Coda Octopus Engineering RFSoC Enclosure Solutions

RFSoC (Radio Frequency System on a Chip) technologies have improved dramatically in the past few years, spawning a number of development board solutions. An RFSoC integrates a high-power microprocessor, substantial FPGA fabric, and direct RF sampling into one chip. An RFSoC allows complex RF development using advanced digital signal processing versus having to develop complex RF analog circuitry. Military applications for these software-defined RF solutions include digital communications, radar, and electronic warfare.

Often, engineers using RFSoC modules and development boards combine other technologies to complete their application capabilities including the addition of extra storage, other data processing modules, custom input/output (I/O), networking, and specialized RF signal conditioning modules. The end goal for many of these applications is to create a miniature rugged payload for air, ground, or maritime applications that is sealed and can be installed/removed quickly to a platform.

Figure 1. RFSoC development solutions can now be taken directly to small form-factor deployment and host a variety of custom I/O.

Coda Octopus Engineering Inc. (COEI) has been developing custom small form embedded rugged (MIL-STD-810 and MIL-STD-461) solutions for military applications for over 20 years, even having our own line of Thermite® embedded computers. Recently, we have been taking RFSoC development modules and combining them with other customer-defined boards such as additional compute modules, and then using our custom packaging and thermal management to assemble everything into a very small and rugged enclosure suitable for quick installation in vehicles or in pods. Some packaging is fully custom to make the unit as small as possible. Other packaging is per standard form factors such as Mod-Payload. In addition to the complex mechanical and thermal issues that need to be addressed, Coda Octopus Engineering also designs the appropriate power supply cards, input and output boards, interfaces, and carrier cards. Our staff circuit card designers, firmware and FPGA engineers, and our mechanical and system engineers ensure all the subassemblies fit and operate seamlessly for the lowest size, weight, and power (SWAP) solution possible.

Figure 2. RFSoC development modules can be integrated into a variety of SWAP optimized solutions and other small form standards like Mod-Payload.

If you have questions on Coda Octopus Engineering's custom packaging or embedded computing, please do not hesitate to reach us at newbusiness@codaeng.com. Or check out our website at www.codaoctopusengineering.com.

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