

GPS25 Antenna Amplifier



General Description

The GPS25 is an inline GPS antenna amplifier for the L1 frequency (1575.42 MHz). It is simply connected between the GPS receiver and the active antenna. Power from the GPS receiver, that normally powers the active antenna, now powers both the active antenna and the GPS25. Thus no extra power supply is needed for the GPS25.

The GPS25 has a gain of 30 dB (different gains available upon request). With the GPS25 installed, extra lengths of cable can now be used between the antenna and the GPS receiver itself. If low loss cable is used, cable lengths over 350 metres (1150 feet) can be used without any degradation to the GPS signal.

Adding amplifiers however, can cause more problems than they solve. Extra noise can be introduced by the amplifier and nearby transmitters, e.g. cellular or mobile telephone transmitters, can cause overloading of the GPS receivers input, which could cause loss of satellite signals.

The GPS25 has been specially designed to overcome these problems. Ultra low noise amplifiers have been used; together with a stripline band pass filter. The noise figure of the GPS25 is less than 3 dB and signals in the cellular or mobile frequency bands are rejected by more than 75 dB (see plots below).

Various Options and Configurations Available

The GPS25 can be configured to suit your exact requirements. The different configurations include external power supply, DC fed to the antenna for active antennas or DC not fed to the antenna, for passive antennas. Also any type of connector can be supplied.

High Quality of Construction

The GPS25 is made to the highest standards. The RF circuits are housed in an aluminium enclosure which has been milled out of a solid piece of aluminium. A waterproof gasket enables the GPS25 to be placed outside.

Filter Responses

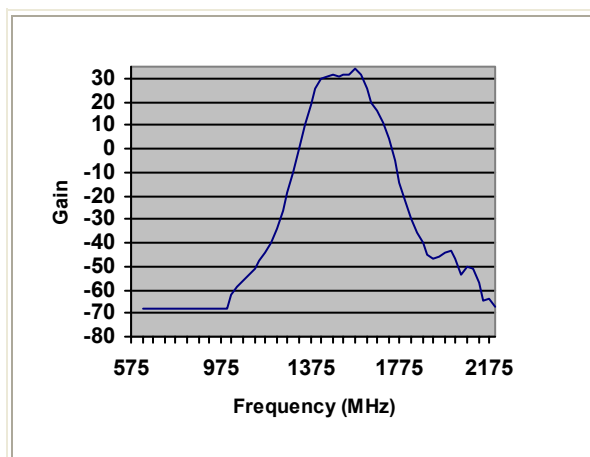
A typical gain versus frequency plot is shown overleaf. The plot shows the gain of the GPS25. At 1575 MHz the gain is 34 dB. At 1000 MHz the gain is -68 which equals a filter rejection of 102 dB (68 + 34). At 2000 MHz the gain is -43 which equals a filter rejection is 77 dB.

Typical Applications

The GPS25 can be used with most commercial GPS receivers. The GPS25 is used in calibration laboratories with GPS Frequency Standards, in vehicles with GPS Vehicle Navigation Systems and in the aircraft industry.

GPS26 – L1 and L2 frequencies

The GPS26 is also available which covers both the L1 and L2 frequencies.



GPS25 SPECIFICATIONS

Specification Parameter	Specification	Comments
Frequency Range	1575 MHz \pm 10 MHz.	
Input and Output Impedance	50 Ω nominal	
Gain	30 dB Minimum	Lower gains available on request
Stopband Rejection	70 dB min @ 1575 \pm 400 MHz	Typically > 77 dB
Reverse Isolation	> 50 dB	
1 dB Compression	-20 dBm	
DC Voltage Required	3.3 V to 5.5 V	Usable from 3.0 volts
DC Current	23 mA	
Connectors	Antenna Input:- SMA Female (standard) or MCX Socket (option 04). Output:- SMA Female	Adapters to other connector types optionally available
Size	144 mm x 38.5 mm x 15 mm	
Weight	125 grams	
Environmental	-20 $^{\circ}$ C to +60 $^{\circ}$ C	
Option 01	External DC power connection	+3.3 to +5 V @ 40 mA
Option 02	SMA to BNC Female adapter	
Option 03	SMA to N type female adapter	
Option 04	MCX Socket as antenna input	
Option 05	SMA to TNC adapter (specify male or female)	
Option 06	Switchable voltage to Antenna	

Specifications subject to change without notice (110305)

Precision Test Systems

Head Office - UK	South Africa	USA	Represented locally by:
Precision Test Systems LTD 40 Holkham Avenue, South Woodham Ferrers Essex, CM3 7AU, England Tel: +44 (0) 845 052 0920 Fax: +44 (0) 870 135 4973 Email: uksales@ptsyst.com Web: www.ptsyst.com	Precision Test Systems cc 183 Edison Crescent Hennops Park X7 Pretoria South Africa Tel: +27 (0) 12 653 5848 Email: sasales@ptsyst.com Web: www.ptsyst.com	Precision Test Systems Suite # 981 14781 Memorial Dr. Houston, TX 77079 Tel: 1 888 876 4804 Fax: 1 413 410 1112 Email: usasales@ptsyst.com Web: www.ptsyst.com	