

* RADAR

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THREAT SIMULATION

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JAMMING

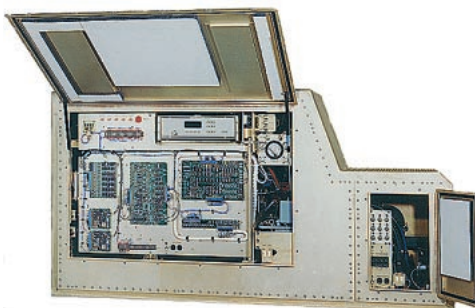
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MICROWAVE SUBSYSTEMS FOR AEROSPACE AND DEFENSE SYSTEMS INTEGRATORS

TAILORED MICROWAVE SUBSYSTEMS

ETM has been building EW subsystems for Prime and Tier 1 military systems integrators since 1989. We offer the unique combination of narrowband and wideband experience, multi-kilowatt power capability in pulsed and CW, linear and switching power supply knowledge, and the ability to design and build a system to your required form and fit.

With a tailored approach, ETM subsystems are designed with the larger system in mind to best facilitate the successful completion of our client's mission. A tailored solution might include such things as:



- Depot support for spares and logistics
- Rugged design for mobile applications
- MIL-STD-810 and -461 compliant
- PDR, CDR, MRR, TRR with customer participation
- Tailored FAT and ATP per program requirements
- On-Site training available as required by customer
- Detailed Operations / Service Manual per program requirements

TAILORED MICROWAVE SUBSYSTEMS

When ETM becomes a part of our client's supply chain, we help reduce cost, lead-time and risk by providing a tailored subsystem solution specific to program requirements. With proprietary tools such as RAPiD™ and C³COM™ we are able to respond quickly to issues that arise during initial build and large-scale production. Our clients can count on consistent reliability and quality, as ETM is ISO 9001:2000 certified and operates within the requirements of AS 9100.



HIGH POWER PULSED AMPLIFIERS

ETM's pulsed transmitters are designed to offer superior pulsing characteristics required for Radar and other EW applications. High burst duty, low jitter, fast rise and fall times, and pulse-to-pulse phase stability are considered to improve your overall system performance.

1.0 - 18.0 GHz Pulsed Suite

ETM offers standard 1 kW, 2 kW and 4 kW pulsed suites complete from 1.0 - 18.0 GHz. These power levels are accomplished with a suite of broadband TWT amplifiers offering instantaneous bandwidth across their sub-bands.



Customers can define pulsing characteristics such as duty, pulse width, rise/fall time, etc, for applications that require a fast, clean pulse. Customers can tailor such things as connector types and locations, package form and fit, and acceptance tests or quality documents required to offer a better fit to their system.

> 10 kW Pulsed Systems

ETM's Model 103PS and 123PX are TWT amplifiers utilizing compact designs specific for Radar applications. These designs offer 10 kW in S-band and 12 kW in X-band respectively with integrated filters for improved harmonic separation. A waveguide arc detector and electronic crowbar improve the RF protection.

When necessary, ETM's power combining approach allows us to provide more power from one unit than is available from a single tube. A single input and output and no required voltage or phase adjustments make the approach transparent to the user. Systems also available in 8 kW and 15 kW versions.



with linear technologies and rugged designs, ETM is able to offer ideal products for Radar, Threat Simulation, and Jamming that are small, light weight and compliant to MIL-STDs.



HIGH POWER PULSED SYSTEMS (CONT.)

Multi-Kilowatt Pulsed Systems



ETM's Model 104PX and 303PKU are Klystron Power Amplifiers packaged for trailer-mounted operation in remote locations. The Amplifiers provide pulsed RF waveforms (100 kW X-Band and 30 kW Ku-Band, respectively), which emulate Radar signatures in support of warfare training exercises (Threat Simulation).

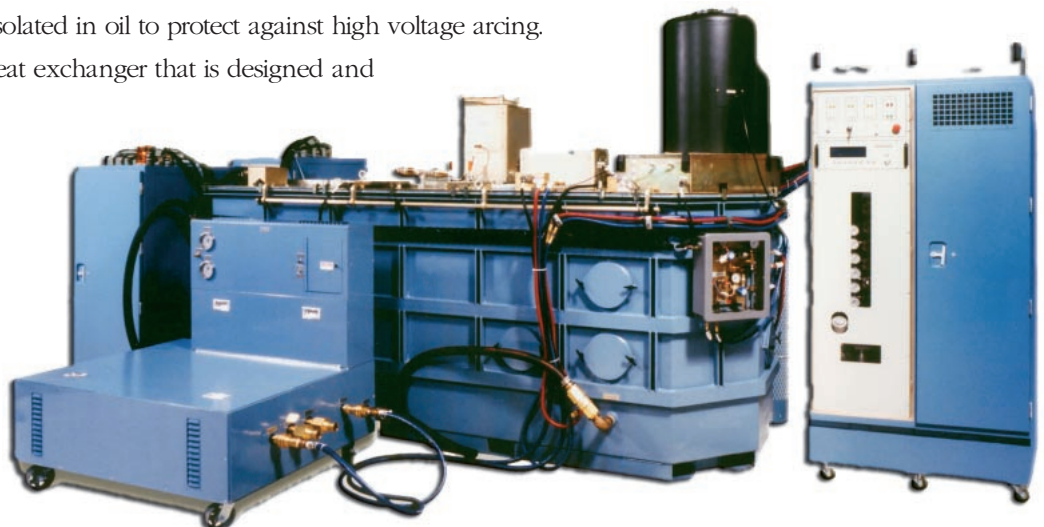
ETM's high power pulsed systems are designed to be user friendly as well as environmentally rugged. LRU modularity allows for easy serviceability and maintainability in the field. Auto tuning systems allow the customer to quickly adjust frequencies during operation without having to manually tune the klystrons, even on multi-octave systems. Rugged construction is ideal for mobile applications and units are designed to meet customer-required MIL-STDs for environmental specifications.

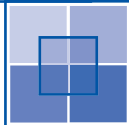


> 1 MW Pulsed Systems

ETM's Model 305C is a fixed ground-based Klystron Power Amplifier designed to support high precision tracking Radar. The 305C can provide more than 4 megawatts of pulsed RF output power in C-Band at 0.4% duty. The system met stringent pulse fidelity, dynamic output range and instrumentation requirements specified by the customer.

Our MW systems allow ETM to take advantage of our core capabilities in high power RF, high power electronics, high voltage and high power cooling to deliver a turn-key transmitter to our customer. High power electronic structures are designed specifically to reduce corona effects. High voltage components are isolated in oil to protect against high voltage arcing. Each system is liquid cooled using a heat exchanger that is designed and built by ETM specific to the power of the supply.





HIGH POWER CW AMPLIFIERS

500 Watts, 1.0 - 2.5 GHz (Jamming)

By taking common SatCom-type technology, modifying it for wideband use, and integrating it into a standard broadband Instrumentation amplifier, ETM was able to develop our Model 500L-M specific for Jamming. Tuned with a wideband linearizer, this 500 watt unit offers instantaneous bandwidth from 1.0 - 2.5 GHz with SatCom-type linear performance to keep your signals clean for jamming only the frequencies you want.



275 Watts, 6.0 - 18.0 GHz (Shipboard)

ETM's Model 300IJ-M3 offers 275 watts CW from 6.0 - 18.0 GHz. This unit is designed specifically for above deck, military shipboard Jamming and complies with MIL-STD-461E. A tailored, split mount package allows for installation within a radome on a customer-designed mechanical frame. RF shielding and custom panels keep EMI leakage to a minimum.



1.0 - 18.0 GHz CW Suites

ETM offers standard 200 W, 250 W, 500 W, 1000 W and 1500 W CW suites complete from 1.0 - 18.0 GHz. Each of these power levels is accomplished with three broadband TWT amplifiers offering instantaneous bandwidth across their sub-bands, typically 1.0 - 2.5 GHz, 2.5 - 7.5 GHz and 7.5 - 18.0 GHz. Sub-bands can be modified by customer requirements.

Suites of 1000 W and higher are accomplished by taking advantage of ETM's power combining approach. With one input, one output and all voltages and phase locked at our facility the power combining approach is transparent to the user during operation and will require no adjustments over time.