ACTPAT154 ACTIVE GPS ANTENNA

Functional Specification

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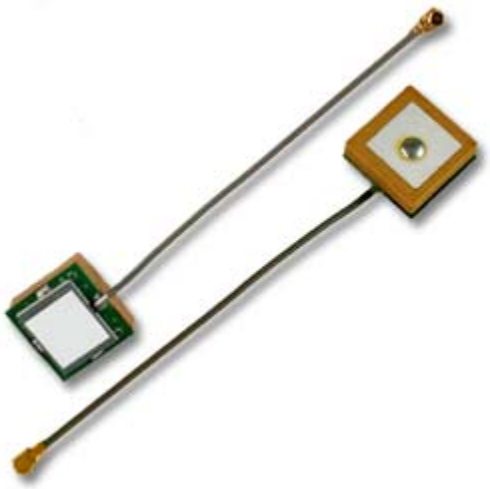


Contents

Overview

Inventek's GPS antenna, part number, ACTPAT154-01-IP is designed to work with a variety of GPS receivers. The active antenna is designed to snap directly onto the Inventek GPS modules ISM300F1 and ISM300F2 Family of GPS receivers.

The standard model is made from ceramic and comes with a LNA and mini coaxial 1.13mm cable with a U.FL RF connector that you can mount it directly on the board or attach to your GPS receiver. The active antenna can be used in a variety of applications including automotive with an impedance of 50 ohms.

The antenna, P/N ACTPAT154-01-IP lets you integrate low cost GPS functionality into your product quickly and easily. It's suitable for a wide range of applications, including the most compact:

- Hand-held personal positioning and navigation
- External PDAs, Pocket PCs and other hand-held computers
- Fleet management
- Asset tracking
- Automatic vehicle location

The ACTPAT154-01-IP provides world class performance suits it to navigating urban canyons, as well as wide-open spaces. Being lead-free, it complies with the European Union's RoHS (Restriction of Hazardous Substances) directive.

Mechanical

Table 1 summarizes the dimensions of the Antenna.

Parameter	Value
Rectangular	15.2 x 15.2 mm
Width	7.0 ± 0.2 mm including Shield
Color	Brown with silver shield
Impedance	50 Ohms
Connector	IPEX U.FL (MHFI)

Table 1 Mechanical

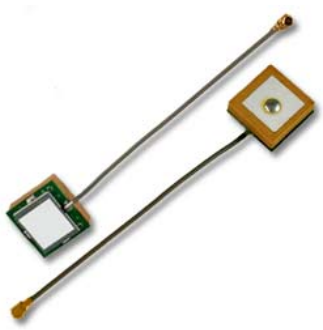


Figure 1 Patch Dimension (mm)

Thermal

Name	
Operation Temperature range	-40 to +85 °C
Storage temperature	-40 to +90 °C
Humidity	10 to 95% RH
Frequency Temp Coefficient	20 max ppm/ °C at -40 to -90 °C

Table 2 Antenna Temperature

Power

Table 3 summarizes the Antenna's power requirements.

Parameter	Value
VCC	2.7–5.4 V dc
Continuous tracking	10 mA @ 3 Volts

Table 3 Power Requirements

You can reduce power consumption by turning on the antenna and only when needed to acquire a fix.

Patch Characteristics

The Patch characteristics are measured with 70x70 mm ground plane in an anechoic chamber. Active antenna ESD test (working): >16kv (contact discharge with radome)

Antenna	Value
Patch Center Frequency	1578.00 +/- 2.0 Mhz
Patch Bandwidth (under -10 dB return loss)	5 Mhz min
Patch Gain at Zenith	+ 0.5 dBic Typical
Patch Gain at 10 degrees elevation	-5.5 dBic min
Polarization	R.H.C.P
Axial Ratio	2.0 dB Typical

Active Antenna and LNA Characteristics

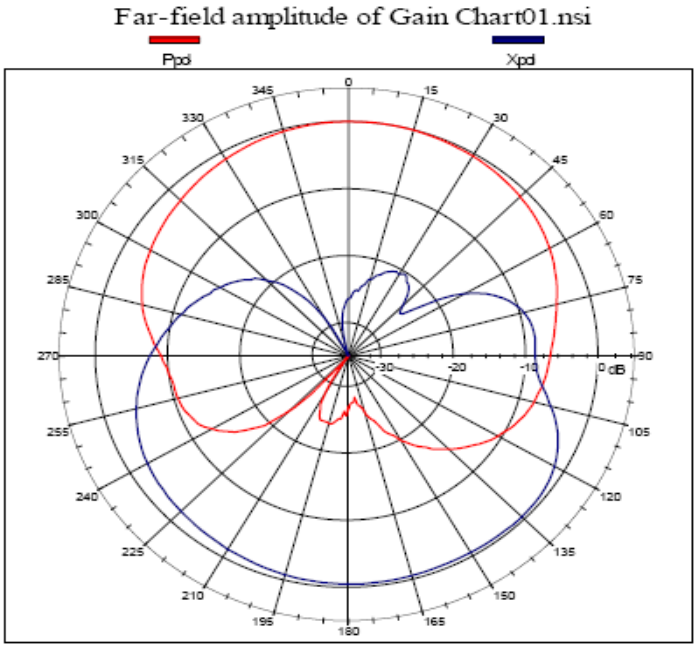
LNA	Value
Gain	26 to 35 dB (@ 3volts 24 dB)
Noise figure	1.4 dB (@ 3 volts 1.35dB)
Output VSWR	DC= 1.5 max
*Center Frequency	1575.42+/- 1.0 Mhz

* Center Frequency may be offset based upon the surroundings. ACTPAT154 has been tuned and tested in free space with printed circuit board and shield as shown in Figure 1.

Far field amplitude excluding the LNA gain

Here is an example of Radiation Pattern of the patch (0 and 90°) Far field amplitude excluding the LNA gain. The Patch characteristics are measured with 50x50 mm ground plane in an anechoic chamber. Active antenna ESD test (working): >16kv (contact discharge with radome)

O ° degrees



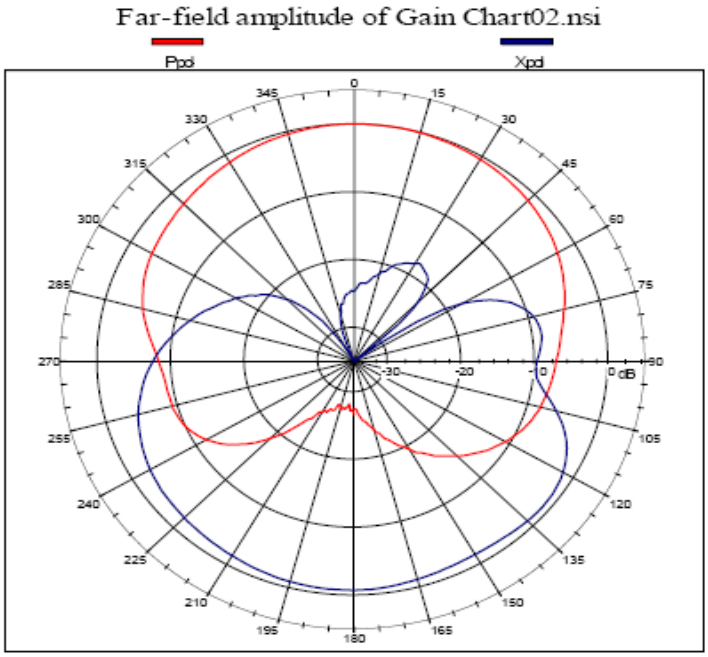


Figure 3 Radiation Pattern (Excluding LNA Gain) (90°)

Shipping

- Each antenna is individually packaged in Plastic bags
- All bags are sealed, impulse sealer
- 20 units per tray
- All material and components are ROHS compliance

Ordering Information

The Antenna is RoHS-compliant and you can custom configure the cable length, type and connector type. Min orders are required for custom builds. Please specify the corresponding part number when ordering.

Build a part number:

The following ordering configurations are available by order:

P/N: ACTPAT154-XX-CT

(XX) = Cable length 01: 63 mm , xx: Custom length in meters

(CT) = Connector Types

00 : No connector

IP: IPEX U.FL connector

HR: Hiroshi U.Fl connector (non standard)

xx: Custom connector

Ordering Part number sequence example

Standard Parts:

Part No.	Antenna Type	Connector Type	Cable Length Inches	Cable Length (mm)
ACTPAT154-01-IP	15.2 x15.2 x7 mm	*Ipex U.FL (MHFI)	~ 2.5	63 mm
ACTPAT154-01-00	15.2 x15.2 x7 mm	None	~ 2.5	63 mm
ACTPAT154-07-00	15.2 x15.2 x7 mm	None	~ 6.5	164mm
ACTPAT154-07-1P	15.2 x15.2 x7 mm	Ipex U.FL (MHFI)	~ 6.5	164mm

* Hirose U.FL compatible