



Mitigating Tomorrow's Interference TodaySM



PTA1.5-17 Miniature GNSS Receive Passive Horizontal-Mount PCBA Antenna

GNSS

Embedded

SPECIFICATION

Part Number: PTA1.5-17

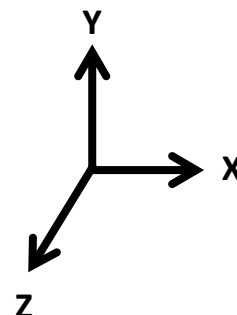
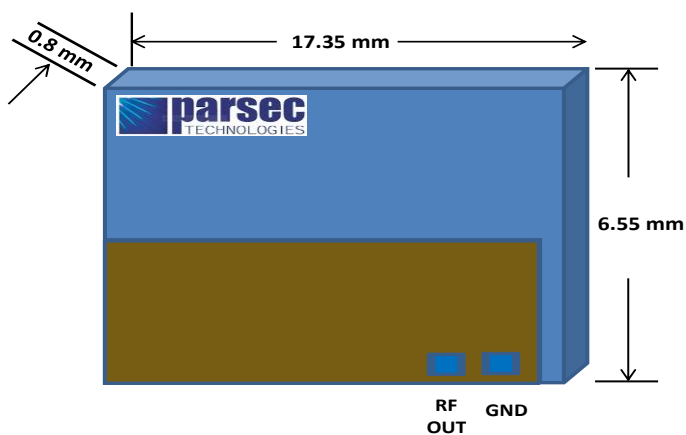
Specification #: PTA1.5-17_040214_v04

Product Name: Miniature GNSS Receive Passive Horizontal-Mount PCBA Antenna

Features: 1560 to 1610 MHz, >60% Radiated Efficiency, η

6.55 x 17.35 x 0.8 mm (H x W x Thickness)

RoHS compliant





PTA1.5-17 Miniature GNSS Receive Passive Horizontal-Mount PCBA Antenna

Product Description

Parsec's PTA1.5-17 is a miniature high radiated efficiency GNSS/GPS L1 passive antenna with 6.55 x 17.35 x 0.8 mm (L x W x thickness) dimensions. The PTA1.5-17 integrates easily with industry leading GNSS/GPS 3D-SIPs and system on chip (SoC) receivers with only a single direct connection typically required and is compatible with any GNSS receiver operating from 1560 to 1610 MHz. Ideal for embedded LBS receivers requiring good user experience that operate within 5 to 7 mm of the human body, indoors in the presence of multipath, and in applications with obstructed view of orbiting satellites. Patents pending.

The PTA1.5-17 miniature printed circuit board (PCB) laminate based passive antenna is intended for embedded Global Navigation Satellite System (GNSS) receivers operating in the 1560 to 1610 MHz frequency range. It is mounted horizontally with respect to Earth within miniature GNSS receivers via surface mount technology (SMT) reflow using low cost industry standard methods. This antenna is linearly polarized (LP) and is optimized for use in miniature GNSS receivers requiring high radiated efficiency and wide beamwidth over a 50-MHz bandwidth.

Specification

Parameter	Specification	Notes
Receive Frequency	1560 to 1610 MHz	
Bandwidth	50 MHz	At 10-dB minimum return loss (RL)
VSWR	1.5:1	Typical at 1575MHz
Gain at Zenith	0.9 dBi	@ 1560 MHz (corrected for cable loss)
Gain at 10° Elevation	0.7 dBi	@ 1560 MHz (corrected for cable loss)
Average Gain	-0.54 dBi	@ 1560 MHz (corrected for cable loss)
Radiated Efficiency, η	$\geq 60\%$	Maximum η degradation of 10% within 5 to 7 mm of human body
Polarization	Linearly Polarized (LP)	
Weight	0.5g	Maximum
Operating Temperature	-40 to +85 C	

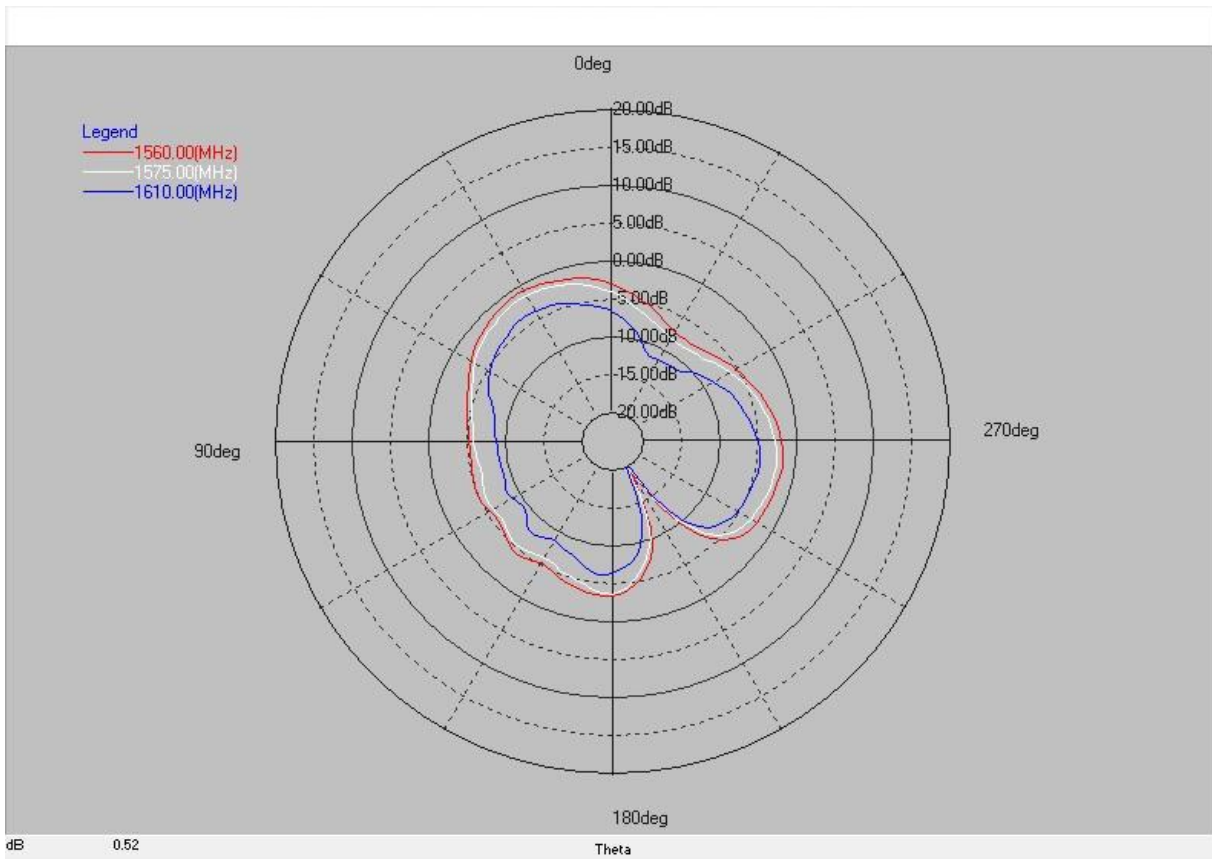
Input Return Loss (IRL), S11 Electrical Property



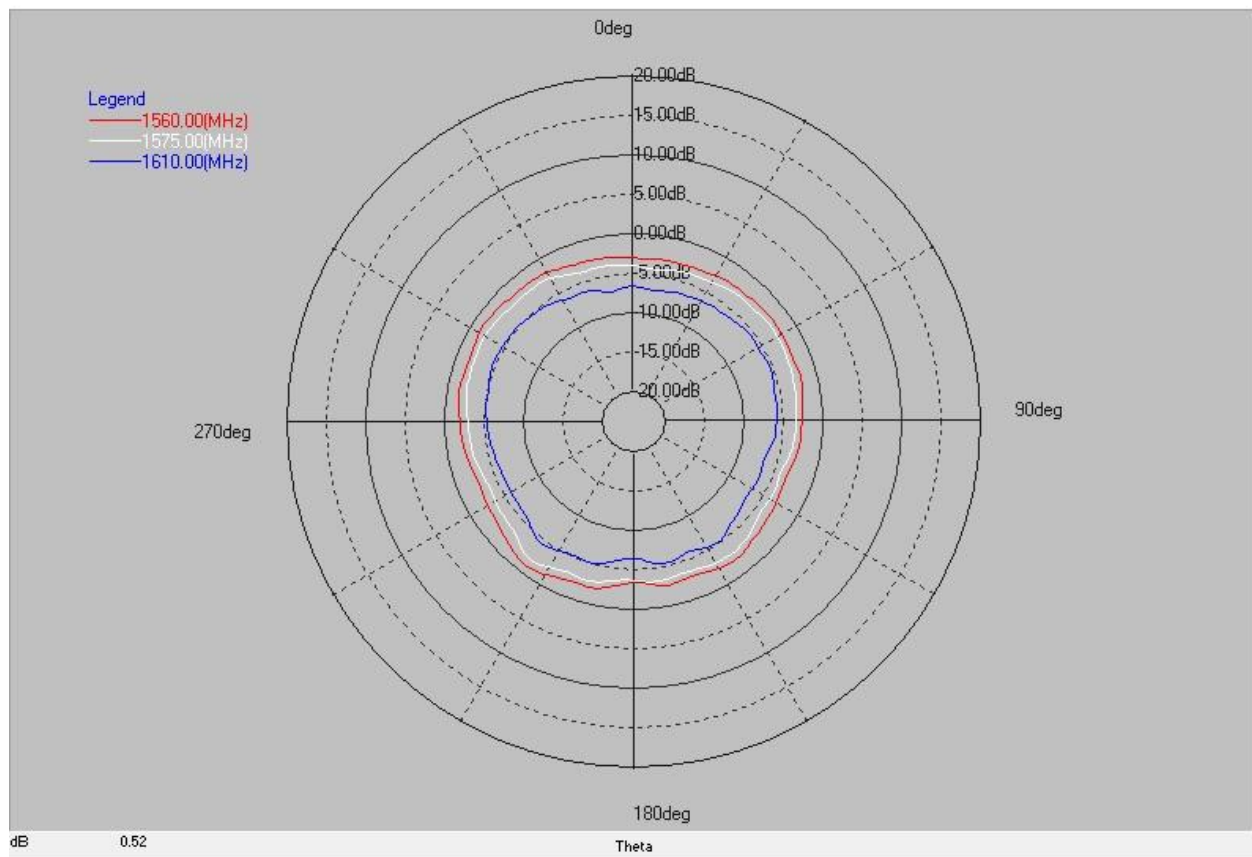
Test by hand with standard coax cable and SMA connector, handheld with the hand one foot away from the antenna on the cable. No loss for the cable or connectors have been deducted from the test. The antenna element was covered with to simulate a plastic cover.

Radiation Pattern

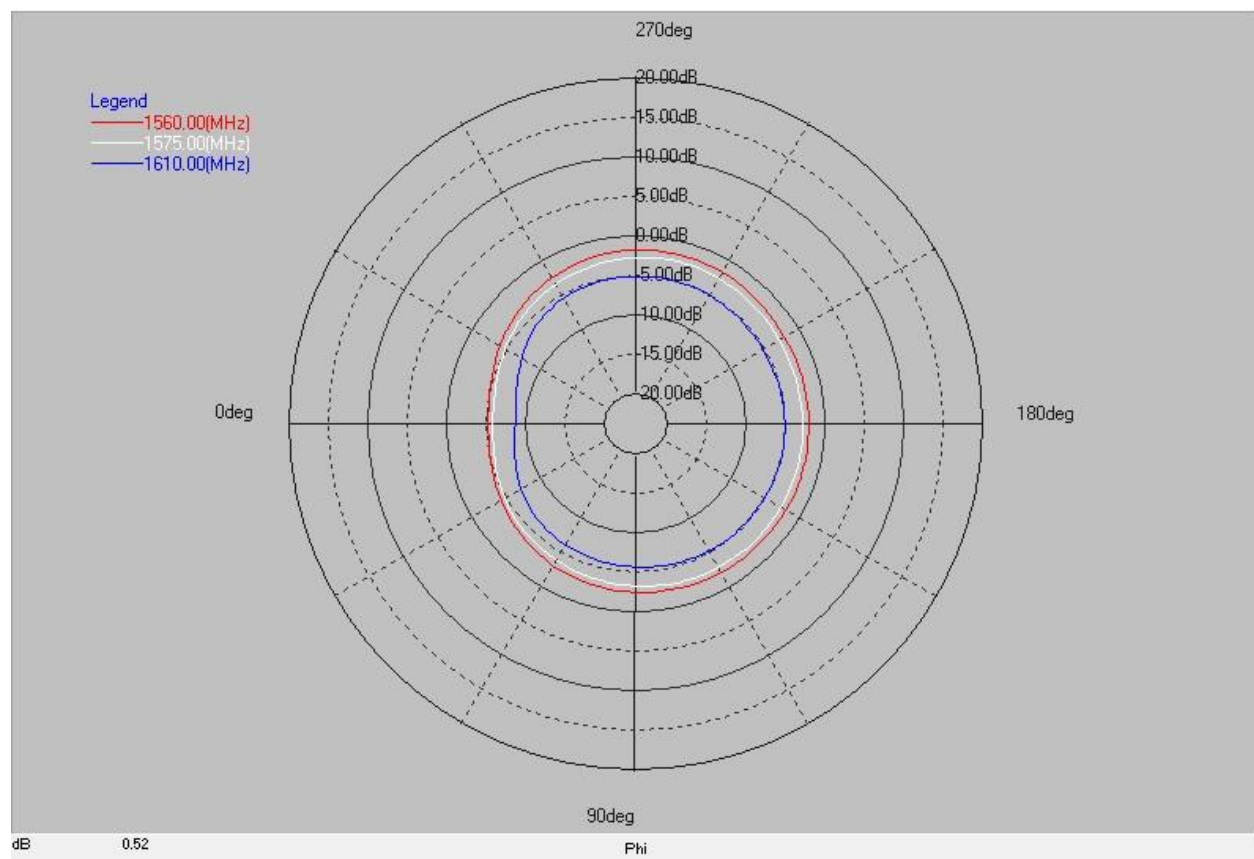
Polar plots shown in this section employ raw antenna test data with no correction for cable and connector loss and near field interference.



XZ Plane Radiation, $\phi = 0^\circ$

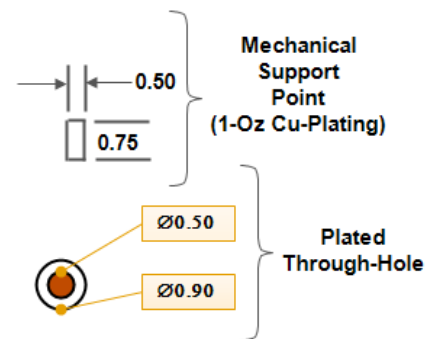
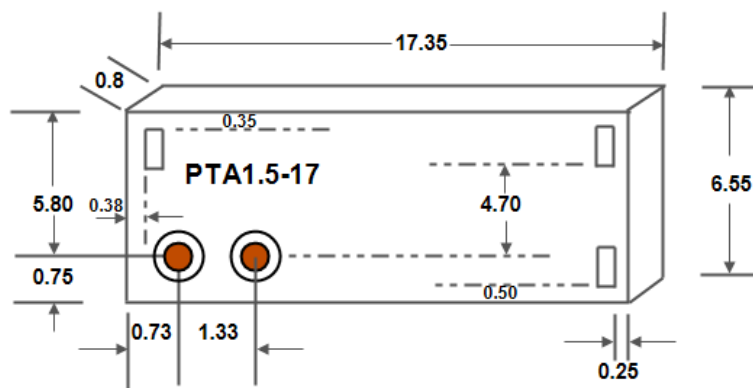


YZ Plane Radiation, $\phi = 90^\circ$



YZ Plane Radiation, $\theta = 90^\circ$

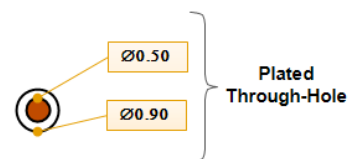
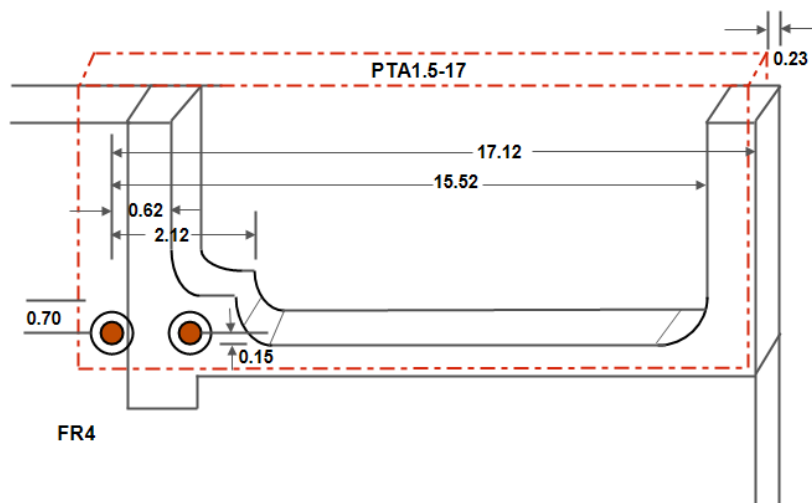
Mechanical Drawings



All dimensions in millimeters

PTA1.5-17 thickness is 0.80 mm nominal and 0.88 mm with one (1) ounce copper (Cu) plating on both Top and Bottom Sides

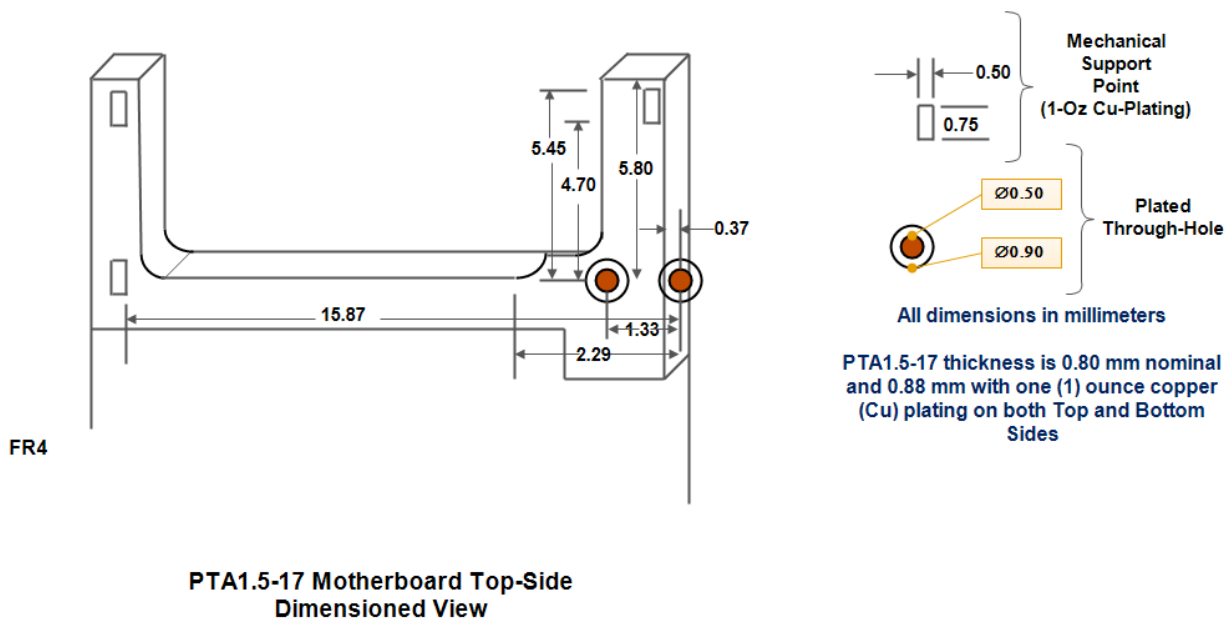
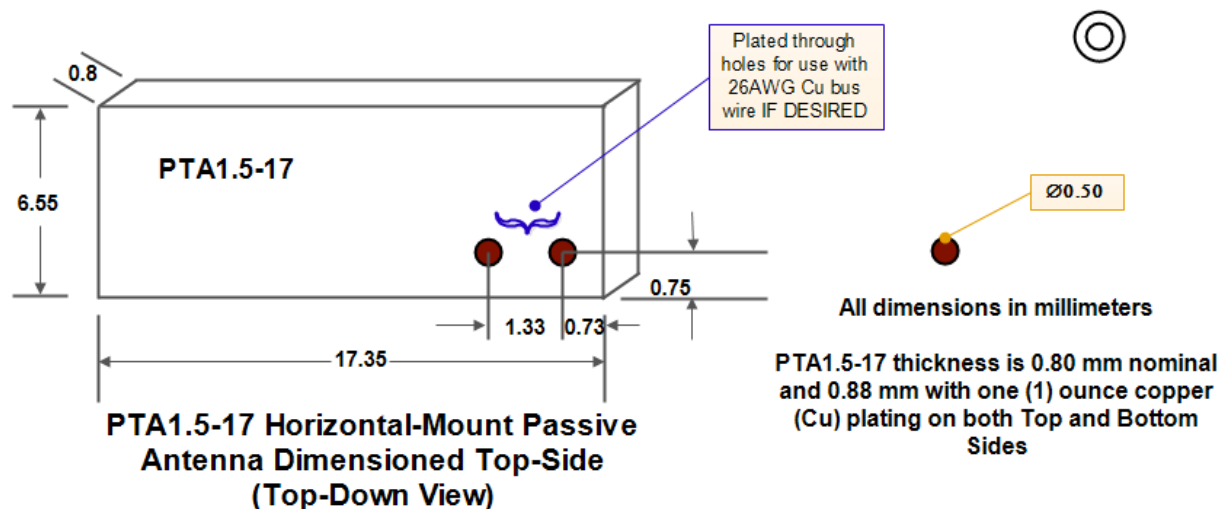
PTA1.5-17 Horizontal-Mount Passive Antenna Dimensioned Bottom-Side (Top-Up View)



All dimensions in millimeters

PTA1.5-17 thickness is 0.80 mm nominal and 0.88 mm with one (1) ounce copper (Cu) plating on both Top and Bottom Sides

PTA1.5-17 Motherboard Back-Side Dimensioned View



PTA1.5-V antenna thickness is 0.8 mm nominal and 0.88 mm maximum to accommodate one (1) ounce copper (Cu) plating thickness on top and bottom side. Parsec Technologies Inc. assumes the customer will employ a motherboard or mating printed circuit board (PCB) constructed of two-layer minimum NEMA compliant FR4 V0 rated laminate material with 1.5 mm nominal thickness and a permittivity of 4.8 maximum.

Pad Out

PAD DESCRIPTION	FUNCTION	NOTES
RF OUT	50-Ohm 1560 to 1610 MHz radio frequency (RF) output	No matching required for 50-Ohm applications. Solder 26AWG copper (Cu) wire to plated through-hole as shown in Mechanical Drawing.
GND	Ground	Solder 26AWG Cu bus wire to plated through-hole as shown in Mechanical Drawing.

Surface Mount Technology (SMT) Reflow

Step One: place solder paste IAW instructions on Parsec antenna module pads;

Step Two: position the Parsec antenna module as shown against the GNSS receiver PCBA prior to SMT reflow;

Step Three: perform SMT reflow IAW provided temperature profile.

Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact:

Parsec Technical Support Center (PTSC), techsupport@parsec-t.com