

The antenna is constructed on a fiberglass printed circuit board for a slim profile and rugged structure.

Dipole elements

Reflector

The dipole elements form the "front" of the antenna. A reflector creates a forward gain of about 3.7 dB.

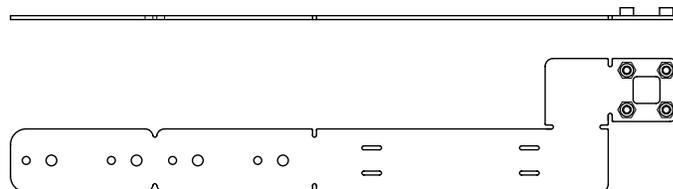
A single trace on the back of the PC board connects one dipole element to the center conductor of the BNC connector and functions as an impedance matching balun.



- Printed circuit finished with black solder mask on FR4 fiberglass for a slim profile and the ruggedness needed for field use
- Directional dipole design
- 825 to 1025 MHz frequency range
- Circular pattern with 3.7 dB gain
- Supplied with aluminum mounting strap

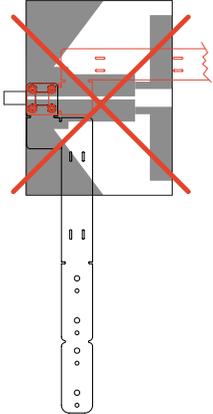
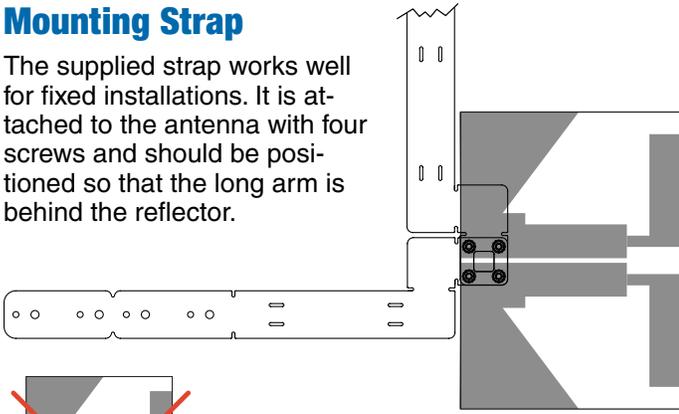
A unique and very useful design, the PCA900 antenna provides wide bandwidth and a circular pattern in a compact, rugged package. A BNC connector allows direct connection to receivers and multicouplers with standard 50 ohm coaxial cable. An aluminum mounting strap for fixed installation is included and a variety of other mounting options are also available for mobile applications.

A mounting strap is included for fixed installations. It is notched to allow clean bends for a wide variety of horizontal and vertical positions.



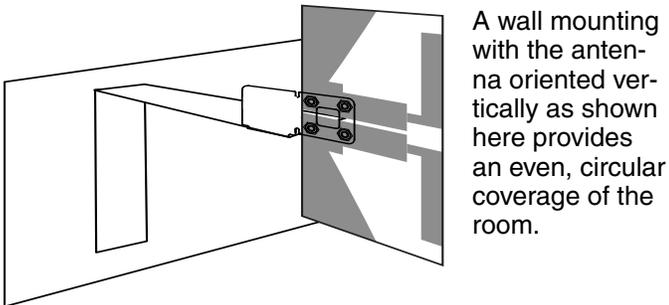
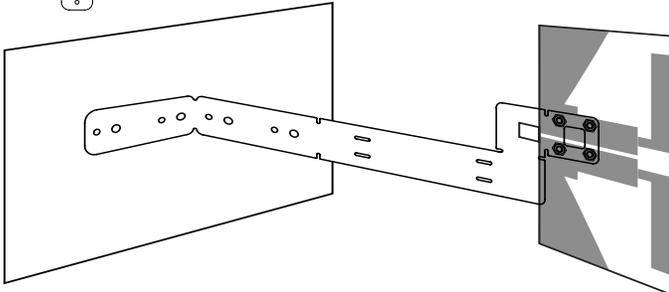
Mounting Strap

The supplied strap works well for fixed installations. It is attached to the antenna with four screws and should be positioned so that the long arm is behind the reflector.

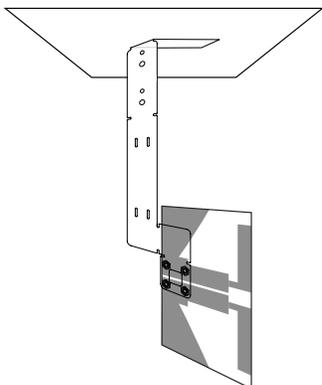


The strap should NOT be mounted so that the long arm is in front of the reflector.

The strap can be bent at various angles at the notches to shape it into a bracket for mounting the antenna to a variety of surfaces.

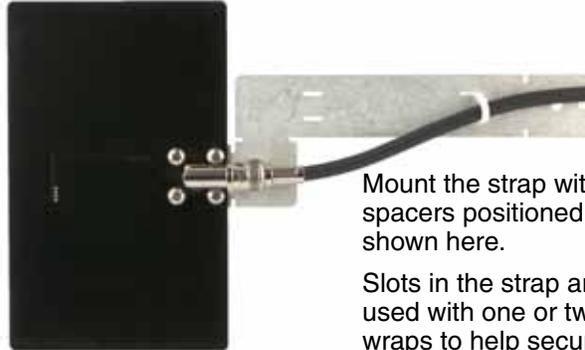


A wall mounting with the antenna oriented vertically as shown here provides an even, circular coverage of the room.



The antenna can also be mounted to a ceiling with appropriate bends in the bracket.

IMPORTANT
Determine the bends needed in advance so that each one is made only once, as repeated bending can cause the aluminum to fracture.

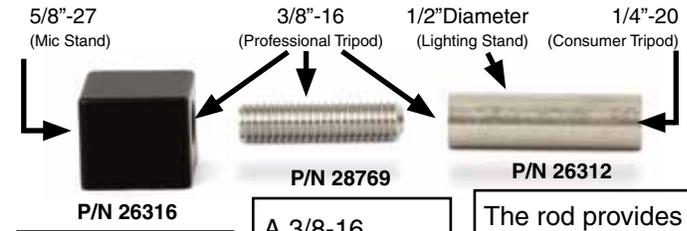


Mount the strap with the spacers positioned as shown here.

Slots in the strap are used with one or two tie wraps to help secure the coaxial cable.

Optional Mounting Block & Adapters

For mobile applications where the antenna is moved and remounted frequently, an optional mounting block and threaded adapters are available to allow mounting on tripods and lighting clamps.



Standard mic stand and 3/8-16 large tripod threads are provided on the machined aluminum block.

A 3/8-16 threaded stud is available to attach a stainless steel lighting clamp rod.

The rod provides 1/4-20 threads at one end for use with smaller tripods.

The block is mounted so that the threaded stud and clamping rod extend behind the reflector of the antenna, following the same guidelines as for the strap.

The block is mounted with the four screws supplied with the antenna. Insert the threaded stud with the hex key end facing forward so an Allen wrench can be used to tighten the stud and lighting clamp rod.

The photo below shows how these accessories mount to antenna

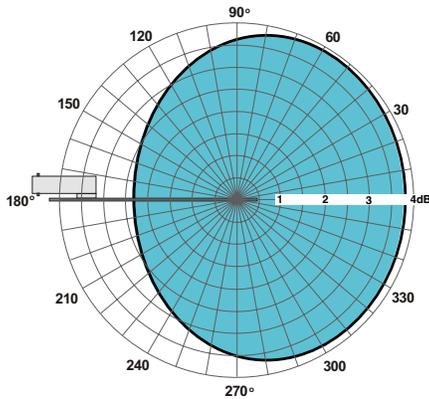


Antenna Placement

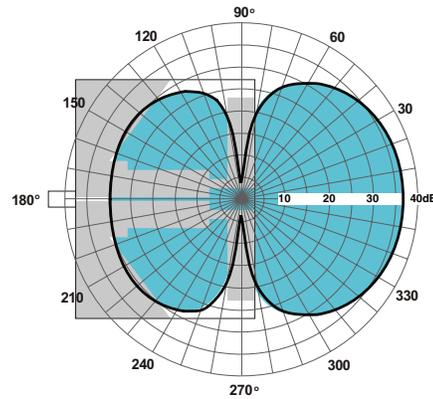
The best placement of the antenna is generally within a line of sight of the transmitter, placed so that the antenna patterns overlap each other as depicted by the blue elliptical lines in the diagrams below.

The transmitter antenna pattern varies significantly depending upon placement on the user's body and the orientation of the whip, but the basic pattern is much the same as the PCA900.

The patterns shown here are signal strength plots showing the power or sensitivity of the antenna in different directions in an anechoic environment. In reality, reflections off the room surfaces, furniture, etc. generate many more paths between the transmitter and receiver antennas. It is, however, best practice to optimize the placement considering the patterns shown here since direct signals are stronger than reflected signals.



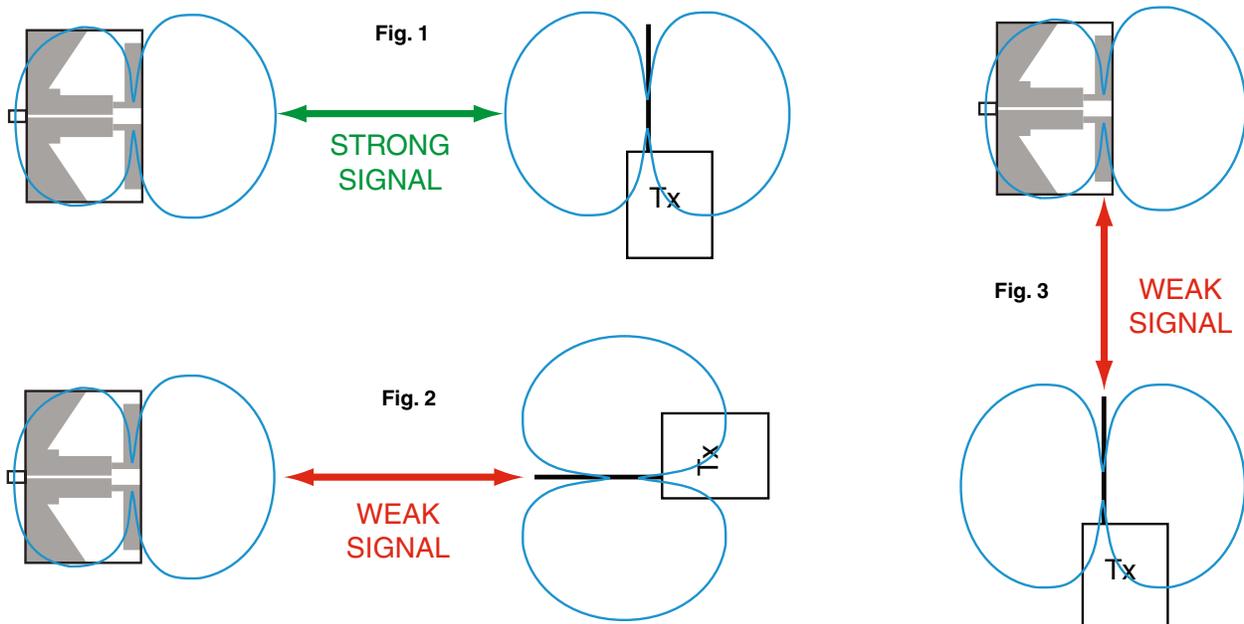
Viewed from the top, the PCA900 pattern is circular with a modest forward gain.



Viewed from the side, the PCA900 pattern is the same as a conventional dipole.

Outdoors the pattern is often close to the plots shown above, so the orientation in the diagrams below are accurate examples. Indoors, the pattern of the antenna is modified by RF signal reflections off walls, ceilings and other surfaces, so the coverage patterns normally do not match the ideal plots shown above. Strong reflections that are common indoors can also cause multipath drop-outs, requiring diversity reception for reliable operation.

In spite of signal behavior in a reflective environment, patterns should still be considered in determining antenna placement and orientation. Fig. 1 depicts an ideal setup where the antennas are both vertical. Fig. 2 shows what happens when a belt pack transmitter is positioned with its antenna horizontal and the PCA900 is in the null of the transmitter antenna. Fig. 3 depicts a worst case setup where each antenna is in the null of the other.



Specifications

Antenna type:	Directional dipole
Frequency range:	825 - 1025 MHz
Gain:	3.7 dB approx.
Dimensions:	5.63 x 3.88 x .500 inches; 143 x 98 x 13 mm
Weight:	1.7 ozs; 47 grams (without strap and hardware)
Included accessories:	Aluminum strap with four mounting screws

