

7 Harmonic Load

Solid-state Amateur Band RF power amplifiers typically use low pass filters to suppress harmonic frequency output created during amplification to meet jurisdictional regulations limiting emissions that can cause interference in other frequency bands. With traditional amplifier designs, this harmonic energy is reflected from the low pass filters back into the output stage where it can cause damaging voltage spikes and additional non-linearities.

In addition to a set of low pass filters, the Power Genius XL employs separate high pass filters that route generated harmonics to an internal 400-watt dummy load, called the Harmonic Load. Commonly found only in broadcast-grade transmitters, unwanted harmonic energy is not reflected into the output stage and is safely dissipated as heat. This design improves linearity and allows the amplifier to achieve the same fundamental power output with less LDMOS device peak drain voltage.

The Harmonic Load in the Power Genius XL is mounted on a dedicated heat sink, with independent thermal management, using a discrete temperature sensor and fan controller.

