

Automotive Head Unit Penetration Test

Global automotive Tier 1 supplier

Task

Auxilium Cyber Security was approached by Global automotive Tier 1 supplier (further referred to as the Customer) for a variety of projects regarding the automotive division of the company and its operations. Customer designs and engineers connected products and solutions for automakers, consumers, and enterprises worldwide, including connected car systems, audio and visual products. Considering the importance of the safety aspect in the automotive industry and the fact that current generations of cars are always connected with complex systems, security is of high importance and one of the critical requirements that Auxilium Cyber Security helped Customer to achieve.

Solution

Based on our prior experience with hardware and automotive penetration testing, we offered to provide thorough security testing of the several devices and different projects in the automotive projects of Customer. Due to the complex and customized nature of their devices, testing and development had to be adapted and specialized for the needs. Several projects have been executed successfully during the cooperation with Customer, including:

- Secure architecture proposal and implementation for in-car entertainment system. As a manufacturer, Customer constantly develops new technologies to equip future cars. This means that security is of high priority and the design has to be based in secure implementations and developed properly. One of the projects that Auxilium Cyber Security accomplished is the design and development of a secure communication schema between the in-car entertainment system and the accompany devices.
- Main head-unit penetration testing. One of the most important parts that Customer develops is the head-unit for higher end cars. In the latest generations of these cars the head-unit is directly connected to the different ECUs of the car which means that passenger's safety directly relies to their systems, when it comes to malicious attacks and how they can affect the car. Auxilium Cyber security successfully accomplished to further secure the main head-unit device developed by Customer, through penetration testing and security research procedures.

Main Achievements

- Auxilium Cyber Security successfully designed and developed a secure communication schema between the main head-unit developed by Customer and other devices in the car. The developed system is currently used in the latest generation of the head-units developed by Customer and will be included in the next generation of cars.
- Auxilium Cyber Security discovered several high and medium severity vulnerabilities on Customer's head-unit, during our penetration test and security research. The outcome of the penetration test, directly affected the security of the system and the safety of the next generation of cars that will include those systems.

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