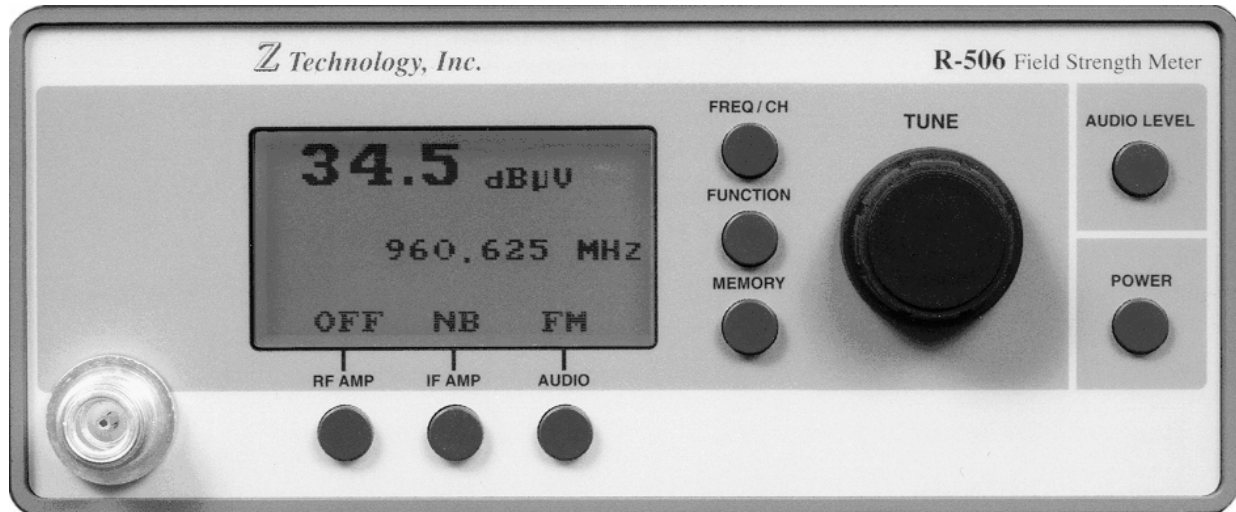


R-506 Programmable Field Strength Meter



R-506 Field Strength Meter

Rugged and Highly Portable

Accurate NIST traceable field strength measurement of RF signals

Includes Windows™ application software for automated signal strength and GPS logging

Programmed operation from front panel or attached Windows™ PC

Direct Readout in dBm, dBuV, or dBuV/m when used with a calibrated antenna

Broad Frequency Coverage: 5 MHz to 1000 MHz, with options for AM Broadcast and GSM frequencies

Factory calibrated for operation over a wide range of temperatures, frequencies, and power levels

Internal Preamp and Auto-Selection controlling RF Input Filters

Battery or AC Operated

The full featured R-506 is designed for evaluation of signal coverage across a service area, analysis of signal strength at a specific location, surveying sites for new antenna construction and making precise industry required NIST traceable field strength measurements. The R-506 is an excellent unit for those needing to characterize or maintain both analog and digital RF wireless communications and Broadcast systems.

The R-506 expands the Z Technology product line of cost effective test instrumentation with a rugged, portable unit designed for the professional user. This instrument is an excellent unit when a precision highly portable field service tool is required. The R-506 is a state of the art instrument combining the functions of off-air field strength metering; accurate RF signal strength measurement, and PC based automatic data collection and storage in one convenient lightweight system.

An operator can accurately measure signals at frequencies from 5 to 1000 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 controlled RF AMP and an internal auto-ranging function. The RF AMP (internal preamp) is an integral part of the instrument. It is preceded by one of a series of automatically selected internal RF Filters to minimize out of band signal susceptibility. This allows measurement of weak signals while protecting against unwanted strong signal overload.

The operator can select various front panel signal level measure units including dBuV, dBm, or dBuV/meter (when using a calibrated and traceable antenna --not included) with manufacturer provided antenna factors.

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 40 user defined frequencies. The display can be backlit for operating in low ambient light. Several TV Channel plans are included in the instrument for users testing television transmitters.

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. Z Technology provides ready-to-use computer programs for RF measurement and data storage. One of these programs incorporates GPS Latitude/Longitude tagging.

The R-506 offers a Resident Data Logging feature to record measured signal levels and associated frequency settings inside the instrument. A user is able to store up to 20 sets of measurements and associated frequencies without a PC connected. Back in the laboratory, the RS-232 serial port is used to download stored information to a PC or directly to a printer.

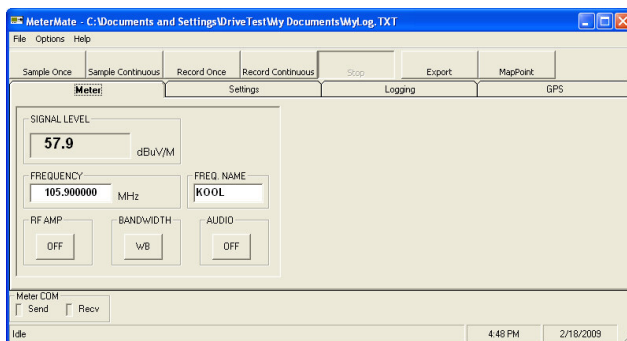
Separate AM and FM detectors are provided for quick aural identification of signals. The R-506 includes an internal water repellent speaker and a rear panel audio access.

The Z Technology R-506 measures 3.5" high x 8.4" wide x 9" deep and weighs less than 10 lbs. It is provided with an AC power supply/charger and an internal NiCad battery for operation where AC power is not available. Its compact size makes the R-506 ideal for one-man portable operation in all types of environments and terrain. Several options, and a series of calibrated antennas are available.

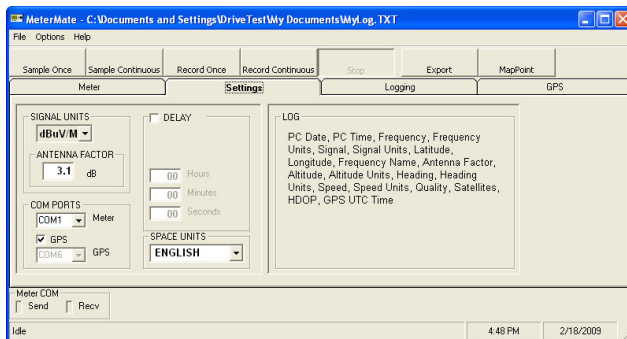
Included with each R-506 is a Windows™ based software program called MeterMate. This application can be installed on a customer's PC running the N.A. Windows™ Operating System. Using the R-506 RS232 port and a user provided GPS receiver, field strength measurements and location data can easily be recorded and stored. Collected data is stored in clear text files which are available for analysis and plotting using such programs as EXCEL™, Microsoft MapPoint™, etc.

The programmability of the R-506, along with its included application software provides the basis of a sophisticated NIST traceable RF measurement system for RF signals.

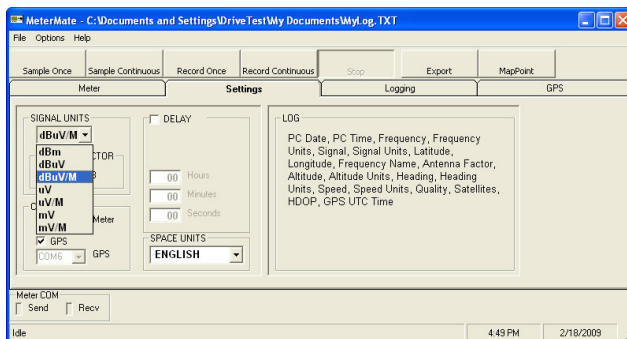
Example of screen captures from MeterMate follow:



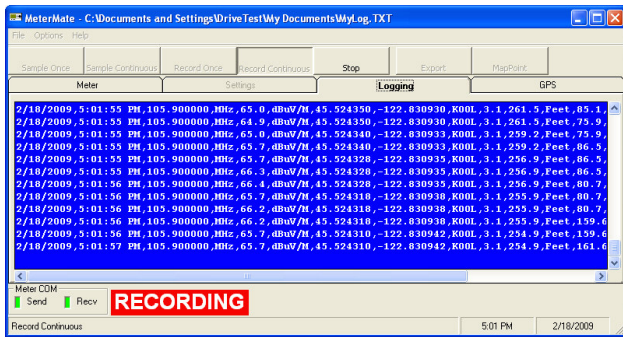
MeterMate Meter Tab



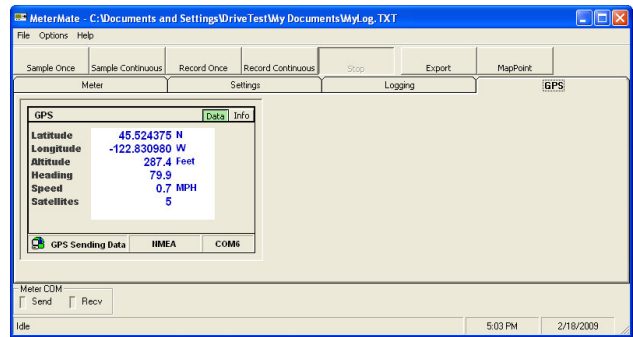
MeterMate Settings Tab



MeterMate Setting Tab with signal units



MeterMate Logging Tab



MeterMate GPS Tab

Serial Port

RS232 compatible rear panel connection. Allows interface with IBM-compatible PC.

Built-in Speaker

Outputs detected audio from FM & AM signals.

Charger/Power Supply Inputs

On rear panel. Operates from power supply while internal battery is being charged. Battery operates unit 4 hours without recharge.

LCD Display

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

RF Input

Rugged Type-N connector operates 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: 15KHZ and 150KHZ.

AUDIO Detectors:

Select from either AM or FM audio detector

Accessory Connector

Rear panel audio Output, DC power source & other functions.

FREQ/CH

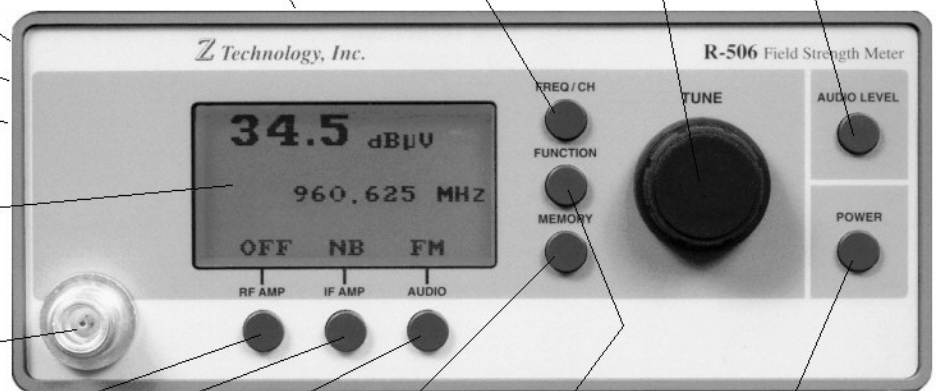
Sets display to show either FREQ/TV channel.

TUNE KNOB

Convenient to use, Positive detent action For precise tuning.

AUDIO LEVEL

Controls all output audio volume.



MEMORY

Activates internal Memory feature for storage 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

Includes a "timed-turn-off" function to preserve battery life.

The R-506 Programmable Field Strength Meter from Z Technology is a modern, time-saving system product for the engineer qualifying and maintaining over-the-air transmission systems.

Application information is available at the Z Technology website www.ztechnology.com. Systems are also available directly from Z Technology as factor-integrated measurement systems. One of these factory-assembled systems is the S5006GPS automated measuring and mapping system.

Test and Measurement Package



R-506, TV-2 Dipole Antennas and MeterMate Application Installed on a User's PC

R-506 Programmable Field Strength Meter Specifications:

Frequency Coverage:

5 MHz to 1000 MHz Contiguous

Tuning Method:

Detent TUNE knob controls precise phase locked loop synthesized tuning.

Pushing TUNE knob changes tuning steps from 100 MHz/step down to 1 kHz/step.

Front Panel Display:

Large 64 x 128 pixel graphics LC display with controlled back lighting. Active display area of 1.3 x 2.6 inches.

Internal User Memory:

TUNE knob controlled

- a) MEMORY button recalls 40 user selectable frequencies.
- b) FREQ/CH allows fast tuning to local television channels.

Measurement Range:

dBuV Mode:

-10 dBuV to +90 dBuV

dBm Mode:

-117 dBm to -17 dBm

Utilizes auto-range plus front panel RF AMP controlled gain setting.

Standard Measurement

Accuracy:

Accuracy is +/- 2dB for temp. range of 25 °C +/-10 °C

Accuracy is typical when extended over temperature of 0 to + 50 °C

Ordering Information

R-506 Programmable Field Strength Meter with Windows™ MeterMate Software Application

Options:

Option GPS: GPS receiver and antenna

Option NB1: 13 kHz @ 6 dB NB IF

Option WB3: 300 kHz @ 3 dB WB IF

IF Bandwidth:

15 kHz (6 pole) and 150 kHz.

See Options for other bandwidths.

RF Input Filter Ranges:

Automatically Selected

- 1) 400 to 1000 MHz
- 2) 30 to 400 MHz
- 3) 5.0 to 30 MHz

Type of Conversion:

Triple conversion system

1st LO frequency: 1 to 2 GHz.

Reference Oscillator Stability:

Internal TCXO Ref; 1st & 2nd LO

typ. stable +/-1ppm over temp.

Image Rejection:

60 dB typical, High Sensitivity mode.

Detuning Characteristics:

40 dB typical; for undesired signal 2x IF BW away from center freq.

Third Order Intercept:

Preamp ON typ. 0 dBm

Preamp OFF +20 dBm.

Noise Figure:

Preamplifier NF = 7 dB typical when RF AMP is selected.

Input Impedance:

50 ohms.

Measurement Resolution:

0.1 dB.

Output Linearity Range:

Continuous measurement range: 80dB

Audio Detection:

AM or FM to internal speaker selected from front panel.

Rear panel connection for remote speaker or headphones.

BW is 300Hz to 3 kHz.

Sensitivity:

FM detector:1uV for 12dB SINAD typ.

AM detector:1uV for 12dB S/N typ.

Serial Port Control:

Allows PC control of R-506.

Baud rates up to 9600:

8 data bits No Parity

1 stop bit RTS/CTS

Interface for MeterMate Software

Operating Temperature:

0 °C to +50 °C

Weight:

4.5 Kg (10 lbs).

Dimensions:

3.5 x 9 x 8.4 in (H x D x W)

89 x 229 x 213 mm

Supplied Accessories:

- Internal Rechargeable Battery Pack
- AC power supply/charger
- Soft carrying case
- Uncalibrated utility antenna
- User manual
- Windows™ MeterMate Software Application.

Accessories:

BC-BCB: 0.3 to 3.0 MHz Block Converter

BC-PCS: 1750 to 1980 MHz Block Converter

BC-PCS-2: 1980 to 2500 MHz Block Converter

TV-1: Calibrated Tuned Dipole Antenna, 50 – 219 MHz

TV-2: Calibrated Tuned Dipole Antenna, 325 – 1000 MHz

AA-TV SET: Calibrated Tuned Dipole Antenna Set for FM,

Radio and for VHF/UHF Television Channels, with

Calibrated Cable, Ant. Bracket & Hard Carrying Case

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 
Home of Precision RF Measurements

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