HUGHES
An EchoStar Company

Hughes WS-3000 MAX

UAV BVLOS Communication Platform

Reliable, secure, and adaptive communications are both advantageous and mission critical in today's dynamic operational landscape. Hughes is proud to introduce a breakthrough in 4G/5G Beyond Visual Line of Sight (BVLOS) communications for Unmanned Aerial Vehicles (UAVs), a next-generation, compact, multi-network communications platform that is engineered for demanding operational environments.

KEY FEATURES AND TACTICAL ADVANTAGES

Innovative and Adaptable BVLOS Communications

Designed for integration into UAV platforms, our architecture ensures persistent connectivity across vast operational theaters.

Extensible Resilient Comms Platform within a Low SWaP

Embed in UAVs to form on-board networking and communications backbone

WS-MAX is Designed to Support Three Onboard Capabilities

- Capable of hosting up to three radios or additive customer daughter cards
- Two additional radios via external ethernet and/or USB (up to five channels in total)
- Swap capabilities to adapt solution to mission parameters

Support Multiple Concurrent communications Links to Form a Highly Resilient Comms Solution

Low Size, Weight, and Power (SWaP)

Optimized for tactical deployment, our platform delivers high performance in a compact footprint which is ideal for Group 1-3 UAVs and other SWaP-constrained platforms.

Advanced Cellular Technology

Built on the latest production-grade 4G/5G cellular technology, our platform possesses carrier support for T-Mobile, AT&T, Verizon, and Boost, enabling rapid deployment across North America with an additional option for global network reach.

Network Resiliency Through Public/Private Dual SIM Support

Supports dual Subscriber Identity Modules (SIMs) to operate in Public and Private 5G networks and can autonomously switch between available networks.

GEO/MEO/LEO Satellite Integration

Full support for Third Generation Partnership Project (3GPP) Non-Terrestrial Network (NTN) standards, unlocking global coverage and low-latency communications

Networking

IPv4/IPv6, Quality of Service (QoS), SD-WAN capable

Secure Tunnel Backbone

End-to-end NIST standard encryption for uncompromised data integrity and confidentiality. Stateful firewall.

Edge Artificial Intelligence/Machine Learning (AI/ML)

Execute edge AI workloads directly, enabling real-time decision-making, threat detection, and autonomous mission support.

Edge Compute and Application Hosting

Capable of running microservices and third-party applications.

TAA-Compliant

Fully aligned with Trade Agreements Act (TAA) requirements for federal procurement.

FUTURE-READY ROADMAP

The Hughes innovation pipeline ensures continued relevance and superiority in future operational scenarios:

GPS-Denied Navigation

Optional modules for robust location services in contested or degraded GNSS environments.

Custom Waveform Enablement

Tailored communications to mission-specific parameters with flexible waveform support.

Advanced Networking and Routing

- Make-before-break (MBB) for seamless network transitions
- Predictive AI handoff and routing: traffic pre-emptively hands off before edge of coverage and connectivity loss
- Advanced traffic flow management and packet duplication for guaranteed delivery and QoS

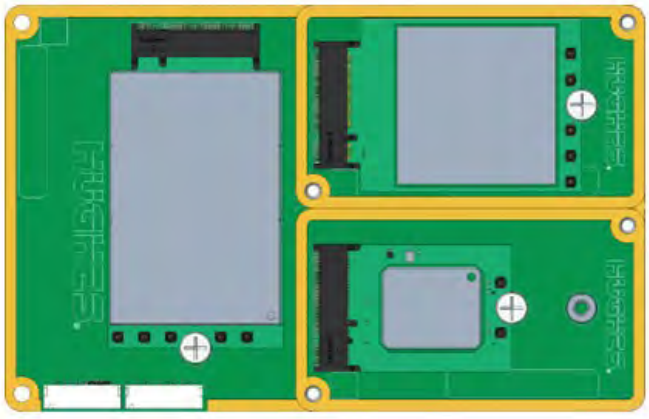
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Technical Specifications

Processor Subsystem	Quad ARMv8 A73 at 2.2 GHz, 2 GB DDR4, 8 GB eMMC (up to 128 GB)
Secure Network Gateway	Hughes GUARDIAN Secure Tunnel Backbone FIPS 140-3 Level 2 TPM
External Interfaces	USB 3.0/2.0 OTG (JST-GH) UART (RS-232 option) (JST-GH) 2x 10/100/1000 Ethernet (JST-GH) Dual nano-SIM (4FF); + eSIM
SD-WAN Throughput	More than 250 Mbps
Power Input	9V-30V DC Input (JST-GH)
Operational Temperature	-40 °C to +85 °C
Weight	149g
Dimensions (W x L x D)	70 x 125 x 20 mm (est.)

Capability Slots Available

Primary Capability (M.2)	USB3.0/2.0 PCI Express 3.0 x1 Lane Dual SIM Interfaces + eSIM DC Power
Capability Expansion Interface (2x M.2)	USB3.0/2.0 PCI Express 3.0 x1 Lane SPI/I2C/GPIOs DC Power



MAX
70 x 125mm

Radio Capabilities

Cellular Radio Access	5G Sub.6 FDD and TDD operation in 5G NR stand-alone • DL: 223 Mbps • UL: 123 Mbps LTE Cat 4 • DL: 200 Mbps • UL: 105 Mbps
Cellular Bands	5G FR1: n1/n2/n3/n5/n7/n8/n12/n13/ n14/n18/n20/n25/n26/n28/n29/n30/ n38/n39/n40/n41/n48/n53/n66/n67/ n68/n70/n71/n75/n76/n77/n78/n79/ n90/n91/n92/n93/n94 4G LTE: B1/B2(25)/B3/B4(66)/ B26(5/18/19)/B7/B8/B12(17)/B13/ B14/B20/B25/B28/B29(DL)/B30/ B32(DL)/B34/B38/B39/B40/B41/B46/ B48(CBRS)/B53/B67(DL)/B68/B70/ B71/B75(DL)/B76(DL) 3G: B1/B2/B4/B5(6/19)/B8
Cellular Throughput	5G SA: 4.1 Gbps DL / 900 Mbps UL 5G NSA: 4.9 Gbps DL / 550 Mbps UL 4G LTE: 2 Gbps DL / 211 Mbps UL
LTE/5G Transmit Power	23 dBm (Power Class 3) 26 dBm (Power Class 2 in B41/n41)

Cellular Capabilities with Telit FN990B40

Cellular Radio Access	• 5G 3GPP Rel 17 sub-6 FDD and TDD, SA and NSA operations • 5G core network Opt. 3a/3x and Opt. 2 • 4G: 7-CA up to 20 layers DL/2-CA UL, 256-QAM DL/UL • 3G: 3GPP WCDMA Rel 99, HSDPA, HSUPA, HSPA+ and DCHSPA+ (42DL/11UL Mbps)
Cellular Bands	5G FR1: n1/n2/n3/n5/n7/n8/n12/n13/ n14/n18/n20/n25/n26/n28/n29/n30/ n38/n39/n40/n41/n48/n53/n66/n67/ n68/n70/n71/n75/n76/n77/n78/n79/ n90/n91/n92/n93/n94 4G LTE: B1/B2(25)/B3/B4(66)/ B26(5/18/19)/B7/B8/B12(17)/B13/ B14/B20/B25/B28/B29(DL)/B30/ B32(DL)/B34/B38/B39/B40/B41/B46/ B48(CBRS)/B53/B67(DL)/B68/B70/ B71/B75(DL)/B76(DL) 3G: B1/B2/B4/B5(6/19)/B8
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For more information, visit
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