Aukua MGA2510

Optimising Global SATCOM Performance

Global Satellite Testing

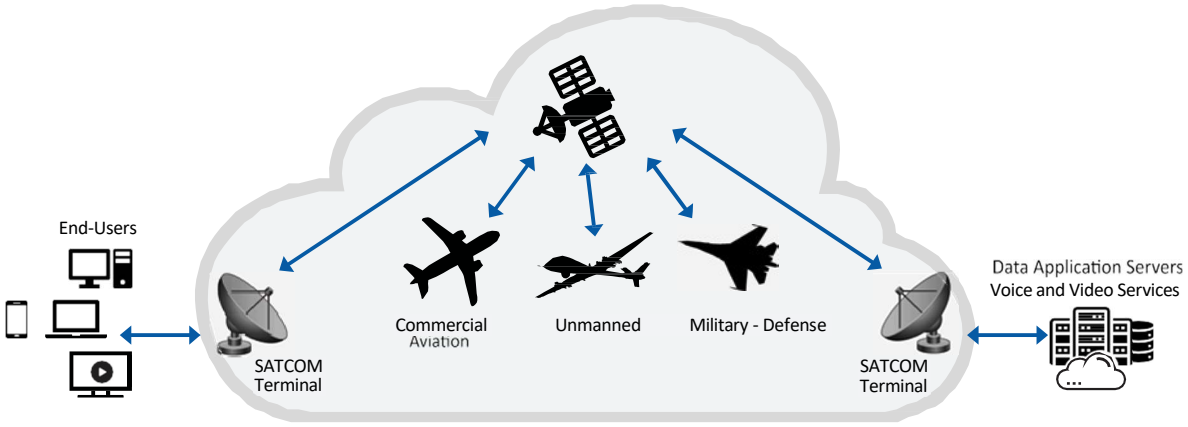
A global satellite operator leveraged Aukua's MGA2510 Network Impairment Emulator to validate and optimise their satellite communication systems before deployment, ensuring real-world performance and reliability.

The operator needed to guarantee seamless connectivity and robust performance across diverse satellite network conditions while mitigating risks associated with deployment.

Aukua's MGA2510 Network Impairment Emulator provided an advanced, repeatable lab environment to recreate real-world satellite network conditions, allowing for precise testing and performance optimisation.

The operator used the MGA2510 to replicate:

Latency Effects	Simulated high-latency conditions typical of geostationary satellites (250ms or more) to assess protocol performance.
Bandwidth Constraints	If the same test is run multiple times under identical conditions, it should produce consistent results, allowing for comparison and identification of trends.
Atmospheric Conditions	Utilized BER to account for signal attenuation due to rain, multipath fading, and other environmental factors and introduced link flapping to emulate intermittent or unexpected outages.
Interference Analysis	Introduced controlled delay, jitter, and packet loss to evaluate system resilience under adverse network conditions.



Example Aerospace and Satellite Communications Network

Aukua Systems
gch-services.com

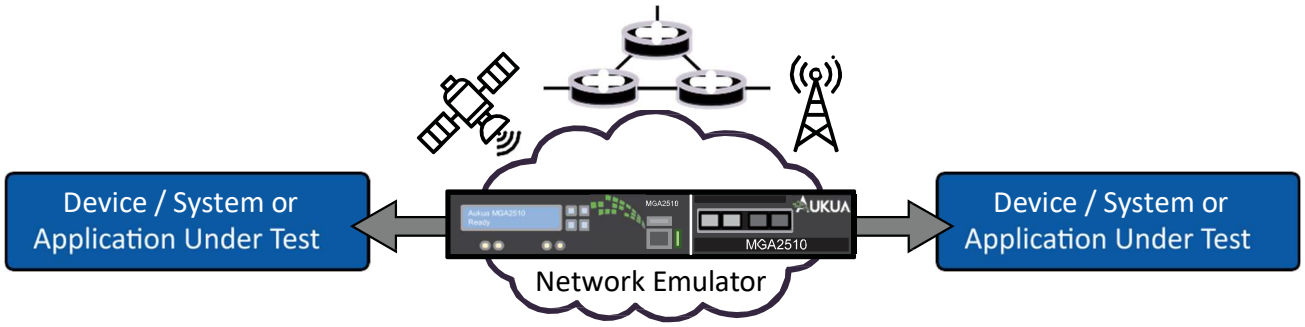
+44 1628 559980
sales@gch-services.com

© 2015-2025 Aukua Systems, Inc. All rights reserved.

SBSATCOM-0425A

Solution Highlights

- **Accelerated Time-to-Market –** Comprehensive lab-based testing reduced reliance on costly live satellite trials, speeding up deployment.
- **Reduced Risk –** Identified and resolved performance bottlenecks before deployment, preventing costly failures.
- **Versatility & Scalability –** Enabled rigorous testing across GEO (Geostationary Earth Orbit), MEO (Medium Earth Orbit), and LEO (Low Earth Orbit) satellite scenarios, ensuring adaptability.
- **Optimised Protocol Performance –** Fine-tuned network protocols to maximize bandwidth utilisation and maintain stable connectivity under challenging conditions.
- **Reduce Mean Time to Repair (MTTR) –** When customer issues occurred, there was a proven method to quickly reproduce, fix, and then test fixes against the customer's network conditions.



Connects inline (bi-directional) with the system under test and recreates real-world network delay and impairments.

Real-world Condition	Aukua Network Emulation Impairment
Rain Fade & Weather Effects	Packet Drop, Jitter, Bandwidth Throttling
Ionospheric Scintillation	Jitter, Delay, Bit Error Rate (BER)
Multipath Fading	Delay
Solar Activity & EMI (Electromagnetic Interference)	Bit Error Rate, Burst Errors
Satellite Congestion - CCI (Co-Channel Interference) ACI (Adjacent Channel Interference)	Bandwidth Throttling, Link Flap, Packet Corruption
LoS (Line of Sight) Obstructions	Link Flap, Jitter, Packet Drop
Intentional Jamming	Burst Errors, Packet Loss, Bandwidth Packet Drop, Packet Modification
Hardware Failure / Ground Station Issues	Bit Errors, Packet Corruption

Benefit Highlights

Aukua's industry-leading network emulation technology empowered the operator to proactively address real-world challenges, ensuring their satellite communication system met rigorous performance standards before deployment.

Product descriptions, features and specifications are subject to change without notice.
© 2015-2025 Aukua Systems, Inc. All rights reserved. SBSATCOM-0425A