



## 2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector

### Antennas Technical Data Sheet

PE51MP1000

#### Features

- NMO Mount, Black Chrome Finish
- Flexible Black Polymer Alloy Spring
- Broad Band, Field Tunable
- O-ring seal for waterproof construction
- Durable Xenoy™ base with TPV over mold dust seal and grip ring

#### Applications

- Service vehicles
- Public Safety
- Public Transportation
- Mining & Construction

#### Description

This field tunable VHF/UHF mobile omnidirectional antenna is ideally suited for multipoint mobile applications including service vehicles, public transportation, public safety, mining and construction vehicles, as well numerous other commercial and industrial applications where mobility and wide coverage is desired. This antenna features a flexible Poly Spring base. Unlike the traditional metal spring base, the Poly Spring will not corrode and does not generate electrical noise when flexed during use. It has a standard TAD/NMO Motorola-type mobile base.

#### Configuration

Design	Vehicular
Application Band	VHF/UHF
Band Type	Single
Radiation Pattern	Omni Directional
Wavelength	Quarter Wave
Polarization	Linear, Vertical
Ground Plane	Required
Connector Type	NMO Mount

#### Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range (Tunable Range)	108		520	MHz
Input VSWR			2:1	
Impedance		50		Ohms
Gain		2		dBi
Horizontal (Azimuth) Beam Width		Omnidirectional		
Vertical (Elevation) Beam Width		50		Degrees
Input Power			150	Watts

#### Specifications by Band

Description	Band 1	Band 2	Band 3	Band 4	Band 5	Units
Bandwidth	15	50	100			MHz
Center Frequency	150	450	450			MHz
VSWR Max 2:1	1.5:1	2:1				

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



2 dBi Tunable Poly Spring Vehicular Antenna  
108-520 MHz NMO Mount Connector

Antennas Technical Data Sheet

PE51MP1000

**Mechanical Specifications**

Base Material	Xenoy™ w/TPV over mold grip ring
Whip Material	17-7 SS
Whip Finish	Black Chrome
Mounting Application	¾ inch thru-hole NMO Mount
Spring Material	Black Molded Polymer Alloy

**Size by Frequency**

Length @ 108 MHz	29 in [736.6 mm]
Length @ 150 MHz	19.75 in [501.65 mm]
Length @ 450 MHz	7.75 in [196.85 mm]

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



2 dBi Tunable Poly Spring Vehicular Antenna  
108-520 MHz NMO Mount Connector

Antennas Technical Data Sheet

PE51MP1000

**Installation Instructions**

**PE51MP1000 (108-520 MHz)**

**BROAD BAND VHF/UHF QUARTER-WAVE**

**ROOF MOUNT ANTENNA**

*Congratulations on your selection of another quality antenna product from Pasternack.*

*Pasternack is committed to continually provide the greatest antenna VALUE for your wireless applications.*

**1. Parts (Figure 1):**

Verify all parts are included with the Antenna as shown in figure 1.

- a. Antenna Whip
- b. e/m-Flex™ Poly Spring Assembly
- c. NMO Base Adapter
- d. O-Ring

**2. Tools:**

- a. Tool for cutting stainless steel whip
- b. Hex Wrench (3/32")
- c. **Note:** Special tools are not required to install the antenna.

The antenna is intended to be installed using a firm hand torque until the sealing O-ring is completely compressed against the installation surface.

**3. Pre-Installation (Figure 2):**

- a. The PE51MP1000 is designed for vehicular groundplane installation with a standard NMO mount.
- b. Ensure O-ring groove as shown in Figure 3.
- c. **Note:** Always cut the whip longer than specified chart dimensions to verify ground plane effects do not cause whip to resonate higher than desired frequency of operation.

**4. Tuning and Installation (Figure 3):**

- a. Verify contact spring is completely extended. If necessary, adjust by pulling the contact outward.
- b. Thread NMO Base Adapter onto the vehicle NMO Mount. Tighten by hand until O-Ring is completely seated.
- c. Thread spring onto NMO Base Adapter. Firmly torque by hand.
- d. Refer to PE51MP1000 whip cutting instructions. Cut whip to length according to desired frequency of operation.
- e. Verify VSWR. Apply firm torque to whip adapter set screws (2 ea).

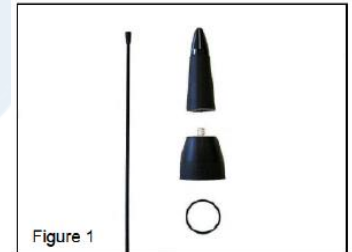


Figure 1

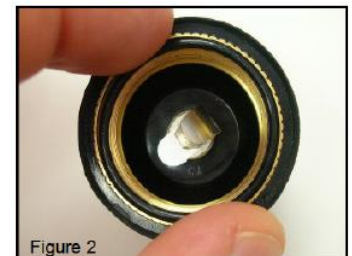


Figure 2

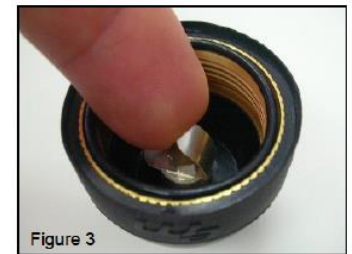


Figure 3

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



2 dBi Tunable Poly Spring Vehicular Antenna  
108-520 MHz NMO Mount Connector

Antennas Technical Data Sheet

PE51MP1000

**WHIP CUTTING INSTRUCTIONS**

**FOR TUNING PE51MP1000**

**VHF 108-225 MHz**

PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE CUTTING THE WHIP

1. **IMPORTANT: Before Cutting.**  
It is recommended to cut the whip longer than the required dimension to verify actual performance. Then trim the whip in 1/8" (3mm) increments to fine tune the desired VSWR response. The whip can be cut using a grinding wheel or shearing tool designed for this purpose.
2. **NOTE:** The Tuned Length "W" is determined by measuring the distance between the top of the whip adapter and the top of the whip. See Figure 4. Cut length dimension will be approximately 1" (25mm) longer than tuned length "W".
3. Identify the desired center frequency of operation in the left column of Table 1. Imperial and metric units are given for convenience.
4. **Note:** For frequencies not listed in Table 1 interpolation of Tuned Length "W" is permitted. Mounting location and vehicle (ground plane) size will affect actual VSWR performance.
5. Cut the whip length required to establish the specified Tuned Length "W" as shown in Figure 4.
6. Verify VSWR. Secure set screws (2 ea.).

FREQUENCY (MHz)	TUNED WHIP LENGTH "W"	
	(inches)	(mm)
108	25-5/16	642
110	24-1/16	611
115	22-11/16	580
120	21-1/4	540
125	20	508
130	18-3/4	475
135	17-13/16	453
140	16-15/16	430
145	16-1/4	412
150	15-9/16	395
155	15	380
160	14-3/8	365
165	13-15/16	354
170	13-1/2	343
175	13-1/8	332
180	12-5/8	320
185	12-1/4	310
190	11-13/16	300
195	7-11/16	290
200	11	280
205	10-3/4	273
210	10-7/16	265
215	10	254
220	9-3/4	248
225	9-1/2	240

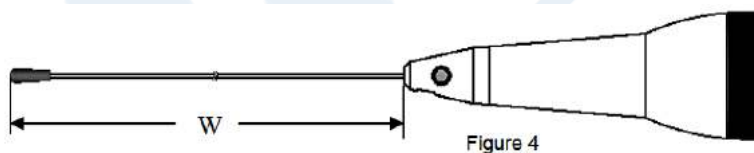


Figure 4

[Note: Add 1" (25mm) to Tuned Length "W" when cutting whip.]

Table 1

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



2 dBi Tunable Poly Spring Vehicular Antenna  
108-520 MHz NMO Mount Connector

Antennas Technical Data Sheet

PE51MP1000

**WHIP CUTTING INSTRUCTIONS**

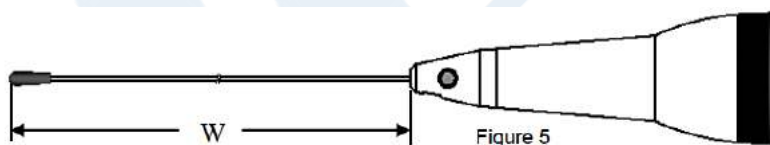
**FOR TUNING PE51MP1000**

**VHF 380-520 MHz**

PLEASE CAREFULLY READ ALL INSTRUCTIONS BEFORE CUTTING THE WHIP

- IMPORTANT: Before Cutting.**  
It is recommended to cut the whip longer than the required dimension to verify actual performance. Then trim the whip in 1/16" (1.5mm) increments to fine tune the desired VSWR response. The whip can be cut using a grinding wheel or shearing tool designed for this purpose.
- NOTE:** The Tuned Length "W" is determined by measuring the distance between the top of the whip adapter and the top of the whip. See Figure 4. Cut length dimension will be approximately 1" (25mm) longer than tuned length "W".
- Identify the desired center frequency of operation in the left column of Table 2. Imperial and metric units are given for convenience.
- Note:** For frequencies not listed in Table 1 interpolation of Tuned Length "W" is permitted. Mounting location and vehicle (ground plane) size will affect actual VSWR performance.
- Cut the whip length required to establish the specified Tuned Length "W" as shown in Figure 5.
- Verify VSWR. Secure set screws (2 ea.).

FREQUENCY (MHz)	TUNED WHIP LENGTH "W"	
	(inches)	(mm)
380	4-3/8	110
385	4-1/4	108
390	4-1/4	107
395	4-1/8	105
400	4-1/8	104
405	4	100
410	3-13/16	96
415	3-3/4	95
420	3-3/4	94
425	3-5/8	91
430	3-1/2	89
435	3-3/8	86
440	3-1/4	83
445	3-1/4	82
450	3-3/16	81
455	3-3/16	80
460	3-1/8	79
465	3-1/8	78
470	3-1/16	77
475	3	76
480	2-15/16	75
485	2-15/16	74
490	2-7/8	73
495	2-13/16	71
500	2-3/4	70
505	2-3/4	69
510	2-11/16	68
515	2-5/8	66
520	2-5/8	65



[Note: Add 1" (25mm) to Tuned Length "W" when cutting whip.]

Table 2

**Environmental Specifications**

**Temperature**

Operating Range

-40 to +85 deg C

Humidity

95%

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



2 dBi Tunable Poly Spring Vehicular Antenna  
108-520 MHz NMO Mount Connector

Antennas Technical Data Sheet

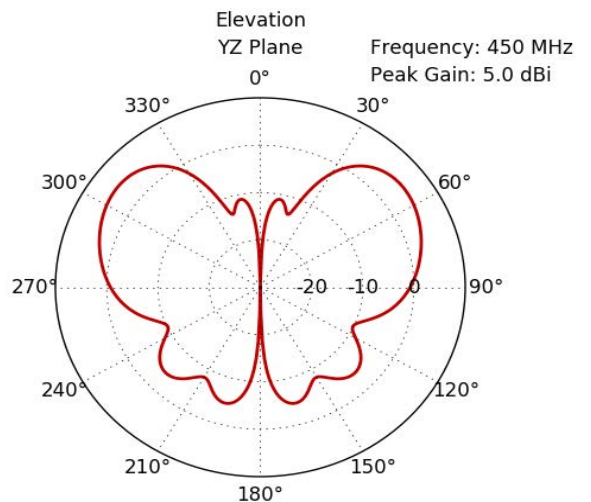
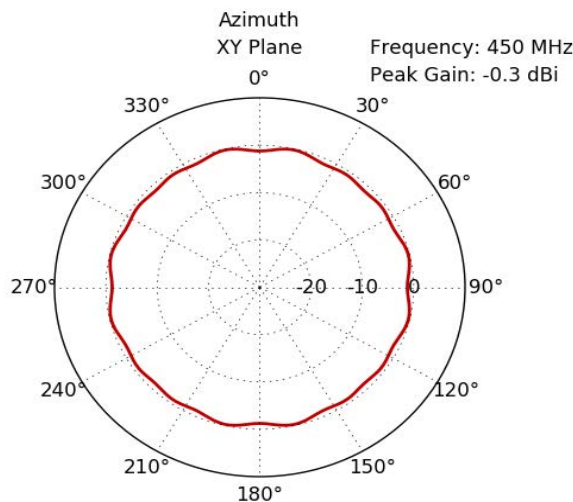
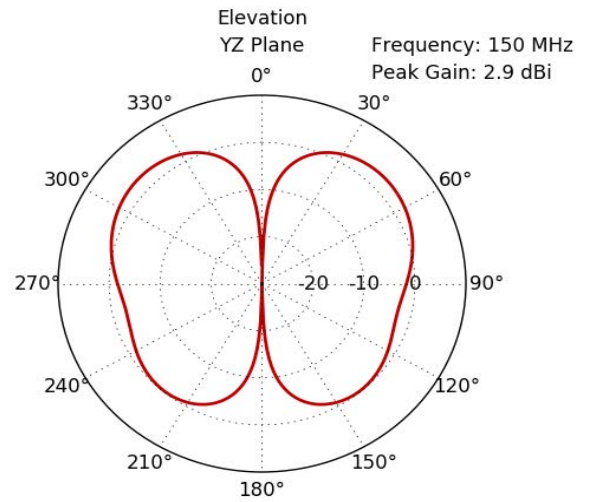
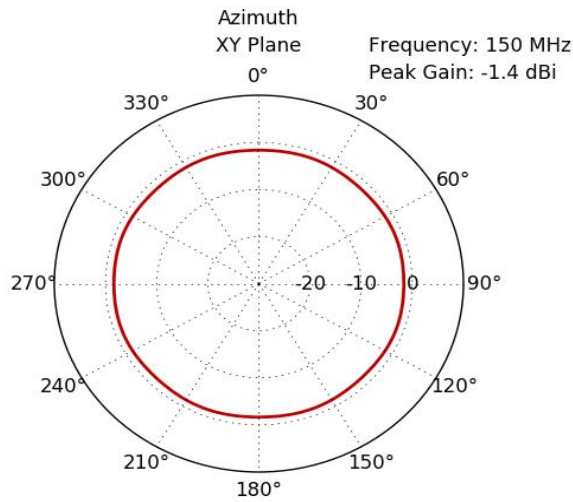
PE51MP1000

**Compliance Certifications** (see [product page](#) for current document)

**Plotted and Other Data**

Notes:

**Typical Radiation Pattern**



Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](#)



## 2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector

### Antennas Technical Data Sheet

PE51MP1000

2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector from Pasternack Enterprises has same day shipment for domestic and International orders. Our RF, microwave and millimeter wave products maintain a 99.4% availability and are part of the broadest selection in the industry.

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector PE51MP1000](https://www.pasternack.com/single-antenna-108-520-mhz-2-dbi-gain-nmo-mount-pe51mp1000-p.aspx)

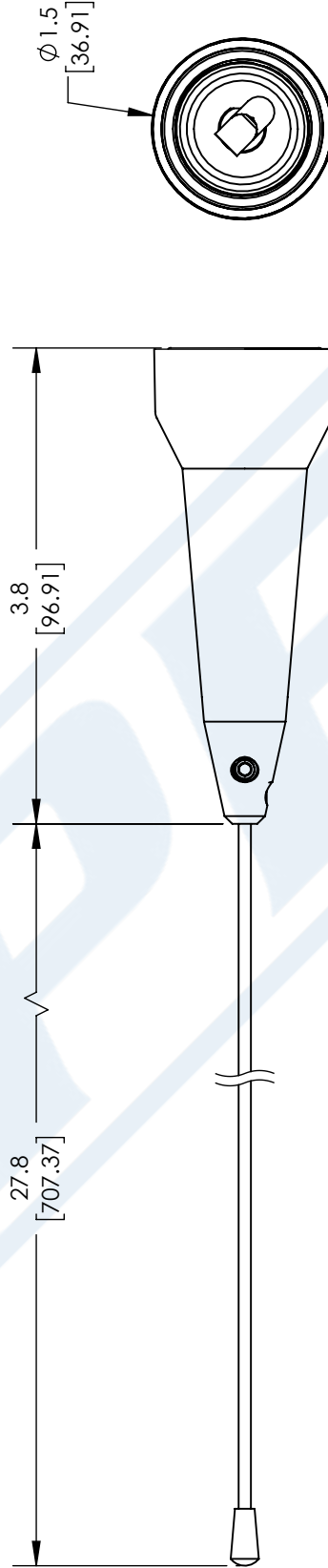
URL: <https://www.pasternack.com/single-antenna-108-520-mhz-2-dbi-gain-nmo-mount-pe51mp1000-p.aspx>

The information contained in this document is accurate to the best of our knowledge and representative of the part described herein. It may be necessary to make modifications to the part and/or the documentation of the part, in order to implement improvements. Pasternack reserves the right to make such changes as required. Unless otherwise stated, all specifications are nominal. Pasternack does not make any representation or warranty regarding the suitability of the part described herein for any particular purpose, and Pasternack does not assume any liability arising out of the use of any part or documentation.

# PE51MP1000 CAD Drawing

2 dBi Tunable Poly Spring Vehicular Antenna 108-520 MHz NMO Mount Connector

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	07/16/2019	MMILLER



UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS	
TOLERANCES:	FRACTIONS
X±.2 [5.08]	+1/32
XX±.01 [.25]	ANGLES ± 1°
XXX±.005 [.13]	
ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.	
THIRD-ANGLE PROJECTION	

**(PE) PASTERNAK**  
an INFINITE brand

Pasternack Enterprises, Inc.  
P.O. Box 16759, Irvine, CA 92623.  
Phone: 1.949.261.1920 | 1.866.727.8376  
Fax: 1.949.261.7451  
www.pasternack.com | e-mail: sales@pasternack.com

SIZE: A CAGE NUMBER: 53919 DRAWN BY: BPUCHASKI PART NUMBER: PE51MP1000

THE INFORMATION AND DESIGN IN THIS DOCUMENT IS THE PROPERTY OF PASTERNAK CORPORATION. ALL RIGHTS RESERVED.	
SHEET 1	OF 1
SCALE	N/A
REV	A

THESE COMMODITIES, TECHNOLOGY OR SOFTWARE WERE EXPORTED FROM THE UNITED STATES IN ACCORDANCE WITH THE EXPORT ADMINISTRATION REGULATIONS. DIVERSION CONTRARY TO U.S. LAW PROHIBITED.