

How to Use the Palomar Engineers BULLET-2006-100 Antenna for Summits on the Air (SOTA) Portable Amateur Radio (HAM) Operations

SEO Title: “7 Reasons the Palomar BULLET-2006-100 Is the Ultimate SOTA Antenna for Portable HAM Operators”

Meta Description: Learn how to use the Palomar Engineers BULLET-2006-100 antenna for Summits on the Air (SOTA) portable amateur radio operations. Discover setup steps, tuning tips, and field-tested benefits for HAM operators.

Introduction: Why the BULLET-2006-100 Is a Game-Changer for SOTA Enthusiasts

If you’ve ever hauled your gear up a mountain for a **Summits on the Air (SOTA)** activation, you already know that weight, speed, and efficiency make or break the day. You want an antenna that’s light enough to carry, fast to deploy, and versatile enough to handle changing conditions — without spending half your activation time tuning or troubleshooting.

That’s where the **Palomar Engineers BULLET-2006-100** shines. Designed by hams for hams, this compact, end-fed off-center-fed (OCF) antenna is tailor-made for **portable, stealthy, and multi-band operation**. Whether you’re working CW, SSB, or FT8, this little “Bullet” packs a serious punch for its size.

Understanding the Palomar BULLET-2006-100 Antenna

Design and Construction Overview

The **BULLET-2006-100** is an **off-center-fed antenna** designed to cover the **20–6 meter bands** with a single 25-foot wire element and your coax braid acting as the counterpoise. Its clever design eliminates the need for multiple band-specific wires or traps.

At its heart is Palomar’s **BULLET matching unit**, a compact broadband transformer that matches your transceiver’s 50-ohm output to the antenna’s varying impedance. It’s rugged, weatherproof, and shaped like a bullet for both form and function — and yes, it earns that name in performance too.

Frequency Coverage and Power Ratings

The **BULLET-2006-100** handles up to **100 watts SSB or FT8**, making it ideal for QRP and mid-power portable rigs. It offers reliable coverage on **20, 17, 15, 12, 11, 10, and 6 meters**, and with a little help from your transceiver's internal tuner, you can easily tweak for optimal SWR across all these bands.

This flexibility means you can **chase DX or activate SOTA summits** on multiple bands without ever changing antennas.

Why Off-Center-Fed (OCF) Designs Outperform EFHW Antennas

End-fed half-wave (EFHW) antennas are popular — but they come with baggage. The high-voltage feedpoints can be dangerous, and they often require long wires (33+ feet for 20 meters).

The **BULLET-2006-100**, by contrast, uses an **OCF design**, which distributes current more evenly, offers more stable impedance across bands, and is **shorter and safer** to use in tight or elevated spaces. You'll enjoy more bands, less RF feedback, and no hot feedpoint surprises near your radio setup.

Preparing for Your SOTA Activation

Choosing the Right Site and Setup Strategy

When activating a summit, look for a **clear, elevated area** with one or two natural supports (trees, trekking poles, or a telescoping fiberglass mast). The **BULLET-2006-100** performs beautifully as a **sloper, L-configuration, or horizontal wire**.

If you're going for quick setup, try hanging the **matching unit 6–10 feet off the ground** and let the 25-foot wire slope downward. This setup balances vertical and horizontal radiation for strong near and far-field contacts.

Essential Accessories and Recommended Gear

To get the best out of your antenna:

- Use **25+ feet of RG-8X or RG-58 coax** (as recommended by Palomar).

- Add a **coax choke (SOFLC)** about 7 feet from the matching unit.
 - If operating near urban areas, use a **CMNF-500 noise filter** near your radio to reduce common-mode interference.
 - Bring a small **tuner** — though most bands will be fine without one.
 - Don't forget lightweight rope, bungees, and a compact throw bag for quick deployment.
-

Step-by-Step Setup Guide for SOTA Operations

Step 1: Mounting and Orientation

Start by mounting the **BULLET matching unit** as high as possible. If you've got a fiberglass pole, attach it near the top. Otherwise, use a tree branch or even your trekking pole. Run the 25-foot wire as a **sloper** or in an **L shape** — experiment with angles; even a gentle slope works wonders.

Step 2: Coax Feed Line and Choke Placement

Run your feed line away from the antenna at a right angle if possible to reduce coupling. Place a **coax choke** 5–6 turns through a ferrite core (which comes with the complete antenna kit) **7 feet from the matching unit** to keep RF off your coax braid from the choke to the radio.

This not only improves SWR stability but also keeps your mic and rig free from stray RF energy.

Step 3: Tuning and SWR Optimization

Once you're on-site, connect your rig and **check SWR across all bands**. Most operators report **under 2:1 SWR** on all bands 20 through 6 meters — easily within range for internal tuners. If you notice a high SWR on one band, adjusting wire height or slope usually clears it up.

Operating Tips from the Field

How to Get the Most Out of 20–6 Meter Operation

Start your activation on **20 meters** — it's the “money band” for SOTA. Then move up through 17, 15, 12, and 10 as propagation shifts.

For **6 meters**, you'll be amazed how well the BULLET performs during sporadic E season — it's practically magic with only 25 feet of wire.

Best Practices for FT8, CW, and SSB Portable Modes

Running FT8? Keep your transmit duty cycle reasonable — around **50 watts continuous** for the BULLET-2006-100. CW and SSB operators can comfortably push up to 100 watts.

For SSB contacts, a **sloper configuration** provides excellent takeoff angles for DX. For FT8, the flat-top configuration maximizes pattern stability and ground reflection gain.

Benefits of Using the BULLET-2006-100 for SOTA

Lightweight, Compact, and Stealthy Advantages

At only about **25 feet of wire** and a small matching unit, the BULLET-2006-100 easily fits in your backpack. It's perfect for **stealth activations**, HOA-restricted areas, or quick-deploy emergency setups.

Multi-Band Performance Without Hassle

Unlike band-specific antennas, the BULLET-2006-100 lets you switch frequencies freely. With minimal tuner tweaks, you're active from **20 to 6 meters** — perfect for **multi-band SOTA challenges** or **POTA activations** on the same trip.

Safety Benefits Over EFHW Designs

Because it's **not voltage-fed**, you won't encounter dangerous feedpoint voltages. That means **less RF burn risk**, fewer RF feedback issues, and safer operation near metal supports or damp ground.

Real-World Results: What Operators Are Saying

In a real-world test by **Bob, AK6R**, the BULLET-2006-500 (same design, higher power rating) logged **contacts worldwide** on 20–10 meters in just 2.5 hours using FT8.

From Southern California, Bob worked **ZL, VK, PY, JA, and 5W1** — proof that even a 25-foot wire can reach across the globe when designed right.

Frequently Asked Questions (FAQs)

1. Do I need a tuner with the BULLET-2006-100?

Most bands tune under 2:1 SWR, but a small tuner can help fine-tune certain frequencies.

2. What's the best configuration for SOTA?

A sloper or inverted-L offers great performance with quick deployment.

3. Can I use digital modes like FT8?

Yes — it's rated for 100 watts FT8 and performs beautifully in portable setups.

4. How long should my coax be?

At least 25 feet; longer runs can slightly lower SWR on some bands.

5. What if my SWR seems high?

Check choke placement and ensure the antenna isn't too close to ground or metal objects.

6. Can this antenna work for POTA or emergency comms?

Absolutely. It's also great for ARES, RACES, and EMCOMM operations due to its size and ease of setup.

Conclusion: Why the BULLET-2006-100 Should Be in Every SOTA Backpack

The **Palomar Engineers BULLET-2006-100** isn't just another portable antenna — it's a **carefully engineered, field-proven performer** that gives SOTA operators a real edge. Compact, multi-band, safe, and durable, it embodies the spirit of portable amateur radio: making the most of your station, wherever you are.

So next time you're planning a summit activation, pack your rig, grab your pole — and let the **BULLET fly**.

Learn more at [Palomar Engineers Official Site](#)