



We Make Innovation Work

**Project Name:** Spot 3 Plastic Design  
**Application:** Global Satellite Messenger  
**Customer:** Globalstar  
**Website:** [www.globalstar.com](http://www.globalstar.com)



## THE NEXT GENERATION OF PERSONAL SATELLITE MESSAGING AND EMERGENCY COMMUNICATIONS

ENHANCED GPS, SMALLER, LIGHTER, MORE ERGONOMIC

### BACKGROUND AND PROJECT CHALLENGE

The SPOT Satellite GPS Messenger provides a vital line of communication with friends and family when you want it, and emergency assistance when you need it. Using 100% satellite technology, SPOT works virtually anywhere in the world, even where cell phones do not – all with the push of a button.

Globalstar was searching for an engineering firm to design the next generation of their successful family of SPOT products. The global satellite messenger is required to work under demanding outdoor conditions, across a wide temperature range (-40°C to 85°C) and altitude range (-100 meters to +6500 meters). It has to be waterproof, durable, dropable, marine oriented, and RoHS compliant.

### PROCESS AND SOLUTION

The project scope incorporated all aspects of the product line expansion and took advantage of PADT's unique capabilities; industrial and mechanical design, rapid prototyping, testing, and coordination with offshore contract manufacturers.

The project was divided into a series of tasks and deliverables:

#### Define Product Requirements

PADT routinely works with our customers up front to define the product requirements. We believe that clearly defined requirements are the foundation to providing design direction and are a key task in our design control process.



In 2012 PADT worked with Globalstar to extend their product line with improved ergonomics and manufacturability

### DISCIPLINES EMPLOYED

Industrial Design  
Mechanical Design  
Product Verification Testing  
Rapid Prototyping  
Simulation and Analysis  
Liaison with Offshore High Volume Manufacturing



Page 1

### Contact Us

480-813-4884

[info@padtinc.com](mailto:info@padtinc.com)

### PADT, Inc.

[www.padtinc.com](http://www.padtinc.com)

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## Create Industrial Design Concepts

Photo-realistic renderings were used to evaluate the visual appeal of multiple designs featuring enhanced ergonomics and functionality while maintaining the established brand identify, and the rugged, durable appearance that Globalstar products are known for.

## Produce Rapid Prototype Concept Models

PADT's in-house rapid prototyping technologies produced prototypes of the leading design concepts. Concept prototypes provide a hands-on evaluation of the look and feel of the design features and options.

## Detail Design and Design Reviews

- CAD models, engineering calculations, and computer simulation were used to meet product and user requirements.
  - Waterproof and robust design
  - Differential pressure during altitude descents will not activate the push buttons
  - Stress/strain analysis of molded components and living hinges
  - Eliminate inadvertent SOS button activation
  - Enhanced ergonomics and improved tactile response
- Collaborative design reviews were held at key decision points. Globalstar QC and manufacturing personnel provided valuable insight to mitigate manufacturing and assembly risks early in the development process, resulting in decreased manufacturing costs.

## Consult and Coordinate With Injection Molding Supplier

PADT has considerable experience working with offshore injection molders. Early collaboration activities resulted in a design consistent with high volume manufacturing methods, materials, and processes.

## Verification Testing

PADT worked with Globalstar during their verification testing to troubleshoot any issues and ensure that the product requirements were met.

## CONCLUSION

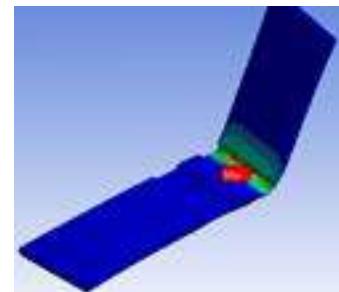
PADT delivered functional prototypes and has continued to work with Globalstar and their contract manufacturer to support the product rollout.



PADT worked with an Industrial Designer to realize the customer's ergonomic and style needs.



The entire product assembly was designed as an accurate 3D CAD model to enable faster downstream processes and meet stringent assembly and packaging demands.



Simulation was used to drive the design of critical components, avoiding testing and redesign further in the product development process.

## TESTIMONIAL

"PADT has been like an extension of our own design team and totally understood our unique product design constraints from the get go. Despite ever evolving product requirements and short design cycles, they managed to stick to their original schedule and provide a successful product design. Additionally, their ability to coordinate with our overseas manufacturing partner has proved invaluable for getting through the difficult last stages of high volume mass production."

Eric Blanchard  
Senior Design Engineer  
Globalstar Inc.

## PROJECT HIGHLIGHTS

- Industrial Design and Rapid Prototyping
- Computer Simulation and Analysis
- Designed for High Volume Manufacturing
- Enhanced Ergonomics
- Incorporation of Safety Features
- Injection Molding Coordination with Offshore Vendor
- Reduced Manufacturing Costs



PADT's in-house Rapid Prototyping capabilities were used to create multiple product models for fit, form, function, and style evaluation.

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