Bulletin – Jan 2021

Automotive Ethernet

New Gigabit Ethernet & testing product launches

What's inside ?

▪ Major developments in January

▪ Spotlight on Saelig: T3AWG3252 multifunctional 16-bit arbitrary/function generator with application in distortion test for Automotive Ethernet

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THEMES AND KEY TAKEAWAYS IN **January Bulletin**

01	**Top developments in January**
02	**Spotlight of the month**

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Contents covered in this Bulletin

Major developments in the Automotive In-vehicle network market

- The Automotive Ethernet market witnessed some major industrial activities in January month

Product launches

- ❑ **NXP :** Bluebox 3.0 development platform
- ❑ **Green Hills Software :** μ-visor for embedded microcontrollers
- ❑ **Ambarella :** CV5 supporting Gigabit Ethernet
- ❑ **Saelig :** T3AWG3252 multifunctional 16-bit arbitrary/function generator for Ethernet testing
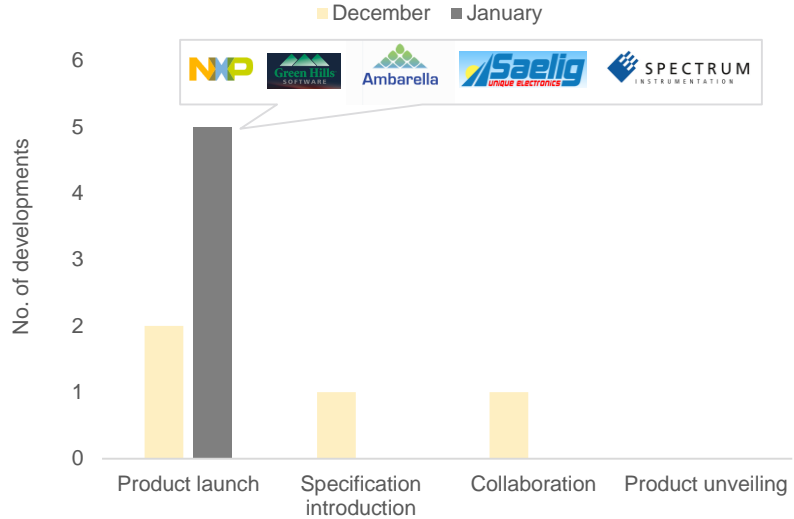
Spotlight of the month: Saelig introduces T3AWG3252 multifunctional 16-bit arbitrary/function generator with application in distortion test for Automotive Ethernet

Key Takeaways

- NXP's BlueBox 3.0 platform integrates the NXP S32G processor. Network accelerators include CAN FD, FlexRay, SPI, and LIN (Local Interconnect Network), as well as a Low Latency Communications Engine (LLCE).

- Green Hills Software announced the release of μ-visor™ designed to support the emerging automotive cybersecurity requirements of ISO/SAE 21434 and UNECE WP.29 and to meet ISO 26262 ASIL D functional safety.

- Ambarella CV5, an artificial intelligence (AI) vision processor is integrated with a rich set of interfaces includes 4-lane PCIe, CAN FD, Gigabit Ethernet, etc.

- Saelig introduced the Teledyne LeCroy T3AWG3252 multifunctional 16-bit arbitrary/function generator especially suited for the Distortion Test for Automotive Ethernet 100Base-T1 and 1000-Base-T1Power and the Semiconductor Dynamic Behavior Test.

- Teledyne LeCroy T3AWG3252 multifunctional 16-bit arbitrary/function generators test instrument is especially suited for the Distortion Test for Automotive Ethernet 100Base-T1 and 1000-Base-T1Power and the Semiconductor Dynamic Behavior Test. This is made possible with the instrument's versatile double-pulse test capability.

Industry Development activities in Jan 2021

Chart: No. of developments by category (December vs January)

Category	December	January
Product launch	2	5
Specification introduction	1	0
Collaboration	1	0
Product unveiling	0	0

Type of development	Sub-category	Date	Development	URL
Product Launch	Ethernet switch	08-Dec-20	Marvell Introduces Carrier-Optimized Ethernet Access and Edge Switches	Link
	Others	11-Jan-21	NXP announces the Bluebox 3.0 development platform for safe automotive high-performance computing	Link
	Others	11-Jan-21	Green hills software adds revolutionary safe and secure virtualization for embedded microcontrollers	Link
	Gigabit Ethernet	11-Jan-21	Ambarella introduces CV5 high performance AI vision processor for single 8K and multi-imager AI cameras supporting Gigabit Ethernet	Link
	Ethernet Testing	25-Jan-21	Saelig introduces T3AWG3252 multifunctional 16-bit arbitrary/function generator with application in distortion test for Automotive Ethernet	Link
	Gigabit Ethernet	27-Jan-21	Spectrum's new generator & digitizer in one box integrated with Gbit Ethernet port	Link
	SPE (Single Pair Ethernet)	16-Dec-20	EKF developed a CompactPCI Serial FPGA board with front panel connectors for up to 20x100Mbps port of Single Pair Ethernet	Link
Specification	SPE (Single Pair Ethernet)	15-Dec-20	AVX Joins the OPEN Alliance for widespread adoption of Single Pair Ethernet	Link
Collaboration	Gigabit Ethernet	03-Dec-20	AAEON and LIPS partner to accelerate LIPSedge® AE400 Industrial 3D Camera supporting Gigabit Ethernet	Link

Key takeaways

- The month of January witnessed product launches, with the focus being on Gigabit Ethernet technology. Spectrum Instrumentation and Ambarella introduced new products providing connectivity via Gigabit Ethernet. Ambarella unveiled CV5, an artificial intelligence (AI) vision processor capable of recording 8K video or four 4K video streams. In automotive video telematics applications, CV5 provides the performance necessary to encode multiple video streams from front ADAS, driver monitoring, cabin monitoring, and side-view cameras. Its CVflow AI engine can simultaneously run advanced driver assistance systems (ADAS) algorithms such as lane departure, and forward-collision warning as well as driver monitoring algorithms such as drowsy driver detection.

- On the other hand, Spectrum Instrumentation introduced hybridNETBOX, a new generator & digitizer in one box integrated with a Gbit Ethernet port. The hybridNETBOX units are ideal for a wide variety of automated testing applications. This powerful testing process can be deployed in a host of applications like bus testing, MIMO communications, circuit verification, robotics, automotive and scientific experiments.

01 | **Top developments of the month**
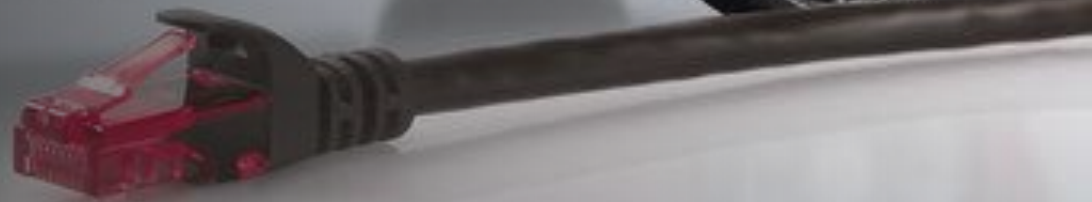
- Expert Comments -

"Renesas and Green Hills have been working together for decades to provide the best functional safety solutions for Renesas MCUs for our mutual customers. Renesas RH850/U2A's hardware-based virtualization assisted technology and Green Hills Software's extensive experience with virtualization and Renesas' products is a natural combination. We've worked together to address our customers' most challenging consolidation requirements, and µ-visor enables the full utilization of the advanced capabilities of our latest MCUs."

- *Naoki Yoshida, Vice President of Automotive Digital Products Marketing Division at Renesas*

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11 January 2021

NXP announces the Bluebox 3.0 development platform for safe automotive high-performance computing

NXP Semiconductors has announced BlueBox 3.0, a new and expanded version of NXP's flagship safe Automotive High-Performance Compute (AHPC) development platform. BlueBox 3.0 now offers a flexible way to address user-defined vehicles, safety Level 2+ (L2+) automated driving, and the evolving vehicle architectures that will revolutionize connected vehicles.

Analyst comment:

- NXP's BlueBox 3.0 platform integrates the NXP S32G processor to provide secure vehicle networking and reliable safety processing and checking for system-level ASIL D conformance.

- The headless SoC is loaded with coprocessors including Ethernet packet forwarding and hardware security engines. Network accelerators include CAN FD, FlexRay, SPI, and LIN (Local Interconnect Network), as well as a Low Latency Communications Engine (LLCE).

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11 January 2021

Green Hills Software adds revolutionary safe and secure virtualization for embedded microcontrollers

Green Hills Software announced the release of µ-visor™, its safe and secure embedded virtualization hypervisor, for the Renesas RH850/U2A microcontroller (MCU).

Analyst comment:

- Designed to support the emerging automotive cybersecurity requirements of ISO/SAE 21434 and UNECE WP.29 and to meet ISO 26262 ASIL D functional safety, µ-visor for MCUs expands Green Hills leadership in safe and secure virtualization technology and its product line. µ-visor joins the proven, broadly deployed INTEGRITY Multivisor® virtualization for application processors already used in tens of millions of commercial vehicles worldwide.

- µ-visor is the basis for safe and secure consolidation of multiple MCU-based systems onto a single multicore RH850/U2A design, enabling savings in cost, size, and power for the resulting consolidated system, while at the same time simplifying the safety design of the system.

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- Expert Comments -

"With the introduction of CV5, Ambarella is defining the next generation of automotive, consumer, and robotic cameras. By combining 8K single-channel and 4K multi-channel recording with the high performance of our CVflow AI engine, we are enabling cameras with the highest-quality imaging and innovative new AI features."

- Fermi Wang, CEO of Ambarella

11 January 2021

Ambarella introduces CV5 high performance AI vision processor for single 8K and multi-imager AI cameras supporting Gigabit Ethernet

Ambarella, an AI vision silicon company, unveiled CV5, an artificial intelligence (AI) vision processor capable of recording 8K video or four 4K video streams. The new system on chip (SoC) will enable the development of intelligent automotive camera systems, consumer cameras (drone, action, and 360°), and robotic cameras.

Analyst comment:

- CV5 combines Ambarella's powerful CVflow AI engine with dual Arm® A76 CPUs to provide the performance necessary for a wide range of AI-based algorithms.

- It is integrated with a rich set of interfaces includes 4-lane PCIe, CAN FD, Gigabit Ethernet, USB 3.2 host and device, three SD card controllers, MIPI DSI/CSI-2, and HDMI video outputs.

- In automotive video telematics applications, CV5 provides the performance necessary to encode multiple video streams from front ADAS, driver monitoring, cabin monitoring, and side-view cameras.

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25 January 2021

Saelig introduces T3AWG3252 multifunctional 16-bit arbitrary/function generator with application in distortion test for Automotive Ethernet

Saelig Company has introduced the Teledyne LeCroy T3AWG3252 multifunctional 16-bit arbitrary/function generators that are designed with an innovative architecture that features synchronized analog signal and digital pattern generation. This multifunction 250MHz arbitrary/sweep/function generator combines multiple functions in a single instrument, including a two-channel function and arbitrary waveform generator with an eight-channel digital pattern generator.

Analyst comment:

- This test instrument is especially suited for the Distortion Test for Automotive Ethernet 100Base-T1 and 1000-Base-T1Power and the Semiconductor Dynamic Behavior Test. It is made possible with the instrument's versatile double-pulse test capability.

- The standard feature Double Pulse function required for testing MOSFETs and IGBTs is made simpler because the two pulses can have different amplitudes, rise-times, fall-times, and widths.

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02 | Spotlight of the month

SP☀TLIGHT

Automotive Ethernet
Saelig introduces T3AWG3252 multifunctional 16-bit arbitrary/function generator with application in distortion test for Automotive Ethernet

The variable clock, true-arbitrary technology of the **Arbitrary Waveform (AWG) / Digital Pattern Generator** lets the user create complex signals of synchronized analog waveforms as well as digital patterns. Users can create signals in a sequence, or apply loops, jumps, and conditional branches. The AWG mode uses a variable or synchronized sample rate 'True-Arb' technology to suit applications requiring extremely high signal fidelity.

- **T3AWG3252** - 250MHz arbitrary/sweep/function generator combines multiple functions in a single instrument, including a two-channel function and **arbitrary waveform generator** with an eight-channel digital pattern generator.
- The T3AWG3252's excellent Harmonic Distortion performance, combined with the output voltage amplitude range and the precise tuning of the delay and phase of the differential signal pairs, makes the T3AWG3252 a perfect tool for emulating the disturber signal to assist in avoiding pitfalls encountered during the execution of the test.
- The T3AWG3252 can also quickly determine the dynamic behavior of power devices. The standard feature Double Pulse function required for testing MOSFETs and IGBTs is made simpler because the two pulses can have different amplitudes, rise-times, fall-times, and widths.

Applications areas:

- Distortion Test for Automotive Ethernet 100Base-T1 and 1000-Base-T1Power
- Semiconductor Dynamic Behavior Test made easier with the instrument's versatile double-pulse test capability

Key features:

- 16-bit vertical resolution
- 128Mpts (up to 1Gpts option) memory on each channel
- 16,384 waveform entries in the sequencer
- + / − 24V output

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The reality for Future Mobility

Presented by:
Georgios Stathousis
Product Manager - Mobility Insider

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Watch here

Solid-state batteries, together with Lithium-Sulfur batteries, are being considered as the next in line to replace the conventional lithium-ion batteries.

2020 saw increased research work to improve cycle life, energy density and ionic conductivity – the main challenges for solid-state batteries. In more detail, ProLogium launched a solid state battery package (MAB battery pack) for electric cars, buses and two-wheelers at CES 2020. Samsung introduced a new solid-state lithium metal battery with 900Wh/L density and BYD's Blade Battery intends to mitigate concerns about battery safety in EVs.

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