rf/microwave, microelectronic & electromagnetic

space solutions

api technologies corp.
Developing mission critical solutions for space applications has never been more challenging. Prime contractors delivering today’s deep space exploration, scientific discovery, military surveillance/protection, and commercial communications innovations demand suppliers who combine the highest reliability products with cost efficiency. API Technologies is exactly that kind of partner. With a space heritage dating to 1976, we have proven experience participating in a long line of past and present space programs.

API is a designer and manufacturer of RF/microwave and hybrid components, microwave semiconductors and microelectronic assemblies for space systems, satellites, launch vehicles, and associated support networks. We utilize five manufacturing space centers of excellence offering a wide range of space and Hi-Rel certifications and extensive testing capabilities. Our experienced engineering team will recommend one of our many space-approved standard designs or develop a custom solution radiation hardened to withstand the most extreme environments.
**Capabilities Overview**

**Facilities**
- Rancho Cordova, California, USA
- Marlborough, Massachusetts, USA
- Nashua, New Hampshire, USA
- Great Yarmouth, United Kingdom
- Milton Keynes, United Kingdom

**Certifications**
- MIL-PRF-38534 Class K
- MIL-PRF-38534 Class H
- AS9100
- ISO9001
- IPC-610 Class 3
- J-STD 001
- MIL STD 883
- ESA/SCC 5010 – Microwave Diodes QPL

**Brands**
- Spectrum Microwave™
- C-MAC Aerospace™
- CMT™
- Filtran™

**Products**

**RF/Microwave**
- Filters
- Multiplexers
- Switched Filter Banks
- Filter GPS LNA
- Couplers
- Dividers/Combiners
- Amplifiers
- Switches
- Diodes
- Limiters (Waveguide & Coax)
- Mixers
- SAW Oscillators
- VCOs

**Testing**
- Environmental to IECQ, MIL-STD-883 and MIL-STD-202
- Up-screening of selected passive component and active die lots
- Completed product qualification
- ISO 17025 accredited facility

**Microelectronics**
- Microelectronic Assemblies
- Multi-Chip Modules (MCM)
- Build-to-Print

**Magnetics**
- Transformers
- Inductors
- Coils & Chokes
Deep Space
- Galileo
- Cassini
- USERS (2 sats)
- Selene & Okina
- Mars Phoenix
- Lunar Reconnaissance Orbiter

Scientific Missions
- SAOCOM
- Hershel Plank
- AMS-02
- Aquarius (SAC-D)
- Lisa Pathfinder
- Juno
- OCO
- LCROSS
- Mars Science Lab
- ISS Kibo EF
- Grail (2 sats)
- EnMap
- Vegetation
- Cassini
- Meteosat

Communications
- GPS-2F
- Prima
- O3B
- Inmarsat
- Intelsat
- Sirius Radio
- Direct TV
- Optus 10
- Amazonas 3
- Thor 7
- MUOS
- Military Classified
- Hot Bird
- MARECS
- Olympus
- SkyNet
- Eutelsat
- Koreasat

Launch & Reentry Vehicles
- Taurus
- Minuteman
- H-II
Low Noise High Linearity & High Efficiency Amplifiers

Mixers

Frequency Doubler

VCOs

Mixed Signal

mars curiosity rover program involvement
**The API Difference**

Whether your mission requires a standard single function component, a custom multi-function assembly, or a build-to-print/testing supplier, API Technologies is poised to be your ideal space partner. With five facilities offering specialized capabilities and engineering support, API is unique in its ability to offer customers a flexible, responsive approach driven by proven technology.

**Engineering Expertise**

The API engineering team offers a strong heritage in designing high-reliability solutions for space payloads in a wide range of deep space, scientific, and commercial programs. We utilize all of the popular and accepted simulation and design tools, as well as several proprietary programs. In addition, as a vertically integrated manufacturer, we have in-house machining centers for quick-turn prototyping.

**Certifications**

API employs all of the quality systems and processes essential to being a qualified supplier for Hi-Rel space platforms. We have two facilities certified to MIL-PRF-38534 Class K out of fewer than 20 in the world, as well as facilities certified to a variety of other quality standards, including AS9100 and ISO9001. These space centers of excellence allow us to assign specific projects to the individual facility with the required certifications and specializations.

**Testing**

Our facilities offer a wide range of in-house mechanical and environmental screening and auto-electrical testing for element evaluation as well as completed product qualification. API has an independently managed, ISO 17025 accredited test facility providing full environmental testing against IECQ, MIL-STD-883, and MIL-STD-202 test methods. These test capabilities are an integral part of our internal process are also available for screening and qualification testing of customer-supplied designs and piece work.
centers of excellence

Marlborough
Massachusetts-USA

Specialization:
Design and manufacture high-performance hybrids, MCMs, SAW filters, SAW-based sub-systems, amplifiers, and build-to-print. Featured products include data converters, oscillators, filters, and precision analog circuits.

Space Heritage:
Since 1986

Certifications:
MIL-PRF-38534 Class H & K
MIL-STD-883 Screening
IPC-610 Class 3 Workmanship
J-STD 001 Soldering

Unique Capabilities:
• Void free solder die attach
• Auto flip chip/BGA
• Mixed signal testing
• Metal deposition
• 0.7 - 2 mil gold wire bonding
• Active and passive laser trim
• Environmental stress screening
• In-house SAW
• Thin film fabrication

Facility:
45,000 Sq. ft.
30,000 Sq. ft. Clean Room

Great Yarmouth
United Kingdom

Specialization:

Space Heritage:
Since 1986

Certifications:
MIL-PRF-38534 Class K
MIL-PRF-38534 Class H
AS9100
ISO9001:2008

Unique Capabilities:
• Environmental testing against IECQ, MIL-STD-883 and MIL-STD-202 test methods for element evaluation of microcircuit & semiconductor dice, passive components, substrates, packages, adhesives
• Engineering disciplines – sub-contract manufacture of analogue digital hybrids
• Up-screening of selected passive component and active die lots
• Testing for completed product qualification
• Offer monolithic and hybrid devices based on Linear Tech RF product line

Facility:
112,000 Sq. ft.

Nashua
New Hampshire-USA

Specialization:
RF/Microwave/mmW components - design and manufacture space grade components and integrated microwave assemblies for launch vehicles, payloads, and satellites.

Space Heritage:
Since 1995

Certifications:
ISO9001:2008
AS9100 Certification in Process
MIL-PRF-38534, 883 Screening
IPC-610 Class 3 Workmanship
J-STD 001 Soldering

Unique Capabilities:
• Vertically integrated to go from concept to qualification under one roof
• Engineering disciplines – RF/Microwave and mmW electrical design, assembly and verification testing
• Test at altitude
• Up-screening of selected passive component to meet platform requirements
• Testing for completed product qualification requirements
• Extensive library of space designs

Facility:
40,000 Sq. ft.
1,000 Sq. ft. Class 10 Clean Room

Milton Keynes
United Kingdom

Specialization:
Microwave semiconductors, hybrid and multifunction components - qualified to ESA and project specific specifications for space payloads. Completed formal qualification testing to ESA/SCC 5010 for a range of UK manufactured microwave diodes.

Space Heritage:
Since 1976

Certifications:
ESA/SCC 5010 Microwave Diodes QPL
ISO9001:2008
ISO14001

Unique Capabilities:
• Semiconductor in house wafer fab for two terminal microwave devices
• Engineering disciplines – non ITAR microwave component design
• Testing for completed product qualification
• ESA qualified microwave diodes

Facility:
50,000 Sq. ft.
rf/microwave filters
High isolation between bands, stability over temperature

microwave diodes
ESA Qualified product line, EU manufacture

SAW oscillators
Voltage controlled, Q-Swept, Low phase noise (400MHz to 4GHz) and low vibration sensitivity
mixers
Flight heritage on a broad product range, available EU manufacture if required

amplifiers
Low phase noise, High linearity, available EU manufacture if required

limiters
(waveguide & coax)
Broad product range supported by in-house diode manufacturing capability, EU manufacture
microelectronics products & capabilities

microelectronic assemblies
Hermetic MIL-PRF-38534 class K certified line, high MTBF, available EU manufacture if required

radiation tolerant power products
MIL-PRF-38534 certified and experienced radiation test partners

multi chip modules
Multichip Modules (MCM) – L (PCB), Thin Film (D) or LTCC (C)
custom hybrids
Design and manufacture custom solutions with multiple technologies including Mixed Signal & Power, RF, Microwave & MMW, Optoelectronics, Thin Film & SAW Fab

build-to-print
DLA Certified, MIL-PRF-38534, Class K, available EU manufacture if required

magnetics
Custom magnetic components including transformers, inductors, coils and chokes
About API Technologies

API Technologies Corp. is a trusted provider of RF/microwave, microelectronics, power and security solutions for critical and high-reliability applications. The company designs, develops and manufactures electronic components, modules, systems and products for technically demanding defense, commercial/industrial and aerospace applications. API Technologies’ customers include many leading Fortune 500 companies, as well as a majority of NATO governments. While API was founded in 1981, our heritage brands have served the demanding, hi-rel marketplace for more than 70 years. API Technologies trades on the NASDAQ under the symbol ATNY.

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