

ENSURE HIGH POWER AND FASTER DATA TRANSFER FOR PASSENGER IN-FLIGHT ENTERTAINMENT

Situation

Inflight Peripherals Ltd (IFPL), an award-winning company, specialize in the design and manufacture of passenger interface solutions to the global in-flight entertainment and connectivity (IFEC) industry. They wanted to design and manufacture an at-seat module that meets USB 3.0 protocol and delivers high power and reliable data transfer. This module would enable passengers to interface with the aircraft's IFE system and charge their portable electronic devices while traveling. However, they needed to design a smaller module to fit inside a very compact area while still meeting industry requirements.

Challenge

The complexity of the electronic circuits and required form, fit, and function of the module presented significant challenges because it had to fit inside a smaller area. Therefore, using a traditional design approach would result in a smaller module radiating very high emissions and creating electromagnetic interference (EMI). This smaller module would also need to provide more power and data while meeting the requirement for power dissipation at 2 watts or below to effectively dissipate secondary heat.

In addition, IFPL's design team needed a certified high-speed data cable connected to their module that provided reliable signal integrity over longer distances while supporting the module's required 12-32V power input. The unit would then convert the input to a 2A 5V DC output to ensure passenger devices can be charged quickly and easily. At the same time, they needed smaller, lighter and more durable cables that can withstand challenging environments such as high temperatures and rigorous installation in tight spaces without failing.



“The research and development teams at IFPL and Gore have a complimentary proactive approach to problemsolving. This approach enables IFPL to be the first peripheral manufacturer to produce an aerospace-grade USB 3.0 unit and ensures the groundwork for future USB-C 3.1 units.”

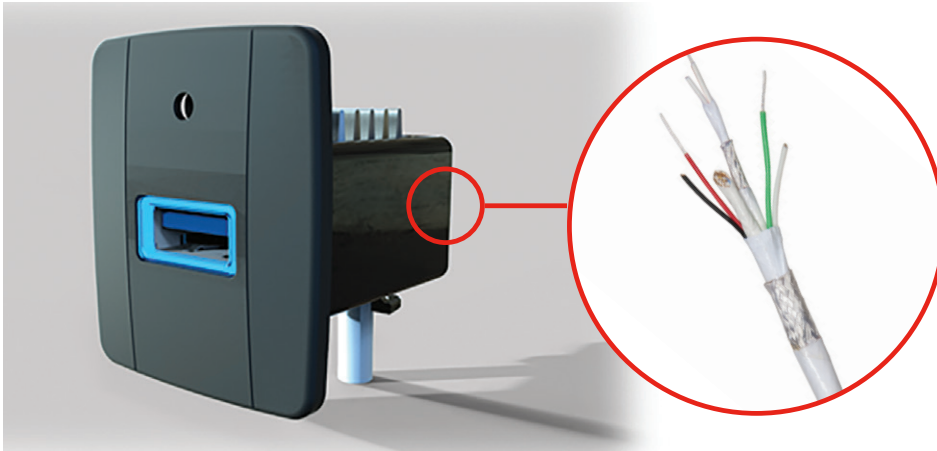
– David Thomas, Vice President of Business Development at Inflight Peripherals Ltd.

Solution

IFPL's design team conducted extensive research to select a board layout with highly-efficient components and EMI filtering for their new design. They also contacted Gore to provide assistance in selecting the right high-speed data cable to meet their requirements. Gore engineers collaborated with the IFPL design team to understand their specific challenges. Based on Gore's extensive knowledge in providing cables that meet USB protocol for non-aerospace applications, they quickly provided a 5-meter sample of their cable constructed with approved aerospace materials.

GORE® Aerospace USB 3.0 Cables

Case Study



The new IFPL USB-A 3.0 module combined with GORE® Aerospace USB 3.0 Cables provide the ideal solution for delivering high power at 2A, 5V DC and data transfer up to 5 Gb/s while meeting USB 3.0 requirements. Passengers can now charge their laptops, tablets, and mobile phones quickly and interface with the aircraft's IFE system faster while traveling.

The IFPL design team conducted thorough testing using their in-house testing facilities, and results showed that their new USB-A 3.0 module met D1060(G) regulatory requirements. They also conducted in-house testing on power dissipation, and results demonstrated that the new module design not only met, but surpassed industry standards further improving performance reliability.

Test results showed that Gore's USB 3.0 cable provided reliable signal integrity for high-speed data transmission up to 10 gigabits (Gb/s) over longer distances while withstanding wide temperature ranges. This cable carried increased data greater than 5 meters in IFPL's application for faster IFE content uploads and downloads. In addition, Gore's USB 3.0 cable easily supported the new module's 12-32V power input to ensure passengers can charge their devices quickly and easily.

Diverse Product Engineered for Simple Integration

GORE® Aerospace USB 3.0 Cables are available in a variety of standard sizes that are easy to integrate into existing new or existing system architecture. These cables provide manufacturers with many benefits that improve electrical and mechanical performance such as:

- excellent signal integrity for high-speed data transmission up to 10 gigabits
- faster data transfer greater than 5 meters to ensure quick and easy access to IFE content
- improved power management from 12-32V systems to charge devices quickly and easily
- tolerate temperatures ranging from -65°C to 200°C
- enhanced durability due to high-density construction with approved aerospace materials
- improved installation with smaller, lighter weight cable bundles that have a tight bend radius

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