



A D V A N C E D E H F

ASSURED, PROTECTED, SURVIVABLE COMMUNICATIONS

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## ADVANCED EHF: Assured, Protected, Survivable Communications

Advanced EHF (AEHF), the nation's next generation military strategic and tactical relay system, will deliver survivable, protected communications to U.S. forces and selected allies worldwide. The system provides the joint, interoperable, assured connectivity for warfighters in operations in all levels of conflict – a capability not available through other planned military communication networks. AEHF provides much greater capacity and more flexible coverage than its predecessor, Milstar, while assuring operational continuity through compatibility with the Milstar constellation.

AEHF delivers the flexible connectivity-on-demand needed to achieve 21st century objectives – swift, decisive outcomes based on information dominance. On-orbit processing provides the flexibility needed to rapidly establish and reconfigure networks to meet dynamic command and control requirements. Electronically steerable antenna beams and flexible channel-to-beam mapping allows the delivery of capacity when it's needed, where it's needed. EHF frequencies, onboard digital processing, and highly directional antennas reduce the probability of jamming and intercept, assuring secure, reliable communications. Satellite crosslinks enable flexible global communications without the need for fixed site ground gateways.

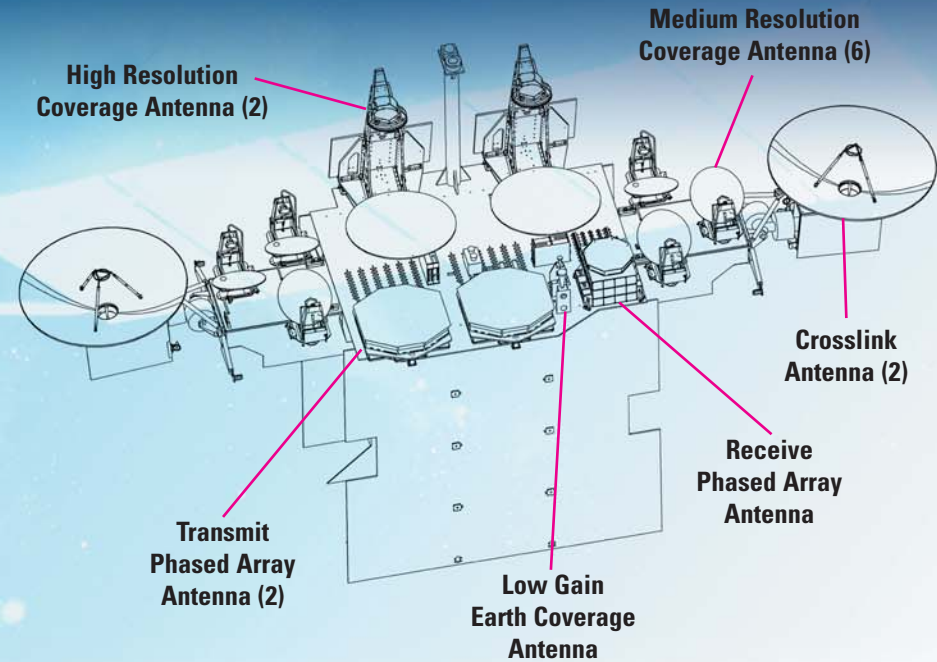
Rapidly deployable airborne, maritime, vehicular, and manpackable AEHF terminals put this connectivity in the hands of warfighters worldwide, delivering communications anytime, anywhere.

The system is compatible with existing terminals and will support future terminals as they are deployed.

The AEHF system is integrated, tested and launched by Lockheed Martin; Northrop Grumman Space Technology builds and integrates the AEHF payload – processors, antennas, radio frequency subsystems and crosslinks. The payload delivers the new AEHF communication services, providing data rates up to 8.192 Mbps per user, Milstar Low Data Rate (LDR) services (75-2400 bits per second), and Milstar Medium Data Rate (MDR) services (4.8 Kbps-1.544 Mbps).

The AEHF antenna suite provides several coverages that are tailored to meet unique warfighting requirements. Low gain earth coverage antennas deliver communications anywhere within the satellite's footprint. The phased array antenna provides super high-gain earth coverages, enabling worldwide unscheduled access for all users, including small portable terminals and submarines. Six medium resolution coverage antennas (MRCA) are provided by dwelling spot beam antennas, and up to 24 time-shared MRCA coverages are provided by phased array antennas. Two high resolution coverage area antennas enable operations in the presence of in-beam jamming.

### **Advanced EHF: secure command and control for the 21st century**



	<b>Milstar (LDR &amp; MDR)</b>	<b>Advanced EHF</b>
<b>Frequency</b>	EHF (44 GHz) uplink SHF (20 GHz) downlink	EHF (44 GHz) uplink SHF (20 GHz) downlink
<b>Data Rates</b>	75 bps - 1.544 Mbps	75 bps - 8.192 Mbps
<b>System Security</b>	Terminal-to-terminal COMSEC TRANSEC-governed frequency hopping	Terminal-to-terminal COMSEC TRANSEC-governed frequency hopping
<b>Interoperability</b>	Milstar LDR & MDR modulation modes	Milstar LDR, MDR & AEHF modulation modes
<b>Antenna Coverages</b>	1 earth coverage beam 5 agile beams 2 narrow and 1 wide spot beams 2 nulling spot beams 6 spots (distributed user coverage)	1 earth coverage beam 4 agile beams 24 time-shared spot beams 2 nulling spot beams 6 dwelling spot beams
<b>Crosslinks</b>	2 per satellite (each bi-directional) ~ 10 Mbps	2 per satellite (each bi-directional). Compatible with Milstar & AEHF requirements ~ 60 Mbps

