Microwave Generator Delivers More Than 100 W CW at 2.45 GHz

Emblation Microwave has introduced its model ISYS245 microwave generator for commercial, industrial, research, and test applications requiring a high-power microwave source. The extremely compact source generates more than 100 W CW output power at 2.45 GHz. It stays cool via highly efficient, solid-state technology and replaces much larger magnetron and traveling-wave-tube-amplifier systems. It provides clean microwave output power that can be adjusted by means of a straightforward user interface or under remote control with a personal computer (PC).

The model ISYS245 microwave generator is actually a full microwave system in a compact housing measuring just 11.8 x 2.2 x 10.8 in. (300 x 85 x 275 mm). It includes a low-noise voltage-controlled oscillator (VCO), high-power transistor amplifier, and control and monitoring circuitry. The four-stage solid-state power amplifier (SSPA) is based on state-of-the-art technology, using gallium-nitride (GaN) transistors on silicon-carbide (SiC) substrates for effective thermal management. The amplifier, which is biased for Class AB mode operation, achieves better than 62% efficiency.

In addition to providing high-power signals, the model ISYS245 can boost signals from an external source, such as a signal generator. As a stand-alone SSPA, it delivers small-signal gain from 55 to 58 dB at 2.45 GHz. In swept mode, the output power can be varied from 0 to 100 W in 5-W increments. The model ISYS245’s GaN amplifier provides as much as +51 dBm (110 W) saturated output power at 2.45 GHz, available at a female Type N connector. It delivers a wide dynamic range compared to tube amplifiers, with a noise figure of less than 10 dB and output third-order intercept point (OIP3) of +56 to +58 dBm. When working as a stand-alone amplifier, the ISYS245 handles maximum input levels of +15 dBm from external signal sources.

The ISYS245 microwave generator is easy to use. It features a simple-to-navigate front panel, with the capability of enabling or disabling RF output power at the push of a button. Power can also be disabled by means of a timer with a 99-minute range. The ISYS245 includes a simple parallel communications interface for external control and data logging with a PC, and is available with an optional USB interface module for use with USB-equipped computers. A variety of LEDs and audible alarms warn when RF power is enabled and of severe load mismatches and excessive reflected power conditions.

The ISYS245 incorporates an innovative reflected-power measurement system that delivers outstanding accuracy when used in swept mode. For example, when working with a device under test (DUT) that presents a poor impedance match (high return loss) to the output of the ISYS245, the reflected-power measurement system can significantly reduce errors and measurement uncertainty. For certain applications, such as analysis of material properties, good reflected-power measurement accuracy is essential.

Although the ISYS245 is available as a standard product, Emblation Microwave's CEO, Gary Beale, notes that they will also supply custom versions: "In the end, we will design any type of system that our customer requires. Our modular design allows for fast and economical modifications."

The ISYS245 is a low-cost, light-weight solution for applications requiring high levels of microwave power, such as in plasma physics, microwave chemistry (to speed reaction times), food processing, curing, material analysis, material heating and drying, and in general measurement applications. It employs pulse-width modulation (PWM) techniques to maintain power within 5% of a selected value, even over temperature. The ISYS245 runs on 100 to 240 VAC, 50/60 Hz. The FCC-compliant high-power microwave source meets CE mark certification as well as UL 61010 and IEC 61010 product safety standards in the US, UK, and Canada.

For more information please visit, www.emblationmicrowave.com [1]

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