

**PRELIMINARY DRAFT**

**Motorola Satellite Series 9522  
L-Band Transceiver  
Fact Sheets**



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# Motorola Satellite Series 9522 L-Band Transceiver Fact Sheets

## 1 Product Overview

The 9522 LBT is intended for incorporation into a final Iridium subscriber product that would supply power, provide an antenna, and provide user interface components such as a keypad, display, microphone, and speaker. If the final product supports a data mode, an RS232 data interface would also be included.

Regulatory approval for FCC, Canada and CE will be provided for the 9522 LBT assuming an antenna with a gain of  $\leq 3$  dBi. This will allow the 9522 LBT to be integrated into a variety of subscriber products, as well as retrofitted into existing LBT-based subscriber products. These products, when integrated together will require Regulatory testing.

The functional capabilities of the 9505 handset provide the baseline for the 9522 LBT, noting that user interface components must be added to the 9522 LBT in order to access such functionality. The [ISU AT Command Reference](#) and the [Satellite Series 9505 Portable Telephone User's Guide](#) provide information relevant to the 9522 LBT's functional capabilities.

The following differences exist when comparing the functional capabilities of the 9522 LBT to the 9505 handset.

- The 9522 LBT is always powered externally and therefore has no battery metering.
- The 9522 LBT does not incorporate a vibrating call alert and therefore has no vibrate/ring control.
- The 9522 LBT incorporates an analog audio interface not present on the 9505 handset.

## 2 Standards Compliance

The 9522 LBT has been designed to comply with the standards for Emissions Compliance, Electromagnetic Compatibility, Electromagnetic Safety, and AC Safety in the United States, Europe and Canada. Standards in other areas of the world are often the same.

### 2.1 FCC Compliance

This device has been certified under 47 CFR Part 25 as FCC ID: IHDT6NJ1 and also complies with Part 15 of the FCC Rules. 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.

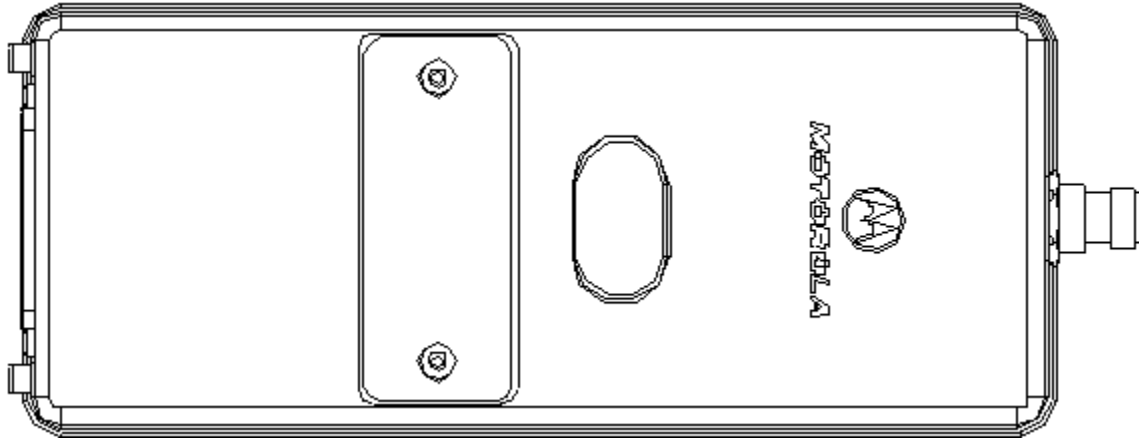
### 2.2 CE Compliance

This product, when marked with the CE symbol, complies with the European Community Council Directive for R&TTE, 99/5/EC, provided the installer/user adheres to the instructions detailed in the [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.

# PRELIMINARY DRAFT

## 3 Physical Specifications

The 9522 LBT is depicted in **Figure 1** below.



**Figure 1: Top View**

### 3.1 Environmental

The environmental specifications of the 9522 LBT are summarized in **Table 1** below.

**Table 1: Environmental Specifications**

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

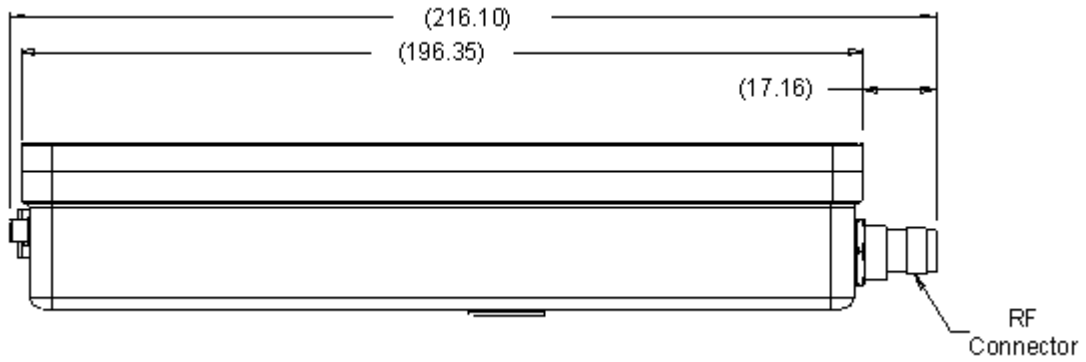
### 3.2 Dimensions

The overall dimensions of the 9522 LBT and its weight are summarized in **Table 2** below. Dimensioned views of the 9522 LBT are shown in **Figures 2-5** to follow.

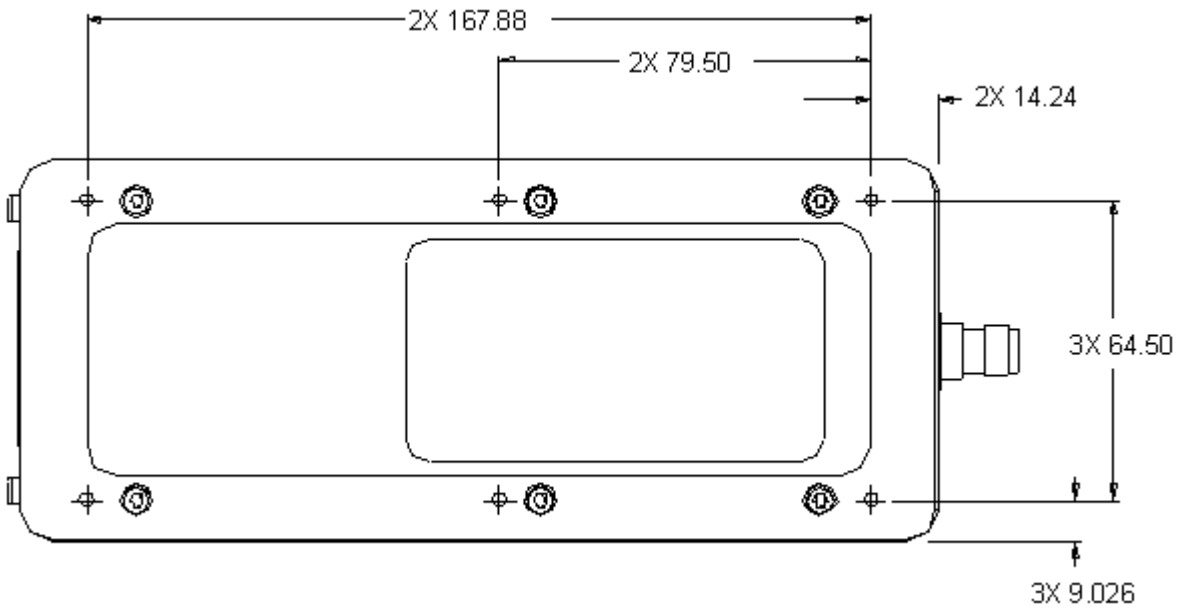
**Table 2: Mechanical Dimensions**

Parameter	Value
Length (including antenna connector)	216.1 mm (8.51")
Length (excluding antenna connector)	196.4 mm (7.73")
Width	82.6 mm (3.25")
Depth	39.0 mm (1.54")
Weight (approximate)	610 g

**PRELIMINARY DRAFT**



**Figure 2: Side View**



**Figure 3: Bottom View**

## PRELIMINARY DRAFT

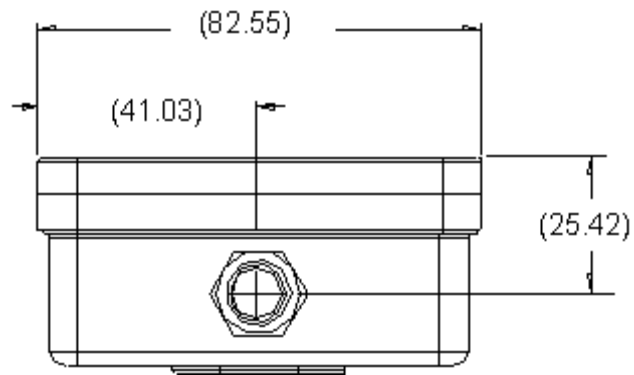


Figure 4: Antenna Connector End View

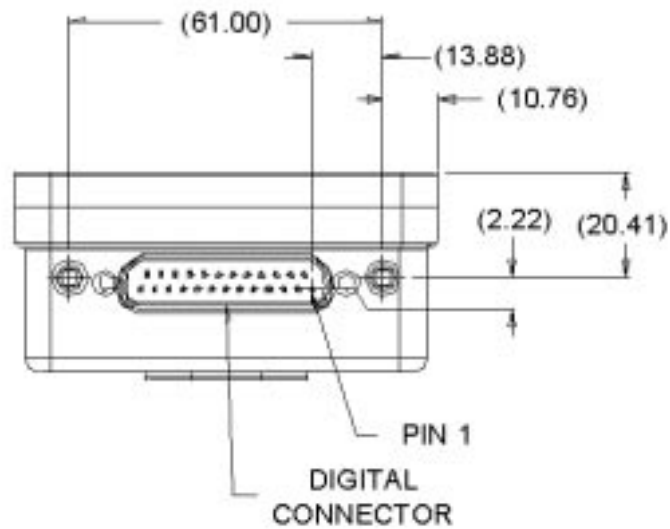


Figure 5: Multi-Interface Connector End View

### 3.3 Interface Connectors

The 9522 LBT incorporates three interface connectors.

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

## PRELIMINARY DRAFT

### 3.3.1 Multi-Interface Connector

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

- DC Power
- Control/Audio
- RS232 Data
- Analog Audio

### 3.3.2 Antenna Connector

The 9522 LBT provides a single, 50  $\Omega$ , TNC type antenna connector for both transmit and receive.

### 3.3.3 SIM Chip Connector

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

## 4 Electrical Interfaces

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

### 4.1 DC Power Interface

#### 4.1.1 DC Power Interface Signal Descriptions

The DC power interface is comprised of the DC power inputs and a control signal as summarized in **Table 3** below. The EXT\_B+ and GND inputs are used to supply DC power to the 9522 LBT. The EXT\_ON\_OFF control input is pulled to a GND level to toggle the 9522 LBT on and off.

**Table 3: Control/Audio Interface Signal Descriptions**

Signal Name	Signal Description
EXT_B+	External 4.4 VDC input
GND	External GND input
EXT_ON_OFF	Power on/off control input

# PRELIMINARY DRAFT

## 4.1.2 DC Power Input Specifications

The DC power requirements for the 9522 LBT are summarized in **Table 4** below. Note that these requirements apply to DC power measured at the 9522 LBT multi-interface connector input.

**Table 4: DC Power Input Specifications**

Parameter	Value
Main Input Voltage - Range	+4.0 VDC to +4.8 VDC
Main Input Voltage - Nominal	4.4 VDC
Main Input Voltage - Ripple	40 mVpp
Peak Input Current (maximum)	2.5 A @ 4.4 VDC
Main Input Active Power (average)	2500 mW
Main Input Standby Power (average)	210 mW

## 4.2 Control/Audio Interface

### 4.2.1 Control/Audio Interface Signal Descriptions

The control/audio interface enables peripherals such as handsets and SIM card readers to be interfaced to the 9522 LBT. The interface utilizes a Motorola Proprietary full duplex communication buss not detailed in this fact sheet. Details can be made available after appropriate Non-disclosure Agreements and /or License Agreements are executed.

## 4.3 RS232 Data Interface

### 4.3.1 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 9522 LBT's modem functionality via AT command control.

## 4.4 Analog Audio Interface

### 4.4.1 Analog Audio Interface Signal Descriptions

The analog audio interface is comprised of the analog audio input and output signals, an enable input signal, and a ground level signal reference as summarized in **Table 5** below.

**Table 5: Analog Audio Interface Signal Descriptions**

Signal Name	Signal Description
MIC_AUD	Analog audio input
SPKR_AUD	Analog audio output
ANALOG_AUD_EN	Analog audio enable input
ANALOG_GND	Analog audio ground level signal reference

# PRELIMINARY DRAFT

## 4.5 SIM Interface

An integrated SIM chip connector is provided on the 9522 LBT. An external SIM card reader may also be interfaced as a peripheral to the 9522 LBT via the DSC bus of the 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.

## 4.6 RF Interface

### 4.6.1 RF Interface Specifications

The RF interface requirements for the 9522 LBT are summarized in **Table 6** below.

**Table 6: General RF Parameters**

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

### 4.6.2 Radio Characteristics

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

**Table 7: 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 50 $\Omega$ (typical)	-118.5 dBm
Receiver Spurious Rejection at offsets > 1 MHz (typical)	60 dB

**Table 8: Link Margin**

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

Note 1: Other antenna options may become available

Note 2: Cable losses should be minimized

Note 3: Link Margin given for free space