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Hands-Free Soap Dispenser

Project Timeline: 6 Months

DESIGN AND DEVELOPMENT

New Product Introduction

- Defined critical product and process characteristics, performed system-level tolerance analysis, identified key characteristics, and conducted a full Design Failure Mode and Effects Analysis (DFMEA) to mitigate risk.
- Completed the customer's industrial design and delivered full mechanical, electrical, PCB layout, and firmware development.
- Provided design support for plastics, tooling, and manufacturing processes, ensuring cost-effective and efficient production.
- Developed comprehensive test plans and quality plans aligned with customer requirements and industry standards.

Design Verification and Qualification

- Established detailed product specifications, along with DVT and qualification test plans to validate performance and reliability.
- Reviewed all test data systematically and implemented design updates where necessary.
- Verified first articles for every custom and standard component to confirm compliance.
- Executed DVT and qualification testing on both pilot and production units to ensure readiness for mass production.
- Recorded, archived, and maintained all test reports in a centralized database for traceability and future reference.

OVERVIEW

The unit meets mechanical specs for pump action, stroke length, battery retention, and full compatibility with wall mounts and bottles. Electrical functions include a fully operational PCA, emitter/sensor within range, polarity protection, timeout, and matched power draw. The design uses low-cost, single-direction molds and a compact double-sided SMT PCA. Quality checks cover color, texture, and plastic defects, with a clearly defined manufacturing warranty period.

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