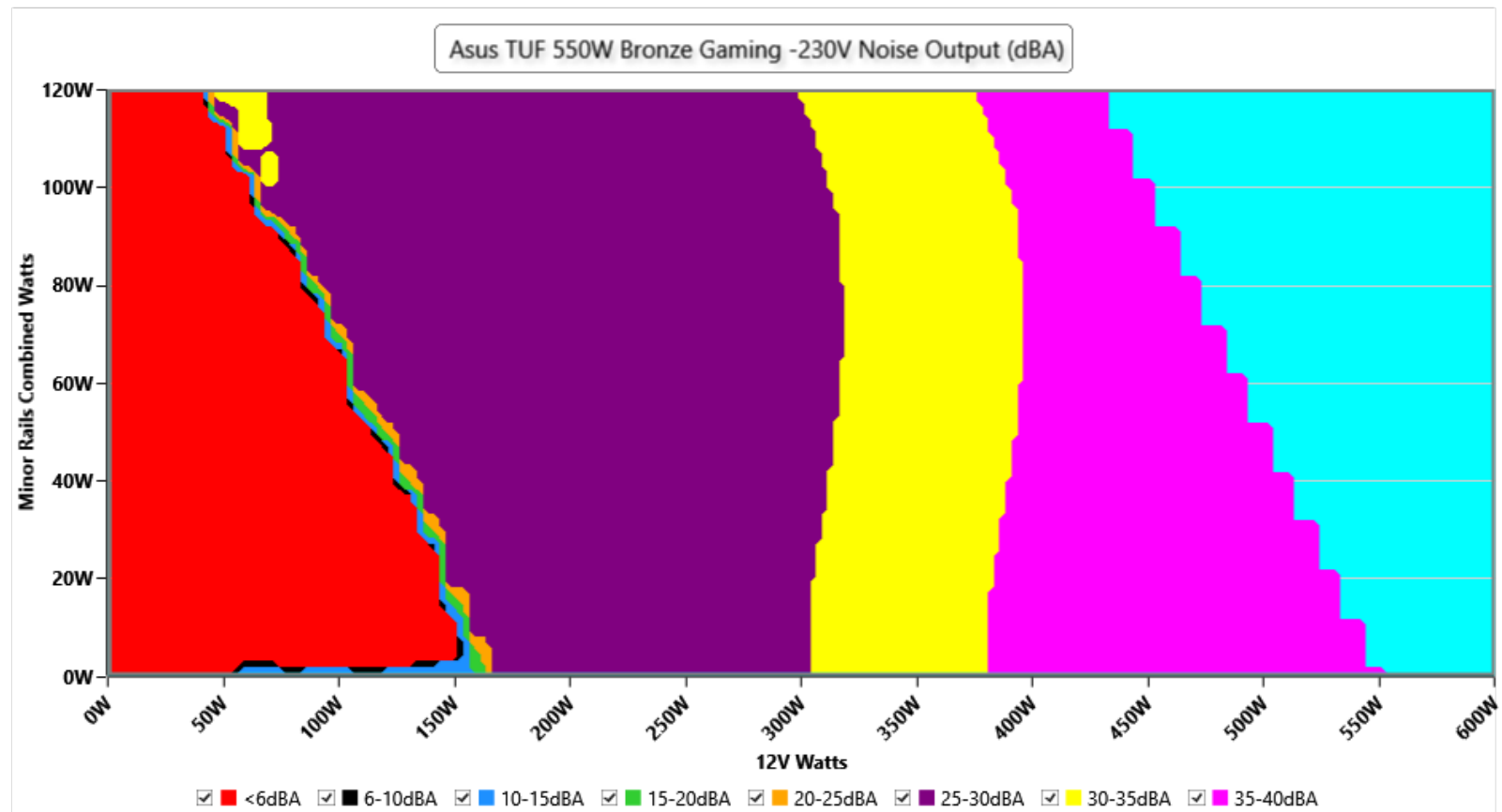
Noise Graph

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



INFO

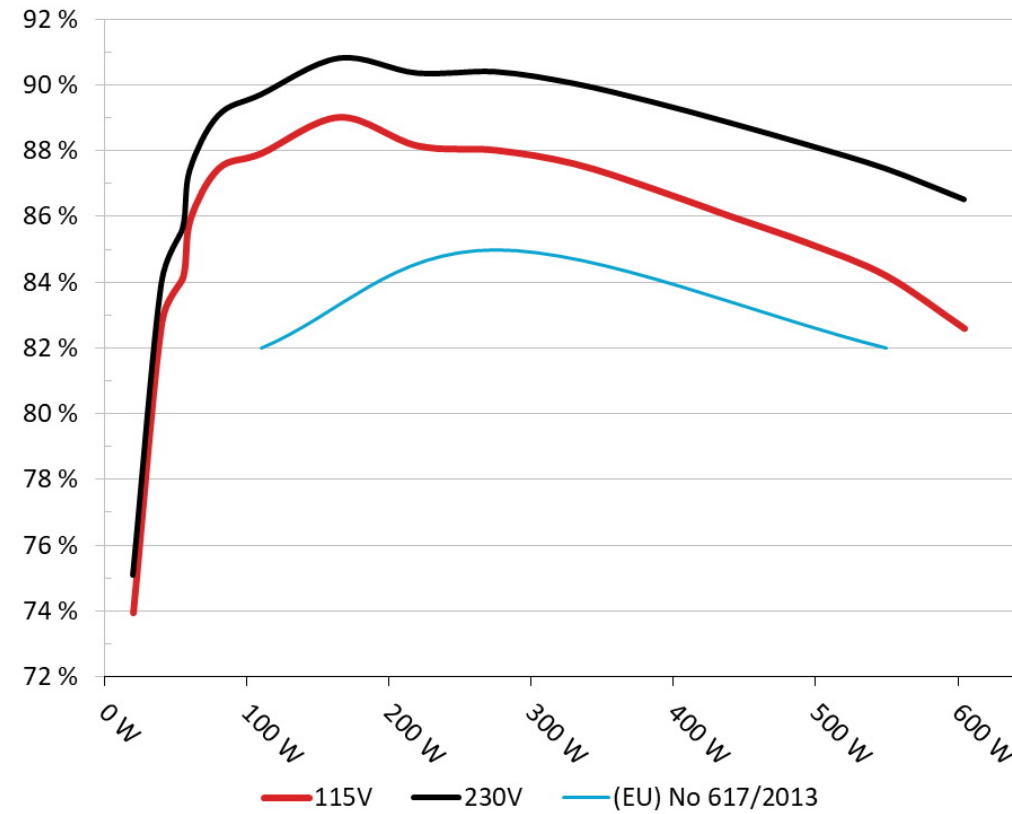
The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

Indicative Performance

Efficiency under high ambient temperature

Efficiency: ASUS TUF-550W-BRONZE-GAMING

Ambient: 33°C - 40°C (91.4°F - 104°F)



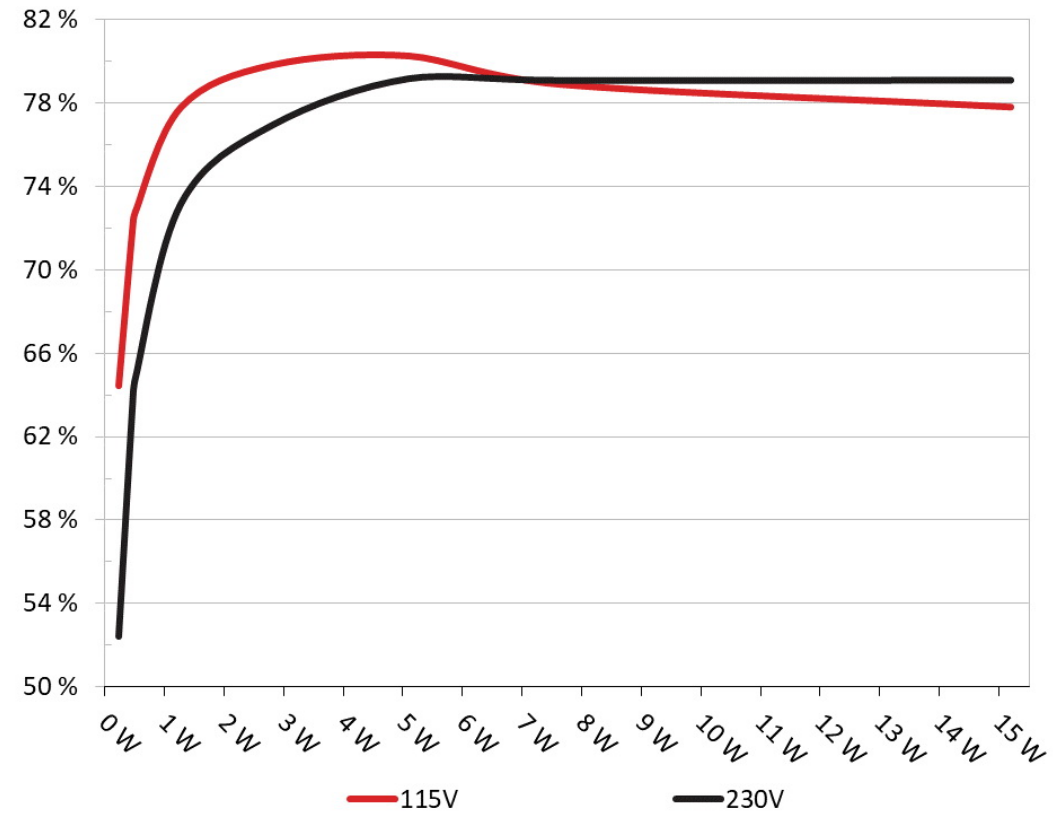
INFO

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

5VSB Efficiency: ASUS TUF-550W-BRONZE-GAMING

Ambient: 34°C - 36°C (93.2°F - 96.8°F)



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	0.23W	64.462%	0.033
	5.112V	0.357W		114.88V
2	0.09A	0.46W	71.964%	0.059
	5.112V	0.639W		114.87V
3	0.55A	2.807W	79.824%	0.246
	5.106V	3.517W		114.88V
4	1A	5.098W	80.257%	0.325
	5.099V	6.353W		114.88V
5	1.5A	7.637W	78.897%	0.373
	5.092V	9.679W		114.88V
6	2.999A	15.19W	77.812%	0.433
	5.065V	19.523W		114.87V

230V

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	52.446%	0.012
	5.112V	0.439W		229.95V
2	0.09A	0.46W	63.496%	0.02
	5.112V	0.726W		229.95V
3	0.55A	2.807W	76.927%	0.097
	5.105V	3.649W		229.95V
4	1A	5.098W	79.153%	0.159
	5.099V	6.442W		229.95V
5	1.5A	7.637W	79.069%	0.213
	5.092V	9.659W		229.95V
6	2.999A	15.195W	79.076%	0.311
	5.067V	19.215W		229.95V

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%	2.758A	1.952A	1.981A	0.982A	54.985	84.165%	0	<6.0	39.44°C	0.953
	12.105V	5.122V	3.332V	5.093V	65.329				35.43°C	114.84V
20%	6.535A	2.929A	2.973A	1.179A	109.91	87.93%	0	<6.0	39.99°C	0.978
	12.091V	5.12V	3.33V	5.088V	124.996				35.74°C	114.83V
30%	10.667A	3.418A	3.47A	1.377A	164.896	89.031%	0	<6.0	40.62°C	0.986
	12.080V	5.119V	3.328V	5.082V	185.209				35.87°C	114.81V
40%	14.827A	3.912A	3.969A	1.576A	219.968	88.161%	1277	30.4	36.37°C	0.989
	12.057V	5.112V	3.325V	5.077V	249.507				41.42°C	114.8V
50%	18.650A	4.895A	4.966A	1.774A	274.953	88.029%	1227	29.3	37°C	0.991
	12.036V	5.108V	3.322V	5.072V	312.343				42.42°C	114.79V
60%	22.475A	5.877A	5.964A	1.974A	329.938	87.619%	1329	31.6	37.69°C	0.992
	12.019V	5.105V	3.32V	5.067V	376.563				43.7°C	114.77V
70%	26.311A	6.86A	6.963A	2.173A	384.934	86.863%	1428	33.7	38.09°C	0.993
	12.004V	5.103V	3.318V	5.06V	443.146				45.14°C	114.76V
80%	30.137A	7.844A	7.959A	2.274A	439.349	86.025%	1597	36.7	38.12°C	0.994
	11.994V	5.101V	3.315V	5.055V	510.72				46.16°C	114.73V
90%	34.383A	8.333A	8.445A	2.375A	494.311	85.2%	1680	38.3	38.36°C	0.994
	11.978V	5.099V	3.314V	5.051V	580.18				47.44°C	114.72V
100%	38.427A	8.827A	8.963A	2.976A	549.506	84.205%	1787	40	39.03°C	0.995
	11.966V	5.097V	3.312V	5.038V	652.59				49.11°C	114.7V
110%	42.351A	9.81A	10.054A	2.979A	604.507	82.601%	1892	41.5	40.07°C	0.99
	11.953V	5.096V	3.31V	5.035V	731.86				51.01°C	114.69V
CL1	0.114A	14.098A	14.35A	0A	121.259	82.457%	0	<6.0	44.05°C	0.982
	12.090V	5.121V	3.323V	5.093V	147.058				38.63°C	114.82V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
CL2	0.113A	19.483A	0A	0A	101.373	81.471%	0	<6.0	42.96°C	0.979
	12.116V	5.132V	3.325V	5.098V	124.431				35.86°C	114.83V
CL3	0.113A	0A	24.802A	0A	83.86	75.11%	0	<6.0	44.03°C	0.977
	12.103V	5.131V	3.326V	5.088V	111.653				34.91°C	114.82V
CL4	45.813A	0A	0A	0.001A	549.314	85.196%	1802	40.2	38.46°C	0.995
	11.990V	5.115V	3.321V	5.085V	644.764				49.37°C	114.71V

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%	2.758A	1.952A	1.981A	0.982A	54.99	85.635%	0	<6.0	39.71°C	0.768
	12.107V	5.121V	3.331V	5.093V	64.213				35.65°C	229.89V
20%	6.535A	2.93A	2.973A	1.179A	109.921	89.695%	0	<6.0	39.98°C	0.895
	12.092V	5.12V	3.329V	5.088V	122.549				35.74°C	229.88V
30%	10.667A	3.419A	3.47A	1.377A	164.89	90.802%	0	<6.0	40.89°C	0.937
	12.079V	5.118V	3.328V	5.083V	181.593				36.16°C	229.88V
40%	14.833A	3.913A	3.97A	1.575A	219.961	90.347%	1197	28.6	37.04°C	0.957
	12.052V	5.111V	3.324V	5.078V	243.463				42.05°C	229.87V
50%	18.662A	4.897A	4.967A	1.774A	274.937	90.388%	1146	27.2	37.55°C	0.967
	12.027V	5.105V	3.321V	5.074V	304.171				43.07°C	229.86V
60%	22.478A	5.879A	5.965A	1.973A	329.924	90.034%	1302	31	38.46°C	0.974
	12.017V	5.103V	3.319V	5.068V	366.44				44.55°C	229.85V
70%	26.305A	6.861A	6.963A	2.172A	384.907	89.474%	1435	33.9	38.6°C	0.979
	12.006V	5.102V	3.317V	5.062V	430.191				45.8°C	229.85V
80%	30.137A	7.845A	7.959A	2.273A	439.222	88.844%	1530	35.7	38.88°C	0.982
	11.990V	5.1V	3.315V	5.058V	494.376				46.93°C	229.84V
90%	34.373A	8.333A	8.446A	2.374A	494.251	88.167%	1681	38.3	39.28°C	0.984
	11.980V	5.098V	3.314V	5.053V	560.588				48.32°C	229.83V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
100%	38.398A	8.823A	8.962A	2.975A	549.453	87.439%	1832	40.7	39.34°C	0.986
	11.974V	5.099V	3.312V	5.04V	628.386				49.43°C	229.83V
110%	42.355A	9.811A	10.057A	2.978A	604.52	86.507%	1892	41.5	40.15°C	0.988
	11.953V	5.095V	3.31V	5.036V	698.814				51.13°C	229.82V
CL1	0.114A	14.09A	14.349A	0A	121.264	83.837%	0	<6.0	41.74°C	0.916
	12.095V	5.124V	3.323V	5.093V	144.642				36.25°C	229.88V
CL2	0.113A	19.486A	0A	0A	101.375	83.057%	0	<6.0	43.23°C	0.896
	12.116V	5.132V	3.326V	5.099V	122.056				36.19°C	229.88V
CL3	0.114A	0A	24.798A	0A	83.861	76.532%	0	<6.0	45.3°C	0.88
	12.104V	5.13V	3.326V	5.089V	109.577				36.19°C	229.88V
CL4	45.835A	0A	0A	0.001A	549.347	88.438%	1803	40.2	37.69°C	0.986
	11.985V	5.109V	3.321V	5.089V	621.16				48.67°C	229.83V

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	1.225A	0.488A	0.495A	0.196A	19.985	73.95%	0	<6.0	36.25°C	0.864
	12.110V	5.121V	3.333V	5.108V	27.025				33.2°C	114.85V
40W	2.698A	0.683A	0.693A	0.294A	39.985	82.785%	0	<6.0	36.58°C	0.931
	12.108V	5.122V	3.333V	5.106V	48.3				33.24°C	114.84V
60W	4.174A	0.878A	0.891A	0.392A	59.984	85.909%	0	<6.0	37.83°C	0.956
	12.103V	5.122V	3.332V	5.103V	69.824				34.05°C	114.84V
80W	5.645A	1.074A	1.089A	0.49A	79.923	87.472%	0	<6.0	38.7°C	0.968
	12.098V	5.121V	3.332V	5.101V	91.37				34.72°C	114.83V

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	1.225A	0.488A	0.495A	0.196A	19.986	75.083%	0	<6.0	36.02°C	0.488
	12.108V	5.122V	3.333V	5.108V	26.618				32.94°C	229.9V
40W	2.699A	0.683A	0.693A	0.294A	39.987	83.954%	0	<6.0	36.88°C	0.682
	12.107V	5.121V	3.332V	5.106V	47.632				33.61°C	229.89V
60W	4.174A	0.879A	0.891A	0.392A	59.987	87.404%	0	<6.0	37.65°C	0.785
	12.102V	5.121V	3.331V	5.103V	68.632				34.14°C	229.89V
80W	5.645A	1.074A	1.09A	0.49A	79.938	89.058%	0	<6.0	37.31°C	0.844
	12.100V	5.121V	3.331V	5.101V	89.757				33.46°C	229.89V

The results above are not used in the certification process

Ripple Measurements**115V**

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	52.99mV	11.08mV	8.95mV	40.07mV	Pass
20% Load	30.51mV	8.33mV	8.80mV	12.50mV	Pass
30% Load	24.38mV	9.81mV	8.95mV	17.20mV	Pass
40% Load	44.99mV	11.43mV	9.81mV	36.74mV	Pass
50% Load	40.91mV	13.47mV	10.72mV	42.10mV	Pass
60% Load	35.95mV	14.18mV	10.36mV	37.70mV	Pass
70% Load	41.16mV	13.62mV	10.92mV	40.03mV	Pass
80% Load	20.86mV	13.21mV	12.69mV	22.97mV	Pass
90% Load	38.98mV	15.30mV	13.04mV	44.43mV	Pass
100% Load	33.27mV	19.62mV	15.68mV	31.93mV	Pass
110% Load	38.78mV	18.51mV	16.13mV	32.52mV	Pass
Crossload1	33.52mV	16.16mV	15.58mV	14.06mV	Pass
Crossload2	27.83mV	12.91mV	8.90mV	11.74mV	Pass

Test	12V	5V	3.3V	5VSB	Pass/Fail
Crossload3	44.69mV	10.42mV	16.83mV	34.86mV	Pass
Crossload4	32.53mV	15.58mV	12.07mV	25.17mV	Pass

The results above are not used in the certification process

230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	45.44mV	9.96mV	8.24mV	41.44mV	Pass
20% Load	33.09mV	8.79mV	9.35mV	37.75mV	Pass
30% Load	25.75mV	10.01mV	8.69mV	16.55mV	Pass
40% Load	35.69mV	14.54mV	9.45mV	44.02mV	Pass
50% Load	25.14mV	12.45mV	9.96mV	18.37mV	Pass
60% Load	43.22mV	14.02mV	10.62mV	42.51mV	Pass
70% Load	30.38mV	12.96mV	11.17mV	34.10mV	Pass
80% Load	30.99mV	13.97mV	13.85mV	37.19mV	Pass
90% Load	21.77mV	14.64mV	12.23mV	22.57mV	Pass
100% Load	34.15mV	18.01mV	15.12mV	30.34mV	Pass
110% Load	38.75mV	19.33mV	15.96mV	33.45mV	Pass
Crossload1	33.82mV	14.46mV	15.06mV	13.90mV	Pass
Crossload2	29.60mV	13.47mV	8.75mV	10.98mV	Pass
Crossload3	30.71mV	8.79mV	18.30mV	11.44mV	Pass
Crossload4	33.91mV	15.70mV	11.99mV	23.49mV	Pass

The results above are not used in the certification process

ASUS TUF-550B-GAMING (#2)



Top side



Power specifications label

Cybenetics [REDACTED]

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LAMBDA [REDACTED]

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PHI [REDACTED]

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