

INFORMATION PAPER

High Altitude Electromagnetic Pulse (HEMP) Surge Protection Technologies Tested to MIL-STD-188-125-1, MIL-STD-461G, and MIL-STD-464C

EMP Shield LLC has a line of surge protection products tested to exceed the EMP protection requirements of MIL-STD-188-125-1, MIL-STD-461G, and MIL-STD-464C. EMP Shield has models to protect AC primary/backup power supplies, data systems, low voltage controls, and communication systems. All production units begin shunting over-threshold voltage in less than 1 nanosecond, from conductor to conductor, conductor to ground, conductor to neutral, and neutral to ground, with a capacity above 100kAmps per phase. EMP Shield can respond to custom requirements quickly and can meet production goals on time, while maintaining high quality. EMP Shield products offer 100% lightning protection.

Technology Category: Power and Energy

Technology Readiness Level: 9



Technology Explanation and Status

Help to open new markets with DOD, DHS and other Governmental agencies.

Innovation Capabilities

1. Quick acting HEMP surge protection that switches in less than <math><1</math> nanosecond.
2. High current shunting capability above 100kAmps and scalable to any size.
3. Units designed to protect power, control, data, communications, and radio antenna input.

Relevance to DoD

1. Models available for all Single & 3-Phase Power configurations.
2. Models available for all DC Voltages.
3. Models available for Data, Ethernet, RS-485, RS-422, RS-232, Etc.
4. Models available for RF Communications, Antennas, coax, Etc.

Explanation of Technology Readiness Level:

The EMP Shield was tested at Keystone Compliance on the following EMP Testing Standards:

MIL-STD-188-125-1 High Altitude EMP

MIL-STD-461G Control of Electromagnetic Interference

MIL-STD-461-CS-115 The purpose of CS115 is to test an electronic or electrical system to withstand signals coupled onto the test unit's associated cabling. The test unit will be subjected to rise and fall times, pulse width, and amplitude as specified on Figure CS115-1 at a 30 Hz rate for one minute

MIL-STD-461-CS116 applies to 10 kHz to 100 MHz for all interconnecting cables, including power cables, and individual high side power leads

MIL-STD-461 CS117 applies to all safety-critical equipment interconnecting cables and non-safety critical equipment with interconnecting cables/electrical interfaces that are part of or connected to equipment performing safety critical functions. The goal is to ensure a test unit's ability to withstand lightning transients coupled onto the test unit's associated cables and power leads

MIL-STD-461-RS105 Transient electromagnetic pulse of up to 50 kV/m, double exponential wave with a rise time in the nanosecond range, that is applied to the equipment under test (EUT) at least 5 times and

MIL-STD-464C Electromagnetic Environmental Effects Requirements for Systems.

Scaling Ability:

1. Electrically scale-able from 3 volts to thousands of volts.
2. Current shunting scale-able from 1kAmps to 1000's kAmps.

Production Capabilities:

1. Presently manufacturing and shipping (40) models to all US States and (12) Countries.
2. Mass production above 20,000 units per month.