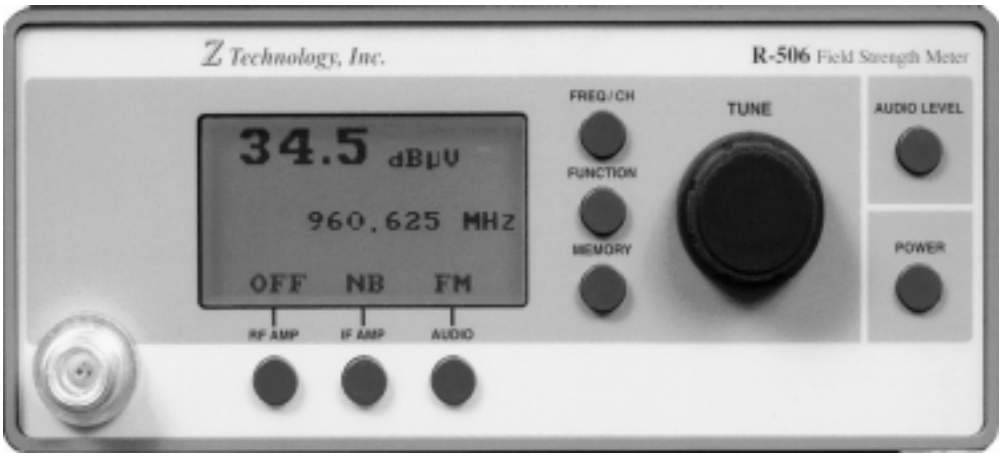
Z Technology, Inc.

R-506 Field Strength Meter



R-506 Field Strength Meter

Broad Frequency Coverage: 5 MHz to 1000 MHz

Wide Signal Measurement Range: -10 dBuV to +90 dBuV

Excellent Measurement Accuracy: +/-2 dB

RS-232 Serial Interface Control Port

Full Featured Front Panel for Ease of Use

Internal Preamp with Auto-Selection of RF Input Filters

Fast Front Panel Recall of 100 User-Programmed Frequencies

Front Panel Frequency or TV Channel Tuning Steps

Direct Readout in dBm, dBuV, or dBuV/m with User-Provided Antenna Factors

Battery or AC Operated; Rugged and Highly Portable

The new 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 in 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 precision, broad band, 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 light weight 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.

R-506 inatalled as part of S5006GPS Factory Integrated System

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.

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.

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. Several of these programs incorporate GPS Latitude/Longitude tagging and geographic plotting.

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 down load 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 inches 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.

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.

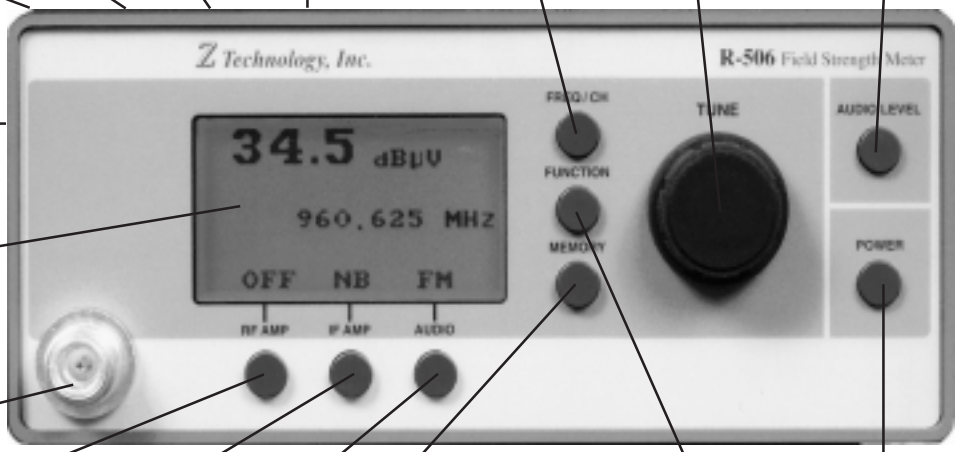
FREQ/CH
Sets tuning display to show either frequency or a TV channel number.

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

AUDIO 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.

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.

AUDIO Detectors:
Select from either an AM or FM high quality audio detector.

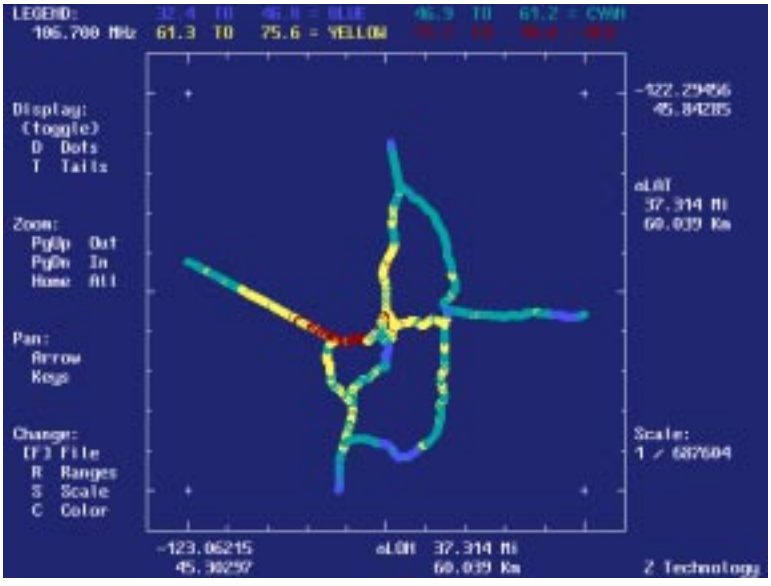
MEMORY
Activates internal memory feature for storing and retrieving 40 user defined frequencies. These frequencies are then sequenced through using the TUNE knob.

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.

R-506 Operational Controls and System Connections

The R-506 can be integrated with a GPS receiver and laptop PC to provide system coverage plots. Application information is provided at the Z Technology internet site, www.ztechnology.com. Systems are also available factory integrated. The plot shown was automatically acquired by a factory assembled S5006GPS system in a drive test of Portland, Oregon.



R-506 Field Strength Meter Specifications:

Frequency Coverage:
5 MHz to 1000 MHz Contiguous Coverage.

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-ranging plus front panel RF AMP controlled gain setting.

Standard Measurement Accuracy:
+/-2 dB @ 25ºC +/-10ºC
Typical: Swept Mode and Temperature = 0 to +50ºC

IF Bandwidth:
15 kHz (6 pole) and 150 kHz.
See Options for other bandwidths.

RF Input Filters:
Automatically Selected
1) 400 to 1000 MHz
2) 5.0 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 Reference; 1st and 2nd LO typically stable +/- 1ppm over temperature.

Image Rejection:
60 dB typical, High Sensitivity mode.

Detuning Characteristics:
40 dB typical; for undesired signal 2x IF BW away from center frequency.

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.

Audio Detection:
AM or FM to internal speaker selected from front panel.
Rear panel connection for remote speaker or headphone.
BW is 300 Hz to 3 kHz.

Sensitivity:
FM detection: 1 uV for 12 dB SINAD typical.
AM detection: 1 uV for 12 dB S/N typical.

Measurement Resolution:
0.1 dB.

Output Linearity Range:
Continuous measurement range of 80 dB.

Serial Port Control:
Baud rates up to 9600. Used for external data logging features as in all R-500 series instruments.

Operating Temperature:
0ºC to +50ºC

Weight:
4.5 Kg (10 lbs).

Dimensions:
89 mm (3.5 in) High
229 mm (9.0 in) Deep
213 mm (8.4 in) Wide

Ordering Information

R-506 Field Strength Meter with DOS Application Software

Supplied Accessories:
Internal NiCad battery
AC power supply/charger
Soft carrying case
Extendable antenna
Instruction manual
DOS control software

Options:
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

Accessories:
BC-BCB: 0.3 to 3.0 MHz Block Converter
BC-PCS: 1750 to 1980 MHz Block Converter

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

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