

Wireless

3500 Portable Radio Communications Test Set

AEROFLEX
A passion for performance.



The Aeroflex 3500 meets the needs of a variety of vehicle radio tests and commercial radio applications within the 2 MHz to 1 GHz frequency range.

- Easy portability - weighs only 8.5 lbs. (3.9 kg)
- 5 hour battery life
- 2 MHz - 1 GHz operation
- Rugged construction
- -10° to +50° C operating temperature range
- Built-in generator and receiver to 1 GHz
- AM/FM transmitter tests
 - RF power
 - RF frequency error
 - AM modulation / FM deviation
 - Receive Signal Strength Indicator (RSSI)
- AM/FM receiver tests
 - Distortion
 - SINAD / Sensitivity
 - Two audio generators provide 150 Hz squelch tone for modern FM radios
- VSWR tests for cable and antenna testing
- Software defined features allow field upgrades
- Handset and antenna to be able to perform "Talk Test"

The Aeroflex 3500 is a brand new Aeroflex Radio Test Set with the latest in portability, battery life and performance. The Aeroflex 3500 Radio Test Set builds upon Aeroflex's expertise in developing portable Radio Test Sets with exclusive features and affordability that are destined to set a new standard in portable radio test sets. The 3500 is capable of measuring high power (20 watts without an external attenuator, up to 200 watts with an external attenuator option), as well as finding faults in antennas, power amplifiers and interconnects. The 3500 meets the needs of a variety of vehicle radio tests, as well as commercial radio applications. With extensive operational capability, the 3500 provides portable test features that are typically found in bench top radio test equipment.

Portable and Rugged

The 3500 Radio Test Set was designed from the ground up to be portable and rugged, weighing in at only 8.5 lbs. including the battery. It has a solid aluminum weatherproof case, an operating temperature range of -10° to +50° C, and rugged construction specifications for humidity, altitude, shock, and vibration. The battery gives the user 5 hours of operation and can be fully re-charged and ready to operate in only 4 hours. In addition, the 3500 and the optional accessories can be stored in a ruggedized transport case.

Quick Drive By Testing To Isolate Radio Installation Failures

Designed to be used for quick Drive By Testing, the 3500 can efficiently and easily find radio failures. There is no need to connect to the radio under test, simply connect the supplied antenna, key up the radio and then measure the radio parameters over-the-air. A handset is provided to check voice quality of the transmitter and receiver.

Isolate Cable and Antenna Problems

Since many radio faults lie in the cabling and/or antenna and not with the radio, the 3500 includes the capability to measure the VSWR of

the cable and antenna. A large VSWR can be an indication of a high return loss caused by a bad cable, connector or antenna. By isolating the problem to the cable, connector or antenna, you can avoid returning good radios to the depot or manufacturer for repair, thus avoiding radio system down time.

Future Updates

The 3500 utilizes a software-defined radio architecture. The software defines almost all of the functionality of the test set from the RF physical layer and up. This software-defined feature allows for future updates and improvements to the capability of the instrument and allows the user to easily add options or update functional improvements in the field, without the need to return the instrument to the factory. Future enhancements will include a spectrum analyzer and oscilloscope.

SPECIFICATION

RF SIGNAL GENERATOR

FREQUENCY

Range

2.000 to 999.999 MHz

Resolution

1 Hz

Accuracy

Same as Timebase

OUTPUT LEVEL

Range

T/R Port: -50 to -120 dBm
ANT Port: -30 to -90 dBm
SWR Port: -5 to -65 dBm

Resolution

0.1 dB

Accuracy

±3 dB

SSB PHASE NOISE

-80 dBc/Hz at 20 kHz offset

INTERNAL FM (AFGEN 1 and AFGEN 2)

Deviation Range

10 Hz to 100 kHz

Resolution

10 Hz

Accuracy

+/- 10%

INTERNAL AM (AFGEN 1 and AFGEN 2)

Modulation Range

0 to 95%

Resolution

1%

Accuracy

10% of setting, 1 kHz rate

15% of setting from 20 to 90%, 300 to 3 kHz rate

AFGEN 1 and AFGEN 2

Frequency Range

10 Hz to 5 kHz

Frequency Resolution

1 Hz

Frequency Accuracy

5%

Output Level

0.0 to 1.6 Vrms

Output Resolution

0.1 Vrms

Output Accuracy

+/- 5%

EXTERNAL FM

Input Frequency Range

EXT AUDIN: 300 Hz to 10 kHz
MICIN: 400 Hz to 1.2 kHz

Sensitivity

EXT AUDIN: 10 Hz / mVpeak nominal
MICIN: 100 Hz / mVpeak nominal

EXTERNAL AM

Input Frequency Range

EXT AUDIN: 300 Hz to 10 kHz
MICIN: 400 Hz to 1.2 kHz

Sensitivity

EXT AUDIN: 1% / 10 mVpeak nominal
MICIN: 1% / 1 mVpeak nominal

RF RECEIVER

FREQUENCY

Range

2.000 to 999.999 MHz

Resolution

1 Hz

Accuracy

Same as Timebase

AMPLITUDE

Minimum Input Level

ANT port, audio: -80 dBm, typical 10 dB SINAD

ANT port, receiver measurements:

-60 dBm for RSSI and RF error, modulation, distortion

T/R port, audio: -40 dBm, typical, 10 dB SINAD

T/R port, receiver measurements:

-30 dBm for RF error, modulation, distortion

-60 dBm for RSSI

Maximum Usable Input Level

ANT port, receiver measurements: -10 dBm
T/R port, receiver measurements: +20 dBm

DEMODULATION

FM Demod

Output level: 50 mV_{peak} / kHz, +/- 15%

AM Demod

Output level: 1.5 mV_{peak} / %AM, +/- 15%

RF TRANSMITTER TEST METERS

RF Frequency Error Meter

Range

+/- 25 kHz

Accuracy

Same as Timebase

RSSI Indicator

Range

-110 to 40 dBm

Accuracy

+/- 3 dB

RF Power Meter (Broadband Power into T/R Port)

Minimum Input Level

0.03 W / +15 dBm

Maximum Input Level

20W / 43 dBm with no attenuator
50 W / 47 dBm with external 20 dB attenuator
200 W / 53 dBm with external 20 dB attenuator

Accuracy

+/- 15% (no external attenuator)
External attenuator, +/- 0.5 dB

FM Deviation Meter

Range

10 Hz to +/- 80.0 kHz

Accuracy

+/- 5% of reading, 1 kHz to 10 kHz
+/- 3% of reading, 2.5 kHz to 6.5 kHz

AM Percent Meter

Range

5 to 100.0%

Accuracy

+/- 5% of reading

SWR MEASUREMENT

Display Range

0 to 6

Accuracy

+/-0.5 dB from VSWR readings of 1.5:1 to 3:1 when calibrated

AUDIO METERS

AUDIO INPUT (EXT AUDIN)

Range

300 Hz to 10 kHz
0 to 5 V_{p-p}

SINAD METER (WITH 1 KHz AUDIO)

Display Range

0 to 40 dB

Accuracy

+/- 1.5 dB from 8 to 40 dB

DISTORTION METER

Reading Range

0 to 100%

Accuracy

+/- 10% from 1% to 20%

TIMEBASE

Temperature Stability

1 ppm standard, 0.1 ppm optional

Aging

1 ppm / year standard, 0.1 ppm optional

ENVIRONMENTAL / PHYSICAL

Overall Dimensions

231 x 285 x 70 mm (W x L x D)
9.1 in. x 11.2 in. x 2.8 in.

Weight

8.5 lbs. (3.9 kg); 12 lbs. (5.4 kg) with accessories and softbag

Temperature

-30° to 71°C storage, -10° to 50°C operating

Battery Operation Time

4 hours continuous use, 5 hours typical

VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Supplied Accessories

Internal battery

AC to DC charger with AC power cord

Audio/Microphone handset

Audio/Microphone handset cable

Short/1 GHz VSWR load TNC female

DC charger cable



Optional Accessories

AC27001 Hardside carrying case (req's AC27004)

AC27002 20 dB, 50 W attenuator

AC27003 20 dB / 150 W attenuator

AC27004 Carrying case-softsided

AC27005 Extra battery

AC27006 Flip cover

AC27012 BNC antenna / adaptor kit includes:

Antenna, BNC, 50 MHz

Antenna, BNC, 150 MHz

Antenna, BNC, 450 MHz

Antenna, BNC, 800 MHz N-M, BNC-F adapter

N-F, BNC-M adapter

N-F, BNC-F adapter

TNC-M, N-M adapter

TNC-M, BNC-F adapter

BNC - BNC cable

TNC-TNC cable

AC27013 Directional coupler and kit including:

10 dB attenuator

BNC 12 inch cables

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