



# Dual Band Duplexed Antenna Kit with GPS 108-174 380-870 MHz NMO Mount/N Type Connectors

## Antennas Technical Data Sheet

PE51AK1001

### Features

- Duplexer (VHF/UHF 108-174MHz/380-870MHz) with integral N-Type (m) Connectors (3 ea.)
- Low Loss PE51GPS1000 NMO Combination mount with integrated GPS antenna (1 ea.)
- RG-58/U NMO mount (1 ea.)
- Field Tunable Antennas (2 ea.)
- RG-58/U Feed Vable (1 ea.)
- HG-GPSNMO58-SMA NMO Combination mount with integrated GPS antenna

### Applications

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

### Description

Combined with a GPS antenna, this VHF/UHF duplexed mobile antenna kit 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. The antenna kit features a VHF/UHF duplexer, a pair of field tunable antennas, and a GPS antenna. This gives users the flexibility to operate radio transceivers in any VHF and UHF band with optimum performance. The kit allows the user to upgrade/switch to any NMO-type antenna.

### Configuration

Design	Duplexer
Application Band	VHF/UHF
Band Type	Dual
Cable Length	204 in [518.16 cm]
Connector Type	NMO Mount
Interface 2	N

### Duplexer Electrical Specifications

Description	Minimum	Typical	Maximum	Units
Frequency Range (VHF)	100		180	MHz
Frequency Range (UHF)	380		870	MHz
Input VSWR (All Ports)			1.6:1	
Impedance		50		Ohms
Isolation (VHF↔UHF-870)	50			dB

Electrical Specification Notes:  
Electrical specifications data applies to Duplexer

### Duplexer Specifications by Band

Description	Band 1	Band 2	Band 3	Band 4	Band 5	Units
Range	100-180	380-520	746-870			MHz
Insertion Loss	0.2	0.3	0.5			dB
Maximum Input Power	150	100	75			Watts

Click the following link (or enter part number in "SEARCH" on website) to obtain additional part information including price, inventory and certifications: [Dual Band Duplexed Antenna Kit with GPS 108-174 380-870 MHz NMO Mount/N Type Connectors PE51AK1001](#)



# Dual Band Duplexed Antenna Kit with GPS 108-174 380-870 MHz NMO Mount/N Type Connectors

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### GPS Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Bandwidth (L1)		1575.42±3		MHz
Gain @ 5VDC		30		dBi
VSWR (In/Out)			2:1	
Impedance		50		Ω
Operational Voltage	3		5	V
Current Drain	6		20	mA
Filter Type		SAW		
Attenuation wrt L1 (L1±50 MHz)	35			dB
Attenuation wrt L1 (L1±100 MHz)	45			dB
Input Power		10		W

### GPS Passive Element Specifications

Description	Min	Typ	Max	Max
Center Frequency		1575.42		MHz
Antenna VSWR			1.5:1	
Impedance		50		Ω
Polarization		RHCP		

### NMO Combination Mount Electrical Specifications

Description	Min	Typ	Max	Max
Frequency Band	30		1000	MHz
VSWR			1.5:1	
Impedance		50		Ω
Cable Type		RG58/U		
Insertion Loss			2.5	dB
Power Rating			150	W

### NMO Combination Mount Mechanical Specifications

Height	0.88 in [22.4 mm]
Width	2.2 in [55.9 mm]
Length	4.5 in [114.3 mm]
Mounting Application	Bulkhead, ¼ in. Thru-Hole
Cable Length NMO	17 ft. [5.1 m]
Cable Type	RG174/U
GPS Connector	SMA Plug
Color	Black
GPS Radiator	Ceramic, Silver
Operating Temperature	-40°C to 85°C
Corrosion	Salt Fog
Humidity	95%
Vibration	AAR & MIL-STD-810E

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**Field Tunable Antenna Electrical Specifications**

Description	Min	Typ	Max	Max
Frequency Range	108		870	MHz
VSWR (Field Tunable)			1.6:1	
Impedance		50		Ω
Gain		2		dBi
Power Rating		100		W
Polarization		Linear, Vertical		
E-Plane		50		Degrees
H-Plane		Omnidirectional		
Ground Plane		Required		

**Field Tunable Antenna Mechanical Specifications**

Height	31.75 in [806 mm]
Radiator Material	300 Series SS
Radiator Plating	Black Chrome
Base Material	Xenoy™ w/TPV Skirt
Mounting Application	¾" thru-hole NMO mount
Operating Temperature	-40°C to 85°C
Corrosion	Salt and UV Resistant

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**Duplexer Mechanical Specifications**

**Size**

Overall Length

3.27 in [83.06 mm]

Width

2.1 in [53.34 mm]

Height

1.1 in [27.94 mm]

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#### Installation Instructions PE51AK1001

*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.*

**Parts (Figure 1):** Verify all parts are included. Reference items in Figure 1:

1. (1 ea.) Multi-Band Duplexer
2. (2 ea.) Z-Nut™ Field Tunable ¼ Wave Antenna
3. (3 ea.) Type N Connectors, RG-58/U & 195 Type
4. (1 ea.) PE51GPS1000 NMO/GPS Combination Cable Mount
5. (1 ea.) 195 Low Loss NMO Cable Mount
6. (1 ea.) RG-58/U Feed Cable, 17 ft. (5.1m) length

**Tools/Materials Required:**

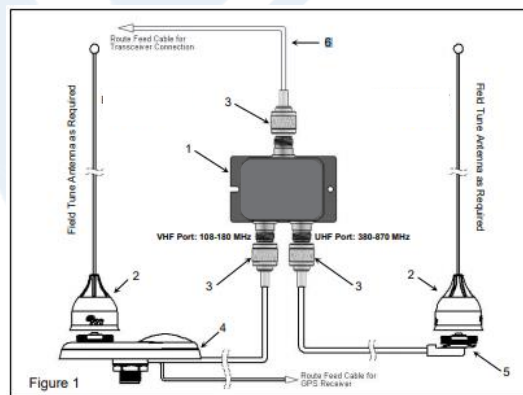
- Drill and Hole Punch, ¼" (19.05mm) Diameter – NMO Cable Mount Installation
- #8 Self Tapping or Machine Screws (2 ea.) – Duplexer Installation
- Cable Stripping Tools for RG-58/U & 195 type cable – Connector Installations
- Coaxial Connector (sold separately) for attaching Feed Cable (RG-58/U) to radio transceiver

**Pre-Installation Checklist and Tips:**

- ✓ **Caution:** Verify radio output power does not exceed rated power for each band of the duplexer:  
VHF ◊ **150W Max:** (100-180 MHz) UHF ◊ **100W, max:** (380-520 MHz) 700/800 MHz ◊ **75W, max:** (746-870 MHz)
- ✓ Locate a suitable mounting location for the Duplexer providing the shortest cable lengths for installing both antennas.
- ✓ **Important:** Duplexer intended for interior or environmentally protected installation only. Do not install with direct exposure to outdoor environment.
- ✓ Follow all instructions provided with each NMO Cable Mount and Field Tunable Antenna to be installed.
- ✓ **Best Performance Recommendations:**
  - Minimize all cable lengths during installation to reduce unnecessary cable insertion loss.
  - Feed the UHF of 700/800 MHz Antenna using the 195 Low Loss NMO Cable Mount.
  - Separate antennas by largest distance possible to prevent VSWR mismatch or radiated obstruction. (**Note:** Duplexer provides >50 dB isolation between VHF and UHF/700-800 MHz antenna ports, maximizing cross-talk rejection.)

**Installation:**

1. Refer to figure 1 for antenna/duplexer system configuration.
2. Install Duplexer to a suitable mounting surface using #8 screws. Mounting Hole spacing: 2-15/16" (74.6mm).
3. Install NMO cable mount and NMO/GPS cable mount for each antenna according to the individual instructions.
4. Verify antenna cable routing. Cut excess cable. Strip ends of the NMO cable mounts according to the N Type Connector instructions provided with the connectors. Attach N Type connectors to the cables. Crimp and verify operation.
5. Repeat Step 4 for one end only of RG-58/U Feed Cable. Attach radio transceiver connector (sold separately) to the opposite end of the RG-58/U Feed Cable.
6. Install and tune antennas according to the individual antenna instructions provide. Verify operation.
7. Attach GPS connector to GPS receiver. Attach all remaining connections according to the system diagram in Figure 1.
8. Verify radio transceiver performance for all required operating bands or channels.



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**Environmental Specifications**

**Temperature**

Operating Range

-40 to +85 deg C

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

**Plotted and Other Data**

Notes:

Dual Band Duplexed Antenna Kit with GPS 108-174 380-870 MHz NMO Mount/N Type Connectors 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.

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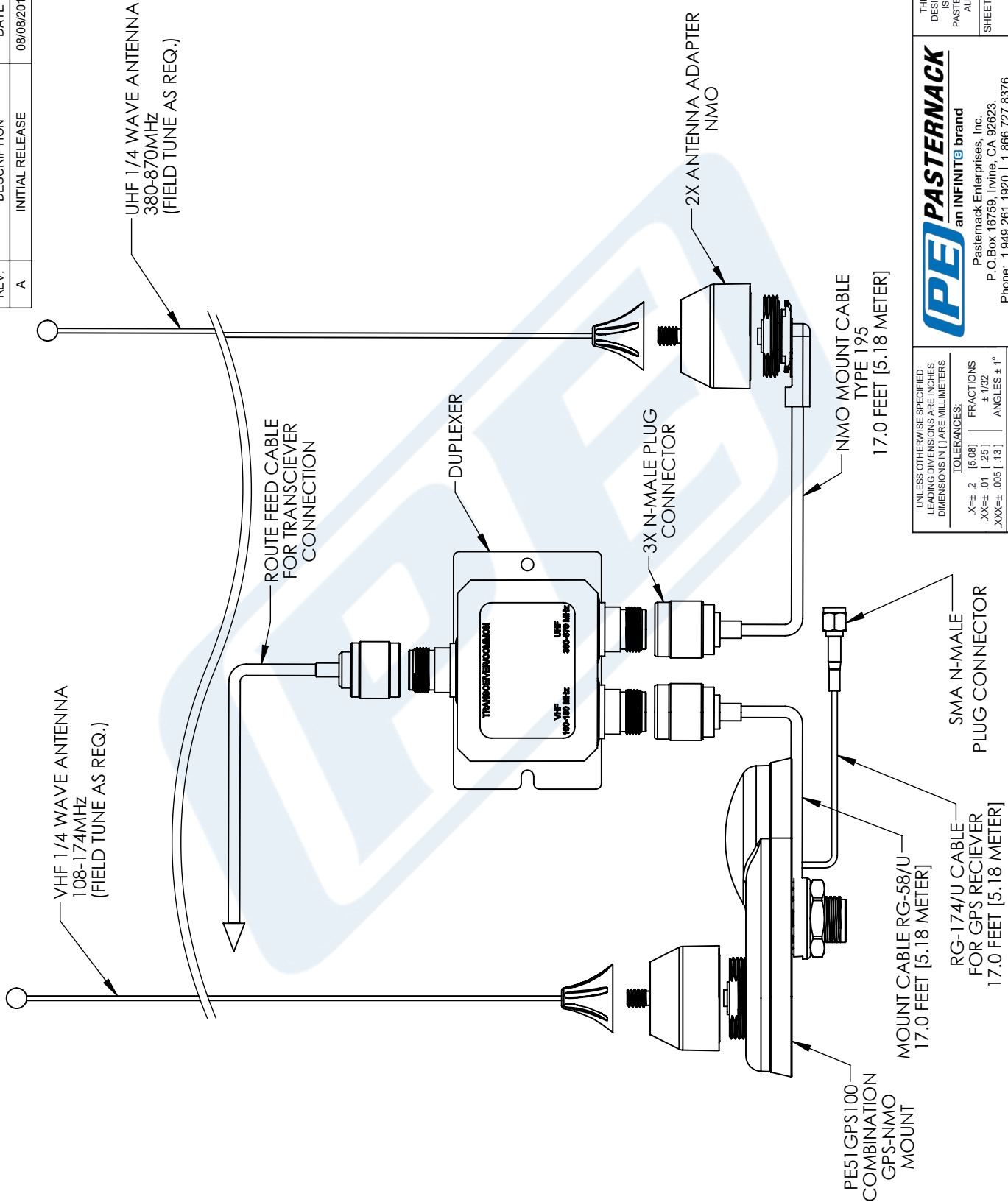
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# PE51AK1001 CAD Drawing

Dual Band Duplexed Antenna Kit with GPS 108-174 380-870 MHz  
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	08/08/2019	MMILLER



UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [ ] ARE MILLIMETERS

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

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.  
 THIRD-ANGLE PROJECTION

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