



“Built Per Spec, Designed for Performance”

Scott Poole — Director of Engineering

AirBorn's Power Pedigree

Designing & manufacturing interconnects put us on the map 6 decades ago, but we offer so much more. Our power system expertise is becoming more prevalent to OEMs across many hard-driving industries.

- 30+ Years of Power Design and Manufacturing
- Designs in Ground Vehicles and AirCraft (MIL & Commercial)
- Designs from 50W-300kW
- Vertically-integrated processes

Things That VITA Doesn't Require

1. High Efficiency Power Engines
2. Low Noise Switching
3. Clean Conducted Emissions
4. Ultra Clean Output Voltages
5. Versatility in Parallel VPX
(and other form factor) cards



High-Efficiency Power Engines

1. High-Efficiency Power Engines

Nominal Efficiency in the marketplace is in the 82% - 90%

90%@1000W = 100Wpd

90%@1500W = 150Wpd

90%@2000W = 200Wpd



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90%@1000W = 100Wpd

90%@1500W = 150Wpd

90%@2000W = 200Wpd

95%@1500W = 75Wpd

95%@2000W = 100Wpd



1. High-Efficiency Power Engines

Nominal Efficiency in the marketplace is in the 82% - 90%

90%@1000W = 100Wpd

90%@1500W = 150Wpd

90%@2000W = 200Wpd

95%@1500W = 75Wpd

95%@2000W = 100Wpd

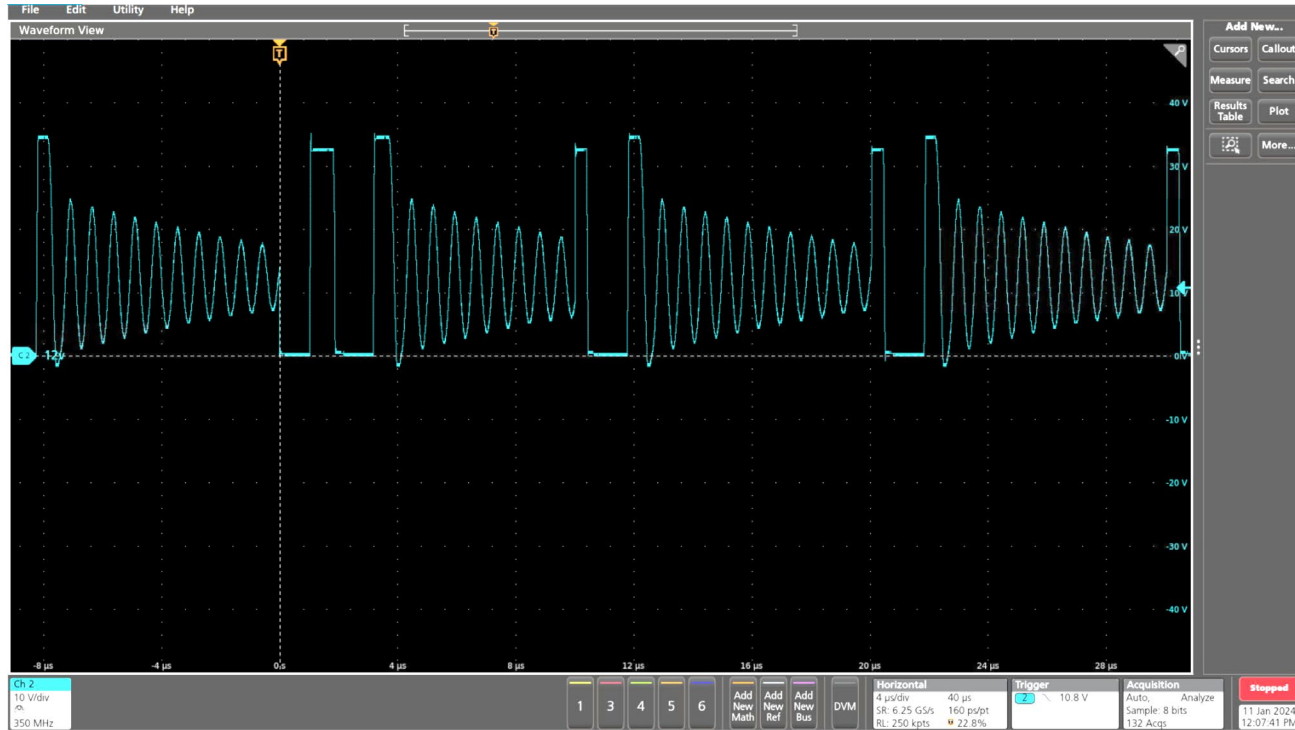


Low Noise Switching

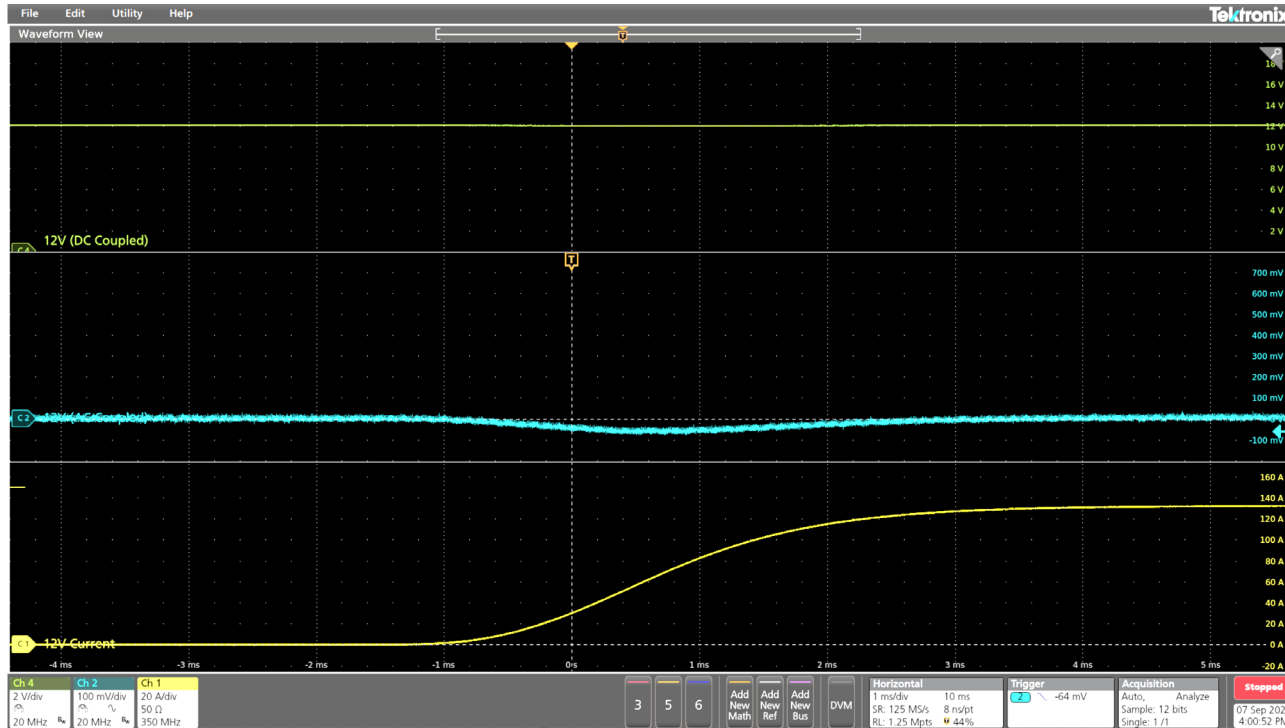
2. Low Noise Switching

- In a modular approach, filter & bypass components cannot be located 'near' the output switches
 - Ringing due to loop inductance cannot be optimized
 - Additive Inductance in the leads, traces, and PCB is detrimental due to laws of physics
 - Gives the integrator opportunity to select non-optimal components
 - Obsolete materials 'requires' simulation and testing to re-validate at the integrator level
- In a discrete approach, the filter & bypass components can be very near the output switches
 - The OEM is responsible for optimization removing the responsibility and engineering load from the integrator
 - OEM has the option to eliminate leads, wire bonds, etc. from the transistors (ie. Flip chip)

Low Noise Switching



Low Noise Switching



Clean-Conducted Emissions

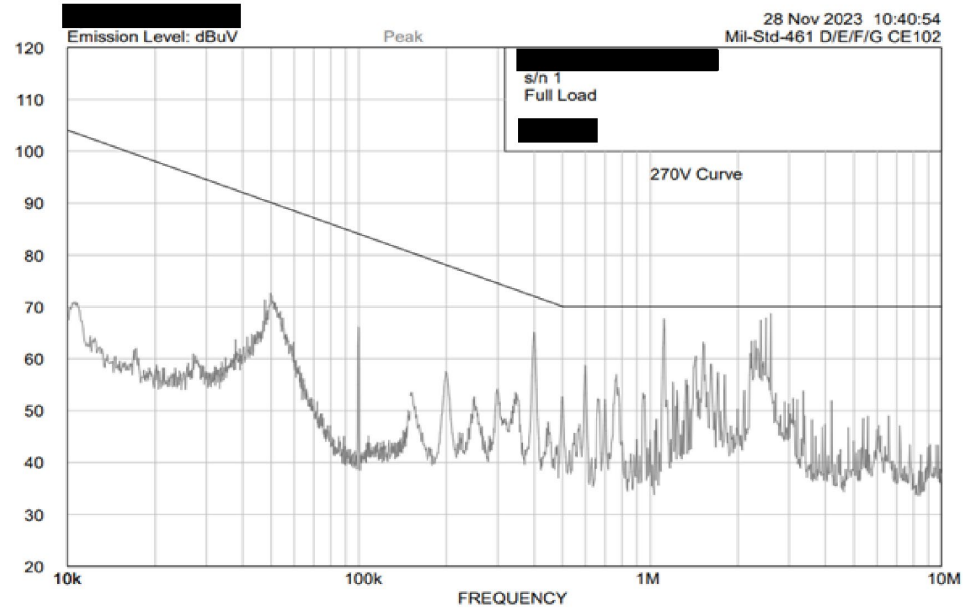
3. Clean-Conducted Emissions

- Most modern-day systems require expensive, large volume, and power hungry passive filters to achieve EMI compliance
- What if a systems integrator was able to push the EMI requirements onto the power supply cards??



3. Clean-Conducted Emissions

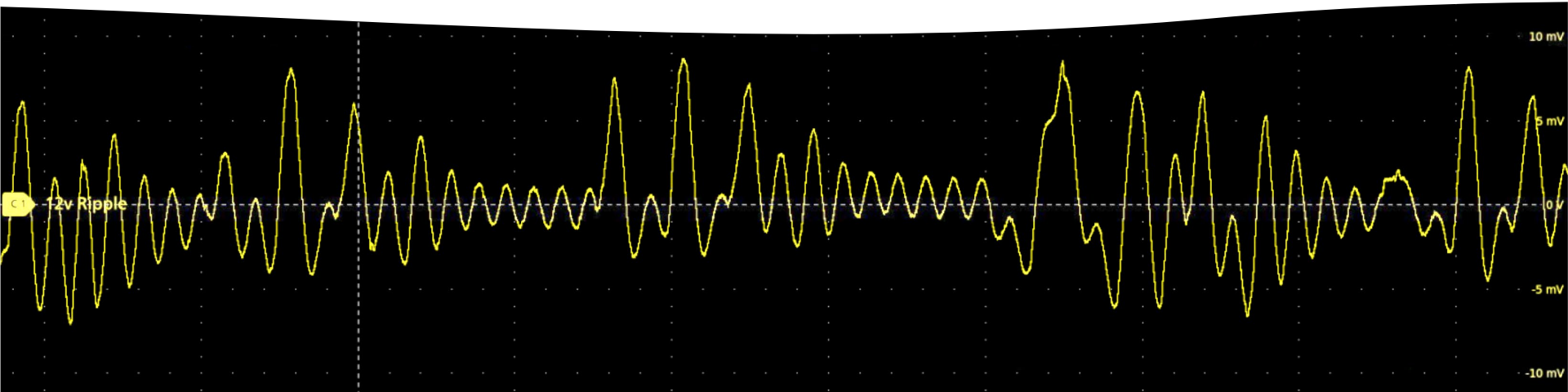
- 270VDCin
- 12V, 160A Output
- 3.3V, 30A Output
- **NO EXTERNAL EMI FILTER!**
- CE101 & CE102 Compliance yields >90% MIL-STD-461E Compliance
- AC VERSION IS SIMILAR!



Ultra-Clean Power Output

4. Ultra-Clean Power Output

- 12V, No Load (full load is similar)
- TPR1000 Active Probe
- BW Limited
- AC Coupled
- Tek MSO Series 5



VPX Card Paralleling Schemes

5. VPX Card Paralleling & Sharing Schemes

- Paralleling can be set to balance on:
 - ✓ Equal load
 - ✓ Equal thermal response
 - ✓ Equal voltage
 - ✓ CAN Bus communication
 - ✓ N+1 Configurable
 - ✓ No Paralleling Limits Known

Feature*

1. High Efficiency Power Engines
2. Low Noise, Open Architecture Switching
3. Clean Conducted Emissions
4. Ultra Clean Output Voltages
5. Versatility in Parallel VPX (and other form factor) cards

* Patents Pending

** Load Characteristic Pending

Benefit

- ✓ Increased Power Output with more manageable thermal management and higher reliability
- ✓ Switching Frequency can be tailored to spread EMI with minimal emissions and efficiency impact
- ✓ Power Supply Can Pass CE101 and CE102 at full load with no external filter**
- ✓ Nearly unmeasurable noise and ripple promote very wide range of the most sensitive loads
- ✓ Paralleling can be set to balance on equal load, equal thermal response, or equal voltage



Thank You!