Designed To Perform
Efficient amplification is a system designer’s goal and we design Linear Class A, Class AB and Non-Linear Class C high power amplifiers with efficiency in mind. Products include both broadband, high linearity amplifiers, as well as high frequency, narrowband, higher power amplifiers to 100 watts with strict attention to size and value.

Built-in User Control Interfaces
High input protection circuitry
Built-in monitoring
Voltage Regulators

Thermal temperature compensating circuits
Harmonic Filters
Fault Monitoring
Customizable Control Functions
Custom Designs Available

Utilizing both hybrid thick-film and SMT technology, our power amplifiers draw from a wide range of leading edge semiconductors including:

- Silicon MOSFET
- LDMOS
- GaAs
- GaN
- SiC

For more information or to let us know how we may help you, please contact us at 888.553.7531
Exceeding Expectations
Spectrum Microwave’s design engineers focus their expertise not only on meeting the customer’s requirements, but on exceeding expectations. Other companies talk about technology. The performance of our sophisticated designs speak for itself.
A broad range of RF and microwave components, integrated assemblies and power amplifiers are the cornerstone of SMI’s business. Our ability to offer complete custom solutions for unique requirements in a timely manner and rapid turn-around prototypes with demanding specifications is what separates Spectrum Microwave from other power amplifier vendors.

**Full Customization**

**Optimum Packaging Solutions**
Our designers use sophisticated software to optimize package layouts for a variety of thermal conditions providing a higher MTBF than other firms who choose a less advanced method of package integration.

**Experts at Integration**
Spectrum Microwave engineers are experts at amplifier, filter and power supply design. Integrating multiple components in a single housing reduces overall costs and package housing size while optimizing heat transfer.

**Experienced RF Chain Analysis**
Engineering solutions and providing assistance with the entire RF transmit chain (baseband or IF) is an element of customer service that separates Spectrum Microwave from other vendors whose one dimensional offerings leave customers flat.

**Unique Packaging**
Modules, pallets, surface mount and substrate drop-in packages offer SMI customers a wide range of custom packaging options.
Using state-of-the-art software and simulation tools, our experienced engineering team is able to quickly take a requirement from concept to production. Utilizing these sophisticated programs sets our company apart from other power amplifier firms, making Spectrum Microwave the company choice for all of your power amplification needs.

Design Development
All amplifier designs are based on theoretical linear and non-linear simulations using both ADS and Genesys. Based on proven nonlinear simulation and CAD mechanical and thermal modeling, SMI provides compact, low weight, excellent thermal characteristic power amplifiers to customers in the shortest possible time.

3D Modeling
All power amp designs are based on state-of-the-art 3D SolidWorks modeling. These sophisticated models are used to predict junction-to-case temperatures, thermal profiles, and optimized PCB layouts.

Teaming with Customers
SMI engineers work closely with customers using thermal and CAD models to embed the power amplifier into the customer’s next higher level assembly to ensure fit and thermal integrity.

Performance Enhancements
Spectrum Microwave builds added features into its lineup of power amplifiers including:
- Fault Reporting
- Control & Configuration Monitoring using RS-232, RS-485, MODBUS, PC, CAN and other protocols
- High Efficiency Doherty techniques integrated
- Optimized for Cross-Cancellation Linearization
- Drain Boost Efficiency Enhancements implemented
- Power & Coupler Feedback techniques employed

Tools and software our RF Engineers routinely use:
- Agilent ADS Design Suite
- SolidWorks
- Labview
- Agilent Genesys
- AutoCAD
- Cadence Allegro
- Ansoft Designer
- Sonnet EM Simulator
Prior to delivery, Spectrum Microwave performs 100% electrical testing on all power amplifiers to confirm compliance with the customer’s specification requirements. Our quality management system is also registered is compliant with ISO-9001:2008 and periodically audited by our registrar.
Spectrum Microwave’s diverse lineup of power amplifier solutions includes several broadband models covering 2 to 6 GHz in a small, low profile package. Using advanced semiconductor technologies such as GaN and HEMT for broader bandwidths, along with a number of proprietary design techniques, our power amplifiers deliver exceptional performance from 1 watt to 500 watts.

**Commitment to Quality**

With over 20 awards and accolades to its credit, Spectrum Microwave’s reputation for quality and performance is the reason why leading military and technology firms choose SMI for their amplification requirements.

**Gain**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Frequency (GHz)</th>
<th>Power Out (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>3</td>
<td>3.0</td>
<td>3.5</td>
</tr>
<tr>
<td>4</td>
<td>3.5</td>
<td>5.0</td>
</tr>
</tbody>
</table>

No additional circuitry needed. Internal blocking caps, biasing circuitry and RF matching is included.

A balanced output design is featured for Excellent Broadband Return Loss.

A standard Internal Voltage Regulator is incorporated to accept multiple bias options.

We also added an integral High Pass Filter for improved Low Frequency Rejection.

**Power Out vs. Frequency**
**Superior Quality**

Spectrum Microwave subjects the highest quality control standards to every aspect of production from initial design through the entire manufacturing process. Our Quality Assurance Department maintains tight control of all processes in our ISO 9001:2008 certified facility including both material and screening standards, strict lot traceability, and continuous monitoring over all parameters critical to product quality and development.

**Seam Sealing**

Spectrum Microwave’s inventory of sealing alternatives includes both seam sealing and projection welding which provide a very reliable hermetic seal, while maintaining a cool, stable environment for the package and its temperature sensitive contents. Hermetic sealing also maintains environmental integrity to pass the rigors of MIL-PRF-38534 methods 1014 conditions A & C for both Gross and Fine leak detection.

**Laser Sealing**

Unlike other amplifier companies we offer laser sealing for both hermetic and environmental integrity.

**Vibration Testing**

On-site random and sinusoidal vibration to 30g, along with shock testing allow our engineers to test their designs under extreme conditions early in the design process without waiting to schedule outside testing services.

**Designed & Tested To Perform**

Our thick and thin film amplifiers are designed and tested to meet the reliability and testing requirements of MIL-PRF-38534 and the screening requirements of MIL-STD-883. We are also equipped to perform Groups A, B, C and D QCI qualification of our hybrid microelectronic devices. We routinely perform MIL-PRF-38534 Class H qualification testing on many of our amplifiers thereby proving out the high reliability designs Spectrum Microwave is known for in the industry.

**Temperature Cycling**

Cycling amplifiers from -55 to 85°C is often required when the amplifier may be exposed to extreme operating conditions.

**Multiple Tests**

Spectrum Microwave employs testing over temperature to include not merely functionality, but parametric testing as well, as illustrated on this tuner. Capabilities include:
- Conversion gain
- Spurious testing
- IP2, IP3, and IP2H
- Current Draw
- Noise figure
- Windowed gain ripple
- Compression tests
- Linearity testing
- LO leakage testing
- Image rejection
- Group delay
SpectrumMicrowave.com
Spectrum Microwave’s website features complete information on all standard products with updated versions of more than 900 product datasheets. SMI’s customers enjoy FREE engineering tools, tours, application notes, white papers, and the ability to create a custom designed product per individual specifications.

Cascade Design Suite
With over 750 datasheets on Spectrum Microwave’s Amplifiers, Mixers, Oscillators & Control Products, this CD also offers the industry’s best manufacturer’s cross reference. The System Simulator lets you optimize your design by viewing an individual component’s contribution to overall system performance. You can also quickly evaluate trade-offs in component selection and their impact on system performance (e.g. Gain, Noise, P1dB, IP3, Dynamic Range,......)

FilterXpress Online
Real Designs. Real Results. Real Filters. FilterXpress finds your ideal Bandpass, Lowpass, Highpass, or Notch Filter... AUTOMATICALLY! With 10,000+ real designs from which to choose, Spectrum Microwave is your #1 resource for all your Filter needs!

Our Family of Custom Solution Businesses
SpectrumControl.com
- Amplifiers & Mixers to 28 GHz
- Filters & Switch Filter Assemblies to 40 GHz
- DROs, PLOs, VCOs & Synthesizers
- Integrated Assemblies to 47 GHz
- Hybrids to 50 GHz
- Advanced Thin Film Products
- EMI Filters, Components and Modules
- Filtered Interconnect Devices
- Antennas
- Advanced Ceramics and Assemblies
- Specially Connectors
- Position Sensors
- Temperature Sensors
- NTC and PTC Ceramic Components
- PTC Heater Assemblies
- Panel Input Controls
- Power Management and Distribution Systems
- Remote Management Systems
- Monitoring Equipment
- Environmental, Electrical, Security, Mechanical