

## BEAR Power Supplies and the GR-1089 lightning criteria for telecom equipment

*The BEAR 15 W encapsulated power supply is tested to meet the requirements of GR-1089 section 4.7.*

July 2006 - BEAR encapsulated power supplies are increasingly popular for outdoor telecommunications equipment due to their rugged design, high reliability, long life, and wide operating

temperature range of -40 to +70°C.

All BEAR power supplies are TUV tested to the EN 6100-4 standard for surges. In addition, BEAR has performed the surge tests outlined in the GR-1089 Standard for Telecom Equipment, Section 4.7 (Lightning criteria for equipment interfacing with AC power port).

These tests require that high-voltage surges as described below are applied to the unit between:

- Each phase conductor separately and the neutral conductor
- Each phase conductor separately and the green-wire ground
- The neutral conductor and green-wire ground

BEAR tested its standard 3.3 V, 15 W encapsulated power supply and found it to meet the requirements of GR-1089.



*The BEAR power supply survived the level 1 and level 2 lightning surge tests and continued to operate properly after each test.*

### TEST1. First-level surge on AC power port

#### Test Requirements

- Nominal peak voltage ..... ±2000 V
- Nominal voltage rise / decay time ..... 1.2 μs / 50 μs
- Repetitions, each polarity ..... 4

The unit is to be operating and performing its design-intended functions during the application of the surges. The leads of the telecommunications port associated with the unit, as well as other connections to the unit (such as control leads) are to be terminated as in service.

The unit shall not be damaged and shall continue to operate properly.

#### Results

The 15 W BEAR survived the level 1 test and continued to operate properly after each test, including a fifth repetition.

Test 1	+2000 V	-2000 V	repetitions
Ground to Neutral	OK	OK	5 each
Ground to Line	OK	OK	5 each
Neutral to Line	OK	OK	5 each

### TEST2. Second-level surge on AC power port

#### Test Requirements

- Nominal peak voltage ..... ±6000 V
- Nominal voltage rise / decay time ..... 1.2 μs / 50 μs
- Repetitions, each polarity ..... 1

The unit is to be powered during the application of the surges. Upon application of the second-level surge, the unit shall not become a fire, fragmentation or electrical safety hazard.

#### Results

The 15 W BEAR not only survived the level 2 test, but continued to operate properly after 2 repetitions.

Test 2	+6000V	-6000V	repetitions
Ground to Neutral	OK	OK	2 each
Ground to Line	OK	OK	2 each
Neutral to Line	OK	OK	2 each