



## Environmental Tests on LED Lamps

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For	Federal Signal Corporation 2645 Federal Signal Drive University Park, IL 60466
P.O. Number	1408147-ON
Date Tested	June 09, 2019 to June 10, 2019
Test Personnel	John Gondek
Test Standard	Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access, Document: ISO 20653 Second edition 2013-02-15

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### 1. REPORT REVISION HISTORY

Revision	Date	Description
-	June 24, 2019	Initial release

## 2. INTRODUCTION

This document presents the results of a series of environmental (ENV) tests that were performed on (2) LED Lamps (hereinafter referred to as the Device Under Test (DUT)). The DUTs were identified as follows:

Part ID: PMLMP	S/N: N/A
Part ID: PMC	S/N: N/A

## 3. TEST STANDARD

The tests were performed in accordance with the Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access, Document: ISO 20653 Second edition 2013-02-15 test standard.

## 4. MODIFICATIONS MADE TO DUT AND/OR DEVIATIONS TO THE TEST STANDARD DURING TESTING

No modifications were made to the DUTs during the testing. No deviations from the test standard were made during the testing.

## 5. SUMMARY

The following ENV tests were performed and their results are shown below:

Test Description	Test Standard Section	Test Results	Part ID:	Date Tested
Protection Against Foreign Objects (IP6KX)	ISO20653, Section 8.3 (IP6KX)	Compliant	PMC, PPMLMP	06/09/2019-06/10/2019
Protection Against Water (IPX9K)	ISO20653, Section 6 IPX9K	Compliant	PMC, PPMLMP	06/10/2019

## 6. OPERATION STATES

The ENV tests were performed with the DUTs operating in one or more of the test modes described below.

### 6.1. Unpowered

The DUTs were not powered during the test.

## 7. PERFORMANCE MONITORING

The DUTs were not monitored during the test.

## 8. ACCEPTANCE CRITERIA

- The DUTs shall satisfactorily withstand exposure to dust without dust penetration.
- Water that is directed against the DUTs from any direction shall not have any harmful effects or impaired function.

## 9. TEST METHOD

The tests were performed using the referenced methods described in the Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access, Document: ISO 20653 Second edition 2013-02-15 test standard.

## 10. CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions, which meet or exceed those specified in the test specifications. The data presented in this test report pertains to the DUTs at the test date as operated and monitored if required. Any electrical or