

3550R

Touch-Screen Radio Test System

Data Sheet

COBHAM

The most important thing we build is trust

The complete portable, on site radio communication test system for analog and digital communication systems.

Now available with NEON® Signal Mapper for indoor signal mapping.

The 3550R. The first truly portable touch-screen radio communication test system. The 3550R takes radio and repeater site testing to the next level with a quantum leap in an easy to use, integrated test system for complete radio receiver and transmitter performance testing, cable fault and antenna system analysis. With its ultra-responsive resistive touch-screen, the 3550R brings a whole new experience to RF testing.

- Next Generation Touch-Screen Operation!
- Define your own test screens and then save for future use!
- Internal Battery Provides 4.5 Hours of True Portability on One Charge!
- Super Light Magnesium Alloy – 8.3 lbs/3.75 kg Weight! Almost half the weight of competitive units!
- 0° to 50° C Operating Range!
- 0.15 ppm Timebase with Exclusive “Freq-Flex” External Flexible Frequency Reference!

Complete Support for Today's Analog and Digital Technology

- AM
- FM
- DMR (MOTOTRBO™)
- P25
- TETRA
- NXDN™
- dPMR
- ARIB T98

Full Feature RF Test Functions

-140 dBm DANL Channel Analyzer

Multi-Function Oscilloscope

Tracking Generator for sweeping filters, antennas and cables. Can also be used for measuring VSWR or return loss of antennas as well as finding the location of faults in cables.

Precision RF Power measurements using external USB wideband thru-line power sensor

Analog demod measurements for modulation, distortion and SINAD

Digital demod measurements for modulation fidelity and symbol deviation

RF Generator for determining receiver performance of both digital and



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Multi-Language Support

Simplified Chinese

Traditional Chinese

Spanish

Portuguese

Malay/Indonesian

Korean

Arabic

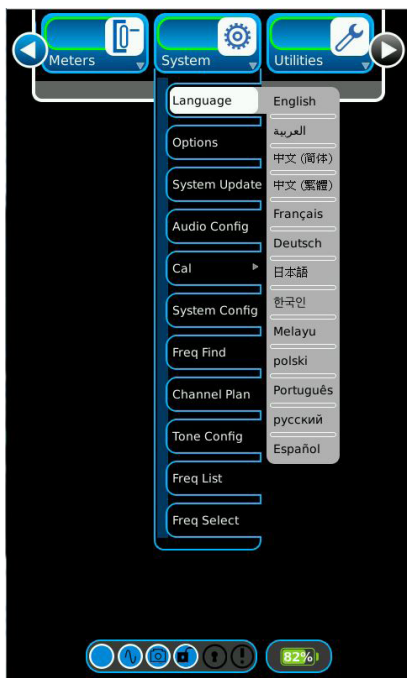
Polish

Russian

Japanese

German

French



The 3550R System Language Selection

A Complete Radio Test System

Cobham's expertise in developing radio communications test sets with exclusive features and excellent return on investment put the 3550R at the front of affordable, high performance RF analysis. Designed for speed, the 3550R features a complete radio test system with an advanced touch-

screen that simplifies cable and antenna testing.

Next Generation Touch-Screen Operation

The 3550R, with its resistive touch-screen, will meet the needs of users that require the test set to operate under all conditions, whether on the bench or in the field. Perfect for cold or wet weather applications, the 3550R also features a wider operating range of -20° C to $+55^{\circ}$ C and MILPRF28800F Class 2 specification for toughness required for extreme conditions.

Complete RF Transmitter Testing

With integrated RF power, RSSI, frequency error and modulation meters, the 3550R provides complete analysis of AM, FM, P25, DMR (MOTOTRBO), dPMR, NXDN and ARIB T98 radio systems.

Cobham's exclusive "Freq-Flex" external frequency reference allows you to use any external reference from 2 MHz to 1 GHz to calibrate the 3550R's time base. Simply connect a known good RF source to the 3550R antenna or T/R port and the 3550R time base is frequency corrected to the reference signal for super-accurate RF frequency measurements. Once calibrated, the 3550R can then be taken out and used for hours "un-tethered" to the reference oscillator.

With typical power accuracy of 0.5 dB, and with external cable path loss correction, the 3550R provides superior power measurements for results you can count on.

FM deviation analysis with accuracies of 4% (typical) and 0.0 dB flatness provides deviation measurements you can trust for FM and digital technologies using FSK modulations. Flatness of the deviation meter is important when aligning radios to ensure proper digital operation.

Complete RF Receiver Testing

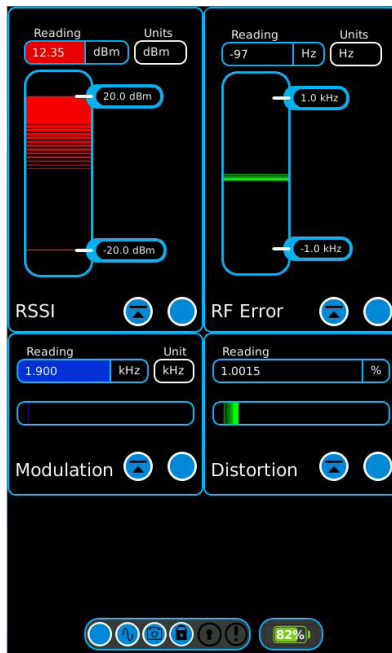
With a fully integrated, multifunction RF generator and SINAD, Distortion and BER meters, the 3550R allows for simplified and accurate receiver sensitivity testing. Full function audio routing allows the 3550R to perform proven Analog SINAD and DISTORTION testing down to -125 dBm. Plus, digital bit pattern sequences provide the digital RF generator needed to perform digital BER sensitivity testing for DMR (MOTOTRBO), dPMR, P25 and NXDN systems.

Meters Any Way You Want It

Exclusive, easy to read color coded meters allow for fast "Go, No-Go" testing at a glance. Plus, adjustable size at the touch of the screen provides more or less data as you require. It's so simple to set up and use! After you have the screen defined in a matter of seconds, you can easily save the screen settings and set up parameters for use at a later time. You have 100's of set ups for future use, plus if you need more than that, the easy access front USB drive port allows you to quickly recall stored set ups from your USB drive.

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Meter tiles showing color coded pass/fail

Complete analog test system

The 3550R includes the capability to perform direct connect type testing on a radio. All radio parameters including power, frequency error, modulation accuracy, receiver sensitivity and audio performance are easily accessed and tested.

To test receivers, the 3550R provides a signal generator, enabling the testing of the receiver portion of the radio. Audio SINAD, distortion and frequency error are among the tests that the 3550R can perform on the radio's receiver. With two internal generators that can be used as modulation sources, the 3550R can modulate the carrier with both a test tone and a squelch tone.

Alternatively, the internal generators can generate both a test tone and DCS, enabling the testing of mobiles requiring a digitally coded squelch.

Direct Connect Testing

- RF power and frequency error
- AM modulation/FM deviation
- Audio frequency counter
- Receive Signal Strength Indicator (RSSI)
- CTCSS/DCS encode/decode
- DTMF encode/decode
- Tone Remote
- Two Tone Sequential
- Distortion meter
- SINAD/sensitivity
- Channel analyzer

- Audio frequency oscilloscope
- Frequency find
- Audio level meter
- Pass/Fail limits

Snapshot and Clone Me!

The 3550R snapshot features allows you to capture the perfect picture of the system's performance before and after you're done! Spectrum shots, Distance to Fault, SWR and any other combination of meters and displays can be captured into digital picture for future reference.

If you've ever had to manage multiple instruments, you'll really appreciate our "Clone Me" function! If you have a fleet of test equipment that needs to do the exact same thing, and you have your 3550R defined exactly the way you want with screens and setups, the clone function allows you to transfer the same configuration to multiple 3550Rs through a simple internet connection.

Remote Operation and Remote File Access

Intermittent problems? The 3550R has the perfect solution for you to remotely monitor tough to find system anomalies through your smartphone, tablet, or PC anywhere on the planet. All you need is internet access and a VNC connection. This allows users to access a remote 3550R and view the live display as well as control the 3550R with the click of a mouse or a touch of your smartphone or tablet!

WinSCP or other FTP/SFTP clients can be used to easily transfer stored files, such as screen shots and memory setups, between the 3550R and a PC. This feature requires the following user name and password to access the 3550R:

Username: user

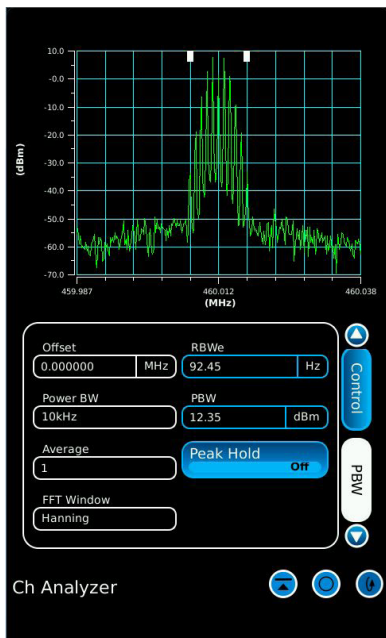
Password: user

Channel Analyzer

RF signals can be graphically analyzed with the Channel Analyzer option of the 3550R. The channel analyzer allows the user to analyze up to a 5 MHz spectrum of signals from a repeater, a mobile radio, or a hand-held, while at the time demodulating the signal and taking modulation measurements. The 3550R Channel Analyzer includes the capability of measuring the amount of power within a bandwidth or the level of the signal at a marker position. The user can also store and recall traces for comparison with live traces.

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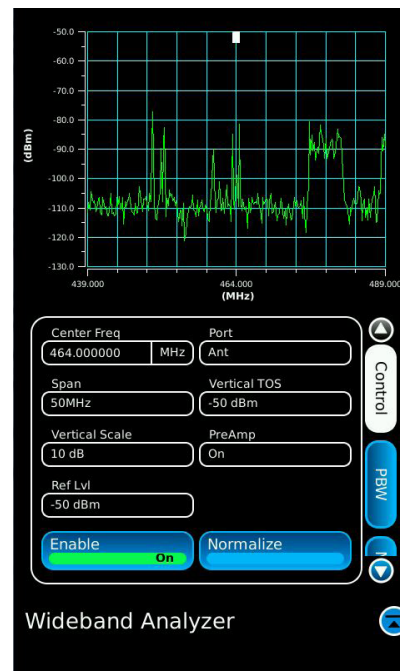
The 3550R Channel Analyzer

Oscilloscope

The 3550R Oscilloscope option is an important tool that is useful for viewing the demodulated audio of the transmitter under test, or to look at the audio from the receiver of a mobile or hand-held radio. The oscilloscope includes six markers for measuring timing and levels of the audio or demodulated signals.

Wideband Analyzer

In addition to the full suite of field-level test instrumentation, the 3550R features a 50 MHz Wideband Analyzer with up to six color markers. This powerful features allows desired signals, interferer signals, and other spectrum anomalies to be viewed. Screen hold and capture features provide instant storage of screen images to be saved and exported to a PC for later analysis and documentation.



The 3550R Wideband Analyzer

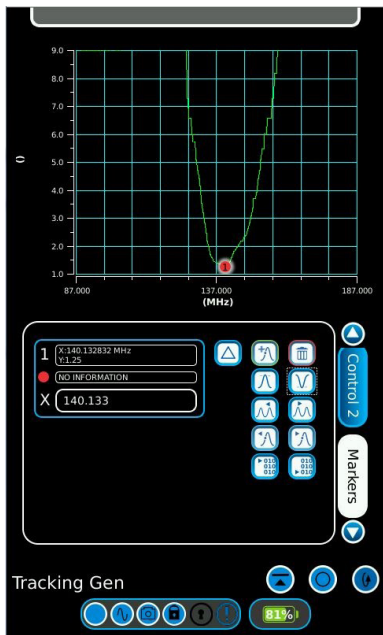
Simplified Repeater Site Analysis and RF Installation Testing

In addition to radio tests, test professionals must also isolate RF problems with cable and antenna systems as well as tune duplexers for maximizing RF system performance. Now these critical tests can be supported with a lightweight, portable 3550R Radio Test System with the optional full span tracking generator and precision DTF/VSWR accessory kit (kit items listed on page 13). Touch-screen menus provide easy setup and selection of VSWR, Return Loss, and Distance to Fault (DTF) measurements. Sweep results are displayed graphically and six color markers, which have manual and touch-screen controls, are available for identifying system anomalies. Numeric values for VSWR, Return Loss, and DTF (in feet or meters) are automatically calculated and displayed in the marker table.

3550R Touch-Screen Radio Test System

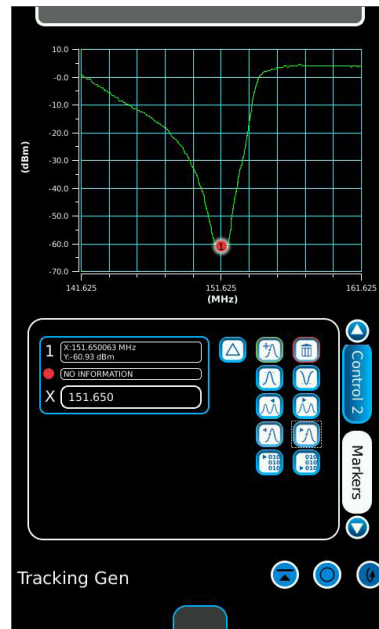


VSWR and Return Loss:



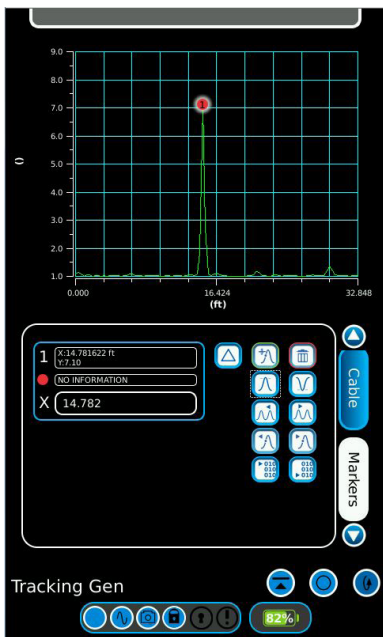
Tracking Generator Showing VSWR graph

Duplexer Tuning:



Tracking Generator Tuning a Duplexer

Distance to Fault (DTF):



Tracking Generator Showing DTF

AAR Channel Plan Option

AAR stands for Association of American Railroads and is an association of US and Canadian railroads. The AAR Channel plan consists of frequencies from 160.1775 to 161.5725. This option controls the RF frequency of both the generator and receiver of the 3550R based on the channel number. The channel number also automatically controls the modulation type with channel numbers 5 through 197 selecting FM modulation and channels 302 through 488 selecting NXDN modulation.

External RF Power Meter Option

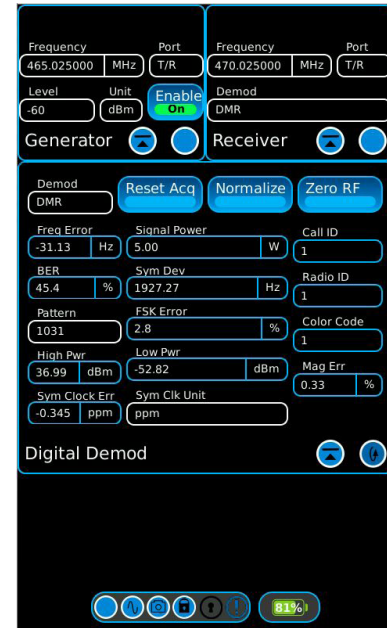
The 3550R now includes support for the Bird 5017D Wideband Power Sensor. The 3550R connects to the 5017D through the USB port.

- This power sensor is a thru-line power meter that can measure power levels from 500 mW to 500 W.
- Covers a frequency range of 25 MHz to 1000 MHz.
- Measures Peak Power and True Average Power
- Calculates and displays VSWR, Return Loss, Reflection Coefficient, Crest Factor and CCDF.

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Bird External Power Sensor Option



The 3550R Digital Analysis Panel

DIGITAL RADIO TEST OPTIONS

DMR Test

- Burst Power Meter
- Frequency Error Meter
- FSK Error Meter
- Symbol Deviation Meter
- Magnitude Error Meter
- Transmit BER Meter
- Color Code, Call ID, and Radio ID decode
- Transmit 1031 Hz, 0.153, and calibration patterns
- Base Repeater pattern for duplex radio testing
- User programmable Color Code and Call ID

With the DMR option, the 3550R can now perform a complete test on the transmitter and receiver of a DMR radio. This testing includes the measurement of the key modulation fidelity parameters, FSK error, magnitude error, symbol deviation and frequency error. The 3550R can also measure the power during the burst and the power level between the bursts. In order to enable the testing of radios, without requiring them to be put into a special test mode, the 3550R also has a programmable color code and call ID. A key feature of the 3550R is the base repeater (BR) pattern. A radio in duplex mode must synchronize with this BR pattern before it can transmit. It would not be possible to test a duplex radio without this feature.

P25 Test

- Inband and Broadband Power Meters
- Frequency Error Meters
- Modulation Fidelity Meter
- Transmit BER Meter
- NAC Decode
- Transmit 1011 Hz, 0.153, and CAL test patterns
- User programmable NAC for transmit

The 3550R P25 option gives you the capability to test P25 mobiles, hand-helds, repeaters and base stations. With this option, you can measure modulation fidelity, symbol deviation and frequency error and transmit standard patterns as specified by TIA-102.CAAA-C. This function becomes part of the Generator or Receive testing functions when this option is installed.

TETRA Base Station Test

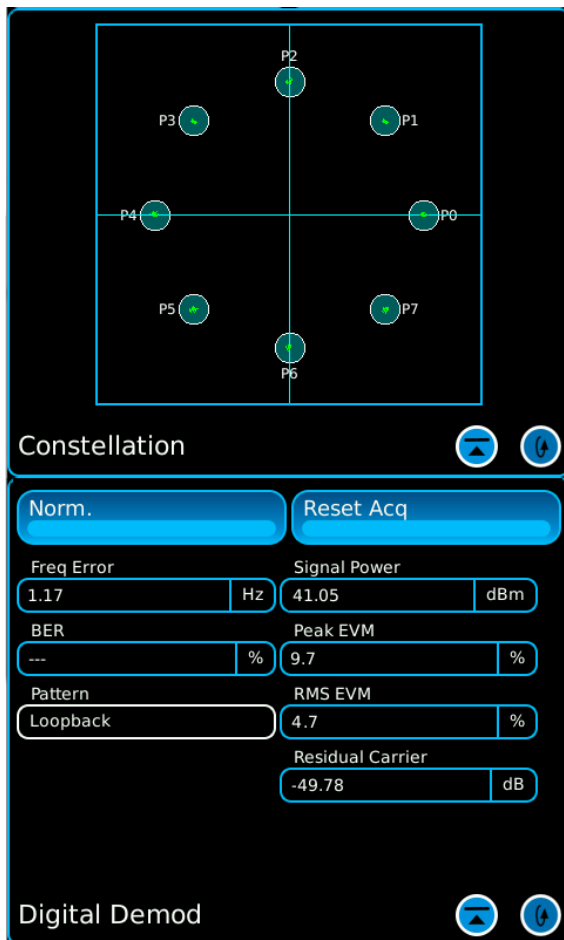
The 3550R includes a cost effective way to perform field-testing on TETRA base stations. Included are the critical tests for both the transmitter and receiver of the base stations. The following tests are included:

- Frequency Error
- Signal Power
- Peak EVM (Error Vector Magnitude)
- RMS EVM
- Residual Carrier

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- BER (Bit Error Rate)
- Modulation Constellation Display
- Auto and Pulse Synchronization Modes
- Receiver Testing
- Base Station Identity Parameters



TETRA Base Station Test

NXDN Test

- 4800 and 9600 Selectable Baud Rates
- Signal Power Meter
- Frequency Error Meter
- FSK Error Meter
- Symbol Deviation Meter
- Transmit BER Meter
- RAN Decode
- Transmit 1031 Hz, 0.153, and CAL test patterns
- User programmable RAN for transmit

With the NXDN test option, you will be able to measure the key NXDN RF parameters with the 3550R. These measurements verify the correct operation of both the transmitter and receiver of a NXDN radio. The 1031 Hz pattern along with the selectable RAN enables a test of the audio of a NXDN radio without requiring it to be in test mode. With the 0.153 random data pattern, you can perform BER testing of the receiver to verify that it meets its sensitivity requirements.

dPMR Test

- Signal Power Meter
- Frequency Error Meter
- FSK Error Meter
- Symbol Deviation Meter
- Transmit BER Meter
- Transmit 0.153 patterns

With the dPMR test option, you will be able to measure the key dPMR RF parameters with the 3550R. These measurements verify the correct operation of both the transmitter and receiver of a dPMR radio. With the 0.153 random data pattern, you can perform BER testing of the receiver to verify that it meets its sensitivity requirements.

Positive Train Control (PTC) Test

The 3550R PTC Option provides advanced transmitter and receiver test capabilities that are similar to vector signal analyzers and generators. This option enables the user to perform testing to verify the transmitter and receiver operation of PTC base stations, wayside and locomotive radios. Test capabilities of the 3550R for PTC include:

- EVM (Error Vector Magnitude)
- Carrier Feedthrough
- Signal Power
- Frequency Error
- BER (Bit Error Rate)
- Modulation Constellation display
- Transmitter and Receiver data rates of 8000 and 16000
- Receiver testing

NEON Signal Mapper Package

Cobham and TRX Systems are providing a new joint solution that integrates TRX's Neon Signal Mapper Application with the Cobham 3550R. NEON Signal Mapper automates the geo-referencing cloud storage, and 3D visualization of LMR test data for technicians who use Cobham test equipment to record and analyze two-way radio signals inside buildings and outdoors.

The NEON Signal Mapper includes the following:

- TRX Systems Tracking Unit with Belt Clip (1 year warranty)
- USB Cable and Wall Adapter for Charging
- 1 Year Signal Mapper Software License with NEON Cloud Access

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- Portable Wireless Router/Access Point



3550R PRODUCT SPECIFICATIONS

RF SIGNAL GENERATOR

Frequency

Range	2 MHz - 1 GHz (usable from 500 kHz)
Resolution	1 Hz

Output Level

Range	T/R Port: -50 to -125 dBm/707.107 μ V to 0.126 μ V ANT Port: -30 to -90 dBm/7071.068 μ V to 7.071 μ V SWR Port: -5 to -65 dBm/125743.344 μ V to 125.743 μ V
Resolution	Step size 0.1 dB
Accuracy	± 2 dB; ± 1.5 dB typical ± 3 dB (<-100 dBm); ± 1.5 dB typical

SSB Phase Noise

-80 dBc/Hz at 20 kHz offset
-95 dBc/Hz at 1 GHz typical at 20 kHz offset

Spurious

Harmonics	-30 dBc, -42 dBc typical
Non-Harmonics	-40 dBc, -50 dBc typical

Residual FM

<40 Hz in 300 Hz to 3 kHz BW; 6 Hz typical

Residual AM

<5% in 300 Hz to 3 kHz BW; 0.65%

Port Input Protection

ANT Port	+20 dBm typical
SWR Port	+20 dBm typical
T/R Port	+44 dBm typical

Port VSWR

ANT Port	<1.5:1
SWR Port	<1.5:1
T/R Port	<1.25:1

FM Modulation (GEN 1 and GEN 2)

MODULATION FREQUENCY RATE	
Range	0 Hz to 20 kHz
Resolution	0.1 Hz
Accuracy	Timebase ± 2 Hz
FM MODULATION	
Range	Off, 0 Hz to 100 kHz
Resolution	1 Hz
Accuracy	$\pm 10\%$ (2 kHz to 50 kHz deviation, 150 Hz to 3 kHz rate) Typically <4% (5.6 kHz deviation, 1 kHz rate)
Total Harmonics Distortion	3%, 1% typical (1 kHz rate, >2 kHz deviation, 300 Hz - 3 kHz BP filter)

External FM Modulation

MICROPHONE IN	
Input Range	Range 1: 2-15 mVrms (8 mVrms nominal) MIC E-OPEN, F-GND Range 2: 35-350 mVrms (100 mVrms nominal) MIC E-GND, F-OPEN Range 3: 2-32 mVrms (20 mVrms nominal) MIC E-OPEN, F-OPEN
Frequency Range	300 Hz to 3 kHz
Deviation Range	Off, 0 Hz to 80 kHz
Modulation Accuracy	$\pm 20\%$ (300 Hz to 1.2 kHz) $\pm 30\%$ (>1.2 kHz)
Slope	Positive voltage yields positive deviation
AUDIO IN	
Switchable Loads	150 ohms, 600 ohms, 1 K ohms, High Z DIV 10 (1 K ohm, 30 Vrms maximum input)
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)

MODULATION FREQUENCY RATE	
Range	0 Hz to 20 kHz
Resolution	0.1 Hz
Accuracy	Timebase ± 2 Hz
AM MODULATION	
Range	Off, 0 to 100%
Resolution	0.1%
Modulation Accuracy	10% off setting, 150 Hz to 5 kHz rate, 10% to 90% modulation (based on \pm peak/2 measurement)
Total Harmonics Distortion	3%, (20% to 90% mod, 1 kHz rate, 300 Hz to 3 kHz BP filter)

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External AM Modulation

MICROPHONE IN	
Input Range	Range 1: 2-15 mVrms (8 mVrms nominal) MIC E-OPEN, F-GND Range 2: 35-350 mVrms (100 mVrms nominal) MIC E-GND, F-OPEN Range 3: 2-32 mVrms (20 mVrms nominal) MIC E-OPEN, F-OPEN
Frequency Range	300 Hz to 3 kHz
Modulation Range	0% to 80%
AUDIO IN	
Switchable Loads	150 ohms, 600 ohms, 1 K ohms, High Z DIV 10 (1 K ohm, 30 Vrms maximum input)
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 20.0 kHz (usable)
Resolution	0.1 Hz
Accuracy	Timebase ± 2 Hz
OUTPUT LEVEL	
Range	0 to 1.57 Vrms (into 600 Ω)
Resolution	0.01 Vrms
Accuracy	$\pm 10\%$; Typical 3%
Distortion	3% (1 kHz rate, sine, 300 Hz to 3 kHz); 1% typical

RF Receiver

FREQUENCY	
Range	2 MHz to 1 GHz (useable from 750 kHz)
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 preamp) 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, Modulation, AF Counter and AF Level) ANT: -90 dBm (-110 dBm with RF Amp On) to -10 dBm (RSSI) T/R: -20 dBm (RF Error, Distortion, Modulation, AF Counter and AF Level) 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) +47 dBm/50 W (FM) and +41 dBm (AM) with 50 W attenuator +51.76 dBm/150 W (FM) and 45.76 dBm (AM) with 150 W attenuator
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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 kBP, 0.3-3 kBP, 0.3 kHP, CCITT BP, C-Wt BP, 15 K LP, 5 K, LP, 3 K LP, 0.3 K LP, 0.02 kHP, 0.02 - 3 kBP, 0.02 - 5 kBP FM: (3 Vrms/kHz Dev)*IF BW (kHz)
Audio Output Level Sensitivity	$\pm 15\%$ 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

RF Frequency Error Meter

Range	± 200 kHz
Resolution	1 Hz
Accuracy	Timebase ± 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) T/R Port: -50 dBm to +43 dBm ANT Port (without RF amp on): -90 dBm to -10 dBm
Usable Meter Reading RF Level Range	ANT Port (with RF amp on): -110 dBm to -10 dBm
Resolution	0.01 dBm

Accuracy	± 3 dB; 1.5 dB typical (>-50 dBm into T/R, >-90 dBm into ANT or >-110 dBm into ANT with RF Amp On)
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RF Power Meter (Broadband RF Power Into T/R Port)

Display Range	0 to 43 dBm (0 to 20 W)
Minimum Input Level	0.10 W/+20 dBm 20 W/43 dBm for 10 minutes
Maximum Input Level	at +25° C or until thermal alarm sounds
Resolution	0.01 W/0.1 dBm
Accuracy	± 1 dB; 0.5 dB typical

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FM Deviation Meter

Range	500 Hz to ± 100 kHz
Modes	Peak+, Peak-, (Peak+ - Peak-)/2 RMS, dBr
Resolution	0.1 Hz
Accuracy	$\pm 10\%$, 6% typical; of reading 500 Hz to 100 kHz deviation $\pm 5\%$, 4% typical 1 kHz to 10 kHz deviation, 150 Hz and 1 kHz rate

AM Percent Meter

Range	5% to 100%
Modes	Peak+, Peak-, (Peak+ - Peak-)/2 RMS, dBr
Resolution	1%
Accuracy	$\pm 5\%$ of reading, 1 kHz rate, 30% to 90% modulation, 3 kHz LPF; 2% typical

Ant-Cable 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	6
Immunity to Interfering Signal	Typically -30 dBm

SWR Measurement

VSWR Range	1.00 to 20.00
Resolution	0.01
VSWR Accuracy	$\pm 20\%$ of SWR readings (calibrated) <300 MHz; typical $\pm 30\%$ of SWR readings (calibrated) ≥ 300 MHz; typical

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	3 ft to 328 ft 1 m to 100 m
Return Loss Range	0.0 to -50.0 dB
Cable Types	USER, RG-8x, RG-8, RG-8foam, RF-8A, RF-55, RF-55A, RF-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	40,80, 200 or 400 ft 12.2, 24.4, 61 or 121.9 m

Audio Meters

AUDIO INPUT (AUDIO IN)	
Source	BNC Input on front panel
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; ± 1.0 dB typical

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%; ± 1 count

Audio Frequency Counter

Input Demodulation Range	FM: 15 Hz to 20 kHz (IF BW set appropriately for received modulation BW) AM: 100 Hz to 10 kHz (IF BW set appropriately for received modulation BW) Audio Input Level: 10 mVp-p to 5 Vp-p
Audio Input Range	15 Hz to 20 kHz
Ext Audio Input	10 mVp-p to 5 Vp-p
Resolution	0.1 Hz
Accuracy	± 1 Hz

Audio Frequency Level Meter

Measurement Sources	Audio in, DVM
Frequency Range	200 Hz to <5 kHz
Input Level	Audio in 10 mV rms to 3 V rms (x1) 1 V rms to 30 V rms (/10) DVM 10 mV rms to 3 V rms (x1) 1 V rms to 30 V rms (/20)
Display Unit Resolution	Volts 0.001 V mV 0.001 mV dBuV 0.001 dBuV dBm 0.001 dBm Watts 0.001 W
Accuracy	$\pm 5\%$; $\pm 2\%$ typical; Audio In

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Channel Analyzer (Optional)

FREQUENCY	
Range	2 MHz to 1 GHz (Usable from 250 kHz)
Resolution	1 Hz
Accuracy	Same as timebase
Span	10 kHz to 5 MHz in 1, 2, 5 sequence
Wide Analyzer	10 kHz to 50 MHz in 1, 2, 5 sequence
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 selective 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)
Markers	6
Displayed Average Noise Level (DANL)	-120 dBm (typical, 10 kHz span) -14 dBm with pre-amp enabled

Oscilloscope (Optional)

Source	DVM, Audio In, Demod
Traces	One
Markers	Six
Maximum Input Level	+30 Vrms
TRIGGER	
Type	Auto, Norm
Edge	Rising, Falling
Trigger Level Range	-30 to +30 Vrms
Horizontal Range	0.5 ms/div to 0.1 sec/div
Accuracy	3% of full scale
VERTICAL RANGE	
FM demod	0.1 kHz to 50 kHz/div in a 1, 2, 5 sequence
AM demod	5, 10, 20, 50%/div
DVM and Audio in	10 mV to 10 V/div in a 1, 2, 5 sequence
Accuracy	10% of full scale
Coupling	DVM Input: AC, DC, and GND Audio in: AC DVM Input: 1 M Ω
Input Impedance	Audio in: 150 Ω , 600 Ω , 1 K Ω , High Z, Div by 10
Bandwidth	5 kHz

Occupied Bandwidth (Optional) (Requires Channel Analyzer Option)

FREQUENCY	
Range	2 MHz to 1 GHz (Usable from 250 kHz)
BANDWIDTH MEASUREMENT RANGE	
Percentile	1.0% to 100%; selectable in 0.1% steps
OBW DISPLAY	
Span Range	10 kHz, 20 kHz, 50 kHz, 100 kHz, 200 kHz, 500 kHz, 1 MHz, 2 MHz, and 5 MHz; selectable
OBW Power Resolution	0.01 dB
OBW Frequency Resolution	1 Hz (step size = span range/128)
ACCURACY	
OBW Power	± 3 dB (± 1.5 dB typical)
OBW Frequency	$\pm 1\%$ of span range (Hanning window selected)
Modes	Live
Timebase	
Temperature Stability	± 0.15 ppm at -20° C to 70° C
Aging	0.5 ppm/First Year 0.3 ppm/After First Year
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	8.3 lbs. (3.75 kg); 12 lbs. (5.4 kg) with accessories
Temperature	Storage: 51° C to +71° C storage Note: Battery must not be subjected to temperatures below -20° C, nor above +60° C
Operation	3550R - DC only Operation: -20° C to +55° C (battery removed, contingent upon applied RF power over time ²). 3550R Battery Operation: -20° C to +40° C (typical based on internal temperature rise and usage of the instrument ²). Note: Battery to be charged at temperatures between 0° C to +45° C
Altitude	4600 M - MIL-PRF-28800F Class 2
Humidity	95% Maximum (Non-condensing) MIL-PRF-28800F Class 2
Shock, Functional	30 G - MIL-PRF-28800F Class 2
Bench Handling	MIL-PRF-28800F Class 2
Vibration	MIL-PRF-28800F Class 2
Compliance	
	EMC
Emissions	MIL-PRF-28800F EN61326: 1998 Class A EN61000-3-2 EN61000-3-3
Immunity	MIL-PRF-28800F EN61326: 1998
	SAFETY

3550R Touch-Screen Radio Test System



Standard	UL 61010-1; CSA
ENVIRONMENTAL	
Acoustic Noise	MIL-PRF-28800F Class 2
Explosive Atmosphere	MIL-PRF-28800F Class 2
Dust Resistance	MIL-PRF-28800F Class 2
Drip Proof	MIL-PRF-28800F Class 2
Blowing Rain	MIL-PRF-28800F Class 2
Solar Radiation	MIL-PRF-28800F Class 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
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, 32 VDC, 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	100% Backlight: 3 1/2 hours typical 40% Backlight: 4 hours typical Minimum backlight: 4 1/2 hours typical
Battery Charge Time	4 hours Note: Battery to be charged at temperatures between 0° C and +45° C only

VERSIONS AND ACCESSORIES

90849 3550R Touch-Screen Radio Test System Ruggedized

3550R STANDARD ACCESSORIES

External DC Power Supply

Getting Started Manual (Paper)

Operation/ICW Manual (CD)

REGIONAL KITS FOR 3550R (WITH HARD PECIAN CASE)

90603 US

90890 China

90889 International

REGIONAL KITS FOR 3550R (WITH SOFT-SIDED CASE)

92777 US

92775 China

92776 International

REGIONAL KIT ACCESSORIES

Hard, Pelican Transit Case or Soft-Sided Carrying Case

Power Cable (AC)

Handset

Short-Open-Load VSWR Calibrator

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)

Accessory Case

Power Cable (DC supply - cigarette lighter)

Getting Started Manual (Paper)

Operation/ICW Manual (CD)

Antenna (BNC) (50 MHz)

Antenna (BNC) (150 MHz)

Antenna (BNC) (450 MHz)

Antenna (BNC) (800 MHz)

Cobham Combo Stand and Cover

OPTIONS

91819 3550OPT01 Channel Analyzer

91818 3550OPT02 Oscilloscope

83346 35XXOPT07 P25 Test

83347 35XXOPT08 Tracking Generator

89509 35XXOPT09 dPMR Test

89510 35XXOPT10 ARIB T98 Test

92468 3550OPT13 AAR Channel Plan

92803 3550OPT14 Precision Thru-Line Power Meter
(Use with Bird Wideband Power Sensor; 5017D)

112401 3550OPT15 Occupied Bandwidth (Requires 3550OPT01)

3550R Touch-Screen Radio Test System



114327	3550OPT16 Positive Train Control
89261	35XXOPT33 NXDN Test
89262	35XXOPT34 DMR Test
91820	German
91821	Japanese
91822	Korean
91823	Malay/Indonesian
91824	Polish
91825	Portuguese
91826	Russian
91827	Simplified Chinese
91828	Traditional Chinese
91829	Spanish
91830	Arabic
91832	CALFB3550 Calibration Certificate - 3550R
92240	French
141787	TETRA Base Station Test

OPTIONAL ACCESSORIES

63927	AC25081 Site Survey Software
140747	NEON Signal Mapper Package for Indoor Coverage Mapping
89908	Mounting Bracket for AC27003 150 W Attenuator
91600	Yellow Hard Transit Case
91679	Cobham Combo Stand and Cover
91706	Black Hard Transit Case
10192	AC27004 Case, Soft-Sided Carrying Accessory Kit, Precision DTF/VSWR
	This kit contains:
	12 inch coax cable (TNC-M to N-M)
	7.5 inch coax cable (TNC-M to N-M)
	Return Loss Bridge, 5-3000 MHz
	Termination, 50 Ohm, Precision
	Power Divider, DC - 3.0 GHz
	Conn, Adapter (TNC-M to N-M)
	Accessory Case
92723	
92793	5017D Wideband Power Sensor (Use with 3550OPT0014)
82559	AC27002 Attenuator (20 dB/50 W), Adapter (N-F to BNC-F), Adapter (N-M to TNC-M)
82560	AC27003 Attenuator (20 dB/150 W), Adapter (N-F to BNC-F), Adapter (N-M to BNC-F)
67076	AC27005 Battery, Spare
90520	3550 Series Op/ICW Manual (CD Only) (One Supplied Standard)
90523	3550 Series Maintenance Manual (CD Only)
90521	3550 Series Getting Started Manual (Paper Only) (One Supplied Standard)
67474	AC0826 Tripod
82553	AC24006 Tripod, Dolly, Stand

EXTENDED STANDARD WARRANTIES FOR 3550R

84341	W3500/203 Extended Standard Warranty 36 Months
84343	W3500/205 Extended Standard Warranty 60 Months

EXTENDED STANDARD WARRANTIES WITH CALIBRATION FOR 3550R

84342	W3500/203C Extended Standard Warranty 36 Months with Scheduled Calibration
84344	W3500/205C Extended Standard Warranty 60 Months with Scheduled Calibration

¹ - "Specifications" describe product performance over the specified operating temperature range and frequency range are covered by the product warranty. "Typical" numbers are specified at ambient room temperature (23° C) and describes a characteristic that 95% of product exhibit (±2 standard deviations) with a 95% confidence level at room temperature (23° C). Typical characteristics are not covered by product warranty.

² - Use reason when working with RF test instruments. All thermal ratings are dependent upon applied RF power. The 3550R will alarm once the internal temperature of the 3550R exceeds predetermined limits. Applying power continuously in high ambient temperature conditions will result in a heat build-up within any instrument. The 3550R is rated for 20 W (43 dBm) for 10 minutes at +25° C or until thermal alarm sounds. Exceeding these conditions will result in thermal shutdown.

3550R Touch-Screen Radio Test System

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For further information please contact:

Cobham AvComm

10200 W York Street

Wichita, KS 67215

USA

Tel: 1-316-522-4981

Fax: 1-316-524-2623