

# Military Communications

## 3515 Military Portable Radio Communications Test Set

**AEROFLEX**  
A passion for performance.



The Aeroflex 3515 was developed for military use and offers rugged construction and testing in the 2 MHz to 1 GHz frequency range.

- H-250 SINCGARS handset adaptor
- Military version of 3500
- Packaged options simplify ordering
- Easy portability - Weighs only 8.5 lbs. (3.9 kg)
- 5 hour battery life
- 2 MHz - 1 GHz operation
- Rugged MIL-PRF-28800F Class 2 operation
- -20° to +55° 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 to provide 150 Hz squelch tone for modern FM radios
- VSWR tests for cable and antenna testing
- Software-defined features allow field upgrades
- Handset and speaker to perform "Talk Test"

The Aeroflex 3515 is a brand new Aeroflex Military Radio Test Set with the latest in portability, battery life and performance. The Aeroflex 3515 Military 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 3515 was developed for military use and is capable of measuring high power (20 watts without an external attenuator, up to 200 watts with an external attenuator provided), as well as finding faults in antennas, power amplifiers and interconnects. The 3515 meets the needs of a variety of vehicle radio tests, as well as commercial radio applications. With extensive operational capability, the 3515 provides portable test features that are typically found in bench top radio test equipment.

### Portable and Rugged

The 3515 Military 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 -20° to +55°C, and meets the rugged MIL-PRF-28800F Class 2 specification 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 3515 and the supplied accessories can be stored in a ruggedized transport case.

### Quick Drive By Testing To Isolate Radio Installation Failures - Military or Civilian

Designed to be used for quick Drive By Testing, the 3515 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. Additionally, the 3515 provides a standard H-250 adaptor to use with the standard H-250 SINCGARS handsets.

For the very latest specifications visit [www.aeroflex.com](http://www.aeroflex.com)

## Isolate Cable and Antenna Problems

Since many radio faults lie in the cabling and/or antenna and not with the radio, the 3515 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 downtime.

## Future Updates

The 3515 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 or depot. Planned features are a built in spectrum analyzer and an oscilloscope

# SPECIFICATION

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## RF SIGNAL GENERATOR

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### 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 Rrange

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

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### 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<sub>peak</sub> / kHz, +/- 15%

#### AM Demod

Output level: 1.5 mV<sub>peak</sub> / %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

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#### Display Range

0 to 6

#### Accuracy

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

### AUDIO METERS

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#### AUDIO INPUT (EXT AUDIN)

##### Range

300 Hz to 10 kHz  
0 to 5 V<sub>p-p</sub>

#### 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

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#### Temperature Stability

1 ppm standard, 0.1 ppm optional

#### Aging

1 ppm / year standard, 0.1 ppm optional

### ENVIRONMENTAL / PHYSICAL

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#### 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, -20° to 55° C operating

#### Battery Operation Time

4 hours continuous use, 5 hours typical

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## VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

### Supplied Accessories

Internal battery

Cover/stand

150 W (200 W intermittent) 20 dB attenuator

50 W 20 dB attenuator

Antenna HF 50 MHz

Antenna VHF 150 MHz

Antenna UHF 450 MHz

Antenna 800 MHz

AC to DC charger with AC power cord

DC NATO adaptor

Audio/ Microphone handset

Audio/Microphone handset cable

TNC to TNC cable 4 ft.

BNC to BNC cable 4 ft.

5 TNC to BNC adaptors

Short / 1 GHz VSWR load TNC female

H-250 microphone adaptor accessory

Soft carrying case

N-M, BNC-F adapter

N-F, BNC-M adapter

N-F, BNC-F adapter

TNC-M, N-M adapter

### Optional Accessories

Hard carrying case

Internal battery (additional)

Directional coupler

10 dB attenuator



### EXPORT CONTROL:

This product is controlled for export under the International Traffic in Arms Regulations (ITAR). A license from the U.S. Department of State is required prior to the export of this product from the United States.

### EXPORT WARNING:

Aeroflex's military products are controlled for export under the International Traffic in Arms Regulations (ITAR) and may not be sold or proposed or offered for sale to certain countries including: Belarus, Burma, China, Cuba, Haiti, Iran, Liberia, Libya, North Korea, Somalia, Syria, Sudan, and Vietnam. See ITAR 126.1 for complete information.

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