Radioddity CBL-561

Radioddity CBL-561 Dual Band HF Antenna User Manual

Model: CBL-561

1. Introduction

This manual provides instructions for the proper installation, operation, and maintenance of your Radioddity CBL-561 Dual Band HF Antenna. Please read this manual thoroughly before using the antenna to ensure optimal performance and safety.

Image 1.1: Radioddity CBL-561 Dual Band HF Antenna, showcasing its full assembly.

2. Key Features

- **Wide Frequency Support:** Operates across a 25-30MHz range, compatible with 10-meter and 11-meter bands.
- **Exceptional SWR Performance:** Achieves an SWR of ≤1.3:1 for minimal signal loss and efficient transmission.
- **High Power Capacity:** Designed to handle up to 1000W, suitable for demanding communication setups. Compatible with Radioddity mobile radios including QT80, QT60, QT40, CB-900 PRO, CS-47, and CB-500.
- **Sturdy Construction:** Made from high-quality aluminum alloy for durability and weather resistance.
- **Adjustable Design:** Features a three-section adjustable design for fine-tuning length across different frequencies. Includes an Allen key for adjustments.

3. Setup and Installation

Proper installation is critical for optimal antenna performance. Follow these steps carefully.

3.1 Component Overview

Image 3.1: Detailed views of the antenna's base, coil, and adjustable tip, showing the PL-259 connector and Allen key adjustment point.

The CBL-561 antenna consists of several sections: the base with a PL-259 connector, a loading coil, and an adjustable telescopic whip. An Allen key is provided for tuning.

3.2 Assembly

1. **Connect to Mount:** Securely attach the antenna's PL-259 connector to a compatible antenna mount (e.g., magnetic mount, trunk lip mount). Ensure a good electrical connection.

Image 3.2: Close-up of the PL-259 connector at the base of the antenna, ready for connection to a mount.

2. **Connect to Radio:** Connect the antenna mount's coaxial cable to your mobile radio's antenna input.

Image 3.3: The CBL-561 antenna mounted on a vehicle with a magnetic base, connected to a Radioddity mobile radio.

3. **Grounding:** Ensure your antenna mount and radio system have a proper ground connection. A good ground plane is essential for optimal performance, especially for mobile installations.

4. Operation and SWR Tuning

The CBL-561 antenna is designed for adjustable performance across its frequency range. Proper SWR (Standing Wave Ratio) tuning is crucial for efficient operation and to prevent damage to your radio.

4.1 Understanding SWR

SWR measures how efficiently radio frequency power is transmitted from the radio, through the feed line, into the antenna. An SWR of 1:1 is ideal, meaning all power is transmitted. An SWR of ≤1.3:1 is considered excellent for this antenna. High SWR indicates reflected power, which can reduce transmission range and potentially damage your radio's final amplifier stage.

4.2 SWR Tuning Procedure

1. **Initial Setup:** Connect an SWR meter between your radio and the antenna.
2. **Select Frequency:** Choose the center frequency of the band you intend to operate on (e.g., 27.000 MHz for 11-meter band).
3. **Measure SWR:** Transmit a low-power signal (e.g., 5W) and measure the SWR.
4. **Adjust Antenna Length:**
    - If the SWR is high and lower on higher frequencies, the antenna is too long. Shorten the adjustable whip using the provided Allen key.
    - If the SWR is high and lower on lower frequencies, the antenna is too short. Lengthen the adjustable whip using the provided Allen key.

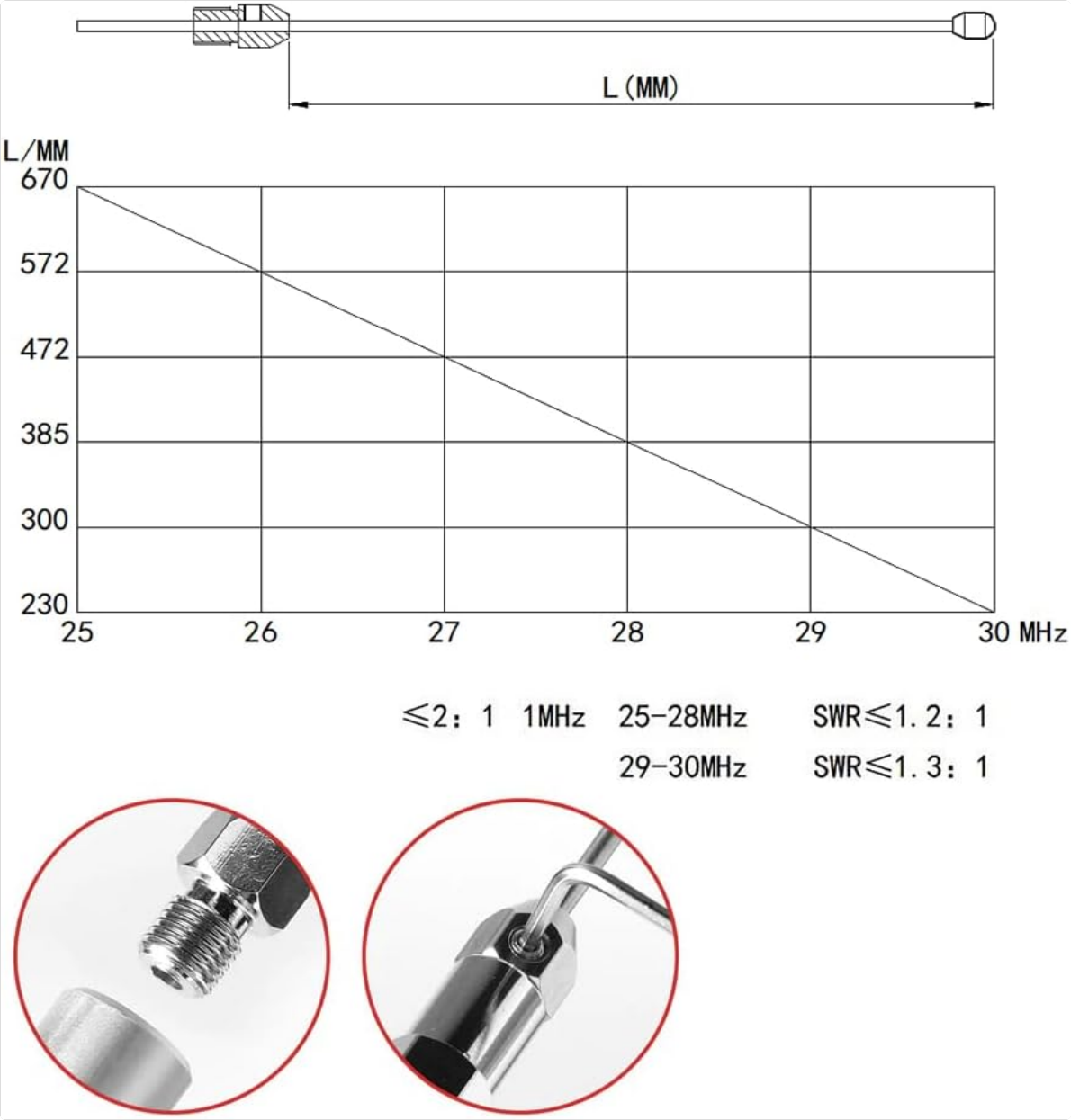


Image 4.1: SWR adjustment chart illustrating the relationship between antenna length (L/MM) and frequency (MHz) for optimal SWR.

5. **Repeat:** Make small adjustments and re-measure SWR until the lowest possible SWR is achieved at your desired operating frequency. Aim for ≤1.3:1.

Note: *The optimal length for the adjustable whip will vary depending on your specific installation, ground plane, and operating frequency. Always tune for the lowest SWR.*

5. Maintenance

The Radioddity CBL-561 antenna is designed for durability. Regular maintenance will ensure its longevity and performance.

- **Cleaning:** Periodically clean the antenna with a soft, damp cloth to remove dirt and grime. Avoid abrasive cleaners.
- **Connection Check:** Regularly inspect all connections (PL-259, coaxial cable) for corrosion or looseness. Ensure they are clean and tight.
- **Physical Inspection:** Check the antenna for any signs of physical damage, such as bends, cracks, or frayed wires, especially after exposure to harsh weather conditions.

- **Weather Protection:** While weather-resistant, extreme weather conditions (e.g., heavy ice, strong winds) can still affect the antenna. Consider removing or securing the antenna during severe weather.

6. Troubleshooting

If you experience issues with your CBL-561 antenna, refer to the following common problems and solutions.

Problem	Possible Cause	Solution
High SWR readings	• Incorrect antenna length • Poor ground plane • Loose or corroded connections • Damaged coaxial cable • Antenna not mounted correctly	• Adjust antenna length as per Section 4.2. • Ensure adequate ground plane (e.g., large metal surface for mobile use). • Check and tighten all connections; clean any corrosion. • Inspect coaxial cable for damage; replace if necessary. • Verify antenna is securely mounted and making good electrical contact.
Poor transmission/reception range	• High SWR • Obstructions (buildings, terrain) • Low power output from radio • Antenna damage	• Tune SWR to optimal levels. • Relocate antenna to a clearer line of sight if possible. • Check radio's power settings and functionality. • Inspect antenna for damage; repair or replace.
Antenna components feel loose	• Vibration during travel • Improper initial tightening	• Periodically check and tighten all threaded connections. • Ensure the adjustable whip is securely fastened after tuning.

7. Specifications

Feature	Detail
Model	CBL-561
Frequency Range	25-30 MHz
SWR	≤1.3:1
Max Power	1000W
Connector Type	PL-259
Material	Aluminum Alloy
Adjustable Sections	Three-section telescopic design
Item Weight	1.35 pounds (approx. 0.61 kg)

Feature	Detail
Package Dimensions	31.75 x 2.5 x 2.3 inches (approx. 80.6 x 6.35 x 5.84 cm)

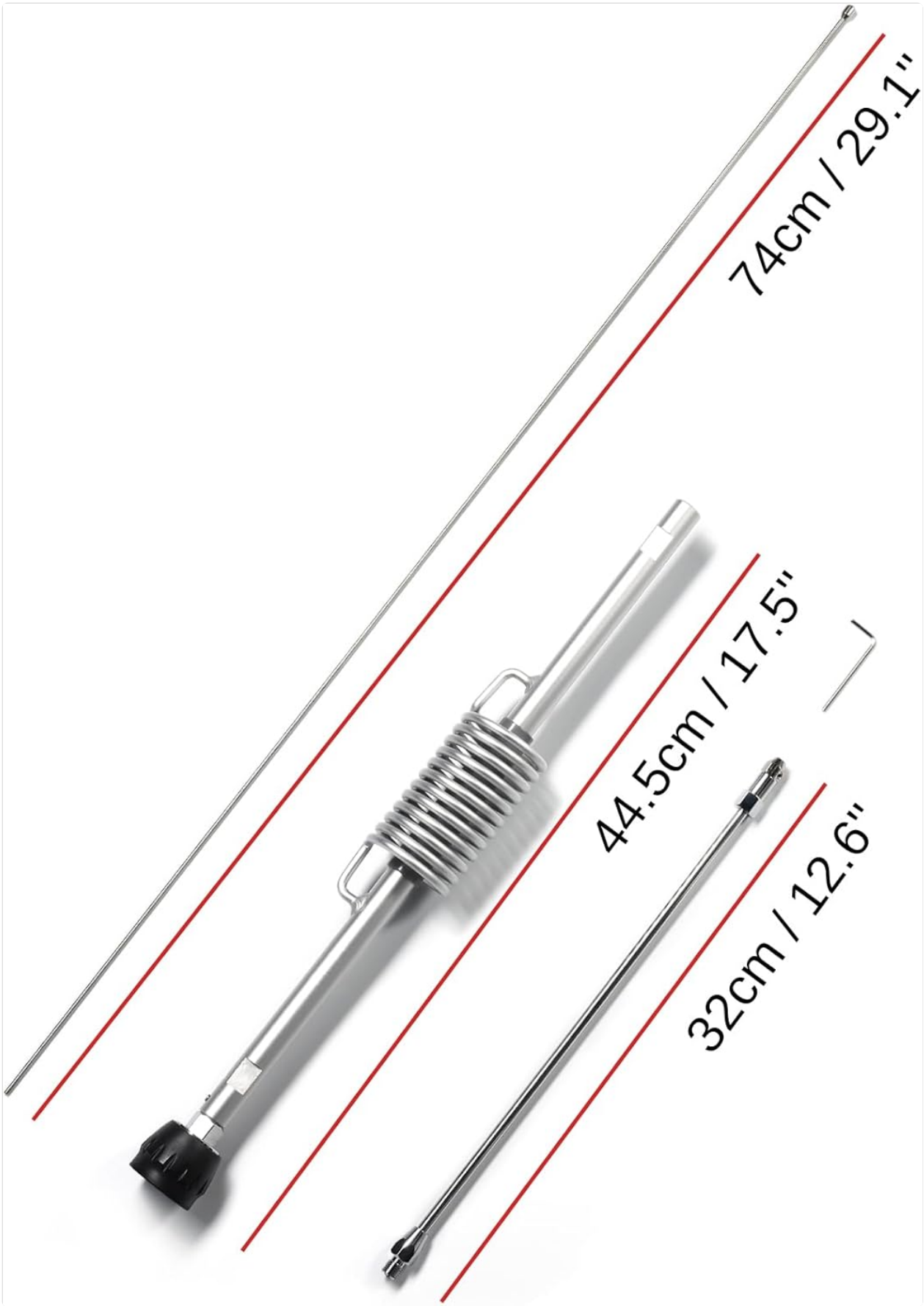
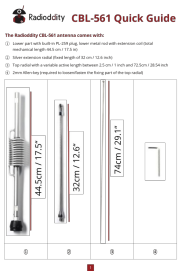
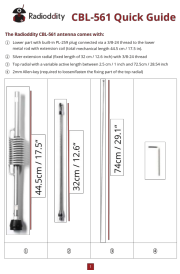


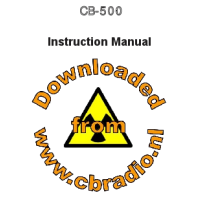
Image 7.1: Diagram showing the approximate dimensions of the antenna's main components: 74cm (29.1") for the top whip, 44.5cm (17.5") for the coil section, and 32cm (12.6") for the base section.

8. Customer Support and Warranty

For technical assistance, warranty information, or any questions regarding your Radioddity CBL-561 antenna, please contact Radioddity customer support.
You can typically find support contact details on the official Radioddity website or through your purchase platform.
Please retain your proof of purchase for warranty claims.

Related Documents - CBL-561

	Radioddity CBL-561 Antenna Quick Guide A quick guide to setting up and using the Radioddity CBL-561 HF CB Radio Antenna, including component descriptions, setup instructions, and band-specific radial length adjustments.
	Radioddity CBL-561 Antenna Quick Setup Guide A concise guide to setting up the Radioddity CBL-561 antenna, including component identification, assembly instructions, and band-specific radial length adjustments for optimal performance.
	Radioddity QT40 10 Meter Amateur Radio Instruction Manual Comprehensive instruction manual for the Radioddity QT40 10 Meter Amateur Radio. Covers features, accessories, installation, operation, function menu, error codes, and specifications.

	[Radioddity CB-900 PRO CB Radio Instruction Manual] Comprehensive instruction manual for the Radioddity CB-900 PRO CB Radio, detailing standard and optional accessories, installation procedures, front and rear panel controls, operational guidance, function menu settings, and technical specifications.
	[Radioddity QT60 10 Meter Amateur Radio Instruction Manual] Comprehensive instruction manual for the Radioddity QT60 10 Meter Amateur Radio, detailing its functions, features, installation, operation, keypad functions, menu system, specifications, and CTCSS/DCS charts.
	[Radioddity CB-500 CB Radio Instruction Manual - Operation and Specifications] Comprehensive instruction manual for the Radioddity CB-500 CB Radio, covering setup, operation, features like AM/FM, VOX, Scan, CTCSS/DCS, and technical specifications. Downloaded from www.cbradio.nl.