Doodle Labs Opens New Doors for the Boeing Insitu ScanEagle

Insitu partnered with Doodle Labs to customize a Front-End Subsystem that allows the ScanEagle's existing radio to operate at new frequencies.

As a wholly owned subsidiary of The Boeing Company, Insitu is a pioneer in the design, development, production, and operation of high-performance, cost-effective unmanned aircraft systems. These technologies are applied to intelligence, surveillance, and reconnaissance efforts in the defense sector. Doodle Labs supported Insitu with customized design blocks as the company looked to expand into government and commercial industries such as environmental monitoring, precision agriculture, search-and-rescue, disaster relief, and mining operations.

Business Challenge

The ScanEagle emerged as the result of a strategic alliance between Boeing and Insitu. The resulting technology has been successful as a portable Unmanned Aerial System (UAS) for autonomous surveillance in the battlefield.

While the primary use case has been defense, the underlying technology can be used for many things. In fact, the ScanEagle is a descendant of another UAS, the Insitu SeaScan, which was conceived of as a remote sensor for collecting weather data as well as helping commercial fishermen locate and track schools of tuna.

Insitu was approached by a customer who needed the radio to operate at the 5.2 GHz frequency band. Rather than redesigning a completely new radio, the team was searching for a way to add to the existing system, thereby minimizing significant design cycles and risk. Moreover, existing certificates, clearances, and licenses could be maintained.

Ideally, the solution would be something that Insitu could incorporate into their hardware stack that would give them the flexibility to adjust frequencies easily, instantly expanding the potential customer base for their existing UAS technology.

Solution

Doodle Labs' Front-End Subsystems (FES) leverage Prism technology, which provides flexibility to OEMs looking to continue utilizing their existing wireless radios while shifting the output frequency to anything from 100 MHz – 6 GHz. It is an in-line module placed between the radio and the antenna.

The ScanEagle's existing radio was a 900 MHz frequency hopping radio. In order to allow operation at 5.2 GHz, the Doodle Labs team developed a customized version of the FES that was optimized and calibrated for operation with the ScanEagle's radio. Additionally, the Front-End Subsystem operates as a power booster, which significantly improved the range of the ScanEagle.

Prism technology was developed with flexibility in mind for the OEM. Front-End Subsystems are form-factor compatible and can easily be swapped out for others that operate at different frequencies. When Insitu ships to international customers with access to licensed-band frequencies, their operations team simply utilizes the corresponding FES module.
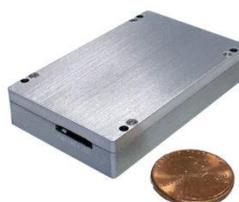
Results

With the use of Doodle Labs' customized Front-End Subsystem, Insitu was able to bring its advanced UAS technology and to completely new markets with minimal redesign efforts. Its existing certifications and clearances were maintained due to the fact that no existing hardware or software needed to be modified.

Related Products for UAS

Front-End Subsystems   Smart Radio   Industrial Wi-Fi Transceivers