Bracer™
From QINETIQ

Communication.
Secured.

Keep your communication lines open and information secure

Bracer™ sets the standard in secure commercial satellite communication
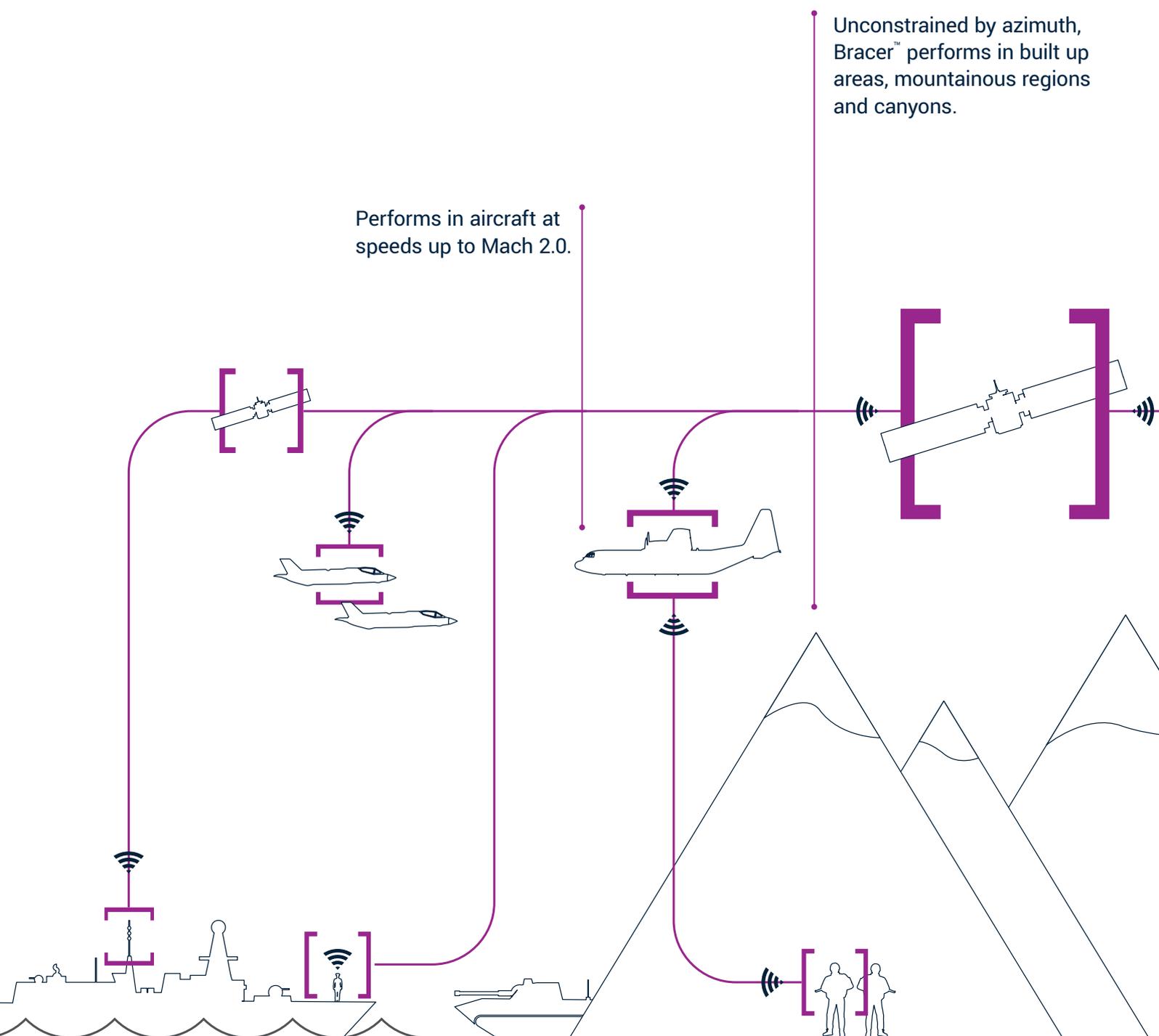
Designed for discretion and engineered to operate in the planet's harshest environments, it is the most robust, effective and reliable commercial TacSat in the market.

Powered by Iridium satellite technology, the 100% BLOS, push-to-talk device keeps you connected through a highly-resilient network, while end-to-end encryption protects your information and allows you to operate without constraints.

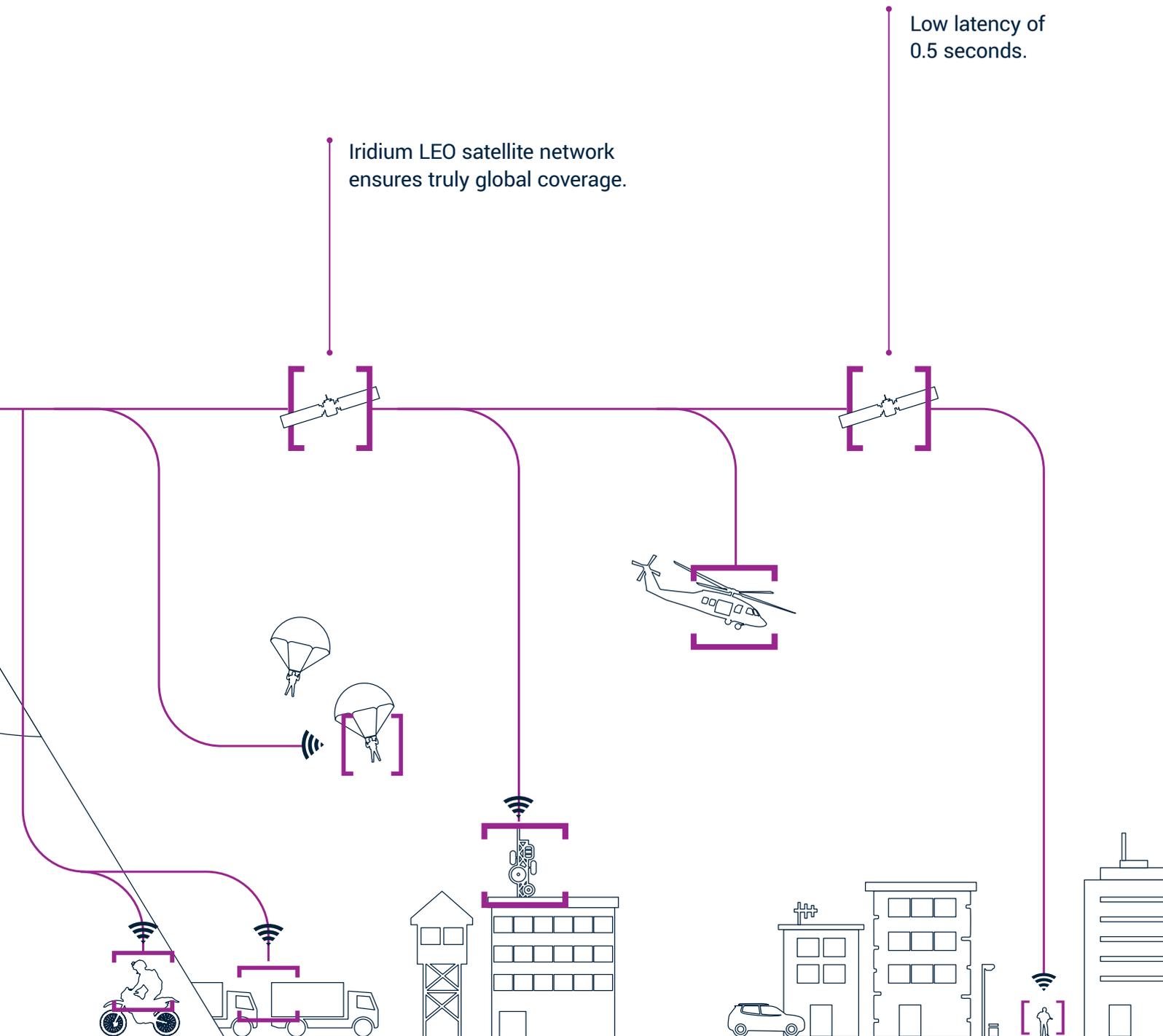When information security is critical, trust Bracer™.

Bracer™ in action

Unconstrained by azimuth, Bracer™ performs in built up areas, mountainous regions and canyons.

Performs in aircraft at speeds up to Mach 2.0.

Engineered to excel in the most harsh environments, Bracer™ performs in aircraft up to Mach 2.0 speeds and facilitates effective communication in urban canyons, mountainous regions and deep valleys. Powered by the Iridium Low Earth Orbiting satellite network, Bracer™ keeps global teams connected when communication is critical.

With an unlimited number of handsets available for each talkgroup, and each handset configurable with up to 15 separate groups at any one time, Bracer's ability to seamlessly connect global teams makes it an essential part of any mission.

Low latency of 0.5 seconds.

Iridium LEO satellite network ensures truly global coverage.

Bracer™ has been engineered to expertly serve military, commercial and aid & emergency personnel through a range of innovative product features

Extreme resilience

Bracer™ delivers guaranteed performance in some of the harshest environments in the world across land, sea and air. Rated IP66 and IP67, Bracer™ can withstand extreme conditions, keeping global teams connected when it matters most.

Compact carrying

Bracer's optimised Size, Weight and Power (SWaP) ratio means it can be deployed easily and used discreetly.

Affordability without compromise

Bracer's use of commercial satellite technology guarantees elite functionality at a fraction of the cost of military alternatives — so that keeping connected doesn't have to affect the bottom line.

High availability

Powered by the Iridium Low Earth Orbiting satellite network, Bracer's 100% BLOS capability keeps global teams connected, when constant communication is critical.

Superior security

Bracer™ applies end-to-end encryption powered by QinetiQ, ensuring team communications remain secure and information stays safe.

Instant C2

With Bracer™, you can configure global coverage in seconds, so that when time is of the essence, securing communication lines is simple. Putting the power to configure coverage in the hands of the user, Bracer™ allows instant handset reconfiguration over the air.

Third party integration

Bracer™ is universally interoperable with a range of covert, discreet and overt audio ancillaries; letting you choose the best radio to meet mission-specific tasks.

Bracer™ secure BLOS PTT radio

System overview

- Bracer™ satellite radio communications device and service provides end-to-end encrypted (AES 256 FIPS 140-2 level 3), beyond line of sight (BLOS) voice in one-to-many push-to-talk radio mode, Position Location Information, and SOS emergency alerting.

- Responsive, reliable, simple and secure, Bracer™ increases reactiveness, enhances situational awareness and passage of information within the operational domain, improving the ability to prosecute effective command and control and increase the speed of the decision-making cycle.

Requirement areas

- The system has a range of use areas that include supporting early entry expeditionary and dislocated forces, wide area communications, crisis response, liaison tasks, enduring operations across the spectrum of military commitments, and training exercises.

- Example market areas where Bracer™ would be applicable include: defence, government agencies, coast guard, border forces, aid organisations, and emergency services.

Situational awareness

- Bracer™ enables end-to-end encrypted Position Location Information to be transmitted from each device, which can be visualised through a tethered data device in the tactical, operational or strategic domains.

- At 500ms latency it is equivalent to the fastest terrestrial based tracking systems and includes an emergency alert function.

Iridium satellite network

- As a system Bracer™ is powered by the Iridium satellite constellation using the push-to-talk service to enable rapidly deployable situational awareness and secure command and control in one system.

- As a satellite service it negates the requirement for expensive range extension equipment, reducing the manpower, training, planning, physical security and logistics associated with deploying such equipment.

Truly global coverage

- The satellite constellation enables communications from anywhere to everywhere in the world.

- Coverage areas are controlled by the user, not the service provider, allowing for movement of Talkgroup coverage within seconds in line with the users operational demand, increasing responsiveness as real-time situations emerge or change.

Mobile platform communications

- The Iridium network tolerates platform movement up to Mach 2.0 and can operate through rotor blades and is ideal for BLOS communications on aircraft, maritime vessels, vehicles and personnel.

- Bracer™ can be simply carried onto a platform (land, maritime, air*), reducing cost and timelines associated with a full integration process. This allows for rapid use from platforms of opportunity.

Environmental

- Bracer™ is adapted to operate in extreme environments with a level of robustness that is designed for the most demanding scenarios.

- Tested to IP66 (high power jet washable) and IP67 (submersible to 1m for 30mins).

- It is also ideally suited for challenging communication environments such as, at sea, mountainous regions, deep canyons and built up areas.

Low SWaP

- The handheld device is low size, weight (400g) and power (7 Watts).

- The battery is integrated into the device and can be recharged via, mains, 12V DC and USB.

- The internal rugged antenna is small (approx. 3cm in height), with remoting options for body-worn, in-building and vehicle connectivity.

Simplicity

- Bracer™ has been built with simplicity in mind. Easy to train and simple to use by non-vocational communicators, reducing overheads normally associated with extensive training and subsequent skill fade experienced with other tactical radio systems.

Bracer™ key features

1. Ruggedised casing

- Tough polycarbonate fully sealed casing for maximum impact protection with rubber over-mould for handheld comfort

2. LED indicator

- Multi-colour LED status indicator

3. Internal antenna

- Ruggedised internal high gain Iridium antenna, safe for body worn use

4. SOS

- Emergency SOS button
- Protective cap for accidental activation
- Sends SOS and PLI message to all active radios on PTT Talkgroup (secure TGs only)

5. Headset volume

- Volume up/down buttons

6. Soft keys

- Status sensitive quick selection keys

7. Navigation keypad

- Enter button (centre)
- Menu navigation keys (up, down, left, right)

8. Multi-function button 2

- Send tone 2
- Send instantaneous PLI
- Zeroise (multi-press)

9. SIM card slot

- Sealed removable SIM panel
- Requires Iridium SIM card to enable telephony services**

10. LCD display

- Variable LED backlight
- Battery life/charging
- Iridium signal strength
- Talkgroup status
- Talker ID and PLI
- Talkgroup select
- Secure mode indication
- Settings menu

11. On/off

- Multi-function power button
- Selectable power states:

    - Disabled
    - Off
    - Standby
    - On

12. Integral GPS/GNSS antenna

- Integral GPS/GNSS antenna for PLI

13. Integral PTT button

- Activate transmit audio into talkgroup

14. Intergral battery

- 6000mA hour capacity
- Lithium ion
- 3 days, mission life (8:1:1 duty cycle)
- USB , DC or AC charge (with adapter)

15. Multi-function button 1

- Send tone 1
- Zeroise (multi-press)

16. Power/config connector

- Charging , USB configuration (PC), USB token, PLI tether

17. Audio PTT connector

- Headset PTT audio connection
- Multi-headset compatibility via adapter cables

18. External antenna connector

- SMA connection for external Iridium antenna

19. Lanyard tether point

- Integrated slot for lanyard (included)

Footnotes:
* subject to airworthiness assessments
** subject to future firmware upgrades

Bracer™ specification*

General

Services	• Voice: One-to-many, BLOS, Iridium™ push-to-talk (insecure** and secure modes)
	• Secure Position Location Information (PLI) and emergency alerting (SOS)
	• Simultaneous voice and PLI
	• Multiple PTT talkgroups
Frequency range	• Iridium 1616–1626.5 MHz L-band
Waveform	• TDD, TDMA/FDMA
Transmit Power	• 7 Watt (peak)
Audio latency	• 500ms
Net entry time	• 500ms from hot talkgroup (open)
	• 2 seconds warm talkgroup (idle)
Network coverage	• Truly global, user managed
	• 6 talkgroup sizes (100,000 Sq km to 2.5 million sq km)
Internal GNSS	• Multi-constellation open service L1/E1/B1 GPS, Galileo, GLONASS, BeiDou
Iridium PTT talkgroups	• Multiple talkgroups per customer
	• 15 talkgroup allocations per radio
	• Over 1,000 handsets per talkgroup
	• Priority talkgroup assignment (pre-empt)
	• Customer to customer talkgroup sharing (single net)
Talkgroup management	• End user managed via web portal command centre
	• Flexible assignment of radios to talkgroups
	• Dynamic over the air update of radio talkgroup assignments (20 second network wide update time)
	• 5 x tariffs from small (100,000 sq km) up to jumbo (2.5 million sq km) with flexible coverage in up to 10 polygon areas on web map per talkgroup
Iridium satellite airtime	• Handset subscription
	• Talkgroup subscription
Encryption key management	• PC compatible security toolkit software
	• Radio initialisation and key generation/distribution
	• User authentication assignments
Compatibility	• Fully compatible with Iridium Extreme 9575PTT handset (in insecure** mode)
Certifications	• CE, FCC, UL

Security

Insecure mode	• Iridium™ AES 256 SatCom bearer link encryption
Secure mode	• Additional layer of customer-keyed AES 256 end-to-end content encryption for push-to-talk and PLI
Certification	• FIPS 140-2 level 3 (pending)
Handset key management	• Selection of insecure (link encrypted) or secure (link and end-to-end encrypted) talkgroups
	• User authentication
	• Zeroize

Footnotes:
*subject to change
**reduced protection to Iridium PTT network encryption layer only

Interfaces

Power input	• 5 to 15 VDC (DC or AC charging adapters)
	• USB v2 compatible via cable accessories
Key management	• USB device/host port via cable accessories
PLI / C2 input/output	• USB interface to PC/tablet
	• PLI output (all received stations plus own position, COT or KML)
	• C2 I/O (SOS acknowledgement remote cancel)
Audio input/output	• Bespoke PTT audio interface for:
	- U-229 6 pin military audio connector
	- 3.5 mm headset jack (mobile phone earpiece)
	- Lightweight ear hanger headset
	- Software configurable for other headsets
	- Multi-headset compatibility via cable accessories
Internal antennas	• Rugged high gain internal Iridium antenna
	• Integral GNSS antenna
External Iridium antenna	• Optional use of external Iridium antenna
	• SMA connector, 50Ω
	• Adaptor cable for TNC
SIM card	• User-accessible SIM card slot

Power

Battery	• Internal rechargeable Li-ion battery pack (non-user accessible)
	• 6000 mAh nominal capacity
Mission life	• 24hrs continuous talkgroup use on a 8:1:1 duty cycle
Charge time from flat	• USB: 6 hours
	• 12V vehicle or AC charger: 3 hours

Physical

Dimensions	• 170 x 76 x 33 mm (excluding antenna)
Weight	• 400g
Material	• UL rated PC-ABS with TPE rubber over-mould

Environmental

Temperature	• Operating: -10 to +55°C
	• Battery Charging: 0 to +55°C
	• Storage: -40 to +60°C
Ingress protection	• IP66
	• IP67 to 1-m immersion
	• (IEC/EN 60529)
Vibration	• Tested to MIL-STD-810G / Def Stan 00-035 for wheeled/tracked operation & helicopter transportation
Shock	• Tested to MIL-STD-810G / Def Stan 00-035 to 40g/11ms
Air transportation	• MIL-STD-810G / Def Stan 00-035 for pressurised/unpressurised transportation

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