Golden era of innovation

Established in 1988, Advantech Wireless Technologies designs, manufactures and deploys satellite and terrestrial wireless communications equipment for broadband connectivity, broadcast solutions, video contribution/distribution, mobile 3G, 5G, LTE backhaul, DTH & DTT, and MIL-Satcom. Advantech's product portfolio consists of next generation GaN-based Solid State Power Amplifiers (SSPAs), Block-Up Converters (SSPBs), frequency converters, terrestrial microwave products, Pulsed Amplifiers for Radar Applications, Transmitter and Transceiver products, as well as RF Passive Components and integrated systems. Tony Radford, Vice President Global Sales at Advantech Wireless Technologies, opines on the present day satcoms sector, and Advantech's place within it.

Question: The space sector is in the midst of a golden era of innovation; change is coming on all fronts, and with remarkable speed. What's your assessment of the space and satellite sectors as they stand right now?

Tony Radford: I have been in the satcom industry for 40 years and I don't recall having seen the industry being pulled in so many directions at the same time. Innovation in our industry used to happen at a much slower pace.

With the advent of CubeSats, SmallSats and whatever else gets spun into LEO, everything is being affected one way or another. Spacecraft designs, ground stations, antennas, launch vehicles – even the way services are accessed is changing. Today, seamless global ubiquity is the goal along with unlimited data rates and as close to zero link latency as you can get.

Question: With so much change well underway, what will Advantech's role be within such a rapidly developing sector going forwards?

Tony Radford: As has always been the case, satellite architecture defines what we do on the ground. The focus on LEO and MEO constellations is changing everything we do in satcom, whether it's RF amplifiers and converters, antennas, launch services, satellite tracking or comms architecture. When you consider all of that along with the push for 5G, attempting to survive on legacy technology and products is futile. Advantech's R&D team is constantly innovating to ensure our products keep up with (and ahead of) these trends.

As one of the world's largest suppliers of satcom products, we have a sizeable design team currently engaged in new product development. In addition to the sustainment of our broad portfolio, thanks to our deep experience in passive component design, we're pushing solid state RF power levels to new heights with proprietary combining structures.

SUMMIT - High-Power, Modular, Soft-Fail Redundant SSPA Systems

Our digital design team is preparing to launch a complete refit of our monitor and control platform to CAN Bus, a move that promises exponentially greater speed and status monitoring down to the device level. This is particularly critical for our new Summit II and Olympus high-power SSPA systems. With the need for ever increasing bandwidth and power, we're always looking for new devices and techniques that will allow us to continue to be leaders in this industry.

Question: In April 2019, Advantech announced the official opening of its Advantech Wireless Technologies Centre of Excellence in Kirkland, Quebec. What can you tell us about this new facility and the implications for the company?

Tony Radford: When we combined the R&D resources of Advantech and Alga, it was decided that the best way to ensure coordination and process efficiency was to centralize in one location. Our Tech Center is treated like a separate entity whereby everything related to R&D can be accounted for on a free-standing basis. We currently have three R&D labs that are part of our new center.

Question: In 2019 we saw the release of Advantech's new line of Solid-State Power Amplifiers and Block Up Converters; what improvements does this new product line deliver compared to previous iterations?

Tony Radford: Shortly after Baylin's acquisition of Advantech, Alga Microwave was acquired, giving us two product portfolios with overlap in some bands and power levels. This prompted

Taurus Line - 500W Ku-Band GaN based SSPA/BUC

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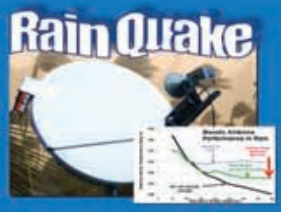

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us to critique both brands so we could standardize on the best models, based on performance, cost and manufacturability.

Advantech has always been known, particularly for high power amplifiers, whereas Alga's legacy has been in low to medium power, at least as far as mainstream production is concerned. Alga brought an extensive library of microwave passives, along with sophisticated modelling and prototyping tools. Last year, we announced the release of a new 1kW Ku-band SSPB that is truly a hybrid of Advantech's high-power RF circuit design coupled with a new combining assembly developed by Alga.

Our new Summit II soft-fail, redundant SSPA system is slated for launch next quarter. Summit II represents the culmination of everything new at Advantech – high-power SSPAs with Alga combining and high-performance monitoring and control based on CAN Bus M&C.

Question: What new technologies is Advantech considering for its next round of innovation?

Tony Radford: Since Ka-band is forming the basis for many, if not most, of the new satellite platforms, Advantech has a team specifically dedicated to the design and development of a new line of Ka-band RF modules and BUCs. Our new RF combining designs will grant us the ability to achieve high levels of RF output power with modular architecture that will permit cost effective sparing and field maintenance.

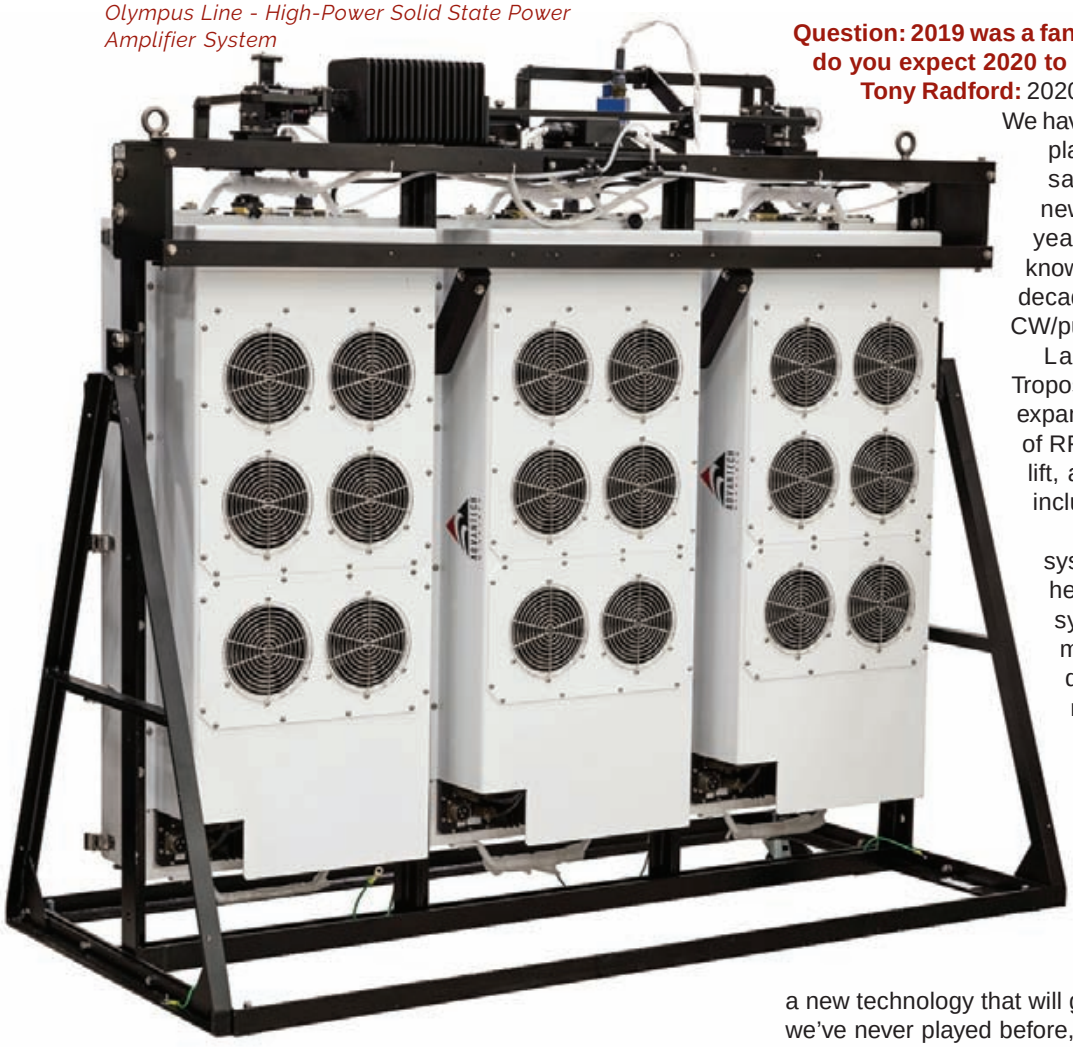
"With the advent of CubeSats, SmallSats and whatever else gets spun into LEO, everything is being affected one way or another. Spacecraft designs, ground stations, antennas, launch vehicles – even the way services are accessed is changing."

All of our new products are designed around our CAN Bus M&C platform. Commonality will simplify the integration of our products into earth station networks regardless of their heritage – Advantech or Alga.

The recent launch of Olympus high-power redundant and phase combined system indicates our never-ending pursuit of projects that require very high levels of solid-state power. Summit II will pick up where Olympus leaves off. Though our Summit systems have proven themselves in the market with seven years of 100 percent availability, Summit II will carry that legacy forward with even greater reliability, less weight, a smaller footprint, faster reaction time and superior diagnostics.

Another recent launch was our 5G interference rejection filter for C-band operators.

Olympus Line - High-Power Solid State Power Amplifier System



Question: 2019 was a fantastic year for Advantech; what do you expect 2020 to have in store?

Tony Radford: 2020 is going to be a busy year for us. We have a long list of new products we're planning to launch. In addition to our satcom products, we launched a new pulsed amplifier platform last year. Though Advantech isn't well known for RADAR products, we have decades of experience in pulsed and CW/pulsed amplifier deployments.

Last year we launched a new Troposcatter amplifier line that will be expanding upon this year. Also, our line of RF converters will be getting a face lift, as will our universal controllers – including touch screen front panels.

Though Advantech is not a system integrator per se, we won't hesitate to integrate our amplifier systems with antennas up to 13 meters. Our new Summit II is designed to be suitable for mounting on the work platforms of large aperture antennas.

The Advantech design team is hard at work on a list of initiatives that will combine the best elements of multiple products and drive an increase in performance and manufacturability. Soon, we will announce our entrance into a new technology that will give us access to a market where we've never played before, so stay tuned!

MICROSPACE INNOVATION FOR THE NEWSPACE ERA

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