



IRIDIUM

**9522A
L-BAND TRANSCEIVER
USER'S GUIDE**



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1 Product Overview

The 9522A L-Band Transceiver (9522A) is designed to be integrated into a specific application with other hardware and software to produce a solution designed for a specific application or vertical market. Some examples of these solutions include a maritime voice telephony terminal or a vehicle tracking solution.

The 9522A functionally supports all of Iridium's voice and data services. Applications can be built to use one or multiple services using the voice and data interfaces. The 9522A is a functional replacement to the 9522 "Sebring" L-Band Transceiver. However it should be noted that there are some differences to the voice interface.

The 9522A is regulatory approved for FCC, Canada, and CE. This allows the 9522A to be integrated into a variety of subscriber products, or retrofitted into existing L-Band Transceiver based products. These products, when integrated together will require Regulatory testing to be conducted by the integrator. Please note that the 9522A is only approved for use with an antenna that has a gain of ≤ 3 dBi.

The 9522A is essentially provided as a 'black box' with all interfaces provided via a DB25 connector. The product provides the core transceiver module and SIM card reader. All other functions and hardware such as keypad, display, power supply, antenna etc. must be provided by the solution developer. The DB25 provides the following interfaces and connections:

- Analog Audio
- Control / Digital Audio
- RS232
- Power Input
- On / Off

2 Export Compliance Information

This product is controlled by the export laws and regulations of the United States of America. The U.S. Government may restrict the export or re-export of this product to certain individuals and/or destinations. For further information, contact the U.S. Department of Commerce, Bureau of Industry and Security or visit www.bis.doc.gov.

3 Standards Compliance

The 9522A is designed to comply with the standards for Radio Emissions Compliance, Electromagnetic Compatibility, and AC Safety in the United States, European Union and Canada.

3.1 FCC Compliance

The 9522A is certified under 47 CFR Part 25 as FCC ID:Q639522AC. It also complies with Parts 2 and 15 of the FCC Regulations. Operation is subject to the condition that this device does not cause harmful interference. Any changes or modifications, including the use of a non-standard antenna, not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

IMPORTANT: To comply with FCC RF exposure requirements, a minimum separation of 20 cm is required between the antenna and all persons.

3.2 CE Compliance

This product complies with the European Community Council Directive for R&TTE, 99/5/EC, provided that the integrator/user adheres to the instructions detailed in this 9522A Interface Specification. This product is in compliance with applicable ETSI standards. Compliance with the requirements of ETSI EN 301 489 requires the use of a shielded digital data interface cable.

4 Physical Specifications

The 9522A is depicted in Figure 1 below.

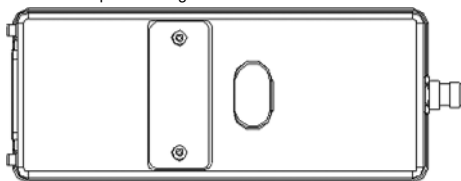


Figure 1: Top View

4.1 Dimensions

The overall dimensions of the 9522A and its weight are summarized in Table 1 below.

Table 1: Mechanical Dimensions

Parameter	Value
Length (including antenna connector)	216.1mm (8.51")
Length (excluding antenna connector)	196.4mm (7.73")
Width	82.6mm (3.25")
Depth	39.0mm (1.54")
Weight (approximate)	659g

4.2 Dimensional Views

Dimensioned views of the 9522A are shown in Figures 2-5 to follow.

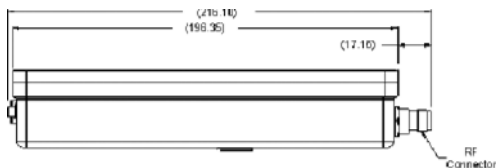


Figure 2: Side View

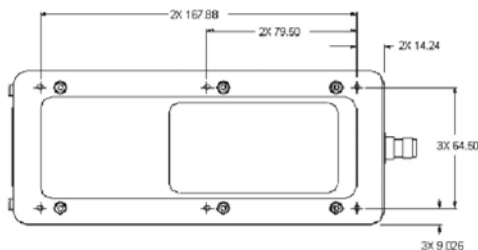


Figure 3: Bottom View

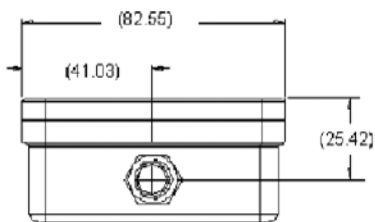


Figure 4: Antenna Connector End View

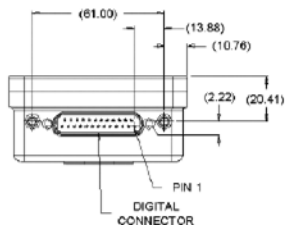


Figure 5: Multi-Interface Connector End View

4.3 Interface Connectors

The 9522A incorporates three interface connectors.

- Multi-Interface Connector (located on the end of the 9522A)
- Antenna Connector (located on the end of the 9522A; opposite to the multi-interface connector)
- Subscriber Identity Module (SIM) Chip Connector (located beneath a cover plate atop the 9522A)

4.3.1 Multi-Interface Connector

The multi-interface connector is a 25 pin D-subminiature type that includes four interfaces.

- DC Power
- Control/Digital Audio (DPL bus)
- RS232 Data
- Analog Audio

The pin out information for this connector is given in Table 2 below.

Table 2: 25-way connector pin-out

Contact	Signal	Description
1	EXT_ON_OFF	External connection for On / Off key input to 9522A
2	EXT_11HZ	90ms "frame sync" signal (used in testing)
3	EXT_GND	Power Ground input to 9522A
4	EXT_PWR	Power input to 9522A
5	SPKR_AUD	Speaker audio output from 9522A
6	DA_TX	PCM digital audio output from 9522A
7	DF_RI	Data / Fax Ring Indication output from 9522A
8	DF_RTS	Data / Fax Request to Send input to 9522A
9	DF_S_TX	Data / Fax (UART) data input to 9522A
10	DF_DCD	Data / Fax Data Carrier Detect output from 9522A
11	DA_FS	PCM digital audio frame sync output from 9522A
12	DA_CLK	PCM digital 2.048MHz audio clock output from 9522A
13	DF_S_RX	Data / Fax data (UART) output from 9522A
14	0V	Signal ground, 0V signal reference and return
15	MIC_AUD	Microphone audio input to 9522A
16	EXT_PWR	Power input to 9522A
17	EXT_GND	Power Ground input to 9522A
18	DPL_TX	Digital Peripheral Link (UART) data output from 9522A
19	DF_DTR	Data / Fax Data Terminal Ready input to 9522A
20*	DPL_RX	Digital Peripheral Link (UART) data input to 9522A
21	DF_DSR	Data / Fax Data Set Ready output from 9522A
22	DF_CTS	Data / Fax Clear to Send output from 9522A
23	0V	Signal ground, 0V signal reference and return
24	DA_RX	PCM digital audio input to 9522A
25	0V	Signal ground, 0V signal reference and return

4.3.2 Antenna Connector

The 9522A provides a single 50Ω, TNC type antenna connector both transmit and receive.

4.3.3 SIM Chip Reader

An integrated SIM chip reader is provided on the 9522A. This connector allows installation of the chip form of the SIM beneath a cover plate on the 9522A housing.

4.4 Mounting

The 9522A incorporates (6) mounting holes on its bottom surface that can aid in its mounting. See Figure 3 for locations of these features. It is recommended that a thread-forming screw be used to mount the 9522A via these features. Particularly, a Textron Camcar® Taptite® II Thread-Rolling Fastener of M3.5x0.6 thread type is recommended. This fastener has a 15IP Torx Plus® pan head and is available in lengths of 6, 8, 12, 16, and 20 mm as part number 3BE-P802-00, 3BE-P803-00, 3BE-P8185-00, 3BE-P804-00, 3BEP8186-00, and 3BE-P8187-00 respectively. Length should be chosen to ensure that penetration into the 9522A housing does not exceed 11 mm.

If a 6-32 thread type is desired, a Textron Camcar® Taptite® II Thread-Rolling Fastener with a 15IP Torx Plus® pan head is available in lengths of 1/4, 5/16, 3/8, 1/2, 5/8, 3/4, and 1 inch as part number 3BE-P814-00, 3BE-P8123-00, 3BE-P815-00, 3BE-P816-00, 3BE-P8124-00, 3BE-P817-00, and 3BE-P818-00 respectively. A 10IP Torx Plus® flat head version is also available in a single length of 1/2 inch as part number 3BE-P801-00. Another 6-32 thread type option is to insert a helical coil insert with a 6-32 internal thread into these features thus accommodating 6-32 threaded fasteners as mounting hardware for the 9522A. National Aerospace Standard NASM122238 serves as a technical reference for the recommended helical coil insert.

4.5 Connector Sealing in Harsh Environments

If the 9522A is to be used in a harsh environment with exposure to high humidity or water, the mating of the multi-interface connector must be further sealed to protect from moisture entry. It is recommended that a bead of RTV silicone sealant be placed on the connector mating to the 9522A's multi-interface connector where shown in Figure 6 below. A material similar to Permatex 16B should be used.

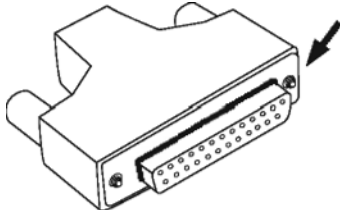


Figure 6: Place a bead of Silicone RTV material along this area all around the connector mating to the 9522A's multi-interface connector.

5 Environmental

The environmental specifications of the 9522A are summarized in Table 3 below.

Table 3: Environmental Specifications

Parameter	Value
Operating Temperature Range	-20°C to + 60°C
Operating Humidity Range	≤75% RH
Storage Temperature Range	-40°C to + 85°C
Storage Humidity Range	≤93% R

6 Electrical Interfaces

The subsections to follow contain interface information for the electrical interfaces of the 9522A.

6.1 DC Power Interface

6.1.1 DC Power Interface Signal Descriptions

The DC power interface is comprised of the DC power inputs and a control signal as summarized in Table 4 below. The EXT_PWR and GND inputs are used to supply DC power to the 9522A. The EXT_ON_OFF control input is pulled to a GND level to toggle the 9522A on and off. Note that both pairs of pins should be connected for EXT_PWR and EXT_GND.

Table 4: Control/Audio Interface Signal Descriptions

Signal Name	Signal Description
EXT_PWR (pin 4 and 16)	External power +4.4VDC input
EXT_GND (pin 3 and 17)	External power GND input
EXT_ON_OFF (pin 1)	Power on/off control input

6.1.2 DC Power Input Specifications

The DC power requirements for the 9522A are summarized in Table 5 below. Note that these requirements apply to DC power measured at the 9522A multi-interface connector input.

Table 5: DC Power Input Specifications

Parameter	Value
Main Input Voltage - Range	+4.0 VDC to +4.8 VDC
Main Input Voltage – Nominal	4.4VDC
Main Input Voltage – Ripple	40 mVpp
Peak Input Current (maximum)	2.5 A @ 4.4 VDC
Main Input Active Power (average)	2200 mW
Main Input Standby Power (average)	570 mW

6.2 Control/Digital Audio (DPL bus) Interface

6.2.1 Control/Digital Audio Interface Signal Descriptions

The control/digital audio interface enables peripherals such as handsets and SIM card readers to be interfaced to the 9522A. The interface utilizes an Iridium proprietary communication bus not detailed in this fact sheet. Details can be made available after appropriate Non-disclosure Agreements and /or License Agreements are executed.

6.3 RS232 Data Interface

6.3.1 RS232 Data Signal Descriptions

The RS232 data interface is comprised of eight standard RS232 data, control, and status signals plus a ground level signal reference. This interface allows a connected Data Terminal Equipment (DTE) to utilize the 9522A's modem functionality via AT command control. A 3-wire RS232 Data minimal interface may also be implemented however the 9 wire interface offers better control and is the recommended implementation.

6.3.2 Autobaud

The 9522A default is for autobaud to be enabled. Autobaud will occur on the following characters 'a', 'A', CR (carriage return). Autobaud will also occur on the escape sequence character, provided this is an odd number character. Normally this is set to '+' in register S2 see AT Command Reference for details.

6.4 Analog Audio Interface

6.4.1 Analog Audio Interface Signal Descriptions

The analog audio interface is comprised of the analog audio input and output signals referenced to the 0V signal ground as summarized in Table 6 below.

Table 6: Analog Audio Interface Signal Descriptions

Signal Name	Signal Description
MIC_AUD (pin 15)	Analog audio input to 9522A
SPKR_AUD (pin 5)	Analog audio output from 9522A
0V (pin 14, 23 and 25)	Signal ground

6.5 SIM Interface

An integrated SIM chip reader is provided on the 9522A. An external SIM card reader may also be interfaced as a peripheral to the 9522A via the DPL bus (control/audio interface). A SIM card in the external reader will take precedence over the SIM chip in the integrated connector when both are present.

6.6 RF Interface

6.6.1 RF Interface Specifications

The RF interface requirements for the 9522A are summarized in Table 7 below.

Table 7: General RF Parameters

Parameter	Value
Frequency Range	1616 MHz to 1626.5 MHz
Duplexing Method	TDD (Time Domain Duplex)
Oscillator Stability	± 1.5 ppm
Input/Output Impedance	50 Ω
Multiplexing Method	TDMA/FDMA

6.6.2 Radio Characteristics

The tables within this section contain radio characteristics of the 9522A.

Table 8: In-Band Characteristics

Parameter	Value
Average Power during a transmit slot (max)	7 W
Average Power during a frame (typical)	0.6 W
Receiver Sensitivity at 50W (typical)	-118.5 dBm
Receiver Spurious Rejection at offsets > 1 MHz (typical)	60 dB

Table 9: Link Margin

Configuration	Cable Loss	Link Margin
9522A with accessory antennas (Note 1)	2 dB (Note 2)	13.1 dB (Note 3)

Note 1: Other antenna options are available

Note 2: Cable losses should be minimized

Note 3: Link Margin given for free space

7 Instructions for the safe Installation and use

The 9522A is intended for integration into a finished product. The integrator of the 9522A is required to connect a power supply, antenna, and user interface to the 9522A. To ensure that the 9522A is correctly installed the following general instructions (sub-section 7.1) are provided for the installer.

The integrator will be required to supply the end user of the integrated product, incorporating the 9522A, with operating instructions and any other information relating to the maintenance and safety of the equipment (sub-section 7.2).

7.1 Instructions for the Integrator

The 9522A must be installed by an appropriately qualified installer and mounted securely as described in section 4.4 of this document.

The power supply used to power the 9522A must be checked to ensure it meets the requirements of sub-section 6.1.2 of this document.

Electrical connections to the 9522A multi-interface connector shall be as designated in Table 2 of sub-section 4.3.1 of this document.

The current and voltage rating of the multi-interface connector cable shall meet the requirements of the 9522A DC power input.

The electrical characteristics of the multi-interface connector cable shall not degrade the 9522A digital communications and analog audio signals.

The multi-interface connector cable will provide adequate screening from external electromagnetic interference.

The 9522A shall not be located in close proximity to sources of extreme temperature which will cause it be operated outside of its temperature specification (-20°C to +60°C).

The 9522A shall not be operated without an appropriate antenna connected to its Antenna connector via a suitable 50ohm coaxial cable. This antenna shall be sited at least 20cm away from any person.

7.2 Instructions from the integrator to the user

To comply with the requirements of sub-clause 1.7.2 (Safety instructions) of the European Information technology equipment safety standard EN60950-1:2002 the integrator must ensure that:

'Sufficient information shall be provided to the USER concerning any condition necessary to ensure that, when used as prescribed by the manufacturer, the equipment is unlikely to present a hazard within the meaning of this standard. If it is necessary to take special precautions to avoid the introduction of hazards when operating, installing, servicing, transporting or storing equipment, the necessary instructions shall be made available.'

As part of these instructions the installer should inform the user that they should not service the 9522A.

8 Modem Commands and Configuration

The 9522A is configured through the use of AT commands. A full listing of the supported AT commands can be found in the AT Command Reference document.

Iridium Limited Warranty For Satellite Subscriber Radiotelephone Products

1. Coverage and Duration

Iridium warrants that its new satellite subscriber radiotelephone products and accessories (the "Product") shall be free from defects in materials and workmanship for a period of twelve (12) months from the date such Product is delivered to the first end user purchaser or first lessee (the "Purchaser"), or the date such Products are first placed into satellite subscriber service, whichever occurs earliest.

Iridium, at its option, shall at no charge to Purchaser, either repair or replace the Product, or refund the purchase price of a Product that does not conform to this warranty, provided the Product is returned in accordance with the instructions set out below and within the warranty period. These remedies are Purchaser's exclusive remedies under this warranty. Repair may include the replacement of parts or boards with functionally equivalent reconditioned or new parts or boards. A product that has been repaired or replaced is warranted for the balance of the original warranty period. A Product for which a replacement has been provided shall become Iridium's property.

This warranty is made by Iridium to the Purchaser of the Products only, and it is not assignable or transferable by the Purchaser. This is Iridium's sole and complete warranty for the Products. Iridium assumes no obligation or liability for additions or modifications to this warranty unless made in writing and signed by an officer of Iridium. Iridium does not warrant any installation, maintenance, or service of the Products not performed by Iridium.

This Product is covered by a U.S.A. warranty. If the Product has been sold outside of the U.S.A., Iridium will honor the U.S.A. warranty terms and conditions only. Outside of the U.S.A., any different warranty terms, liabilities and/or legal requirements of the country in which the Product is sold are specifically disclaimed by Iridium.

2. Conditions Not Covered By This Warranty

- a. Products that are integrated, installed, maintained, or serviced in any manner other than in accordance with the Iridium user documentation furnished with or applicable to the Product.
- b. Product damage caused by the use of ancillary equipment not furnished Iridium, including accessories and peripherals.
- c. Problems where the Product is used in a combination with ancillary equipment not furnished by Iridium, and it is determined by Iridium there is no fault with the Product.
- d. Ancillary equipment not furnished by Iridium which is attached to or used in connection with the Products is not the responsibility of Iridium, and all such equipment is expressly excluded from this warranty. Furthermore, Iridium does not warrant the integrated operation of the combination of the Products with any ancillary equipment not furnished by Iridium.
- e. Defects or damage resulting from: use of the Product in any manner not normal or customary; misuse, accident or neglect including but not limited to dropping the Product onto hard surfaces, immersion in or exposure to water, rain or extreme humidity, immersion in or exposure to sand, dirt or other particulates, exposure to extreme heat, spills of food or liquid; improper testing, operation, maintenance, installation, adjustment; or any alteration or modification of any kind.
- f. Batteries manufactured by Iridium and sold with Products whose capacity exceeds 80% of rated capacity are not covered. Batteries whose capacity falls below 80% of rated capacity, or that develop leakage, shall be considered nonconforming. This warranty is voided for batteries if: a) such batteries are charged by other than the Iridium-approved battery charger specified for charging such batteries; b) any seals on such batteries are

broken or show evidence of tampering; or c) such batteries are used in equipment other than the Product for which they are specified; or d) such batteries are charged and stored at temperatures greater than 60 degrees centigrade.

g. Breakage or damage to antennas, or scratches or other damage to plastic surfaces or other externally exposed parts caused by Purchaser's use.

h. Products disassembled or repaired in such a manner as to adversely affect performance or prevent adequate inspection and testing to verify any warranty claim.

i. Products on which serial numbers or date tags have been removed, altered or obliterated.

j. Coil cords that are stretched or on which the modular tab is broken; leather cases, which are covered under separate manufacturers' warranties;

k. Products rented on a month-to-month basis.

l. Normal wear and tear.

3. Obtaining Warranty Service

For warranty questions, repairs, or for the return of Product, **please call your Service Provider or Point-of-Sale, not Iridium.** Equipment needing service should be returned to your **Service Provider or Point-of-Sale**, not Iridium.

SERVICE WORK PERFORMED BY SERVICE CENTERS NOT AUTHORIZED BY IRIDIUM TO PERFORM SUCH WORK WILL VOID THIS WARRANTY.

All Products shipped to Iridium's authorized Warranty Service Center must be shipped with freight and insurance prepaid. Purchaser must include with the Product a bill of sale, a lease, or some other comparable proof of purchase, the name and location of the installation facility, if any, and most importantly, the Purchaser's name, address, and telephone number and a written description of the problem. Product that is repaired or replaced under this warranty shall be returned to Purchaser at Iridium's expense for the freight and insurance, and at Purchaser's expense for any applicable duties or other charges. If additional information is needed, please contact Iridium at the address and phone number listed in Paragraph 7 below.

4. General Provisions

THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. FURTHER, THIS WARRANTY COVERS THE PRODUCTS ONLY, AND NO WARRANTY IS MADE AS TO COVERAGE, AVAILABILITY, OR GRADE OF SERVICE PROVIDED BY IRIDIUM SEPARATELY FOR IRIDIUM SATELLITE SERVICES. IN NO EVENT SHALL IRIDIUM BE LIABLE FOR DAMAGES IN EXCESS OF THE PURCHASE PRICE OF THE PRODUCT IN QUESTION, OR FOR ANY LOSS OF USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOST PROFITS OR SAVINGS OR OTHER INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE SUCH PRODUCT, TO THE FULL EXTENT SUCH MAY BE DISCLAIMED BY LAW.

5. Conditions of Use and Disclaimer of Liability

IN THE UNITED STATES, AND SUBJECT TO AVAILABILITY, CALLS TO 911 OR 112 ARE ROUTED TO AN EMERGENCY CALL CENTER FOR RESPONSE. OUTSIDE THE UNITED STATES, CALLS TO 911 OR 112, OR OTHER EMERGENCY ACCESS NUMBERS SUCH AS 999, ARE NOT AVAILABLE ON THE IRIDIUM SYSTEM. THE IRIDIUM SERVICE DOES NOT CURRENTLY PROVIDE ENHANCED 911 OR ENHANCED 112 SERVICE, WHICH AUTOMATICALLY IDENTIFIES CALLER LOCATION. CALLER LOCATION IDENTIFICATION IS NOT AUTOMATICALLY TRANSMITTED ON THE IRIDIUM SYSTEM.

Users of the Iridium Satellite LLC ("Iridium") mobile satellite phone service and related equipment, including without limitation those using the phone service and equipment in any manner in conjunction with emergency 911 or emergency 112 or any other distress calling or emergency services, both public or privately operated, acknowledge and agree as a condition of the provision of phone service and equipment by Iridium that they will make no claim, whether in contract, tort or otherwise, against Iridium for bodily injury, loss of life, damage to property or for any other loss whatsoever, or for special, incidental, indirect, consequential or punitive damages, by reason of any unavailability, delay, faultiness or failures of the Iridium facilities or phone service or equipment or for inaccuracies or failures with regard to any user information provided. This is a waiver and release and disclaimer of liability to the fullest extent permitted by applicable law and applies regardless of the cause of any liability, including without limitations, to wrongful conduct, omission or fault of employees or agents of Iridium.

Iridium makes no warranties, express or implied, including any implied warranty of merchantability or fitness for a particular purpose concerning Iridium service or equipment. Iridium cannot promise uninterrupted or error free service.

Users by their use of the phone service and equipment consent to Iridium's disclosure of user information, including but not limited to name, address, telephone number and location information, including, when available, the geographic coordinates of equipment, to governmental and quasi-governmental agencies, where Iridium deems it necessary in its sole discretion to respond to an exigent circumstance. These governmental and quasi-governmental agencies shall be deemed "users" for all purposes of this Disclaimer of Liability.

6. State Law and Other Jurisdiction Rights; Software Copyrights

SOME STATES AND OTHER JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO PURCHASER.

This warranty gives Purchaser specific legal rights, and Purchaser may also have other rights which vary from jurisdiction to jurisdiction.

Laws in the United States and other countries preserve for Iridium certain exclusive rights for copyrighted Product software such as the exclusive rights to reproduce in copies and distribute copies of such Product software. Product software may be copied into, used in and redistributed with only the Product associated with such Product software. No other use, including without limitation disassembly, of such Product software or exercise of exclusive rights in such Product software is permitted.

7. Contact

For additional information about this Product warranty, please contact your Service Provider or Point of Sale.

For additional information about Iridium products and services, please contact Iridium as follows:

By Telephone: Customer Service Toll Free from a landline:
+1-866-947-4348

Local or International Number:
+1-480-752-5155

By Email: Info@iridium.com

By Mail: Iridium Satellite LLC
Attn: Customer Service
8440 S. River Parkway, Tempe, AZ 85284
USA

**E C Directive
Declaration of Conformity**

This is to certify that the following equipment complies with all relevant Essential Health and Safety Requirements of the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC and the Low Voltage Directive 73/23/EC as amended by 93/68/EC.

Equipment description:
Iridium 9522A Satellite L-band transceiver

Manufacturer: Iridium Satellite, LLC
8440 South River Parkway, Tempe, AZ 85284 USA

The following harmonised standards have been applied to the design of the L-band transceiver:

Standard	Description
EN 60950-1:2002	Information technology equipment - Safety - Part 1: General requirements
EN 301 489-20V1.2.1 (2002 11) EN 301 489-01 V1.4.1 (2002-08)	Electromagnetic compatibility and Radio Spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services.
ETSI EN 301 441 V1.1.1 05/2000	Satellite Earth Stations and Systems (SES); Harmonised EN for Mobile Earth Stations (MES)

A "technical file" is retained by Iridium Satellite LLC. Related test reports are available upon request directly from Iridium Satellite LLC. The 9522A L-band transceiver is declared conformant only if it is used in the configuration tested and if the L-band transceiver is used as described in the 9522A User Guide.

Signed: David C. Schoen
David Schoen, VP of Technology Development

Date: 2/28/2006

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