

KVH INDUSTRIES INC \DE\  
Form 10-K  
March 08, 2012  
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**UNITED STATES**  
**SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM 10-K**

(Mark One)

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the fiscal year ended December 31, 2011

**OR**

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**  
For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission File Number 0-28082

**KVH Industries, Inc.**

*(Exact Name of Registrant as Specified in its Charter)*

**Delaware**  
*(State or Other Jurisdiction of Incorporation or Organization)*

**05-0420589**  
*(I.R.S. Employer Identification Number)*

**50 Enterprise Center, Middletown, RI 02842**

*(Address of Principal Executive Offices) (Zip Code)*

**(401) 847-3327**

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(Registrant's Telephone Number, Including Area Code)

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, \$0.01 par value per share	The NASDAQ Global Market

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. **Yes**  **No**

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. **Yes**  **No**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. **Yes**  **No**

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). **Yes**  **No**

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of large accelerated filer, accelerated filer and smaller reporting company in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer <input type="checkbox"/>	Accelerated filer <input checked="" type="checkbox"/>
Non-accelerated filer <input type="checkbox"/>	Smaller reporting company <input type="checkbox"/>

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). **Yes**  **No**

As of June 30, 2011, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was \$139,592,203 based on the closing sale price of \$10.63 per share as reported on the NASDAQ Global Market.

As of March 5, 2012, the registrant had 14,599,363 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement relating to its 2012 Annual Meeting of Stockholders are incorporated herein by reference in Part III.

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**PART I**

**ITEM 1. Business**

**Cautionary Statement Regarding Forward-Looking Information**

In addition to historical facts, this annual report contains forward-looking statements. Forward-looking statements are merely our current predictions of future events. These statements are inherently uncertain, and actual events could differ materially from our predictions. Important factors that could cause actual events to vary from our predictions include those discussed in this annual report under the headings "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations," and "Item 1A. Risk Factors." We assume no obligation to update our forward-looking statements to reflect new information or developments. We urge readers to review carefully the risk factors described in this annual report and in the other documents that we file with the Securities and Exchange Commission. You can read these documents at [www.sec.gov](http://www.sec.gov).

**Additional Information Available**

Our principal Internet address is [www.kvh.com](http://www.kvh.com). Our website provides a hyperlink to a third-party website through which our annual, quarterly, and current reports, as well as amendments to those reports, are available free of charge. We believe these reports are made available as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC. We do not provide any information regarding our SEC filings directly to the third-party website, and we do not check its accuracy or completeness.

**Introduction**

We are a leading manufacturer of solutions that provide global high-speed Internet, television, and voice services via satellite to mobile users at sea, on land, and in the air. Our CommBox offers a range of tools designed to increase communication efficiency, reduce costs, and manage network operations. We are also a premier manufacturer of high-performance navigational sensors and integrated inertial systems for defense and commercial guidance and stabilization applications. Our research and development, manufacturing and quality control capabilities have enabled us to meet the demanding standards of our military, consumer and commercial customers for performance and reliability. This combination of factors has allowed us to create products offering important differentiating advantages to our customers. We are based in Middletown, Rhode Island, with offices in Illinois, Denmark, Norway and Singapore.

We sell our mobile communications products and airtime services, including the TracVision, TracPhone, and CommBox systems and mini-VSAT Broadband airtime, through an extensive international network of distributors and retailers worldwide. In 2011, we completed our initial global coverage plan for our mini-VSAT Broadband Ku-band service, which primarily supports maritime applications along with land-based mobile and aeronautical uses on a more limited basis currently. In addition, in February 2011, we introduced a new addition to our mini-VSAT Broadband-compatible antenna family, the 14.5-inch diameter TracPhone V3. In early 2012, we announced plans for a C-band VSAT service overlay on our mini-VSAT network to complement our Ku-band service by increasing our global coverage from 70°S latitude to 75°N latitude. We also introduced a new dual-mode product, the TracPhone V11, which will be able to transmit and receive both C and Ku-band signals from our mini-VSAT Broadband network. We may also pursue expanded coverage in the future to support customer, market, or capacity demands. In addition, we are pursuing opportunities to apply our mobile communications expertise to military applications that require affordable, high-bandwidth mobile connections.

Our guidance and stabilization products include precision fiber optic gyro (FOG)-based systems that help stabilize platforms, such as gun turrets, remote weapon stations, and radar units, and provide guidance for munitions, as well as tactical navigation systems for a broad range of military vehicles. We sell our guidance and stabilization products directly to United States (U.S.) and allied governments and government contractors, as well as through an international network of authorized independent sales representatives. Our fiber optic products

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are also used in such commercial applications as train track geometry measurement systems, industrial robotics, surveying, optical stabilization, autonomous vehicles, and undersea remotely operated submersibles. In June 2011, we introduced the DSP-1750, which we believe to be the world's smallest high performance fiber optic gyro and the first to use our new ECore ThinFiber technology. The small size and weight of the DSP-1750 make it well suited for applications with size and weight restrictions, such as night vision and thermal imaging systems, aircraft-mounted gimballed cameras for law enforcement and homeland security, and shipboard optical systems.

## **Our Products and Services**

### ***Mobile Satellite Communications***

We believe that there is an increasing demand for mobile access to television, voice services and the Internet on the move. Our objective is to connect mobile users on sea, land, and air to the satellite TV, communications, and Internet services they wish to use. We have developed a comprehensive family of products and services marketed under the TracVision, TracPhone, and CommBox brand names as well as the mini-VSAT Broadband airtime network to address the unique needs of our communications markets.

Our mobile satellite products are typically installed on mobile platforms and use sophisticated robotics, stabilization and control software, sensing technologies, transceiver integration, and advanced antenna designs to automatically search for, identify and point directly at the selected television and communications satellite while the vehicle, vessel, or plane is in motion. Our antennas use gyros and inclinometers to measure the pitch, roll and yaw of an antenna platform in relation to the earth. Microprocessors and our proprietary stabilization and control software use that data to compute the antenna movement necessary for the antenna's motors to point the antenna properly and maintain contact with the satellite. If an obstruction temporarily blocks the satellite signal, our products continue to track the satellite's location according to the movement of the antenna platform in order to carry out automatic, rapid reacquisition of the signal when a direct line of sight to the satellite is restored.

Our Certified Support Network offers our TracVision and TracPhone customers an international network of skilled technical dealers and support centers in many locations where our customers are likely to travel. We have selected distributors based on their technical expertise, professionalism and commitment to quality and regularly provide them with extensive training in the sale, installation and support of our products.

We offer a broad array of products to address the needs of a variety of customers seeking mobile communications in maritime, land mobile and aeronautical applications.

*Marine.* In the marine market, we offer a range of mobile satellite TV and communications products. In December 2009, we began selling the TracVision HD-7, a 24-inch diameter satellite TV antenna capable of receiving signals from two DIRECTV Ka-band satellites and one DIRECTV Ku-band satellite simultaneously to offer a high-definition TV experience comparable to what a home DIRECTV HDTV subscriber would enjoy. It includes an Internet Protocol-enabled antenna control unit as well as optional antenna controls via a free TracVision application for use on an Apple iPhone. We believe that this is the first marine antenna to offer this combination of capabilities. In January 2012, we began shipping our TracVision HD-11. This system uses a 1-meter antenna to receive both Ku-band and Ka-band satellite television signals without changing out hardware elements. It will work with any modern satellite television service in the world, including DIRECTV HDTV. Like the TracVision HD-7, it features a customer application for the Apple iPhone or iPad to enable easy control of the system. Our marine TracVision M-series satellite TV antennas are designed with the full spectrum of vessel sizes in mind, ranging from recreational vessels as small as 20 to 25 feet to large commercial vessels. The award-winning family of marine TracVision products vary in size from a lower-profile elliptical parabolic system similar to those offered for use on recreation vehicles (RV) to the 12.5-inch TracVision M1, 14.5-inch TracVision M3, 18-inch TracVision M5, 24-inch TracVision M7, and 32-inch diameter TracVision M9, each of which employs a high-efficiency circular antenna. These products are compatible with Ku-band HDTV programming as well as high-powered regional satellite TV services around the globe, based on available signal strength and antenna size requirements.

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*Broadband Internet.* In 2007, we introduced our Ku-band airtime service branded as mini-VSAT Broadband. This service utilizes spread spectrum technology and ArcLight modem technology, both of which were developed by ViaSat. This spread spectrum approach reduces the broadcast power requirements and the pointing accuracy necessary to track the high-bandwidth Ku-band satellites that carry the service. The resulting efficiencies allowed us to develop and bring to market the 24-inch diameter TracPhone V7 antenna, which we also introduced in 2007. This antenna is 85% smaller by volume and 75% lighter than alternative 1-meter VSAT antennas. In February 2011, we introduced a new addition to our mini-VSAT Broadband-compatible antenna family, the 14.5-inch diameter TracPhone V3. We believe that the TracPhone V3 is the smallest maritime VSAT system currently available. Its small size makes it practical for use on smaller vessels as well as land vehicles.

The high bandwidth offered by the Ku-band satellites also permits faster data rates than those supported by Inmarsat's L-band satellites. TracPhone V7 subscribers may select service packages with Internet data connections offering ship-to-shore satellite data rates as fast as 1 Mbps, or megabits per second, and shore-to-ship satellite data rates as fast as 2 Mbps. The TracPhone V3, due to its smaller dish diameter, offers ship-to-shore data rates as fast as 128 kilobits per second, or Kbps, and shore-to-ship satellite data rates as fast as 2 Mbps. In addition, subscriptions include Voice over Internet Protocol (VoIP) telephone services optimized for use over satellite connections. The TracPhone V7 can support two or more simultaneous calls while the TracPhone V3 can support one call at a time.

We currently offer our Ku-band mini-VSAT Broadband service in the Americas, Europe, the Middle East, Africa, Asia-Pacific, and Australian and New Zealand waters. We believe that our mini-VSAT Broadband service represents the only global multi-megabit commercial satellite communications network for vessels and airplanes.

In late January 2012, we announced that we plan to incorporate a new global C-band network into our mini-VSAT Broadband network. We have entered into an agreement to lease three global C-band beams beginning no later than the second quarter of 2012. Each of these global beams covers approximately 1/3<sup>rd</sup> of the globe from 70°S latitude to 75°N latitude and will be used in combination with our Ku-band coverage to provide worldwide coverage. Service will be provided using our existing Ku-band network where coverage is available, including most of the northern hemisphere outside of the polar regions and around all of the major continents. Service will be provided using the new C-band network in areas outside the Ku-band footprint and will serve as a backup to the Ku-band service in areas where both are available. The TracPhone V3 and V7 products operate only in the Ku-band coverage areas. The new TracPhone V11, which is expected to begin shipping in the 3<sup>rd</sup> quarter of 2012, will operate in both C and Ku-band coverage areas.

We are actively engaged in sales efforts for the TracPhone V3, V7, and V11 and mini-VSAT Broadband service to government agencies for maritime, military, and emergency responder use. In September 2010, the U.S. Coast Guard awarded us a 10-year, up to \$42 million contract to supply TracPhone V7 systems and mini-VSAT Broadband airtime to as many as 216 U.S. Coast Guard light cutters. We are also taking steps to expand our ability to support the commercial maritime market. In 2010, we entered into distribution agreements with a couple of large wholesalers to sell both our TracPhone V7 as well as our mini-VSAT Broadband service through their distribution networks. In addition, in March 2011, we signed a contract to provide TracPhone V7 and mini-VSAT Broadband service to Vroon B.V. and its fleet of more than 125 commercial vessels. In March 2012, V.Ships, the world's largest independent ship manager serving a fleet of over 1,000 vessels, selected our mini-VSAT Broadband service as its preferred satellite communications solution.

Our unified C/Ku-band Broadband service will enable us to offer commercial, leisure and government customers an integrated hardware and service solution for mobile communications and seamless region-to-region roaming. It is our long-term plan to continue to invest in and enhance the mini-VSAT Broadband network in cooperation with ViaSat under the terms of a 10-year agreement announced in July 2008. In February 2011, we completed a major capacity increase which doubled our network capacity in the Asian, African and the West Indian Ocean regions, including waters off the coasts of Australia and New Zealand. As part of the network expansion to support regions with growing numbers of customers, we plan to continue to acquire, as needed, satellite capacity from commercial satellite operators and to purchase regional satellite hubs from ViaSat. These hubs use ViaSat's ArcLight spread spectrum mobile broadband technology and are operated by ViaSat on our

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behalf. Over the course of the 10-year agreement, we and ViaSat also expect to implement future enhancements to the mini-VSAT Broadband spread spectrum maritime services and related products. In August 2011, we, along with Viasat, rolled out enhancements to the global spread spectrum network that doubled the maximum uplink speeds and offered significant improvements in the network reliability. In addition, we announced new adaptive return link technology, which enables KVH TracPhone V3 and V7 systems to adjust system operations automatically to suit changing conditions. Under the terms of our revenue sharing arrangement with ViaSat, these types of expansions position us to earn revenue not only from the maritime and land-based use of the mini-VSAT Broadband service but also from aeronautical applications that roam throughout our network.

This broadband Internet offering represents a relatively new business model for KVH. We are the source of the mini-VSAT Broadband service and, as a result, we generate revenue from hardware sales as well as recurring monthly revenue derived from subscription packages. We offer a selection of airtime subscription plans designed to provide leisure, commercial, and government customers the flexibility to select packages that best suit their data and voice usage patterns and their budgets. Airtime options for the TracPhone V7 include fixed-rate subscription packages ranging from \$995 to \$8,995 per month, seasonal fixed-rate packages that permit subscribers to use their system for as little as three months per year, and per-megabyte service plans that we believe can be significantly more affordable than competing legacy VSAT and Inmarsat offerings in many instances. Service pricing for TracPhone V3 subscribers is provided on a per-megabyte basis for data services and a per-minute basis for voice calls. We have not announced specific service plans for the new integrated C/Ku- band service, but we will charge incrementally more for the addition of the C-band service to our existing Ku-band service for customers who choose to use it. In addition to our TracPhone V3, V7 and V11 and mini-VSAT Broadband service, we also offer a family of Inmarsat-compatible TracPhone products that provide in-motion access to global satellite communications. These products rely on services offered by Inmarsat, a satellite service provider that supports links for phone, fax and data communications as fast as 432 Kbps. The TracPhone FB150, FB250, and FB500 antennas use the Inmarsat FleetBroadband service to offer voice as well as high-speed Internet service. The TracPhone FB150, FB250, and FB500 are manufactured by Thrane & Thrane A/S of Denmark and distributed on an OEM basis by us in North America under the KVH TracPhone brand and distributed in other markets on a non-exclusive basis. Unlike mini-VSAT Broadband, where we control and sell the airtime, we purchase Inmarsat airtime from a distributor and resell it to our customers.

In September 2010, we completed our acquisition of Virtek Communication, a Norwegian firm responsible for developing a ship/shore network management product called CommBox. CommBox, which comprises shipboard hardware, a KVH-hosted or privately owned shore-based hub, and a suite of software applications, offers a range of tools designed to increase communication efficiency, reduce costs, and manage network operations. Key functions include web and data compression and optimization to increase network capacity; remote PC management for customer IT departments; integrated e-mail, web compression, firewalls, and security; least-cost routing; and bandwidth management on multiple communication carriers. CommBox is now offered as an option for the TracPhone V3, V7 and V11 and with our Inmarsat-compatible TracPhone and Iridium OpenPort systems. CommBox sales include both the shipboard hardware and optional private shore-based hub, subscriptions to the selected software applications, and monthly system maintenance fees.

We offer Iridium OpenPort hardware and service to be used in conjunction with our mini-VSAT service. Iridium OpenPort service provides data rates up to 128Kbps and it covers the entire world, including the polar regions. We offer the Iridium hardware and service along with our own mini-VSAT solution and our CommBox, which will switch over to the Iridium service if the mini-VSAT service is not available. Our customers might choose to add the Iridium service to expand the geographic coverage of the system, or as a backup service.

*Land.* We design, manufacture, and sell a range of TracVision satellite TV antenna systems for use on a broad array of vehicles, including recreational vehicles, trucks, conversion vans, and automobiles.

In the RV/truck market, we offer a line-up of our TracVision satellite TV products, including products intended for both stationary and in-motion use. Our RV product line, known as the TracVision SlimLine series,

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offers Ku-band HDTV support, automatic satellite switching, and integrated compatibility with the international DVB (Digital Video Broadcast) standard. The 12.5-inch high in-motion TracVision R5SL and stationary automatic TracVision R4SL use an elliptical parabolic antenna to reduce the antenna's profile to address height restrictions on the road. The in-motion 12.5-inch high TracVision R6 is the flagship product of our RV-specific offerings. This system incorporates a number of innovations, including a high-efficiency antenna, integrated global positioning system (GPS) for faster satellite acquisition, and our patented DewShield electronic dew elimination technology.

The TracVision A7 uses hybrid phased-array antenna technology to provide in-motion reception of satellite TV programming in the continental United States using the DIRECTV service. Our TracVision A7 product includes a mobile satellite television antenna and an integrated 12V mobile DIRECTV receiver/controller designed specifically for the mobile environment by KVH and DIRECTV. The TracVision A7 stands approximately five inches high and mounts either to a vehicle's roof rack or directly to the vehicle's roof, making it practical for use aboard minivans, SUVs and other passenger vehicles. The TracVision A7 is also popular for tall motor coaches and buses. Automotive customers subscribe to DIRECTV's TOTAL CHOICE MOBILE satellite TV programming package, which is specifically promoted for automotive applications. Local channels and network programming are also available as an option for TracVision A7 users as a result of the system's integrated GPS and mobile receiver. At this time, we are the only company authorized by DIRECTV to sell, promote, and activate mobile users for the TOTAL CHOICE MOBILE programming package.

In addition to sales through aftermarket dealers, we sell our TracVision products to original equipment manufacturers for factory installation on new vehicles. Our TracVision SlimLine systems work with a range of service providers, including DIRECTV, DISH Network, and other regional service providers. Although initially designed for automotive applications, the TracVision A7 is now also sold within the RV marketplace to provide access to DIRECTV programming in in-motion applications and for vehicles with height restrictions that could prevent them from safely using a satellite TV antenna based on parabolic technology, and/or where the accumulation of moisture on the outer surface of the antenna's radome is not a concern.

*Aeronautical Applications.* We designed, developed, and manufactured DIRECTV-compatible satellite TV antennas for use on narrowbody commercial aircraft, such as Boeing's 737 and the Airbus A320, operating in the United States.

Shipments of these antennas began in the second quarter of 2009 and continued into 2011. We currently have a three-year agreement with LiveTV covering maintenance of existing satellite antennas as well as pricing terms for potential purchases of new antennas.

### ***Guidance and Stabilization Products***

We offer a portfolio of digital compass and fiber optic gyro-based systems that address the rigorous requirements of military and commercial customers. Our systems provide reliable, easy-to-use and continuously available navigation and pointing data. Our guidance and stabilization products include our inertial measurement unit for precision guidance, fiber optic gyros for tactical navigation and stabilization, and digital compasses that provide accurate heading information for demanding applications.

*Guidance and Stabilization.* Our fiber optic gyro products use an all-fiber design that has no moving parts, resulting in an affordable combination of precision, accuracy and durability. Our fiber optic gyro products support a broad range of military applications, including stabilization of remote weapons stations, antennas, radar, optical devices or turrets; image stabilization and synchronization for shoulder-or tripod-mounted weapon simulators; precision tactical navigation systems for military vehicles, and guidance for weapons and unmanned autonomous vehicles. Our fiber optic gyro products are also used in commercial and industrial applications, such as train location control and track geometry measurement systems, robotics, surveying, optical stabilization, autonomous vehicles, and undersea remotely operated submersibles.



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Our TG-6000 Inertial Measurement Unit (IMU) is a guidance system that provides precise measurement of motion and acceleration in three dimensions. It uses a three-axis configuration of our high-performance DSP-based (digital signal processing) fiber optic gyros integrated with three accelerometers. We believe that this configuration provides outstanding performance, high reliability, low maintenance and easy system integration. The TG-6000 IMU is in full production as a component in the U.S. Navy's MK54 lightweight torpedo and is suitable for use in other applications that involve flight control, orientation, instrumentation and navigation, such as unmanned aerial vehicles. Building on our inertial measurement product offering, in June 2010, we introduced the CG-5100, our first commercial-grade inertial measurement unit. The CG-5100 is focused on a wide range of applications such as 3D Augmented Reality, mobile mapping, platform navigation and GPS augmentation for unmanned vehicle programs, precise mapping and imagery.

In October 2008, we introduced the CNS-5000 continuous navigation system, a self-contained navigation system that combines our fiber optic gyro-based inertial measurement technology with GPS technology from NovAtel. This navigation solution provides precise position and orientation of a host platform on a continuous basis, even during periods where GPS signals are blocked by natural or man-made obstructions or conditions. The CNS-5000 is designed for demanding commercial applications, such as dynamic surveying, precision agriculture, container terminal management, and autonomous vehicle navigation, where the ability to determine the precise position and orientation of a piece of equipment or a mobile platform is critical. The CNS-5000 is a commercial-off-the-shelf (COTS) product consisting of a FOG-based inertial measurement unit tightly integrated with GPS within a single enclosure. This design reduces the operational complexities for customers whose products cross international boundaries.

In June 2011, we introduced the DSP-1750, which we believe to be the world's smallest high performance fiber optic gyro and the first to use our new ECore ThinFiber technology. This new thin fiber, which is created at our Tinley Park, Illinois manufacturing facility, is only 170 microns in diameter, enabling longer lengths of fiber to be wound into smaller housings. Since the length of the fiber used in a fiber optic gyro directly relates to gyro accuracy and performance, the new technology enables us to produce smaller and more accurate gyros. The new DSP-1750 is five times faster and has angle random walk (ARW) ten times better than our first small gyro, the DSP-1500, which has been replaced with the new design. The small size and weight of the DSP-1750 make it well suited for applications with size and weight restrictions, such as night vision and thermal imaging systems, aircraft-mounted gimballed cameras for law enforcement and homeland security, and shipboard optical systems.

Our open-loop DSP-1750, DSP-3000 series, and DSP-4000 fiber optic gyros provide precision measurement of the rate and angle of a platform's turning motion typically for significantly less cost than competing closed-loop gyros. These DSP-based products deliver performance superior to analog signal processing devices, which experience greater temperature-sensitive drift and rotation errors. Applications for these products include inertial measurement units, integrated navigation systems, attitude/heading/reference systems, and stabilization of antenna, radar and optical equipment.

The DSP-3000 series is slightly larger than a deck of playing cards and offers a variety of interface options to support a range of applications. High-performance 2-axis and 3-axis configurations can be realized by integrating multiple DSP-3000 units. Currently, the DSP-3000 series is used in an array of pointing and stabilization applications, including the U.S. Army's Common Remotely Operated Weapon Station (CROWS) to provide the image and gun stabilization necessary to ensure that the weapon remains aimed at its target. We estimate that more than 20 companies have developed or are developing stabilized remote weapons stations that we believe will require similar fiber optic gyro stabilization capabilities. Our fiber optic products are also used in commercial and industrial applications, such as train location control and track geometry measurement systems, robotics, precision surveying, augmented reality systems, optical stabilization, autonomous vehicles, and undersea remotely operated submersibles. The larger, militarized DSP-4000 is designed for use in high-shock and highly dynamic environments, such as gun turret stabilization.

*Tactical Navigation.* Our TACNAV tactical navigation product line employs digital compass sensors and KVH fiber optic gyros to offer vehicle-based navigation and pointing systems with a range of capabilities,

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including GPS backup and enhancement, vehicle position, hull azimuth and navigation displays. Because our digital compass products measure the earth's magnetic field rather than detect satellite signals from the GPS, they are not susceptible to GPS jamming devices.

TACNAV systems vary in size and complexity to suit a wide range of vehicles. The TACNAV Light is a low-cost, digital compass-based battlefield navigation system specifically designed for non-turreted vehicles, such as high mobility multi-wheeled vehicles (HMMWVs) and trucks. Turreted vehicles, including reconnaissance vehicles, armored personnel carriers and light armored vehicles, are supported by the TACNAV TLS, a digital compass-based tactical navigation and targeting system that offers a fiber optic gyro upgrade for enhanced accuracy. We also manufacture the TACNAV II Fiber Gyro Navigation system, which offers a compact design, continuous output of heading and pointing data, and a flexible architecture that allows it to function as either a stand-alone navigation module or as the central component of an expanded, multifunctional navigation system.

Our navigation systems function as standalone tools and also aggregate, integrate and communicate critical information from a variety of on-board systems. TACNAV can receive data from systems such as the vehicle's odometer, military and commercial GPS devices, laser rangefinders, turret angle indicators and laser warning systems. TACNAV can also output this data to an on-board computer for retransmission through the vehicle's communications systems to a digital battlefield management application.

Our TACNAV digital compass products have been sold for use aboard U.S. Army, Marine Corps, and Navy vehicles as well as to many allied countries, including Australia, the United Kingdom, Canada, Germany, Italy, New Zealand, Saudi Arabia, Spain, Sweden, Taiwan, Malaysia and Switzerland. We believe that we are among the leading manufacturers of such systems. Our standard TACNAV products can be customized to our customers' specifications. At customer request, we offer training and other services on a time-and-materials basis.

## **Sales, Marketing and Support**

Our sales, marketing and support efforts target markets that are substantial and require dedicated dealers and distributors to reach end customers. These channels vary from time to time, but currently include targeted efforts to reach the commercial and leisure maritime markets, the RV and high-end automotive markets, and the commercial, industrial and government markets. We believe our brands are well known and well respected by consumers within their respective niches. These brands include:

TracVision satellite television systems for vessels and vehicles

TracPhone two-way satellite communications systems

mini-VSAT Broadband broadband mobile satellite communications network

CommBox network management hardware and software for maritime communications

Azimuth digital compass for powerboats

Sailcomp digital compass for sailboats

TACNAV tactical navigation systems for military vehicles

Our fiber optic gyros and digital compass sensors use an alphanumeric model numbering sequence such as C-100, DSP-1750, DSP-3000, DSP-4000, CNS-5000, CG-5100, and TG-6000 IMU.

We sell our mobile satellite communications products through an international network of independent retailers, chain stores and distributors, as well as to manufacturers of vessels and vehicles.

Our European headquarters located in Denmark, KVH Industries A/S coordinates our sales, marketing and support efforts for our mobile satellite communications products in Europe, the Middle East, and Africa. Asian

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and Australia/New Zealand sales are managed by our Asian headquarters located in Singapore, KVH Industries Pte. Ltd. and our Brazilian sales are managed by our Brazilian subsidiary, KVH South America Comunicacao Por Satelite Ltda, respectively, under the oversight of our North American sales and marketing offices. Standalone CommBox sales are managed by our Norwegian subsidiary in cooperation with members of our satellite sales teams in all offices worldwide. See note 12 of the notes to our consolidated financial statements for information regarding our geographic segments.

We sell our guidance and stabilization products directly to U.S. and allied governments and government contractors, as well as through an international network of authorized independent sales representatives. This same network also sells our fiber optic products to commercial/industrial entities.

## **Backlog**

Backlog is not a meaningful indicator for predicting revenue in future periods. Commercial resellers for our mobile satellite communications products and legacy products do not carry extensive inventories and rely on us to ship products quickly. Generally due to the rapid delivery of our commercial products, our backlog for those products is not significant.

Our backlog for all products and services was approximately \$22.1 million, \$20.8 million, and \$24.5 million on December 31, 2011, 2010 and 2009, respectively. The increase in backlog of \$1.3 million from December 31, 2010 to December 31, 2011 was primarily a result of increased orders for fiber optic gyros, a three-year agreement with LiveTV covering maintenance of existing satellite television antennas that began in September 2011, as well as an increase in orders of our mobile satellite communications products. The decrease in backlog of \$3.7 million from December 31, 2009 to December 31, 2010 was primarily a result of a decrease in orders of our aeronautical antenna system sold to LiveTV.

Backlog consists of orders evidenced by written agreements and specified delivery dates for customers who are acceptable credit risks. We do not include satellite connectivity service sales in our backlog even though many of our satellite connectivity customers have signed annual service contracts providing for a fixed monthly fee. Military orders included in backlog are generally subject to cancellation for the convenience of the customer. When orders are cancelled, we generally recover actual costs incurred through the date of cancellation and the costs resulting from termination. As of December 31, 2011, our backlog included approximately \$16.0 million in orders that are subject to cancellation for convenience by the customer. Individual orders for guidance and stabilization products are often large and may require procurement of specialized long-lead components and allocation of manufacturing resources. The complexity of planning and executing larger orders generally requires customers to order well in advance of the required delivery date, resulting in backlog.

## **Intellectual Property**

Our ability to compete effectively depends to a significant extent on our ability to protect our proprietary information. We rely primarily on patents and trade secret laws, confidentiality procedures and licensing arrangements to protect our intellectual property rights. We own approximately 37 U.S. and foreign patents and have additional patent applications that are currently pending. We also register our trademarks in the United States and other key markets where we do business. Our patents will expire at various dates between March 2013 and July 2028. We enter into confidentiality agreements with our consultants, key employees and sales representatives, and maintain controls over access to and distribution of our technology, software and other proprietary information. The steps we have taken to protect our technology may be inadequate to prevent others from using what we regard as our technology to compete with us.

We do not generally conduct exhaustive patent searches to determine whether the technology used in our products infringes patents held by third parties. In addition, product development is inherently uncertain in a rapidly evolving technological environment in which there may be numerous patent applications pending, many of which are confidential when filed, with regard to similar technologies.

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From time to time, we have faced claims by third parties that our products or technologies infringe their patents or other intellectual property rights, and we may face similar claims in the future. Any claim of infringement could cause us to incur substantial costs defending against the claim, even if the claim is invalid, and could distract the attention of our management. If any of our products is found to violate third-party proprietary rights, we may be required to pay substantial damages. In addition, we may be required to re-engineer our products or seek to obtain licenses from third parties to continue to offer our products. Any efforts to re-engineer our products or obtain licenses on commercially reasonable terms may not be successful, which would prevent us from selling our products, and, in any case, could substantially increase our costs and have a material adverse effect on our business, financial condition and results of operations.

### **Manufacturing**

Manufacturing operations for our mobile satellite communications and navigation products consist of light manufacture, final assembly and testing. Manufacturing operations for our fiber optic gyro products are more complex. We produce specialized optical fiber, fiber optic components and sensing coils and combine them with components purchased from outside vendors for assembly into finished goods. We own optical fiber drawing towers with which we produce the specialized optical fiber that we use in all of our fiber optic products. Excluding the CommBox product, which we manufacture in Norway, we manufacture, warehouse and distribute our mobile satellite communications products at our headquarters in Middletown, Rhode Island. We manufacture our navigation and fiber optic gyro products in our facility located in Tinley Park, Illinois.

We contract with third parties for fabrication and assembly of printed circuit boards, injection-molded plastic parts, machined metal components, connectors and housings. We believe there are a number of acceptable vendors for the components we purchase. We regularly evaluate both domestic and foreign suppliers for quality, dependability and cost effectiveness. In some instances we utilize sole-source suppliers to develop strategic relationships to enhance the quality of materials and save costs. Our manufacturing processes are controlled by an ISO 9001:2008-certified quality standards program.

### **Competition**

We encounter significant competition in all of our markets, and we expect this competition to intensify in the future. Many of our primary competitors are well-established companies and some have substantially greater financial, managerial, technical, marketing, operational and other resources than we do.

In the market for mobile satellite communications products, we compete with a variety of companies. We believe the principal competitive factors in this market are product size, design, performance, reliability, and price.

In the marine market for satellite TV equipment, we compete primarily with Intellian, Cobham SeaTel, Inc., Raymarine, NaviSystem Marine Electronic Systems Srl, King Controls, and Thrane & Thrane A/S. In the marine market for voice, fax, data and Internet communications equipment and services, we compete with Cobham Sea Tel, Inc., Thrane & Thrane A/S, Furuno Electric Co., Ltd., Globalstar LP, Iridium Satellite LLC, Intellian, Ship Equip and JRC. We also face competition from providers of marine satellite data services and maritime VSAT solutions, including Inmarsat/ShipEquip/Stratos, MTN/SeaMobile, Speedcast, CapRock, Schlumberger, and Vizada/Marlink.

In the land mobile markets, we compete primarily with MotoSAT, King Controls, Cobham TracStar and Winegard Company.

In the guidance and stabilization markets, we compete primarily with Honeywell International Inc., Kearfott Guidance & Navigation Corporation, Northrop Grumman Corporation, Goodrich Aerospace, IAI, Fizoptica, SAGEM and Systron Donner Interrial. We believe the principal competitive factors in these markets are performance, size, reliability, durability and price.

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### **Research and Development**

Focused investments in research and development are critical to our future growth and competitive position in the marketplace. Our research and development efforts are directly related to timely development of new and enhanced products that are central to our core business strategy. The industries in which we compete are subject to rapid technological developments, evolving industry standards, changes in customer requirements, and new product introductions and enhancements. As a result, our success depends in part upon our ability, on a cost-effective and timely basis, to continue to enhance our existing products and to develop and introduce new products that improve performance and meet customers operational and cost requirements. Our current research and development efforts include projects to achieve additional cost reductions in our products and the development of new products for our existing marine and land mobile communications markets, and navigation, guidance and stabilization application markets. For example:

in February 2011, we introduced a new addition to our mini-VSAT Broadband-compatible antenna family, the 14.5-inch diameter TracPhone V3;

in June 2011, we introduced the DSP-1750 fiber optic gyro intended for integration within stabilized cameras, drones, and other systems that need very high bandwidth, super low noise sensors;

in November 2011, we introduced the TracVision HD-11, which we believe to be the world's first global Ku/Ka-band programmable television antennas that is also compatible with the North American DIRECTV HDTV service; and

in January 2012, we announced plans for our new global C-band overlay for our mini-VSAT network, as well as the new dual-band TracPhone V-11.

Our research and development activities consist of projects funded by us, projects funded with the assistance of customer-funded contract research and Small Business Innovative Research (SBIR) grants. Our customer-funded research efforts are made up of contracts with defense and OEM customers, whose performance specifications are unique to their product applications. SBIR projects are generally directed towards the discovery of specific information requested by the government research sponsor. Many of these grants have enhanced our technologies, resulting in new or improved product offerings. Defense and OEM research often results in new product offerings. We strive to be the first company to bring a new product to market, and we use our own funds to accelerate new product development efforts.

### **Government Regulation**

Our manufacturing operations are subject to various laws governing the protection of the environment and our employees. These laws and regulations are subject to change, and any such change may require us to improve our technologies, incur expenditures, or both, in order to comply with such laws and regulations.

We are subject to compliance with the U.S. Export Administration Regulations. Some of our products have military or strategic applications, and are on the Munitions List of the U.S. International Traffic in Arms Regulations. These products require an individual validated license to be exported to certain jurisdictions. The length of time involved in the licensing process varies and can result in delays of the shipping of the products. Sales of our products to either the U.S. government or its prime contractors are subject to the U.S. Federal Acquisition Regulations.

We are also subject to the laws and regulations of the U.S. and foreign jurisdictions in which we offer and sell our satellite communication products and services, including those of the European Union, Brazil, Norway and Singapore. These laws and regulations, as well as the interpretation and application of these laws and regulations, are subject to change and any such change may affect our ability to offer and sell existing and planned satellite communications products and services.

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### **Employees**

On December 31, 2011, we employed 368 full-time employees. We also employ temporary or contract personnel, when necessary, to provide short-term and/or specialized support for production and other functional projects.

We believe our future success will depend upon the continued service of our key technical and senior management personnel and upon our continued ability to attract and retain highly qualified technical and managerial personnel. None of our employees is represented by a labor union. We have never experienced a work stoppage and consider our relationship with our employees to be good.

### **ITEM 1A. Risk Factors**

*An investment in our common stock involves a high degree of risk. You should carefully consider the following risk factors in evaluating our business. If any of these risks, or other risks not presently known to us or that we currently believe are not significant, develops into an actual event, then our business, financial condition and results of operations could be adversely affected. If that happens, the market price of our common stock could decline.*

#### **Our revenues and results of operations have been and may continue to be adversely impacted by worldwide economic turmoil, credit tightening, high fuel prices and associated declines in consumer spending.**

Worldwide economic conditions have experienced a significant downturn over the last several years, including slower economic activity, tightened credit markets, inflation and deflation concerns, increased fuel prices, decreased consumer confidence, reduced corporate profits, reduced or canceled capital spending, adverse business conditions and liquidity concerns. These conditions make it difficult for businesses, governments and consumers to accurately forecast and plan future activities. Governments are experiencing significant declines in tax receipts, which may cause them to curtail spending significantly or reallocate funds away from defense programs. For example, sales of our FOG products declined 44% from 2010 to 2011. There can be no assurances that government responses to the disruptions in the economy will remedy these problems. As a result of these and other factors, customers could slow or suspend spending on our products and services. We may also incur increased credit losses and need to increase our allowance for doubtful accounts, which would have a negative impact on our earnings and financial condition. We cannot predict the timing, duration or ultimate impact of this downturn. We expect our business to continue to be adversely impacted by this downturn.

Net sales of many of our mobile communications products are largely generated by discretionary consumer spending, and demand for these products may demonstrate slower growth or decline as a result of continuing weak regional and global economic conditions. Consumer spending tends to decline during recessionary periods and may decline at other times. For example, sales of our mobile satellite communications products declined approximately 27% from 2008 to 2009. Some consumers have chosen not to purchase our mobile communications products due to a perception that they are luxury items, and this could continue. As global and regional economic conditions change, including the general level of interest rates, fluctuating oil prices and demand for durable consumer products, demand for our products could continue to be materially and adversely affected.

#### **Our results of operations could be adversely affected if unseasonably cold weather, prolonged winter conditions, disasters or similar events occur.**

Our marine leisure business is highly seasonal and seasonality can also impact our commercial marine business. We historically have generated the majority of our marine leisure product revenues during the first and second quarters of each year, and these revenues typically decline in the third and fourth quarters of each year.

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compared to the first two quarters. Temporary suspensions of our airtime services typically increase in the third and fourth quarters of each year as boats are placed out of service during winter months. Our marine leisure business is also significantly affected by the weather. Unseasonably cool weather, prolonged winter conditions, hurricanes, unusual amounts of rain, and natural and other disasters may decrease boating, which could reduce our revenues. Specifically, we may encounter a decrease in new airtime activations as well as an increase in the number of cancellations or temporary suspensions of our airtime service.

**We expect that we could derive an increasing portion of our revenues from commercial leases of mobile communications equipment, rather than sales, which could increase our credit and collection risk.**

We are actively seeking to increase revenues from the commercial markets for our mini-VSAT Broadband service, particularly shipping companies and other companies that deploy a fleet of vessels. In marketing this service, we offer leasing arrangements for the TracPhone antennas to both commercial and leisure customers. If commercial leases become increasingly popular with our customers, we could face increased risks of default under those leases. Defaults could increase our costs of collection (including costs of retrieving leased equipment) and reduce the amount we collect from customers, which could harm our results of operations.

**Changes in the competitive environment or supply chain issues may require inventory write-downs.**

During 2009, we recorded \$1.3 million in inventory reserve charges to account for excess inventory that resulted from a substantial decline in customer demand due to the 2008-2009 economic downturn, design changes by our suppliers and increased price competition. During 2011 and 2010, we wrote off approximately \$0.2 and \$0.6 million of fully reserved inventory, respectively. Market or competitive changes could lead to future charges for excess or obsolete inventory, especially if we are unable to appropriately adjust the supply of material from our vendors.

**Adverse economic conditions could result in financial difficulties or bankruptcy for any of our suppliers, which could adversely affect our business and results of operations.**

The significant downturn in worldwide economic conditions and credit tightening could present challenges to our suppliers, which could result in disruptions to our business, increase our costs, delay shipment of our products and impair our ability to generate and recognize revenue. To address their own business challenges, our suppliers may increase prices, reduce the availability of credit, require deposits or advance payments or take other actions that may impose a burden on us.

They may also reduce production capacity, slow or delay delivery of products, face challenges meeting our specifications or otherwise fail to meet our requirements. In some cases, our suppliers may face bankruptcy. We may be required to identify, qualify and engage new suppliers, which would require time and the attention of management. Any of these events could impair our ability to deliver our products to customers in a timely and cost-effective manner, cause us to breach our contractual commitments or result in the loss of customers.

**Shifts in our product sales mix toward our mobile communications products may reduce our overall gross margins.**

Our mobile communications products historically have had lower product gross margins than our guidance and stabilization products. During the years ended December 31, 2009 and 2010, we experienced a significant increase in sales of our guidance and stabilization products, primarily due to an increase in our FOG product sales. However, during 2011, we experienced a 14% decline in sales of our guidance and stabilization products. A shift in our product sales mix towards mobile communications products would likely cause lower gross margins in the future, especially if driven by reduced demand.

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### **We must generate a certain level of sales of the TracPhone V3, V7 and V11 and our mini-VSAT Broadband service in order to improve our service gross margins.**

As a result of our mini-VSAT Broadband network infrastructure, our cost of service sales includes certain fixed costs that do not generally vary with the volume of service sales, and we have almost no ability to reduce these fixed costs in the short term. These fixed costs will increase if we further expand our network to accommodate additional subscriber demand and/or coverage area expansion. For example, we recently entered into a five-year agreement to lease additional satellite capacity as well as an agreement to purchase three additional hubs in connection with the offering of our new C-band service at a total cost of approximately \$12.2 million. If sales of our TracPhone V3, V7 and V11 and the mini-VSAT Broadband service do not generate the level of revenue that we expect or decline, our service gross margins may remain below historical levels or decline. The failure to improve our mini-VSAT Broadband service gross margins would have a material adverse effect on our overall profitability.

### **Competition may limit our ability to sell our mobile communications products and guidance and stabilization products.**

The mobile communications markets and defense navigation, guidance and stabilization markets in which we participate are very competitive, and we expect this competition to persist and intensify in the future. We may not be able to compete successfully against current and future competitors, which could impair our ability to sell our products. For example, improvements in the performance of lower cost gyros by competitors could potentially jeopardize sales of our fiber optic gyros. Foreign competition for our mobile satellite communications products has continued to intensify, most notably from companies that seek to compete primarily on price. We anticipate that this trend of substantial competition will continue.

In the market for marine satellite TV equipment, we compete with Intellian, Cobham SeaTel, Inc., Raymarine, NaviSystem Marine Electronic Systems Srl, King Controls, and Thrane & Thrane A/S.

In the marine market for voice, fax, data and Internet communications equipment and services, we compete with Cobham Sea Tel, Inc., Thrane & Thrane A/S, Furuno Electric Co., Ltd., Globalstar LP, Iridium Satellite LLC, Intellian, Ship Equip and JRC. We also face competition from providers of marine satellite data services and maritime VSAT solutions, including Inmarsat/ShipEquip/Stratos, MTN/SeaMobile, Speedcast, CapRock, Schlumberger, and Vizada/Marlink.

In the market for land mobile satellite TV equipment, we compete with MotoSAT, King Controls, Cobham TracStar and Winegard Company.

In the guidance and stabilization markets, we compete primarily with Honeywell International Inc., Kearfott Guidance & Navigation Corporation, Northrop Grumman Corporation, Goodrich Aerospace, IAI, Fizoptica, SAGEM and Systron Donner Inertial.

Among the factors that may affect our ability to compete in our markets are the following:

many of our primary competitors are well-established companies that could have substantially greater financial, managerial, technical, marketing, personnel and other resources than we do;

product improvements, new product developments or price reductions by competitors may weaken customer acceptance of, and reduce demand for, our products;

new technology or market trends may disrupt or displace a need for our products; and

our competitors may have lower production costs than we do, which may enable them to compete more aggressively in offering discounts and other promotions.



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**The emergence of a competing small maritime VSAT antenna and complementary service or other similar service could reduce the competitive advantage we believe we currently enjoy with our 24-inch diameter TracPhone V7 and 14.5-inch diameter TracPhone V3 antennas along with our integrated Ku-band mini-VSAT Broadband service, or with our newly announced C/Ku-band mini-VSAT Broadband service and our new TracPhone V11.**

Our TracPhone V3 and V7 systems offer customers a range of benefits due to their integrated design, hardware costs that are lower than existing maritime Ku-band VSAT systems, and spread spectrum technology. We currently compete against companies that offer established maritime Ku-band VSAT service using, in some cases, antennas 1-meter in diameter or larger. While we are unaware of any company offering a 14.5-inch VSAT solution comparable to our TracPhone V3, we are encountering regional competition from companies offering 24-inch VSAT systems and services. Likewise, our TracPhone V11 will be more than 85% smaller and lighter than competing C-band maritime VSAT systems, which uses antennas in excess of 2.5m in diameter to provide similar global services. We are unaware of any competitor currently offering a similar size solution for global C-band coverage, but any introduction of such a product could adversely impact our success. In addition, other companies could replicate some of the distinguishing features of our TracPhone V3, V7 or V11, which could potentially reduce the appeal of our solution, increase price competition and adversely affect sales. Moreover, consumers may choose other services such as FleetBroadband or Iridium OpenPort for their service coverage and potentially lower hardware costs despite higher service costs and slower data rates. Finally, it is possible that sales of our TracPhone V3 antennas will reduce sales of our TracPhone V7 antennas.

**Our ability to compete in the maritime airtime services market may be impaired if we are unable to provide sufficient service capacity to meet customer demand.**

The TracPhone V3, V7, and V11 and our mini-VSAT Broadband service offer a range of benefits to mariners, especially in commercial markets, due to the smaller size antenna and faster, more affordable airtime. We recently completed the rollout of our original network coverage plan and currently offer service in the Americas, Europe, the Middle East, Africa, Asia-Pacific, and Australian and New Zealand waters. In the future, we may need to expand capacity in existing coverage areas to support an expanding subscriber base. If we are unable to reach agreement with third-party satellite providers to support the mini-VSAT Broadband service and its spread spectrum technology or transponder capacity is unavailable should we need to increase our capacity to meet growing demand in a given region, our ability to support vessels and aeronautical applications globally will be at risk and could reduce the attractiveness of the product and service to these customers.

**The purchasing and delivery schedules and priorities of the U.S. military and foreign governments are often unpredictable.**

We sell our fiber optic gyro systems as well as vehicle navigation products to U.S. and foreign military and government customers, either directly or as a subcontractor to other contractors. These customers often use a competitive bidding process and have unique purchasing and delivery requirements, which often makes the timing of sales to these customers unpredictable. Factors that affect their purchasing and delivery decisions include:

increasing budgetary pressures that may reduce funding for military programs;

changes in modernization plans for military equipment;

changes in tactical navigation requirements;

global conflicts impacting troop deployment, including troop withdrawals from the Middle East;

priorities for current battlefield operations;

new military and operational doctrines that affect military equipment needs;

sales cycles that are long and difficult to predict;

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shifting response time and/or delays in the approval process associated with the export licenses we must obtain prior to the international shipment of certain of our military products;

delays in military procurement schedules; and

delays in the testing and acceptance of our products, including delays resulting from changes in customer specifications.

These factors can cause substantial fluctuations in sales of our FOG and TACNAV products from period to period. For example, sales of our FOG products increased \$11.4 million, or 39%, from 2009 to 2010 driven largely by increased sales for commercial applications, such as surveying and optical stabilization, and a range of government and defense applications, including weapons stabilization. However, sales of our FOG products decreased \$17.9 million or 44%, from 2010 to 2011. Sales of FOG products have slowed as the industry awaits updates on the U.S. Army's plans for its next procurement of remote weapon systems under the Common Remotely Operated Weapon Station (CROWS) program. We do not anticipate more than a modest level of sales of FOG products for the CROWS program in the first quarter of 2012. The Obama administration and Congress may change defense spending priorities, either in conjunction with troop withdrawals from Iraq and Afghanistan or for other reasons, including efforts to reduce the deficit. Moreover, government customers such as the U.S. Coast Guard and their contractors can generally cancel orders for our products for convenience or decline to exercise previously disclosed contract options. Even under firm orders with government customers, funding must often be appropriated in the budget process in order for the government to complete the contract. The cancellation of or failure to fund orders for our products could further reduce our net sales and results of operations.

**Sales of our fiber optic gyro systems and TACNAV products generally consist of a few large orders, and the delay or cancellation of a single order could substantially reduce our net sales.**

KVH products sold to customers in the defense industry are purchased through orders that can generally range in size from several hundred thousand dollars to more than one million dollars. For example, in October 2011, we received an \$8.6 million TACNAV products order and in December 2011, we received a \$2.5 million and a \$7.6 million fiber optic gyro products order. In addition, we received a multi-million dollar TACNAV products order and a multi-million dollar fiber optic gyro products order earlier in 2011. Orders of this size are often unpredictable and difficult to replicate. As a result, the delay or cancellation of a single order could materially reduce our net sales and results of operations. We periodically experience repeated and unanticipated delays in defense orders, which make our revenues and operating results less predictable. Because our guidance and stabilization products typically have relatively higher product gross margins than our mobile communications products, the loss of an order for guidance and stabilization products could have a disproportionately adverse effect on our results of operations.

**Only a few customers account for a substantial portion of our guidance and stabilization revenues, and the loss of any of these customers could substantially reduce our net sales.**

We derive a significant portion of our guidance and stabilization revenues from a small number of customers, most of whom are contractors for the U.S. Government. Our top four guidance and stabilization customers accounted for approximately 23% and 29% of our net sales during 2011 and 2010, respectively. The loss of business from any of these customers could substantially reduce our net sales and results of operations and could seriously harm our business. Since we are often awarded a contract as a subcontractor to a major defense supplier that is engaged in a competitive bidding process as prime contractor for a major weapons procurement program, our revenues depend significantly on the success of the prime contractors with which we align ourselves.

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**Our mobile satellite products currently depend on satellite services and facilities provided by third parties, and a disruption in those services could adversely affect sales.**

Our satellite products include only the equipment necessary to utilize satellite services; we do not broadcast satellite television programming or own the satellites to directly provide two-way satellite communications. We currently offer satellite television products compatible with the DIRECTV and DISH Network services in the United States, the Bell TV service in Canada, the Sky Mexico service and various other regional satellite TV services in other parts of the world.

SES, Eutelsat, Sky Perfect-JSAT, GE Satellite, Telesat, EchoStar, Intelsat and Star One currently provide the satellite capacity to support the mini-VSAT Broadband service and our TracPhone V3, V7 and V11. In addition, we have agreements with various teleports and internet service providers around the globe to support the mini-VSAT Broadband service. We rely on Inmarsat for satellite communications services for our mini-M, Fleet and FleetBroadband compatible TracPhone products.