

Light Pipe Arrays Used in Law Enforcement GPS Trackers

GPS trackers are used in many industries, including the automotive industry and law enforcement. In law enforcement, GPS trackers are used to fight crime and promote safe driving habits.

Overview

A customer contacted Bivar asking for design and manufacturing of a custom light pipe and adapter intended for law enforcement GPS trackers. The customer had previously designed the light pipe, but experienced prototyping challenges, including difficulty mounting the pipe, and light bleeding. Our experience with designing and manufacturing custom light pipe solutions was suitable for this task.

The customer had several design parameters for the light pipe.

- IP54 rated for Electrical Enclosures. This rating meant that the product must be protected against contamination from limited amounts of dust and other particles.
- Rigid 1x6 array light pipe
- Zero-bleed light pipe adapter
- Able to withstand minimal vibration
- LED color cross talk between light pipes
- Consistent, optimal performance (no false readings)

Challenge

The crucial factor in this design was producing a light pipe with zero crosstalk between light pipes. This is important because having a false reading between light pipes can incorrectly trigger the system. Bivar's engineering team considered all the design parameters and used their expertise to address the challenge.

Solution

Bivar's Advanced Solutions Engineering team used simulation software to identify optimal bend radii in the product. The simulation software was also used to ensure minimal light bleeding between light pipes with Bivar's ZeroLightBleed™ technology. Bivar used a high-quality dual-sided adhesive to create a hermetic seal, satisfying the IP54 certification. Bivar conducted the design, testing, and manufacturing of this custom light pipe solution within the customer's urgent timeline. Within six weeks, we successfully created a light pipe and adapter to meet and exceed customer's requirements, helping them overcome their prototyping challenges.

Have a technical question? Need to talk to an engineer?

Our engineering team is here to help answer any questions you may have.

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