Digital and Analog Signal Measurements:

The new S5006GPS is an RF measurement system for digital and analog wireless coverage testing. With this system, a user can survey and document the service area for communications availability.

This factory integrated system is optimized to the user’s application, taking advantage of the precision and flexibility of the R-506 Field Strength Meter. The R-506 provides accurate, high speed measurement under PC control for both analog and digital wireless signals. The system offers accuracy and features for standard field strength measurements; plus the ability to plot signal strength on computer generated maps. The system provides precision measurement and documentation of signals in a frequency range of 5 to 1000 MHz.

The system includes Z Technology Survey software for evaluation of signal coverage over a geographic area. An operator can also use the R-506 in a stand-alone mode for individual precision field strength measurements. In the Survey application, the system evaluates signal coverage across an entire service area, analyzing signal strengths at a GPS identified locations, surveying sites for new antenna construction and making precise...
industry required NIST traceable field strength measurements.

The S5006GPS expands the Z Technology product line of cost effective test instrumentation with a rugged, portable system designed for the professional user. It combines the functions of off-air field strength metering, accurate RF signal strength measurement, GPS position identification, and PC based automatic data collection and storage in one convenient light weight system.

Field Strength Measurement:

Frequency coverage is from 5 to 1000 MHz. Accessory converters extend the calibrated measurement range to include 300 kHz to 3.0 MHz and from 1750 to 2500 MHz. The R-506 utilizes a digitally encoded TUNE knob for front panel frequency selection. Step sizes available are 100, 10, and 1 MHz, and 100, 10, and 1 KHz. The frequency of operation is continuously displayed while the digit under control of the TUNE knob is highlighted. The system is fully synthesized and highly stable using a precise TCXO crystal reference.

The R-506 accurately measures signals from -10 dBuV to +90 dBuV. The full dynamic range of 100 dB is available through a combination of the front panel RF AMP control and an internal auto-ranging function. The RF AMP (internal preamp) is an integral part of the instrument providing a typical noise figure of 7 dB. It is preceded by one of a series of internal RF Filters that are automatically controlled to minimize out-of-band signal interference. This allows measurement of weak signals while protecting against unwanted strong signal overload.

The R-506 features digital readout of field strength measurements, the frequency being monitored and front panel button status all on one large LCD display. The unit offers internal memory recall and LCD display of up to 100 user defined frequencies. The display can be back-lit for operating in low ambient light.

Using the FUNCTION button to make a selection, signal strength can be displayed in dBuV or dBm. When using a calibrated and traceable antenna with manufacturer provided Antenna Factors, these Factors can be loaded into the R-506. In Direct Readout mode, the LCD displays signal level in dBuV/meter, the critical measurement unit best suited for transmission testing.

GPS Location Signal Strength Plotting

Operating at rates up to 9600 baud, the standard RS-232 serial port allows computer controlled measurements of analog or digital signals in stationary or mobile environments. The Z Technology S5006GPS is provided with a laptop PC and a PCMIA serial port card allowing connection of both the R-506 field strength meter and a GPS receiver, and ready-to-use computer programs for RF measurement and data storage with GPS Latitude/Longitude tagging. An operator can survey up to 50 discrete frequencies in a single drive test. The S5006GPS system is placed into operation under 12V vehicle power, and will operate unattended as the driver covers a route of interest.

The system automatically measures signal strength and stores the signal level, time, frequency, and position information into a data file. No operator attention is required while the measurement system is in motion, and it is recommended the system be installed out of view of the driver. Once the drive test is completed, the data can be analyzed directly from the data file, or plotted as a colored dot trail showing signal strength in color along the drive route. Where DeLorme Street Atlas maps are available, Option 01 allows plotting signal strength along the driven...
**Serial Port**
RS232 compatible rear panel connection. Allows interface with IBM-compatible PC or a serial printer.

**External Battery Input**
On rear panel. Use an external NiCad battery pack to extend handheld operation.

**Accessory Connector**
Rear panel audio output, dc power source, and other optional outputs.

**FREQ/CH**
Sets tuning display to show either frequency or a TV channel number.

**TUNE Knob**
Convenient to use, even when operating in the field. Positive detent action for precise frequency tuning.

**Audio Detectors**
Select from either an AM or FM high quality audio detector.

**RF Input**
Rugged Type-N connector operating at 50 ohms.

**RF AMP**
Preamplifier control to improve sensitivity and measure weak or distant signals.

**IF BANDWIDTH**
Provides user selection of two IF bandwidths: NB=15 kHz, WB=150 kHz.

**MEMORY**
Activates internal memory feature for storing and retrieving 40 user defined frequencies. These frequencies are then sequenced through using the TUNE knob.

**FUNCTION**
Selects test function options, display units of readout, battery self-test & save mode, data logging, etc.

**POWER Switch**
Turns unit on or off. Also has a "timed-off" function to preserve battery charge.

**AUDIO LEVEL**
Controls audio volume of speaker and external accessory audio signal.

**Built-in Speaker**
Outputs detected audio from FM & AM signals.

**Charger/Power Supply Input**
On rear panel. Product will operate from power supply while internal battery is being charged. Battery will operate unit at least 5 hours without recharge.

**LCD Display**
Single large liquid crystal display shows signal level (dBm, dBUV, or dBUV/meter), frequency to 1 kHz resolution and status of instrument.

**Built-in Speaker**
Outputs detected audio from FM & AM signals.

**Option-1 Delorme Street Atlas (available for United States only)**

---

**Z Technology R-506 Field Strength Meter, heart of the S5006GPS Measurement System**

route directly onto commercial maps. Off-line, the display can be reproduced on a PC screen or exported into reports and presentations.

**System Integration**

The Z Technology S5006GPS system is a self-contained, lightweight system suitable for transport as hand-carry airline baggage. Its small size permits easy, temporary installation in a vehicle; quick setup for field locations with or without power; and even hand-carry portability for measurement to characterize existing receive antennas at remote sites. The system includes necessary hardware and software for NIST traceable RF signal measurement, and when used with optional calibrated antennas, provides a complete system for the measurement and documentation of...
## S5006GPS System Specifications:

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Coverage:</strong></td>
<td>5MHz to 1000 MHz contiguous coverage with minimum step size of 1KHz</td>
</tr>
<tr>
<td><strong>Measurement Range:</strong></td>
<td>-10 dBmV to + 90 dBmV (-117dBm to -17dBm) using 4 internal attenuation ranges &amp; 1 preamp range</td>
</tr>
<tr>
<td><strong>Standard Measurement Accuracy:</strong></td>
<td>+/-2 dB @ 25°C +/-10°C</td>
</tr>
<tr>
<td><strong>Image Rejection:</strong></td>
<td>60 dB typical, High Sensitivity mode</td>
</tr>
<tr>
<td><strong>Detuning Characteristics:</strong></td>
<td>40 dB typical; for undesired signal 2x IF BW away from center frequency</td>
</tr>
<tr>
<td><strong>Third Order Intercept:</strong></td>
<td>Preamp ON typ. 0 dBm Preamp OFF +20 dBm.</td>
</tr>
<tr>
<td><strong>Noise Figure:</strong></td>
<td>Preamplifier NF = 7 dB typical when RF AMP is selected</td>
</tr>
<tr>
<td><strong>Input Impedance:</strong></td>
<td>50 ohms</td>
</tr>
<tr>
<td><strong>Audio Detection:</strong></td>
<td>AM or FM to internal speaker selected from front panel Rear panel connection for remote speaker or headphone BW is 300 Hz to 3KHz</td>
</tr>
<tr>
<td><strong>Sensitivity:</strong></td>
<td>FM detection: 1 uV for 12 dB SINAD typical. AM detection: 1 uV for 12 dB S/N typical</td>
</tr>
<tr>
<td><strong>Measurement Resolution:</strong></td>
<td>0.1 dB.</td>
</tr>
<tr>
<td><strong>Output Linearity Range:</strong></td>
<td>Continuous measurement range of 80 dB in auto-ranging mode.</td>
</tr>
<tr>
<td><strong>GPS Rx:</strong></td>
<td>L1 frequency (1575.42 MHz), C/A code (standard positioning service), 8-channel, continuous tracking receiver, Memory backup battery</td>
</tr>
<tr>
<td><strong>GPS Position Accuracy:</strong></td>
<td>Position &amp; Velocity: 25 m CEP (50%) &amp; 0.1 m/sec (without S/A) Time: 95 nanoseconds RMS (over-determined clock mode)</td>
</tr>
<tr>
<td><strong>Laptop Computer:</strong></td>
<td>Pentium class, 600 MHz, 64 Mb RAM, 12 Gb Hard Drive, or better.</td>
</tr>
<tr>
<td><strong>Power Inverter:</strong></td>
<td>12V DC input, 120V AC output, 150 watts (230VAC output available)</td>
</tr>
<tr>
<td><strong>Operating Temperature:</strong></td>
<td>0°C to +50°C</td>
</tr>
<tr>
<td><strong>Ordering Information:</strong></td>
<td>S5006GPS Field Strength Measurement System.</td>
</tr>
<tr>
<td><strong>System includes:</strong></td>
<td>R-506 Field Strength Meter Laptop Computer Installed Survey Software GPS Receiver GPS Active Antenna 12VDC-to-120VAC Inverter Hand-Carry System Case</td>
</tr>
<tr>
<td><strong>Supplied Accessories:</strong></td>
<td>Internal NiCad battery AC power supply/charger Extendable antenna Instruction manual Quick-Start instructions</td>
</tr>
<tr>
<td><strong>Options:</strong></td>
<td>Option 01: DeLorme Street Atlas USA Software with Z Technology R500 Translator Option 02: 220 MHz Linear Modulation Application Option NB1: 13 kHz @ 6 dB NB IF Filter Option NB3: 30 kHz @ 3 dB NB IF Filter Option WB1: 300 kHz @ 3 dB WB IF Filter</td>
</tr>
<tr>
<td><strong>Accessories:</strong></td>
<td>BC-BCB: 0.3 to 3.0 MHz Block Converter BC-PCS: 1750 to 1980 MHz Block Converter BC-PCS2: 1980 to 2500 MHz Block Converter AA1-B1: Calibrated tuned dipole antenna 30 - 70 MHz AA1-B2: Calibrated tuned dipole antenna 65 - 180 MHz AA1-B3: Calibrated tuned dipole antenna 170 - 340 MHz AA1-B4: Calibrated tuned dipole antenna 325 - 1000 MHz AA1-SET: Calibrated tuned dipole antenna set 30 - 1000 MHz; includes case, antennas B1, B2, B3, B4 AA-2 Active monopole antenna system, battery power, 100 kHz - 60 MHz AA-3 Biconical antenna system 20 MHz - 330 MHz AA-4 Log Periodic antenna system 290 MHz - 1000 MHz AA-6 Log Periodic antenna system 150 MHz - 1000 MHz AA-7 Bi-Log Periodic antenna system 25 MHz - 1000 MHz AA-8 Log Periodic antenna system 800 MHz - 2600 MHz CAB214-3N Calibrated Cable 3 meter RG214U, N connectors</td>
</tr>
</tbody>
</table>

This product is manufactured in the USA by Z Technology, Inc., and carries a 1 year warranty. For additional information please contact the factory.

Z Technology, Inc.

1815 NW 169th Place, Suite 3070
Beaverton, OR 97006-4886 USA
Ph: 503-614-9800, FAX 503-614-9898
www.ztechnology.com