P 🚝 W E R S I D E

Compliance Testing

Compliance Testing For Reliable Electrical Performance

Reliable electrical systems are crucial to optimal operations. Poor power quality can cause costly interruptions, production inefficiencies and safety hazards.

SEMI F47 is an industry standard for voltage sag immunity in industrial and semiconductor applications. Compliance requires process equipment to tolerate various voltage sag depths and durations on the AC power line.

Powerside performs on-site voltage sag testing at your facility in North America or internationally using portable testing equipment. Additionally, our engineers can perform certification tests on smaller components, such as power supplies, at our lab in Alameda, CA.

Testing is customized to your needs, including certifications for SEMI F47 test limits, ITIC/CBEMA compliance, IEC 61000-4-1 or the SAMSUNG Power Vaccine standards. We also offer power performance mapping for SEMI E6 or S23 standards.

Failing to design for, or comply with, industry standards would require facilities to make the tool more resilient or improve the supply power quality.

TESTING BENEFITS

Relevance to Real-World Conditions: SEMI F47 testing simulates voltage sags and swells that can occur in practical electrical systems.

Consistency and Reproducibility:

SEMI F47 defines specific voltage sag and swell magnitudes and durations, providing a consistent and reproducible testing methodology.

Equipment Compatibility: The SEMI F47 standard is widely adopted within the semiconductor industry.

Customer Confidence: Compliance with SEMI F47 testing assures customers of the performance and reliability of the equipment they are purchasing.

Regulatory Compliance: In some regions, regulatory bodies or industry certifications require adherence to SEMI F47 standards.



Voltage sags are costly for semiconductor fabs:

- Process disruption Reduced throughput, reduced yield
- Wafer damage (detected or undetected)
- Re-start time
 - Cryo pumps several hours
 - Physically damaged wafers clean-out
- Hidden service costs



SEMI E6 and S23 power analysis enhances design validation and process integrity by assessing tool behavior, power consumption, and performance. Process cycle energy and power characterization plots can be faithfully produced from the following parameter recordings during tool testing or cycling:

- Utility Type
- Voltage/Phase/Wire
- Frequency
- Ampere Interrupting Capacity
- Full Load Amps Phase A, B, C, Neutral
- Branch Circuit Protection
- Real Power Idle Average

- Real Power Process Average
- Real Power Maximum
- Apparent Power Idle Average
- Apparent Power Process Average
- Apparent Power Maximum
- Current Idle Average Phase A, B, C, Neutral

- Current Process Average Phase
 A, B, C, Neutral
- Current Maximum Phase A, B, C, Neutral
- Current THD Phase A, B, C, Neutral (Potentially compress this list via table/ side by side columns)

This enables system capacity verification and creates a baseline for process optimization and expansion.

Powerside has extensive experience testing and certifying a broad range of equipment worldwide in hundreds of applications. We assist throughout the process to help you achieve certification, whether it's first-time compliance, a tool series or recertification.

powerside.com/services/semi-compliance-testing

Contact Us

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