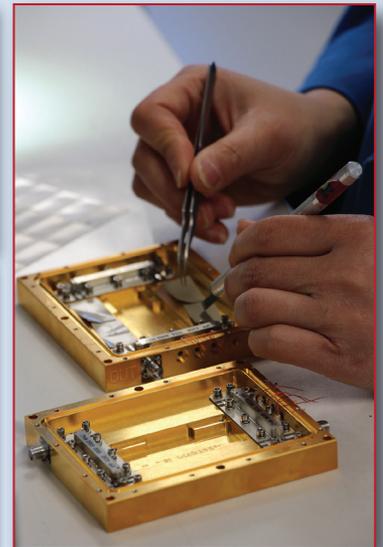


FAB S and LAB S

Best Performing, Highest Power and Highest Frequency Power Amplifiers in the World



Surrounded by pastoral fields in Souderton, Pennsylvania, the modern building with its distinctive orange is immediately recognizable, mirroring the trim on the high-power amplifiers that built AR. Now four businesses with a staff of more than 200, AR began in founder Donald “Shep” Shepherd’s basement in 1969, motivated by his vision to supply the best performing, highest power and highest frequency power amplifiers (PA) in the world. AR’s success achieving that vision is reflected in many ways, with power the most impressive metric.

In 1988, AR developed the first 100 W solid-state PA covering 100 MHz to 1 GHz, a record at the time. By 2015, AR had achieved a 50,000 W CW, class A, solid-state amplifier. To develop and manufacture PAs delivering more than 100 kW, AR expanded its Souderton facility with a two-story addition, comprising 10,000 ft² and some 2 MW of electric capacity, clearly differentiating AR among high-power amplifier suppliers.

AR’s PAs are the industry standard for electromagnetic compatibility (EMC) testing and have been widely adopted for sub-6 GHz wireless test and measurement, growing with the dynamic mobile market. AR is also well-known in the defense community, with PAs covering the electronic warfare (EW) bands from 700 MHz to 18 GHz. In all markets, AR strives to provide the best performance at a reasonable price, performance defined by output power, flatness, linearity and ruggedness to high VSWR loads.

To meet the company’s goals for performance, price and quality—amplifiers that are built to last forever—AR builds its own solid-state PA modules internally

in the company’s Microelectronics (MET) lab. Recently expanded to add capabilities and increase capacity, the MET lab has 2000 ft² dedicated to production and 1000 ft² for design, both in a class 100,000 clean room that can be converted to class 10,000 if required. The PA design team brings some 200 years of experience to new designs and is complemented with engineers providing system, mechanical, digital hardware and software expertise. Once products are in production, AR’s customers are supported by a technical applications team and the most comprehensive warranty in the industry.

To achieve the highest power density, most PAs use GaN semiconductor devices, assembled into modules with chip-and-wire technology. MET lab capabilities include eutectic and epoxy die attach and a full range of wire bonding processes, with two fully-automated wire bonders and five semi-automatic bonders. To verify these processes provide void-free die attach, AR employs X-ray inspection. A nearby test lab handles any special tests that AR doesn’t perform internally.

The future for AR is certain: higher power and higher frequency, including products to support the emerging wireless millimeter wave markets. As one example, new solid-state field generating systems combine a solid-state PA and antenna to achieve electric fields up to 50 V/m at 1 m, from 18 to 26.5 GHz and 26.5 to 40 GHz.

Almost 50 years after starting AR, Shep, who now serves as chairman of the board, maintains his founding vision: “As customers require larger, more powerful amplifiers, we’ll be ready for their future needs.”

www.arworld.us