### GPS Receiver

**FUNCTIONAL CHARACTERISTICS**
- Frequency: 1575.42 MHz
- Bandwidth: 20 MHz
- Return loss: ≤-5 dB
- Impedance: 50 Ohm (matched)
- Active gain (RHC): ≥16 dBi
- Noise figure: <2 dB
- Axial Ratio: <4 dB

**PHYSICAL CHARACTERISTICS**
- Dimensions: 54 mm x 54 mm x 14.1 mm
- Mass: <80 g
- Power: <80 mW

**ENVIRONMENTAL CHARACTERISTICS**
- Thermal (operational): -10 °C to +50 °C
- Vibration (qualification): 14 g
- Radiation (TID): 10 krad (component level)

**INTERFACES**
- Power supply: 24 VDC to 36 VDC, unregulated (isolated)
- Data: RS-422 UART
- Connector: SMA Female (antenna), D-Sub standard density 9-pin (power) & D-Sub high density 26-pin (communication)
- Mechanical: 4 x M4 mounting holes

### NANT-PTCL1

**FUNCTIONAL CHARACTERISTICS**
- Frequency: 1575.42 MHz
- Bandwidth: 20 MHz
- -3 dB beamwidth: ≥100° (phi = 0˚); ≥100° (phi = 90˚)
- Return loss: ≤-5 dB
- Impedance: 50 Ohm (matched)
- Active gain (RHC): ≥16 dBi
- Polarization: Right Hand Circular (RHCP)
- Noise figure: <2 dB
- Axial Ratio: <4 dB

**PHYSICAL CHARACTERISTICS**
- Dimensions: 54 mm x 54 mm x 14.1 mm
- Mass: <80 g
- Power: 1 W (excluding active antenna)

**ENVIRONMENTAL CHARACTERISTICS**
- Thermal (operational): -25 °C to +60 °C
- Vibration (qualification): 14 g
- Radiation (TID): 10 krad (component level)

**INTERFACES**
- Power supply: 5 VDC nominal
- Connector: 50 Ω SMA female
- Mechanical: 4 x M3 through hole

**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 NewSpace GPS Receiver has been flying for more than a decade. Fifteen flight model units have been commissioned for build and launch in 2017 alone.

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.