Mitigating Tomorrow's Interference Today[SM]

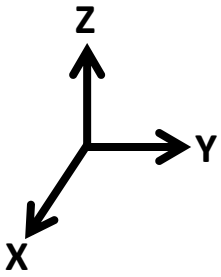
PTA1.5-V Miniature GNSS Receive Passive PCBA Vertical-Mount Antenna

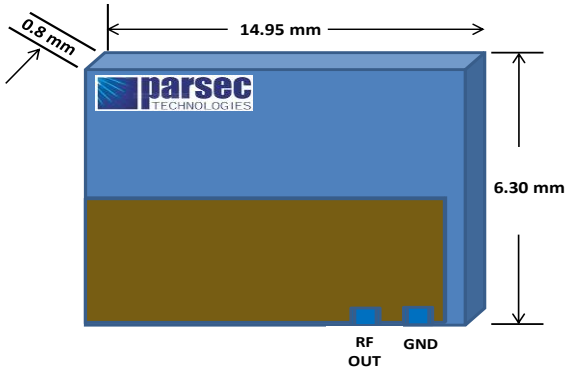
GNSS

Embedded

SPECIFICATION

Part Number:	**PTA1.5-V**
Specification Number:	**PTA1.5-V_020214_v03**
Product Name:	**Miniature GNSS Receive Passive PCBA Vertical-Mount Antenna**
Features:	**1560 to 1610 MHz, >60% Radiated Efficiency, η**
	6.30 x 14.95 x 0.8 mm (H x W x Thickness)
	RoHS compliant





PTA1.5-V Miniature GNSS Receive Passive PCBA Antenna

Product Description

Parsec's PTA1.5-V is a miniature high radiated efficiency GNSS/GPS L1 passive vertical-mount antenna with 6.30 x 14.95 x 0.8 mm (L x W x thickness) dimensions. The PTA1.5-V 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.

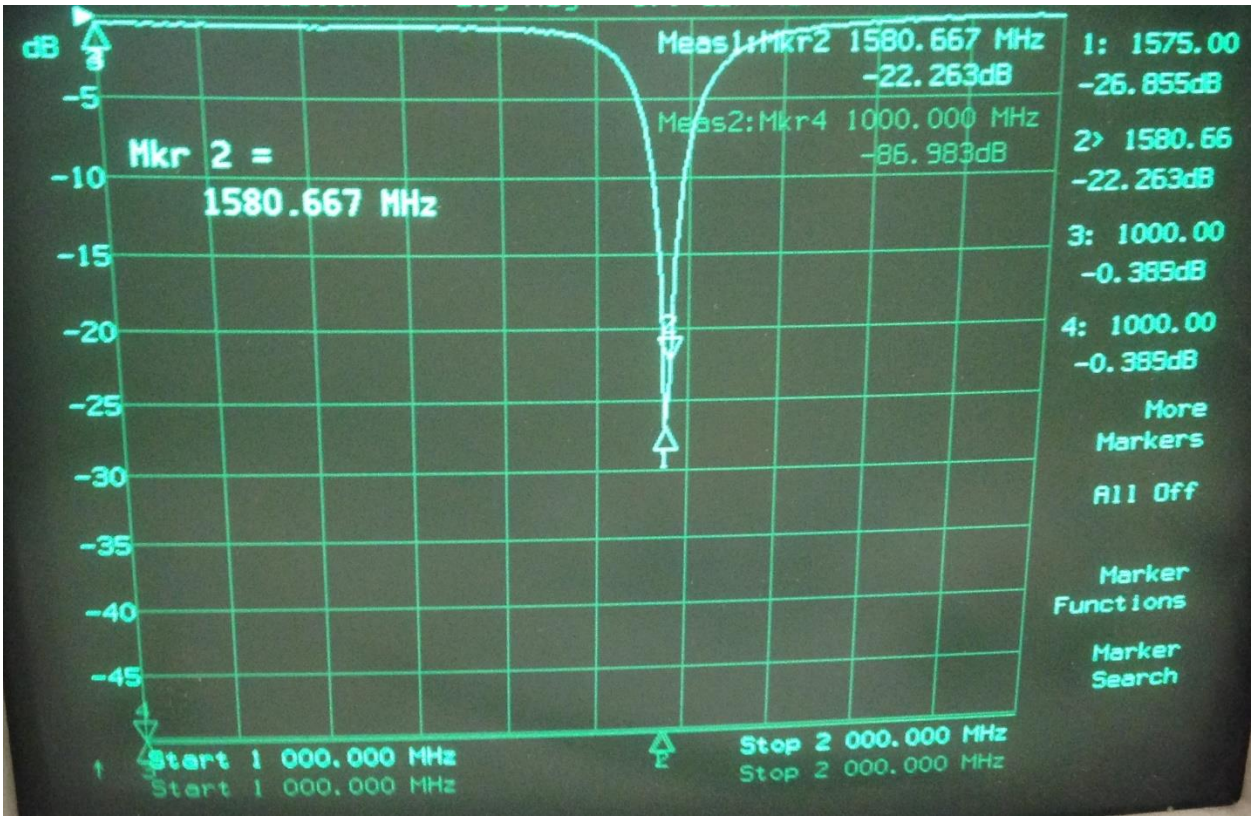
The PTA1.5-V miniature printed circuit board (PCB) laminate based passive antenna is intended for embedded Global Navigation Satellite System (GNSS) receivers operating in the 1560 to 1610 MHz frequency range. It is vertically mounted within products equipped with miniature GNSS receivers via surface 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

Specification

Parameter	Specification	Notes
Receive Frequency	1560MHz 1575MHz 1610 MHz	
Bandwidth	50 MHz	At 10-dB minimum return loss (RL)
Gain at Zenith	3.5 dBi	@ 1560 MHz (corrected for cable loss)
Gain at 10° Elevation	0.5 dBi	@ 1560 MHz (corrected for cable loss)
Average Gain	1.6 dBi	@ 1560 MHz (corrected for cable loss)
Radiated Efficiency, η	≥60%	Maximum η degradation of 10% within 5 to 7 mm of human body
Polarization	Linearly Polarized (LP)	
Weight	0.5 g	Maximum
Operating Temperature	-40 to +85 C	
Return Loss	-10dB -15dB -10dB	Typical

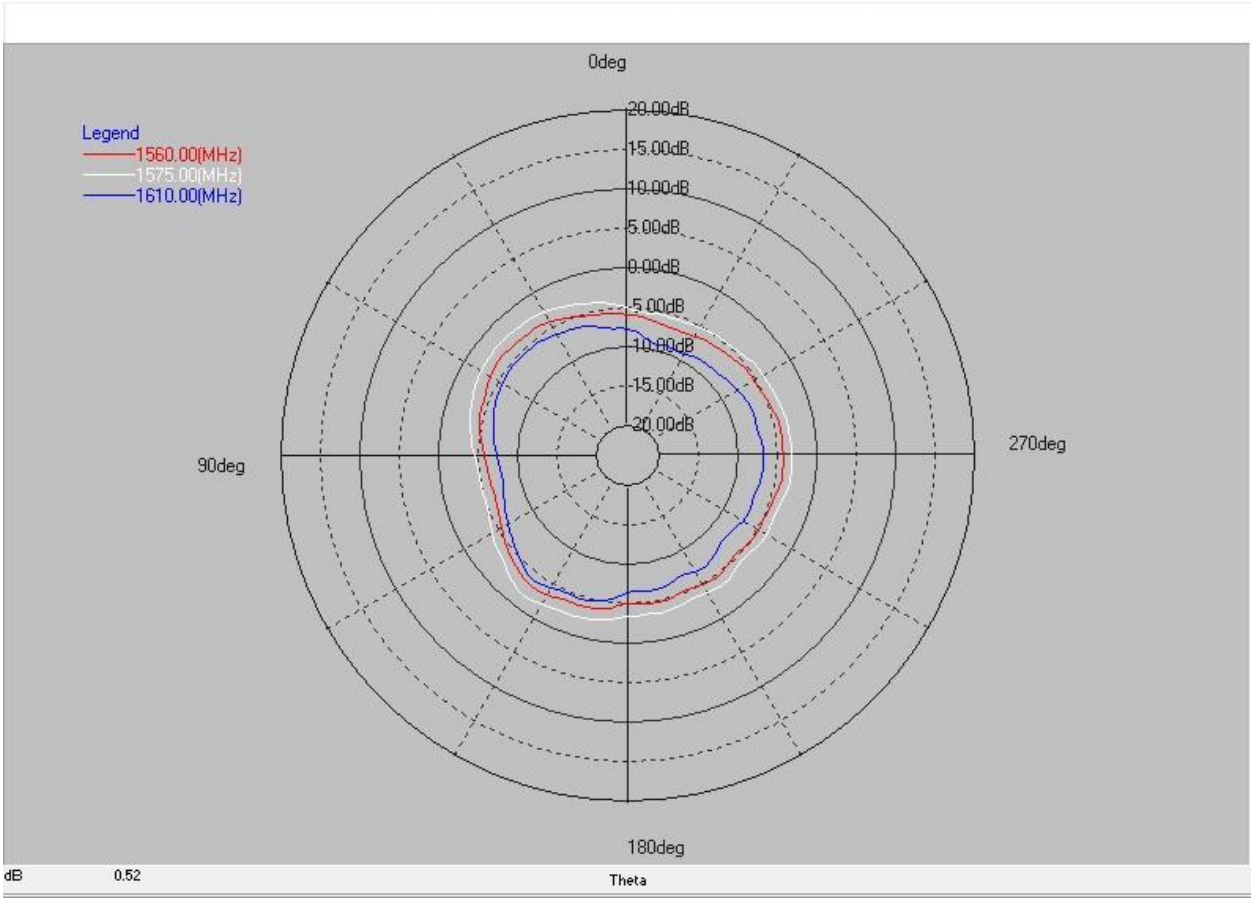
Returnloss

Tuned for GPS 1575MHz on standard coax, with hand holding the cable one foot away from antenna.

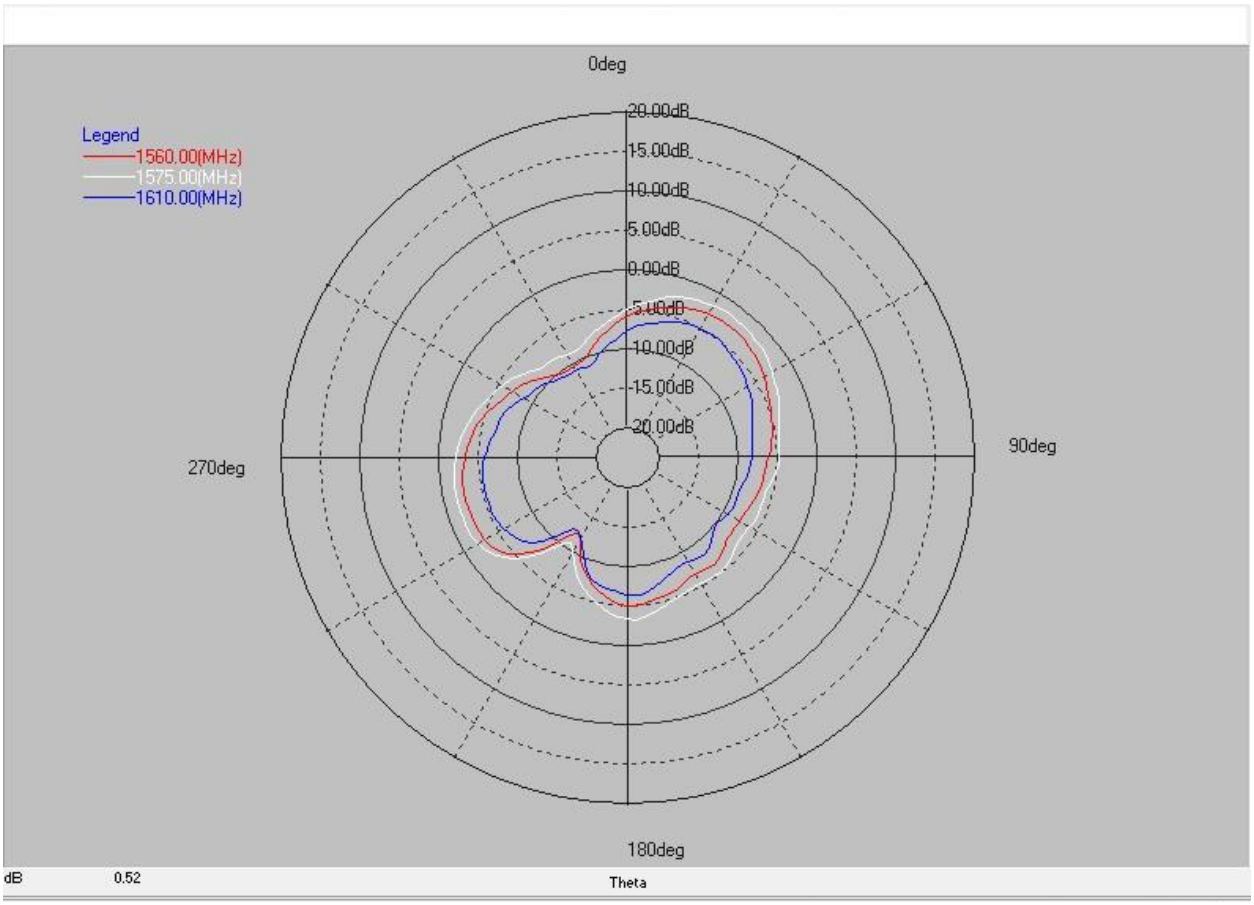


Radiation Pattern

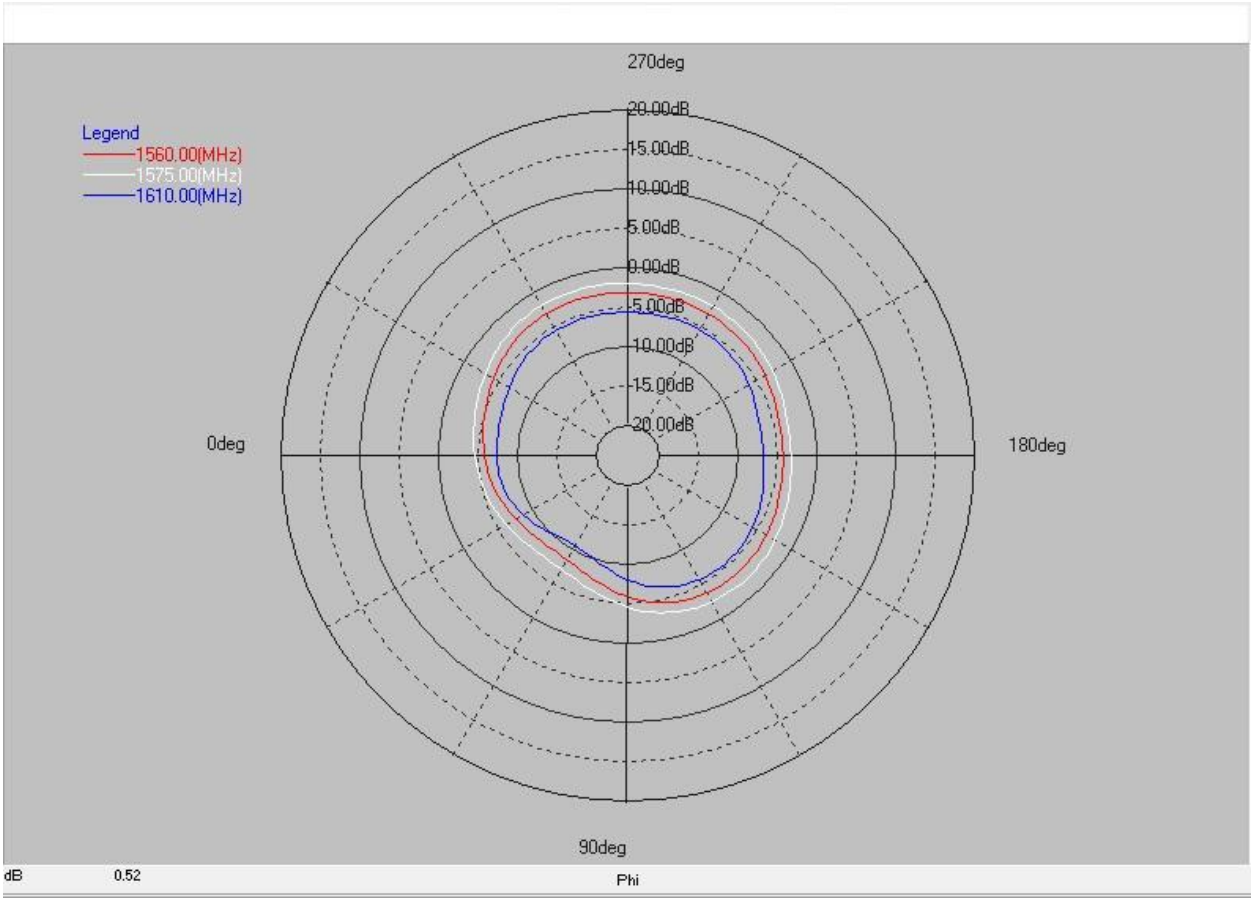
Polar plots shown in this section employ raw antenna test data with no correction for cable and connector loss and near field interference.



XZ Plane Radiation, ϕ = 0°

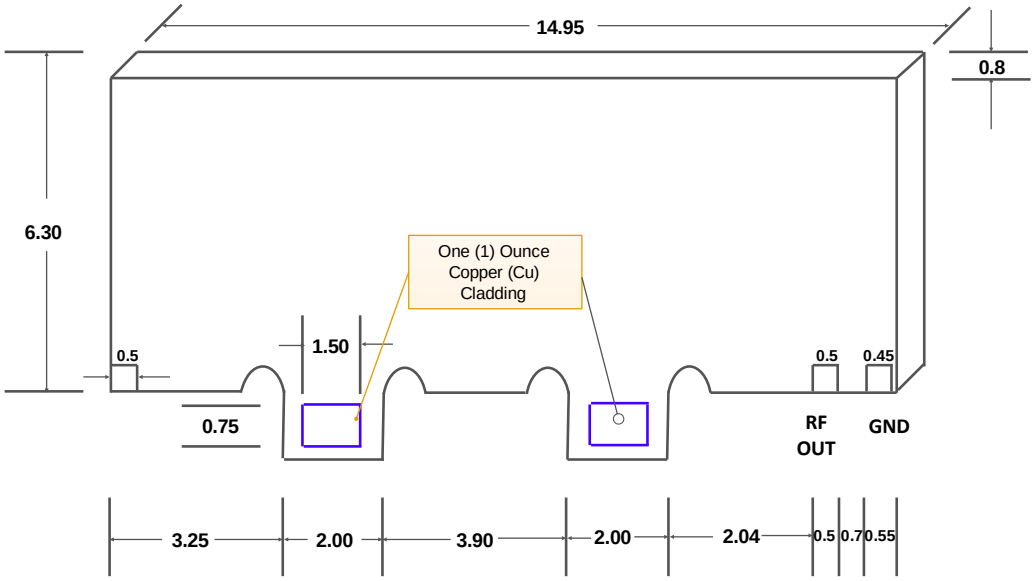


YZ Plane Radiation, ϕ = 90°



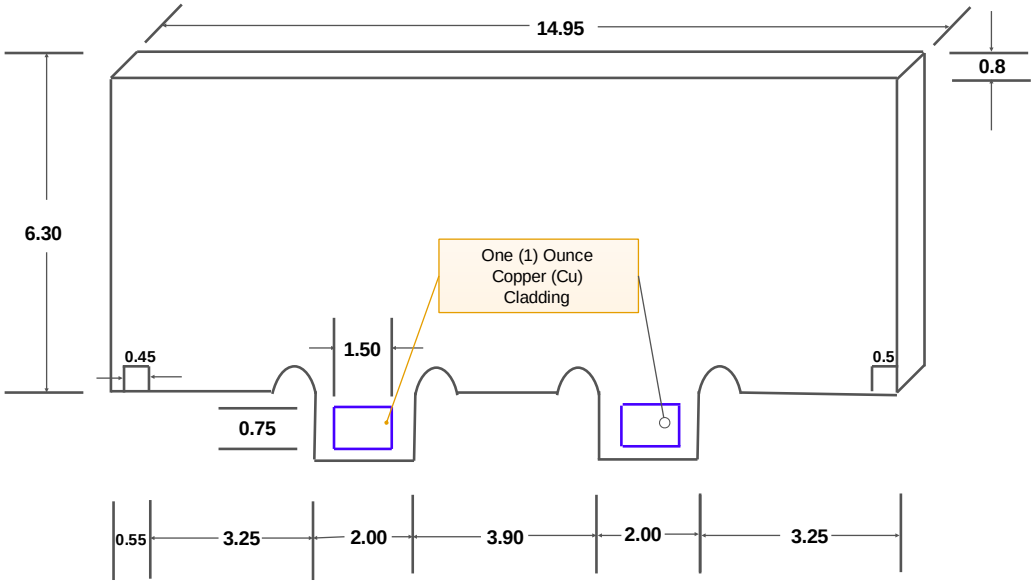
YZ Plane Radiation, θ = 90°

Mechanical Drawing



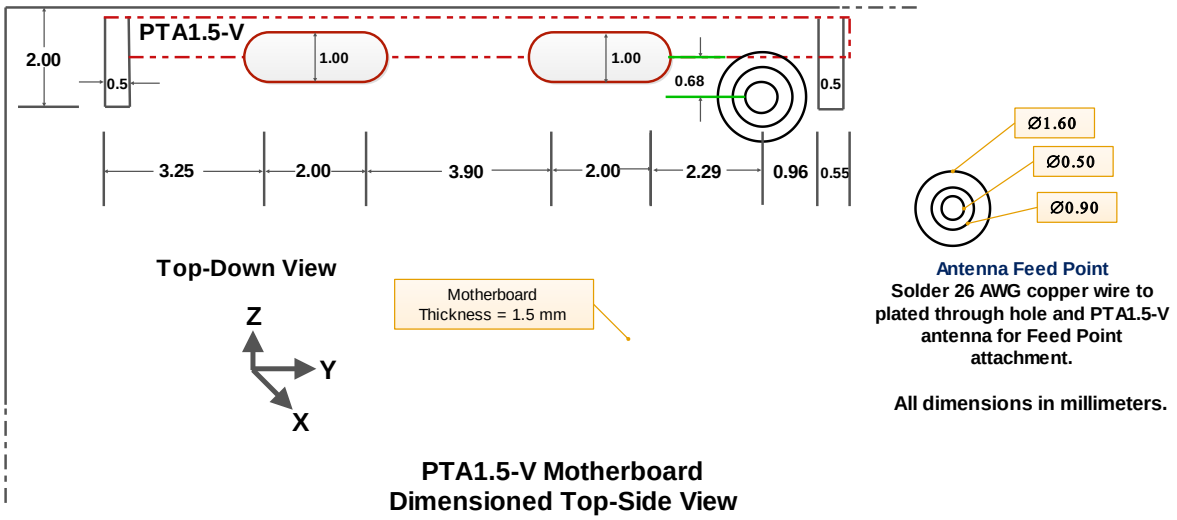
All dimensions in millimeters (mm)

PTA1.5-V Antenna Front-Side



All dimensions in millimeters (mm)

PTA1.5-V Antenna Back-Side

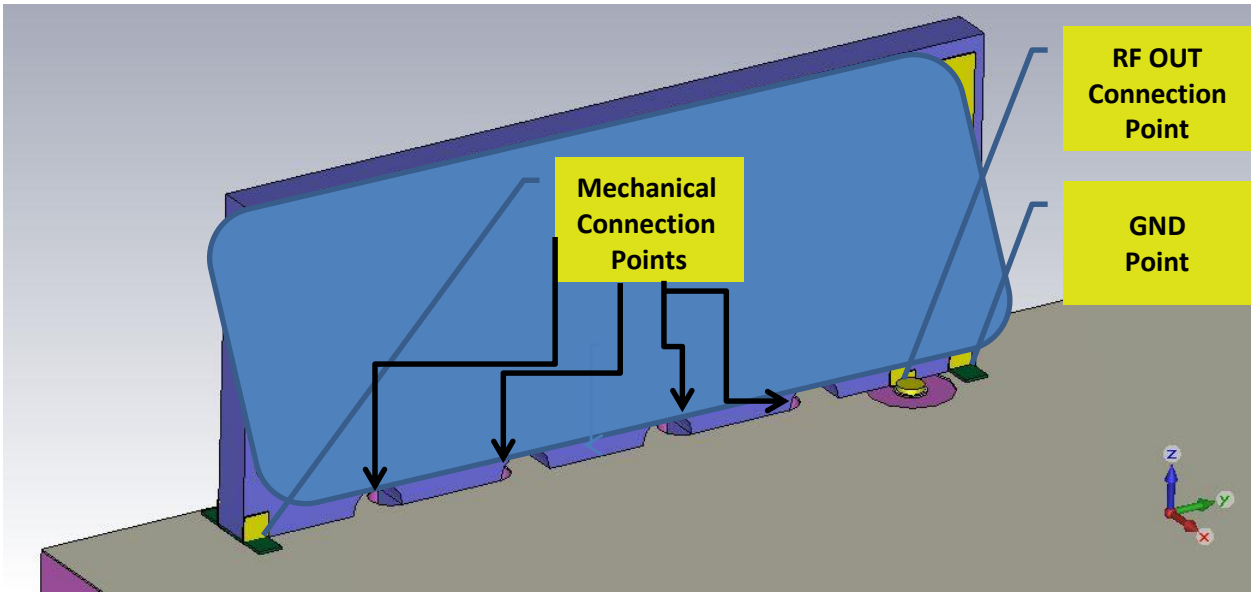


PTA1.5-V Motherboard Dimensioned Top-Side View

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 to motherboard PAD as shown in mechanical drawing and below (very little GND area (0.50 x 1.8 mm is shown in the Mechanical Drawing) is required to achieve rated radiated efficiency, η).



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.

The motherboard laminate material should be two-layer copper-clad NEMA-compliant FR4 V0 flame retardant rated with nominal thickness of 1.5 mm with permittivity of 4.8 maximum.

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