



# Hughes Airborne SATCOM Systems

## Advanced BLoS Satellite Communications

Designed specifically for Mobile SATCOM applications, the Hughes HM Series software-defined modems (HM400 and HM100) are ready to meet today's rapidly changing mobility requirements for military users. This powerful, flexible technology supports the Hughes Airborne Satellite Communications (SATCOM) System by delivering a constant, secure and reliable capability for bi-directional, enroute and outroute transmission of critical real-time information supporting any airborne mission. The HM series modems leverage the unique Hughes Scrambled Code Multiple Access (SCMA) Waveform technology that enables efficient bandwidth use for smaller antennas operating over multiple frequencies (L-, Ku- Ka-, Mil Ka- and X-band) while also providing a Direct Sequence Spread Spectrum (DSSS) waveform that enables LPI/LPD/LPE characteristics.

## ISR Data Transfer

Ideal for Beyond-Line-of-Sight (BLoS) enroute connectivity requirements, the innovative Hughes HM series modems, paired with an advanced airborne antenna, provide high throughput ISR return link and enroute communications over satellite for situational awareness. The ruggedized, ½ Air Transport Rack Mil Spec modem which is installed in the platform transmits High-Definition video and other critical sensor information from the aircraft to the ground (via an HM 100 hub modem) to support ISR missions and deliver real-time situational awareness. It also has the capability of transmitting voice or command and control data to the aircraft for manned or unmanned operations. Hughes is delivering these flexible, high data rate modems to General Atomics for the MQ-9B and MQ-1C unmanned aerial vehicles and has tested these modems on the UH-60 Black Hawk and the CH-47 Chinook helicopters.

## Enroute Communications

For fixed-wing, non-ISR, enroute communications, the multifunctional Hughes Airborne modems are designed especially for a variety of military and commercial aircraft including Very Important Person Special Air Mission (VIPSAM) platforms for senior leaders in the U.S. Government. The advanced modems feature Single Channel Per Carrier (SCPC)-Demand Assigned Multiple Access (DAMA) communications which results in high modem efficiency and provides up to 45 Mbps for enroute communications on the aircraft. This Hughes solution is the ideal capability for highly secure and robust airborne broadband connectivity.

## Open Architecture Technology

Today, users require flexibility so they can leverage rapidly evolving technology. Hughes is meeting this requirement by designing innovative technology with open architecture and interoperability built in so the capabilities will suit various user requirements. The advanced Hughes modems are Commercial-Off-The-Shelf (COTS) products that Hughes can readily install into a wide range of manned or unmanned, fixed, or rotary winged platforms, and can interface with a variety of commercial and government antenna solutions. Based on a unique Software-Defined Modem (SDM) and employing the specialized Hughes Scrambled Multiple Access (SCMA) waveform, the modems deliver highly reliable mobile video, voice,

and data capabilities for all airborne BLoS systems. Ground stations use the Hughes standard 1U rack enclosure HM100 modem, which is designed with the same SDM and interfaced to either a gateway or into mission specific, fixed or mobile ground stations around the world. Hughes has integrated its airborne system onto a variety of platforms by adapting the solution to interface with different antennas. The system's architecture is focused on meeting customer-specified requirements for certain Size, Weight, and Power (SWaP), or performance characteristics.

## Resilient and Secure

Military users in today's contested battlespace must have uninterrupted information access. Hughes continues to adapt the Airborne SATCOM solution to deliver strong resiliency and security for every mission, including those accessing the WGS satellites as the HM series is WGS certified. Using the flexible HM400 and HM100, Hughes is supporting critical planning of communications resources. These software-defined modems work together with the Hughes network management system to enable dynamic satellite channel assignments using DAMA technology, providing cost-effective and automated PACE (Primary Alternate Contingency Emergency) planning. This flexible satcom and network management can autonomously switch the satellite link to another satellite during incidents of interference or outages. In addition, Hughes has incorporated TRANSEC and LPI/LPD technology to enhance security for the communications link.

### Benefits:

- Open architecture for user flexibility and interoperability with other systems
- Integrates with DoD EBEM waveform
- Integrates with commercial and military antennas using Open AMIP
- Variety of antenna SWaP options
- High data throughput for BLoS applications (1-45 Mbps, both inroute or outroute)
- SCMA waveform for small apertures and/or LPI/LPD characteristics
- Global coverage for all frequency bands: L-, X-, Ku-, Commercial Ka-, and MIL Ka-bands
- Transmit/receive through rotary blades
- Transmit/receive on fixed wing platforms
- Very short acquisition and reacquisition time
- Low power consumption
- Mil-Spec-810B Compliant (vibration, temperature, EMI/RFI) with integrated TRANSEC
- ½ Air Transport Rack Mil-Spec

### Technology

### Applications:

- BLOS ISR missions
- Border protection
- Search and rescue
- VIP and passenger communications
- Wildfire response
- Law enforcement
- News and media



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