

Wireless

3500 Portable Radio Communications Test Set



AEROFLEX
A passion for performance.

New Spectrum Analyzer

Designed to dramatically improve radio operational time in vehicle installations and reduce the number of incorrectly diagnosed radios that result in NTF (No Trouble Found).

- 2 MHz - 1 GHz operation
- Portable and rugged
- AM/FM transmitter and receiver tests
- Spectrum Analyzer with < -136 dBm noise floor
- Oscilloscope
- Antenna/Cable tests
- Isolate radio and installation failures

Portable and Rugged

- Easy portability - weighs only 8.5 lbs. (3.9 kg)
- Rugged construction - solid aluminum weatherproof case
- -20° to $+50^{\circ}$ C operating temperature range
- 5 hour battery life

Aeroflex engineers designed the 3500 from the ground up to be portable and rugged, weighing in at only 8.5 lbs (3.9 kg) including the battery. It has a solid aluminum weatherproof case, an operating temperature range of -20° to $+50^{\circ}$ C, and rugged construction specifications (Mil-PRF-28800A) 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.

Radio Installation Failures

- Handset and antenna allow over the air "Talk Test"
- RSSI Meter
- RF Error Meter
- Modulation Measurements
- Audio Frequency Counter
- Spectrum Analyzer

Designed to be used for quick installed radio testing (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. A push-to-talk button on the handset controls whether the 3500 is transmitting or receiving. The "Drive by" test screen, shown below, is ideal for making quick transmitter and receiver measurements on an installed radio system.

The Aeroflex 3500 is the *First Truly Rugged, Portable Radio Test Set*. With the latest in portability, battery life and performance, the Aeroflex 3500 builds upon Aeroflex's expertise in developing portable radio communications 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 W without an external attenuator, up to 150 W with an external attenuator option), as well as finding faults in antennas, power amplifiers and interconnects. Designed to meet the needs of a multitude of radio tests, the 3500 provides fast, reliable measurements of the radio's transmitter and receiver parameters. With the additional capability to perform quick testing of antennas and cables, the 3500 provides the most complete portable test solution available to quickly isolate problems and assess performance of the radio, cable and antenna systems. With extensive operational capability, the 3500 provides portable test features that you typically find in bench top radio test equipment.

For the very latest specifications visit www.aeroflex.com

| DRIVEBY TEST | | |
|---|--|------------------------------------|
| Generator MHz: 50,000000 Port: ANT Mod: FM Lvl: -70 dBm | Receiver MHz: 50,000000 Port: ANT Mod: FM 25k AFB'w: [C-Wt BP] | MOD-FMDEV 1.998 0 kHz 100 |
| Modulator Gen 1: ON 1000.0 Hz 2.00 kHz DCS ON 026 0.60 kHz Ext Aud: OFF Load: High Z MIC: OFF | Freq/Code FM | RF-ERROR -0.014 -200 kHz 200 |
| Bat: 53 Temp: 28 Vol: 10 Recall Save Aud Out Speaker | AF-COUNTER 999.9 15 Hz 20000 | RSSI -70.92 -110 dBm 43 |
| [Edit] | [Return] | [System] [Setup] [Ptt on] |

Drive By Test Screen

Bench Top Testing

- Spectrum Analyzer
- RF power
- RF frequency error
- AM modulation/FM deviation
- Audio frequency counter
- Receive Signal Strength Indicator (RSSI)
- DCS generator
- Distortion
- SINAD/Sensitivity

Also included in the operation of the 3500 is the capability to perform bench top type testing on a radio. All radio parameters including power, frequency error, modulation accuracy, receiver sensitivity and audio performance can be easily accessed and tested with the 3500. In the Bench Top Mode, the user has the ability to tailor the operation of the 3500 to the type of testing to be performed.

| |
|---------------------------|
| 1 - RECEIVER TEST |
| 2 - TRANSMITTER TEST |
| 3 - DUPLEX TEST |
| 4 - SWR TEST |
| 5 - METERS |
| 6 - AUDIO |
| 7 - SETUP |
| [Return] [System] [Setup] |

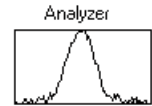
Bench Top Menu Screen

If the Receiver Test is selected, the 3500 operates as a signal generator, enabling the testing of the receiver portion of the radio. Audio SINAD, distortion, and frequency are among the tests that can be performed on the radio's receiver. With two internal generators that can be used as modulation sources, the 3500 can modulate the carrier with both a test tone and a squelch tone. In addition, the operation of Gen 2 can be changed to be DCS or DCS invert, enabling the testing of mobiles requiring a digitally coded squelch.

| RECEIVER TEST | | |
|---|--------------------------------|------------------------------------|
| Generator MHz: 172.625000 Port: T/R Mod: FM Lvl: -99 dBm | SINAD-AUDIN 32.9 0 dB 60 | DIST-AUDIN 2.8 0 % 100 |
| Modulator Gen 1: ON 1000.0 Hz 3.50 kHz Gen 2 ON 67.0 Hz 0.75 kHz MIC: OFF Ext Aud: OFF Load: High Z | Freq FM | AF-COUNTER 999.7 15 Hz 20000 |
| Bat: 71 Temp: 29 Vol: 10 Recall Save Aud Out Speaker | | |
| [Edit] | [Return] | [System] [Setup] |

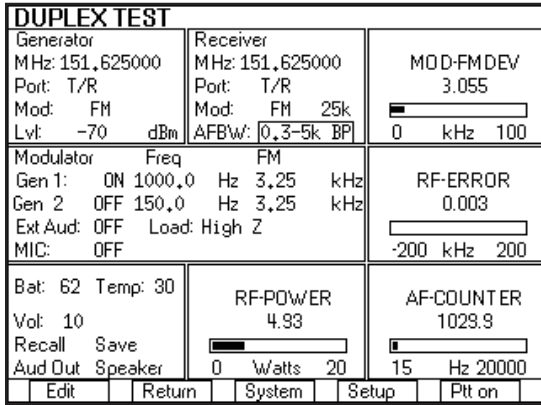
Receiver Test Screen

The Transmitter Test screen operates as a signal analyzer, measuring the parameters associated with the transmit portion of the radio being tested. Included in this screen are measurements of the modulation, the RF power, and RF frequency error.

| TRANSMITTER TEST | | |
|---|------------------------------------|---|
| Receiver MHz: 151.625000 Port: T/R Mod: FM 12.5k AFB'w: 0.3-5k BP | RF-ERROR -0.023 -200 kHz 200 | |
| | MOD-FMDEV 1.586 0 kHz 100 | RF-POWER 1.30 0 Watts 20 |
| Bat: 60 Temp: 30 Vol: 0 Recall Save Aud Out Speaker | | Analyzer  |
| [Edit] | [Return] | [System] [Setup] |

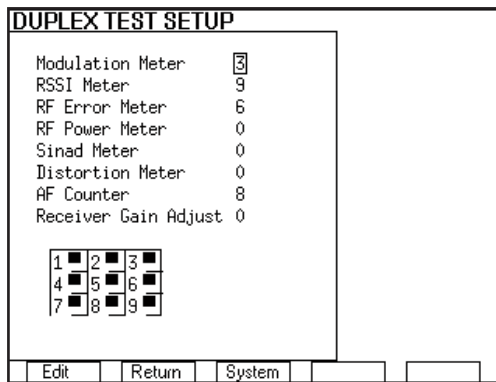
Transmitter Test Screen

The Duplex Test screen operates as both a signal generator and analyzer, allowing simultaneous testing of the transmitter and receiver of the radio being tested. All of the capabilities of the transmitter test screen and the receiver test screen are included in this screen.



Duplex Test Screen

Any of the test screens can be easily configured with the meters that are needed according to the type of tests that the user wants to perform by selecting the meters from the setup screen. Users can quickly define the "look" of the instrument by configuring the way the meters are displayed on the screen.



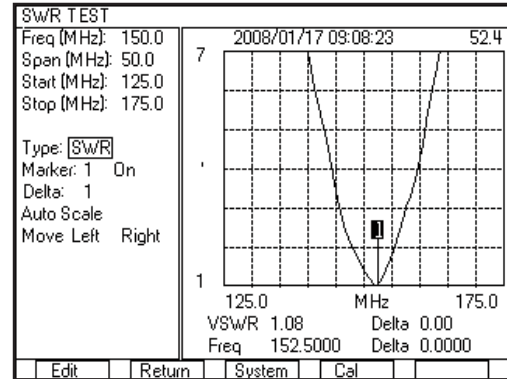
Duplex Test Setup Screen

Isolate Cable and Antenna Problems

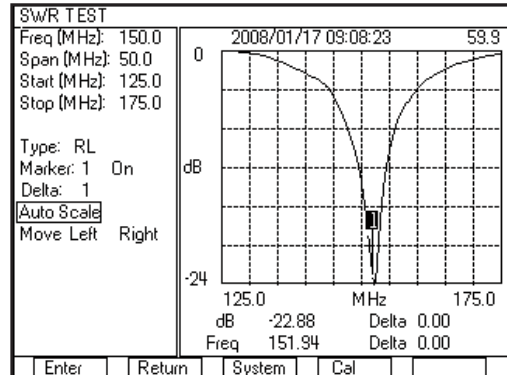
Since many radio faults lie in the cabling and/or antenna and not with the radio, the 3500 includes the capability to measure the VSWR or return loss of an antenna, and the loss or distance to fault of a cable. By isolating the problem to the cable, connector or antenna, you can avoid returning good radios to the depot or manufacturer for repair, thus avoiding radio system down time. The SWR Test screen provides the user with the option to display:

- VSWR versus frequency
- Return loss versus frequency
- Cable loss versus frequency
- Return loss versus feet

The display of VSWR or Return Loss (RL) versus frequency is useful for observing the characteristics of an antenna. The following two screenshots show examples of these two types of measurements.

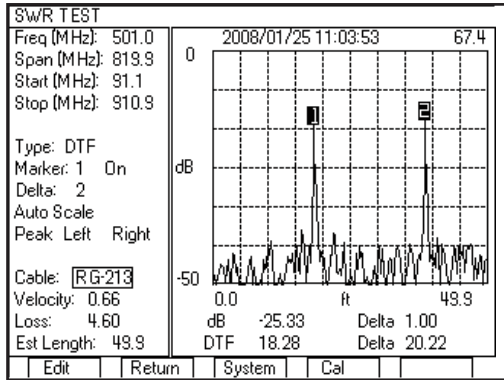


SWR Test Screen Showing VSWR Versus Frequency



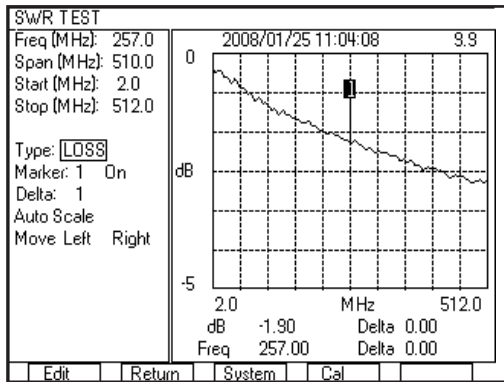
SWR Test Screen Showing RL Versus Frequency

The display of return loss versus feet is descriptive of the characteristics of a cable, illustrating to the user the precise location of faults (DTF). The following screenshot shows a cable that has a fault, with the location of marker 1 at the fault and marker 2 at the end of the cable.



SWR Test Screen Showing DTF

The cable loss feature enables the user to do a one port measurement of the loss of a cable over frequency. For example, the following screen shot shows the loss of a cable over the frequency range of 2 MHz to 512 MHz.



SWR Test Screen Showing LOSS

Up to three markers can be enabled for use in analyzing the graphical data that is acquired on the SWR test screen. The markers provide the user with information on the precise return loss at a given distance for DTF mode or the exact VSWR at a given frequency for SWR mode. A delta function, associated with the markers, is also available in order to show the difference in VSWR and frequency, or return loss and feet, between two of the markers.

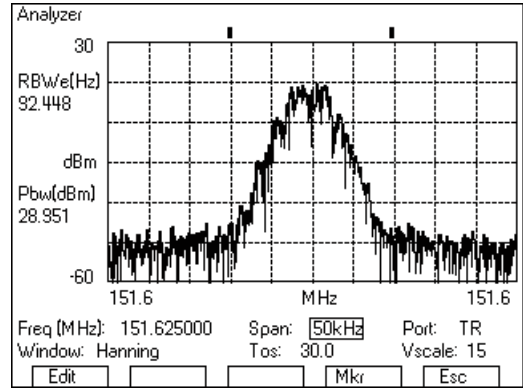
Save/Recall Features

The 3500 allows users to define pass/fail parameters and configure the test parameters and then save these files internally for future use. This feature allows fast testing on radios that require constant testing, base station verification and for testing a large number of the same radio.

Spectrum Analyzer (35XXOPT01)

Now available as an option for 3500 is an FFT based spectrum analyzer. An FFT analyzer uses a snapshot of the incoming RF signal that is within the selected span and converts it to a frequency spectrum. The advantage of using this method is that the spectrum is converted from one set of data and not from a sweep where the RF signal may have changed from the start of the frequency sweep to the finish. The noise floor of the spectrum analyzer is < -136 dBm in the 10 kHz span. The 3500 analyzer has a span width that ranges from 10 kHz to 5 MHz with

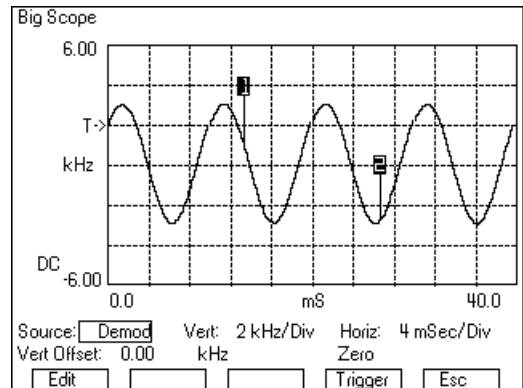
an effective resolution bandwidth as narrow as 19 Hz. A marker function includes the capability of measuring the power within a particular bandwidth and at a specified offset from the center frequency. The 3500 Spectrum Analyzer can be accessed from the Transmitter Test screen, the Duplex Test screen, and as a stand-alone spectrum analyzer.



Full Screen Spectrum Analyzer

Oscilloscope (35XXOPT02)

The latest option for the 3500 is an audio bandwidth Oscilloscope. This option enables the 3500 to display external audio or the demodulated audio of a received signal. The oscilloscope features 2 markers and a horizontal range of 50 mS/Div to 0.1 Sec/Div, sufficient for observing and analyzing audio signals.



Full Screen Oscilloscope

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.

SPECIFICATION

RF SIGNAL GENERATOR

FREQUENCY

Range

2 MHz to 1 GHz

Resolution

1 Hz

Accuracy

Same as timebase

OUTPUT LEVEL

Range

T/R port: -50 to -120 dBm/707 μ V to .224 μ V

ANT port: -30 to -90 dBm/7071 μ V to 7.07 μ V

SWR port: -5 to -65 dBm/125743 μ V to 126 μ V

Resolution

1 dB/0.1 μ V

Accuracy

\pm 2 dB

SSB PHASE NOISE

-80 dBc/Hz at 20 kHz offset

SPURIOUS

Harmonics

-30 dBc

Non-Harmonics

-40 dBc ($> \pm$ 20 kHz offset from carrier) in Band

RESIDUAL FM

<60 Hz in 300 Hz to 3 kHz BW

Typically <20 Hz

RESIDUAL AM

<5% in 300 Hz to 3 kHz BW

Typically <1%

PORT INPUT PROTECTION

ANT port: +20 dBm

SWR port: +20 dBm

T/R port: +44 dBm

PORT VSWR

ANT port: <1.5 : 1

SWR port: <1.5 : 1

T/R port: <1.25 : 1

MODULATION FREQUENCY (RATE) - AM AND FM

Range

0.0 Hz to 20.0 kHz

Resolution

0.1 Hz

Accuracy

Timebase \pm 2 Hz

FM DEVIATION (GEN 1 AND GEN 2)

Range

Off, 500 Hz to 50 kHz

Total Harmonic Distortion

3% (1 kHz rate, >2 kHz deviation, 300 Hz - 3 kHz BP filter)

Resolution

10 Hz

Accuracy

\pm 10% (2 kHz to 50 kHz deviation, 150 Hz to 5 kHz rate)

Typically <2% (5.6 kHz deviation, 1 kHz rate)

EXTERNAL FM

MIC IN

Level: 1 to 30 mVrms, voiced tone

Frequency range: 300 Hz to 3 kHz

MIC IN FM

Deviation off, 0 Hz to 40 kHz

Slope: Positive voltage yields positive deviation

AUDIO IN

Switchable loads: 150 ohms, 600 ohms, K ohms High Z

Input levels: 0.05 to 3 Vrms

Frequency range: 300 Hz to 5 kHz

Level sensitivity: 1 kHz/35 mVrms

Slope: Positive voltage yields positive deviation

AM MODULATION (GEN 1 AND GEN 2)

Range

OFF, 0 to 100% (0Hz to 20 kHz)

Resolution

0.1%

Total Harmonic Distortion

3% (20% to 90% mod, 1 kHz rate, 300 Hz to 3 kHz BP filter)

Accuracy

10% of setting (150 Hz to 5 kHz rate, 10% to 90% Modulation)

EXTERNAL AM

MIC IN

Frequency Range: 300 Hz to 3 kHz

AUDIO IN

Switchable loads: 150 ohm, 600 ohms, 1 K ohms High Z

Input levels: 0.05 to 3 Vrms

Frequency range: 300 Hz to 5 kHz

Level sensitivity: 1% / 35 mVrms nominal

AFGEN 1 AND AFGEN 2

FREQUENCY

Range

30 Hz to 5 kHz (spec)

0.0 Hz to 24.0 kHz (usable)

Resolution

0.1 Hz

Accuracy

Timebase \pm 2 Hz

OUTPUT LEVEL

Load Impedance

600 ohms

Range

0 to 1.57 Vrms

Resolution

0.01 Vrms

Accuracy

±10%

Distortion

<3% (1 kHz rate, sine, 300 Hz to 3 kHz)

HANDSET

Frequency Range

300 Hz to 1.2 kHz

Input Level

0.03 Vrms to 8 Vrms

PTT Operation

PTT On/Off will change between TRANSMITTER TEST and RECEIVER TEST

PTT ON Low GND

PTT OFF Hi Open with Pull-up

RF RECEIVER

FREQUENCY

Range

2 MHz to 1 GHz

Resolution

1 Hz

Accuracy

Same as timebase

INPUT AMPLITUDE

Minimum Input Level, Audio Sensitivity

ANT: -80 dBm (22.4 μ V), typical 10 dB SINAD (-110 dBm with pre-amp)

T/R: -40 dBm (2236 μ V), typical, 10 dB SINAD

Usable Input Level Range

ANT: -60 dBm (-80 dBm with RF Amp On) to -10 dBm (RF Error, Distortion and Modulation)

ANT: -90 dBm (-110 dBm with RF Amp On) to -10 dBm (RSSI)

T/R: -20 dBm to maximum input level (RF error, distortion and modulation)

T/R: -50 dBm to maximum input level (RSSI)

Maximum Input Level

ANT: +20 dBm/0.1 W for 10 seconds

T/R: +43 dBm/20 W (FM) and +37 dBm (AM)

AM/FM DEMODULATION

IF Bandwidth

FM: 5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, 300 kHz

AM: 5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz

Audio Filters Bandwidth

0.3-20 k BP, 0.3-5 k BP, 0.3-3 k BP, 0.3HP, CCITT BP, C-Wt BP, 15 K LP, 5 K LP, 3 K LP, 0.3 K LP

Audio Output Level Sensitivity

FM: (3 Vrms/kHz Dev)/IF BW (kHz) \pm 15%

AM: 7 mVrms/% AM \pm 15%

Speaker Output

75 dBA min. at 0.5 m, 600 - 1800 Hz, max volume

VOLUME CONTROL

Range

0 to 100

LO Emissions

>-50 dBc

Quieted Channels

10 frequencies allowed between 2 MHz and 999.999 MHz quieted by no more than 30 dB

RF TRANSMITTER TEST METERS

RF FREQUENCY ERROR METER

Range

\pm 200 kHz

Resolution

1 Hz

Accuracy

Same as timebase \pm 2 Hz

RSSI INDICATOR (RF POWER WITHIN RECEIVER IF BANDWIDTH)

Display Range

dBm: -120 dBm to +43 dBm (+53 dBm with Ext Attn dB set to 20 dB)

Watts: 10 pW to 20 W (200 W with Ext Attn dB set to 20 dB)

Usable Meter Reading RF Level Range

T/R port: -50 dBm to +43 dBm

ANT port (without RF amp on): -90 dBm to -10 dBm

ANT port (with RF amp on): -110 dBm to -10 dBm

Resolution

0.01 dBm

Accuracy

\pm 3 dB (>-50 dBm into T/R, >-90 dBm into ANT or >-120 dBm into ANT with RF Amp On)

RF POWER METER (BROADBAND RF POWER INTO T/R PORT)

Display Range

Ext Attenuation set to 0 dBm: 0 to 43 dBm (0 to 20 W)

Ext Attenuation set to 20 dBm: 0 to 53 dBm (0 to 200 W)

Minimum Input Level

0.10 W/+20 dBm

Maximum Input Level

No external attenuator:

20 W/43 dBm for 10 minutes at +25° C or until thermal alarm sounds

With external 50 W attenuator:

50 W/47 dBm average at +25° C

With external 150 W attenuator:

150 W/51.8 dBm average for temperatures up to +25° C, linearly derated to 125 W at 55° C

200 W/53 dBm peak for 30 seconds on / 5 minutes off at +25°C

Resolution

0.01 W/0.1 dBm

Accuracy

±1 dB for internal attenuator
±1.5 dB using external attenuator

FM DEVIATION METER

Range

500 Hz to ±100 kHz

Modes

Peak+, Peak-, (Peak+ - Peak-)/2

Resolution

1 Hz

Accuracy

±10% of reading
500 Hz to 100 kHz Deviation
±5% 1 kHz to 10 kHz Deviation, 150 kHz and 1 kHz rate

AM PERCENT METER

Range

5% to 100%

Modes

Peak+, Peak-, (Peak+ - Peak-)/2

Resolution

1%

Accuracy

±5% of reading, 1 kHz rate, 30% to 90% modulation, 3 kHz LPF

SWR TEST

Frequency Range

2.0 MHz to 1000.0 MHz

Span Range

10.0 MHz to 998 MHz

Start Range

2.0 MHz to 990.0 MHz

Stop Range

12.0 MHz to 1000.0 MHz

Frequency Resolution

0.1 MHz

Markers

3

SWR MEASUREMENT

VSWR Range

1.00 to 7.00

Resolution

0.04

VSWR Accuracy

±10% of SWR readings (calibrated) <300 MHz
±20% of SWR readings (calibrated) =300 MHz

RETURN LOSS (RL) MEASUREMENT

Range

0.0 to -50.0 dB

Resolution

0.01 dB

CABLE LOSS MEASUREMENT

Range

0.0 to -50.0 dB

Resolution

0.01 dB

DTF MEASUREMENT

Measurement Range

3ft to 328 ft

Span Range

41 ft to 408 ft

Resolution

0.1 ft

Return Loss Range

0.0 to -50.0 dB

Cable types

USER, RG-8x, RG-8, RG-8foam, RG-8A, RG-55, RG-55A, RG-55B, RG-58, RG-58foam, RG-58A, RG-58B, RG-58C, RG-174, RG-213, RG-214, RG-223, RG-400

Velocity

0.00 to 1.00, automatically selected by cable type

Loss

0.00 to 100.00 dB per 100 ft, automatically selected by cable type

Est Length

42.0 to 408.0 ft

AUDIO METERS

AUDIO INPUT (EXT AUDIN)

Source

BNC Input on handset

Frequency Range

300 Hz to 10 kHz

Level Range

0.2 Vp-p to 5 Vp-p

SINAD METER (WITH 1 KHZ AUDIO)

Measurement Sources

Audio in, demod

Audio Frequency

1 kHz

Display Range

0 to 40 dB

Resolution

0.1 dB

Accuracy

±1.5 dB from 8 to 40 dB

DISTORTION METER**Measurement Sources**

Audio in, demod

Audio Frequency

1 kHz

Reading Range

0% to 100%

Resolution

0.1%

Accuracy

±10% from 1% to 20%

ANALYZER (OPTIONAL)

FREQUENCY**Range**

2 MHz to 1 GHz

Resolution

1 Hz

Accuracy

Same as timebase

Span

10 kHz to 5 MHz in 1,2,5 sequence

Level

Top of scale (Tos) range

-100 to +50 dBm

Top of scale resolution

0.1 dB

Vertical scales

2, 5, 10, 15, and 20 dB/division

EFFECTIVE RBW**Range**

19 Hz to 25 kHz (Effective RBW calculated based on FFT window type and Span)

POWER BANDWIDTH**Offset Range**

0 to +/- 2.495 MHz

Bandwidth Range

1 kHz to 5 MHz in a 1,2,5 sequence (maximum bandwidth is the selected span)

Power Bandwidth Display Range

-137 dBm to +43 dBm

Power Bandwidth Display Resolution

0.001 dBm

Power Bandwidth Accuracy

±3 dB (>-50 dBm into T/R, > -90 dBm into ANT or > -110 dBm into

ANT with RF Amp On)

Displayed Average Noise Level (DANL)

-120 dBm (Typical, 10 kHz span) -136 dBm with pre-amp enabled

Sweep time

370 ms (Typical)

OSCILLOSCOPE (OPTIONAL)

Source

DVM, Audio In, Demod

Traces

One

Markers

Two

Trigger

Type

Auto, Norm

Edge

Rising, Falling

Level

-50 to +50 V

Horizontal

10 microsecond to 1 second per horizontal division in a 1/2/5 sequence

Vertical

FM demod

100 Hz to 1 kHz per vertical division in a 1/2/5 sequence

AM demod

5%, 10%, 20%, 50% per vertical division

DVM and Audio in

10 mV to 10 V per vertical division in a 1/2/5 sequence

Coupling:

DC

Bandwidth

5 kHz

TIMEBASE

Temperature Stability

±0.25 ppm at 25°C

±0.5 ppm over temp range

Aging

1 ppm/year standard

Warm-up time

3 min.

ENVIRONMENTAL / PHYSICAL

Overall Dimensions

231 mm x 285 mm 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

Storage: -51°C to +71°C storage

Note: Battery must not be subjected to temperatures below -20° C, nor above +60° C

Operation: -20°C to +50°C

Note: Battery to be charged at temperatures between 0°C and +45°C

Humidity

95% max. (non-condensing) (MIL-PRF-28800F Class 2)

Altitude

4,600 m max. (15,092 ft.) (MIL-PRF-28800F Class 2)

Shock, Functional

30G (MIL-PRF-28800F Class 2)

Vibration

Random 10 - 500 Hz (MIL-PRF-28800F Class 2)

Bench Handling

MIL-PRF-28800F, Class 2

COMPLIANCE

ENVIRONMENTAL

Use

Pollution degree 2

Mil-PRF-28800F class 2

Salt fog

Splash proof

Acoustic noise

Explosive atmosphere

Fungus resistance

Dust resistance

Drip proof

Solar radiation

EMC

Emissions

Mil-PRF-28800F

EN61326: 1998 class A

EN61000-3-2

EN61000-3-3

Immunity

Mil-PRF-28800F

EN61326: 1998

EN61000-6-1

SAFETY

Standard

UL 61010-1

Usage Environment

Indoor use, maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% RH at +40°C, Installation Category II, Pollution degree 2

AC INPUT POWER (AC TO DC CONVERTER / CHARGER UNIT)

AC Input Voltage Range

100 to 240 VAC, 1.5 A max., 47 Hz - 63 Hz

AC Input Voltage Fluctuation

Less than 10% of the nominal input voltage

Transient Overvoltage

According to Installation Category II

Usage Environment

Indoor use, maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% RH at +40°C, Installation Category II, Pollution degree 2

Operating Temperature

0°C to +40°C

Storage Temperature

-20°C to + 85°C

EMI

EN55022 class B, EN61000-3-2 class D

Safety

UL 1950, CSA 22.2 No. 234 and No.950, IEC 950/EN 60950

DC INPUT POWER

DC Input Voltage Range (DC INPUT CONNECTOR)

11 VDC to 32 VDC

DC Power Input, Max. (DC INPUT CONNECTOR)

55 W

DC Power Input, Nominal (DC INPUT CONNECTOR)

25 W

DC Fuse Requirement (DC INPUT CONNECTOR)

5A, 32VDC, Type F

BATTERY

Battery Type

Lithium Ion (Li Ion) battery pack

Note: Battery must not be subjected to temperatures below -20°C , nor above +60°C

Battery Operation Time

5 hours continuous use

No backlight, duty cycle 80% transmitter and 20% Receiver tests, Auto shutoff if key is not pressed for 10 minutes

7 hours typical use

Battery Charge Time

4 hours

Note: Battery to be charged at temperatures between +0°C and +45°C only

DIRECTIONAL COUPLER

Coupling

30 dB

Frequency Range

20 MHz to 200 MHz

Power Rating

250 W CW

Insertion Loss

0.25 dB Max.

VSWR

1.10:1 Max.

Flatness

+/- 0.5 dB Max.

Directivity

20 dB Min

Connectors

RF In: Type N

RF Out: Type N

FWD: BNC

REV: BNC

Kit Includes

Coupler (Werlatone Model: C1569-13)

2 BNC cables (12 in)

2 Adapters (N-F to BNC-F)

1 10 dB attenuator

20 db/50 W ATTENUATOR

Attenuator Type

Bi-Directional

DC - 18 GHz

Power Rating

(mounted horizontally): 50 watts average (bi-directional) to 25°C ambient temperature, derated linearly to 10 Watts @ 125°C. 1 kW peak (5 µsec pulse width; 2.5% duty cycle).

Kit Includes

20 dB/50 W attenuator

N-F, BNC-F adapter

TNC-M, N-M adapter

20 db/150 W ATTENUATOR

Attenuator Type

Uni-Directional

DC - 1.5 GHz

Power Rating

(mounted horizontally with fins vertical): 150 watts average (unidirectional) to 55°C ambient temperature, derated linearly to 10% @ 125°C.

Kit Includes

20 dB/150 W attenuator

N-F, BNC-F adapter

N-M, BNC-F adapter

VERSIONS, OPTIONS AND ACCESSORIES

When ordering please quote the full ordering number information.

Ordering Numbers

Description

| | |
|--------|--|
| 3500 | Portable Radio Test Set |
| 3500UK | Portable Radio Test Set plus upgrade kit |

3500 SUPPLIED ACCESSORIES

| |
|---------------------------------------|
| Case, Soft -Sided Carrying |
| External DC Power Supply |
| Power Cable (AC) |
| Handset |
| Handset Cable |
| Short-Open-Load VSWR Calibrator |
| Comm Breakout Box |
| Cable (TNC) (M-M) (48 in) |
| 2 X Cable (BNC) (M-M) (48 in) |
| 5 X Adapter (BNC-F to TNC-M) |
| 2 X Fuse, Spare (5 A, 32 Vdc, Type F) |
| Case, Accessory |
| Power Cable (DC cigarette lighter) |
| Getting Started Manual (Paper) |
| Operation/ICW Manual (CD) |

3500UK ADDITIONAL SUPPLIED ACCESSORIES

| |
|----------------------------|
| Antenna (BNC) (50 MHz) |
| Antenna (BNC) (150 MHz) |
| Antenna (BNC) (450 MHz) |
| Antenna (BNC) (800 MHz) |
| Flip Cover |
| Attenuator (20 dB / 50 W) |
| Adapter (N-M to TNC-M) |
| 2 X Adapter (N-F to BNC-F) |
| Attenuator (20 dB / 150 W) |
| Adapter (N-M to BNC-F) |

Options

| | |
|-----------|-------------------|
| 35XX0PT01 | Spectrum Analyzer |
| 35XX0PT02 | Oscilloscope |

OPTIONAL ACCESSORIES

AC number

Description

| | |
|---------|---|
| AC27002 | Attenuator (20 dB / 50 W), Adapter (N-F to BNC-F), Adapter (N-M to TNC-M) |
| AC27003 | Attenuator (20 dB / 150 W), Adapter (N-F to |

| | |
|---------|--|
| AC27013 | BNC-F), Adapter (N-M to BNC-F) Directional Coupler (20 to 200 MHz), 2 X Adapter (N-M to BNC-F), Attenuator (10 dB), 2 X Cable (BNC) (M-M) (16 in) |
| AC25042 | Antenna (BNC) (50 MHz) |
| AC25045 | Antenna (BNC) (150 MHz) |
| AC25043 | Antenna (BNC) (450 MHz) |
| AC25044 | Antenna (BNC) (800 MHz) |
| AC27005 | Battery, Spare |
| AC27001 | Case, Transit |
| AC27006 | Flip Cover |
| AC27009 | CD Maintenance Manual (CD) |
| AC0820 | Desk Top Stand |
| AC0826 | Tripod |
| AC24006 | Tripod, Dolly, Stand |
| AC25055 | QMA Adapter Kit (Includes 24 assorted adapters) |
| AC25056 | 4 ft Blue Streak QMA to QMA quick connect cable |
| AC25057 | AC25055 + AC25056 Combo |

EXTENDED STANDARD WARRANTIES FOR 3500

| | |
|-----------|--------------------------------------|
| W3500/203 | Extended Standard Warranty 36 Months |
| W3500/205 | Extended Standard Warranty 60 Months |

EXTENDED STANDARD WARRANTIES WITH CALIBRATION FOR 3500

| | |
|------------|---|
| W3500/203C | Extended Standard Warranty 36 Months with scheduled calibration |
| W3500/205C | Extended Standard Warranty 60 Months with scheduled calibration |

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Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven and customer-focused.