

Worldwide Satellite Magazine

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Year in Review – December 2020



**INFRASTRUCTURE
SERVICES** FOR THE GROWING
SPACE ECONOMY



Year in Review: Comtech Xicom Technology

2020 saw tremendous change worldwide in practically every aspect of our lives and work. Comtech Xicom's emphasis on flexibility provided the resilience to meet the challenge.

At the end of 2019, the US economy and much of the global economy, was humming along with historically, low unemployment and solid capital investment across many industries, including satellite communications (SATCOM). As the US economy continued growing over the first months of 2020, a viral disease breaking out in China became the start of a global pandemic. The impact on our industry was felt when the DC-based Satellite 2020 show was shut down one day before schedule in March — people on business travel from all over the world were sent home.

Comtech Xicom Technology, was exhibiting at this event and had just announced a slate of new products that were aimed at commercial and military SATCOM terminals and the company was looking at a big year filled with new opportunities.

Comtech Xicom is based in Santa Clara, California, one of the first west coast counties to be "shut down" to limit spread of the coronavirus. Xicom management had to quickly determine the appropriate response and execute a plan.

As part of the critical telecommunications industry, and a key supplier of US military communications equipment, Xicom was considered "essential" and reopened after implementing appropriate hygiene/distancing measures. All employees who could work from home immediately began to do so and only the workers needed in the factory for essential production were called back into the COVID-safe environment. Management's ongoing attention to COVID-19 has prevented any community spread from occurring in the Xicom facility.

The keys to Xicom successfully responding to this unprecedented situation have been to remain flexible and focused, focused on the safety and well-being of employees, suppliers and customers, as well as on the critical needs of customers for high quality, high performance SATCOM amplifiers. — and flexible in how challenges are met as they arise.

The Market Effect of the Pandemic

As the world economy was pummeled, communications became more important than ever to people living and working at home in isolation as well as for essential businesses, that were suddenly operating without in-person, business-to-business interaction.

Demand for teleconferencing and entertainment services boomed as people found new ways to meet and work together. SATCOM has always played an important role in telecommunications services and the industry performed well by keeping services intact and growing. Despite some supply



Xicom's Bobcat BUC



Xicom's Falcon BUCs + SSPAs



Xicom's Puma SSPAs + BUCs.

chains interruptions from international trade/shipping and customer/supplier communications, infusing the supply chain with flexibility from top to bottom and maintaining focus on priorities allowed factories to keep running and development projects on schedule. Key growth market segments, such as new LEO systems, airborne and maritime connectivity as well as new military SATCOM networks, were impacted more than traditional fixed services.

LEO Systems

The nascent market in SATCOM equipment for LEO systems got a shock early in 2020 as capital markets tightened dramatically before they grudgingly returning to a more sober state. Several planned systems are gone, and others are being rethought well into their execution phase.

OneWeb entered bankruptcy and had trouble finding a buyer — until acquired by the UK Government and Bharti Global ([more info at this Satnews daily news link](#)). However, large, internally funded systems by SpaceX and Amazon proceeded, lagged by the LEO offering from Telesat. All face the challenge of creating a solid business case in current conditions.

Airborne and Maritime Mobility

Coronavirus created a near halt in both leisure and business travel, causing airborne in-flight connectivity (IFC) and cruise connectivity segments to go from being the strongest growing, most profitable market segments to the source of significant financial instability generating bankruptcies, acquisitions, and reorganizations. Cruise lines are shut down for 2020 and beyond. The airborne market saw virtual stoppage of air travel which, although gradually coming back, won't reach pre-pandemic levels for at least another year. SATCOM operators depended on lucrative fixed bandwidth IFC contracts, and IFC service provider revenue streams dropped to near zero.

Military/Government Mobile and Transportable

Military SATCOM networks were in the midst of transformation to address the realization that leased bent-pipe capacity no longer met the demands of global military operations when the personnel designing and procuring them were suddenly working from home.

The initial, reduced level of communication and ability to procure, verify, certify and field new equipment put significant delays into deployment timelines. Huge capacity that was leased globally to support US and partner forces had massive annual costs and limited efficiency; the military also needed increased mobility while communicating, enhanced security, and greater network resiliency.



From left to right:

- *Rack-mount TWTAs with integrated touch screen control*
- *Antenna- and feed-mount, solid-state SSPAs and BUCs for commercial SATCOM and military*
- *Full line of antenna-mount TWTAs for SATCOM*
- *New, solid-state, certified in-cabin and out-of-cabin airborne solutions*

The Comtech Xicom Response

Xicom is a premier supplier of TWTA and SSPA amplifiers. Founded in 1991, the company has shipped more than 15,000 TWTAs as well as 12,000 GaAs and GaN SSPAs.

Xicom's approach has long been to offer the best technology for any application by leveraging the flexibility of offering tube-based and solid-state amplifiers across frequency bands and power levels while adding a focus on innovation. Addressing both commercial and military markets increases resiliency in times of change. This enabled Xicom to adapt to shifts across market segments and served it well during this pandemic.

Throughout 2020, Xicom invested in new products and markets by developing a suite of technology building blocks that can take advantage of advances in device technology and be used to quickly release new products. Flexible baseline products are now released, and new products with high commonality are being added. Focus on common designs enhances flexibility in the supply chain and manufacturing process to improve customer response time.

Ka-band SSPAs for LEO Systems

LEO systems require many more gateways with lower uplink transmit power/gateway than GEO systems, resulting in high demand for low cost, high power, Ka-band SSPAs.

Xicom focused on preparing for the launch of Ka-band LEO systems that occurred this year. With many custom requirements, Xicom added to the firm's Puma solid-state GaN product line in 2020 with a suite of easy-to-build, high-power Ka-band GaN modules, waveguide designs to combine varying numbers of these modules, and extremely flexible upconverters accommodating many sub-band possibilities within the 27.5-31.0 GHz Ka-band. Xicom enhanced their performance to support new and innovative architectures using higher-order modulations.

SPA/BUCs for Airborne Mobility

Xicom responded to the expanding use of Ka-band in airborne IFC by establishing the Falcon airborne product line and adding multiple DO-160-certified Ka-band SSPA/BUC products to their established Ku-band commercial airborne products. Xicom is adding flexibility by expanding available options for power levels, frequency sub-bands, and other features.

A main focus for Xicom during 2020 was to develop plans to ramp production quickly to meet customer demands has been crucial to Xicom's ongoing success today and tomorrow.

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A Time to Build

The arrival of the novel coronavirus in March of 2020 changed the world. At the same time, my world was also changing as Comtech Telecommunications promoted me to President of the Xicom Technology division. It has been an extraordinary year for me to say the least. While transitioning into a new role, all the challenges a global pandemic presented made me appreciate the talented, adaptable, and forward-thinking team at Comtech Xicom.

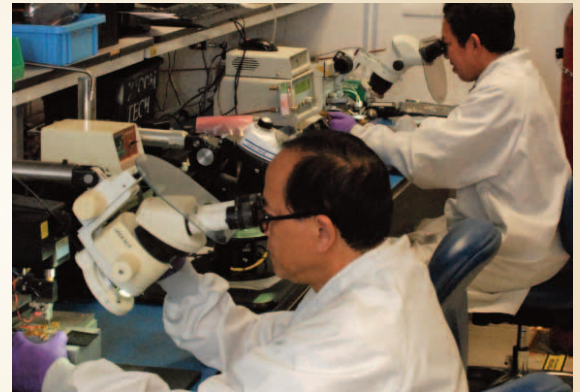
Having initial COVID protocols in place before the virus spread was deemed a pandemic, allowed us to quickly adjust as new safety practices were required to operate as an essential business and keep our employees safe. This kind of forward thinking has been a pillar on which Xicom continues to build.

During this year, we have seen market segments like airborne and mobility, collapse, while other areas such as GEO, HTS, LEO and MEO constellations prospered. Having a robust, adaptable, and diverse product line of TWTAs, BUCs and SSPAs is required to ensure long term success and is Xicom's focus.

Since joining the Xicom team 5 years ago, we have taken a closer look at how we design and build our products. Creating an environment of continuous improvement has paid dividends over the past few years, particularly with a decline in warranty repair rates and an improvement in first pass yields. Neither of these successes could be accomplished without great employees and a solid business system.

Continuing to build on our solid technological foundations and infrastructure will propel us into the next generations of HPAs and BUCs. For example, we have built and continue to invest in a state-of-the-art chip-and-wire assembly area to design our own chip-level circuits in order to maximize performance and adapt to new challenges. This capability not only gives us the most efficient design with the latest devices but also allows us to be the first to market with the next generation of devices. We also utilize an in-house machine shop to make high-performance and broad band combining networks in the smallest packages possible. Having these capabilities, coupled with extremely talented engineers and advanced analysis tools enables the creation of cost effective, compact, and highly manufacturable power amplifiers and BUCs.

One of the challenges in staying ahead of the competition is being able to aggressively adapt our product line as needs change and new technology becomes available. Just as we predicted the COVID shutdowns, we can predict advancements in RF components and be ready as new technology emerges. The versatility of the common building blocks used in our products allows us to quickly realize and adapt to changes in technology. We are already the leading amplifier supplier at Q-band and V-band, and we are making investments to increase our capability to 50GHz and beyond.



Xicom's chip and wire clean room.

While the novel coronavirus dealt the world economy a heavy blow, we look forward to the opportunities the recovery brings. Xicom is excited to continue to lead the industry into the next chapter in satellite communications and meet the market demands by supplying cutting edge solutions and technology.



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Technology and has 25+ years of experience in RF amplifier, RF systems, electronics, power electronics and mechanical engineering, in the telecom and SATCOM industries at both large and small companies that have included Motorola, Andrew, MCL (Miteq) and Teledyne.