SHUNYATA RESEARCH

DTCD® Technology

The Shunyata Research DTCD® Analyzer is the first and only power analyzer designed specifically to measure the differences between AC power cables, wires and connections.

We interrupt our regularly scheduled analog programming for this important message: Shunyata Research's proprietary DTCD® Analyzer finally proves that power cords, power conditioners, circuit breakers, even fuses measure differently, and that perhaps these measured differences are what audio enthusiasts hear when they swap out these elements in their systems.
Michael Fremer, Stereophile, USA

For years, the debate has raged on-line and off regarding the perceived value of after-market power cords within professional and consumer audio-video systems. Though there are many sound and visual professionals who report experiencing dramatic differences when replacing stock power cords, there are still skeptics who point to a lack of measurements as proof that no real difference can exist.

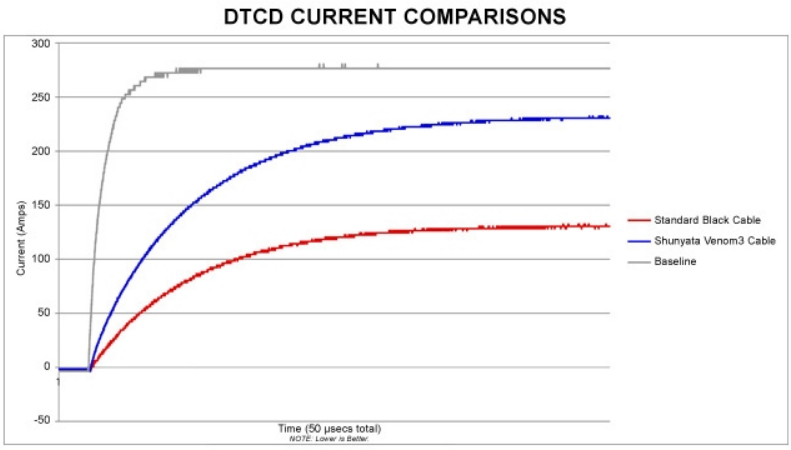
Shunyata Research scientist, Caelin Gabriel, has put an end to the debate by revealing not only one — but three dramatic measured differences between stock power cords and an inexpensive audio-grade power cord.

DTCD® (Dynamic Transient Current Delivery) Analyzer

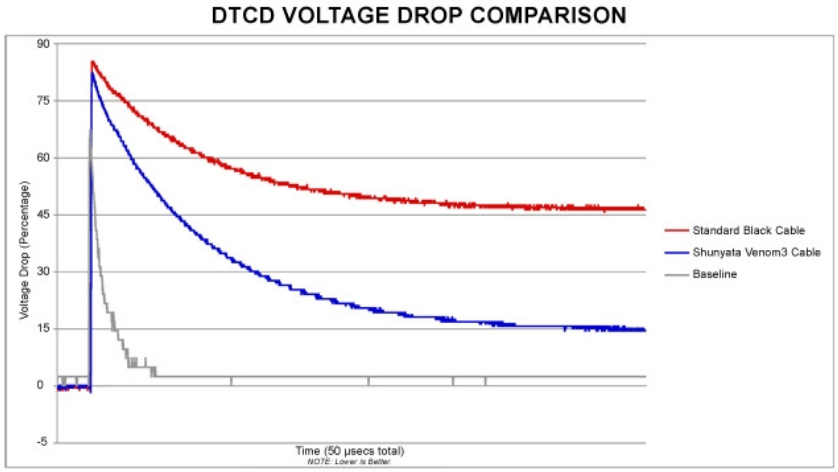
DTCD® is a method of current analysis that measures instantaneous current delivery in the context of a pulsed current draw. In layman's terms, it is a way of measuring current performance into typical electronic component power supplies.

The DTCD® Analyzer allows the measurement of pulsed transient current through a variety of AC power products, including power cords. The measurements represent three critical performance criteria:

1 – The quantity of instantaneous current available through a specified power device or circuit. Measured in amperes.
2 – The amount of voltage drop across the device during the conduction period.

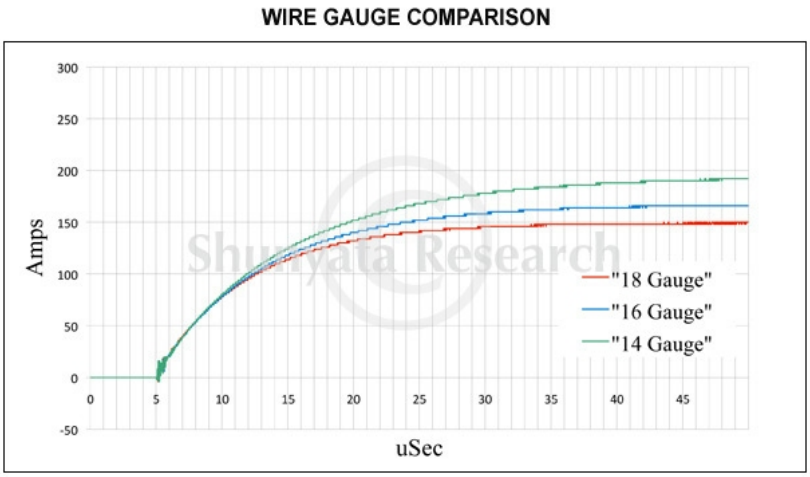


DTCD® Current Measurement: This measurement depicts the difference in available impulse current between Shunyata's VENOM-3 power cord ($99 retail) and a standard black component power cord. Note the enormous difference in the quantity of current available compared to the stock power cord. The stock power cord delivers only 47% of available current compared to 84% with a VENOM-3 power cord. By any standard of measure, this is statistically significant.

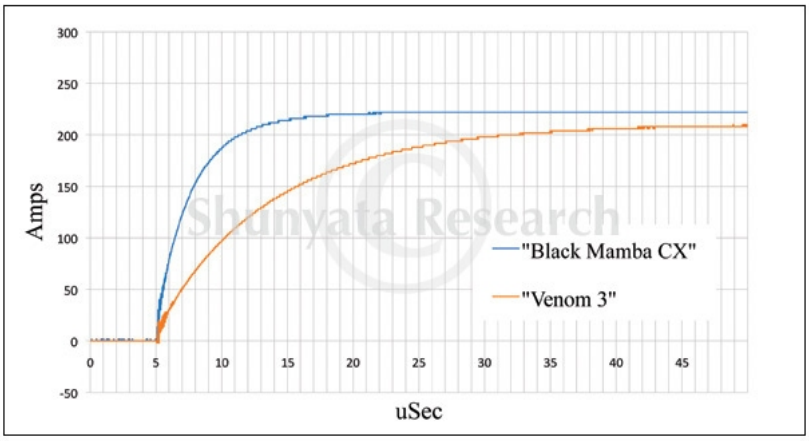


Voltage Drop Comparison: The voltage drop depicted for the stock power cord was so profound that several models were tested to validate the standardized measurement. A 15 volt drop in voltage during the conduction period compared to only a 5 volt drop with a Shunyata VENOM-3 power cord represents a night to day objective difference. This magnitude of difference is certainly significant in a high performance entertainment system.

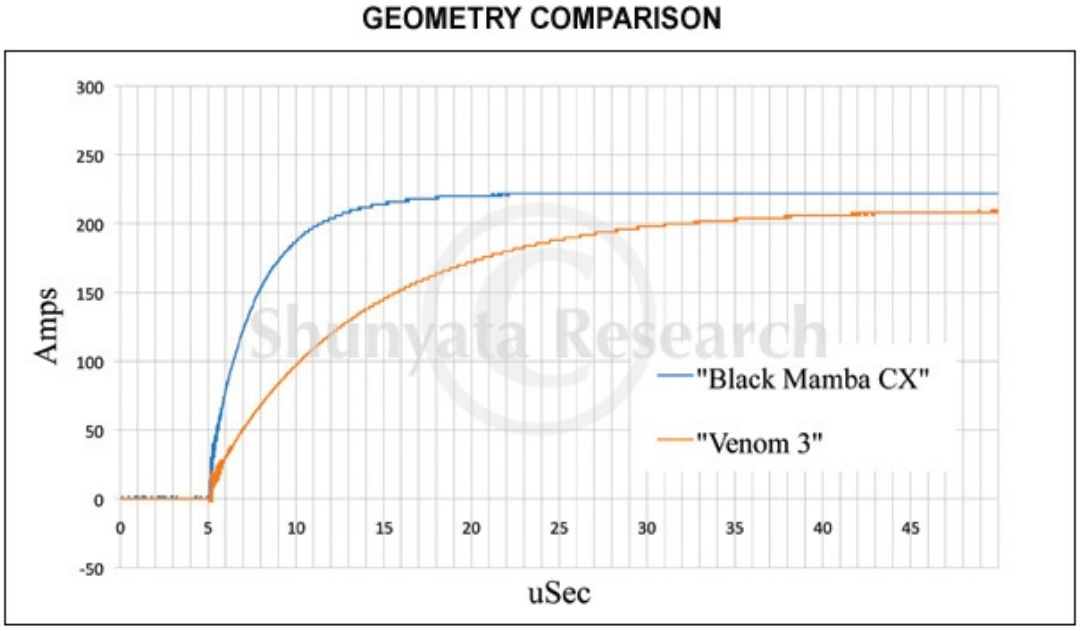
The Shunyata Research DTCD® Analyzer is the first and only power analyzer designed specifically to measure the differences between AC power cables, wires and connections. Previously published DTCD® measurements revealed dramatic peak-current and voltage delivery advantages when substituting a quality 12-gauge power cord (Shunyata's VENOM-3) for any stock power cord.



Wire Gauge Comparison: This graph plots the differences between power cables of different wire gauge size. These measurements were generated by the DTCD® Analyzer from actual stock power cords. Notice the progressive improvement in instantaneous power delivery as the wire gauge is increased from 18 to 16 to 14 gauge*. *(Wire gauge is inversely proportional to the number – 18 is smallest and 14 is largest).



Connector Comparison: DTCD® measurements also reveal differences between connectors and connection methods. The first cable labeled “Molded” is a standard cable with crimped and molded connectors. The second cable is identical except the molded connectors have been cut off and replaced with high quality Hubbell connectors. Notice that the DTCD® Analyzer clearly shows a significant increase in current delivery. (NOTE: Both cables measure identically using conventional volt / current meters)



Geometry Comparison: The DTCD® Analyzer is the only device that measurably demonstrates the difference between cable geometries. The VENOM-3 and Black Mamba CX are both 12-gauge power cables. The VENOM-3 cable uses a simple 3-wire twisted geometry while the Black Mamba CX uses 140 conductors in a complex Helix geometry. Notice the Black Mamba's dramatic improvement in current response! Then, consider that this difference in current response is repeated 120 times per second in a typical A/V power supply.

A note to engineers: All the graphs were generated in Excel for simplicity and readability. The graphs were generated directly from the data captured by the data storage oscilloscope. The data has not been modified or enhanced in any way.