updated January 30, 2018

# ANTENNA GUIDE

This guide is intended to provide information and instructions regarding antenna installation and antenna tuning.


## INSTALLATION

- For best performance, mount the antenna on a metal or aluminium roof in the center. The ½ wave NGP (No Ground Plane) antennas do not require a ground plane (meaning, metal surface) but it is always best to have enough metal surface area over 2'x 2' area.

- Mount NMO connector to a 3/8" hole in roof or roll bar top. Be sure to scrape away any paint on the underside so the NMO mount gets a good metal contact. Route the coax cable away from ignition boxes, coils, HID ballasts, amps, headset cables, and other components that carry power or emit RF interference.

- **IMPORTANT!** If there is any excess coax cable after installation DO NOT COIL THE CABLE! Coiling coax cable will cause transmit problems and limit radio range. Ideally, the coax should be cut to exact length and re-crimped with connectors. However, if that option is not available, route the cable further around the car.

We have several videos online that offers detailed information about cutting coax, proper antenna installation and tuning. Visit our YouTube page (youtube.com/ruggedradios) and search for these titles for additional information:

- Mobile Radio Antenna Tuning, Trimming, and Connector Installation
- How to Install a UHF Connector
- Clever Coax Cable Connectors

## ANTENNA OPTIONS:

### ANTENNA MOUNT

Rugged Radios offers optional roll bar antenna mounts which allow you to mount your antenna to any vehicle with 1", 1-1/2", 1-3/4", or 2" tubing.

### ANTENNA SWITCH

Easily switch your coax antenna connection to a second backup antenna.

951 E. Grand Avenue • Arroyo Grande • CA 93420 | local (805) 541-1696 • toll free (888) 541-7223 • fax (805) 541-1679
www.ruggedradios.com

updated January 28, 2015

# ANTENNA GUIDE

This guide is intended to provide information and instructions regarding antenna installation and antenna tuning.

## ANTENNA TUNING

Most antennas are already pre-tuned (cut to length) to perform at a specified frequency range. If the length of your antenna does not match the frequency range you need as shown below, then modifications may be required. Refer to the charts below for your antenna type and proper cut length.

**Wideband Maxrad HD 2.4 NGP 132-174 Mhz**

| Freq | No Spring | With Spring |
|---|---|---|
| 132-150 | 37-5/8” | 33-7/8” |
| 138-160 | 34-3/4” | 31-1/8” |
| 142-170 | 33” | 29-1/4” |
| 148-174 | 32” | 28-1/4” |

**1/2 Wave NGP 144-174 Mhz**

| Freq | Cut Length |
|---|---|
| 144 | 44” |
| 146 | 42-1/2” |
| 148 | 41-1/2” |
| 150 | 40-1/4” |
| 152 | 39” |
| 154 | 38” |
| 156 | 37” |
| 158 | 35-1/2” |
| 160 | 34-1/2” |
| 162 | 33-1/2” |
| 164 | 32-3/4” |
| 166 | 32” |
| 168 | 31-1/2” |
| 170 | 31” |
| 172 | 30-1/4” |
| 174 | 29-1/2” |

**5/8 Wave NGP 132-174 Mhz**

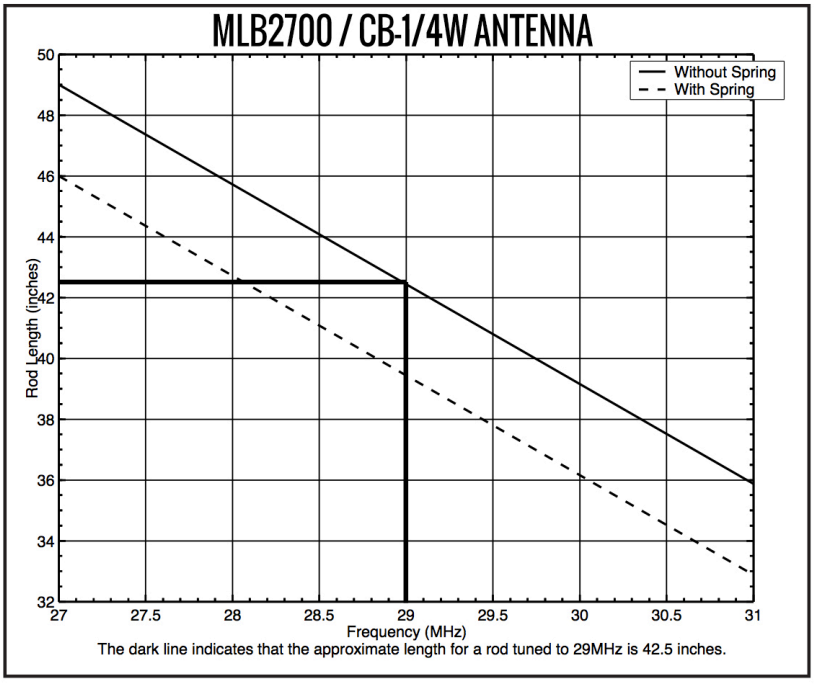
| Freq | Cut Length |
|---|---|
| 132 | 55” |
| 134 | 54-5/8” |
| 136 | 53-5/8” |
| 138 | 53-1/2” |
| 140 | 52-3/4” |
| 142 | 52” |
| 144 | 49” |
| 146 | 48-1/4” |
| 148 | 47” |
| 150 | 46-1/4” |
| 152 | 45-1/2” |
| 154 | 44-1/4” |
| 156 | 43-1/4” |
| 158 | 43” |
| 160 | 42-1/4” |
| 162 | 41-1/2” |
| 164 | 40-3/4” |
| 166 | 40” |
| 168 | 39-1/2” |
| 170 | 38-3/4” |
| 172 | 37-1/2” |
| 174 | 37-1/2” |

**1/4 Wave NGP 118-460 Mhz**

| Freq | No Spring | With Spring |
|---|---|---|
| 118 | 23-1/4” | 22-3/8” |
| 120 | 22-7/8” | 21-7/8” |
| 122 | 22-1/4” | 21-1/2” |
| 124 | 21-1/2” | 20-3/4” |
| 126 | 21-1/8” | 20-1/2” |
| 128 | 21” | 20-1/4” |
| 130 | 20-5/8” | 19-7/8” |
| 132 | 20-3/8” | 19-3/4” |
| 145 | 18-1/8” | 17-1/2” |
| 150 | 17-5/8” | 17” |
| 155 | 17” | 16-1/8” |
| 160 | 16-1/2” | 15-3/4” |
| 165 | 16” | 15-1/4” |
| 170 | 15-1/2” | 14-3/8” |
| 175 | 15” | 14” |
| 220 | 11-7/8” | 11 |
| 225 | 11-5/8” | 10-5/8” |
| 405 | 6” | 5-3/16” |
| 412 | 5-7/8” | 5-1/8” |
| 420 | 5-13/16” | 5-1/8” |
| 430 | 5-11/16” | 4-3/4” |
| 440 | 5-1/2” | 4-5/8” |
| 450 | 5-3/8” | 4-3/8” |
| 460 | 5-3/16” | 4-3/16” |

**CB 1/4 Wave 118-460 Mhz**

| Freq | Cut Length |
|---|---|
| 132 | 19-3/8” |
| 134 | 19” |
| 136 | 18-1/2” |
| 138 | 18-1/8” |
| 140 | 17-7/8” |
| 142 | 17-5/8” |
| 144 | 17-1/2” |
| 146 | 17-1/4” |
| 148 | 17” |
| 150 | 16-7/8” |
| 152 | 16-1/2” |
| 154 | 16-1/4” |
| 156 | 16” |
| 158 | 15-5/8” |
| 160 | 15-3/8” |
| 162 | 15” |
| 164 | 14-7/8” |
| 166 | 14-5/8” |
| 168 | 14-1/2” |
| 170 | 14-3/8” |
| 172 | 14-1/8” |
| 174 | 14” |
| 200 | 11-1/2” |
| 210 | 11” |
| 220 | 10-1/2” |
| 230 | 10-1/8” |
| 240 | 9-3/4” |
| 250 | 9-1/4” |
| 406 | 4-5/8” |
| 425 | 4-1/8” |
| 450 | 3-5/8” |
| 475 | 3-1/8” |
| 500 | 3” |
| 525 | 2-3/4” |



The dark line indicates that the approximate length for a rod tuned to 29MHz is 42.5 inches.

951 E. Grand Avenue • Arroyo Grande • CA 93420 | local (805) 541-1696 • toll free (888) 541-7223 • fax (805) 541-1679
www.ruggedradios.com