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Simulator Software for testing Voice commands, Bluetooth, Speaker, Auxiliary IN, Navigation (Air Conditioning Industry)

Client Background

Client is an automotive manufacturer offering a wide range of latest luxury SUV cars & Electric Vehicles.

The Client sought a comprehensive simulator software solution for testing various functionalities of their infotainment system at the Halol manufacturing facility. This project aimed to ensure the reliable performance of voice commands, Bluetooth connectivity, speaker response, auxiliary input, and navigation features. Optimized Solutions (OSL) was tasked with engineering, designing, and implementing a customized Automated Test Equipment (ATE) system to meet these requirements.

Challenge

The primary challenge was to create a versatile and efficient testing setup that could seamlessly integrate with the infotainment system and perform a wide range of tests. The solution needed to record and analyze voice commands, generate USB profiles, assess GSM/GPS gains, and perform speaker frequency tests. Additionally, it required robust software to manage the entire testing process, ensuring accurate data collection and real-time analysis.

Solution

Optimized Solutions (OSL) developed a custom Test Application software for Windows. This software interfaced with the infotainment system via USB, enabling the recording of voice commands, generation of USB profiles, and assessment of GSM/GPS gains. It included modules for user authentication, configuration, testing, and offline analysis, providing a comprehensive testing environment.

The hardware setup included PLC controllers, HMI displays, high-resolution cameras, and a laptop for simulator interfacing. The system facilitated seamless communication between the PLC and DUT, allowing automated testing sequences and real-time data collection. The software enabled users to configure test points, record audio commands, and automate the testing process, ensuring thorough documentation and performance verification.

Solution

Additionally, OSL's solution included a two-hour battery backup for uninterrupted testing, integration of a UPS, and user-friendly software to manage the entire testing workflow. This comprehensive setup ensured accurate and efficient testing of the infotainment system, meeting all specified requirements and enhancing the reliability of testing process.

Benefits

1. Enhanced Testing Efficiency: The automated system streamlined the testing process, reducing manual intervention and ensuring consistent and reliable results.

2. Comprehensive Data Analysis: Real-time data logging and offline analysis capabilities enabled detailed performance evaluation and troubleshooting.

3. User-Friendly Interface: The intuitive software interface allowed easy configuration and operation, minimizing training requirements and operational errors.

Benefits against alternatives

1. Customization: Unlike generic testing solutions, OSL's system was tailored specifically to MG Motors' requirements, ensuring optimal performance and compatibility.

2. Integrated Solution: The combination of hardware and software components provided a cohesive and seamless testing environment, reducing setup complexity and integration issues.

3. Scalability: The modular design of the system allowed for future expansions and upgrades, supporting evolving testing needs.

Value Proposition

The automated testing solution provides a robust, reliable, and efficient method for verifying infotainment system performance. By automating the testing process, it significantly reduces the time and effort required for testing, ensures high accuracy, and provides detailed documentation for analysis and verification. The system's flexibility and ease of use make it an invaluable tool for any organization looking to enhance its testing capabilities for infotainment systems.