



***S5007DTV Field Strength Measurement System***



*S5007DTV Measurement System with Spectrum software plotting a digital TV signal*

**System for Field Measurement and Documentation of Digital and Analog Television Signals**

**Broad Frequency Coverage:  
5 MHz to 1000 MHz**

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

**Excellent Measurement Accuracy:  
+/-2 dB over Temperature and Frequency Range**

**Internal Preamp with Auto-Selection of RF Input Filters**

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

**12V DC or AC Operated; Rugged and Highly Portable**

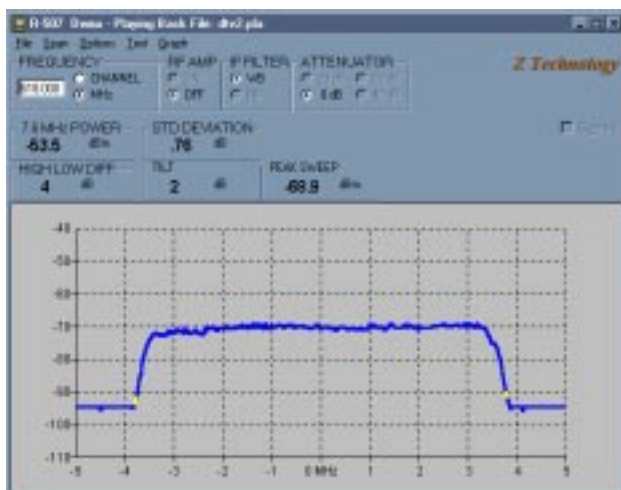
**Factory Integrated system supplied in Airline Hand-Carry Hard Case, with laptop PC in its own soft case**

## Digital and Analog Television Measurements:

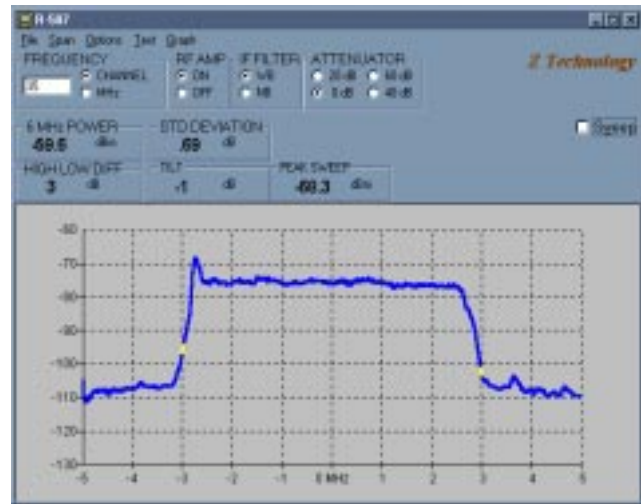
The new S5007DTV is an RF measurement system for digital and analog signal analysis. With this system, a user can analyze the received RF signal in a problem location for power level and spectral characteristics.

This factory integrated system is optimized to the broadcaster's application, taking advantage of the precision and flexibility of the R-507 DTV Field Strength Meter. The R-507 provides accurate, high speed measurement under PC control for both wide and narrow band signals. The system offers the accuracy and features necessary for NIST traceable field strength measurements. The system provides the added ability to display on a PC screen, total power in a user defined bandwidth, peak power in the band, and signal strength versus frequency over spans of 5, 10, or 20 MHz. The system provides precision measurement and documentation of signals in a frequency range of 5 to 1000 MHz.

The system is configured with Spectrum Display software for wideband and DTV spectral measurements. An operator can easily switch between the Spectrum Display application and a stand-alone mode for individual precision field strength measurements. The system is ideal for site evaluation for new antenna construction or making precise industry required NIST traceable field strength measurements. The Spectrum Display application allows visual identification of channel occupancy throughout a band. This feature is also very useful in analyzing digitally-modulated signals such as DTV, DVB-T, and GSM. An operator can directly measure total received power across an occupied channel. Simply enter the bandwidth to be measured and read the power being received, in dBm or dBuV directly on the PC.



*S5007DTV Spectrum Display of an off-air DVB-T signal*



*S5007DTV Spectrum Display of an off-air DTV signal*

The S5007DTV 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, 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. The R-507 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-507 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-507 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 backlit 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 manufac-



*R-507 Field Strength Meter with DTV capability; heart of the S5007DTV system*

turer provided Antenna Factors, these Factors can be loaded into the R-507. In Direct Readout mode, the LCD displays signal level in dBuV/meter, the critical measurement unit best suited for transmission testing.

#### **Spectrum Evaluation:**

The S5007DTV is configured with a unique interactive software program to allow the system PC to synchronously control the R-507's swept spectrum feature and display measured signal levels on the PC screen. The PC display refreshes up to 2 times per second offering a near-real-time display of spectrum over the swept frequency. A 5 MHz, 10 MHz, or 20 MHz band can be viewed at any one time. The vertical axis is calibrated and can be displayed in dBm or dBuV, while the horizontal axis is calibrated in frequency around the selected center frequency.

Using an interactive Windows-based applications program, the system PC communicates with the R-507 through its serial port. From the PC, a user can easily control basic features for the instrument including: operating frequency, RF AMP, IF Bandwidth, and attenuator settings. Through a point-and-click process and using pull-down menus, the R-507 is initialized and the spectrum sweep mode is activated.

Cursors marking the measurement band edges can be set by the user. This defines the band over which power is measured. Received power in this band is then calculated and resulting total average power is displayed on the PC. Tilt and notches for the same band can also be measured and displayed.

The R-507 applications program allows a user to record measured parameters such as frequency, channel number, total power and in-band peak power readings, tilt and notches to a data file. In the spectrum display mode, the R-507 provides accurate measurements for digitally modulated signals plus the ability to visually

analyze signals being received over a band of interest. An operator can easily capture to the Windows clipboard any swept display image and paste it into a Windows application such as PowerPoint for future viewing and analysis.

#### **System Integration:**

The Z Technology S5007DTV system is a lightweight, compact, factory configured 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 signal strength, and spectral analysis of received DTV or DVB-T notches, tilt, and in-band and peak power.

# S5007DTV System Specifications:

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**Frequency Coverage:**

5 MHz to 1000 MHz Contiguous Coverage.

**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 @ 25°C +/-10°C

Typical: Swept Mode and Temperature = 0 to +50°C

**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.

**Laptop Computer:**

Pentium class, 233 MHz, 32 Mb

Memory, 3.2 Gb Hard Drive, or  
better.

**Operating Temperature:**

0°C to +50°C (R-507 & GPS Rx)

**System Weight:**

13.9 Kg (25 lbs).

**System Dimensions:**

216 mm (8.5 in) High

375 mm (14.75 in) Deep

470 mm (18.5 in) Wide

**Ordering Information:**

S5007DTV Field Strength Measurement System.

**System includes:**

R-507 Field Strength Meter

Laptop Computer

Installed Spectrum Display

Software

Hand-Carry System Case for R-507 and accessories

**Supplied Accessories:**

Internal NiCad battery

AC power supply/charger

Soft carrying case

Extendable antenna

Instruction manual

Quick-Start instructions

**Accessories:**

BC-BCB: 0.3 to 3.0 MHz

Block Converter

BC-PCS: 1750 to 1980 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

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

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