



NEWS RELEASE

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Contact: John Wranovics
(925) 640-6402

Curtiss-Wright and Green Hills Software Collaborate to Demonstrate INTEGRITY®-178 tuMP™ Safety-Certifiable RTOS on Arm® VPX3-1703 SBC

***NXP® LAYERSCAPE 1043A (LS1043A) ARM QUAD-CORE A53 PROCESSOR-BASED
RTCA/DO-254 SAFETY-CERTIFIABLE COTS SBC SUPPORTS GREEN HILLS SOFTWARE
RTCA/DO-178B LEVEL A CERTIFIABLE MULTI-CORE RTOS***

2019 ARMY AVIATION MISSION SOLUTIONS SUMMIT, NASHVILLE, Tenn. (Booth #1068) – April 15, 2019 – Curtiss-Wright's Defense Solutions division today announced that Green Hills Software's field-proven INTEGRITY-178 tuMP safety- and security-critical multi-core real-time operating system (RTOS) will be demonstrated for the first time running on the Curtiss-Wright [VPX3-1703 module, the industry's first RTCA/DO-254 Design Assurance Level \(DAL\) A safety-certifiable Arm processor-based single board computer \(SBC\)](#). The demonstration, hosted in Curtiss-Wright's booth (#1068) at the Army Aviation Mission Solutions Summit, will feature the [INTEGRITY-178 tuMP RTOS](#) running FACE™-conformant applications on the VPX3-1703, and will show full utilization of all of the SBC's Arm processor cores, with full space and time partitioning per ARINC 653.

The Curtiss-Wright/Green Hills Software demo highlights the size, weight and power (SWaP) benefits resulting from an Integrated Modular Avionics (IMA) real-time computer network airborne system architecture fully utilizing the VPX3-1703 SBC's multicore processors by running the INTEGRITY-178 tuMP multicore RTOS. The rugged 3U OpenVPX™ module features the NXP Layerscape 1043A Arm quad-core A53 processor, and enables avionics system designers to rapidly integrate Commercial Off-the-Shelf (COTS) system solutions. Paired with the INTEGRITY-178 tuMP RTOS, the VPX3-1703 provides a compelling combination of hardware and software for system integrators that require optimal processing power and industry-leading SWaP benefits for their multi-core critical systems.

“We are pleased to collaborate with Green Hills Software to present the first live demonstration of the VPX3-1703, the industry’s first DO-254 safety-certifiable Arm single board computer, running the multi-core INTEGRITY-178 tuMP real-time operating system in an Integrated Modular Avionics airborne network architecture,” said Lynn Bamford, Senior Vice President and General Manager, Defense Solutions division. “When combined with INTEGRITY-178 tuMP, our Arm, Intel®, and Power Architecture® SBCs provide system designers with the critical building blocks they need to quickly and cost-effectively develop safety certifiable systems. Even better, the Arm processor-based VPX3-1703 expands our ability to provide avionics systems designers with dissimilar processors for redundancy to meet the most stringent DAL A requirements.”

Curtiss-Wright is the only COTS vendor with announced products that provide support for DO-254 hardware and DO-178C software safety-certifiable operating environments across all three major processor architectures: Arm, Intel and Power Architecture. This makes Curtiss-Wright uniquely positioned to support avionics system developers seeking to deploy embedded solutions that feature dissimilar redundant system architectures (i.e., using two or more different processor types while also running different operating systems) in order to meet the stringent requirements of DAL A certification.

DO-254 DAL A is required for safety-critical avionics applications such as flight control computers, fly-by-wire, flight displays, air data systems, and full authority digital engine control. A white paper discussing the benefits of dissimilar redundant architectures, [“Why Dissimilar Redundant Architectures Are a Necessity for DAL A”](#) is available for download. A second white paper, [“Is Arm the Future for Airborne Platforms in Military and Aerospace?”](#) highlights the benefits of Arm-based processing in safety-critical deployed applications.

Using the rugged VPX3-1703 module, avionics system designers can easily and rapidly integrate complete high-performance rugged DO-254/DO-178 safety-certifiable system solutions that run INTEGRITY-178 tuMP, the first true multi-core operating system for Arm processors that conforms to the FACE 2.1.1 Technical Standard. INTEGRITY-178

tuMP RTOS has successfully met DO-178 DAL A certification objectives multiple times across several different multi-core SOC architectures (each featuring a different core design), and is now available for all of Curtiss-Wright's DO-254 safety-certifiable SBC products.

At the 2018 U.S. Army FACE Technical Interchange Meeting (TIM), Curtiss-Wright, in collaboration with Green Hills Software and Harris Corporation, publicly demonstrated the first working example of a FACE-conformant operating system (OS) and FACE-conformant software application running simultaneously on two completely different processor infrastructures (Intel and NXP Power Architecture).

About the VPX3-1703 SBC

The recently introduced the VPX3-1703 is a low-power module (14W to 21W depending on frequency and application) ideal for size, weight and power (SWaP) constrained deployed applications. This rugged, highly capable module brings Arm's unparalleled power-to-performance ratio to safety-critical avionics systems. Designed specifically to address DO-254 avionics applications, the VPX3-1703 is available with data artifacts up to DAL A to help speed and ease the system certification process and greatly reduce program risks and costs.

The VPX3-1703's LS1043A processor, supported by NXP with a 15-year lifecycle, features four low-power Arm A53 cores that provide a good balance between performance, power, and cost for deployed defense and aerospace systems. What's more, because A53 cores are well known and field proven, they provide an ideal high-confidence pedigree for demanding and critical safety-certifiable applications such as avionics and motor/engine control. The fully rugged VPX3-1703 is ideal for use in mission computers, as well as general purpose SBC applications, both safety-certifiable and non-certifiable.

Sales inquiries: Please forward all Sales and reader service inquiries to defensesales@curtisswright.com.

For more information about Curtiss-Wright's Defense Solutions division, please visit www.curtisswrightds.com.

About Curtiss-Wright Corporation

Curtiss-Wright Corporation is a global innovative company that delivers highly engineered, critical function products and services to the commercial, industrial, defense and energy markets. Building on the heritage of Glenn Curtiss and the Wright brothers, Curtiss-Wright has a long tradition of providing reliable solutions through trusted customer relationships. The company employs approximately 9,000 people worldwide. For more information, visit www.curtisswright.com.

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