Viasat™

Black ICE SDR

Flexible waveform integration

Communications made certain

With the increasing use of uncrewed and crewed systems for Intelligence, Surveillance and Reconnaissance (ISR) in land, sea and air operations, military commands require reliable, flexible, secure, low size weight and power (SWaP) solutions for consistent, mission-critical communications, anywhere in the world.

The Black ICE Software Defined Radio (SDR) modem family leverages commercial off-the-shelf and custom waveforms to satisfy challenging, mission-specific requirements. Black ICE SDR modems enable access to the ELERA L-band and Global Xpress (GX) Ka-band networks, augmenting U.S. government military satellite resources.

Features

- Flexible commercial-off-the-shelf and custom waveform integration
- Simple Network Management Protocol (SNMP) for monitoring antenna performance
- Integrated Web User Interface (UI)
- Global Positioning System Daemon client
- Xilinx and Intel Field-programmable Gate Array (FPGA) architectures supported
- Open standards for antenna management, including OpenAMIP
- Radio-Frequency Integrated Circuit (RFIC) with 70MHz to 6GHz tune range and up to 200MHz of bandwidth

Benefits:

- Customizable to users' specific requirements
- Enables SWaP reduction in user terminals
- Provides persistent and secure coverage via networks, including ELERA L-band and GX Ka-band

- Offers critical beyond line of sight (BLOS) communications for uncrewed and crewed platforms and expeditionary Command and Control operations
- Designed to meet customers' intense security and performance requirements

Developed for the Military User

The Challenge

Sensor/video backhaul connectivity over satellite communications (SATCOM) via low-SWaP user terminals is critical for today's ISR missions. In the last five years alone, Combatant Commands (COCOMs) have deployed uncrewed and crewed assets in ever-increasing ISR operations, leaving acquisition commands to search for an end-to-end SATCOM solution that could seamlessly augment military satellite communications (MILSATCOM) resources.

The Requirement

Deploy a reliable, flexible, secure, low-SWaP solution with persistent communications coverage and quick-reaction, high-performing capabilities for global ISR missions and expeditionary C2, today and in the future. Deliver secure Beyond line of sight (BLOS) communications to land, sea and air users for both uncrewed and crewed platforms.

The Solution

Black ICE SDR family of innovative, high-performance modem solutions enables the integration of commercial off-the-shelf and custom waveforms, allowing secure data transmission. The platform of modems meets customers' requirements for low SWaP user terminals and provides highly reliable and secure worldwide communications coverage. It enables U.S. government customers to utilize our services as an augmentation to their MILSATCOM systems, such as the Wideband Global SATCOM system (WGS). Black ICE SDR's low SWaP is engineered to meet challenging terminal form factor and performance requirements of BLOS communications for small uncrewed ISR as well as crewed platforms. The platform of modems is designed to meet customers' intense security and performance requirements. In addition, customers can add new features and capabilities to existing infrastructure and be compatible with our current and future networks—ensuring rapid and cost-effective delivery.
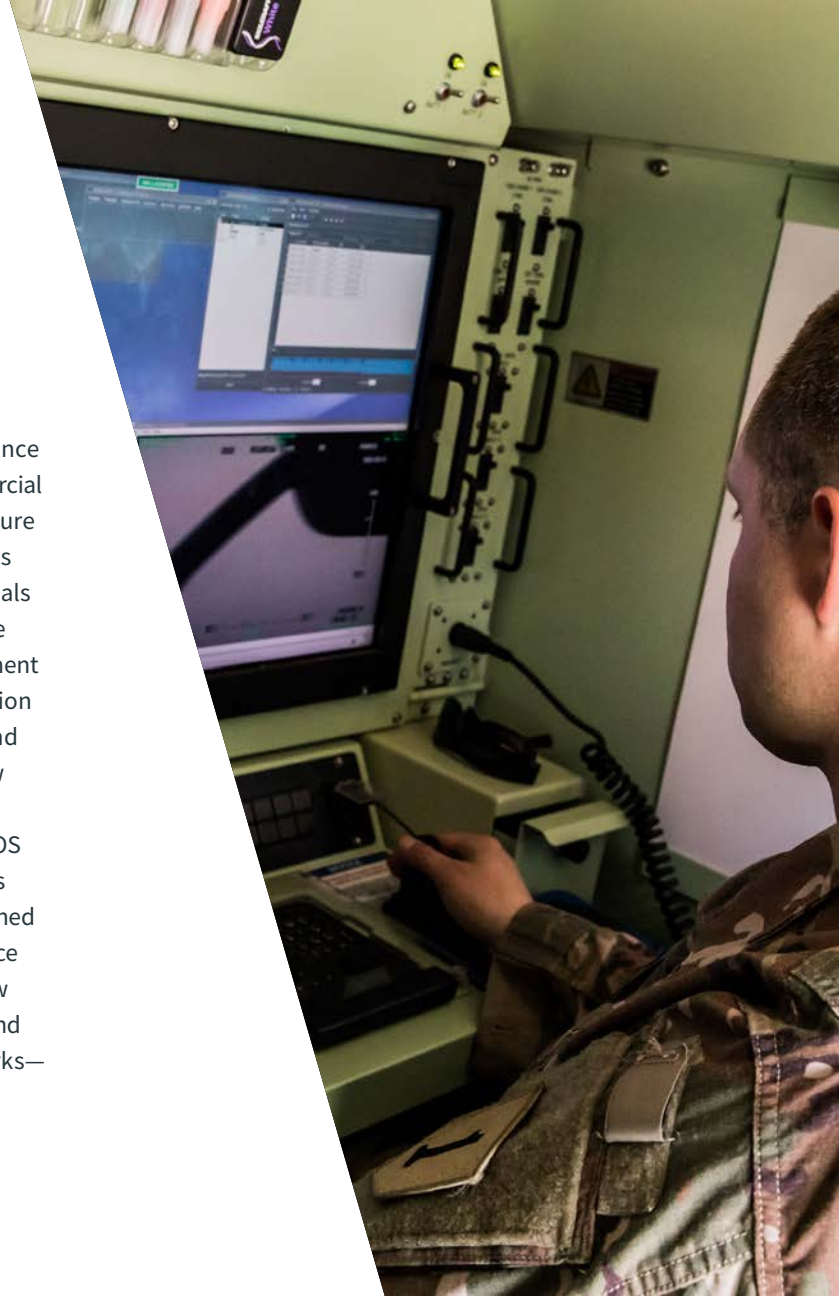
L-BAND

Black ICE SDR enables the reduction in SWaP for L-band LAISR terminals. It supports customers' BLOS communications requirements for security, flexibility, low form factor user terminals and high performance.

On ELERA L-band, Black ICE SDR provides access to the powerful and highly efficient DVBS2X waveform in a low-SWaP form factor. The solution meets challenging user terminal form factor and performance requirements for BLOS communications on crewed and uncrewed platforms, as well as expeditionary C2 operations.

Initial products include the LAISR ULW, our latest generation of LAISR satellite terminals. LAISR ULW delivers access to high availability, high-performance, full-duplex, secure BLOS communications via reliable, global ELERA L-band network for airborne crewed and uncrewed platforms. As an ultralightweight alternative to the LAISR family of terminals, the ULW consists of two line-replaceable units (LRU) comprised of the LAISR core module (CM) and an antenna
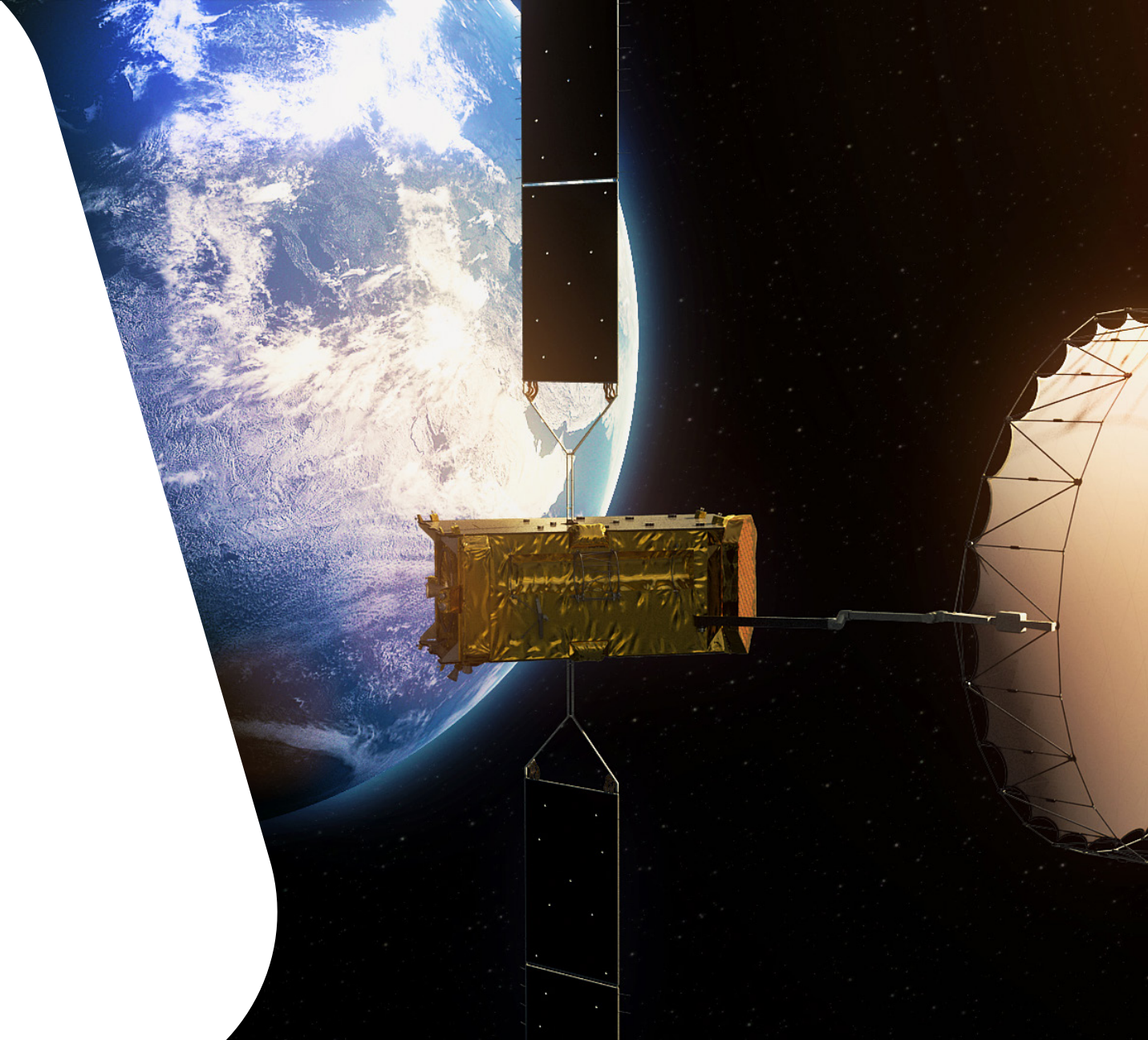
KA-BAND

For Ka-band customers, Black ICE SDR enables the addition of a special waveforms service that integrates into existing Global Xpress terminals. Through the special waveforms service, U.S. government Global Xpress customers access alternative waveforms to satisfy specific high-demanding mission requirements, such as high data rate and resiliency necessary in congested and contested environments. Users may choose from several terminal options that work with this new service across land, air and sea. Those terminals are type approved for operation of Global Xpress commercial and Military-Ka.

More complex waveforms and enhancements are in development to deliver new features for customers, establishing greater flexibility in countering challenging threats. The Black ICE SDR platform of modems will also allow the addition of future enhanced special waveforms features so the service can utilize the capabilities of our next-generation satellites.

BLACK ICE MODEMS

MODEM	BLACK ICE LITE	BLACK ICE MEDIUM	BLACK ICE HEAVY	BLACK ICE MC
Size OEM Size Stand Alone	3.6" x 2.7" x 0.8" 7.0"x4.5"x1.4"	2.1" x 3.6" x 0.6" 5.5"x2.8"x1.0"	2.1" x 3.6" x 0.6" 7.5"x6.0"x1.5"	--- 3.0" x 5.0" x 1.0"
Weight OEM Weight Stand Alone	0.11 lbs 1.60 lbs	0.18 lbs 0.66 lbs	0.25 lbs / 2.00 lbs	--- 0.88 lbs
Power	12 W	10 W	25 W	25 W
Bandwidth	56 MHz	56 MHz	1.1 GHz	100 MHz
FPGA	Xilinx	Intel	Intel / Xilinx	Xilinx