NEARSPACE LAUNCH

EyeStar Radio and Black Box

iridium®

SYSTEMS SNAPSHOT

- Heritage of 180+ EyeStar products flown
- 24/7 connection to satellite
- Latency of seconds
- Global connectivity
- Network in operation for over 25 years
- Asset Tracking
- Asset Health and Safety
- 100% mission success

PUBLICATIONS

"Black Box" Beacon for Mission Success, Insurance, and Debris Mitigation

GlobalStar Link: From Reentry Altitude and Beyond

TSAT GlobalStar ELaNa-5 Extremely Low Earth Orbit (ELEO) Satellite

FAQ for NSL and Iridium

CUSTOMERS

NASA

MILLENNIUM SPACE SYSTEMS
A Boeing Company

U.S. AIR FORCE

NANORACKS

SPACEFLIGHT

BOSTON UNIVERSITY

QUALITY ASSURANCE

- ISO90001: Quality management systems
- FCC: Part 15, 25 Compliant
- MIL-SPEC parts
- 300 hour steady state burn in

About NSL

NearSpace Launch Inc. (NSL) has flown 800+ systems in the past five years, with 100% mission success for all commercial and research missions. NSL manufactures and produces Iridium enabled communication systems (EyeStar radios), ThinSats, CubeSats, and Black Boxes. NSL was founded following the successful mission of TSAT. The mission proved one could effectively connect 24/7 to an NSL EyeStar radio via the Globalstar constellation. Heritage of 180+ EyeStar radios in space.

About Iridium

Iridium operates a low-earth-orbit (LEO) constellation of 40+ satellites and provides mobile satellite voice and data products and service packages. Customers around the world in industries such as government, emergency management, marine and oil & gas rely on Iridium satellites constellation to be smarter and faster.

Iridium EyeStar S4 Crossover

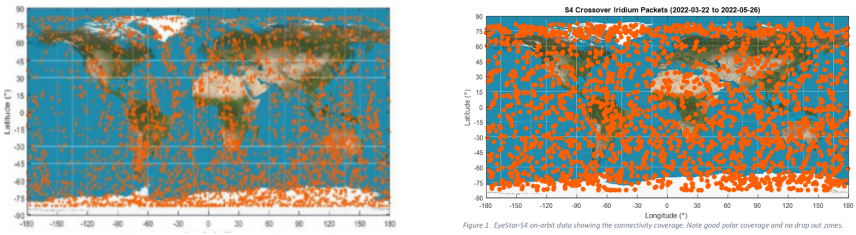

Figure 1 EyeStar-S4 on-orbit data showing the connectivity coverage. Note good polar coverage and no drop out zones.

About EyeStar & Black Box

The NSL/Iridium radios provide continuous connectivity for your satellite in orbit no matter where in space it is, and anytime (24/7 coverage). Real-time data at low latency of a few seconds is critical for mission success during regular, discovering satellite health problems early, making real-time data available for payload trigging, failure analysis, or monitoring attitude performance. The Simplex radios have worked well in polar and lower inclinations and for tumbling spacecraft up to 15 rpm. Packet throughput is over 90%, over 100% of the earth (see AIAA Papers #11). No ground station is necessary with the NSL radio since all secure data is available on the internet in near real-time from the Iridium commercial ground stations.

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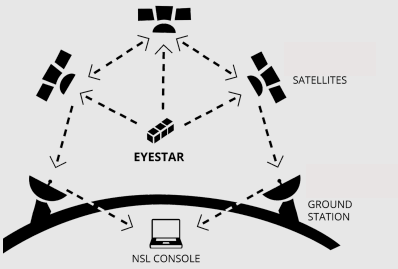
NSL HERITAGE

100%
TOTAL MISSION SUCCESS RATE

180+
SUCCESSFUL EYESTAR MISSIONS

90+
SATELLITE CONSTELATION

800+
SYSTEMS AND SUB-SYSTEMS



CONTACT

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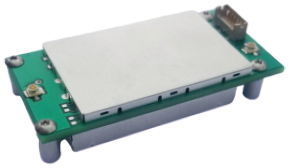
EyeStar-S4 (Half Duplex)

End-to-End System, 24/7 connected to Iridium constellation, with latency of seconds , Max 600 Kbytes/day, Anywhere-Anytime, 100% On-orbit success, Flight Ready, TRL 9, Compliant with new FCC requirements

EyeStar-Tag

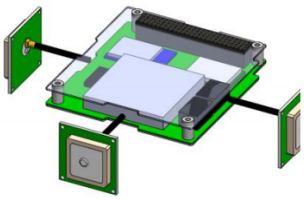


The 22 gram Tag and S4 can ID its satellite with Integrated GPS within a few minutes after turn-on while in LEO orbit from pole to pole 24/7. The Tag can track damaged satellites or identify problems early, several hours before ground station contact. TLE can be produced and sent automatically to the 18th Squadron and for the payload team within minutes of orbit deployment. The Black Box subsystems are TRL 9.

Black Box-Patch

140 gram 10x8.3x0.9cm Black Box and S4 can ID its satellite with GPS within a few minutes after turn-on while in LEO orbit from pole to pole 24/7. The Black Box is an independent barnacle that can track damaged satellites or identify problems early, several hours before ground station contact. TLE can be produced and sent automatically to the 18th Squadron and for the payload team within minutes of orbit deployment. The Black Box subsystems are TRL 9.

Black Box PC 104



9x9.6x1.3 cm Black Box and S4 can ID its satellite with GPS within a few minutes after turn-on while in LEO orbit from pole to pole 24/7. The Black Box is an independent system that can track damaged satellites or identify problems early, several hours before ground station contact. TLE can be produced and sent automatically to the 18th Squadron and for the payload team within minutes of orbit deployment. The Black Box subsystems are TRL 9.

Black Box-Standard

140-gram Black Box and S4 can ID its satellite with GPS within a few minutes after turn-on while in LEO orbit from pole to pole 24/7. The Black Box is an independent barnacle that can track damaged satellites or identify problems early, several hours before ground station contact. TLE can be produced and sent automatically to 18th Squadron and for the payload team within minutes of orbit deployment. The Black Box subsystems are TRL 9.

	UNIT	EYESTAR TAG	BLACK BOX PATCH	BLACK BOX PC104	BLACK BOX STANDARD
SIZE L X W X H	cm	5.3 X 2.5 X 0.9	10 X 8.3 X 0.85	9 X 9.6 X 1.3	8.9 X 7.1 X 4.1
WEIGHT	g	22	140	NA	350
POWER	v	7.2	7.2	7.2	7.2

PRODUCT	EYESTAR S3	FLIGHT PROCESSOR	RT SHIELDING	SERIAL INTERFACE	A/D INPUTS	FRAME	SIMPLEX RX	NSL GPS	3RD PARTY GPS	DC-DC ISOLATION	BATTERIES	SOLAR ARRAY	9 AXIS IMU	HORIZON SENSOR	PARTICLE DETECTOR
BLACK BOX PATCH	✓	✓	✓	✓	✓	✓	✓	✓	●	✗	✓	✓	✓	✓	✓
BLACK BOX TAG	✓	✓	✓	✓	✗	○	○	✓	○	✗	✗	✗	○	○	○
BLACK BOX STANDARD	✓	✓	✓	✓	✓	✓	●	●	✓	●	●	●	●	○	●
BLACK BOX PC104	✓	✓	✓	✓	✓	✗	✓	✓	●	●	●	○	✓	●	●

✓ INCLUDED ✗ NOT INCLUDED ● INTEGRATED OPTION ○ ADD ON OPTION