

User Interface

Display

12" color LCD, sunlight readable with back light

Controls

Touch screen

Antenna Coupler

Antenna Coupler	Cavity, patch
Coupling	21 dB typical at 1575.42 MHz
Isolation	>25 dB at 1575.42 MHz >30 dB typical at 1575.42 MHz

Direct Connection Ports

Impedance	50 Ω
SWR	1.3:1 maximum
Connector	TNC x 2
Coupling	AC (maximum DC input 50 V)

Generator

GPS Frequencies

L1:	1575.42 MHz (C/A, pseudo P(Y), SBAS)
L1C:	1575.42 MHz
L2:	1227.60 MHz (pseudo P(Y))
L2C:	1227.60 MHz
L5:	1176.45 MHz (New Civil SoL)

Galileo Frequencies

E1:	1575.420 MHz (pseudo-PRS, [pseudo-G/NAV]), (OS, CS, SoL, [I/NAV])
E5:	1191.795 MHz center frequency
E5a:	1176.45 MHz (OS, (F/NAV))
E5b:	1207.14 MHz (CS, SoL, (I/NAV))

Accuracy Same as master oscillator

Inter Channel Bias Zero (digital design)

Frame Sync Output LVTTL

Channels

1-6, 1-12 SV simulation, selectable
GPS: PRN=1 to 32
Galileo: PRN=1 to 36
SBAS: PRN=120 to 138

Positional simulation via menu entry of Latitude and Longitude or positional offset and waypoint.

Positional Simulation

Static: Via user entry of Latitude/Longitude/Altitude or selectable from waypoint database.

Dynamic: Create, store and recall routes consisting of multiple route points.

User Defined Doppler Error

Selectable frequency offset ± 5.0 kHz, 1 Hz increment

Amplitude Offset

Sets SV carrier amplitude offset from main attenuator setting ± 15 dB in 1 dB increments.

Step Error

Sets SV pseudo range error ± 10 km in 1 m increments (used for RAIM testing)

Satellite Health

Allows selection of GOOD or BAD

Code Carrier Coherence

Sets frequency variation between code carriers

Range	2 m/S
Increment	1 mm/S

GPS Codes

L1 C/A

Code Rate	1.023 Mc/s
Primary Seq. Length	1023 bit s
Modulation	BPSK
Symbol Rate	50 sps

SBAS

WAAS/EGNOS L1, L5

L2C

Code Rate	0.5115 Mc/s
Sequence Length	10230/767250 bits
Modulation	BPSK
Symbol Rate	50 sps

L1 P(Y) (not encrypted)

Code Rate	10.230 Mc/s
Sequence Length	15345000 bits
Modulation	BPSK

Note: Long random codes simulated

L1C
 Code Rate 10.230 Mc/s
 Sequence Length 10230 bits
 Modulation BOC (1, 1)

L5
 Code Rate 10.230 Mc/s
 Sequence Length 10230 bits
 Modulation QPSK

Galileo Services

E1
 Pseudo G/NAV Long random codes simulated
 Code Rate 2.5575 Mc/s
 Sequence Length 25575 bits
 Symbol Rate 100 sps
 Modulation Interplex/CBOC
 Sub Modulation BOC (15, 2.5)

Note: PRS not supported

E1
 OS Complete implementation (I/NAV)
 CS Null message content (pseudo I/NAV)
 SoL Compliant, no integrity alerts (I/NAV)
 Code Rate 1.023 Mc/s
 Sequence Length 4092 (primary) x 1 (secondary) bits
 Symbol Rate 250 sps
 Modulation Interplex/CBOC
 Sub Modulation CBOC(6,1,1)

E5a
 OS Complete implementation (F/NAV)
 Code Rate 10.23 Mc/s
 Sequence Length 10230 (primary) x 20 (secondary) bits
 Symbol Rate 50 sps
 Modulation ALTBOC
 Sub Modulation None

E5b
 OS Complete implementation (F/NAV)
 CS Null message content (pseudo I/NAV)
 SoL Compliant, no integrity alerts (I/NAV)
 Code Rate 10.23 Mc/s
 Sequence Length 10230 (primary) x 4 (secondary) bits
 Symbol Rate 250 sps
 Modulation ALTBOC
 Sub Modulation None

Almanac
 Obtainable from built-in GPS receiver or external file load in .alm format

NAV Data
 Navigation data is computed in real-time to match the simulation.

Positional Simulation

Max Relative Velocity ±1000 Kts (514 m/s)
 Max Relative Acceleration ±98 m/s²
 Max Relative Jerk ±20 m/s³
 Max Altitude 100,000 ft.

Error Models

Atmospheric

Positional Simulation Accuracy

Pseudorange <0.1 m
 Pseudorange Rate ±0.01 m/s (RMS) with respect to master oscillator

RF Output Level Direct

-93 to -155 in 1 dB step

ANT Coupler

-68 to -130 in 1 dB step
 ±2 dB accuracy into 50 Ω (AC coupled) standard cable,
 4 dB loss

Signal Quality Spurious

<-35 dBc over the bandwidth (40 MHz)

Harmonics

<-45 dBc

Master Oscillator

Frequency 10 MHz nominal
 Temperature Stability ±0.05 ppm
 Aging Rate ±0.3 ppm /yr., ±2.5 ppm /10 yr.
 Uncertainty ±1 ppm
 External Reference Input
 Input Level 0.25 to 6.0 Vp-p
 Input Impedance 50 ohm nominal
 Input Frequency 10.0 MHz ±10 Hz
 External Reference Output
 Output Level 1.5 Vp-p nominal into 50 Ω
 Output Frequency 10.0 MHz nominal

Battery

14.4V 6.75 Ah Lithium Ion

Battery Temperature Range for Charging

0° to 45°C

DC Input

11-32 VDC
75 W max.
5 A max.

Environmental

Test Set

Operational Temperature	-20° to 55° C
Storage Temperature	-30° to 71° C
Operational Humidity	MIL-PRF-28800F Class 2
Storage Humidity	MIL-PRF-28800F Class 2
Altitude	10,000 feet

Supplied External AC to DC Converter

Use	Indoors
Altitude	10,000 feet
Operating Temperature	5°C to 40°C
Storage Temperature	-20°C to 71°C

Physical Characteristics

GPSG-1000

Height	10.63 in. (27.0 cm)
Width	13.97 in. (35.5 cm)
Depth	3.425 in. (8.7 cm)
Weight	15.5 lbs. (7 kg) Test set only 48 lbs. (21.7 kg) kit with shipping case

Antenna Coupler

Height	7.54 in. (19.15 cm)
Width	7.46 in. (18.95 cm)
Depth	7.46 in. (18.95 cm)

(Note: Maximum antenna height accommodated 1.5 in)

RF Gasket

Flexible seal

Connector

TNC

Positioning

By hand or with optional 8ft placement pole via hook.

Placement Security

Weighted peripheral bag

Multiple GPS Antenna Support

Supports two to three GPS antennas using optional antenna coupler kits.

Certifications

Test Set

Vibration Limits	MIL-PRF-28800F Class 2
Shock, Functional	MIL-PRF-28800F Class 2
Transit Drop	MIL-PRF-28800F Class 2
Drip Proof	MIL-PRF-28800F Class 2
Dust	MIL-PRF-28800F Class 2
Salt	MIL-PRF-28800F Class 2
Explosive Atmosphere	MIL-STD-810F Method 511.4, Procedure 1
Safety Compliance	UL-61010:2001 CSA 22.2 No 1010.1

WEEE
ROHS
EMC

Emissions	MIL-PRF28800F Class 2 EN 61326:1998 Class A EN 61000-3-2 EN 61000-3-3
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Immunity	MIL-PRF28800F Class 2 EN 61326:1998 Class A
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External AC-DC Converter

Safety Compliance	UL 1950 DS CSA 22.2 No. 234 VDE EN 60 950 FCC Docket 20780 Curve "B" EMC EN 61326
EMI/RFI Compliance	

Transit Case

Drop Test	FED-STD-101C , Method 5007.1 Paragraph 6.3, Procedure A, Level A
Falling Dart Impact	ATA 300 Category I
Vibration, Loose Cargo	FED-STD-101C Method 5019
Vibration, Sweep	ATA 300 Category I
Simulated Rainfall	MIL-STD-810F Method 506.4 Procedure II of 4.1.2 FED-STD-101C Method 5009.1 Sec 6.7.1
Immersion	MIL-STD-810F Method 512.4

Versions, Options and Accessories

Order Description

Number

87339	GPSG-1000 6 Satellite Simulator
87715	GPSG-1000 12 Satellite Option

Standard Accessories

88493	Transit case (qty 1)
67374	Power supply
87636	Antenna coupler
90113	RX Antenna
90114	Cable, coax 50 ft.
62302	Power cord (U.S)
64020	Power cord (European)
88037	Operation Manual (CD)
88038	Getting Started Manual (paper)

Optional Accessories

87040	External battery charger
86196	Spare battery pack
90106	Kit, Antenna coupler placement pole 8 ft.
91136	Kit, CPLR Dual GPS Antenna System
91137	Kit, CPLR Triple GPS Antenna System
113108	Kit, GPS Receiver Termination
89023	Maintenance Manual (CD)

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