The Abdus Salam
International Centre for Theoretical Physics

United Nations
Educational, Scientific and
Cultural Organization

IAEA
International Atomic Energy Agency

2025-35

Satellite Navigation Science and Technology for Africa

23 March - 9 April, 2009

GPS Ionospheric Scintillation and tec Monitor GSV4004B

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February 12, 2008

GPS IONOSPHERIC SCINTILLATION and TEC MONITOR GSV4004B

GPS Silicon Valley is pleased to offer the GSV4004B GPS Ionospheric Scintillation and TEC Monitor (GISTM) receiver. This receiver, a NovAtel Euro-3M dual-frequency receiver with special firmware, comprises the major component of a GPS signal monitor, specifically configured to measure amplitude and phase scintillation from the L1 frequency GPS signals, and ionospheric TEC from the L1 and L2 frequency GPS signals. This scintillation and TEC monitoring receiver is packaged in a NovAtel EuroProPak - 3M style housing with a low phase noise oscillator, and is designated as the GPStation - G2. It provides true amplitude, single frequency carrier phase measurements and TEC measurements from up to 10 GPS satellites and 3 SBAS GEOs. From SBAS (WAAS, EGNOS or MSAS) GEOs, it provides L1 measurements and scintillation data (but no TEC). The unit comes with complete software that allows the automatic measurement and computation of all the major scintillation parameters and TEC. A variety of antennae, with or without choke rings and cables, are offered as options.

GSV4004B GPS IONOSPHERIC SCINTILLATION AND TEC MONITOR AND OPTIONAL GPS702GG ANTENNA

GPS IONOSPHERIC SCINTILLATION AND TEC MONITOR (GISTM) FEATURES:

- Tracks and reports scintillation and TEC measurements from up to 10 GPS satellites and 3 SBAS GEO(s) in view (no TEC on SBAS GEOs).

- A 25 Hz raw signal intensity noise bandwidth and a 25 Hz phase noise bandwidth insures that all the spectral components of both amplitude and phase scintillations are measured. Phase data and amplitude data are sampled at a 50 Hz rate.

- Single frequency (L1) satellite carrier phase is compared against a stable ovenized crystal oscillator (OCXO) to insure that all phase scintillation effects are recorded, not merely the 1/f refractive component measured by dual-frequency differential systems. The stable OCXO also allows tracking with a narrowband phase-lock-loop (PLL) to provide more robust tracing in scintillating environments.

- Software is included in the GISTM to automatically compute and log the amplitude scintillation index, S_4, and phase scintillation index, σ_ϕ, computed over 1, 3, 10, 30 and 60 seconds. In addition, TEC and TEC phase are

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each logged every 15 seconds. Phase and amplitude data, either in raw form or detrended (to remove systematic variations), can also be logged at a 50-Hz rate.

- Scintillation measurements from the GISTM can easily be scaled to the frequencies of the new, L-band and C-band low-orbit personal telecommunications satellites to predict the magnitude of scintillation effects on those commercial systems. These measurements can also be scaled to lower frequencies typical of older military and commercial systems.

- Utility software is included: 1) Script Logging utility for controlling the receiver and requesting data logs, 2) Various data parsing utilities for extracting data from the logs and converting to ASCII data, 3) A utility to view logs collected at a 1/60-sec rate. Standard NovAtel windows-based utilities (GPSolution4 and Convert4) can also be used for real-time viewing of receiver status and for data parsing.

SPECIFICATIONS:

- Tracks up to 10 GPS satellites simultaneously in 20 receiver channels (L1 and L2). [One channel is reserved for measurement and subtraction of the local background noise, and 3 channels are used for tracking 3 SBAS satellites.]

- The GISTM outputs real-time values of the S_4 amplitude scintillation index and the σ_ϕ phase scintillation indices, computed over periods of 1, 3, 10, 30 and 60 seconds, averaged over one minute, and 4 pairs of TEC and TEC rate values computed every 15 seconds.

- The S_4 index is typically less than 0.05 with the choke ring antenna, and σ_ϕ is typically less than 0.05 radian, in the absence of scintillation effects, for all received signal-to-noise density levels above about 36 dB-Hz C/N_0.

OPTIONS:

- NovAtel GPS-532, GPS-533 (with choke ring) or GPS-702GG antennae and antenna cables of length 5, 15 or 30 meters.

- Factory calibration of combined receiver/antenna TEC bias.

For more information or pricing, please call or fax to the numbers provided below, or e-mail % ajvd@aol.com.

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