PASTERNACK
an INFINITE brand

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 multimpoint 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 antennna 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

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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]

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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

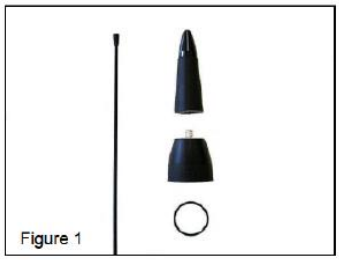
Figure 1

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.

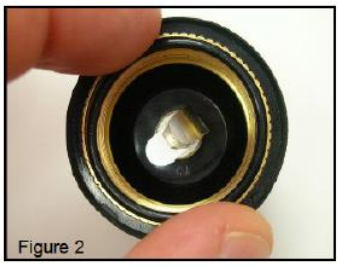
Figure 2

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 completed 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).

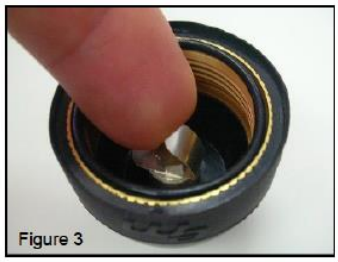
Figure 3

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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.).

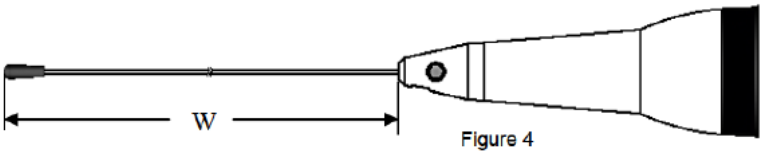

Figure 4

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

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

Table 1

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WHIP CUTTING INSTRUCTIONS

FOR TUNING PE51MP1000

VHF 380-520 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 1/16'' (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.
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 2. 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 5.
6. Verify VSWR. Secure set screws (2 ea.).

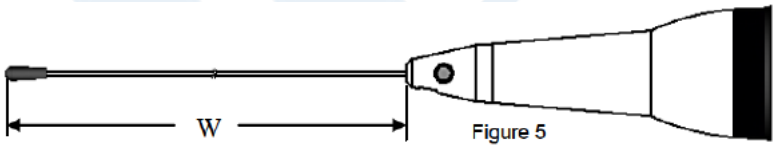

Figure 5

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

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

Table 2

Environmental Specifications

Temperature	
Operating Range	-40 to +85 deg C
Humidity	95%

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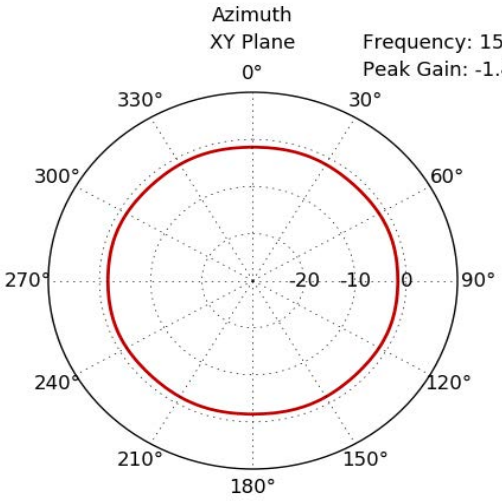
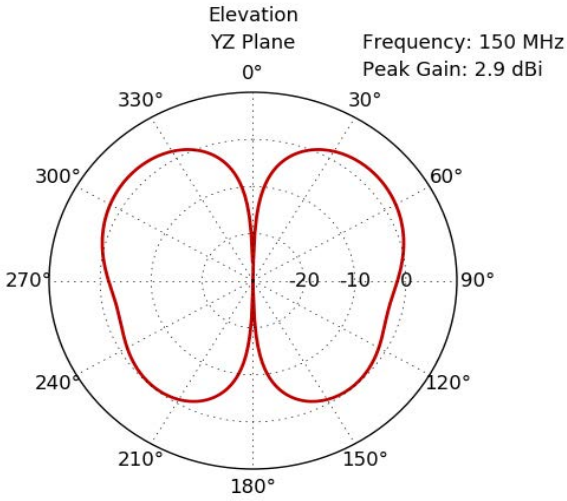
Compliance Certifications (see product page for current document)

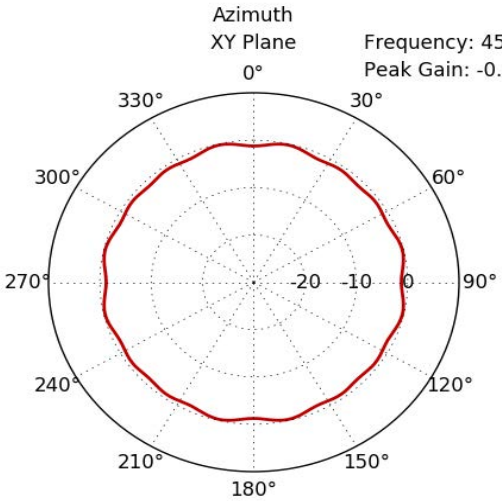
Plotted and Other Data

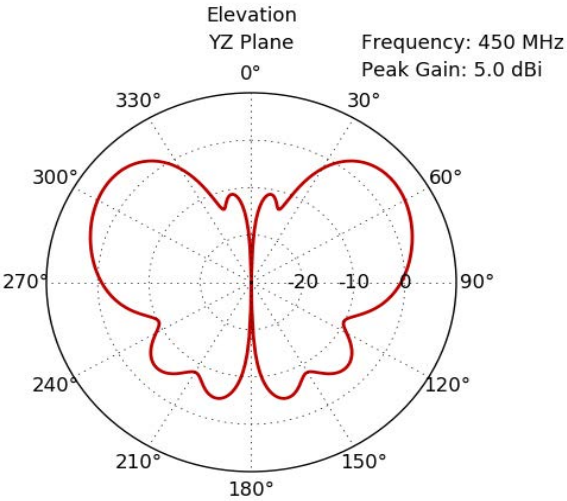
Notes:

Typical Radiation Pattern









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

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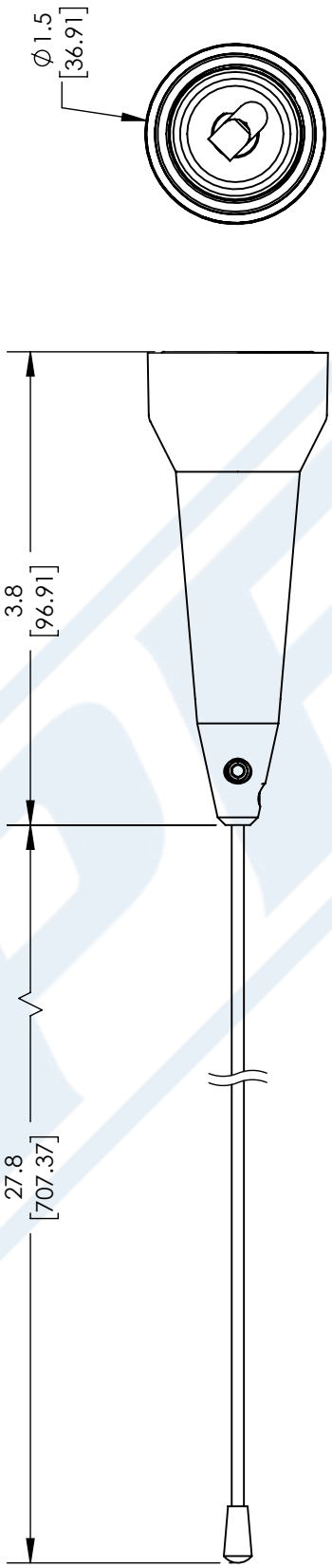
PE51MP1000 CAD Drawing

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:

X=± .2	[5.08]	FRACTIONS	± 1/32
.XX=± .01	[.25]	ANGLES	± 1°
.XXX=± .005	[.13]		

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.

THIRD-ANGLE PROJECTION

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

SCALE N/A

SHEET 1 OF 1

T-Rev.B