

# Surgelogic™ Insertion Loss Testing per MIL-STD 220C

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Test performance values contained within this document are representative of the Square D™ brand Surgelogic™ Surge Protective Devices (SPDs) incorporating Sine Wave Tracking (SWT) technology. Testing followed the guidelines as outlined in the most recent revision of the Department of Defense test method standard, method of insertion loss measurement, MIL-STD 220C .

The testing was conducted at the Schneider Electric industry certified surge laboratory. Standard testing processes and procedures were followed.

Insertion loss testing was completed for both the EMA and HWA product lines and is representative of the entire Surgelogic Type 2 product offering that features Sine Wave Tracking.

## Test Set-up and Information

Insertion loss data was gathered using the HP8751A Network Analyzer. MIL-STD 220C does not directly specify the testing parameters or procedures. Our testing parameters have been defined below.

### Connections

- Panel type products (EMA) were connected using #10 AWG wire
- Hard wired product (HWA) utilizes #10 AWG wire

### Frequency Sweep

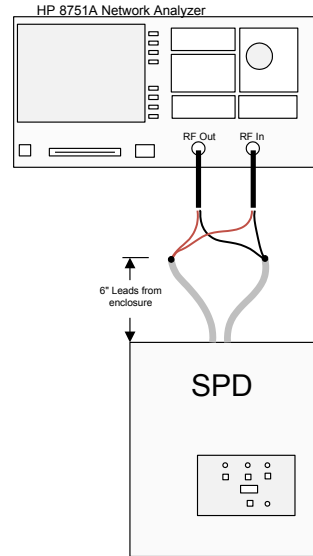
- 10 kHz - 100 MHz

### Connections

Measurements recorded in the L-N mode with:

- 6" of lead outside the panels for external type products (EMA), (see Figure 1).
- 6" of lead from the nipple for the hard wired type products (HWA).

Figure 1: Test Set-up Diagram



NOTE: As these particular surge protective devices (SPDs) are attached to the electrical system as non-load bearing (parallel), both the RF Out and RF In connections are made at the same reference point.

## Test Results

Measured insertion loss of the Surgelogic EMA and HWA constructed SPDs incorporating Sine Wave Tracking (SWT) has been summarized in Table 2 with supporting performance graphs (see figures 2 and 3).

These values reflect the performance of Surgelogic products when tested in a controlled laboratory environment per MIL-STD 220C. Actual filtration of any non-load bearing type SPDs such as these will vary greatly in an actual installation due to the impedance of the power source and other load impedances of the electrical system. The information provided should be used for comparing similar products in a similar controlled laboratory environment.

Table 1: Test Equipment

Manufacturer	Description	Model	Serial #	Last Calibration	Calibration Due
Hewlett Packard	Network Analyzer	8751A	3315J01331	9/9/2010	9/9/2011

# SurgeLogic Insertion Loss Testing

Table 2: Insertion Loss

SurgeLogic Product	EMA, EBA, L-L Enhanced with Sine Wave Tracking*	HWA Products**
Measured Insertion Loss	Up to -54 dB (Figure 2)	Up to -54 dB (Figure 3)

\* Sine Wave Tracking (SWT) is an available option for EMA, EBA, and L-L Enhanced products. The addition of "SWT" to a catalog number designates the added feature.

\*\* SWT is a standard feature of all HWA products.

Figure 2: EMA, EBA, L-L Enhanced with Sine Wave Tracking Module

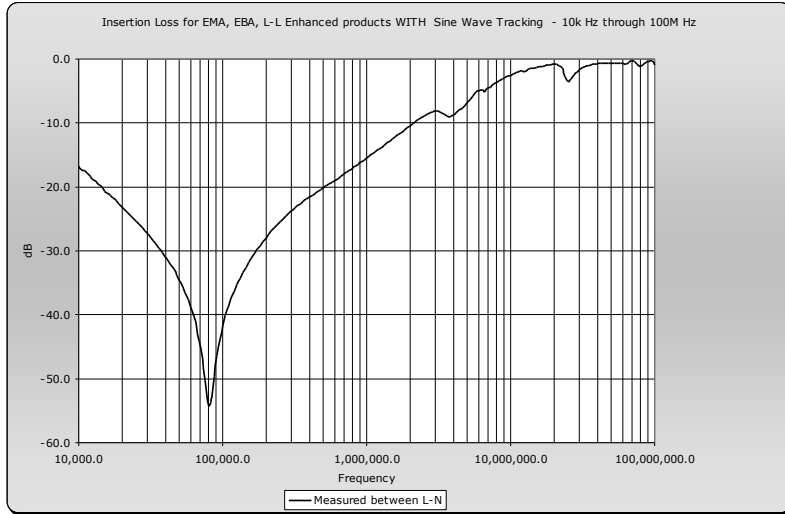
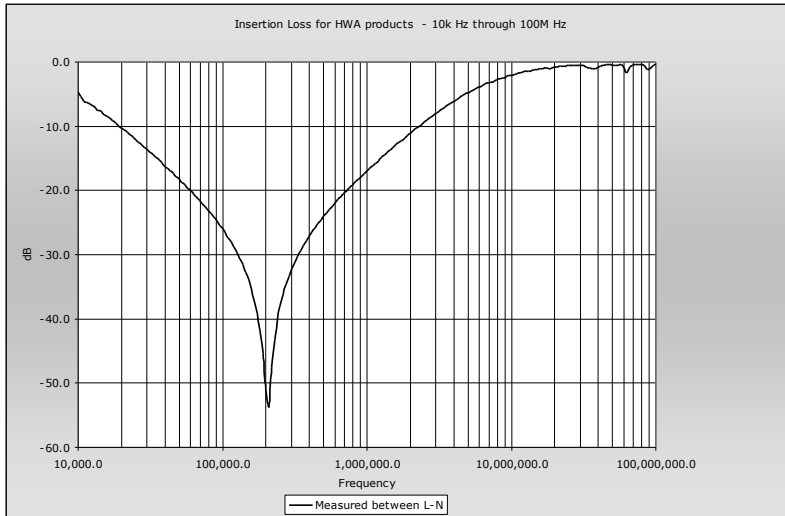


Figure 3: HWA products



## Contact Information

For additional information regarding SurgeLogic products or questions about these tests, please contact the SurgeLogic Technical Assistance Group.

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