

YEAR IN REVIEW: *Mission Microwave*

Mission Microwave's customers started 2021 eager to meet the challenges offered by a market dealing with the on-going effects of the global pandemic. The company's customers continue to rely on Mission for on-time and in-spec delivery of innovative X-, Ku-, and Ka-band Block Upconverters (BUCs) for tactical and high-performance SATCOM terminals and gateways.

New Market Segment Expansion

The year 2021 witnessed Mission Microwave complete several DO-160 qualified airborne products and establish large orders from leading SATCOM *Inflight Connectivity* (IFC) providers. These products are integrated transceivers and stand-alone BUCs incorporated into a variety of airborne platforms. The products are the result of cooperative relationships with customers planning for the expansion of Inflight connectivity services throughout the decade and demonstrate the confidence of Mission's customer base in one of the most difficult segments the satellite industry.

One of Mission's early aviation customers previously announced a series of wins in the business aviation market for their tail-mount antenna technology using a Mission Microwave BUC, causing them to increase their forecast for this product beyond initial expectations.

New Interest From Teleport Operators

While Mission has long been a leading supplier to the SATCOM terminal market, the year also saw new customer applications of Mission's highest power amplifiers in teleports and gateways. The company's **400 watt Ka-band** and **Ku-band BUCs** and **SSPA's** have been adopted to replace TWTA amplifiers in large gateway sites.

The 400 Watt Ka-band SSPA is a drop-in replacement for a legacy 500 watt TWTA. Early customers for this product have been keen to follow military users lead in the roll-out of TWTA replacements and expect to build their next generation networks with SSPA's instead of TWTAs, to take advantage of the improved reliability and lower total cost of ownership associated with Solid State Amplifiers. As one of the only producers of commercial Ka-band GaN amplifiers at these power levels, Mission Microwave has earned a position of trust with satellite operators and teleport managers and expects this sector to become a very large portion of the company's business throughout the decade.

In support of this growth in the gateway and teleport sectors, the company has developed a technical and commercial partnership with a long-standing supplier of waveguide switch and load systems to be able to offer customers uniquely designed redundancy systems using Mission Microwave BUCs/ SSPAs in an easy to buy, use, install and maintain configuration. This novel arrangement allows customers to take advantage of Mission Microwave's compact designs to place amplifiers closer to the antenna feed/hub assemblies, allowing them to eliminate 1-2 dB of lossy axis crossing on the antenna. This allows for a more efficient design and ultimately both initial and operational cost savings.



Mission Microwave products were everywhere at the recent satellite show in DC.

Continued Growth In Tactical Markets

Mission's customers in the tactical terminal market continued to develop consistently winning terminals that bring reliable performance to end-users. During this past year, Mission Microwave had several "design wins" on exciting, next generation terminals from essentially all of the top-tier SATCOM terminal manufacturers. Mission's customers have developed the confidence that the Mission Microwave products will help them design winning and easily certifiable terminals. Mission's Stinger, Javelin and Titan products are routinely used on a wide range of terminals certified for use on military and commercial GEO and MEO networks.

Mission's customers announced wins on major DoD and international MoD programs using the company's standard products. The company is also supporting customer certification of new terminals using the company's new 20-watt Ka-band Cube product and the recently announced 400-watt and 800-watt X-band products.

Customer Marketing Events

Mission's customers returned to the trade show circuit in the second half of 2021. The Washington, DC, trade event in September featured Mission Microwave products on SATCOM terminals in a dozen stands. Despite the low attendance from international exhibitors, there were several new terminal introductions featuring Mission Microwave products.

Mission Microwave's products also appeared on customer terminals at the **Global MILSATCOM** conference, the **Association of the U.S. Army** (AUSA) meeting and the popular **Satellite Innovation Conference** in Mountain View, California.

THE NEW SHAPE OF SOLID STATE

X, Ku, & Ka-Band BUCs & SSPAs
from 12 Watts to 800 Watts



A Foundation Building Year

Among the high points of the year for Mission's customers were the launch of several new terminals that take advantage of Mission Microwave's industry leading performance, along with the products' advantages in *size, weight and power (SWaP)*. Several of Mission's long-standing customers selected the company's products for their next generation, multi-band/multi-constellation terminals. Many of these are in the pre-production stage and will be the foundation for Mission Microwave's growth over the next decade.

The company made outstanding advances in the production of wideband high power Ka-band products. In 2021, the company shipped more than 200 units of the industry leading Titan 200 watt Ka-band BUC. The Titan, along with early shipments of 400 watt SSPAs, and 250 watt Ka-band BUCs, placed Mission Microwave as the de facto leader in high power solid state Ka-band products. The company expects these products will continue to be very popular with Ka-band GEO, MEO and emerging LEO system operators and terminal providers.

New Facility Expansion

In April of 2021, the company moved into a new state-of-the-art facility in Cypress, California. The new facility offers room for all functions to return under one roof as well as the expansion of the team, with several new hires in operations, production and product engineering.

The new facility has more than 31,000 square feet of finished workspace and is equipped with ten, temperature controlled, test equipment suites, capable of automated production testing up to 40 GHz for high power amplifiers and up to 750 watts. The facility has enhanced power distribution and HVAC systems to accommodate the growing volume of deliveries of Mission products that each

undergo proprietary burn-in, and testing processes. The new floor plan layout supports the reliable manufacturing of Mission's well-known products, such as the **Cube, Dart, Stinger, Javelin, and Titan** BUCs used on tactical SATCOM terminals throughout the DoD and critical commercial telecommunications networks.

Improvements to the production and testing lines also enhance Mission Microwave's growing airborne product business, including Ku-band and Ka-band BUCs and transceivers for UAV's and for DO-160 qualified terminal partners.

The Outlook

Mission Microwave and its customers had a solid performance in 2021. Despite the dynamic supply-chain challenges and pandemic induced uncertainty, the company continues to gain market share, introduce new products, and acquire new customers and market segments.

Throughout 2022, Mission's product lines will continue to support a wider range of terminal architectures and applications. The company's customers increasingly require wideband solutions for Ka-band, and higher RF power levels and enhanced performance in all bands. 2022 will be another banner year for this innovative leader in high power SATCOM BUCs.

Both Mission Microwave and its customers are planning on more success and bringing new capabilities to end users as the satellite industry evolves beyond traditional architecture to mobile and non-GEO networks in 2021 and beyond.

missionmicrowave.com



Steve Richeson is the Vice President of Sales and Marketing at Mission Microwave.



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