

EW Capabilities



Teledyne Microwave Solutions (TMS) brings the strength of seven leading microwave companies to a suite of vertically integrated product lines for electronic warfare.

From microwave components to integrated assemblies, TMS has more than 50 years of experience as a worldwide leader in the design, development, and manufacture of advanced microwave technologies. Our product lines include:

Amplifiers • Filters • Synthesizers • YIG Filters & Oscillators • Transceivers and Converters
Integrated Microwave Assemblies (IMAs) • BAW Delay Lines • TWTs



TELEDYNE MICROWAVE SOLUTIONS
Everywhere you look™

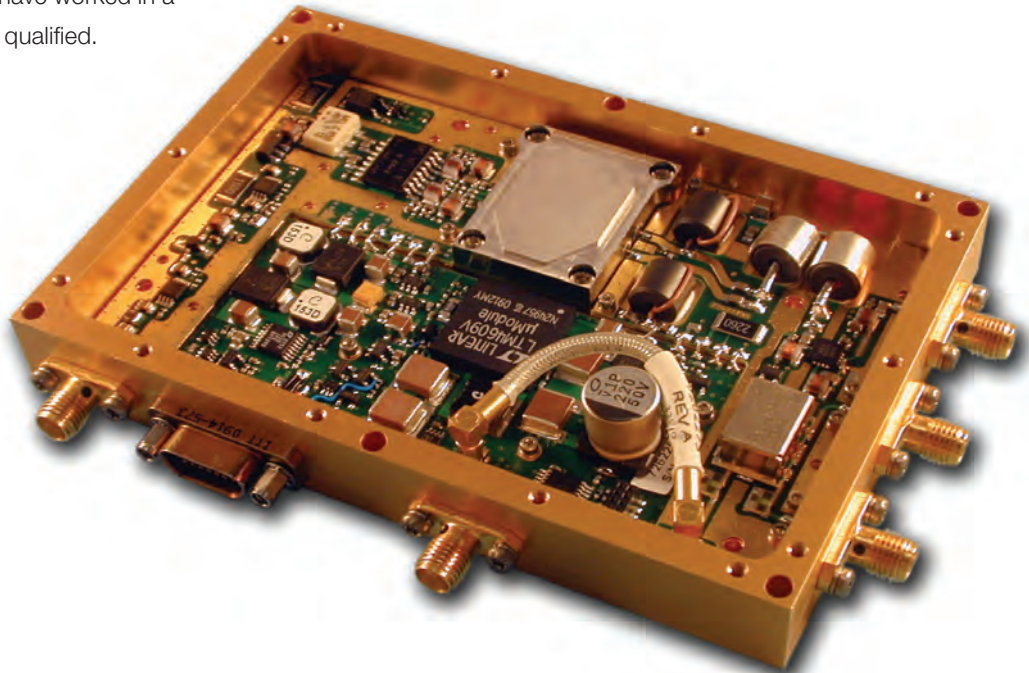
Solid State Broadband Amplifiers

With top quality amplifiers incorporated into many EW applications, Teledyne Microwave Solutions has become the benchmark in RF SSPA design

Solid State Power Amplifiers

Teledyne Microwave Solutions is committed to a strong Solid State Power Amplifier (SSPA) portfolio. Over recent years we've had the opportunity to work with most of the large OEM system manufacturers to develop custom SSPAs for EW needs.

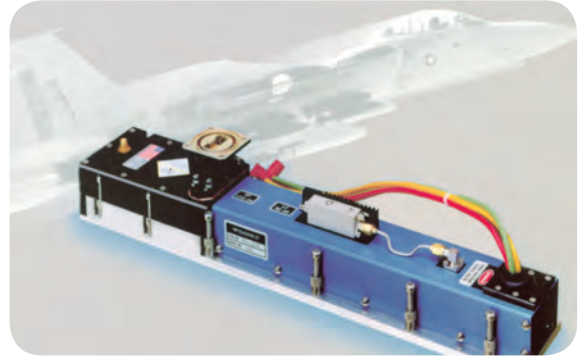
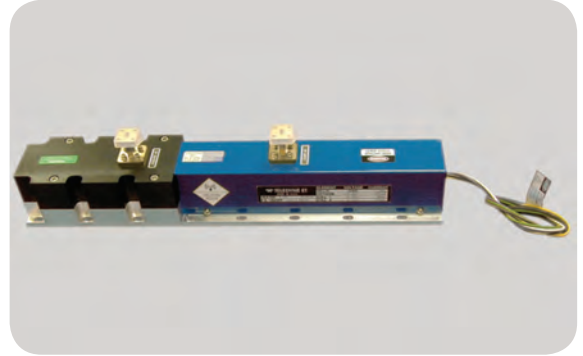
These amplifier developments have a frequency of operation ranging from VHF (1kW) through V-Band (60W). Our units have worked in a number of applications including Space qualified.



Traveling Wave Tubes (TWTs) & Assemblies (TWTAs)

Teledyne continues to be a world leader in the design, development, and manufacture of broadband metal ceramic Traveling Wave Tubes, Traveling Wave Tube Amplifiers, and Solid State Power Amplifiers, meeting stringent airborne and shipboard environments. By truly understanding both technologies, we can offer the optimum technology to service your power amplification needs.

Shadow Gridded Helix TWTs for Broadband EW and Radar Applications from L through Ku Bands at Peak Power Levels to 12 kW and Average Power Levels to >700 W



Exceptionally Tunable YIGs and Filters

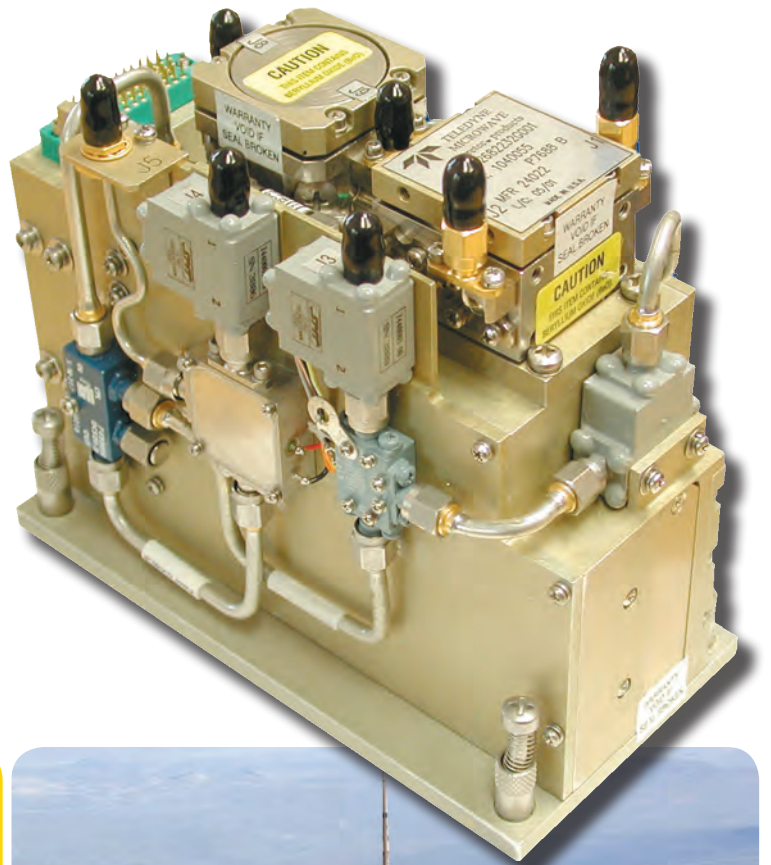
YIGs:

YIG products have a unique ability to provide exceptional performance over a multi-octave bandwidth making them ideally suited to instrument and electronic warfare applications. When used as part of an Oscillator, the phase noise performance is an industry beater. When used as part of a tracking filter, the bandwidth of operation is superior to any other product available.

With constant updating of YIG technology with materials and manufacturing improvements, TMS meets performance and delivery needs for volume commercial test equipment users through physically demanding military applications

Filters:

Look to TMS for waveguide, combine, and lumped element designs, along with close integration with other TMS products.



Frequency Generation

A full range of Frequency Generation products

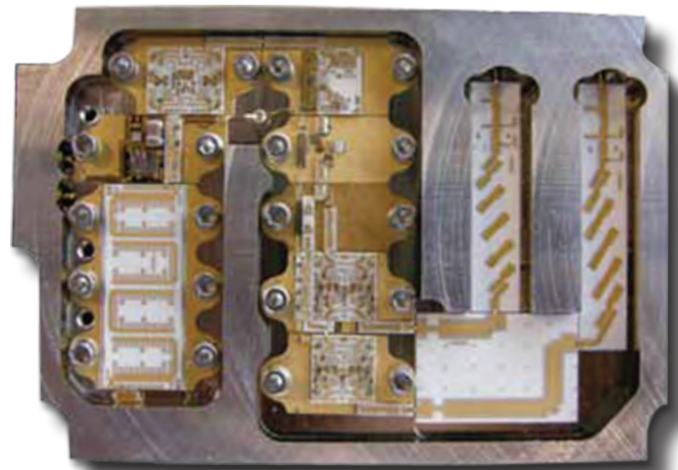
Many products needed in today's wideband architectures need frequency generation products including that either manipulate or generate a signal. TMS has expertise in combining many of these approaches to produce an Integrated Microwave Assembly that meets a specific customer need.

Building blocks for these assemblies include:

- Phase Locked Loops
- Step Recovery Diode Comb Generators incorporating Switched Filters
- SAW Multipliers
- Multi-loop Frequency Synthesizers, YIG, VCO, and DDS based
- Stand alone Multipliers

Many of these products features include:

- Broadband Coverage
- Fast Tuning
- Sub-Hz Resolution
- Low Phase Noise
- Integrated BIT
- Output Filtering for low Harmonic and Spurious
- Fast Output Blanking



Integrated Microwave Assemblies

Teledyne Microwave Solutions has developed a number of integrated products used in today's modern war-fighting systems

Teledyne Microwave Solutions offers a full range of Integrated Microwave Assemblies (IMAs) used on many EW systems.

General construction consists of a RF/Microwave circuit using microwave modules and either a single or multiple printed circuit boards for control and power conditioning. The microwave modules are produced in house, on thin film circuits which are then wire bonded together to make a complete microwave chain. By using a common module concept, design cycles and risk are very much reduced when developing new designs for custom applications. With over 1,500 microwave modules designed and available, most requirements are met using existing proven module designs. The power and control circuit boards usually circle the main microwave modules, as these circuits are more flexible in location, and are therefore more specialized for any given IMA.

With experience from UHF to V-Band, we have a wide portfolio of circuit architectures, configurations and functionality to meet many different platform needs. A large part of our work when designing new converters is power management, digital control, and functionality. Over the years we have found these criteria often more demanding than the microwave design itself. Experience in isolating supply lines and designing the unit with utmost isolation between adjacent circuits is critical to achieving the best design possible.



LRU-6A Quad Amp

- Each quad amp contains 4 independent wideband switched gain amplifiers with internal noise source
- Same functionality as 4X LRU-6 amps in much smaller package for pod-based platform



Receivers and Threat Warning

At TMS, our focus is on man-portable and vehicle mount options where weight, size, and power consumption are at a premium.

Receivers

TMS has developed a family of high performance superhet receivers for ESM / ELINT applications incorporating patented features and offering wide band synthesized capability from 0.5 to 18 GHz. Frequency extensions are available to above 40 GHz and the modular approach enables options including multiple phase and gain matched channels or integrated High POI wideband receivers.

Threat Warning

The Phobos tactical threat warning system includes a high sensitivity radar warning receiver and a highly portable hand held display. This small form factor design delivers true tactical flexibility. The system includes de-interleaving, emitter identification and MMI software - a truly integrated solution.



Receiver with four antennas (more or fewer can be incorporated)



PHOBOS

Handheld unit for individual use in the field

Receiver and processing unit





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Teledyne Microwave Solutions unites the strengths of seven pacesetter companies into one global leader ... the leader for everything microwave.

Teledyne Microwave • Teledyne TWT Products (MEC) • Teledyne Defence Ltd. • Teledyne Labtech
Teledyne Cougar • Teledyne Paradise Datacom • Teledyne Filter Products

By joining as TMS, these companies bring you a **unified sales and customer service portal** to a powerful, collaborative, vertically integrated provider.

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Contact your sales executive or call:

Tel: 1.800.832.6869 or +1.650.962.6944