Combustion Research Center

June 4, 2003

Mr. Carmen Romeo
V.P. Sales & Marketing
2285 Reservoir Ave.
Trumbull, CT 06611

Subject: Executive Summary for project report No. CRC-2264

References: Report Number CRC-2264, Project Number CRC5871.

Dear Mr. Romeo:

The Combustion Research Center (CRC) was contracted to conduct a testing program to determine the visibility performance characteristics of the E-Lite electroluminescent products under various smoke-laden conditions in the CRC Smoke Testing Room.

On May 15, 2003, tests were conducted on two test scenarios by generating smoke in the CRC Smoke Test Laboratory using both white and black smokes. Test scenarios were developed by E-Lite Technologies, Inc and provided to the CRC prior to the test events. Visibility tests and Smoke-Laden visibility tests, for which the conditions were adopted from UL 1994, were carried out on Low Level Path Marking and Lighting Systems.

Ranges of voltages to the lamp samples, corresponding to a light output measured in foot-lamberts, were tested under each scenario in different lighting conditions. Independent observations were made by CRC staff as well as the E-Lite personnel.

The first test scenario intended to represent likely real fire event. A mock up of a single door located 22' from the observation point and mounted on the back wall of the smoke test room was marked by a length of ¼" FLATLITE in a clear extrusion on both sides and around its molding. A low level EL Exit sign was located on the lower left side of the door with a door push bar, lighted with EL and the words EXIT imprinted, mounted in the middle of the door. Mounted above the door were 4 types of Exit Signs and a typical emergency light that were used for comparison and to create different lighting conditions. Smoke gathered and thickened at the ceiling level and left cleared conditions on the floor level. When the visual stratification became apparent, test sequence was started.

Observations: In both White and Black smoke conditions, when Exit Signs were totally obscured from smoke gathered at the ceiling level, the lower portions of the EL strip, push bar and low level exit signs were the last visible markings.

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The second test scenario was intended to match UL 1994 test conditions and included a vertical 4' X 8' black standing on the floor at a distance 12' from the observation window. It included 11 representative samples of FLATLITE system, an EL Exit sign (green) and a EL test panel. Tests were conducted while smoke was being exhausted and again when the UL 1994 required 50% smoke obscuration* level was reached. Thirteen samples mounted on the test panel were cycled by toggling on/off at varied EL brightness levels (100 volts to 280 volts). Additional tests were conducted at lower brightness levels to determine the limiting visibility levels of the EL strips.

Observations: A measurement of 1 Foot-Lambert corresponding to 102 VAC output would be considered the minimum useful reading by the manufacturer. All strip samples were visible at the minimum brightness in 70% smoke obscurity conditions as well as the 50% obscurity required by the UL 1994 standard.

Test report No. CRC-2264, providing test procedures, set-up and observations on the test events, was submitted to E-Lite Technologies, Inc. on 5/27/2003.

* Note: Reference smoke obscuration values are from an observation distance of 12 ft.

Emre Ergun

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