

Anex

Seasonic SSR-1000PD Ultra

Lab ID#: 232

Receipt Date: -

Test Date: -

Report:

Report Date: Apr 12, 2018

DUT INFORMATION	
Brand	Seasonic
Manufacturer (OEM)	Seasonic
Series	Prime Platinum Ultra
Model Number	SSR-1000PD Ultra
Serial Number	R1709AA183740034
DUT Notes	

DUT SPECIFICATIONS	
Rated Voltage (Vrms)	100-240
Rated Current (Arms)	13-6.5
Rated Frequency (Hz)	50-60
Rated Power (W)	1000
Type	ATX12V
Cooling	135mm Fluid Dynamic Bearing Fan (HA13525H12F-Z)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

POWER SPECIFICATIONS						
Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	25	25	83	3	0.3
	Watts	125		996	15	3.6
Total Max. Power (W)		1000				

CABLES AND CONNECTORS				
Modular Cables				
Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (610mm)	1	1	18-22AWG	No
4+4 pin EPS12V (650mm)	2	2	18AWG	No
6+2 pin PCIe (680mm+80mm)	4	8	18AWG	No
SATA (400mm+110mm+110mm+110mm)	2	8	18AWG	No
SATA (350mm+150mm+150mm+150mm)	1	4	18AWG	No
4 pin Molex (450mm+120mm+120mm)	1	3	18AWG	No
4 pin Molex (350mm+120mm)	1	2	18AWG	No
4-pin Molex Adapter / SATA (150mm+150mm)	1	2	18AWG	No
FDD Adapter (+100mm)	1	1	22AWG	No
AC Power Cord (1360mm) - C13 coupler	1	1	18AWG	-

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

PAGE 1/9

Anex

Seasonic SSR-1000PD Ultra

Primary Side	
Transient Filter	6x Y caps, 3x X caps, 2x CM chokes, 1x MOV
Inrush Protection	NTC Thermistor & Relay
Bridge Rectifier(s)	2x Vishay LVB2560 (600V, 25A @ 105°C)
APFC MOSFETS	2x Infineon IPP60R125CP (650V, 16A @ 100°C, 0.125 Ohm)
APFC Boost Diode	1x CREE C3D08060A (600V, 8A @ 152°C)
Hold-up Cap(s)	1x Nippon Chemi-Con (400V, 450uF, 2000h @ 105°C, CE) 1x Hitachi (400V, 820uF, 2000h @ 105°C, HU)
Main Switchers	4x Infineon IPP50R250CP (550V, 9A @ 100°C, 0.25 Ohm)
Drivers For MainSwitchers	2x Silicon Labs Si8230BD
APFC Controller	ON Semiconductor NPC1654
Switching Controller	Champion CM6901
Topology	Primary side: Full-Bridge & LLC Resonant Converter Secondary side: Synchronous Rectification & DC-DC converters
Secondary Side	
+12V MOSFETS	4x Fairchild FDMS015N04B (40V, 100A @ 25°C, 1.5mOhm)
5V & 3.3V	DC-DC Converters: 6x Infineon BSC0906NS PWM Controller: APW7159
Filtering Capacitors	Electrolytics: Nippon Chemi-Con (105°C, W), Nippon Chemi-Con (4,000-10,000h @ 105°C, KY), Rubycon (6,000-10,000h @ 105°C, ZLH), Nichicon (4,000-10,000h @ 105°C, HE), 1x Rubycon (5VSB circuit, 105°C, YXD) Polymers: FPCAP, Nippon Chemi-Con
Supervisor IC	Weltrend WT7527V (OVP, UVP, OCP, SCP, PG) & AS393M
Fan Model	Hong Hua HA13525H12F-Z (135mm, 12V, 0.50A, 2000 RPM, Fluid Dynamic Bearing)
5VSB Circuit	
Buck Converter	Leadtrend LD7750R
Rectifiers	STMicroelectronics STU6N65K3 (650V, 3A @ 100°C, 1.3Ohm) Infineon BSC0906NS (30V, 40A @ 100°C, 4.5 mOhm)
-12V Circuit	
Buck Converter	Lite-On LSP5523 (3A max output current)

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

PAGE 2/9

Anex

Seasonic SSR-1000PD Ultra

RESULTS	
Temperature Range (°C /°F)	30-32 / 86-89.6
Average Efficiency	90.845
Efficiency With 10W (≤500W) or 2% (>500W) Load -115V	0.000
Average Efficiency 5VSB	79.830
Standby Power Consumption (W) -115V	0.0542390
Standby Power Consumption (W) -230V	0.0842123
Average PF	0.991
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
Avg Noise Output	29.11
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	A-

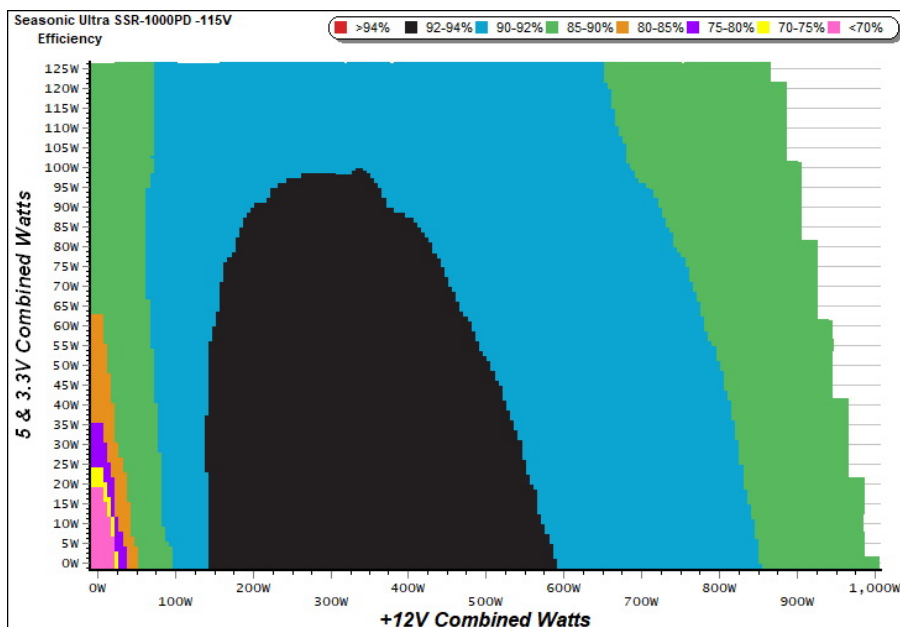
TEST EQUIPMENT		
Electronic Loads	Chroma 6314A x2 63123A x6 63102A 63101A	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, Chroma 61604	
Power Analyzers	N4L PPA1530, N4L PPA5530	
Oscilloscopes	Picoscope 4444 & 3424, Keysight DSOX3024A, Rigol DS2072A	
Voltmeter	Keithley 2015 THD 6.5 Digit	
Sound Analyzer	Bruel & Kjaer 2250-L G4	
Microphone	Bruel & Kjaer Type 4955-A, Bruel & Kjaer Type 4189	
Data Loggers	Picoscope TC-08 x2, Labjack U3-HV x2	

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

PAGE 3/9

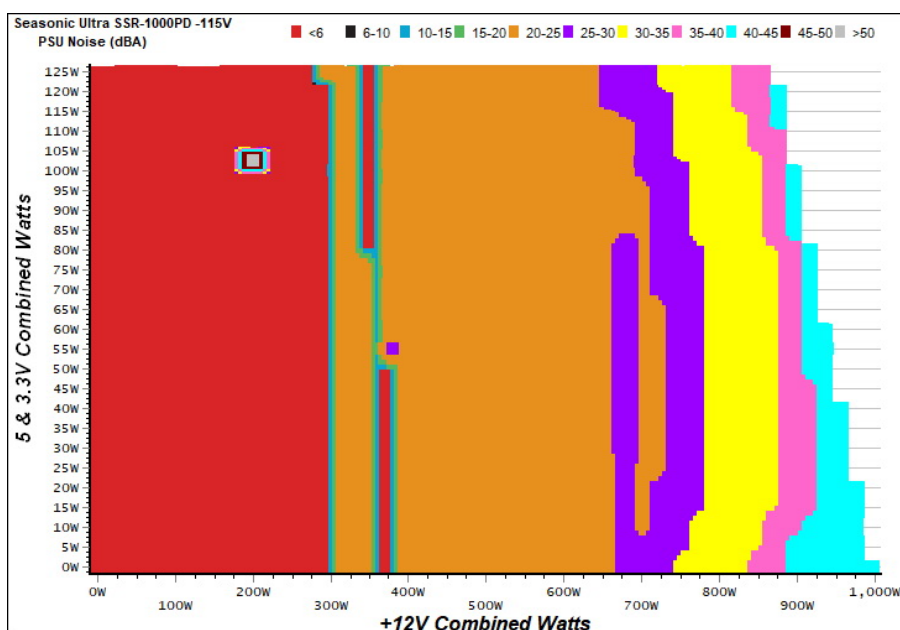
EFFICIENCY GRAPH



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



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

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

Anex

Seasonic SSR-1000PD Ultra

5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

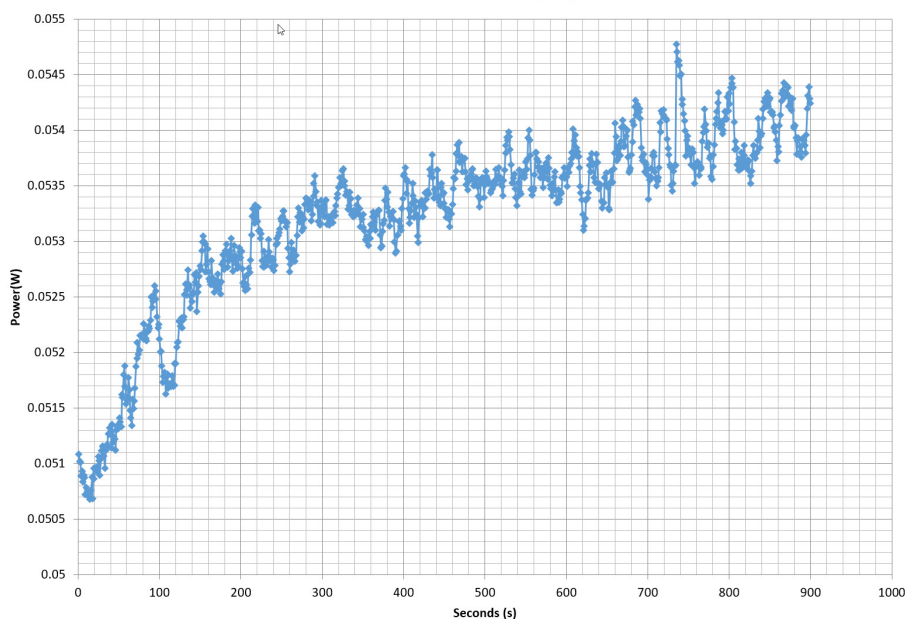
Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	65.938%	0.034
	5.001V	0.320		115.02V
2	0.088A	0.439	73.167%	0.063
	5.000V	0.600		115.03V
3	0.543A	2.703	80.590%	0.268
	4.982V	3.354		115.02V
4	1.003A	4.976	80.950%	0.363
	4.963V	6.147		115.02V
5	1.502A	7.422	80.151%	0.417
	4.942V	9.260		115.02V
6	3.002A	14.667	79.371%	0.485
	4.886V	18.479		115.02V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.042A	0.211	59.104%	0.012
	5.001V	0.357		230.12V
2	0.088A	0.438	68.438%	0.021
	4.999V	0.640		230.14V
3	0.543A	2.702	78.251%	0.105
	4.980V	3.453		230.12V
4	1.002A	4.974	79.597%	0.174
	4.962V	6.249		230.13V
5	1.502A	7.421	79.830%	0.232
	4.941V	9.296		230.13V
6	3.002A	14.639	79.185%	0.335
	4.877V	18.487		230.13V

VAMPIRE POWER -115V

Power - R1709AA183740034 - 30/11/2017 - 09:58



INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

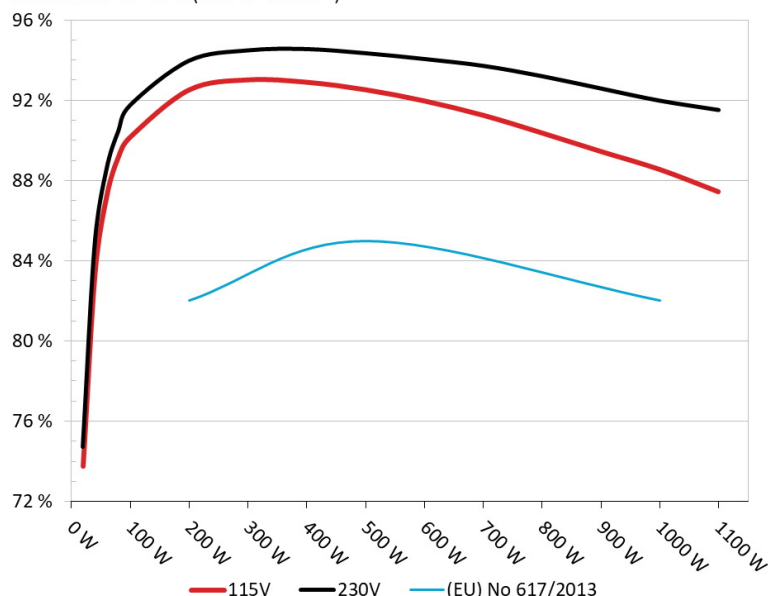
All data and graphs included in this test report can be used by any individual on the following conditions:

- > 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

PAGE 5/9

EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE

Efficiency: Seasonic Ultra SSR-1000PD
Ambient: 37°C - 47°C (98.6°F - 116.6°F)

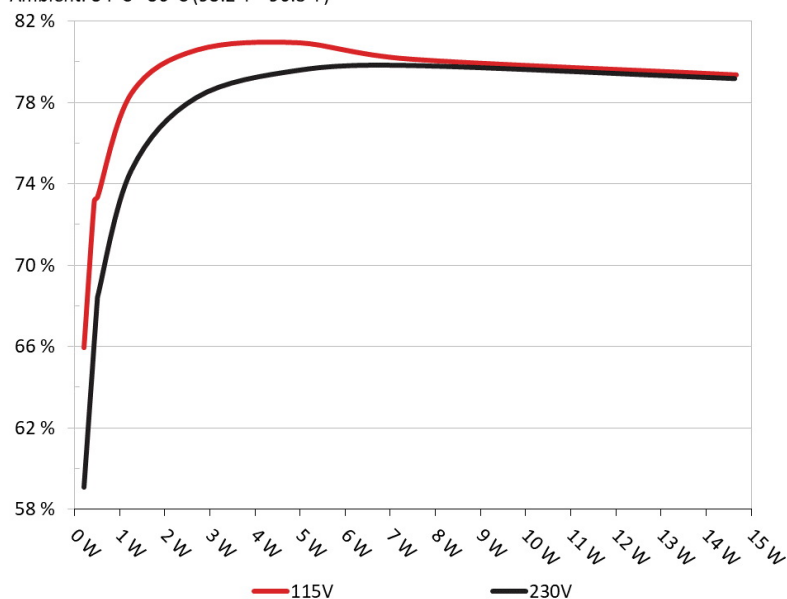


INFO

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: Seasonic Ultra SSR-1000PD
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

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

Anex

Seasonic SSR-1000PD Ultra

10-110% LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
1	6.380A	1.984A	1.974A	0.997A	99.798	90.184%	0	<6.0	44.09°C	0.977
	12.263V	5.028V	3.341V	5.005V	110.661				38.19°C	115.07V
2	13.767A	2.978A	2.961A	1.199A	199.691	92.534%	0	<6.0	44.94°C	0.985
	12.264V	5.026V	3.340V	5.000V	215.804				38.82°C	115.05V
3	21.509A	3.486A	3.471A	1.401A	299.905	93.037%	0	<6.0	45.47°C	0.986
	12.265V	5.024V	3.338V	4.994V	322.351				39.19°C	115.05V
4	29.237A	3.983A	3.953A	1.601A	399.749	92.918%	605	22.2	39.49°C	0.991
	12.264V	5.022V	3.338V	4.989V	430.215				48.96°C	115.05V
5	36.631A	4.978A	4.945A	1.805A	499.684	92.545%	605	22.2	40.08°C	0.994
	12.263V	5.020V	3.335V	4.984V	539.935				50.75°C	115.05V
6	44.018A	5.976A	5.934A	2.006A	599.608	91.985%	660	23.8	40.83°C	0.995
	12.264V	5.019V	3.335V	4.979V	651.856				51.71°C	115.06V
7	51.409A	6.980A	6.928A	2.211A	699.596	91.272%	1108	34.0	41.42°C	0.996
	12.264V	5.017V	3.334V	4.975V	766.498				52.57°C	115.07V
8	58.804A	7.972A	7.921A	2.412A	799.473	90.389%	1727	44.6	42.32°C	0.997
	12.263V	5.015V	3.332V	4.970V	884.481				53.72°C	115.07V
9	66.609A	8.475A	8.431A	2.414A	899.484	89.466%	2132	51.7	43.34°C	0.997
	12.264V	5.015V	3.332V	4.970V	1005.392				55.12°C	115.08V
10	74.163A	8.982A	8.919A	3.026A	999.316	88.573%	2132	51.7	45.09°C	0.998
	12.265V	5.012V	3.330V	4.953V	1128.242				57.13°C	115.08V
11	82.302A	8.987A	8.921A	3.029A	1099.234	87.456%	2132	51.7	47.06°C	0.998
	12.266V	5.010V	3.329V	4.950V	1256.902				59.39°C	115.08V
CL1	0.099A	15.020A	15.003A	0.005A	127.005	87.375%	726	26.0	43.59°C	0.988
	12.260V	5.027V	3.350V	5.053V	145.356				49.78°C	115.09V
CL2	82.937A	1.001A	1.004A	1.002A	1030.663	88.346%	2132	51.7	45.81°C	0.998
	12.266V	5.013V	3.326V	4.991V	1166.615				55.46°C	115.09V

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

PAGE 7/9

Anex

Seasonic SSR-1000PD Ultra

20-80W LOAD TESTS

Test #	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	PF/AC Volts
1	1.191A	0.490A	0.474A	0.196A	19.640	73.754%	0	<6.0	0.824
	12.261V	5.033V	3.343V	5.028V	26.629				115.06V
2	2.410A	0.988A	0.985A	0.396A	39.799	83.357%	0	<6.0	0.918
	12.262V	5.029V	3.341V	5.019V	47.745				115.06V
3	3.624A	1.486A	1.493A	0.596A	59.888	87.253%	0	<6.0	0.951
	12.262V	5.029V	3.341V	5.016V	68.637				115.06V
4	4.833A	1.983A	1.973A	0.796A	79.815	89.205%	0	<6.0	0.971
	12.262V	5.029V	3.341V	5.010V	89.474				115.06V

RIPPLE MEASUREMENTS

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	6.3 mV	3.3 mV	5.3 mV	3.2 mV	Pass
20% Load	9.2 mV	4.8 mV	6.6 mV	4.6 mV	Pass
30% Load	10.7 mV	4.7 mV	6.5 mV	4.6 mV	Pass
40% Load	9.5 mV	7.7 mV	9.9 mV	6.9 mV	Pass
50% Load	8.1 mV	4.5 mV	6.8 mV	5.0 mV	Pass
60% Load	9.1 mV	4.6 mV	6.5 mV	5.9 mV	Pass
70% Load	10.6 mV	5.8 mV	7.0 mV	6.7 mV	Pass
80% Load	12.4 mV	5.7 mV	7.4 mV	7.3 mV	Pass
90% Load	13.4 mV	5.6 mV	8.1 mV	7.9 mV	Pass
100% Load	14.0 mV	6.3 mV	8.4 mV	8.5 mV	Pass
110% Load	15.1 mV	6.7 mV	9.6 mV	9.3 mV	Pass
Crossload 1	7.8 mV	4.5 mV	6.6 mV	3.8 mV	Pass
Crossload 2	14.6 mV	5.9 mV	8.2 mV	8.0 mV	Pass

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

PAGE 8/9

Anex

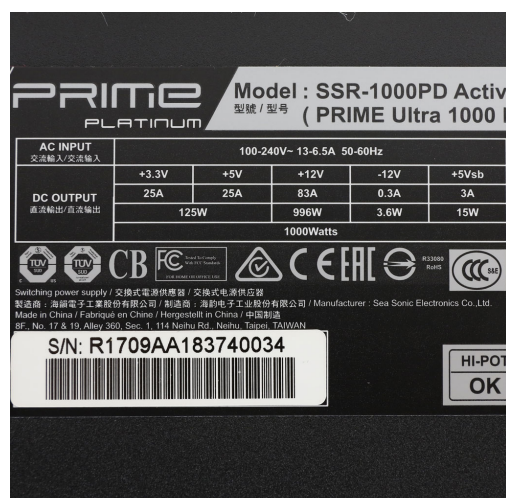
Seasonic SSR-1000PD Ultra

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	31.12
AC Loss to PWR_OK Hold Up Time (ms)	28.02
PWR_OK Inactive to DC Loss Delay (ms)	3.10



Top side



Power specifications label

CERTIFICATIONS



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

PAGE 9/9