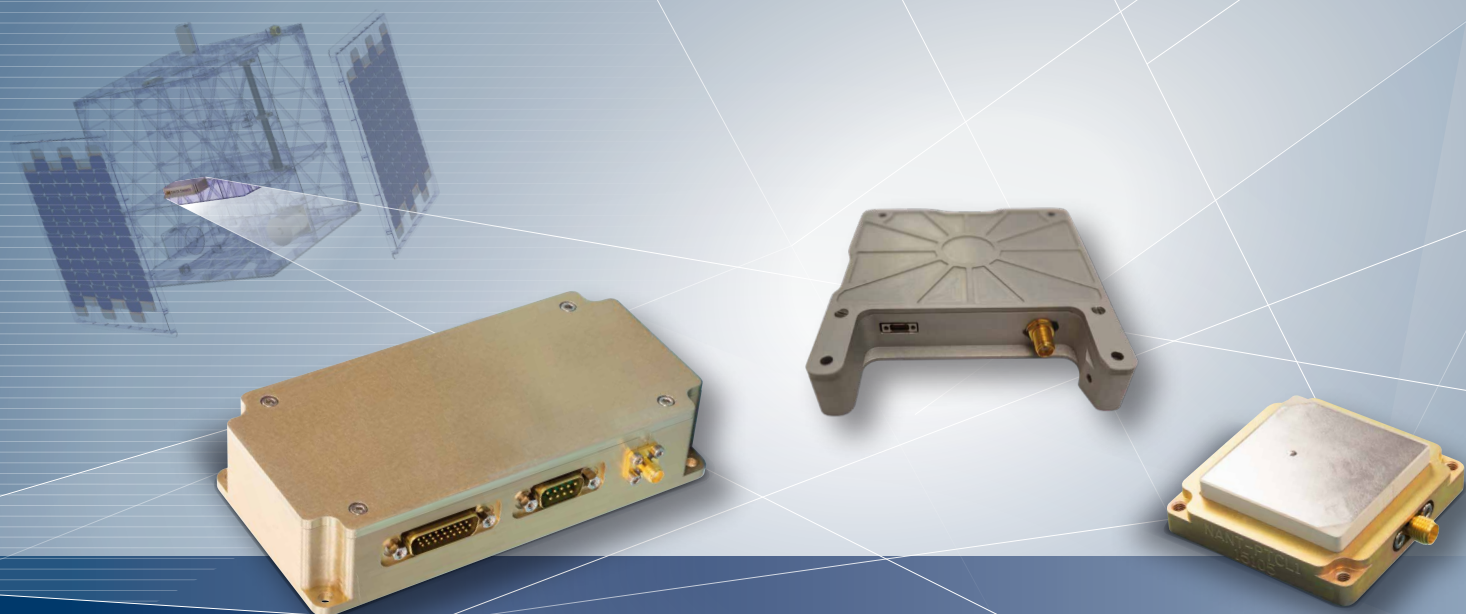


GPS RECEIVER



PERFORMANCE

	NGPS-01-422	NGPS-03-422
FUNCTIONAL CHARACTERISTICS		
Position accuracy [1 σ]	<10 m	<10 m
Velocity accuracy [1 σ]	<25 cm/s	<25 cm/s
Update rate	1 Hz	1 Hz
Operating frequency	L1 (1575.42 MHz)	L1 (1575.42 MHz)
PHYSICAL CHARACTERISTICS		
Dimensions	155 mm x 76 mm x 34 mm (excluding connectors)	96 mm x 91 mm x 18 mm
Mass	<500 g	<130 g
Power	1.5 W (excluding active antenna)	1 W (excluding active antenna)
ENVIRONMENTAL CHARACTERISTICS		
Thermal (acceptance)	-10 °C to +50 °C	-10 °C to +50 °C
Mechanical Tests (qualification)	14 g _{RMS} (random)	14 g _{RMS} (random)
Radiation (TID) (qualification)	10 krad (component level)	10 krad (component level)
INTERFACES		
Power supply	24 V _{DC} to 36 V _{DC} unregulated (isolated)	5 V _{DC} and 3.3 V _{DC}
Data	RS-422 UART	RS-422 or TTL UART
Connector	SMA Female (antenna), D-Sub standard density 9-pin (power) & D-Sub high density 26-pin (communication)	Nano D
Mechanical	4 x M4 mounting holes	4 x M3 on Cubesat PC104 footprint

	NANT-PTCL1
FUNCTIONAL CHARACTERISTICS	
Frequency	1575.42 MHz
Bandwidth	20 MHz
-3 dB beamwidth	$\geq 100^\circ$ ($\phi = 0^\circ$); $\geq 100^\circ$ ($\phi = 90^\circ$)
Return loss	≤ -5 dB
Impedance	50 Ohm (matched)
Active gain	≥ 16 dBiC (@ Zenith)
Polarization	Right Hand Circular (RHCP)
Noise figure	<2 dB
Axial Ratio	<10 dB (@ Zenith)
PHYSICAL CHARACTERISTICS	
Dimensions	54 mm x 54 mm x 14.1 mm
Mass	<80 g
Power	<80 mW
ENVIRONMENTAL CHARACTERISTICS	
Thermal (operational)	-25 °C to +55 °C operating, -30 °C to +60 °C non-operating
Vibration (qualification)	14 g _{RMS} (random)
Radiation (TID)	10 krad (component level)
INTERFACES	
Power supply	5 V _{DC} nominal
Connector	50 Ω SMA female
Mechanical	4 x M3 through hole

ACCEPTANCE TESTING: All FM parts undergo random vibration (10 rms) as well as thermal cycling (four cycle ambient pressure) to five degrees beyond operational thermal specifications. However, NewSpace can perform additional environmental testing if required by a client.

CONFIGURATION MANAGEMENT: Specifications are subject to change. Please refer to latest version.

GPS RECEIVER



FEATURES

- Hardware receiver
- 12-channel L1 receiver
- Small size and low mass
- Radiation tolerant COTS
- Simple to interface

APPLICATIONS

- Accurate determination of orbital position
- Accurate knowledge of time
- Orbit maneuvers
- Time and/or position stamping of payload data

QUALIFICATION

The COTS chipset utilised in the NSS GPS Receiver has been flying for more than a decade. To date, more than 30 units of the NGPS-01-422 and NGPS-03-422 GPS Receivers have been delivered globally.

UTILITY

The NewSpace Systems (NSS) GPS Receiver is a 12-channel hardware-based receiver which utilises a well-established GPS chipset.

This GPS chipset has been successfully flown by a number of organisations over many years. Targeted towards low-cost SmallSat constellations, it has been adapted for space altitude and velocity through the use of custom software modifications.

The NSS GPS includes an unregulated, isolated 28 V power input and differential interfaces. It employs latch-up detection/protection and a watchdog timer for increased reliability and robustness.

If required by the client, the NSS team can also supply an active GPS patch antenna with the receiver. Additionally, the GPS circuitry at the heart of the receiver can also be deployed as a single mezzanine board to accompany the NSS CubeSat ACS board or as a stand alone boxed or unboxed version for cubesats.